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CONTENTS

GUIDELINES FOR THE INVESTMENT CHOICE OF CAPITAL PROJECTS BY PUBLIC CORPORATIONS

*W J Pienaar**

Abstract

This article provides guidelines on how public corporations can choose capital projects on the basis of economic and financial criteria. Project appraisal, selection and prioritisation criteria are listed, followed by a description of the way in which the result of each appraisal technique should be interpreted. Criteria that should be adhered to in the selection of mutually exclusive projects and the prioritisation of functionally independent projects in order to maximise the net output of public corporations in the long run are supplied. Applications of the proposed investment decision rules are illustrated by examples. Two techniques are proposed that may be used as additional decision-making instruments when evaluated projects show similar degrees of long-term financial viability.

Keywords: benefit: cost ratio; capital recovery period; first-year rate of return; incremental benefit: cost ratio; independent projects; indivisible projects; mutually exclusive projects; net present value

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1. GENERAL

The problem of scarcity of resources leads to budget limitations at all levels of decision making. This – along with the fact that commercialised public corporations' investment in capital projects consumes a relatively large proportion of their available funds – means that they have to be certain that the benefits offered by capital investments exceed the costs thereof. However, candidate capital projects must not only be subject to sound investment appraisal, but those chosen for implementation should also collectively maximise benefits. The research question is twofold: first, how to determine the appropriate size of an investment budget of indivisible* capital projects; and, second, how to compile a budget of a given size (i.e. how to allocate a fixed total of funds) among mutually exclusive* and independent projects.*

2. DECISION RULES FOR PROJECT SELECTION AND PRIORITISATION

2.1 Selection criteria

The selection and prioritisation of projects based on investment appraisal usually takes place with reference to the following general criteria (Pienaar, 2002; European Commission, 2008):

(1) All projects must be evaluated in the same manner.
(2) All alternatives, i.e. the whole range of technically feasible projects, should be evaluated.
(3) The benefits of a project must exceed its investment cost.
(4) The investment cost of a chosen project must be within the limits of the budget.

Evaluation techniques to determine the viability of a project are usually based on the following three specific criteria:

(1) Minimum total cost, which can be determined through the present worth of cost (PWOC)* technique (expressed as an absolute monetary amount).
(2) Net advantage, which is determined by the net present value (NPV)* technique (expressed as an absolute monetary amount).

* All concepts marked with an asterisk, are defined in the glossary of terms (section 6).

(3) Relative advantage, which is usually determined either by the benefit:cost ratio (B/C)* technique or the internal rate of return (IRR)* technique (expressed in relative terms; the former as a ratio and the latter as a percentage).

The financial choice of a specific project for implementation involves two steps, namely, project selection and project prioritisation:

- **Project selection** involves the selection of the best mutually exclusive project, or in other words, the most advantageous way of solving a specific operational problem.
- **Project prioritisation** is the arrangement of all functionally independent projects in order of priority according to their respective degrees of viability. The projects will be prioritised from most to least attractive up to the point where the capital budget has been exhausted.

A project which yields a B/C ratio value greater than 1 always has a positive NPV, and an IRR which exceeds its opportunity cost of capital. Provided the initial costs of projects do not differ, any one of the four evaluation techniques discussed may be used to select the best alternative among a number of mutually exclusive projects. The alternative with the smallest PWOC will have the highest B/C ratio, highest IRR and highest NPV. However, if the initial costs differ significantly (which is generally the case), incremental analysis should be used to identify the most suitable alternative (Adler, 1987).

The PWOC and NPV techniques cannot be used to prioritise independent projects. The absolute value of a project's benefits depends on its scope. The benefits of a large project may, for instance, have a larger absolute value than the benefits of a smaller project, whereas the relative return of the larger project may be considerably lower than that of the smaller project. Hence it is better to use the IRR and B/C ratio techniques for the prioritisation of independent projects, also taking into account the results of the investment timing analyses (Canadian Treasury Board, 1998).

The reduction of user cost afforded by new facilities can generate additional demand over and above normal demand. In such cases, the criterion of lowest total cost presents a contradiction in terms which complicates the interpretation of the answer indicated by the PWOC technique. Furthermore, this answer does not give an indication of the scale of the benefit offered by an alternative, unless the answer is subtracted from the PWOC of the existing alternative. This difference is equal to an alternative's NPV (Pienaar, 2002).

It is the creation of net benefit that is of interest to the decision maker, because it is benefit that contributes to wealth, and, therefore, to economic welfare (AASHTO, 2003). To support informed decision making, further analysis in this work focuses on the evaluation techniques which take cognisance of project benefits.

In the sections that follow, the principles of selecting divisible and indivisible projects with a fixed budget and with a variable budget size are discussed.

2.2 Divisible projects

Consider first the situation where all projects are divisible, i.e. they can be increased or decreased by very small increments. Although this is not a realistic assumption, it allows us to illustrate the basic rationale of project selection.

Fixed budget size

Suppose that the decision maker must be advised how best to allocate a given amount, say €1 million, between two proposed projects, X and Y. The problem is similar to that of an individual who must allocate his personal budget. First, one must determine the cost (C) involved in providing each service and the benefit (B) to be derived from each service. Then outlays must be allocated between X and Y in order to maximise the net benefit from the budget (ΣNB), i.e. to derive the largest excess of total benefits over costs $\Sigma(B - C)$. With ΣC limited by the size of the budget, the task is to maximize ΣB.

Variable budget size

More broadly viewed, budgeting indicates that the problem is not merely one of compiling a given budget, but also of determining its size. The government must thereby decide how resources are to be distributed between private and public use. Therefore, one has to drop the assumption of a fixed budget and integrate project choices along with the process of determining total budget size(s). Within a fixed budget, the opportunity cost of pursuing a public project consists of the benefit forgone by not pursuing the best other public project. But in a variable budget situation the opportunity cost of public projects must be considered as the lost benefits from private projects which are forgone because resources are transferred to public use.

The task now is to maximize $\Sigma(B - C)$, including benefits and costs of both public and private projects. This condition is met by equating marginal benefits for the last euro spent on alternative public and private projects. Public projects are extended or restricted and private projects are restricted or extended until the benefit from the last euro spent in either sector is equal. Thus, public investments are increased until the last euro spent yields a euro's worth of benefits.

2.3 Indivisible projects

It is assumed above that investment may be divided between projects, or broad categories, X and Y, so that benefits may be equated for the marginal euro spent on each. With specific allocation within public corporations, choices must be made among indivisible projects. These projects involve lump-sum amounts and are not smoothly expandable. If, for example, the choice has to be made between a road linking points A and B and another linking A and C, where the distance between A and B is twice the distance

between A and C, no marginal extension appears possible. This situation contrasts with, for example, the construction of an access road into a developing region, which may be expanded by small increments.

Fixed budget size

Consider a fixed budget situation. Suppose that the government has €1 million to invest in different infrastructure facilities, and that it may choose among projects A to G, as shown in Table 1. The cost of each project is represented by its required investment amount. The benefit assessment gives the total benefit for each project.

Table 1. Project choice with indivisible projects and a fixed budget

Project	Present value of benefits: B (€ 000)	Present value of investment cost: C (€ 000)	Net benefits: B-C (€ 000)	B/C ratio	B/C ranking
A	215	70	145	3,1	1
B	180	115	65	1,6	4
C	300	210	90	1,4	5
D	190	170	20	1,1	7
E	565	435	130	1,3	6
F	720	430	290	1,7	3
G	685	285	400	2,4	2

In dealing with this case, one can consider various decision rules. Let rule 1 be to rank projects in line with their B/C ratio and move down the order until inclusion of a further project would exceed the budget limit. Projects A, G, F and B are then chosen. The total investment cost is €900 000; total (i.e. gross) benefits are €1 800 000; net benefits equal €900 000; and €100 000 of the available budget remains. As an alternative, let rule 2 call for that mix of projects which yields the largest net benefit. By trying various combinations, one finds that net benefits are maximised by choosing projects A, G, F and C. In this case, the total investment cost is €995 000; gross benefits are €1 920 000; and net benefits equal €925 000. An amount of €5 000 is not invested. Rule 3, finally, might be to minimise the residual not invested, subject only to the constraint that projects must have a B/C > 1. In this case, the choice is for projects B, D, F and G, with a cost of €1 000 000, benefits of €1 775 000 and net benefits of €775 000. No funds remain.

Comparing the merits of the three rules shows that it is evident that rules 1 and 2 are superior to 3 because both realise greater benefits at a smaller investment cost. Choosing between rules 1 and 2 is more difficult. Rule 1 is reasonable, because it calls for the choice of projects which yield the highest return per euro of the constrained resource (i.e. the available budget). Rule 2 offends this principle by choosing project B over C. Yet by moving from rule 1 to rule 2, additional benefits of €120 000 are gained at an additional investment cost of €95 000. Net benefits rise by €25 000, and although the incremental B/C ratio* is only 1,26, it is still a viable proposition. Rule 2 will clearly be preferred if the fixed budget case treats any unutilised funds as worthless. Taking a broader view and allowing for a possible transfer to another budget, one notes that rule 2 will be better only if other budgets cannot offer projects with a B/C ratio above 1,26.

Variable budget size

If the budget size has no fixed limit, the problem is once more one of weighing public against private uses of resources. Since one is now dealing with indivisible projects, this can no longer be done by balancing the benefits derived from incremental outlays on both uses. One now proceeds by the rule that a public project is worth undertaking as long as its benefits exceed its investment cost. The justification for the rule is that the cost of investing *n* euros in the public sector is the loss of *n* euros of benefits – a loss which results from not investing *n* euros in the private sector. The rule may be postulated that a project should be undertaken so long as $(B - C) > 0$ (Musgrave and Musgrave, 1989; Rosen and Gayer, 2008; Black, Calitz and Steenekamp, 2005).

3. APPLICATION OF INVESTMENT DECISION RULES

3.1 Mutually exclusive projects

Whenever the opportunity prevails to solve a specific problem with the investment timing of the solution project not being challenged by any independent projects elsewhere, the NPV measure is the preferred selection criterion. Suppose, for example, that €1 million has been allocated to rectify a specific problem situation, that unused funds cannot be transferred to other projects and that a choice has to be made from the three viable alternatives shown in Table 2.

Table 2. Present value of benefits and investment costs for three alternative projects

Project	Present value of benefits (euros)	Present value of investment cost (euros)	Net present value of benefits (NPV) (euros)	B/C ratio
A	1 080 000	600 000	480 000	1,80
B	1 400 000	800 000	600 000	1,75
C	1 620 000	1 000 000	620 000	1,62

Regardless of the fact that alternative C shows the smallest relative return, it maximises absolute benefit by having the greatest NPV. Incremental B/C analysis using Table 2 shows that a move from alternative A to alternative B and a move from alternative B to alternative C will both be beneficial:

- $B/C_{B:A}$ = (1 400 000 – 1 080 000) ÷ (800 000 – 600 000) = 1,6
- $B/C_{C:B}$ = (1 620 000 – 1 400 000) ÷ (1 000 000 – 800 000) = 1,1

Therefore, a move from alternative A to alternative C will yield the greatest net benefit. Note that in a mutually exclusive situation, incremental analysis will always indicate that the alternative with the greatest NPV is the best project.

3.2 Independent projects

When a choice has to be made among a number of independent projects, given a fixed budget, the B/C ratio measure is the preferred criterion. Suppose, for example, a public corporation with a fixed budget of €1 million has to make a choice among 16 independent projects, five of which are indicated in Table 3.

Table 3. Present value* of benefits and costs for a number of independent projects

Project	Present value of benefits (euros)	Present value of investment cost (euros)	Net present value of benefits (NPV) (euros)	B/C ratio
A	70 000	30 000	40 000	2,33
B	270 000	150 000	120 000	1,80
C	84 000	45 000	39 000	1,87
D	128 000	60 000	68 000	2,13
.	.	.	.	.
.	.	.	.	.
P	180 000	90 000	90 000	2,00

In this situation the B/C ratio criterion is the preferred measure to apply. The project with the highest B/C value is chosen first, followed by the one with second-highest B/C value, and so on until the budget is exhausted. Therefore, the five projects in Table 3 will be chosen in the order A, D, P, C and B. This way the benefit per euro spent is maximised.

3.3 Mutually exclusive and independent projects

Suppose the objective of the decision maker is to maximise benefit subject to the restriction of a fixed budget, and that both mutually exclusive and independent projects are under consideration. In this case, a method of project assessment based on the incremental principle is recommended. The method consists of the following seven steps (Thompson, 1980; Pienaar, 2002; Conningarth Economists, 2006):

(i) Determine the size of the budget. Where the size of the budget has been given, this requirement is met. Where some degree of freedom exists as to the total amount available, then the amount can be expanded incrementally, and the marginal benefits compared with the marginal expenditure to determine whether any expansion of the budget is justified.

(ii) Eliminate all projects that exceed the budget limit and all projects that do not satisfy the minimum acceptance criteria, as set out above.

(iii) Determine which project has the highest B/C ratio within each group of mutually exclusive alternatives and then leave out the rest of the possible projects in the group.

(iv) From the projects under consideration initially, select the one with the highest B/C ratio.

(v) Reconsider the selection of the best project in each group of mutually exclusive projects by, firstly, reviewing all the more expensive projects and noting the incremental B/C ratios. Within each group of mutually exclusive projects the project with the highest incremental B/C ratio is identified and compared with the rest of the independent projects. Secondly, the available

budget is adjusted to reflect the effect of the projects already chosen, and all remaining projects that exceed the balance of the budget are omitted.

(vi) Repeat steps (iv) and (v) for as long as possible. The iteration process ends when the budget is exhausted or when no acceptable projects remain for consideration.

(vii) Consider adjustments to chosen projects when the budget is not completely exhausted and a small adjustment in a chosen project may provide incremental benefits.

The following example demonstrates this procedure. Suppose a corporation has €1 million to spend on capital projects, and 13 possible projects are proposed to replace six unsatisfactory facilities (A to F). The projects under consideration are summarised in Table 4. Projects A_1 and A_2 are two mutually exclusive; B_1, B_2 and B_3 are mutually exclusive; D_1 to D_4 are mutually exclusive; and F_1 and F_2 are mutually exclusive. Groups A, B, C, D, E and F are independent.

Table 4. Present worth (PW)* of benefits and costs, and benefit:cost ratios of a number of projects

Project	PW of benefits (€ 000)	PW of investment cost (€ 000)	B/C ratio
A_1	180	150	1,20
A_2	490	350	1,40
B_1	210	100	2,10
B_2	328	160	2,05
B_3	351	180	1,95
C	270	200	1,35
D_1	180	120	1,50
D_2	432	240	1,80
D_3	630	360	1,75
D_4	816	480	1,70
E	90	40	2,25
F_1	260	130	2,00
F_2	304	160	1,90

There is no project that exceeds the budget limit of €1 million and, furthermore, there is no project with a B/C ratio of less than 1. All projects are, therefore, included in further analysis. Subsequently, from each group of mutually projects the one with the highest B/C ratio is chosen; the projects that are selected for the next step are the following:

Project	**PW of benefits (€ 000)**	**PW of investment amounts (€ 000)**	**B/C ratio**
A_2	490	350	1,40
B_1	210	100	2,10
C	270	200	1,35
D_2	432	240	1,80
E	90	40	2,25
F_1	260	130	2,00

From these six projects E is chosen. There is now €960 000 left in the investment budget, with five remaining projects to choose from. B_1 is subsequently chosen, which leaves €860 000 in the budget. The more expensive projects in the B group are now considered in terms of their incremental B/C ratios, as shown:

Project	**Incremental benefit (€ 000)**	**Incremental cost (€ 000)**	**Incremental B/C ratio**
B_2B_1	118	60	1,97
B_3B_1	141	80	1,76

Although B_1 is preliminarily chosen, B_2B_1 deserves consideration because it is financially viable (*B/C* B_2B_1>1) and more beneficial than *B/C* B_3B_1. The remaining five projects are as follows:

Project	PW of benefits (€ 000)	PW of investment amounts (€ 000)	B/C ratio
A_2	490	350	1,4
B_2B_1	118	60	1,97
C	270	200	1,35
D_2	432	240	1,8
F_1	260	130	2,0

Subsequently, F_1 is chosen, which leaves €730 000 in the budget.
Now consider the more expensive F project (F_2).
The remaining five projects are now as follows:

Project	PW of benefits (€ 000)	PW of investment amounts (€ 000)	B/C ratio
A_2	490	350	1,4
B_2B_1	118	60	1,97
C	270	200	1,35
D_2	432	240	1,8
F_2F_1	44	30	1,47

Choose B_2B_1 and €670 000 remains.
Consider B_3 against B_2.
The remaining five projects are as follows:

Project	PW of benefits (€ 000)	PW of investment amounts (€ 000)	B/C ratio
A_2	490	350	1,4
B_3B_2	23	20	1,15
C	270	200	1,35
D_2	432	240	1,8
F_2F_1	44	30	1,47

Choose D_2 and €430 000 remains.
Consider a more expensive D project. D_3D_2 is incrementally the most beneficial project.
The five remaining projects are as follows:

Project	PW of benefits (€ 000)	PW of investment amounts (€ 000)	B/C ratio
A_2	490	350	1,4
B_3B_2	23	20	1,15
C	270	200	1,35
D_3D_2	198	120	1,65
F_2F_1	44	30	1,47

Choose D_3D_2 and €310 000 remains.
Consider the more expensive D project (D_4).
A_2 falls away because its investment cost exceeds the available budget (€350 000 > €310 000), and A_1 is instead placed on the priority list.

The remaining five projects are as follows:

Project	PW of benefits (€ 000)	PW of investment amounts (€ 000)	B/C ratio
A_1	180	150	1,2
B_3B_2	23	20	1,15
C	270	200	1,35

D_4D_3	186	120	1,55
F_2F_1	44	30	1,47

Choose D_4D_3 and €190 000 remains.
Choose F_2F_1 and €160 000 remains.
C is eliminated because of an insufficient balance in the budget.
Choose A_1 and €10 000 remains.

Because €10 000 in the budget remains unutilised, the last step is to ascertain whether the best eliminated project cannot be incorporated at the cost of any chosen project in order to increase the net benefit attainable through better utilisation of the budget.

This is not the case, and the final choice of projects is as follows:

Project	PW of benefits (€ 000)	PW of investment amounts (€ 000)	NPV (€ 000)	B/C ratio
A_1	180	150	30	1,20
B_2	328	160	168	2,05
D_4	816	480	336	1,70
E	90	40	50	2,25
F_2	304	160	144	1,90
	1 718	990	728	

4. CHOOSING PROJECTS THAT SHOW SIMILAR DEGREES OF VIABILITY

4.1 First-Year Rate of Return technique

Project viability per se does not reveal the optimum timing of project implementation. For the timing of project implementation, the project should be analysed with a range of investment timings to establish the one that yields maximum viability. A project may be viable, but it may be a better project if it were delayed by one year. Delaying implementation would defer the capital expenditures, but lose a year's benefit.

When benefits are expected to grow continuously in the future, the First-Year Rate of Return (FYRR)* technique can be applied as an investment timing criterion. The FYRR is calculated by dividing the year-one worth of the benefits accruing in the first year of operation (i.e. the year subsequent to project completion) by the present worth of the investment cost involved, expressed as a percentage. If the FYRR is higher than the prescribed discount rate, then the project is timely and should go ahead right away. If the FYRR is lower than the prescribed discount rate, but the NPV is positive, commencement with project implementation should be postponed. In the situation where budgetary constraints limit the construction programme, the FYRR can be used as an aid to prioritise the projects showing similar degrees of viability (Layard and Glaister, 1994).

Suppose that the present worth of the investment is C_0, i is the annual discount rate expressed as a decimal fraction, and the net benefits in the following years are N_1, N_2,..., N_T, where T is the time horizon. Then the PW of the project would be:

$$-C_0 + \frac{N_1}{(1+i)} + \frac{N_2}{(1+i)^2} + ... + \frac{N_T}{(1+i)^T}.$$

If implementation is delayed by one year, the PW of the project would be:

$$-\frac{C_0}{(1+i)} + \frac{N_2}{(1+i)^2} + ... + \frac{N_{T+1}}{(1+i)^{T+1}}.$$

Ignoring the PW of the benefits in the final year, N_{T+1}, the gain from a year's delay is:

$$-\frac{C_0}{(1+i)} + C_0 - \frac{N_1}{(1+i)}.$$

This will be positive if

$$\frac{N_1}{C_0} < i.$$

The quantity on the left of this expression is the FYRR. If the FYRR is less than the rate of discount and the benefits of one year's delay exceed the costs then the project should be delayed. In doing so, the value of the project will increase. Delaying may also have other advantages in that more information may become available, or some adverse and unforeseen factor may emerge.

4.2 Capital Recovery Period technique

By taking into account the time value of money, the Capital Recovery Period (CRP)* technique provides a yardstick for estimating the period over which the project's investment will be recouped. The quicker this return, the greater the preference for a project. The CRP is the period over which the discounted benefits are equivalent to the investment cost. The CRP technique can be expressed as follows (Pienaar, 2002):

$CRP = n$

$$\text{When } C_0 = \sum_{t=k}^{n} \frac{N_t}{(1+i)^t}$$

Where:

CRP = capital recovery period
n = number of years over which the discounted benefits are equivalent to the capital investment
C_0 = present worth of the investment cost
t = any particular year in the CRP
k = first year of operation (i.e. the year following the end of the construction period)
N_t = year-end value of benefits in year t
i = annual rate of discount expressed as a decimal fraction

As it is an instrument to show how long it will take to recover total investment, the CRP technique does not purport to be a direct measure of viability. It is useful, however, for indicating the potential risk of projects – the sooner an investment is recovered, the sounder the project. In situations where budgetary constraints limit the construction programme, the CRP technique can be used as an aid to prioritise those projects showing similar degrees of viability (more so if their initial costs do not vary significantly) on account of their capital recovery period.

With respect to the handling and interpretation of the CRP technique, it should be noted that, firstly, the CRP is measured from the beginning of year k until the instant when the investment is recouped, and not from year 0 (construction takes place between years 0 and k); and, secondly, year n does not necessarily imply an integer. Capital recoupment can (and will usually) occur at any moment within a specific year (i.e. any date within year t). However, with inexact forecasting a foregone conclusion, there is no sense in estimating the CRP to a closer degree than one-month accuracy – i.e. in effect to one decimal only.

5. CONCLUSIONS

The recommended decision rules for project choice differ. Depending on whether the budget is fixed or variable and whether the projects are divisible or indivisible, the following rules apply:

(i) **Divisible projects; fixed budget**: Allocate funds among projects so that their incremental benefits are equal.
(ii) **Divisible projects; variable budget**: Extend all projects until their incremental B/C = 1, i.e. the net benefit of incremental investments becomes zero.
(iii) **Indivisible projects; fixed budget**: Choose the project mix ($B - C > 0$) that maximises net benefits.
(iv) **Indivisible projects; variable budget**: Choose all projects with positive net benefits ($B - C > 0$).

Usually the combination of indivisible projects and a fixed budget is the given situation, so that rule (iii) applies. To establish the most beneficial ranking necessitates evaluating all technically feasible projects.

Whenever the opportunity presents itself to solve a specific problem with the investment timing of the solution project not being challenged by any independent projects elsewhere, the NPV measure is the preferred selection criterion. When a choice has to be made among a number of independent projects, given a fixed budget, the B/C ratio and IRR measures are the preferred criteria.

In order to maximise benefit subject to a fixed budget and with both mutually exclusive and independent projects to consider, a method of project choice based on the incremental principle is recommended. This method consists of the following seven steps:

(i) Determine the size of the budget. Where the size of the budget has been given, this requirement is met. Where some freedom exists as to the total budget amount available, the amount can be expanded incrementally, and the incremental benefits compared with the incremental expenditure to determine whether any expansion of the budget is justified.
(ii) Eliminate all projects that exceed the budget limit and all projects that do not satisfy the minimum acceptance criteria, as described above.
(iii) Determine which project has the highest B/C ratio within each group of mutually exclusive proposals.
(iv) From the projects under consideration initially, select the one with the highest B/C ratio.
(v) Reconsider the selection of the best project in each group of alternative projects by, firstly, reviewing all the more expensive projects and noting the incremental B/C ratios. Within each group of mutually exclusive projects the project with the highest incremental B/C ratio is identified and compared with the rest of the

independent projects. Secondly, the available budget is adjusted to reflect the effect of the projects already chosen, and all remaining projects that exceed the balance of the budget are omitted.

(vi) Repeat steps (iv) and (v) for as long as possible. The iteration process ends when the budget is exhausted or when no acceptable projects remain for consideration.

(vii) Consider adjustments to chosen projects when the budget is not completely exhausted and a small adjustment in a chosen project may provide incremental benefits.

In a situation where budgetary constraints limit the construction programme, the First-Year Rate of Return technique (FYRR) and/or the Capital Recovery Period technique (CRP) can be used as aids to prioritise projects showing similar degrees of long-run viability. The FYRR provides guidance with respect to the most beneficial time to implement proposed projects, whereas the CRP can be used as a risk indicator – the shorter the period over which the investment of a project will be recouped, the greater the preference for the project.

6. GLOSSARY OF TERMS

Benefit:cost (B/C) ratio: The present worth of the benefits of a project divided by the present worth of its investment costs. (All proposals with a ratio value greater than 1 are viable.)

Capital Recovery Period (CRP): The period over which the discounted benefits of a project are equivalent to its investment cost.

First-Year Rate of Return (FYRR): The benefits of a project accruing in the first year of operation (i.e. the year subsequent to project completion) expressed as a percentage of the worth of its investment costs at the time of project completion.

Incremental B/C ratio: The difference between the present worth of the benefits of a larger alternative project and the present worth of the benefits of a smaller project, divided by the difference between the present worth of the investment costs of the larger alternative project and the present worth of the investment costs of the smaller project. (The incremental B/C ratio is a measure that can be used to select the most beneficial mutually exclusive project. When the incremental B/C ratio between two alternatives exceeds a value of 1, a move from the smaller project to the larger project will be beneficial.)

Independent projects: Projects that fulfil different functions. They do not form alternatives to one another and are, therefore, not mutually exclusive. The selection of a certain (functionally) independent project can at most postpone, but not exclude, the selection of another (functionally) independent project.

Indivisibility: The nature of a factor of production which is only supplied in discrete amounts, not increasing or decreasing in quantity continuously. Energy or liquid raw materials, for example, are divisible but a piece of capital equipment will be available only in minimum-sized quantities.

Internal rate of return (IRR): The discount rate that will equalise the present worth of the investment costs of a project and the present worth of its benefits, i.e. the discount rate at which the net present value (NPV) of a project will equal a value of zero, or the B/C ratio will equal a value of 1. (A project that yields an IRR greater than the discount rate is regarded as viable.)

Mutually exclusive projects: Technically feasible projects that will fulfil the same function if implemented. Because they are substitutes or alternatives, the selection of any one of the proposals will exclude the need for others.

Net present value (NPV): The difference between the present worth of a project's benefits and the present worth of its investment costs. (If the present worth of a project's benefits exceeds the present worth of its investment costs, it has a positive NPV and is, therefore, regarded as viable.)

Present worth (PW): The worth of a specified future value or of specified values occurring in different time periods expressed as a single amount at the present moment (i.e. year zero). (Present worth is also known as 'present value'.)

Present worth of costs (PWOC): The sum of the present worth of the investment costs and the recurring costs (i.e. all operating costs).

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CORPORATE GOVERNANCE, LEGAL INVESTOR PROTECTION, AND PERFORMANCE IN SPAIN AND THE UNITED KINGDOM

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Abstract

This paper studies the influence of ownership concentration, board size, and debt in firm performance of a sample of 216 companies from Spain and the United Kingdom, over a four-year period (2000-2003), with the aim of uncovering evidence on the influence of the legal environment in the design of governance mechanisms. Our findings show that the legal protection offered to investors in each country determines the use of internal governance mechanisms. The results show that ownership concentration and investor protection are substitutive mechanisms when increasing firm value, and that the latter mechanisms determine the use of the remaining governance mechanisms.

Keywords: corporate governance, legal investor protection, value creation, institutional framework

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1. INTRODUCTION

The study of corporate governance has passed through various stages ever since Adam Smith proposed, for the first time, the potential conflict of interests between owners and managers, when both roles are not exercised by the same people. Denis and McConnell (2003) distinguish two clearly different stages that they have referred to as the first and second generation of works on corporate governance. In the first generation, that lasted throughout the 70s and 80s, research centred on corporate governance in North American firms. It was at the start of the 90s, when literature on firm governance in countries other than the United States started to appear, giving rise to the second generation of this type of research also referred to as international corporate governance. At first it dealt with significant economies in countries such as Japan, Germany or the United Kingdom and later on in developing countries and emerging markets such as those in South-Eastern Asia or Eastern Europe (Denis and McConnell, 2003).

La Porta *et al.* (1998) provide a new analytical perspective on corporate governance, grounded in the idea that the protective laws relating to investor rights and their enforcement are the principal determining factors in the way in which corporate governance develops in each country. As from that moment on, the need became clear to study corporate governance in a country and its legal system jointly, as a representative variable of the institutional framework.

Throughout all these years of research and despite the many studies carried out, it can not be said that consensus exists over a commonly accepted definition of corporate governance and its scope. For Roe (1997), corporate governance can be defined in several ways, a convenient one being the means of decision-making and power allocation among shareholders, senior managers, and boards of directors. A central goal for the governance system could be to make firms operate as well as they can.

Therefore, one of the most significant reasons for studying and for comparing international differences in corporate governance is to highlight the multiple paths that lead to the same end: to make firms operate as well as they can. Our work brings to the fore the importance of studying the interrelationship of corporate governance mechanisms, as it is by no means certain that those mechanisms operate independently of each other (Rediker and Seth, 1995). To do so, we propose a model that enables us to perform a comparative study on two countries from different institutional environments that have developed two patterns of governance with very different characteristics: Spain and the United Kingdom. The model allows us to analyse the

relationship between legal investor protection and internal mechanisms such as ownership structure, the board of directors and debt, as well as the impact that such relationship can have on firm value in each of these institutional frameworks.

Both models of corporate governance present advantages and disadvantages. The problems and conflicts of interest that have to be confronted in each country are different. They are produced between managers and shareholders in the Anglo-Saxon world and, in the Continental European model, which is the case of Spain, between large and small shareholders.

The United Kingdom shares a model of corporate governance with other Anglo-Saxon countries; for the most part with the United States, but also with such countries as Australia and New Zealand (La Porta *et al.*, 1998). This model is characterised by a legal system based on common law that to a great extent protects investors, but remains indifferent, however, to the other stakeholders. This legislation, together with the existence of a well-organized and liquid market, encourages the predominance of dispersed ownership structures, in which the existence of large shareholders that supervise management decisions is unnecessary. Instead, any control over management is left in the hands of the market, given the very limited incentives available to minority shareholders and institutional investors[1]. These companies are financed by the stock market, and the economic weight of the bank, both as a supplier and as a shareholder, is insignificant in comparison with the European and Japanese markets. The board of directors is monist, and outside directors are key to the efficient control of managerial performance.

In contrast to the Anglo-Saxon model, the Continental European legal system based on Roman law, in which Spanish legislation may be included, offers weak legal protection to the investor. The low level of legal investor protection, together with the existence of capital markets that are less liquid, means that ownership becomes concentrated so as to defend its interests. It is the larger shareholders, who do have incentives to monitor and control managers. Likewise, the predominance of cross-holdings and close relations with banks, highlight the existence of implicit trust-based contracts, which can only be maintained in a pluralist model of the firm. In Spain, the tradition is for firms to have a monist board of directors, although since the entry into force of the law that regulates the European public company, firms registered in Spain under this legal person are allowed to have a dual board.

The arguments for or against either of the two governance models have varied over time and continue to do so in relation to the relative success of the economies in which they have emerged. In the 1980s, the model in continental Europe won greater acceptance as a consequence of the growth in the German and Japanese economies in comparison with the North American economy, only to be called into question at the end of the 1990s, when the investor protection was revealed as one of the great advantages of the Anglo-Saxon model (Hansmann and Kraakman, 2000; Becht *et al.*, 2002). In short, any assessment of the effectiveness of the different models of corporate governance tended to vary according to the state of the economy in each country (Carlin and Mayer, 1998).

2. CORPORATE GOVERNANCE AND FIRM VALUE: DIFFERENT PATHS TO THE SAME OBJECTIVE

Numerous studies analyse the relationship between corporate governance and firm value. A great part of the empirical works in this area are focus on how corporate governance mechanisms have been unilaterally designed in order to motivate managers to take decisions leading to the creation of value in the firm.

Thus, we find a wide range of literature that examines a positive correlation between governance variables and *proxies* of firm value (Chidambaran *et al.*, 2006). These mechanisms that are described in the literature include elements whose design is in the hands of each individual firm, such as ownership concentration, board composition and the level of debt. Numerous studies (Morck *et al.*, 1988; Jensen and Murphy 1990; Yermack 1996; Gompers *et al.*, 2003; among others) suggest that changes in these internal governance mechanisms could generate a greater alignment of interests between managers and shareholders, which would amount to greater firm value.

Ownership Concentration and Firm Value

The relationship between ownership structures and firm value has been the subject of an important and ongoing debate in the literature on corporate governance. Berle and Means (1932) have previously suggested an inverse correlation between dispersed ownership and firm performance, as a high concentration of shares tends to put greater pressure on managerial behaviour in a way that maximises shareholder value.

Large shareholders have a general interest in maximizing the value of the company, and sufficient control over its assets to ensure that their interests prevail (Shleifer and Vishny, 1986, 1997; Morck *et al.*, 1988; La Porta *et al.*, 2002; Claessens *et al.*, 2002; Gorton and Schmid, 1996; Himmelberg *et al.*, 1999; Holderness *et al.*, 1999). However, the majority of these authors also defend the idea that above and beyond a certain level of concentration, the relation can once again become negative.

As may be appreciated from the earlier paragraphs, evidence on the role of the shareholders

[1] In the 1990s, approximately two thirds of the capital of quoted firms in the United Kingdom were owned by institutional investors (Franks and Mayer, 1997).

in corporate governance starts to become more extensive, nevertheless, no definitive conclusions have been reached. On the one hand, we find works that lend support to the idea that the large shareholders play an active role in firm governance, the results of which support the hypothesis that the large shareholders contribute positively to value creation. However, on the other hand, some authors find no significant relation between firm value and the presence of a dominant shareholder within it (Renneboog, 2000; Holderness and Sheehan, 1988; Denis and Denis, 1994; Bergström and Rydqvist; 1990; Prowse, 1992).

Due to this, despite shareholder concentration being presented as a natural supervisory mechanism in the firm, the debate over the existence of an optimal ownership structure remains open. The benefits arising from an improvement in management may be compensated by the costs arising from loss of liquidity, from less diversification or from the private benefits obtained by the majority shareholder through their expropriation of the wealth of minority shareholders. In consequence, a greater or lesser degree of shareholder concentration becomes a significant factor in firm value.

This lack of consensus in the conclusions may be due to the fact that a single variable of corporate governance is being studied in isolation, in this case ownership concentration, without taking into account its possible relationship with other governance mechanisms or the institutional framework where firm is embedded.

Size Board and Firm Value

Board is considered a key mechanism on corporate governance. It is through the board that shareholders exercise control over managerial performance. There are a great number of empirical studies that explore the relation between various aspects of the board of directors and firm performance. The central core of these works stresses the effectiveness of the board as a supervisory body in the process of maximising shareholder value. Some of the most-studied aspects of the board as determining factors in value creation is board size.

The greater part of the empirical evidence shows a negative relation between board size and firm value. Thus, authors such as Jensen (1993) and Eisenberg *et al.* (1998), find that small boards correlate positively with high firm value. Equally, Yermack (1996) provides evidence that points towards a clear inverse relation between firm value and board size. Moreover, Andrés *et al.* (2005) study a sample of 450 non-financial firms from 10 developed countries, and find an inverse relation between firm value and board size. Fernández *et al.* (1998) find a non-linear relation between board size and Tobin's q value as a measure of firm value. Initially, it appears to have been proven that an increase in the size of board of director aid the effectiveness of the board and increase Tobin's q value, however, after a certain point the reverse was found to be true, suggesting that coordination and communication problems appear to outweigh the benefits arising from greater oversight and control by numerous directors.

Debt and Firm Value

Debt is also considered a key factor in corporate governance to monitor managerial performance. The debt involves periodic payments over time, agreed interest and repayment of the principal, which reduce the freely available funds for managers since an amount must be set aside to pay the installments and the behaviors of discretionary type (Jensen, 1986; Grossman and Hart, 1980). Thus, firm value depends to a great measure on the use to which management makes of free *cash flow*. Management will resort to self-financing instead of undertaking new capital or debt emissions, because it neither wishes to be subject to the control of capital markets, nor to increase the probability of a business failure, whereas the shareholder, on the contrary, will prefer that *cash flow* is not retained and is paid out in the form of dividends. Thus, as may be seen, the sharing out of free *cash flow* can pit managers against owners that, as a consequence, can give rise to a problem of over-investment, as emphasized by Jensen (1986) in his free *cash flow* theory. Financing in the form of debt obliges the management to free up those resources, reducing the quantity of *free cash flow* available to undertake non-value-creation activities by management. Thus, funding in the form of debt should have a positive effect on firm value.

3. THE COMBINED EFFECT OF CORPORATE GOVERNANCE MECHANISMS

The interdependence of corporate governance mechanisms is a fact that is highlighted in the study of the existing governance models. It is borne out by numerous theoretical and empirical works on the subject, in which we see how the degree to which external mechanisms are developed, such as the capital markets, is associated with greater or lesser use of certain internal control mechanisms (John and Kedia, 2008).

The greater part of this literature considers the relation between two variables relating to firm governance, such as the correlation between ownership structure and takeovers or between certain control mechanisms and firm performance. However, there are an increasing number of works that do not limit their analysis to the unilateral effect of each governance mechanism. Instead, they attempt to examine their possible interaction in greater detail, highlighting the capacity of firms to design efficient corporate governance systems, through the selection of different mechanisms (Coles *et al.*, 2001), which are substitute or complementary, as it is not certain

whether these mechanisms function independently of each other (Rediker and Seth, 1995; Bhagat and Jefferis, 2002).

Agrawal and Knoeber (1996) defend the idea that a greater use of one of the control mechanisms is not necessarily related to a better yearly result, as when a mechanism is used more another is used less, and the result will be equally acceptable. It is a question of different alternative ways of trying to control and to incentivize managers, such that both mechanisms may be used in a complementary way, if the relation between them is positive, or in substitution, if that relation is negative.

Interaction existing between corporate control mechanisms corroborates the heterogeneity of the results in those works that centre on the relation between firm value and the use of a single governance mechanism, such as we have seen in the preceding section with ownership structure, size board or debt.

Internal and external corporate governance mechanisms, firm value and the characteristics of the institutional framework are different pieces of one and the same puzzle. Firm value will depend on the choice of governance mechanisms that are made by the organisations on the basis of the determining factors present in the institutional environment. The use of external corporate governance mechanisms is not a decision of the firm but is determined by external agents, therefore, the use of internal mechanisms that are available to the organization will be affected by the type and degree to which those external mechanisms are applied. In short, the choice made by the firm over its corporate governance system will be determined by the external mechanisms and the rest of the institutional framework that affect it.

This fact highlights the non-existence of, let us say, a common optimal or efficient system of governance for all firms and all countries it leads us to ask what the characteristics of a country are that make the systems optimal.

4. INFLUENCE OF THE INSTITUTIONAL FRAMEWORK

The study and practice of corporate governance cannot be separated from the cultural, socio-political and economic contexts where firms are embedded.

It is logical enough to suppose that the system of corporate governance of a particular country and the predominance of certain supervisory mechanisms over others, whether of an internal or external nature, would be strongly influenced by the institutional framework of that country. It is a view confirmed by such works as (Roe, 2000; Francis *et al.*, 2001; Denis and McConnell, 2003), within the line of research initiated by Rajan and Zingales (1995) and La Porta *et al*. (1997, 1998, 2000, 2002), which highlight the differences existing between the international economic environments, as well as the relevance of the institutional framework when taking decisions within the firm. The conflict between managers and shareholders differs from one country to another, it might not prove worthwhile to use the same tools to solve it.

In the words of Aldo Olcese (2005:49-50), 'for good corporate governance to exist, an institutional framework is needed that creates the conditions that are necessary for the development of firms and personal expectations, which are the fundamental cells of a market economy. This institutional framework should enable firms to approve their own rules on internal governance and should make managers and directors answerable for their actions to their shareholders'.

There are, therefore, specific elements in the institutional framework that influence governance systems, the apparent variability of which is greater between countries or areas of influence (Anglo-Saxon countries, Asia, Central Europe) than between firms in the same country (Salas, 2002).

The legal system of a country has been considered a key component of its institutional framework, as it serves as the basis for the subsequent interpretation of each regulation that enters into force. For La Porta *et al.*, (1997, 1998, 2000) who are pioneers in the joint analysis of legal investor protection of the investor and ownership concentration in almost fifty countries, the various legal traditions between countries are possibly the main cause of diversity between different forms of corporate governance.

Each country's legislation determines the specific rights and investor protection in their relations with firms, thus influencing the predominant forms of ownership structure and financing. It also gives rise to various conflicts and agency problems, specific to each institutional environment, which have to be resolved through different arrangements and combinations of corporate governance mechanisms (La Porta *et al.*, 1997). In concrete, higher investor protection will determine board behaviour, limiting the acquisition of private control benefits by insiders, limiting the diversion of the firm's wealth to those with a capacity to influence business decisions, at the same time as mitigating possible incentives to smooth income (Leuz *et al.*, 2002; Djankov, *et al.*, 2005).

Traditionally, two basic legal systems may be distinguished from which other branches have emerged, civil law and common law, the former practiced in European continental countries, and the latter in the Anglo-Saxon countries. In countries where common law prevails, legal investor protection is higher than in those based on Roman Law (La Porta *et al.*, 1997, 1998). These differences in the degree of investor protection are the source of others with a more corporate nature, such as those existing in the degree of ownership concentration, which in turn generated different agency problems that have to be resolved in different ways through governance mechanisms.

Given that the agency problems to be resolved in each case depend on the business setting, the

corporate governance model that is designed to mitigate them, will also be determined in the same way. In the Anglo-Saxon countries, where there is higher dispersion of ownership, the conflict of interests arises between shareholders and managers; on the contrary, in countries where a legal system based on Roman law prevails and where the concentration of ownership is higher, conflict arises when the interests of the large shareholders clash with those of the minority shareholders[2] (La Porta *et al.*, 1997; Johnson *et al.*, 2000).

Having come this far, we can not affirm that one model of corporate governance is better than another, that dispersed ownership is better than concentrated ownership, or that financing through the market is better than financing through banks. Nevertheless, what is really important is the way in which firms design their own systems of corporate governance according to the history, the culture and the politico-legal tradition of the countries in which they have their head office (Olcese, 2005). For Shleifer and Vishny (1997), German, Japanese and Anglo-Saxon systems of corporate governance are equally effective at monitoring managers, and they contribute in similar ways to the economic success of each of these nations. The interaction between external corporate governance mechanisms and those used internally by the firm compensates the initial shortcomings of those which are present in each institutional framework, resulting in the search for an efficient system of corporate governance, on the basis of the social, political and legal circumstances where firm is embedded.

5. COMPARATIVE ANALYSIS OF CORPORATE GOVERNANCE IN SPAIN AND THE UNITED KINGDOM: METHODOLOGY, VARIABLES AND SAMPLE

Having set out the theoretical framework that explains international differences in corporate governance, we move on to the methodological aspects of the comparative empirical study performed in this work, together with its results. Thus, we firstly present the explanatory model for our work, in order subsequently to detail the sources of information and the sample that is used, before continuing in the next section with the results obtained from the descriptive analysis and the multivariant regression analysis.

The objective of the empirical analysis is to test, through an Ordinary-Least-Squares (OLS) regression, the association between value creation and governance mechanisms practiced by firms in two different institutional frameworks. To do so, we shall use two sample firms, one of Spanish firms and the other of firms belonging to the United Kingdom. With a view to condensing the characteristics that belong to each institutional framework we introduce into our analysis the legal protection received by investors in each country.

Regression model and variables

Ordinary-Least-Squares (OLS) regression is used to confirm the association between a dependent variable and set of explanatory variables. In our case, value creation constitutes the dependent variable, and the variables relating to the governance structure of the firm and the institutional framework in which the firm operates, the independent variables. We used a group of firms belonging to two countries of the European Union, Spain and the United Kingdom, for the analysis that took place over 2000-2003. Two models are proposed: one, which we refer to as the global model, in which the regression analysis is performed on the entire sample, and another, referred to as the individual one, in which a regression analysis is performed on the sample segmented by the institutional framework, which is to say, noting the differences between Spanish firms and UK firms, with a view to confirming whether the results change in a significant way. The multiple regression model is as follows:

$$VC_{it} = \beta_0 + \beta_1 OWN_{it} + \beta_2 DEBT_{it} + \beta_3 B\_SIZE_{it} + \beta_4 IP_{it} + \beta_5 QUOTED_{it} + \beta_6 SIZE_{it} + \beta_7 AGE_{it} + \varepsilon_{it}$$

The dependent variable in our model is value creation in the firm (VC), measured as operating *cash flow* over total assets. Some clarification is necessary with regard to the measurements of value creation, as previous studies have used very different yardsticks to arrive at an approximation of value creation, which may be divided into two groups: on the one hand those works that centre their analysis on accounting measures, and, on the other, those that use an approximation to Tobin's q value. In this work, we focus on the former, specifically, on accounting yardsticks as a *proxy* for value creation. In line with Healy *et al.* (1992), Kothari *et al.* (2005) and Tehranian *et al.* (2006), value creation is measured as *cash flow* operations over total assets, which the latter authors refer to as CFROA [3]. The reason for estimating value creation through this accounting ratio, rather than with the now traditional Tobin's q value used in the majority of the literature on this topic, is fundamentally because the availability of market data is restricted to the set of firms that are listed on the stock exchange. However, as our sample includes listed as well as non-listed firms, it makes the estimation of Tobin's q value more complex. However, it is worth noting that this financial measure

[2] The problem between large and small shareholders was defined by Johnson *et al.*, (2000) as *tunnelling*, referring to the transfer of assets and benefits from the firm to the benefit of the shareholders that exercised control over the management.

[3] This measure of value creation is what Tehranian *et al.*, (2006) refer to as *cash flow* ROA, which includes depreciation and net benefit on the numerator.

offers certain advantages over Tobin's q value, in addition to being an alternative yardstick for value creation. In accordance with Tehranian *et al.* (2006), whereas Tobin's q value reflects opportunities for growth –and in a more general way, expectations about future investment projects- and the impact of these factors on the market value of the company, our value creation yardstick is a measure that concentrates more on current performance. For example, Tobin's q for a firm with a low value creation or performance threshold might be inflated by the expectations of a high bid in a takeover, whereas these kinds of considerations do not affect our measurement as a *proxy* of value creation. Nevertheless, despite it being possible to list various advantages and disadvantages relating to the trustworthiness and efficacy of an accounting-based system of indicators as against a market-based one, we use accounting indicators as yardsticks for value creation given the impossibility of obtaining market values for all of the firms in our sample.

Corporate governance variables are ownership concentration, size board and debt. Ownership structure (OWN) is determined by the percentage of ownership that is in the hands of the main shareholder. This variable has been included so as to analyse the incentives that might motivate the principal shareholders to assume supervisory tasks and to monitor the operation of the firm. Board size (B_SIZE) is defined by the logarithm of the total number of members that make up the board of directors. Financial leverage (DEBT) is defined as current and non current liabilities over total assets. It represents the external financing of the firm and is, therefore, an extra control mechanism that helps to monitor managerial performance.

Investor protection (IP) is based on the work of Djankov *et al.*, (2005) in which the authors develop a new measure for investor protection related in a much more direct way to the monitoring of self-dealing transactions. This new measure is established by the *anti-self-dealing Index*, which is an index that measures the degree to which self-dealing transactions may be legally avoided to the benefit of those in control of the firm. It is measured from 0 to 1, indicating higher investor protection as it approaches 1. This variable has been included owing to the different countries from which the sample is drawn; given that the institutional framework and, as a consequence, the legal protection of the investor is different in each one of them, the variable might influence the design of other control mechanisms available to the firm and might have an important impact on firm performance.

In line with the previously discussed literature, we have included the firm size (SIZE) that is defined as the logarithm of the total assets of the company, as well as its age (AGE). We have, furthermore, included an additional control variable referred to as the stock-exchange listing (QUOTED), which is defined by a binary variable that takes a value of 1 if the firm is listed on the stock exchange and 0 if it is not. It was decided to include this variable due to the sample having both listed and unlisted firms, which allows us to study whether the fact of being listed on the stock exchange has any effect on performance.

Sources of Information and Sample

The main source of information used in this research work is the *Amadeus* database, which provided us with the economic and financial information, as well as that relating to the ownership and control of the firms in our sample.

Our sample was constructed by taking a set of listed and unlisted Spanish and UK firms, belonging to the industrial manufacturing sector, with a size equal to or over 50 workers and with total assets equal to or over 27,000 euros for each year under analysis (2000-2003). Table 1 shows the number of firms by country as well as the total number of observations in the sample.

(INSERT TABLE 1 HERE)

At the outset, there were 290 firms, 74 of which were removed as their financial statements did not contain sufficient information, or owing to their lack of continuity and there not being enough information available on the years that comprise the period under analysis. The 216 firms that make up the final sample can be considered as representative of the business life of the countries under study.

6. RESULTS OF THE EMPIRICAL ANALYSIS

Descriptive Analysis

The descriptive statistics of the variables used for the empirical estimation are presented in Table 2, separated by countries.

(INSERT TABLE 2 HERE)

As may be seen, the value creation variable average (VC) presents similar values for both countries, at 0.121 for Spanish firms and at 0.123 for UK firms. It does not appear, therefore, that there are any significant differences between the levels of value creation.

With regard to the internal mechanisms of corporate governance available to the firm to exercise greater control over managerial performance, we see that ownership concentration, measured through the participation of the main shareholder averages 90% for Spanish firms, whereas for the United Kingdom it is only 36%, which highlights the important differences in the role played by ownership concentration in each of the two institutional frameworks. DEBT averages are 0.68 for Spanish firms and 0.63 for UK firms, which suggests to us that,

on average, the Spanish firms in the sample present a similar although slightly higher indebtedness ratio than the UK firms. Board size variable (B_SIZE) tells us that the boards of Spanish firms are on average larger than the boards of UK firms.

In relation to the institutional framework, the index of legal investor protection (IP), which represents the degree to which self-dealing transactions to the benefit of those in control of the firm can be legally prevented, which implies greater protection for other investors, averages 0.37 for Spain and 0.93 for the United Kingdom. Considering that this index fluctuates between values of 0 and 1, it allows us to see, in general terms, that the legal protection available to Spanish firms, which is based on Roman law, is weaker than that extended to UK firms, which operate in a Common Law environment.

Finally, the logarithm of total assets of the firm (SIZE) is similar for both samples of firms: 13.09 for Spanish firms and 12.74 for British firms. AGE reflects the fact that UK firms are longer-lived than their Spanish counterparts; their average life spans being 33.27 years for Spanish firms and 43.04 years for UK firms.

We can conclude from this first exploratory analysis that there are no apparent differences in value creation between the Spanish and UK firms, but there are differences in the legal protection offered by the institutional framework and in the way these firms design their governance mechanisms. We might ask whether the legal protection offered to investors, which constitutes the different starting points for these firms in the design of such mechanisms, does not in fact mean that the other mechanisms compensate or substitute this higher or lower control through a higher or lower use of such mechanisms, arriving in the end at the same objective or result.

Correlation analysis

In accordance with the descriptive statistics shown in Table 2, we present in Annex I a table of Spearman correlations [4], which indicates that ownership concentration presents a positive association with value creation. This result is coherent with the hypothesis that higher supervision of the managerial performance stemming from a concentrated ownership structure will result in higher firm value. In the same way, investor protection shows a positive correlation with value creation. In the first instance, that the presence of ownership concentration and investor protection are relevant elements for value creation and that both can have a substitutive effect.

The association between board size and firm value shows a negative relation, which is consistent with the hypothesis that smaller boards lead to higher value creation. In the same way, debt is shown to have a negative association with firm performance. Finally, the control variables for stock exchange listing (QUOTED), firm size (SIZE) and age (AGE) present positive associations with firm value.

Regression Analysis Results

The Stata 8 Software Programme was used to estimate the proposed models. Two models were estimated: one that we refer to as global, in which the regression analysis was performed by relating value creation with the explanatory variables of the model that considers the entire sample together, without differentiating between Spanish and UK firms, with the aim of determining the impact of the explanatory variables of the dependent variable. A second model segments the sample by countries, with the objective of examining whether the influence of these governance mechanisms on firm value is different according to the characteristics of institutional framework.

We then proceeded to estimate the effect of ownership structure, board size, debt and legal investor protection on performance, along with the control variables, setting out the results in Table 3. Moreover, Table 4 shows the results of the regression analysis on the sample divided between Spanish firms and UK firms.

(INSERT TABLE 3 AND TABLE 4 HERE)

As shown in Table 3, the results are consistent with the evidence presented, given that the ownership concentration variable (OWN) presents a positive influence on firm value (VC). This statistically significant result suggests that higher ownership concentration is a factor that is associated with an improvement in the firm's performance, which supports the traditional hypothesis that ownership concentration reinforces the control over managers, leading to higher firm value. Equally, the positive sign still holds true when we estimate the separate model that considers only the Spanish firms (Table 4). However, when we consider the firms from the UK, the sign becomes negative, indicating a drop in firm value in this country as ownership concentration becomes more concentrated (Table 4).

Against this backdrop, the results obtained show that the ownership structure acts in a different way depending on the firm's institutional environment. This fact might have its *raison-d'être* in the legal investor protection. We observe a significant ownership concentration in the case of the Spanish firms that compensates the lower levels of protection that investors have under the prevailing institutional framework. Whereas, on the other hand, for the UK firms that fall within the Anglo-Saxon model, the higher legal protection available to investors in this institutional framework means that ownership concentration becomes a redundant governance

[4] The table of correlations includes Spanish and UK firms. The separated correlation analysis does not differ greatly from the result obtained in the global analysis for which reason only this analysis is presented.

mechanism, which may even lead to a fall in the firm's value.

Thus, the evidence shows us that the significant relation between ownership structures and firm value in countries that do not belong to the Anglo-Saxon environment may be due to the prevailing institutional framework, specifically, the existence of weak legal systems. In other words, without strong legal investor protection, ownership concentration becomes necessary. The negative relation between ownership structure and firm value in countries such as the United Kingdom can simply mean that the strong investor protection allows the firms to function efficiently avoiding the need to resort to additional control mechanisms, such as ownership concentration. In countries such as Spain that are characterized by weak investor protection, it seems that only ownership concentration can counter the lack of protection.

The earlier result is consistent with that obtained for investor protection variable (IP) that presents, for the global model, a positive and significant relation with firm value. Thus, the evidence appears to show that increases in the legal protection of investors is a factor associated with improvements in firm performance.

Likewise, the results show a negative relation that is statistically significant between board size (B_SIZE) and firm value. We therefore have strong evidence that the higher board size, the low firm value, suggesting that for boards with a high number of members, the relative benefits of a greater range of opinions are counteracted by the costs relating to less operationality and flexibility when taking decisions. Equally, the results obtained in the individual model for Spanish and UK firms also present a negative and significant relationship between board size and firm value (table 4).

With respect to the influence of debt, the results presented in Table 3 and Table 4, highlight the negative and statistically significant relation between this variable and firm value. This provides us with evidence to support the idea that high levels of debt lead to lower levels of firm value, both in the global and in the individual models for Spanish and UK firms.

The explanation that might be attributed to the similar behaviour of debt in different institutional frameworks might be related to agency problems and informational asymmetries that differ in accordance with the firm's institutional environment. As we have seen in the case of Spain, ownership structure plays a fundamental role as control mechanism, who do not require the help of other stakeholders to carry out this task. As a result, far from generating a positive impact on firm value, higher levels of debt will reduce its value, leading to a greater probability of not being able to meet the contracted obligations. However, in the United Kingdom one of the mechanisms that plays a fundamental role is precisely the institutional framework itself and the higher levels of investor protection that are associated with it. Thus, this higher level of investor protection is what allows the firms to function in an efficient way without the presence of additional governance mechanisms such as ownership concentration or debt, which, in accordance with the evidence obtained, reduces firm value instead of stimulating it. Different relations are therefore confirmed between corporate governance mechanisms and firm value, which depend on the institutional framework. Debt has lesser relevance in firm value in the presence of ownership concentration, on the one hand, and in the presence of higher investor protection, on the other. A substitutive effect occurs between these governance mechanisms (Rediker and Seth, 1995; Coles *et al.*, 2001)

Finally, with respect to the control variables included in the model, the results obtained are principally of interest with respect to the stock-exchange-listing variable, as this variable correlates positively with firm value in the global model, which shows the beneficial effects that entry to the stock exchange can generate for the firm. Likewise, the positive sign of this variable is maintained when we move to the individual model for firms in the UK and the sign changes from positive to negative when we consider Spanish firms. These results appear to demonstrate the presence of differences in the capital markets of both countries, such that in a highly liquid market such as the UK market, the listing of a firm on the stock exchange has a beneficial effect on its value, whereas entry into the stock exchange does not appear to have positive effects on firm value in the Spanish market, which is less organised and less liquid, and in which less protection is available to investors. Finally, with respect to the two remaining control variables, SIZE and AGE, they both present positive significant relations with firm value, as we can see in the global model and in the case of the UK firms, whose greater size and age have a positive influence on value creation.

7. CONCLUSIONS

Nowadays, a new way of conceiving governance begin to emerge, which is based, on the one hand, on the comparative analysis of corporate governance systems in different countries and, therefore, on different institutional frameworks (La Porta *et al.*, 1997, 1998, 2000; Francis *et al.*, 2001; Leuz *et al.*, 2002; Denis and McConnell, 2003) and, on the other hand, on the explicit recognition of interaction among governance mechanisms, revealing the capacity of the firm to design an efficient system of corporate governance (Agrawal and Knoeber, 1996; Rediker and Seth, 1995; Coles *et al.*, 2001; Bushman and Smith, 2001; Bhagat and Jefferis, 2002; John and Kedia, 2008). Accordingly, our work falls into this research line, which seeks to analyse the relations that exist among ownership structure, board size and debt, as well as their effect on firm value, considering at the

same time the institutional environment where firm is embedded.

To do so, we have analysed a sample of 216 firms in Spain and the UK over the period 2000-2003. In the first place, we considered the total combined sample, with the aim of obtaining some primary conclusions on the ownership structure, board size, debt, the institutional framework and its impact on firm performance. Secondly, the model was estimated once again on the basis of the institutional framework, by separating out the firms operating in Spain from the firms in the UK, with a view to finding out whether there were any significant changes in the results.

The results obtained seem to corroborate previous evidence by showing that government mechanisms function in a different way depending on the institutional framework: for example, ownership concentration does not function in the same way in Spain as it does in the United Kingdom, as a significant relation is shown with a positive sign in the former country and a negative one in the latter. The positive sign between ownership concentration and firm value for Spain might be due to lower levels of legal investor protection in that country. Lower investor protection leads Spanish firms to concentrate property so as to have greater control over the company, seeking to participate in an active way in its management, and orienting it towards value creation. On the other hand, the negative relation in the UK between these two variables is due to the higher legal investor protection, which allows the firms to function in a satisfactory way without the intervention of shareholders. In this context, ownership concentration becomes a redundant governance mechanism, which far from contributing value to the firm actually reduces it.

On another note, it was observed that small boards of directors contribute in a significant way to firm value, as the results of both the global and the individual models show an inverse relation between board size and performance. This allows us to see that the possible benefits of greater supervision over the management by numerous board members are outweighed by the problems of coordination and information that can arise in the decision-making process.

Furthermore, we find that the relation between financial leverage and firm value is negative in all the estimations undertaken, regardless of the institutional framework that is considered. The reasoning for the similar behaviour of debt in both institutional frameworks may be found in the relationship governance mechanisms. In the case of Spain, this work of monitoring managerial performance is exercised by the main shareholders, as a result of which increases in the level of debt, far from contributing to improvements in firm performance, actually reduce them. If we look at the UK, institutional framework and legal investor protection assume the leading role as a supervisory and control mechanism over the managerial performance. Thus, investor protection is what allows the company to operate in a satisfactory way without the need to resort to additional control mechanisms such as ownership concentration or high levels of debt, which reduce, instead of contributing to firm value.

In short, we are talking about governance mechanisms that are substituted in accordance with the prevailing institutional framework, as even though the initial studies considered ownership concentration and debt to be governance mechanisms that contributed to value creation, the empirical evidence appears to show that both mechanisms promote value creation, depending on the institutional framework. As pointed out by Rediker and Seth (1995) and Coles *et al.* (2001), a substitutive effect occurs between these governance mechanisms, such that the firm that does not use debt, will not do so because it places emphasis on mechanisms such as ownership concentration or investor protection, depending on the institutional framework.

Based on these results, it is of enormous interest to mature the idea of interaction between mechanisms and institutional framework, as it opens up new inroads into research on governance in the firm, given that it has been demonstrated that governance mechanisms do not function independently of each other, and that their application is determined to a great extent by the prevailing institutional framework in each country.

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Annex I. Table Spearman Correlations

	VC	OWN	DEBT	B_SIZE	IP	QUOTED	AGE	SIZE
VC	1.00	0.03	-0.057	-0.01	0.04	0.05	0.02	0.08
sig.	---	0.31	0.09	0.78	0.19	0.09	0.49	0.00
OWN	0.03	1.00	0.09	-0.05	0.03	-0.043	0.02	-0.06
sig.	0.31	---	0.00	0.09	0.339	0.199	0.402	0.05
DEBT	-0.05	0.09	1.00	0.155	-0.10	-0.10	-0.04	-0.30
sig.	0.09	0.00	---	0.00	0.00	0.00	0.17	0.00
B_SIZE	-0.01	-0.05	0.155	1.00	0.15	0.15	0.05	0.03
sig	0.78	0.09	0.00	---	0.00	0.00	0.10	0.25
IP	0.04	0.03	-0.10	0.15	1.00	0.17	-0.14	-0.01
sig.	0.19	0.339	0.00	0.00	---	0.00	0.00	0.61
QUOTED	0.05	-0.043	-0.10	0.15	0.17	1.00	0.00	-0.09
sig.	0.09	0.199	0.00	0.00	0.00	---	0.94	0.00
AGE	0.02	0.02	-0.04	0.05	-0.14	0.00	1.00	0.01
sig.	0.49	0.402	0.17	0.10	0.00	0.94	---	0.73
SIZE	0.08	-0.06	-0.30	0.03	-0.01	-0.09	0.01	1.00
sig.	0.00	0.05	0.00	0.25	0.61	0.00	0.73	---

Table of correlations of the 8 variables analysed for the overall global sample of firms.

Table 1. Sample by Countries

COUNTRY	**Years**	**Num. of Firms**
SPAIN	2000	111
	2001	111
	2002	111
	2003	111
	Total Spanish Firms	**444**
UNITED KINGDOM	2000	105
	2001	105
	2002	105
	2003	105
	Total UK Firms	**420**
	Total Sample	**864**

This table reports the number of firms by countries that make up the sample used to estimate the model.

Table 2. Descriptive Statistics of the regression analysis variables

Spanish Firms				
Variable	**Average**	**Standard Deviation**	**Minimum**	**Maximum**
VC	0.121	0.096	-0.169	0.526
OWN	0.90	0.989	0.01	0.99
DEBT	0.68	0.276	0.11	2.68
B_SIZE	7.04	4.036	1	17

IP	0.37	0	0.37	0.37
QUOTED	0.038	0.191	0	1
AGE	33.27	21.254	6	89
SIZE	13.09	0.798	10.75	15.23

UK Firms

Variable	**Average**	**Standard Deviation**	**Minimum**	**Maximum**
VC	0.123	0.134	-0.648	0.668
OWN	0.36	0.189	0.01	0.99
DEBT	0.63	0.216	0.08	1.06
B_SIZE	5.90	2.243	2	13
IP	0.93	0	0.93	0.93
QUOTED	0.17	0.377	0	1
AGE	43.042	26.194	2	96
SIZE	12.74	0.724	10.73	14.74

This table reports the descriptive statistics for the 8 variables separated out for the two samples of Spanish and UK firms.

Table 3. Results of the Estimation of the Global Model

	VC
OWN	0.173
	(14.35)**
DEBT	-0.251
	(3.57)**
B_SIZE	-0.015
	(2.84)*
IP	0.119
	(21.74)**
QUOTED	0.195
	(25.64)**
AGE	0.009
	(8.48)**
SIZE	0.758
	(8.13)**
Constant	0.189
	(5.02)**
R^2	0.02

Absolute value of the t statistic between brackets
+ Significant at 10%
* Significant at 5%
** Significant at 1%

This table reports OLS regression for the global sample of firms, in which value creation (VC) is the dependent variable. Independent variables are ownership concentration by the main shareholder (OWN), level of debt (DEBT), size board (B_SIZE), and legal investor protection (IP). Control variables are Stock Exchange listing (QUOTED), firm age (AGE), and firm size (SIZE).

Table 4. Results of the Estimation of the Individual Model

Spanish Firms		*UK Firms*	
	VC		**VC**
OWN	0.015	OWN	-0.069
	(28.89)**		(9.80)**
DEBT	-0.162	DEBT	-0.178

	(9.95)**		(13.58)**
B_SIZE	-0.002	B_SIZE	-0.054
	(2.30)*		(4.37)**
QUOTED	-0.015	QUOTED	0.010
	(1.77)+		(0.89)
AGE	0.002	AGE	0.005
	(1.69)+		(3.66)**
SIZE	0.002	SIZE	0.049
	(0.61)		(16.72)**
Constant	0.243	Constant	0.818
	(5.28)**		(21.00)**
R^2	0.13	R^2	0.23

Absolute value of the t statistic between brackets
+ Significant at 10%
* Significant at 5%
** Significant at 1%

This table reports OLS regression for the separate samples of Spanish and UK firms, in which value creation (VC) is the dependent variable. Independent variables are ownership concentration by the main shareholder (OWN), level of debt (DEBT), and size board (B_SIZE). Control variables are Stock Exchange listing (QUOTED), firm age (AGE), and firm size (SIZE).

GOVERNANCE, CEO POWER, AND ACQUISITIONS

Derek Oler*, Bradley Olson**, Christopher J. Skousen***

Abstract

We examine whether governance matters for acquisitions. Acquisitions are frequently beneficial to the CEO of the acquiring firm, but can often be value-destructive to acquirer shareholders and other stakeholders such as employees. We find that corporate governance does not appear to influence whether a firm will become an acquirer after controlling for CEO power, but superior governance is associated with greater relatedness between the target and acquirer. We also find that the effect of CEO power on a firm's acquisition activity varies according to the source of that power. Our results suggest that the relationships between governance, CEO power, and acquisition activity are complex.

Keywords: Corporate Governance, Acquisitions, Diversification, CEO Power

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1. Introduction

The literature on corporate governance has grown significantly in the past few years (e.g. Larcker *et al.*, 2007; Brown and Caylor, 2006; Jain and Razee, 2006; Farber, 2005), but has produced mixed results in terms of answering the question posed by Larcker *et al.* (2004): "how important is corporate governance?" While results from Gompers *et al.* (2003), Cremers and Nair (2005), and Brown and Caylor (2006) indicate that firms with superior overall governance mechanisms outperform by various measures, results from Larcker *et al.* (2007) and work reviewed by Becht *et al.* (2002) are more pessimistic. Larcker *et al.* show that corporate governance explains little cross-sectional variation for a number of performance-related variables. Becht *et al.*'s review indicates that key factors in corporate control (e.g., board characteristics) do not appear to be related to corporate performance. We examine the effect of governance in the specific setting of a firm's acquisition activity, and we control for the CEO's personal power using proxies borrowed from the management literature.

Acquisitions are a useful natural laboratory for studying the effects of corporate governance and CEO power because they often exemplify the agency conflict between managers and shareholders. Acquisitions have ramifications for many stakeholders including the CEO, shareholders, employees, and the general public. Acquisitions may be pursued by CEOs because they provide personal benefits, such as an increased salary; however, they are often value-destructive to firm shareholders (Tehranian *et al.*, 1987; Morck *et al.*, 1990; Oler, 2008). A recent survey of executives finds that mergers and acquisitions are a major priority in their short term horizon (Krell, 2006). Even executives whose positions are eliminated receive hefty severance packages, such as Gillette's James Kilts who received a $163 million package (Thornton *et al.*, 2005). Furthermore, some research suggests that more diversifying acquisitions provide additional benefits to the CEO, such as decreased sensitivity of their compensation schemes to firm performance (Anderson *et al.*, 2000).

Acquisitions are a significant feature of the corporate landscape, and the most recent acquisition wave studied in the finance literature (from 1998 to 2001) appears to have resulted in the loss of about $240 billion dollars for U.S. shareholders (Moeller *et al.*, 2005). The AOL-Time Warner merger alone has cost shareholders more than $200 billion (Morgenson, 2005). One study found that "post" diversified firms decreased shareholder value by approximately 13 – 15 percent (Berger and Ofek, 1995). Despite this evidence that acquisitions may decrease shareholder wealth, there are relatively few studies that focus on how governance influences acquisitions.

Prior work on governance did not explicitly control for the CEO's power. We define power as the capacity to assert one's will; when applied to CEOs, power is the ability to exert one's will over the strategic direction of the firm (Finkelstein, 1992). As defined by Finkelstein, power can be divided into various types of power: Expert, Prestige, Structural, and Ownership. It is combinations of these elements of power that allow powerful CEOs to take a firm in bold new directions that improve shareholder value (e.g., Steve Jobs at Apple), or conversely can reduce firm value while maximizing personal utility (e.g., Dennis Kozlowski at Tyco). Strong corporate governance mechanisms can serve as a check against CEO power; ideally, strong firm governance should mitigate the negative effects of CEO power.

In the context of our paper, strong governance mechanisms would limit CEOs' aspirations of rapid growth by acquisitions to further increase personal wealth and potentially restructure the acquired firms with massive layoffs, since both outcomes are seen as detrimental to the general public. We examine the relationship between various measures of governance and CEO power on (1) whether the firm will pursue one or more acquisitions in a given year, and (2) the level of relatedness between the acquirer and target.

We use three measures of corporate governance strength: the size of the board, the proportion of outside directors on the board, and the Bebchuck, *et al.* (2004) "E" score. Bebchuk, *et al.* (2004) identify 6 key factors (and create an "E-score") explaining the variance in firm value and stock performance. The E-score variables relate specifically to board structure and CEO provisions. The E-score includes the following elements: staggered boards, limits to amend bylaws, limits to amend charter, supermajority, golden parachutes, and poison pills (for further discussion on these variables see Bebchuk, *et al.*, 2008).

We draw upon Finkelstein (1992) for our measures of CEO power. Finkelstein classifies CEO power measures into four groups: expert power (the CEO's experience and abilities), prestige power (the CEO's reputation), structural power (the CEO's formal position within the firm), and ownership power (the CEO's proportionate ownership of the firm and potential status as a firm founder).

We find that our governance measures are not related to whether a firm pursues an acquisition in a given year, after controlling for CEO power. However, they are strongly associated with the level of relatedness between the acquirer and target, where relatedness is defined using the firms' industry classifications. Several varying definitions of relatedness exist in the literature, and for brevity and clarity we define related firms as firms that share the same first two digits of their primary SIC code, while semi-related firms share only the first digit of their SIC code. A firm with stronger governance (proxied by E) is more likely to pursue a related or semi-related acquisition and less likely to pursue an unrelated acquisition. Semi-related acquisitions are also more likely if the firm has more outside directors on the board, but are less likely if the firm has a larger board.

The results can be condensed into a few stylized facts. First, governance does not appear to affect whether a firm will pursue an acquisition, or the market's response to that acquisition, but does significantly explain the relatedness of the target firm. This is consistent with the widely held view that acquisitions are more likely to be successful when the acquirer and target are at least somewhat related (for example see Kaplan and Weisbach, 1992, and Santalo and Becerra, 2008). Firms with stronger governance are more likely to pursue a related or semi-related acquisition and less likely to pursue an unrelated acquisition. Second, the source of CEO power determines its relationship with acquisition activity and (to some degree) the market's response to the acquisition announcement. It is not possible to conclude that a more powerful CEO is likely to pursue an acquisition, or that a more powerful CEO is more likely to diversify the firm without knowing the specific source of the CEO's power. Similarly, the market's reaction to an acquisition announcement is not uniformly higher or lower for a more powerful CEO.

This research makes contributions to a number of fields of research. We show that governance matters with respect to the selection of target firms in acquisitions, after controlling for CEO power. Also, because we control for a number of variables already shown to have explanatory power over acquisition performance, we show that our measures of CEO power have explanatory power over acquisition activity beyond what is already known in the literature. We also show that measures of CEO power cannot be viewed as fungible: different sources of CEO have entirely different implications. CEO power is not a unified construct when it comes to acquisition activity.

The remainder of the paper is organized as follows. Section 2 reviews related research develops our hypotheses, and section 3 describes the sample and provides descriptive statistics. Section 4 reports our empirical findings, and section 5 summarizes and concludes the paper.

2. Review of related research and hypothesis development

2.1 CEO Benefits from Acquisitions

Acquisitions have been the subject of numerous studies focusing primarily on returns (see Jensen and Ruback, 1983, and Agrawal and Jaffe, 2000, for reviews), and although initiating and overseeing acquisitions are

primarily the CEO's responsibilities (Lehn and Zhao, 2006), comparatively little attention has been paid to the role that governance and CEO power plays in the acquisition activity of the firm. We begin by reviewing agency theory and how such a theoretical framework would influence the motives of the CEO in acquisition strategies.

The agency theory perspective argues that principals, who do not have the time to personally manage and yet have an interest in a firm, will engage agents to manage the firms on their behalf (Jensen and Meckling, 1976). With this arrangement, there is a separation of ownership and control, and thus a potential for agents to engage in self-serving behaviors that may have negative outcomes for shareholders. Proponents of agency theory maintain that executives in management-dominated firms will have different strategy motives than executives in owner-dominated firms (Amihud and Lev, 1981).

One strategic option for executives is acquisitions. Acquisitions are often value-destructive to acquirer shareholders (Morck *et al.*, 1990; Moeller *et al.*, 2005; Oler, 2008), but can provide significant benefits to the acquirer's CEO. For example, acquisitions increase the firm's size, and this in turn can decrease the CEO's employment risk and increase his personal compensation (Morck *et al.*, 1990).

Diversifying acquisitions can be personally more beneficial to CEOs than nondiversifying acquisitions. Rose and Shepard (1997) show that the CEO's compensation is 13% higher in diversified firms vs. non-diversified firms. Anderson *et al.* (2000) find that executives in diversified firms have executive compensation schemes that are less sensitive to firm performance than single business unit firms. The more diversified the firm the greater the potential for information asymmetry between top management and shareholders, thus exacerbating agency conflicts (Bizjak *et al.*, 1993). Highly diverse firms operate in multiple markets, which increase the complexity of the firm's operations. This complexity decreases the firm's transparency of transactions within the firm's business units, and can provide top executives with an opportunity to engage in self-serving decisions with less risk of detection by shareholders.

However, diversifying acquisitions may be more value-destructive to shareholders (especially completely unrelated diversifications). In their guidance to professionals, both Hitt *et al.* (2001) and Gaughn (2002) report that the degree of diversification makes a difference to the performance outcomes of the acquisition. Unrelated diversification strategies focus less on synergies (Palepu, 1985) and more on exploiting untapped markets, rescuing an ailing firm or spreading the business-specific risk across industries (Eisenmann, 2002). Conglomerate acquisitions, or acquisitions where the target is completely outside the traditional industry of the acquirer, often have negative outcomes (see Hitt *et al.*, p. 117; Gaughn, 111; Berger and Ofek, 1995). In contrast, some studies show that related diversification strategies perform better (Palepu, 1985; Palich *et al.*, 2000). This suggests that diversifying acquisitions are more likely to occur when agency conflicts between management and shareholders are more severe.

2.2 Corporate Governance

Corporate governance is an important mechanism for controlling agency costs. Several scandals have focused public attention on governance, and on the role of governance in preventing the CEO from pursuing strategies that maximize his or her personal utility at the expense of shareholder wealth. Hill and Snell (1988) find that when stockholders dominate, business strategies generally focus on building corporate wealth (i.e., innovation and research and development), but when corporations are dominated by executives, strategies tend to center on issues such as executive power or security. However, prior work investigating linkages between superior corporate governance and performance has produced mixed results. In their review, Becht *et al.* (2002) report that key governance mechanisms, such as the board of directors, appear to be weak and ineffective in terms of monitoring managers. Larcker *et al.* (2007) report that a consistent set of empirical results has not yet emerged regarding the significance of corporate governance for company performance. Their own analysis also produces mixed results. Similarly, Gupta *et al.* (2009) find little evidence of on the association between measures of governance and firm value for Canadian firms. We hope to expand the literature on corporate governance by examining acquisitions as a particular corporate decision that is clearly linked to the CEO. Specifically, we consider three measures of governance: the size of the board, the proportion of outside directors on the board, and the firm's general governance proxied by Bebchuk *et al.*'s (2004) E-score.

The E-score consists of six corporate governance provisions related to executive entrenchment. These provisions include: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. Bebchuk *et al.* (2004 and 2008) find that increases in the index are positively associated with firm valuation and abnormal returns.

The board oversees the strategic decisions of the firm, and can therefore act as a significant counterbalance to the CEO. We operationalize board power as the number of board members and the proportion outside versus inside board members (Sahlman, 1990). Redicker and Seth (1995) find that strong boards are given higher monitoring potential

when firms have dominant top managers. Core *et al.* (1999) find that CEOs earn greater compensation when board structures are weak, suggesting that stronger governance reduces agency problems. Strong boards, therefore, may be an important monitoring body that aligns the interests of the CEO with the interests of shareholders. One clear example is provided by D'Orio (2005) who argues that the fraud at Parmalat involved a powerful CEO without sufficient independent oversight from the board.

There is mixed evidence that board size and composition matter in organizational outcomes. Board characteristics, such as board size, are important indicators of a firm's passive or vigilant monitoring of the CEO and the other executives. For example, Hermalin and Weisbach (1988) report that the board size is positively associated with corporate diversification. Hill and Snell (1988) find that the ratio of outside board members to total board members is positively related to board involvement in strategic restructuring. However, Newman and Mozes (1999) do not find any association between the proportion of outside directors and CEO compensation.

More recent studies on general governance focus on the relationship between governance and firm valuation. Gompers *et al.* (2003) form an index based on 24 basic governance provisions ("G-score"), and report that firms with stronger shareholder rights (suggesting weaker management power) have higher value (and higher abnormal returns over their test period) than firms with weaker shareholder rights. Bebchuk *et al.* (2004) identify 6 key factors (and create an "E-score") out of the Gompers *et al.* provisions that dominate the other 18 in explaining the variance in firm value and stock performance.

Governance mechanisms should restrict CEOs who may wish to pursue acquisitions that decrease shareholder value (while increasing CEO utility). Because, on average, acquisitions are value-destructive (e.g., Oler, 2008), we expect to find that stronger governance is associated with reduced likelihood that the firm will announce one or more acquisition in a given year.

> H1: The likelihood of a firm announcing at least one acquisition in a given year is decreasing in corporate governance strength.

In addition, because diversifying acquisitions are often viewed as more value-destructive than related acquisitions, we also expect to find that stronger governance is associated with reduced likelihood that a given acquisition will be unrelated (and greater likelihood that a given acquisition will be semi-related or related).

> H2: Acquirers with stronger corporate governance are more likely to pursue a related or semi-related acquisition, and less likely to pursue an unrelated acquisition.

2.3 CEO power

From an agency perspective, power given to or obtained by executives would be problematic if proper incentives are not established or if power is not monitored to ensure that it is used in the best interest of shareholders. The CEO is the most powerful member of a business organization (Bigley and Wiersema, 2002). Although board members approve acquisitions, the CEO usually initiates them and oversees their progress (Lehn and Zhao, 2006). Accordingly, acquisitions are more likely to be pursued by more powerful CEOs because more powerful CEOs are better able to overcome resistance from other sources, such as stronger corporate governance (see Shapiro, 2006, and Adams *et al.*, 2005). Therefore, acquisitions should be associated with CEO power.

Finkelstein (1992) provides a conceptual framework on how executive power can influence strategic outcomes. He defines power as the ability of individuals to exert their will in corporate decision-making. Power can be classified as formal or informal (Adams *et al.*, 2005). Formal power relates to factors that directly provide the CEO with decision-making influences, such as equity holdings or CEO duality, which is whether the CEO also serves as the board chairperson (Davila and Venkatachalam, 2004). Informal power relates to factors that do not directly depend on the CEO's formal position within the hierarchy, such as the CEO's service on other organizations' boards (Core *et al.*, 1999), CEO tenure (Davila and Venkatachalam, 2004) and CEO education (Hitt *et al.*, 2001). Finkelstein (1992) further groups these types of CEO power into more fine-grained categories: expert power, prestige power, structural power and ownership power.

Although these categories of power sources are treated as fungible in prior work, we argue that these forms of power will not be unidirectional in terms of the acquisitions that a firm pursues. In related work, Chen *et al.* (2008) find that CEO duality and firm performance are not associated. While Adams *et al.* (2005) show that more powerful CEOs are associated with greater variance in firm performance. They argue that more powerful CEOs are better able to implement their decisions without scrutiny than weaker CEOs; this can have a positive effect if the CEO makes good decisions, but a negative effect if the CEO makes poor decisions. Consistent with their argument, they find that firms with powerful CEOs are found in both the best and worst performing companies they examine. They also find that different measures of CEO power have different implications for a firm's Tobin's Q and ROA (for example, firm ROA is significantly higher if the CEO is also the founder, but is significantly lower if the CEO is the only insider on the board). Their work

suggests that CEO power might not have a uniform effect on a firm's acquisition activity.

2.3.1 CEO Expert Power: CEO Tenure and Prior Functional Experience

Expert power encompasses the abilities necessary for success in the firm, and CEO tenure is one form of expert power. Longer tenure as CEO increases the likelihood of developing important relationships with key strategic decision makers. Increasing tenure as CEO suggests increasing depth and breadth of knowledge about the organization. Also, because CEOs can be terminated because of poor strategic decisions (e.g., Lehn and Zhao, 2006), longer tenure may indicate greater competence and skill.

Similar to CEO tenure, the CEO's prior experience within the firm before becoming CEO (e.g., working in accounting, or marketing) is an important job-related factor that should contribute to a CEO's ability to successfully manage a firm. CEOs holding more functional positions within the firm before becoming CEO will have more firm-specific knowledge of the firms operations and more contacts within the firm.

2.3.2 CEO Prestige Power: Elite Education and Other Directorships

Prestige power is based on the reputation of the CEO (Finkelstein, 1992). Elite education and other corporate directorships are both important forms of prestige power. Elite education provides individuals with valuable knowledge gained through their interaction with elite individuals and institutions (D'Aveni and Kesner, 1993). The reputation acquired through elite educational institutions is another source of prestige power. D'Aveni (1989) finds that the elite education of executives provides legitimacy that contributes to the success of financially troubled firms, while lack of top management elite education status decreases legitimacy.

Other board directorship appointments also lead to valuable experiences and knowledge, and increase the prestige of the CEO. Directorships give the CEO access to important external information (Pennings, 1980), contacts with other influential and important business elite (Useem, 1979), and ultimately give the CEO greater status and power within his own organization.

We predict that expert and prestige power will have a similar effect on strategic decision making. These forms of power provide the CEO with knowledge and connections that can facilitate the pursuit of acquisitions. Further, expert and prestige power are likely to not be affected by the ultimate outcome of the acquisition – even if the stockholders lose money (for example, a CEO who is powerful because he has a long tenure or because he has an elite education will retain these power sources even if the acquisition proves disappointing). Pursuing both unrelated and related diversification strategies increases the prestige of the CEO, as well as the potential for increased personal benefits. Therefore, a CEO with strong expert and prestige power may be more able to pursue an acquisition that is less likely to maximize shareholder value, including an unrelated acquisition. We hypothesize:

H3: The likelihood of a firm announcing at least one acquisition in a given year is increasing in CEO expert and prestige power; and,

H4: The degree of relatedness between the acquirer and target is increasing in CEO expert and prestige power.

2.3.3 CEO Structural Power: Board Chair

Besides informal expert and prestige power, the CEO can have formal structural power that provides legitimate decision making authority. Legitimate power represents formal authority from the individual's position within the firm. From a CEO power perspective, an independent chairperson can serve as an important check on the CEO's power (Baliga *et al.*, 1996). Thus, the structural power of the CEO increases when a firm consolidates the CEO and chair positions.

However, there are counter arguments when predicting the directional influence of CEO structural power on acquisitions and diversification. An individual holding both the position of CEO and board chair is likely already dealing with significant information overload. She may not want to pursue an acquisition that increases the demands on her time and cognitive abilities. Furthermore, if the CEO's power comes from consolidated positions, the CEO is likely to be exposed to greater criticism if the acquisition does not perform well. These arguments suggest that a CEO whose power is derived mainly from structural sources will be less likely to pursue an acquisition (especially an unrelated acquisition that is more likely to require more effort from the CEO and more likely to underperform).

H5: The likelihood of a firm announcing at least one acquisition in a given year is decreasing in CEO structural power; and,

H6: The degree of relatedness between the acquirer and target is increasing in CEO structural power.

2.3.4 CEO Ownership Power: Shares Owned and Founder of Firm

Greater ownership in the firm's voting stock can affect CEO power in at least two ways. First, ownership gives the CEO increased legitimate power to influence management's decisions (Riahi-Belkaoui and Pavlik, 1993). With this legitimate power, the CEO can also influence the selection of board directors (Fredrickson *et al.*, 1988). Second, Shen and Cannella (2002) argue

that ownership enhances the CEO image as a loyal employee that will seek the best interests of the firm, thus increasing the CEO's credibility. Pitcher *et al.* (2000) show that CEOs who have high ownership power are able to insulate themselves from unexpected or involuntary turnover.

Founders have strong organizational influence, particularly if the founder is also the CEO of the firm (Daily and Johnson, 1997). Status as the founder allows the CEO to play an influential defining role within the organization such as developing a mission statement, outlining objectives, and making other important firm decisions (Gimeno *et al.*, 1997). Ocasio (1994) finds that CEO/founders were less likely to be replaced than CEO/non-founders.

As with structural power, we argue that a CEO whose power is derived mainly from ownership may be disinclined to use that power to pursue acquisitions (especially diversifying acquisitions), in spite of having an enhanced ability to do so because a CEO with high stock ownership has more personal wealth tied to firm performance.

A CEO who is also the corporate founder likely would prefer that the firm remain in the industry in which she is most familiar rather than diversify into areas where others may have more expertise. As well, a firm founder is likely to have nostalgic ties to the original purpose of the organization, and would prefer that the firm not deviate from its original purpose (accordingly, if the firm does pursue an acquisition, we believe it will be more likely to be related or semi-related if the CEO has greater share ownership or is the firm founder). Thus, if the CEO's power is derived from ownership sources, the CEO may be less likely to pursue an acquisition, especially if that acquisition is unrelated.

> H7: The likelihood of a firm announcing at least one acquisition in a given year is decreasing in CEO ownership power; and,
>
> H8: The degree of relatedness between the acquirer and target is increasing in CEO ownership power.

3. Data and methodology

3.1 Sample

To build our sample, we randomly select 300 companies from the Fortune 1000 as of 2004 and collect CEO power, governance, and acquisitions data for the years 1998 to 2004. We eliminate firm-year observations when we are unable to collect sufficient data from proxy statements, Compustat, CRSP, Execucomp, Forbes, or from SDC's Mergers and Acquisitions database. Our likelihood of an acquisition sample has 271 firms and 1,639 firm-year observations. Our level of diversification sample consists of 1,954 acquisitions, as shown in Table 1, Panels A and B.

3.2 Measurement of variables

3.2.1 Governance Variables

For governance variables, we use the size of the board *(BOARD)* and the proportion of the board made up of outside directors *(OUTSIDE_DIRECTORS)*. We also use Bebchuck *et al.*'s (2004) "E" score as another measure of overall governance strength, transformed to be increasing in shareholder rights (and decreasing in CEO power) by taking 6 less the original E score.

3.2.2 Proxies for CEO Power

Expert power – We use two measures of expert power: the CEO's tenure as CEO (Combs and Skill, 2003), calculated as the natural log of the years the CEO has held his position (*CEO_TENURE*), and number of positions (*NUM_POSTIONS*) held prior to becoming a CEO (Finkelstein, 1992). These data are collected from proxy statements.

Prestige Power – We use two measures to estimate prestige power: elite education and corporate directorships. We determine elite education using Finkelstein's (1992) listing of prestigious universities. This variable is defined as 0 if the CEO had no degree from an elite institution and 1 if the CEO had an undergraduate and/or graduate degree from an elite institution (*ELITE*). We measure corporate directorships as the natural log of the number of for-profit boards (*OTHERBOARDS*) on which the CEO serves. These data are collected from proxy statements and from Forbes.

Structural Power - Structural power is based on whether the CEO is also the board chair. Our measure (*CHAIR*) is operationalized as 1 if the CEO also holds the position of chairperson of the board, and zero otherwise; this information is also collected from proxy statements.

Ownership power – Two items are used to measure ownership power. Share ownership (*SHROWN*) is measured as the percentage of the firm's outstanding shares held by the CEO (Daily and Johnson, 1997). We set a dummy (*FOUNDER*) to 0 if CEO is not the founder and 1 if the CEO is the founder of the firm (Finkelstein, 1992). These data are collected from Execucomp and from proxy statements.

3.2.3 Defining Relatedness

Empirical research on diversification has produced mixed results, likely because of varying operationalizations of diversification (often termed a "conglomerate acquisition"). For example Agrawal *et*

al. (1992) define a diversification as an acquisition where the acquirer and target do not share the same 4-digit primary SIC code. Moeller *et al.* (2004) define a diversification as an acquisition where the first two digits of the acquirer's and target's SIC codes differ. We define relatedness using three classifications: "related" acquisitions are those where the target and acquirer share at least the same first two digits of their primary SIC codes, "semi-related" acquisitions are those where the target and acquirer share only the first digit of their primary SIC codes (for example, a firm in the building construction industry, SIC 15, could acquire a firm in the heavy construction industry, SIC 16), and "unrelated" acquisitions are those where the target and acquirer do not share even the first digit of their primary SIC codes (for example, the construction firm acquiring a hotel chain).

3.2.4 Other Control Variables

We include a number of additional control variables, drawing mostly from the finance literature. Following Harford (1999), we control for momentum *(MOMENTUM)*, proxied by size-adjusted buy-and-hold returns over the prior year, sales growth *(SALESGROWTH)*, leverage *(LEVERAGE)*, book-to-market *(BTM)*, size *(SIZE)*, and cash level *(CASHLEV)* in our models. To ensure that our results for CEO tenure are not attributable to older, more established firms buying up younger firms, we control for the firm's age *(FIRMAGE)*, proxied by the number of years that the firm has appeared in the CRSP dataset before our year of interest. Finally, we control for the pre-acquisition level of diversification of the company *(TOTAL_DIV)* following Palepu (1985). For brevity, all variable calculations are shown in the Appendix.

4. Analysis and Results

4.1 Likelihood of an Acquisition

We present descriptive statistics for our variables in Panel C of Table 1. At first glance, it appears that stronger governance is associated with *greater* likelihood of a firm becoming an acquirer (mean E for acquirers is 3.7, vs. 3.5 for non-acquirers, $p<0.01$). This is contrary to our hypothesized relationship, but it is not possible to draw strong conclusions here because we have not controlled for other factors. With respect to our CEO power measures, there is little relationship between our CEO power measures and the likelihood of a firm making an acquisition announcement. The one exception is shares owned by the CEO (SHROWN), which is significantly lower for acquirers (consistent with our expectations in H7).

Our univariate results suggest that acquirers have higher momentum and sales growth than non-acquirers. Acquirers are also larger than non-acquirers, and have higher cash levels (consistent with Harford, 1999). We also find that acquirers have lower leverage and lower book-to-market ratios, suggesting that acquirers are more likely to be less financially constrained and are more likely to be glamour firms. However, these univariate results may not hold in a multivariate setting. As Table 2 shows, many of our proxies are correlated (for example, our Founder dummy is correlated with the percentage of shares owned by the CEO, at 0.47).

To test H1, H3, and H5, we estimate the following logistic regression equation:

$$ACQUIRER_i = \beta_0 + \beta_1 BOARD_i + \beta_2 OUTSIDE\_DIRECTORS_i + \beta_3 E_i + \beta_4 CEO\_TENURE_i + \beta_5 NUM\_POSITIONS_i + \beta_6 ELITE_i + \beta_7 OTHERBOARDS_i + \beta_8 CHAIR_i + \beta_9 SHROWN_i + \beta_{10} FOUNDER_i + \beta_{11} MOMENTUM_i + \beta_{12} SALESGROWTH_i + \beta_{13} LEVERAGE_i + \beta_{14} BTM_i + \beta_{15} SIZE_i + \beta_{16} CASHLEV_i + \beta_{17} FIRMAGE_i + \beta_{18} TOTAL\_DIV_i + \varepsilon_i \quad (1)$$

The dependent variable, ACQUIRER, equals one when the firm announces at least one acquisition during the year (whether or not it is ultimately consummated), and zero otherwise. Our regression includes year and industry dummies which are not tabulated.

Table 3 Model 1 presents summary statistics from equation (1). With respect to our hypotheses, we find mixed results. With respect to corporate governance, we do not find any significant relationship between governance (proxied by *BOARD*, *OUTSIDE_DIRECTORS*, and *E*) and the likelihood of an acquisition announcement, so H1 is not supported.

The likelihood of an acquisition increases with CEO tenure (the estimated coefficient is 0.20, $p<0.01$), supporting H3, but decreases with the number of positions within the firm held previously by the CEO (-0.05, $p=0.05$). Thus, one of our proxies for expert power loads significantly with the expected coefficient sign, but the other loads marginally with the opposite sign. H3 also considers prestige power, but we find that *ELITE* does not load significantly, and *OTHERBOARDS* (-0.22, $p=0.04$) loads with a significantly negative coefficient; again, opposite of our expectations. These results suggest that the more positions the CEO holds on the boards of other firms, the *less* likely the CEO will pursue an acquisition.

Turning to H5, *CHAIR* (our proxy for structural power), is marginally significant (-0.28, $p=0.06$), supporting H5. A firm where the CEO is also the board chair is less likely to become an acquirer (after controlling for other factors). H7 considers ownership power, proxied by *SHROWN* and *FOUNDER*. *SHROWN* (-7.43, $p<0.01$) loads significantly negatively, with the expected sign, supporting H7; a firm where the

CEO owns more of the company's stock is less likely to become an acquirer. However, *FOUNDER* is not significant.

These results suggest that the source of CEO power plays an important role in determining the likelihood of an acquisition, and that the relationship is complex. A CEO with longer tenure is more likely to undertake an acquisition, as expected, but if that CEO is more familiar with the pre-acquisition operations of the firm (proxied by the number of positions held prior to becoming CEO), has stronger relationships with other firms through other board seats, is the board chair, or has more personal wealth at risk, then the CEO is less likely to "rock the boat" by undertaking an acquisition.

Consistent with Harford (1999), our control variables suggest that larger firms with higher sales growth are more likely to become acquirers. In addition, we find that firms with lower leverage and firms more likely to be overvalued (captured by a low book-to-market ratio) are also more likely to become acquirers. However, after controlling for other factors, we find that cash level is no longer a significant predictor of acquisition activity.

4.2 Relatedness between Acquirer and Target

Table 4 reports our findings for relatedness. Model 2 considers the 938 related acquisitions (based on the first 2-digits of the SIC codes), Model 3 considers the 354 semi-related acquisitions (1-digit), and Model 4 considers the 662 unrelated acquisitions in our dataset. We test H2, H4, H6, and H8 with the following logistic regression:

$$RELATED_i, SEMI\text{-}RELATED_i, or\ UNRELATED_i = \beta_0 + \beta_1 BOARD_i + \beta_2 OUTSIDE\_DIRECTORS_i + \beta_3 E_i + \beta_4 CEO\_TENURE_i + \beta_5 NUM\_POSITIONS_i + \beta_6 ELITE_i + \beta_7 OTHERBOARDS_i + \beta_8 CHAIR_i + \beta_9 SHROWN_i + \beta_{10} FOUNDER_i + \beta_{11} MOMENTUM_i + \beta_{12} SALESGROWTH_i + \beta_{13} LEVERAGE_i + \beta_{14} BTM_i + \beta_{15} SIZE_i + \beta_{16} CASHLEV_i + \beta_{17} FIRMAGE_i + \beta_{18} STOCK_i + \beta_{19} HOSTILE_i + \beta_{20} PUBLIC_i + \beta_{21} TOTAL\_DIV_i + \varepsilon_i \quad (2)$$

The dependent variable equals one when the firm announces a related (semi-related or unrelated) acquisition, and zero otherwise. We include the same control variables as those in Equation (1), and add three more controls to pick up other aspects of the proposed acquisition. Specifically, we add a dummy *STOCK* that is set to one if the acquirer offers his own voting stock as consideration to target shareholders (and zero otherwise). We set a dummy *HOSTILE* to one if the acquisition was resisted by target managers, and we set *PUBLIC* to one if the target firm is publicly traded.

A comparison of estimated coefficients between Models 2 to 4 suggests that there are significant differences in the factors that explain the relatedness of the acquirer and target. Specifically, a larger board is marginally more likely to pursue a related acquisition (p=0.095), but less likely to pursue a semi-related acquisition (p=0.02). In contrast, a board with more outside directors is less likely to pursue a related acquisition (p=0.04) but more likely to pursue a semi-related acquisition (p=0.02), perhaps because an outside director is more likely to add greater familiarity with other industries that are still somewhat related to the firm. Overall corporate governance strength, proxied by E, is positively associated with related and semi-related acquisitions (p<0.01 for both), and negatively associated with unrelated acquisitions (p<0.01), supporting H2. Stronger corporate governance appears to be effective in reducing the ability of a CEO to pursue an acquisition that is more likely to be value-destructive.

An acquisition is marginally less likely to be related if the CEO has longer tenure (p=0.06), but the relationship between CEO tenure and a semi-related or unrelated acquisition is not significant. This implies that a CEO with longer tenure is less likely to pursue a related acquisition. A CEO with an elite education is marginally less likely to pursue a related acquisition (p=0.09) and significantly more likely to pursue an unrelated acquisition (p=0.01), partially supporting H4.

CEOs who are also board chairs are marginally more likely to pursue a related acquisition (p=0.08), significantly less likely to pursue a semi-related acquisition (p<0.01), but marginally more likely to pursue an unrelated acquisition (p=0.07). These confusing results do not support H6. The likelihood of a semi-related acquisition is marginally higher in CEO stock ownership (p=0.08) and a CEO who is also the firm founder is more likely to pursue a related acquisition (p=0.03). These results partially support H8.

With respect to our control variables, firms with higher momentum are more likely to announce a semi-related acquisition but less likely to announce an unrelated acquisition. Higher book-to-market firms (i.e., value firms) are more likely to pursue a related acquisition and less likely to pursue an unrelated acquisition. Larger firms are significantly less likely to pursue a related acquisition and marginally more likely to pursue a semi-related acquisition. High-cash firms are less likely to pursue a related acquisition but more likely to pursue a semi-related acquisition.

If the target is also publicly traded, the acquisition is more likely to be related and less likely to be unrelated. Firms that are already highly diversified are marginally less likely to pursue a related acquisition, more likely to pursue a semi-related acquisition, but less likely to pursue an unrelated acquisition. These results suggest that the degree of relatedness between the

acquirer and target captures a broad cross-section control variables and warrants further investigation in future research

4.3 Additional analysis

As additional analysis, we look at the market response to acquisitions announcements. We use the same equation as in Table 4, this time applied to OLS regression analysis on the announcement period return, slightly modified to capture any differential market response to semi-related acquisitions and unrelated acquisitions:

$$ANNRET_i = \beta_0 + \beta_1 BOARD_i + \beta_2 OUTSIDE\_DIRECTORS_i + \beta_3 E_i + \beta_4 CEO\_TENURE_i + \beta_5 NUM\_POSITIONS_i + \beta_6 ELITE_i + \beta_7 OTHERBOARDS_i + \beta_8 CHAIR_i + \beta_9 SHROWN_i + \beta_{10} FOUNDER_i + \beta_{11} MOMENTUM_i + \beta_{12} SALESGROWTH_i + \beta_{13} LEVERAGE_i + \beta_{14} BTM_i + \beta_{15} SIZE_i + \beta_{16} CASHLEV_i + \beta_{17} FIRMAGE_i + \beta_{18} STOCK_i + \beta_{19} HOSTILE_i + \beta_{20} PUBLIC_i + \beta_{21} SEMI\text{-}RELATED_i + \beta_{22} UNRELATED_i + \beta_{23} TOTAL\_DIV_i + \varepsilon_i \quad (3)$$

ANNRET is the market-adjusted (using CRSP's equal-weighted market return) cumulative acquirer return from day -5 to day +5 relative to the announcement. Table 5 reports our findings, with p-values adjusted for heteroscedasticity.

Our measures of corporate governance do not load significantly. However, the market appears to value CEO experience positively in acquisitions, as the CEO tenure variable loads positively (p=0.03). The market response is marginally decreasing if the CEO holds seats on other boards (p=0.08). Similarly, the market response is marginally decreasing if the CEO is also chairperson (p=0.08). If the CEO is also the founder, the market response is significantly lower (p=0.04), suggesting that the market may prefer a founding CEO to "stick to the knitting" (i.e., what he presumably knows best), rather than acquire other firms. Consistent with Moeller *et al.* (2004), the announcement of the acquisition of a public target firm elicits a significantly lower market response than that for a private target.

5. Conclusions

We investigate the relationship between various measures of corporate governance, CEO power, and acquisitions. We show that our measures of governance do not appear to affect whether a firm undertakes an acquisition, but that stronger governance (as proxied by a higher "E" score) are associated with a greater likelihood of a related or semi-related acquisition and with reduced likelihood of an unrelated acquisition. These results are consistent with governance restricting the CEO from pursuing an acquisition that is more likely to be value-destructive (see Hitt *et al.*, 2001 and Gaughn, 2002).

Our results vary considerably depending on the proxy used to measure CEO power: the likelihood of an acquisition is increasing in CEO tenure, but decreasing in the number of positions the CEO held prior to his appointment. CEOs who have gained a wider perspective of the firm from past positions such as vice president of operations and marketing may not want to risk changing the firm's operations (and, by so doing, render their prior experience obsolete).

Acquisitions are also less likely if the CEO sits on the boards of other firms, if the CEO is also board chair, and if the CEO holds more of the company's stock. CEOs who sit on other boards may not want an increase in workload related to an acquisition placed on their already hectic schedules. These CEOs may also prefer to form relationships with other firms through less radical means (such as sitting on their boards). CEOs with more wealth tied to firm performance likely do not wish to jeopardize that wealth by pursuing an acquisition.

With respect to the degree of relatedness between the acquirer and target, CEOs with an elite education are marginally less likely to pursue a related acquisition and significantly more likely to pursue an unrelated acquisition. Investors/boards seeking to diversify a company's holdings may want to consider a CEO educated from an elite institution.

CEOs who are also chairman of the board are marginally more likely to pursue a related acquisition, significantly less likely to pursue a semi-related acquisition, but marginally more likely to pursue an unrelated acquisition. Although these results generally support our argument that CEO duality will increase the chances of related diversification strategies, the results indicating that a CEO/chairperson will pursue unrelated diversification strategies is contrary to our argument. The relationship between the CEO/Chair combination and the relatedness of the target firm appears to be complex, and future research may add more explanatory variables to explain our results. We encourage future researchers to consider expanding on our study to include the entire top management team instead of the just the CEO. We believe this might provide greater insight into the real influence a CEO has.

If the CEO is also the firm's founder, a given acquisition is significantly more likely to be related. This finding is expected as founders are often highly specialized in a specific industry and understand what it takes to succeed in that industry. Founding CEOs also would likely prefer to not delve into areas where they have reduced expertise.

The market views acquisitions as value-increasing when the CEO has greater tenure, marginally value-decreasing when the CEO sits on other boards or holds

the position of chairperson, and significantly value-decreasing when the CEO is also the founder of the firm.

Overall, our results suggest that governance matters with respect to the relatedness between the target and acquirer. Our results also suggest that the source of CEO power has a significant impact on how that power affects the firm's acquisition activity. However, the relationship between CEO power and acquisition is complex: One cannot simply say that a more powerful CEO is more likely to pursue an acquisition, or is more likely to pursue a diversifying acquisition. Investors concerned with the potential of value-destructive acquisitions should consider the combination of governance and CEO power.

Our work brings together insights from management, accounting, and finance in the specific setting of acquisitions. Because we select firms from the Fortune 1000 (and because those firms announced many acquisitions over our sample period), our results may not extend to smaller firms or to firms that were less acquisition active. However, our inclusion of multiple measures of governance, CEO power, as well as a wide variety of controls, contributes to the external validity of our conclusions. Furthermore, our study gives policy makers greater understanding of CEO power in light of governance.

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APPENDIX: VARIABLE DEFINITIONS AND CALCULATIONS

Stock price and shares outstanding are taken from the CRSP database. All financial statement information is taken from the combined CRSP/Compustat (annual) database provided by Wharton Research Data Services (WRDS). CEO power variables are taken from Execucomp, proxy statements, and Forbes. E-scores are taken from http://www.law.harvard.edu/faculty/bebchuk/data.htm, with thanks to Lucian Bebchuk. All financial variables are for the year just ended.

Description and Calculation of Independent Variables

	Variable Name	Description
Governance Measures	Board Size	(*BOARD*) The natural log of the number of individuals on the board of directors
	Outside Directors	(*OUTSIDE_DIRECTORS*) The proportion of directors selected from outside the firm
	E	(*E*) The entrenchment score developed by Bebchuk, Cohen, and Ferrell (2004), transformed to be increasing in governance strength (and decreasing in CEO power) by taking 6 – original E
Expert Power	CEO Tenure	(*CEO_TENURE*) The natural log of the number of years the individual has been firm CEO
	Number of Positions	(*NUM_POSITIONS*) The number of firm positions held before becoming CEO
Prestige Power	Elite Education	(*ELITE*) Dummy variable set to one if the CEO has at least one degree from an elite school
	Other Boards	(*OTHERBOARDS*) The natural log of the number of other boards that the CEO concurrently sits on
Structural Power	Chair	(CHAIR) Dummy variable set to one if the CEO is also Board Chair
Ownership Power	CEO Shares Owned	(*SHROWN*) The proportion of outstanding firm stock held by the CEO
	Founder	(*FOUNDER*) Dummy variable set to one if the CEO is the firm founder

Description and Calculation of Independent Variables

	Variable Name	Description
Financial Controls	Momentum	(*MOMENTUM*) Firm momentum, defined as size-adjusted buy-and-hold abnormal returns accumulated over the firms fiscal year
	Sales Growth	(*SALESGROWTH)* The proportionate increase in sales over sales from the prior year (#12).
	Leverage	(*LEVERAGE)* Long-tem debt (#9) divided by book value of common equity (#60)
	Book-to-Market	(*BTM)* Total book value of common equity (Compustat item #60) divided by market capitalization (shares outstanding x share price, #24*#25)
	Firm Size	(*SIZE*) Natural log of book value of total assets (ln(#6))
	Cash Level	(*CASHLEV)* Cash and cash equivalents (#1), scaled by total assets (#6).
Other Controls	Firm Age	(*FIRMAGE*) Natural log of the number of years from the year of first coverage by CRSP to the fiscal year-end, plus one
	Total Diversification	(TOTAL_DIV) This measure is taken from Palepu (1985), calculated as: Total diversification = S P_j ln $(1/P_j)$ where P is defined as the sales attributed to business segment J, and ln $(1/P_j)$ is the logarithm of the inverse of sales.

Table 1 - Sample Selection and Descriptive Statistics

Panel A: Likelihood of an Acquisition Sample Selection

	Likelihood of an Acquisition
Randomly Selected firms from Fortune 1000	300
Collected data for years 1998 to 2004	7
Total number of firm year observations	2100
Less observations missing data	461
Total number of firm years	1639
Number of acquisition announcement firm years	773
Number of non-acquisition announcement firm years	866
Total number of firm years	1639

Panel B: Likelihood of Diversification Sample Selection

	Likelihood of Diverisfication
Randomly selected firms from Fortune 1000	300
Less firms without an acquisition	68
Number of firms announcing an acquisition	232
Total number of acquisition announcements	1954
Related Acquisitions (same 2-digit SIC)	938
Semi-Related Diversifications (different 2-digit, same 1-digit SIC)	354
Unrelated Diversifications (different 1-digit SIC)	662
Total number of acquisition announcements	1954

Table 1 - Sample Selection and Descriptive Statistics (*Continued)*

Panel C: Descriptive Statistics
The sample consists of 1,639 firm-years (773 acquisition announcement firm-years and 866 non-acquisition announcement firm-years) from 1998-2004.

	Acquirer		Non-Acquirer		*p* -value
Variable	Mean	Std Dev	Mean	Std Dev	t-test
Governance					
BOARD	2.4490	0.2287	2.4338	0.2196	0.1707
OUTSIDE_DIRECTORS	0.7718	0.1593	0.7799	0.1693	0.3194
E	3.6843	1.3384	3.4711	1.3333	0.0013
Exper Power					
CEO_TENURE	1.6805	0.8958	1.6233	0.9201	0.2033
NUM_POSITIONS	2.5977	2.3174	2.5069	2.3232	0.4295
Prestige Power					
ELITE	0.4049	0.4912	0.4030	0.4908	0.9372
OTHERBOARDS	0.7347	0.5686	0.7495	0.5779	0.6017
Structural Power					
CHAIR	0.7361	0.4410	0.7667	0.4231	0.1515
Ownership Power					
SHROWN	0.0082	0.0268	0.0131	0.0410	0.0047
FOUNDER	0.0957	0.2944	0.0889	0.2848	0.6341
Control Variables					
MOMENTUM	0.1034	0.5209	0.0171	0.4452	0.0003
SALESGROWTH	0.1411	0.3057	0.0990	0.3107	0.0058
LEVERAGE	0.8408	1.1527	1.0024	1.4882	0.0149
BTM	0.3813	0.2678	0.5189	0.4280	<0.0001
SIZE	8.8802	1.2763	8.7048	1.2528	0.0051
CASHLEV	0.0896	0.1226	0.0783	0.1163	0.0550
FIRMAGE	3.2346	0.8003	3.2512	0.8068	0.6766
TOTAL_DIV	1.2604	0.4210	1.1505	0.4229	<0.0001

*Variable definitions are presented in the Appendix.

Table 2: Pearson Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 *BOARD*																	
2 *OUTSIDE_DIRECTORS*	0.196																
	<0.001																
3 *E*	-0.079	-0.100															
	0.001	<0.001															
4 *CEO_TENURE*	-0.087	-0.053	0.094														
	0.000	0.031	0.000														
5 *NUM_POSITIONS*	0.200	0.037	-0.090	-0.228													
	<0.001	0.139	0.000	<0.001													
6 *ELITE*	0.011	0.033	0.093	0.203	-0.050												
	0.668	0.182	0.000	<0.001	0.044												
7 *OTHERBOARDS*	0.144	0.167	-0.050	0.146	-0.025	0.113											
	<0.001	<0.001	0.044	<0.001	0.313	<0.001											
8 *CHAIR*	-0.034	0.167	-0.014	0.378	-0.039	0.190	0.164										
	0.166	<0.001	0.582	<0.001	0.110	<0.001	<0.001										
9 *SHROWN*	-0.055	-0.181	0.182	0.257	-0.139	0.110	-0.168	0.070									
	0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004									
10 *FOUNDER*	-0.097	-0.159	0.162	0.333	-0.136	0.138	-0.160	0.056	0.474								
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.024	<0.001								
11 *MOMENTUM*	-0.077	-0.050	0.058	0.061	-0.004	-0.001	-0.055	-0.004	0.003	0.027							
	0.002	0.041	0.018	0.013	0.866	0.968	0.026	0.884	0.912	0.281							
12 *SALESGROWTH*	-0.010	-0.036	0.100	0.097	-0.080	0.010	-0.026	0.032	0.014	0.074	0.218						
	0.689	0.150	<0.001	<0.001	0.001	0.690	0.302	0.189	0.582	0.003	<0.001						
13 *LEVERAGE*	0.124	0.039	-0.033	-0.049	-0.001	0.080	0.064	0.060	-0.072	-0.063	-0.039	-0.006					
	<0.001	0.111	0.178	0.049	0.952	0.001	0.010	0.016	0.003	0.011	0.119	0.809					
14 *BTM*	-0.056	-0.007	-0.199	0.019	-0.098	-0.095	-0.061	-0.022	-0.023	0.048	-0.295	-0.127	0.005				
	0.023	0.776	<0.001	0.442	<0.001	0.000	0.013	0.377	0.347	0.051	<0.001	<0.001	0.855				
15 *SIZE*	0.434	0.155	0.068	-0.010	0.132	0.058	0.115	0.164	-0.092	-0.078	-0.052	0.007	0.210	0.036			
	<0.001	<0.001	0.006	0.687	<0.001	0.019	<0.001	<0.001	0.000	0.002	0.035	0.782	<0.001	0.140			
16 *CASHLEV*	-0.301	-0.128	0.152	0.065	-0.093	0.017	-0.101	-0.104	0.004	0.088	0.134	-0.032	-0.169	-0.140	-0.216		
	<0.001	<0.001	<0.001	0.008	0.000	0.484	<0.001	<0.001	0.886	0.000	<0.001	0.190	<0.001	<0.001	<0.001		
17 *FIRMAGE*	0.275	0.117	-0.050	-0.119	0.221	0.025	0.168	0.053	-0.053	-0.109	-0.088	-0.104	0.096	-0.040	0.205	-0.162	
	<0.001	<0.001	0.042	<0.001	<0.001	0.311	<0.001	0.031	0.031	<0.001	0.000	<0.001	0.000	0.105	<0.001	<0.001	
18 *TOTAL_DIV*	-0.011	0.027	0.092	0.005	0.132	0.184	0.006	0.053	0.028	0.090	-0.003	-0.063	-0.131	-0.162	0.048	0.096	0.031
	0.661	0.283	0.000	0.850	<0.001	<0.001	0.809	0.031	0.259	0.000	0.888	0.010	<0.001	<0.001	0.053	0.000	0.206

*Variable definitions are provided in the Appendix. Year and industry dummy variables are omitted from the table.

Table 3: Results of Logistic Regression Analysis on the Likelihood of an Acquisition
The dependent variable is Acquirer; it equals 1 for firms announcing at least one acquisition during the year and 0 otherwise. The sample consists of 1,639 firm-years (773 acquisition firm-years and 866 non-acquisition firm-years) during the years 1998-2004. P-values less then 0.05 are in bold; p-values between 0.10 and 0.05 are in italics.

	Hypotheses/	Model 1	
Variables	Predictions	Estimate	Pr > ChiSq
Governance			
BOARD	H1 (-)	0.338	0.267
OUTSIDE_DIRECTORS	H1 (-)	-0.406	0.258
E	H1 (-)	0.005	0.906
Expert Power			
CEO_TENURE	H3 (+)	0.198	**0.008**
NUM_POSITIONS	H3 (+)	-0.051	*0.051*
Prestige Power			
ELITE	H3 (+)	-0.117	0.331
OTHERBOARDS	H3 (+)	-0.221	**0.035**
Structural Power			
CHAIR	H5 (-)	-0.280	*0.056*
Owernship Power			
SHROWN	H7 (-)	-7.433	**<0.001**
FOUNDER	H7 (-)	0.155	0.499
Control Variables			
MOMENTUM		0.199	0.116
SALESGROWTH		0.484	**0.015**
LEVERAGE		-0.111	**0.011**
BTM		-0.921	**<0.001**
SIZE		0.383	**<0.001**
CASHLEV		-0.003	0.995
FIRMAGE		-0.021	0.773
TOTAL_DIV		0.051	0.734
INTERCEPT		-0.896	**<0.001**
		Chi-Square	Pr > ChiSq
Likelihood ratio test		252.753	<0.001
Max-Rescaled R^2			0.191
Sample Size (total firms)			1639
Acquistion Firm-years			773
Non-Acquisition Firm-years			866

*Variable definitions are provided in the Appendix. Year and industry dummy variables are omitted from the table.

Table 4: Results of Logistic Regression Analysis - Related, Semi-Related, and Unrelated Acquisitions

The dependent variable for Model 2 is 1 for related acquisitions, where the target and acquirer share the same first two or more digits of their primary SIC codes and 0 otherwise. For Model 3 it is set to 1 for acquisistions where the acquirer and target share the same 1-digit primary SIC code but a different 2-digit SIC code and 0 otherwise. The dependent variable for Model 4 is set to 1 for acquisitions where there is no match at the first digit of the primary SIC code and 0 otherwise. P-values of less than 0.05 are in bold; p-values between 0.10 and 0.05 are in italix.

	Hypotheses/	Model 2: Related		Model 3: Semi-Related		Hypotheses/	Model 4: Unrelated	
Variables	Predictions	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Predictions	Estimate	Pr > ChiSq
Governance								
BOARD	H2 (+)	0.466	*0.095*	-0.876	**0.015**	H2 (-)	0.277	0.330
OUTSIDE DIRECTORS	H2 (+)	-0.841	**0.040**	1.485	**0.018**	H2 (-)	-0.048	0.910
E	H2 (+)	0.121	**0.004**	0.170	**0.002**	H2 (-)	-0.224	**<0.001**
Expert Power								
CEO_TENURE	H4 (-)	-0.130	*0.060*	0.028	0.761	H4 (+)	0.094	0.190
NUM_POSITIONS	H4 (-)	0.036	0.174	-0.024	0.485	H4 (+)	-0.020	0.464
Prestige Power								
ELITE	H4 (-)	-0.187	*0.094*	-0.146	0.317	H4 (+)	0.295	**0.011**
OTHERBOARDS	H4 (-)	-0.004	0.965	0.135	0.322	H4 (+)	-0.086	0.401
Structural Power								
CHAIR	H6 (+)	0.227	*0.079*	-0.658	**<0.001**	H6 (-)	0.252	*0.066*
Owernship Power								
SHROWN	H8 (+)	-2.215	0.424	5.691	*0.081*	H8 (-)	-0.660	0.820
FOUNDER	H8 (+)	0.466	**0.025**	-0.477	0.117	H8 (-)	-0.253	0.249
Control Variables								
MOMENTUM		-0.030	0.779	0.417	**0.003**		-0.250	**0.035**
SALESGROWTH		0.105	0.588	-0.170	0.499		-0.086	0.694
LEVERAGE		0.005	0.934	0.113	0.117		-0.098	0.116
BTM		0.676	**0.008**	-0.143	0.673		-0.782	**0.007**
SIZE		-0.184	**0.001**	0.120	0.075		0.077	0.155
CASHLEV		-1.396	**0.008**	2.159	**0.001**		0.032	0.952
FIRMAGE		0.040	0.616	0.137	0.198		-0.093	0.261
STOCK		-0.329	0.108	0.157	0.585		0.331	0.112
HOSTILE		-0.183	0.776	0.077	0.916		0.259	0.717
PUBLIC		0.480	**0.002**	-0.007	0.974		-0.511	**0.002**
TOTAL_DIV		-0.272	*0.051*	1.101	**<0.001**		-0.348	**0.017**
INTERCEPT		-0.130	0.573	-0.918	**0.003**		-1.175	**<0.001**
		Chi-Square	Pr > ChiSq	Chi-Square	Pr > ChiSq		Chi-Square	Pr > ChiSq
Likelihood ratio test		264.368	<0.001	321.280	<0.001		177.471	<0.001
Max-Rescaled R^2			0.169		0.248			0.120
Sample Size (total acquisitions)			1954		1954			1954
Related (Model 2), Semi-Related (3), and Unrelated (4)			938		354			662
Other Acquisitions			1016		1600			1292

*Variable definitions are provided in the Appendix. Year and industry dummy variables are omitted from the tables.

Table 5: Results of OLS Regression Analysis - Announcement Period Returns
The dependent variable is the 11-day announcement period return (from day -5 to day +5, where day 0 is the announcement day), adjusted using CRSP's equal-weighted market return. P-values of less then 0.05 are in bold; p-values between 0.10 and 0.05 are in italix.

	Model 5	
Variables	Estimate	Pr > ChiSq
Governance		
BOARD	-0.003	0.783
OUTSIDE_DIRECTORS	-0.003	0.816
E	0.000	0.995
Expert Power		
CEO_TENURE	0.006	**0.034**
NUM_POSITIONS	0.001	0.368
Prestige Power		
ELITE	0.002	0.584
OTHERBOARDS	-0.007	*0.075*
Structural Power		
CHAIR	-0.009	*0.079*
Owernship Power		
SHROWN	0.074	0.587
FOUNDER	-0.022	**0.042**
Control Variables		
MOMENTUM	-0.004	0.485
SALESGROWTH	-0.003	0.776
LEVERAGE	0.000	0.899
BTM	-0.004	0.700
SIZE	-0.001	0.634
CASHLEV	-0.010	0.630
FIRMAGE	-0.003	0.353
STOCK	0.004	0.649
HOSTILE	-0.017	0.307
PUBLIC	-0.019	**0.002**
UNRELATED	0.005	0.233
SEMI-RELATED	0.001	0.811
TOTAL_DIV	-0.001	0.819
INTERCEPT	0.022	**0.005**
	F-Value	Pr > F
Analysis of Variance	1.660	0.006
Ajusted R^2		0.013
Sample Size (total firms)		1954

*Variable definitions are provided in the Appendix. Year and industry dummy variables are omitted from the table.

RAILWAY CORPORATE GOVERNANCE IN A FREE-FUNCTIONING FREIGHT TRANSPORT MARKET: A SOUTH AFRICAN POSITION

*W J Pienaar**

Abstract

Defining the economic role of rail freight transport in the national transport system of South Africa should be one of the basic ingredients of both an economically rational transport policy and the effective functioning of Transnet Freight Rail. In the interest of the national economy and in its own commercial interest, Transnet Freight Rail must only specialise in those fields where it can provide services tailored to the needs of customers at prices which are competitive and defensible in terms of economic principles. The institutional framework governing Transnet Freight Rail's operations should create an environment conducive to the management of its operations as a fully competitive and profit-oriented business by:

- fostering a competitive freight transport market;
- providing any required socio-economic rail services under special agreements;
- Transnet's board of directors defining management objectives and granting real management autonomy to Transnet Freight Rail; and
- Transnet Freight Rail defining clear and adequate performance indicators for itself.

On the basis of these conditions, this paper outlines a governance structure under which Transnet Freight Rail as a public corporation can operate within a climate of free and effective competition.

Keywords: economic regulation; freight rail transport; transport policy; vertical separation

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1. Introduction

The economic regulation of land freight transport in South Africa was terminated on 31 March 1990. Until that date the South African Transport Services (the then national railway operator) had a social obligation to operate as a common carrier. Under the terms of the Legal Succession to the South African Transport Services Act of 1989 ('the Act'), Transnet Limited, the holding company of Transnet Freight Rail, came into being on 1 April 1990. From its inception in 1990, Transnet Freight Rail was relieved of any social common carrier obligations. Under the terms of the Act, Transnet Freight Rail is empowered to operate as a profit-oriented division of Transnet Limited and as the only national rail freight carrier.

Today, 20 years after the economic deregulation of land freight transport, the increase in the number of freight vehicles conducting long-distance haulage on South Africa's intercity road network is receiving substantial attention. This attention usually focuses on (1) the great number of commercial vehicles; (2) their large size; (3) their huge mass (and that of their loads); and (4) the external costs they cause. These points – either individually or collectively – often lead to allegations that road freight carriers, firstly, do not pay in full for the road pavement damage and external costs that they cause, and secondly, unduly deprive Transnet Freight Rail of much of its business (Pienaar, 2003:18).

Investigations conducted in South Africa, however, have demonstrated that these allegations are often not true – or not as severe as asserted. In addition, the organised road transport industry has on several occasions expressed its willingness to pay a due price (and not excessive and misdirected indirect taxes) for road usage. Nevertheless, insinuations persist that long-distance road freight haulage is of a somewhat unsavoury economic nature, and that strict economic re-regulation of land freight transport in favour of rail transport is necessary (Stander and Pienaar, 2002:27; Stander and Pienaar, 2005:16).

Defining the economic role of rail freight transport in the national transport system of South Africa should be one of the basic ingredients of an economically rational transport policy and the effective functioning of Transnet Freight Rail. In the interest of the national economy and in its own commercial interest, Transnet Freight Rail should only specialise in those fields where it can provide services tailored to the needs of customers at competitive prices. The question addressed by this

research, therefore, is: what changes in the institutional and regulatory structures are necessary for Transnet Freight Rail to remain viable?

2. Transnet Freight Rail and national transport policy

To pursue the maximisation of welfare in South Africa, the principal objective of national transport policy should be to achieve effective competition among the various carriers and modes of freight transport. Competition is the medium for attaining the principal objectives that a transport system is meant to achieve. First, competition will best promote economic growth in both the domestic and foreign trade sectors of the country's economy. Second, it will provide the discipline needed to develop and enforce the kinds of rational investment policies that will provide effective transport services in the most efficient manner.

To achieve these objectives, it is essential to pursue two critical policies: economic deregulation and intermodal equity. The economically rational distribution of traffic among the different modes of transport within a free freight transport market implies that the various carriers of all modes of transport should provide full cost coverage for all the economic resources that they require, such as, for example, the provision and maintenance of the infrastructure they use.

The reform of transport policy in developed and developing countries suggests that free operation of the freight transport market guarantees a more efficient and economically rational traffic allocation among modes of transport and provides rail transport with the best opportunities for traffic development. Therefore, in this free operation of the freight transport market, Transnet Freight Rail, under the custodianship of its board of directors, which act as delegates of the Minister of Public Enterprises, should be the sole entity to define the kind of transport services it offers to customers or to freely negotiate special agreements with its major customers.

The best prospects for a sound development of freight rail transport activity will be offered within the framework of a free-functioning transport market, in which, among other things:

- Transnet Freight Rail is in active competition with the carriers of the other transport modes, the customers being totally free to choose the mode of transport and carrier they prefer.
- The various carriers within all modes of transport provide total coverage of the cost of provision and upkeep of infrastructure they use, and the external cost or negative externalities that they impose on the community.
- Transnet Freight Rail freely determines the form of services it offers to its customers, and freely fixes, according to the market situation and its actual cost and cost structure, defensible tariffs for services, or freely negotiates specific agreements with major customers.
- The provision of possible social services by Transnet Freight Rail demanded by Government is carried out within the framework of specific agreements between Government and Transnet Freight Rail, with effective payment by Government that assures the profitability of traffic.

Therefore, the institutional framework governing Transnet Freight Rail's operations should create an environment conducive to the management of its operations as a fully competitive business by:

- fostering a competitive freight transport market;
- providing socio-economic rail services under concessionary agreements; and
- Transnet's board of directors defining management objectives and granting real management autonomy to Transnet Freight Rail, and Transnet Freight Rail defining clear and adequate performance indicators for itself.

Fostering a competitive transport market

Freight rail transport is a commercial activity, which means that Transnet Freight Rail should be managed along business lines, and in active competition with other transport modes. In a competitive transport market customers have total freedom to choose among the various transport modes and operators. This means that there can be no mandatory allocation of traffic. Transnet Freight Rail freely determines the configuration of its commercial services in reference to its own commercial interest. It also freely sets tariffs, or, as is appropriate, freely negotiates special contracts with major customers. Under these terms, (1) all transport operators must bear the resource costs of all inputs that they use and consume, and pay for all external costs that they impose on the community; and (2) the 'public service' concept should be strictly confined to those activities undertaken at Government's request and performed under special concessionary agreements (Huff, Barber and Thompson, 1990:3).

The aim of Transnet Freight Rail (as a commercial enterprise) to recover its full costs requires that users collectively pay the total cost of service. The upper tariff limit is determined by the value of the service – i.e. what the traffic is willing to bear. The lower limit of the tariffs is equivalent to the short-run marginal cost – in practice the direct cost or the cost that will be avoided if the service is not rendered.

The 'user-pays' principle, which is associated with economic rationalism, and the aim of Transnet Freight Rail to recover its full costs, demand that the user pays the total cost of the service. This principle ignores the pursuit of economic efficiency, which cannot be divorced from marginal-cost pricing. The Ramsey pricing principle addresses this problem. This principle takes into account the marginal cost of providing a service as well as the extent to which demand for the service will respond to changes in its

price – or the price elasticity of demand (Ramsey, 1927:61).

Each rate thus covers the direct costs incurred in rendering the service, and contributes to a greater or lesser extent to the indirect costs. The outcome is to maximise the traffic and the consumer surplus. Obviously, differential or Ramsey pricing will yield enough revenue to cover full costs if the demand is sufficiently price-inelastic for some services to enable their contribution to the indirect costs to compensate for the amounts below average costs yielded by the services for which the demand is price-elastic (Baumol and Bradford, 1970:283).

Strict application of short-run marginal-cost pricing will lead to financial losses in certain corridors even though there may be improved efficiencies. This is clearly unacceptable if Transnet Freight Rail is to be commercially viable. Therefore, one needs to find ways of recouping total costs without distorting too much the allocative efficiency of marginal-cost pricing. Ramsey pricing suggests that where short-run marginal-cost pricing is unable to generate sufficient revenues to cover a certain required revenue target, then it is economically most efficient to raise the extra revenue required from different users in inverse relation to their price elasticity of demand for rail services – in effect, by charging on the basis of willingness to pay. Such a policy will have the least impact on the pattern of demand and output that would have prevailed under pure marginal-cost pricing. This way the allocative efficiency is least distorted.

In so far as Transnet Freight Rail is the sole freight rail operator in South Africa, it has the rail monopoly. However, there are alternative modal substitutes for Transnet Freight Rail's product. Therefore, from a competitive intermodal viewpoint, Transnet Freight Rail is not a monopoly. The market dominance that Transnet Freight Rail has on its coal and iron-ore export lines is the result of economies of scale, enhanced by long-haul economies and economies of density.

Monopolies may be harmful or beneficial to the public interest –

a) A beneficial monopoly is one that succeeds in achieving economies of scale in an industry where the minimum efficiency scale is at a level of production that would mean having to achieve a large share of the total market supply.
b) A monopoly that is not in the public interest is one in which cost efficiencies are not achieved, or are negligible.

In so far as Transnet Freight Rail has monopolistic power(s), it falls under category (a) above – its monopolistic powers are natural. Operating in an economically deregulated environment, Transnet Freight Rail has to be both cost-efficient and service-effective to achieve any natural monopolistic advantages.

The existence of the highly remunerative natural monopolies on the coal and iron-ore export lines should not distort the pricing policies applicable to other lines. The maximum annual amount that can be charged on the export lines depends on the coal and iron-ore exporters' willingness to pay. This is, in turn, dependent on the profitability of iron-ore and coal sellers' exports and on the demand levels within importing countries. Transnet Freight Rail must not only recoup all its costs of outlay within the various mines' lifetimes, but also maximise its profits during these periods. The onus is on the exporters – and not on Transnet Freight Rail – to determine the price elasticity and sensitivity of their overseas coal and iron-ore demand. The influence of this will, of course, be subject to negotiation between Transnet Freight Rail and the abovementioned exporters. A possibility for tariff fixing would be to determine Transnet Freight Rail's total cost to supply the entire service and link the return to the profit margin that the iron-ore and coal exporters themselves manage to realise within a year, thereby creating mutually beneficial situations on the coal and iron-ore export lines. Realising above-normal surpluses on the coal and iron-ore export lines gives Transnet Freight Rail justified economic power and commercial freedom (without acting against the public interest) to lower tariffs for less remunerative traffic on other lines, on the condition that it at least recovers the short-run marginal cost of all traffic on these less remunerative lines. By doing so Transnet Freight Rail may be in a position to regain economies of scale and price competitiveness on these lines in the short run.

Provision of social rail services under concessionary agreements

Rail services which are likely to be commercially unprofitable in the long run should be abandoned unless Transnet Freight Rail is explicitly requested by Government to provide such services under a social service agreement. Moreover, a special agreement ought to be signed between Government and Transnet Freight Rail for each social service. Such concessions should define the configuration of the service to be provided, and the compensation to cover Transnet Freight Rail's opportunity cost for each individual and ring-fenced service.

Management objectives and autonomy

In order for Transnet Freight Rail to be competitive it is a prerequisite that the company defines its own appropriate performance indicators and, indeed, monitors its operations in accordance with the pursuit of profit. Physical efficiency indicators – for example, the volume of freight carried and distance covered; locomotive and rolling stock availability and utilisation; wagon turnaround times; and staff productivity – constitute valuable measures of management effectiveness in attaining technical efficiency. Benchmarking, for example, has the

potential to point out where the greatest cost efficiencies may be achieved.

Increased efficiency will lower not only unit cost levels, but also marginal cost. In turn, this would enable Transnet Freight Rail to lower its floor (i.e. lower limit) rate levels, thereby most likely increasing its turnover, as well as maximising surpluses earned on any price-capped traffic. In combination, the increased turnover and greater profit margins per unit should increase Transnet Freight Rail's net revenue. Benchmarking should not be construed to mean only measuring efficiency against best rail practice worldwide, but also measuring total service effectiveness (i.e. meeting clients' expectations) against that of Transnet Freight Rail's road transport competitors. However, efficiency and effectiveness are not always indicators of overall performance of a rail transport entity. Therefore, physical indicators of technical efficiency and of service effectiveness should be supplemented by financial profitability measures. Profit is the most powerful performance indicator of an enterprise placed in a competitive environment.

Providing clear management objectives, strengthening incentives (such as profit-sharing schemes) – and holding management accountable to the board of directors for these objectives – and by granting real management autonomy to Transnet Freight Rail should prevent Government interference in day-to-day management. Real management autonomy was in effect institutionalised with the formation of Transnet Limited as a company in 1989, with Transnet Freight Rail as the company's freight rail transport division. The objective was to secure management autonomy, nurture accountability and stimulate business-oriented conduct, as prescribed by the Competition Act (Act 89 of 1998), subject to scrutiny and verification in an external auditing process, as prescribed by the Companies Act (Act 71 of 2008).

3. Management and control of infrastructure

The reform process of railways around the world follows two mainstream trends. One can be called the vertical separation trend and the other the integrated commercialisation trend.

The first trend is characterised by infrastructure services and train operations being separated (Behafy, 1995:20). In this case, infrastructure is then assigned to a new enterprise or authority. This entity, in turn, makes the infrastructure available to operators on commercial conditions. A characteristic of the second trend is that rail transport operation is deregulated and commercialised in its entirety when it comes to prices and supply, but the entity is allowed to continue without being split (*Railway Gazette International*, 1994:85). The latter condition is the status quo in South Africa.

A major objective of vertical separation in the rail transport industry appears to be to encourage market contestability through open access on the railway network. It can be argued that the primary source of strong economies of scale in rail transport lies in its infrastructure; the natural monopoly argument is mitigated because of the split of infrastructure and operation. Where the ownership of rail infrastructure is vested with an independent authority, the operation of rail freight services may, therefore, be seen as a contestable activity (Pienaar and Vogt, 2009: 345).

Considering that Transnet Freight Rail's quest is for countrywide service delivery, integration between rail transport operation and track is imperative for its purposes. In the light of this, branch and main lines must be seen as an integrated system and not in isolation. For this reason, uneconomic branch lines (seen as single business subdivisions) cannot simply be abandoned, given their important role of feeding the main lines. Furthermore, there may be a conflict of interest between the infrastructure authority and the operators in terms of the quality and quantity of service provided. This may be the result of potential differences in priorities.

Changing the status quo could jeopardise Transnet Freight Rail's development and successful implementation of a centrally coordinated national train-operating schedule, a reliable and punctual service programme and the delivery of a high-quality all-round service. Under vertical separation, the adaptation of rail terminals to make them more user-friendly and compatible with intermodal transfer requirements will be out of Transnet Freight Rail's control.

Many reasons for failures or implementation difficulties of vertical separation in freight rail transport are cited by researchers and rail experts. These include complexity, high costs of execution, additional bureaucracy, loss of economies of scale, safety risks and information asymmetries (Amos, 2007:6; Pittman, 2005:181).

Paradoxically, the problems associated with information asymmetries in cases of vertical separation, and the successful processes to address them, lead to close relationships between interested parties. The mooted advantages of vertical separation are then negated by the fact that an industry with a few highly specialised role players and highly integrated operations will require these relationships to be successful (Sanchez, 2001:7). This inevitably leads to cooperation and quasi-reintegration, which limit the role of market forces – in contrast to what was apparently planned in the first years of railway reform (Bouf *et al*., 2005:11; Cowie, 2010:121).

The preceding discussion on the structural split of infrastructure and operations highlights the need for Transnet Freight Rail to retain the integrated commercialisation model for the foreseeable future. Under this model, in the presence of active intermodal competition, infrastructure and operations are merely

treated as separate accounting units, enabling Transnet to identify infrastructure costs and still gain the purported efficiencies achievable with infrastructure divorce.

4. A governance structure for Transnet Freight Rail

From the discussion above it is evident that – comprehensively viewed – the regulation of land transport cannot be the responsibility of a single regulating body.

Whereas Transnet Freight Rail's commercial conduct and business operations are guided by the board of directors of Transnet Limited (subject to scrutiny and verification in an external auditing process prescribed by the Companies Act), its fulfilment of contractual obligations with respect to social services will naturally be monitored and controlled by the Government body which commissions the company to conduct such concessionary services.

Technical and safety regulatory aspects with a view to protecting the public interest are believed to be most effectively regulated by the Department of Transport through traffic legislation, with enforcement duties delegated to a National Rail Safety regulator.

Custodianship of effective competition, for example guarding against harmful and restrictive business practices and pricing malpractice, as prescribed by the Competition Act, should ideally fall within the ambit of the duties of the Competitions Board within the Department of Trade and Industry, in consultation with the Department of Transport, should such malpractices jeopardise the performance of the freight transport system.

In cases where market forces do not provide for the automatic recovery of road-user costs within intermodal rail-road transport competition, external costs and the costs of damage to road infrastructure, the appropriate road-user cost responsibility should be determined by the National Department of Transport in consultation with the National Department of Finance and the different provincial administrations. Full recovery of user-cost responsibility should take place with no cross-subsidisation between private (mostly light) road vehicle users and commercial (mostly heavy) road vehicle users, which may intermodally be competitors of Transnet Freight Rail.

All other matters not covered here should be left to market forces as such. Within a climate of free and workable competition, it is believed that market forces will be conducive to self-regulation to support an efficient, effective and balanced freight rail transport system.

5. Conclusions

The best prospects for a sound development of freight railway activity in South Africa will be offered within the framework of a free-functioning freight transport market in which:

- customers are free to choose the mode of transport and carrier they prefer;
- all transport operators provide complete cost coverage for their social cost obligations;
- Transnet Freight Rail freely determines the form of services it offers and freely fixes tariffs which are competitive and defensible in terms of economic principles;
- Transnet Freight Rail abandons all services which are likely to be commercially unprofitable in the long run, unless it is requested to provide such services under social service agreements according to which Transnet Freight Rail is remunerated in full.

An environment conducive to the management of Transnet Freight Rail's operations as a fully competitive and profit-oriented business requires (1) the definition of clear and adequate performance indicators and the monitoring of operations aimed at measuring financial profitability; and (2) the provision of clear management objectives and incentives for which management can be held accountable to its board of directors.

Upgrading existing roads and the provision of new roads should go ahead whenever it is economically justified and financially viable to do so. In order to support industrial growth, development and competitiveness in South Africa, an equitable road-user charge system should be introduced in the country. Restrictions and enforcement on land freight transport modes should be limited to technical, safety and environmental considerations only. These refer to traffic aspects, such as speeding, overloading, proper loading of freight, the carriage of dangerous and oversized loads, vehicle visibility and roadworthiness, driver alertness and driver training.

As long as Transnet Freight Rail is to remain a public corporation and the sole countrywide freight rail operator, it should retain ownership of the infrastructure it uses. Changing this ownership status quo could jeopardise Transnet Freight Rail's development and successful implementation of a centrally coordinated national freight train operating schedule and a reliable service programme. And under such change of ownership, the adaptation of rail terminals to make them more user-friendly and compatible with intermodal transfer requirements would then be out of Transnet Freight Rail's control.

Within a climate of free and effective competition, market forces will (within the parameters spelt out in this paper) be conducive to self-regulation to support an efficient, effective and balanced land transport system. Harmful business practices that jeopardise the performance of the transport system should fall within the ambit of the Competition Commission, an institution of the Department of Trade and Industry that investigates anti-competitive business practices.

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THE INFORMATION CONTENT OF ECONOMIC VALUE ADDED, RESIDUAL INCOME, EARNINGS AND OPERATING CASH FLOW: EVIDENCE FROM SOUTH AFRICAN INDUSTRIAL SHARES

Pierre Erasmus*

Abstract

Proponents of the value based financial performance measure of Economic Value Added (EVA) argue that it is a major improvement over other traditional measures. This study investigates the relationship between EVA and market-adjusted share returns, and compares it to that of residual income, earnings and operating cash flow. Relative information content tests suggest that earnings have the strongest relationship with share returns. The results from the incremental information content tests indicate that although the EVA components provide statistically significant information content beyond that provided by residual income, the level of significance is low.

Key words: Economic value added; Value based financial performance measures; relative and incremental information content

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1 INTRODUCTION

While proponents of the measure economic value added (EVA) generally report high levels of correlation between the measure and shareholder value creation, other researchers have at times reported conflicting results. This raises the question whether the measure is able to outperform other financial performance measures.

The objective of this study is to investigate the ability of the measure EVA to explain market adjusted share returns for a sample of firms listed in the Industrial Sector of the Johannesburg Securities Exchange (JSE), and to compare it to that of other financial performance measures. In the first phase of the study the relative information content of EVA relative to residual income (RI), earnings before extraordinary items (EBEI) and operating cash flow (CFO) is evaluated. The second part of the study investigates the incremental information content of EVA components, and whether the inclusion of these components contributes significantly to the information content of the other measures. The empirical results indicate that the relative information content of EVA is not greater than that of earnings. From the incremental information content test it becomes clear that EVA components do not add significantly to the information content of earnings.

The remainder of this paper is in five parts. Section 2 provides the theoretical background to the study. Section 3 defines the components of EVA. Section 4 sets out the research method, highlighting the hypotheses, the statistical tests used in the study, the selection of the sample, and a description of the variables. Section 5 provides the main empirical results. Section 6 contains a number of sensitivity analyses. The final section presents the summary and conclusions, as well as possible limitations of the study.

2 BACKGROUND TO THE STUDY

The primary financial objective of a firm should be the maximisation of its shareholders' value (see, for instance, Brigham and Houston, 2001). All management decisions and strategies should contribute to this objective. Management, however, faces the problem of determining what the effect of its actions would be on the firm's shareholder value. Net Present Value (NPV) techniques are often employed to translate management decisions and actions into financial figures, and to evaluate their value creating potential. Projects with positive NPV values contribute to the shareholder value of a firm, while the adoption of negative NPV projects results in a destruction of shareholder wealth (Young and O'Byrne, 2001).

Value based financial performance measures are based on similar concepts as the NPV techniques (Peterson, 2000). Maximising the value based measures should therefore, result in the maximisation of NPV and as such should contribute to the creation

of shareholder value. These measures provide an estimate of a firm's economic profit by incorporating its total cost of capital in its calculation. In those cases where these measures yield positive values, economic profits are generated, and consequently shareholder value is expected to increase. Negative values indicate the destruction of shareholder value (Stewart, 1991; Grant, 2003).

Traditional performance measures exclude a firm's cost of capital, and no provision is therefore made for the opportunity cost on the capital invested by the shareholders (Young and O'Byrne, 2001). Excluding the cost of capital limits the ability of these measures to assess value creation since the cost of the capital investments required to generate earnings are ignored (Lehn and Makhija, 1996). The traditional measures are also based almost exclusively on information obtained from financial statements, which are compiled according to GAAP accounting guidelines. Consequently, these measures are exposed to accounting distortions (Stewart, 1991; Peterson and Peterson, 1996; Ehrbar, 1998). Despite these limitations analysts and investors still widely apply the traditional measures (Stewart, 1991; Ehrbar, 1998). While some studies reported statistically significant relationships with share returns (Peterson and Peterson, 1996), others obtained far weaker results (Black, Wright and Davies, 2001).

A number of different value based financial performance measures have been developed. These measures include a firm's cost of capital in its calculation (Fabozzi and Grant, 2000). Attempts are also made to overcome some of the accounting distortions by adjusting information obtained from the financial statements (Young and O'Byrne, 2001).

Perhaps one of the best known value based performance measures is Economic Value Added (EVA). This measure, which was registered and trademarked by the New York based consulting firm Stern Stewart and Co., has been adopted by a number of the world's largest firms. It enjoys wide media exposure in the popular press, and numerous examples of successful implementations by companies are available (Walbert, 1993; Teitelbaum, 1997).

EVA is an estimate of the economic profit generated by a firm (Stewart, 1994). The difference between an economic and an accounting profit is a capital charge levied on the capital provided to the firm. In accounting profit, only the cost of debt capital is included in the calculation. EVA, on the other hand, considers the costs of all its forms of capital (debt, as well as equity) (Grant, 2003), and compensates all its capital providers accordingly. EVA is based on the concept that shareholder wealth can only be created if a firm earns a return on its capital that exceeds its cost of capital. If this is achieved, the total shareholder value increases, while failure to do so results in shareholder wealth being destroyed. Maximising a firm's EVA should result in an increase in shareholder value created (Stewart, 1991).

According to Stern Stewart, EVA performs better than other financial performance measures in explaining the shareholder wealth that a firm creates (Stewart, 1991; Stewart, 1994). According to them, changes in EVA over a five year period accounts for almost 50% of the changes in market value added (MVA) (Stewart, 1994). A strong relationship was also highlighted by Walbert (1994). Studies carried out by Grant (1996; 2003) conducted regression analyses between EVA-to-capital and MVA-to-capital, and reported statistically significant relationships with R^2's of 0.316 and 0.27 respectively. Bacidore, Boquist, Milbourne and Thakor (1997) also reported significant positive correlations between EVA and abnormal share returns.

Lehn and Makhija (1996) compared EVA to traditional performance measures, and observed higher correlations between EVA and share returns than for any of the other measures investigated. O'Byrne (1996; 1997) concluded that changes in EVA have greater explanatory power than changes in earnings when attempting to explain the variation in share returns. He ascribed the failure of other studies to observe this variation to their ignorance of certain market valuation characteristics with regard to EVA (O'Byrne, 1996). He argued that market valuation multiples for firms with positive EVA values are higher than for firms with negative values, while higher multiples are also assigned to smaller firms. He also identified the shortcomings of other studies as their failure to focus on excess shareholder returns and expected EVA improvements (O'Byrne, 1997; 1999).

Some studies reported mixed results. Chen and Dodd (1997) reported that although significant relationships are found between EVA, EVA components and share returns, the correlations between the measures are low. Even though EVA provides significant information beyond the traditional measures included in their study, they argued that it should not completely replace them. The small differences observed between EVA and RI also gave rise to the question whether the EVA accounting adjustments are necessary (Chen and Dodd, 1997). Farsio, Degel and Degner (2000) observed weak positive relationships when investigating the relationship between share return and EVA calculated for the current financial year, while a negative correlation was observed between the current year's EVA value and the subsequent year's share return (Farsio *et al*., 2000).

Contradictory results, however, have also been reported. Clinton and Chen (1998) found that the majority of the correlations between EVA, share prices and share returns are either negative or insignificant. EVA is also the only one of the measures investigated in their study that did not consistently reveal significant associations with share prices or share returns (Clinton and Chen, 1998). De Villiers and Auret (1998) also concluded that EVA does not offer an advantage over the traditional

measure earnings per share (EPS) in terms of explaining share prices.

Biddle, Bowen and Wallace (1997) also investigated the relationship between EVA and share returns. The purpose of their study was to compare EVA to another value based measure, residual income (RI), as well as two traditional financial measures, earnings before extraordinary items (EBEI) and operating cash flow (CFO). Not only did they focus on the relative information content of EVA, but they also evaluated the incremental information content of the measure. By means of relative information content tests, the ability of EVA to outperform the other measures was evaluated. They also investigated whether components of EVA contribute additional information to that contained in the other measures. The results from the relative information content tests indicated that EVA does not outperform earnings when explaining market-adjusted share returns. Furthermore, the incremental information content tests indicated that the components of EVA only marginally add to the information contained in earnings. A number of sensitivity analyses were conducted, and supported the main results.

Studies following a similar approach to the one applied by Biddle *et al*. (1997) have subsequently been conducted. Conflicting results, however, are reported in these studies. Worthington and West (2004) report that EVA outperforms the other measures when attempting to explain the variation in share returns for Australian firms. Phaliam (2006), however, reports that EVA does not outperform earnings. Little or no relationship between shareholder returns and EVA is observed in his study. Similarly, Erasmus (2008a; 2008b; 2008c) include EVA as part of an analysis of different value based financial performance measures, and report that EVA does not outperform earnings.

South Africa is a developing economy with an established stock market on which shares are more thinly traded than on the US market where Biddle *et al*. (1997) conducted their studies. Information may, therefore, be less freely available in this more confined context. The purpose of the present study is to test to what extent their results may translate into the developing economy environment, and to determine the extent to which the information content of the various measures represents context specific, or more general phenomena.

3 THE COMPONENTS OF EVA

This paper studies the relative and incremental information content of EVA and the measures operating cash flow (CFO), earnings before extraordinary items (EBEI) and residual income (RI). To do so, EVA is partitioned into its contributing components using the approach applied by Biddle *et al*. (1997). To explore the relationships between the various measures, one should commence by defining EBEI, and then discuss all the additional components required to calculate EVA.

According to Biddle *et al*. (1997) a firm's EBEI could be defined as follows:

EBEI = CFO + Accrual,

where:
EBEI = The earnings before extraordinary items and tax.
CFO = The net cash from operating activities.
Accrual = The total operating accruals of the firm.

The difference between EBEI and the net operating profit after tax (NOPAT) is that NOPAT does not take the after-tax interest expense into account, while EBEI does. Therefore:

NOPAT - ATInt = EBEI

where:
ATInt = Interest expense after provision for tax

While EBEI makes provision for the cost of debt by subtracting the interest expense, RI is calculated by deducting the cost of the total (i.e. debt and equity) capital.

RI = NOPAT – (k*Capital)

where:
k = The firm's estimated weighted average cost of capital (WACC)
Capital = The amount of capital invested in the firm at the beginning of the period

Firms that achieve positive RI values are able to generate profits in excess of their total cost of capital, and consequently shareholder value should be created. Negative RI values are an indication that insufficient profits are generated, and as a result, shareholder value could be destroyed.

EVA is calculated in a similar way as RI. The major difference between the two measures relates to a number of adjustments to NOPAT and Capital included in the calculation of EVA. These adjustments are included with a view to removing some of the accounting distortions identified by Stewart (1991).

$EVA = (NOPAT + AcctAdj_{op}) – [k*(Capital + AcctAdj_{c})]$

where:
$AcctAdj_{op}$ = Adjustments to remove the accounting distortions from operating profit
$AcctAdj_{c}$ = Adjustments to remove the accounting distortions from capital

Based on these definitions, EVA may be presented as follows (Biddle *et al*., 1997):

EVA = CFO + Accrual + ATInt – CapChg + AcctAdj

where:

CapChg = k*Capital

AcctAdj = $AcctAdj_{op} – (k*AcctAdj_c)$

The relationship between the EVA components is summarised in Figure 1 (Biddle *et al*., 1997):

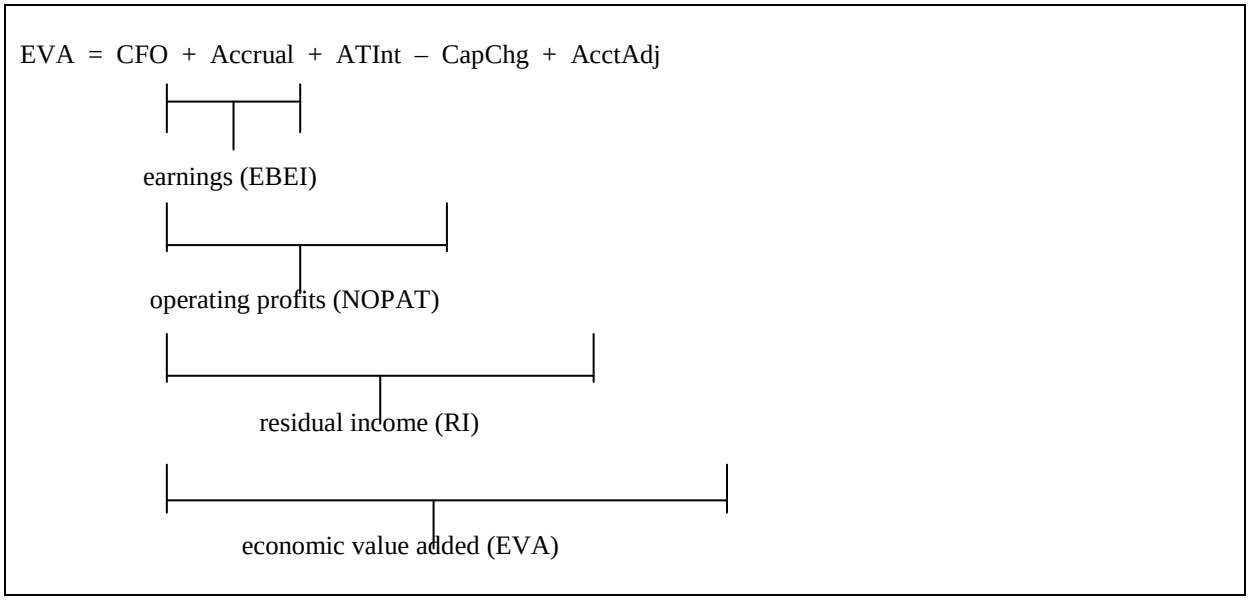

Figure 1. Components of economic value added (EVA)

4 RESEARCH METHOD

4.1 HYPOTHESES

The information content of a financial measure refers to the additional information that the market deduces from its publication and incorporates into the expected future financial performance of the firm. In order to evaluate the relative and incremental information content of the measures EVA, RI, EBEI and CFO, an approach developed by Biddle *et al*. (1997) is applied. According to this approach, relative information content comparisons should be used when different measures are compared in terms of their information content, or when a choice of only one of the measures is required. Incremental information content comparisons are used to determine whether one measure provides additional information over and above that provided by another.

To investigate the relative information content of the measures, the following null hypothesis is formulated (Biddle *et al*., 1997):

H_{REL}: The information content of measure X_1 is equal to that of X_2

where X_1 and X_2 are pairwise combinations of the measures EVA, RI, EBEI and CFO. Rejection of the null hypothesis indicates a statistically significant difference in the information content of the measures.

In order to investigate the incremental information content of the measures, the following break-down of EVA is used:

EVA = CFO + Accrual + ATInt – CapChg + AcctAdj

The following null hypothesis is formulated (Biddle *et al*., 1997):

H_{INC}: Component X_1 does not provide information content beyond that provided by the remaining components X_2-X_5

where X_1-X_5 are the EVA components CFO, Accrual, ATInt, CapChg and AcctAdj. Pairwise comparisons of the components are conducted to evaluate the incremental information content. Rejection of the null hypothesis indicates that the inclusion of the component under investigation will contribute significant additional information content.

4.2 STATISTICAL TESTS

When assessing the information content of a measure, the statistical significance of the slope coefficient b_1 from the following ordinary-least squares regression is examined (Biddle *et al*., 1997):

$$D_t = b_0 + b_1 FE_{Xt} / MVE_{t-1} + e_t \quad (1)$$

where D_t (the dependent variable) is a measure of return for time period t; FE_{Xt} / MVE_{t-1} is the unexpected realisation (or forecast error) of the measure X (FE_{Xt}), divided by the

market value of the firm's equity at the beginning of the financial year (MVE_{t-1}); while e_t is a random disturbance term.

The unexpected realisation of the measure X for time period t is defined as the difference between the observed value of the measure (X_t) and the market's expected value of the measure ($E(X_t)$):

$$FE_{Xt} = X_t - E(X_t) \quad (2)$$

Assuming that the market's expected value is formed according to a discrete linear stochastic process in autoregressive form, $E(X_t)$ may be defined as:

$$E(X_t) = \delta + \phi_1 X_{t-1} + \phi_2 X_{t-2} + \phi_3 X_{t-3} + \ldots \quad (3)$$

where δ is a constant and the ϕ's are the autoregressive parameters. Substituting Equations (2) and (3) into Equation (1) yields:

$$D_t = b_0 + b_1 [X_t - (\delta + \phi_1 X_{t-1} + \phi_2 X_{t-2} + \phi_3 X_{t-3} + \ldots)] / MVE_{t-1} + e_t =$$

$$b_0' + b_1' X_t / MVE_{t-1} + b_2' X_{t-1} / MVE_{t-1} + b_3' X_{t-2} / MVE_{t-1} + b_4' X_{t-3} / MVE_{t-1} + \ldots + e_t \quad (4)$$

where $E(b_0') = b_0 - b_1 \delta$, $E(b_1') = b_1$, and $E(b_i') = -b_i \phi_{i-1}$ for $i > 1$. Equation (4) provides the relationship between abnormal returns (D_t), and the lagged measures of accounting performance (X) scaled by MVE. For the purpose of this study, Equation (4) is limited to one lag:

$$D_t = b_0' + b_1' X_t / MVE_{t-1} + b_2' X_{t-1} / MVE_{t-1} + e_t \quad (5)$$

4.2.1 TESTS FOR RELATIVE INFORMATION CONTENT

The relative information content of the four measures EVA, RI, EBEI and CFO is assessed by means of a statistical test developed by Biddle, Seow and Siegel (1995). The four independent variables are included in individual regressions against the dependent variable:

$$D_t = b_0 + b_1 X_t / MVE_{t-1} + b_2 X_{t-1} / MVE_{t-1} + e_t \quad (6)$$

where D_t is the market-adjusted return on a firm's shares for time period t, X is one of the measures EVA, RI, EBEI and CFO, and MVE is the market value of the firm's equity.

According to the test, six pairwise comparisons of the individual regressions' R^2 values are conducted. Statistically significant differences between two R^2 values result in the rejection of the null hypothesis H_{REL}. This indicates a statistically significant difference in the ability of the two measures under investigation to explain the variation in the dependent variable (Biddle *et al*., 1997).

4.2.2 TESTS FOR INCREMENTAL INFORMATION CONTENT

In order to evaluate the incremental information content of the EVA components, the following regression is conducted (Biddle *et al*., 1997):

$$D_t = b_0 + b_1 X_t / MVE_{t-1} + b_2 X_{t-1} / MVE_{t-1} + b_3 Y_t / MVE_{t-1} + b_4 Y_{t-1} / MVE_{t-1} + e_t \quad (7)$$

where X and Y are two different EVA components (CFO, Accrual, ATInt, CapChg, AcctAdj). The individual regression coefficients are assessed by means of t-tests to investigate the contribution of the component. F-tests are used to assess the following joint null hypotheses:

H_{0X}: $b_1 = b_2 = 0$
H_{0Y}: $b_3 = b_4 = 0$

Rejection of the null hypotheses indicates that the inclusion of a component provides significant incremental information.

4.3 SAMPLE SELECTION

The research sample for this study consists of industrial shares on the JSE over the period 1991 to 2005. The information required to calculate the measures investigated in this study was obtained from the McGregor BFA Database (2005). In the case of companies that were still listed in 2005, annual EVA, WACC and standardised financial statement values were downloaded from the database. No EVA and WACC values were maintained in the database for those companies that delisted during the research period. Consequently, these values were calculated by the authors using the same method as that employed in the database.

The research covers 15 years, from 1991 to 2005. All firms listed in the Industrial Sector of the Johannesburg Securities Exchange (JSE) during this period were included in the sample. The research method requires complete data for at least two consecutive years, and only those firms that provided this information are included in the sample. After the exclusion of 22 firms that did not provide the complete required data, a total of 329 firms providing a total of 3039 complete observations were included.

Following Biddle *et al*. (1997), those observations in excess of eight standard deviations from the median are classified as extreme outliers, and consequently 48 observations were removed from the sample. Both the dependent and independent variables are also winsorised to ± four standard deviations from the median. The final sample consisted of 328 firms with 2991 observations.

4.4 DEPENDENT VARIABLE

The relative and incremental information content tests applied in this study focus on the relationship between the independent variables and the unexpected return generated on a firm's shares. In order to estimate the unexpected return, the market adjusted return is calculated (Biddle *et al*., 1997). This value indicates whether a firm over- or under performed relative to the overall market.

MktAdjRet The market adjusted return is calculated as the difference between the 12-month compounded return on a share and the 12-month compounded return on the ALSI index. These returns are calculated for a period ending three months after the end of a firm's financial year-end to ensure that the information contained in the financial statements is reflected in the share prices.

4.5 INDEPENDENT VARIABLES

The measures CFO, EBEI, RI and EVA included in the relative information content tests, as well as the five EVA components CFO, accruals, after-tax interest expense, capital charge and accounting adjustments required for the incremental information content tests, are calculated from the standardised financial statement data obtained from the BFA database (2005). In the case of listed firms EVA, cost of capital and invested capital values are also obtained from the database. Since these values are not available for firms that delisted during the period under review, they are calculated by the authors using the same method as that employed in the database.

To reduce heteroscedasticity in the data, all the independent variables are divided by the market value of equity as measured three months after the beginning of the financial year (MVE_{t-1}) (Biddle *et al*., 1997). This period is chosen to correspond with the period over which the dependent variable is calculated.

5 EMPIRICAL RESULTS

5.1 RELATIVE INFORMATION CONTENT TESTS

The descriptive statistics of the winsorised variables included in the relative information content tests pooled across time are provided in Table 1.

Table 1. Descriptive statistics on the dependent and independent variables in the relative information content tests

	Descriptive statistics				
	Dependent Variable	**Independent Variables**			
	MktAdjRet	**EBEI**	**EVA**	**RI**	**CFO**
Mean	0.122	0.187	-0.161	-0.101	0.282
Median	0.011	0.119	-0.021	0.001	0.144
Std. Dev.	0.758	0.538	0.605	0.518	0.651
	Correlations				
	Dependent Variable	**Independent Variables**			
	MktAdjRet	**EBEI**	**EVA**	**RI**	**CFO**
MktAdjRet	1.000				
EBEI	0.293***	1.000			
EVA	0.117***	0.324***	1.000		
RI	0.157***	0.440***	0.858***	1.000	
CFO	0.176***	0.474***	0.008	0.029	1.000

Notes:
All the variables are winsorised at ± four standard deviations from the median values. All the independent variables are size-adjusted by dividing them by the market value of the equity as measured three months after the beginning of the financial year.
*** Significant at the 1% level

CFO exhibits the largest mean and median values, followed by EBEI, RI and EVA. In the case of EVA and RI, the median values are close to zero. To investigate the behaviour of the measures over time, the median values of the four measures are plotted in Figure 2.

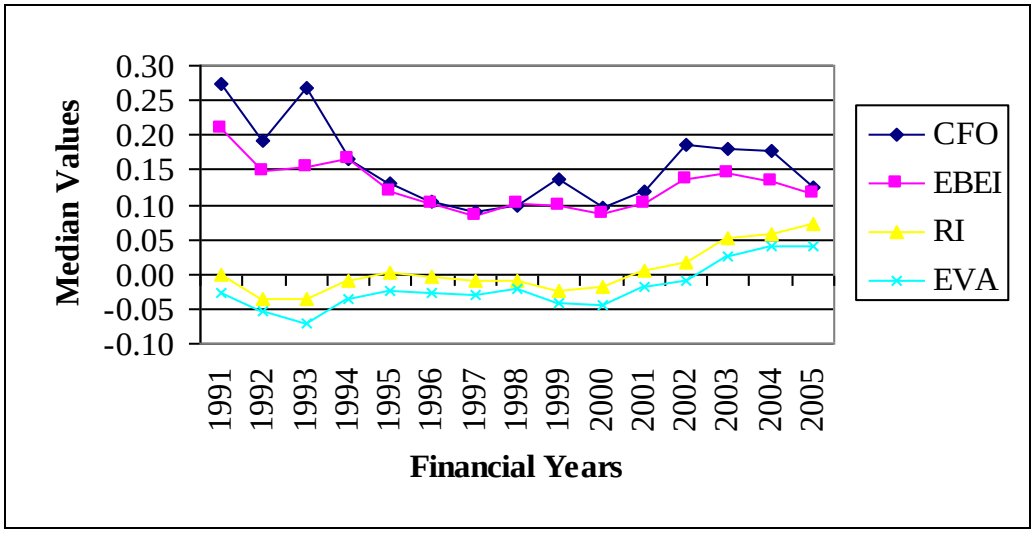

Figure 2. Median values of the size-adjusted measures CFO, EBEI, RI and EVA from 1991 to 2005

The median EVA values from 1991 to 2002 are all negative, while the last three years exhibit increasing positive values. The majority of the median RI values are negative during the period 1991 to 2002 (eight negative values versus four positive), and are also followed by increasing positive values over the last three years. In a competitive economy, most firms struggle to generate returns in excess of their costs of capital (Biddle *et al*., 1997). The period 1991 to 2002 exhibits this pattern.

In accordance with the patterns reported by Biddle *et al*. (1997), statistically significant positive correlations are found between most of the measures. The correlations between CFO, and EVA and RI, however, are not statistically significant. The highest correlation is between EBEI and *MktAdjRet*.

The relative information content of the four measures EBEI, CFO, RI and EVA are evaluated by conducting four separate regressions based on Equation (6), and comparing their R^2s. The results from the relative information content tests are provided in Table 2.

Table 2. Tests of the relative information content of EVA, residual income, earnings and operating cash flow

Relative information content								
Rank order of R^2	**Observations**	**(1)**		**(2)**		**(3)**		**(4)**
Panel A: Coefficient of positive and negative values of each performance measure constrained to be equal [a]								
All firms	**2543**	**EBEI**	**>**	**RI**	**>**	**CFO**	**>**	**EVA**
Adj. R^2		0.0758		0.0348		0.0257		0.0253
Panel B: Coefficient of positive and negative values of each performance measure allowed to differ [b]								
All firms	**2543**	**RI**	**>**	**EBEI**	**>**	**EVA**	**>**	**CFO**
Adj. R^2		0.0910		0.0851		0.06718		0.0372

Notes:

[a] In Panel A, the regression based on Equation (5.2) is conducted, where: $D_t = b_0 + b_1 X_t / \text{MVE}_{t-1} + b_2 X_{t-1} / \text{MVE}_{t-1} + e_t$. D_t is the market-adjusted return for period t, X is one of the four measures CFO, EBEI, RI and EVA, and MVE is the market value of the equity three months after the beginning of the financial year.

[b] In Panel B, the regression used in Panel A is adjusted to allow different coefficients for positive and negative values of the independent variable. The regression based on Equation (5.3) is conducted, where: $D_t = c_0 + c_1 X_{t;\text{pos}} / \text{MVE}_{t-1} + c_2 X_{t;\text{neg}} / \text{MVE}_{t-1} + c_3 X_{t-1;\text{pos}} / \text{MVE}_{t-1} + c_4 X_{t-1;\text{neg}} / \text{MVE}_{t-1} + e_t$. D_t is the market-adjusted return for period t, X is one of the four measures CFO, EBEI, RI and EVA, and MVE is the market value of the equity three months after the beginning of the financial year.

Panel A of Table 2 contains the adjusted R^2 values of the four separate regressions. The measures are arranged in decreasing sequence based on their R^2 values. EBEI has a significantly higher adjusted R^2

value (0.0758) than the other measures. It is followed by RI (0.0348), CFO (0.0257) and EVA (0.0253). In terms of information content, EBEI, therefore, outperforms the other measures.

According to Hayn (1995), Burgstahler and Dichev (1997) and Collins, Pincus and Xie (1997) profitable firms exhibit larger earnings responses than loss-making firms. O'Byrne (1997) also recommends a distinction between positive and negative EVA values. The tests for relative information content are repeated after allowing different coefficients for positive and negative values:

$$D_t = b_0 + b_1 X_{t;\text{pos}} / \text{MVE}_{t-1} + b_2 X_{t;\text{neg}} / \text{MVE}_{t-1} + b_3 X_{t-1;\text{pos}} / \text{MVE}_{t-1} + b_4 X_{t-1;\text{neg}} / \text{MVE}_{t-1} + e_t \quad (7)$$

The results from these regressions are provided in Panel B of Table 2. All the measures exhibit higher adjusted R^2 values. RI experienced the largest increase (0.0348 to 0.0910), and exhibits the highest value compared to the other measures. It is followed by EBEI (0.0851), EVA (0.0672) and CFO (0.0372).

5.2 INCREMENTAL INFORMATION CONTENT TESTS

The descriptive data of the winsorised EVA components included in the incremental information content tests pooled across time are provided in Table 3.

Table 3. Descriptive statistics on the dependent and independent variables in the incremental information content tests

	Descriptive statistics					
	Dependent Variable	**Independent Variables**				
	MktAdjRet	**CFO**	**Accruals**	**ATInt**	**CapChg**	**AccAdj**
Mean	0.122	0.282	-0.069	0.082	0.372	-0.061
Median	0.011	0.144	-0.020	0.026	0.166	-0.016
Std. Dev.	0.758	0.651	0.597	0.170	0.645	0.303
	Correlations					
	Dependent Variable	**Independent Variables**				
	MktAdjRet	**CFO**	**Accruals**	**ATInt**	**CapChg**	**AccAdj**
MktAdjRet	1.000					
CFO	0.176***	1.000				
Accruals	0.058***	-0.492***	1.000			
ATInt	0.080***	0.237***	-0.085***	1.000		
CapChg	0.137***	0.444***	-0.033	0.616***	1.000	
AccAdj	-0.028	-0.027	-0.022	-0.198***	-0.152***	1.000

Notes:
All the variables are winsorised at ± four standard deviations from the median values. All the independent variables are deflated by the market value of the equity as measured three months after the beginning of the financial year.
*** Significant at the 1% level

The mean and median values of both Accruals and AccAdj are negative. This is consistent with the smoothing effect of these components on CFO (Biddle *et al*., 1997). The significant negative correlation between CFO and Accruals could be attributed to the same reason. The correlation between CFO and AccAdj is also negative, but not statistically significant. Statistically significant positive correlations are found between CFO, ATInt and CapChg. According to Biddle *et al*. (1997), firms with higher CFO also have higher debt and equity costs. The highest correlation is between CFO and *MktAdjRet*.

The incremental information contents of the EVA components are evaluated by conducting the following regression:

$$\textit{MktAdjRet}_t = b_0 + b_1 \text{CFO}_t / \text{MVE}_{t-1} + b_2 \text{CFO}_{t-1} / \text{MVE}_{t-1} + b_3 \text{Accrual}_t / \text{MVE}_{t-1} + b_4 \text{Accrual}_{t-1} / \text{MVE}_{t-1} + b_5 \text{ATInt}_t / \text{MVE}_{t-1} + b_6 \text{ATInt}_{t-1} / \text{MVE}_{t-1} + b_7 \text{CapChg}_t / \text{MVE}_{t-1} + b_8 \text{CapChg}_{t-1} / \text{MVE}_{t-1} + b_9 \text{AcctAdj}_t / \text{MVE}_{t-1} + b_{10} \text{AcctAdj}_{t-1} / \text{MVE}_{t-1} + e_t \quad (8)$$

The results of the incremental information content tests are provided in Table 4.

Table 4: Tests of incremental information content of EVA components: CFO, operating accruals, after-tax interest, capital charge, accounting adjustments

	Obs.	Constant	CFO_t	CFO_{t-1}	$Accrual_t$	$Accrual_{t-1}$	$ATInt_t$	$ATInt_{t-1}$	$CapChg_t$	$CapChg_{t-1}$	$AccAdj_t$	$AccAdj_{t-1}$
Adj. R^2	0.0597											
Predicted signs:			+	-	+	-	-	+	-	+	+	-
Regression coefficient[a]	2662	0.0461	0.29049	-0.03021	0.25265	-0.07615	-0.21327	0.57654	-0.00226	-0.01581	0.00161	-0.06236
t-stat		2.69	9.41***	-0.94	8.48***	-2.39**	-1.38	3.64***	-0.05	-0.33	0.03	-1.24
F-stat			48.08		36.01		8.28		0.16		0.78	
p-value [b]			(<0.0001)		(<0.0001)		(-0.0003)		(-0.8542)		(-0.4567)	

Notes:

[a] The regression based on Equation (5.4) is conducted: $MktAdjRet_t = d_0 + d_1\ CFO_t / MVE_{t-1} + d_2\ CFO_{t-1} / MVE_{t-1} + d_3\ Accrual_t / MVE_{t-1} + d_4\ Accrual_{t-1} / MVE_{t-1} + d_5\ ATInt_t / MVE_{t-1} + d_6\ ATInt_{t-1} / MVE_{t-1} + d_7\ CapChg_t / MVE_{t-1} + d_8\ CapChg_{t-1} / MVE_{t-1} + d_9\ AcctAdj_t / MVE_{t-1} + d_{10}\ AcctAdj_{t-1} / MVE_{t-1} + e_t$. D_t is the market-adjusted return for period *t*, while the independent variables are the EVA components (CFO, accruals, after-tax finance cost, capital charge and accounting adjustments). MVE is the market value of equity three months after the start of the financial year.

[b] *p*-values in parentheses represent non-directional *F*-test of the null hypothesis of no incremental information content (Hypothesis H_{INC})

*** Significant at the 1% level

** Significant at the 5% level

Perusal of Table 4 indicates that the regression coefficients of the current year's CFO (CFO_t), both the current and previous years' accrual values ($Accrual_t$ and $Accrual_{t-1}$), and the after-tax interest expense for the previous year ($ATInt_{t-1}$), are all statistically significant at the 0.05 level or better. The coefficients of the other values, however, are not statistically significant. This indicates that the current year's EBEI (consisting of CFO_t and $Accrual_t$), combined with the change in accruals (as represented by $Accrual_{t-1}$), contain the majority of information when attempting to explain the market adjusted returns of a firm.

If the *F*-statistics are considered, it would be seen that CFO, combined with Accruals, provide the largest incremental information contributions. The *F*-statistic for the measure ATInt is also statistically significant at the 0.01 level. CapChg and AccAdj, however, are not statistically significant, and exhibit much lower *F*-statistics (0.16 and 0.78 respectively).

6 SENSITIVITY ANALYSES

6.1 DIVIDING THE SAMPLE INTO SUB-PERIODS

The information content tests are repeated for each individual year from 1992 to 2005. The results from the relative information content tests indicate that EBEI has the largest adjusted R^2 values for seven of the fourteen years, followed by RI for five years and CFO for the remaining two years. Based on the results it appears that EVA does not outperform the other measures in terms of information content.

6.2 FIVE YEAR RETURNS AS DEPENDENT VARIABLE

Stewart (1991; 1994) reports the strongest results over a five-year period. To investigate the effect of a five-year return period, the relative information contents of the measures are evaluated by means of the following regression (Biddle *et al*., 1997):

$$MktAdjRet_{5years} = b_0 + b_1 \sum X_t / MVE_{t-5} + b_2 \sum X_{t-5} / MVE_{t-5} + e_t \quad (9)$$

where $MktAdjRet_{5years}$ is the market adjusted return calculated over the most recent five-year period, $\sum X_t$ is the sum of performance measure *X* over the most recent five-year period, and $\sum X_{t-5}$ is the sum of performance measure *X* over the prior five-year period.

The results of the relative information content tests indicate that EBEI has the highest adjusted R^2 (0.277), followed by the measures RI (0.233), CFO (0.223) and EVA (0.157).

O'Byrne (1996; 1997) reports that changes in EVA have greater explanatory power than changes in earnings when attempting to explain the variation in share returns. To investigate this finding, the tests are also repeated for changes in the measures over the five-year period. Similar results are obtained, with EBEI having the highest adjusted R^2 value (0.273), followed by CFO (0.237), RI (0.218) and EVA (0.206).

6.3 TWO-YEAR RETURNS

To make provision for the possibility that the market takes time to absorb information and that the current EVA values may only be reflected in future share returns, the return interval was extended to a two-year period. The market adjusted return was compounded over the current and the subsequent year, and compared to the measures investigated in the study. The results from the relative information content tests indicate that EBEI has the highest adjusted R^2 value (0.0726) for two-year returns, followed by RI, CFO

and EVA (adjusted R^2 values between 0.0213 and 0.0364).

7 SUMMARY AND CONCLUSIONS

In this study, the information content of the measure EVA was compared to that of the measures RI, EBEI and CFO to determine whether EVA is able to outperform the other measures in explaining share returns. An approach similar to Biddle *et al*. (1997) was applied to a sample of South African industrial firms to evaluate the relative information content of the individual measures, as well as the incremental information content of the EVA components.

The results of the relative information content tests indicated that EVA does not outperform earnings in explaining the variation in the market-adjusted return of a firm's shares. In the majority of the tests, RI also outperformed EVA. This raises the question whether the accounting adjustments required to calculate EVA added significant information. The incremental information content tests indicated that EVA components do not add significant additional information content beyond that contained in earnings. More specifically, it appears that the capital charge and accounting adjustments did not add statistically significant incremental information content at all. Based on the results of the study, claims that EVA outperforms other financial performance measures could, therefore, not be supported.

The results from this study supported those obtained by Biddle *et al*. (1997) for US firms in the majority of cases. The major differences were observed for the results of the incremental information content tests, where only cash from operations, accruals and the after-tax interest payments contributed significant incremental information in the South African context. In the study conducted by Biddle *et al*. (1997), the incremental information contents of all EVA components were significant. Claims that EVA outperforms the other measures were, however, rejected in both studies. In general it would appear that the conclusions of the Biddle *et al*. (1997) study are also applicable in an environment where information flows less freely.

One of the limitations experienced in this study was that a distinction could not be made between those firms that adopted EVA for financial evaluation and remuneration structuring, and those that did not do so. Such information is not available for South African firms.

In future research the focus could be placed on identifying those components of earnings and EVA that contribute to information content. Unfortunately most of the data required to conduct these types of investigations are not available from publicly published sources.

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CHANGES IN BUDGETING

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Abstract

One of the most important issues for companies is how to implement their strategies. Companies implement strategies in a number of ways. Budgeting is described in academia as well as in practice as the corner stone of the management control process through which strategies are implemented. Almost all companies have a budgeting process central to their strategic plans. Yet the usefulness of budgets has generated much criticism and debate in recent years. Many business owners and managers are dissatisfied with budgets. A novel approach is proposed in the literature to displace classical budgeting. This novel approach is termed "Beyond Budgeting." The first part of the paper reviews the challenges that traditional planning and budgeting presents to companies. The second part discusses the novel approach to budgeting. The third part provides examples of companies budgeting practices. The fourth part presents the conditions for a successful implementation of the novel approach.

Keywords: Budgets, Beyond Budgeting, Activity-Based Budgeting

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1. INTRODUCTION

Change in budgeting does not come easily. When the accounting professional accepts dramatic changes, it is either novel or is significant. Such has happened with Beyond Budgeting. Classical budgeting is seen as an ineffective process that is too long, too costly, and does not provide sufficient value to users. Others see it as a bureaucratic process that stiffens innovations.

Neely et al, (2003) summarize criticisms of classical budgeting as follows:

Competitive strategy:

- budgets are rarely strategically focused and are often contradictory;
- budgets concentrate on cost reduction and not on value creation;
- budgets constrain responsiveness and flexibility, and are often a barrier to change;
- budgets add little value – they tend to be bureaucratic and discourage creative thinking.

Business process:

- budgets are time consuming to put together;
- budgets are developed and updated too infrequently – usually annually;
- budgets are based on unsupported assumptions and guesswork; and
- budgets encourage gaming and perverse (dysfunctional) behavior.

Organizational capability;

- budgets do not reflect the emerging network structures that organizations are adopting;
- budgets reinforce departmental barriers rather than encourage knowledge
- sharing; and
- budgets make people feel undervalued;
- budgets strengthen vertical command and control.

Hope and Frazer (2003) point out that such a perspective of budgeting (referred to as "fixed performance contract"):

- leads to only incremental improvements;
- instills fear of failure that could lead to fraud;
- forces managers to focus people on compliance;
- encourages budgetary slacks; and
- encourages myopic decision making that ignores market feedback.

Parmento's study (2003) concludes that budgets with fixed performance contract

"have led to dysfunctional behavior with dire consequences….

behavior that generated many of the recent 'managed earnings' scandals."

Dissatisfaction with any system is reasonable evidence that it is not efficient and usually leads individuals to explore alternatives. One approach advocates improving the budgeting process (The U.S

based Consortium for Advanced Manufacturing-International (CAM-I) Activity-Based Budgeting (ABB), the other advocating abandoning it (The European-based CAM-I) Beyond Budgeting (BB). (See Hansen, Otley, and Van der Stede (2003).

2. THE ACTIVITY-BASED BUDGETING APPROACH

Companies have explored various approaches to improve budgeting including "Activity-Based Budgeting", "zero-base budgeting," "rolling budget," (See Table 1: Better Budgeting Approaches). Zero-base budgeting is an approach in which the budget for each activity is reset to zero. An activity's continuing existence must be justified at each beginning budgeting cycle, before resources can be allocated to it. Rolling budgets, (also called revolving or continuous budgets), tend to have a 12-month time horizon that is updated quarterly. Under the activity-based budgeting approach, there is a shift from traditional product-market, responsibility center or departmental focus to developing budgets from activities.

Table 1. Better Budgeting Approaches

Activity-Based Budgeting	- Similar to activity-based costing (ABC) and activity-based management (ABM) - Involves planning and controlling along the lines of value adding activities and processes - Resource and capital allocation decisions are consistent with ABM analysis, which involves structuring the organization's activities and business processes so that they better meet customers and external needs
Zero Base Budgeting	- Expenditures must be re-justified during each budgeting cycle, rather than basing budgets on previous period - Avoids building on the inefficiencies and inaccuracies of previous history - Value of this approach depends on stability of operating environment shareholder value over time - All expenditure plans evaluated as project appraisals and assessed in terms of shareholder value they will create - Helps to link strategy and shareholder value to planning and budgeting
Profit Planning	Profit 'wheel' method for planning future financial cash flows of profit centers - Assesses whether an organization or unit generates sufficient cash, creates economic value and attracts sufficient resources for investment - Ensures consideration of an organization's short and long term prospects when preparing its financial plans
Rolling Budgets and Forecasts	- Solve problems associated with infrequent budgeting and hence result in more accurate forecasts - More responsive to changing circumstances but requires permanent resources to administer - Also overcomes problems linked to a fixed point in time that is the year-end sand, the often dubious practices that such cut-offs encourage.

Source: Neely et al., (2003)

The ABB approach is described by Hansen, Otley, and Van der Stede (2003) as a two stage process. In stage I, activity-based concepts are used to

"Convert the estimated demand for products and services into activity requirements using activity consumption rates, and then translates activity requirements into resources requirements using resources consumption rates. Once the activity and resource consumption requirements are known, the ABB-approach works to achieve an operational balance between the resources required to fulfill demand and the resource available capacity. If the initial plan leads to an imbalance, the organization can adjust the quantity of demand, resource capacity, resource consumption rates, or activity consumption rates."

In stage II, a financial plan is developed based

"on the operational plan. Financial balance is achieved when the financial plan meets a predetermined financial target. Once the organization knows the demand, activities, and resources, it determines the cost of resources, traces them to activities, and then to products/services….If the initial financial plan is not balanced, the ABB-approach

allows the organization to adjust five possible elements to achieve the budget target: (10 activity and resource consumption rates, (2) resource capacity, (3) resource cost, (4) product/service demand quantity, and (5) product/service price."

However, despite the shift to manage activities, "managing" the year-end rather than supporting medium-term strategy remains still the main focus. Player (2003) concludes:

"most of these "improvements" have been aimed at reducing the costs and increasing the relevance of budgeting. But few have attempted to break free from the fixed-performance contract and the annual trap it creates."

3. THE BEYOND BUDGETING APPROACH

The most accepted and championed idea to date is the CAM-I Europe's Beyond Budgeting Model. The purpose of beyond budgeting is to displace the existing budgeting process. It seeks to avoid the annual performance trap that "involves dysfunctional behaviors that stem from evaluating line managers vis-à-vis budget targets that are set without reference to a credible (outside) source and remain fixed for the next budget year"(Hansen, Otley, and Van der Stede (2003). The rationale is to influence changes in the business organization. This is done through changing corporate culture as governing, value creating, and coordinating. Beyond Budgeting transforms the organization from a central hierarchy, to a network of autonomous units. These organizational changes introduce dispersed responsibilities, and strong values. That is an approach toward autonomy. Beyond Budgeting is based on the idea of greater empowerment of lower-level mangers and spending less time and energy of explaining deviations from fixed budgets. The purpose of the change is to affect the interrelationships, in several ways: implement strategy using the balanced scorecard approach, from bottom-up, to a directional change, and to correct imbalances.

Balanced budgets are not totally novel, in the budgeting area. Analysis shows that Beyond Budgeting is a merging of the various prior budgeting approaches. This merging is not merely an addition, but is a re-engineering of different approaches to the budgeting task. The result is a unique combination of the form. Also, it brings the attributes of the methods into a flexible method. That combination reduces the manipulation (gaming) of budgeting.

Beyond Budgeting covers many aspects of the organization (business). In this over-reaching aspect, it can be considered as an intellectual exercise. The intellectual aspect comes from the challenge of a moving target. That indeed is a challenge, compared to classical budgeting.

Hope and Frazer (2003) present the elements of a relative performance contract as:

- relative targets push employees to outdo themselves;
- rewards based on relative performance give people the confidence to take risks;
- continuous planning focuses people on value creation;
- on-demand allocations of resources minimize costs, and
- decision making, by local units in touch with one another, makes full use of market feedback.

As a result, the reward system should be designed with the following in mind:

- do not base rewards on a fixed performance contract;
- evaluate and reward performance against peers, benchmarks, and principles;
- use a few simple, clear and transparent measures;
- align rewards with strategic goals;
- align rewards with interdependent groups;
- make rewards fair and inclusive.

4. BETTER BUDGERTING PRACTICES

Decades have been spent on efforts to coordinate operations with finance (Joo, 2003). The essence of Beyond Budgeting model is to bring together all the functions of the organization, including research and development, design, finance, operations, logistics, and human resources, and to change their focus from top-down control to bottom-up empowerment. A main contribution of the approach is then the continuous up-to-date information that allows the organization to adapt quickly to changing market conditions and to focus more on customer value creation (Hope and Fraser, 2003). This is a natural attribute of the Beyond Budgeting model. It is likely a main reason why management in practice has been open to the innovations suggested by the Beyond Budgeting (de Waal, 2005).

A recent survey by Libby and Lindsay (2010) found that 46% of the Canadian respondents planned to change or adapt their budgeting systems within the next two years. The reasons given by the respondents (Libby and Lindsay (2010) include:

- preparing budgets is time consuming and the benefits may not be worth the cost;
- the lack of flexibility inherent in budgeting does not fit well with a constantly changing environment;
- budgets can be manipulated and provide incentives for the "wrong' (i.e., self-interested) behavior on the part of the managers;
- budgetary reporting is not meaningful to front-line employees;
- budgeting eliminates the drive for constant improvement; and

- the budget is not aligned with strategy.

These findings are consistent with those of other surveys of practice referenced earlier. In addition, the respondents indicated the types of changes expected to be made:

- incorporate a bottom-up orientation and gather more information from line managers;
- use rolling forecasts;
- better align strategic planning with budgeting;
- prepare less detailed budgets initially and update them regularly using ongoing forecasts.

In the US, Johnson and Johnson, Emerson Electric are examples of successful U.S. companies whose traditional use of budgets lies at the heart of their management control system (Libby and Murray, 2007) (See Table 2. New Tool Box to replace Traditional Budgeting).

In Northern Europe on the other hand, there are many companies that have adopted Beyond Budgeting, most notably, Svenka Handlsbanken, one of the most profitable Scandinavian banks over the last 20 years. Borealis A/S, Park Nicollet Health services, Volvo cars, SKF, Schlumberger are other examples of European successful companies who adopted beyond budgeting model.

Borealis is a European producer of plastics. It abandoned its use of traditional budgeting because it felt the system was time-consuming and was ineffective because of rapidly changing market conditions.

Borealis introduced several tools to replace its budgeting system, including:

- rolling financial forecasts;
- balanced scorecard;
- activity-based costing; and
- decentralized investment management.

Table 2. New Tool Box to replace Traditional Budgeting

Rolling Financial Forecast - Used for financial and tax planning at group level - Updated quarterly, covering next 5 quarters - High level P&L projection, few details - Few people involved - "honest" forecast about what the future holds	**Balanced Scorecard for Performance management** - Corporate objectives are cascaded down into local objectives, which lead to KPIs - "balance" between financial and non-financial , leading and lagging - Scorecard is used for personal target-setting and reporting progress - Focus Is on trends compared to benchmarking based on best performers
Controlling Fixed (Operating) Costs - ABC/M methods used to understand and manage resources - Moving averages replace calendar year focus - Costs, small investments tracked by trends - Everyone is expected to manage within first quartile benchmarks - Capacity management is monitored	**Investment management** - Small investment (below 1 m EUR) Trend reporting Decentralized decision making - Medium (between 1 and 7 m EUR_ Various hurdle rates depending upon resources available Prioritized according to strategic fit - Strategic (above 7 m EUR) Executive board decides

5. CHANGE OR NO CHANGE

Proponents indicate that Beyond Budgeting is the proper model for the next decades. The underlying rationale is that beyond budgeting eliminates a real free-for-all. This elimination includes the annual budget, as well as preliminary meetings and agreements on the budgeting process.

These contributions eliminate contentious meeting with operating units, and accountants (Hope and Frazer, 2003). It moves the authorization to a higher level of management where decisions of this kind are made; that is also the level to make modifications to operations, and in the overall process (Verschoor, 2005).

Also the Beyond Budgeting approach is amenable to a wide-ranging management accounting system. The flexibility of Beyond Budgeting provides that capability.

So then the question is whether the organization is ready to make the change. From an organizational stance, the main questions are (de Waal, 2005):

(1) is the structure of the organization set for flexibility?
(2) is the management decision process adaptable?

The change is viewed a change of "mindset."

From corporations that have made the change, several pre-conditions have been uncovered:

(1) organization is prepared to make the change;
(2) alignment has been made, to comply with the change;
(3) all resources requirements have been met.

Note the three are pre-conditions to a corporate decision to implement change. de Wal (2005) presents a test of the change. Included is the need for change, and the status of the organization for the change.

A condition for implementation is the knowledge of principles of Beyond Budgeting. Of course, this is secondary to the need for the change. Unless the firm detects the need for change, the effort is worthless. But with the need for change, Beyond Budgeting is invaluable.

6. CONCLUSION

The area of budgeting is viewed in several ways, inside of a company. The threshold view is the current state of the art. The thrust of this paper is to introduce Beyond Budgeting as an enhanced approach to budgeting. Various authors indicate that an improvement in accuracy is expected, and is delivered. However, one should note that all forecasts have a range of uncertainty. As budgeting is a forecast of company performance, with the market determining the outcome, forecasts are prone to failure.

However, Beyond Budgeting is noted as increasing accuracy of budget (and forecasts). While a measure of accuracy is not produced, the quality of accuracy is surely found.

With this nebulous conclusion, the change to Beyond Budgeting is warranted—even on a qualitative basis. Users will find ways to further enhance the approach. At a further time, an evaluation of this way of budgeting will be available and its enhancement measured.

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THE ADDED VALUE OF GOVERNANCE BOARDS IN SMALL AND MEDIUM-SIZED FAMILY FIRMS

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Abstract

This paper explores a possible relation between governance boards in small and medium-sized family firms and performance indicators of the firm. Following the legal framework in The Netherlands, firms can have an advisory and/or supervisory governance board next to the top management. The resource based view is used to discuss the possible valuable resources of family SMEs, including the governance board. Two relevant board functions within SMEs are the contribution of resources and the aid to the strategic process. If a governance board is a valuable resource, the establishment of it should ultimately lead to a better defined strategy and possibly a higher performance. Hypotheses were tested on a sample of 330 Dutch family SMEs. Our results show that governance boards positively affect the existence of written strategic plans and the expected marketability of the firm, while there is no relation with the expected short term sales growth.

Keywords: Boards; Governance; Family Firms; Strategic Planning; Performance

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1 Introduction

In this explorative paper we assess the research question whether the existence of a governance board in small and medium-sized family firms (family SMEs) accounts for direct and/or indirect effects on the performance of a family business.

There is a growing interest in corporate governance, resulting in the issuance of various corporate governance codes worldwide. In the Netherlands the Code Tabaksblat was put into practice in 2003. For that reason, firms should install a supervisory board according to this code. Installing a board besides the top management is a key feature of the two-tier governance system. This code only applies to listed companies. However there is a big gap between governance practices in listed firms and governance practices in non-listed and small and medium-sized firms (SMEs). This paper describes governance practices in Dutch family SMEs and focuses in particular on the possible benefits of governance boards in family SMEs. Relatively little research has been conducted on governance in SMEs (Van den Heuvel, Van Gils and Voordeckers, 2006). The aim of this paper is to make a contribution to this field. An important cause for the big gap between governance practices in large firms and SMEs is the focus on monitoring within the governance framework. This focus stems from the view that the firm's goal is to optimise shareholders wealth. Because of the separation between ownership and management in large firms, shareholders must monitor the managers to be assured that they receive an optimal return. This last argument stems from the agency theory (Jensen and Meckling, 1976). The stewardship theory takes a very different approach. The basic assumption for the stewardship theory by Davis, Schoorman and Donaldson (1997), lies in their 'model of man': "the model of man is based on a steward whose behaviour is ordered such that pro-organizational, collectivistic behaviours have higher utility than individualistic, self-serving behaviours" (Davis et. al, 1997). Therefore managers are likely to be collectivistic, pre-organizational and trustworthy. If this is true then governance mechanisms should not be based on control but on trust. Given the nature of family firms, the stewardship approach is likely to be more applicable for family SMEs.

Uhlaner (2008) stipulates that the objective of governance mechanisms is to enable entrepreneurship in firms. The firm is able to thrive and grow due to the support received by the board.

Instead of choosing one absolute theoretic perspective, Lynall et al. (2003) argues that various theories can be applied to governance issues. The key is to identify which theory is more applicable. This depends on certain conditions, such as the ownership structure and the legal framework. The focus of this article is on the existence of governance boards. The key question addressed in this paper is whether governance boards are a valuable resource for small and medium size firms. Therefore the resource based view (RBV) will be the used for the theoretical framework of this paper.

This paper proceeds as follows. The next section will discuss the resource based view which is the theoretical framework of this paper. Attention will be given to "familiness" which is a distinctive feature of

family firms. Subsequently governance in family firms will be discussed, and attention is given to differences between family and non family firms with respect to governance. Also the different functions of governance are considered in this section. The literature discussion will be concluded with the life cycle theory, which elaborates on the differences in firm complexity varying with the age of the firm. The theory is followed by the hypotheses, after which we present our sample and the methodology. Then we present our main findings and consequently our conclusions ant the discussion.

2 Theoretical background

2.1 The Resource Based View

The existence of governance boards is based on different theories. Given the existence of boards, the added value will be analysed using the resource based view of the firm (RBV). This view is one of the most influential theoretical frameworks in the strategic management field (Barney, Wright and Ketchen, 2001;Newbert, 2007). Wernerfelt (1984) introduced the notion that firms can be analysed by looking at the resources of the firm. A resource is defined by Wernerfelt as "anything which could be thought of as a strength or weakness of a firm". The key objective of the RBV is to establish a causal relationship between resources and a long-term competitive advantage. Barney (1991) argued that resources should have four characteristics to establish a competitive advantage. They should be: valuable; rare; inimitable; and non-substitutable. Barney based the RBV on two assumptions: resources should be both heterogeneously distributed among firms and imperfectly mobile. These assumptions allow for differences in firm resource endowments to exist and persist over time. Both assumptions thereby allow for a resource-based competitive advantage.

There is an ongoing debate about the RBV framework. A focus on processes led to new approaches within the RBV (Newbert, 2007). Firstly, there is the notion that besides the existence of resources, firms should be capable of exploiting the full potential of these resources. Barney (1991) named this the implementation skill set of the firm. Concurrent with Barney, Teece, Pisano and Shuen proposed dynamic capabilities framework. This dynamic capabilities framework is "the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments" (Teece et al. 1997). Valuable resources alone are not enough to create a sustainable competitive advantage. Resources should be managed effectively and adjusted to the changing environment of the firm (Sirmon and Hitt, 2003).

The RBV is being increasingly tested as a theoretical framework in empirical research projects. The results of a number of empirical researches are discussed in two meta-analytical reviews (Barney and Arikan, 2001; Newbert, 2007). The empirical results are mixed. Barney and Arikan (2001) conclude that only 2 percent of the presented results are partially inconsistent with the RBV theory. Newbert (2007) found that only 53% of the 55 empirical tests support the RBV, and that the degree of support varies considerably. Notwithstanding, since the introduction in 1984 the RBV has become a very important theory in the field of strategic management (Habbershon and Williams, 1999). The RBV has also proven its value as an appropriate theoretical framework in the field of family business research (Chrisman, Chua and Zahra, 2003).

'Familiness' can be valuable resource. The RBV can be used as a theoretical framework for assessing the possible competitive advantage of family firms (Habbershon and Williams, 1999). Family firms have several unique resources that have been referred to as the familiness of the firm (Sirmon et al. 2003). Familiness is described by Habbershon and Willams (1999) as the unique bundle of resources created by the interaction of family and business. Dyer (2006) refers to the 'family effect' when explaining the effect the family can have on firm performance via variables as governance, management and firm characteristics.
Habbershon and Williams (1999) stipulate a potential problem caused by a generic approach to assessing family firm advantage. Competitive advantage of a firm has to be discussed with referring to the underlying resources, specific strategies and skills. For instance, a strong family leader is not per se beneficial to every firm, as certain companies may become too dependent on its leader. It is not one specific advantage that is held by all family firms. The question to be answered then is why does one family firm utilise its familiness better than the other? This is also emphasised by Nordqvsit and Melin (2007) when they discuss the institutionalization of the family firm. Overemphasizing the similarities between family firms and thereby downplaying the differences can lead to a too simplistic view on family firms. The RBV offers the possibility to focus on the distinctive resources and to look for the firm's uniqueness as to explain the competitive advantage.
Which resources are possible assets to create long term competitive advantage? Various authors discuss the possible sources of competitive advantage (Carney, 2005: Eddleston, Kellermans and Sarathy, 2008; Habbershon and Williams, 1999; Miller and le Breton-Miller, 2006, Miller, Le Breton-Miller and Scholnick, 2008; Sirmon and Hitt, 2003). There is a common understanding of the valuable resources which can exist in family firms. Sirmon and Hitt (2003) discuss for instance five possible family firm specific resources with the following positive outcomes:

- Human capital stands for the acquired knowledge, skills and capabilities of an individual. The positive attributes include extraordinary commitment, warm relationships and the potential for deep firm-specific tacit knowledge;

- Social capital is composed of three dimensions: structural, cognitive and relational. The first dimension is based on network ties, the second one on shared languages and narratives and the third one on trust, norms and obligations. All these components are embedded in the family and can lead to the development of human capital;
- Patient financial capital is capital that is invested without the threat of liquidation for a long period. The generational outlook provides a focus on a long time horizon instead of on short-term results;
- Survivability capital represents the pooled personal resources that family members are willing to loan, contribute, or share for the benefit of the family business. This will help the firm through poor economic times;
- Governance structure: the mutually-shared objectives, trust and family bonds reduce governance costs.

However there is a commonly accepted understanding that the familiness is not always positive. Taguiri and Davis (1996) defined an important feature of family firms: the bivalent attributes. These attributes can be the cause of high performance but can also turn into disadvantages, hence the term bivalent.

Patient financial capital is good illustration of this bivalency. It often leads to a conservative financial strategy, which can have a negative impact on the firm's growth.

The management of resources may be a possibility to influence the effect of the attributes (Sirmon et al.2003). The availability of appropriate resources is necessary but insufficient to achieve long-term competitive advantage. Resources must be managed effectively. Whether governance mechanisms can be a method to manage this "familiness" effectively will be discussed in the next section.

2.2 Governance in family firms

Dyer (2006) named firm governance as one of the common determinants of firm performance. However, to date there is no convincing evidence that governance practices will positively affect firm performance (for instance Klein, Shapiro and Young, 2005, Uhlaner 2008). Abor and Adjasi (2007) draw attention to the disadvantages of governance structure. The introduction of a governance structure in a firm will lead to additional roles in audit, remuneration and nomination committees. Furthermore new and more directors have to be hired and paid – they stipulate that governance structures cost money. Put it differently: governance should be seen as an investment, hence it is a legitimate question to ask if this investment offers a sufficient rate of return. Before we discuss this further it is important to establish what we regard as firm governance.: "Corporate governance is about the understanding and institutional arrangements for relationships among various economic actors and corporate participants who may have direct or indirect interest in a corporation" (Letza, Sun and Kirkbride, 2004).

Firm governance in family firms can be different from non family firms. The agency theory can be useful for explaining the possible advantages and disadvantages of family firms in comparison with non-family firms. The agency theory focuses on the principals (owners) and the agents (managers) of a business. Jensen and Meckling (1976) define agency costs as the sum of the principals' monitoring expenditures, the agents' bonding expenditures and the residual loss. The outcome of the agency theory for the family firm can be twofold. Agency theory is often used to argue that family firms will have relative low agency costs as compared to non family firms. One of the causes is that the owner of a family firm is quite often the same person as the manager, in which case there is no need for monitoring the agent. Another aspect is that the family effect can lead to common goals, high trust and shared values among the principal and the agent which reduces the need for costly governance practices (Dyer, 2006) Research (e.g. Chrisman, Chua and Litz, 2004) supported the view that the family effect can lead to lower agency costs which subsequently potentially enhances firm performance. In this way the relative low agency costs can be viewed as a positive outcome of the familiness of a firm.

On the other hand there is a lot of attention for disadvantages. Altruism is an important aspect that has been investigated by Schulze, Lubatkin and Dino (2003). Altruism can create agency problems. For example, family incumbents have an incentive to be generous. However, that generosity may cause the successors to free ride, shirk and/or remain dependent upon their incumbents.

Another aspect discussed in the literature of agency theory is entrenchment. Poza, Hanlon and Kishida (2004) argued that goal incongruity between the CEO and the rest of the family lead to costs associated with executive entrenchment. Avoidance of strategic planning, lack of career opportunity for non-family agents and avoidance and/ or reduction of business risk are costs found by Gomez-Meija, Nunez-Nickel and Gutierrez (2001).

Governance can have different functions within firms. In the academic debate on corporate governance most attention goes towards the monitoring function of corporate governance. The objective is the maximization of shareholders wealth. In this approach "managers have to be monitored either directly, indirectly via a board of directors or through formal contractual approaches designed to hold management accountable." (Uhlaner 2008). This focus is often not relevant at all for small and medium-sized family firms. Consider for instance the case when the owner is also the manager. However, governance has more aspects than monitoring the managers. Filototchev, Toms and Wright (2006)

distinguish three functions of governance: monitoring, resource and strategy.

The resource function states that resources from outsiders can be helpful in reducing uncertainty, increasing the firm's ability to raise funds or increasing its recognition (Bennett and Robson, 2004). Resources include business contacts, networks, tacit knowledge, et cetera. The strategy function – also known as counselling or advisory role – of governance has a link with the resource function. Outside directors are widely recognised as being a means of providing a source of expertise that may otherwise be lacking (Bennett and Robson, 2004). This expertise can be valuable in the strategy formulation process.

2.3 Importance of the firm's life-cycle

Filatotchev et al. (2006) argue that it is necessary for a firm to indentify where the company stands in the corporate governance life cycle in order to establish an effective governance structure. The corporate governance life-cycle is dependant on the firm's phase in the life-cycle. Based on two variables, 'the organisational resource base' and the 'transparency/accountability', firms can be classified into four quadrants. These quadrants can help define the governance functions suitable for specific firms. For small and medium-sized family firms it is suggested that the monitoring function should be low, resource function high and the strategy function high as well. This is consistent with Van den Heuvel, Van Gils and Voordeckers (2006) who found that CEOs of small and medium-sized family firms perceive the board's service role as more important than the control role.

This life-cycle approach is consistent with Steier's argument on the importance of trust (2001). Steier argues that trust and relational contracting are both prominent features of the governance of family firms in the early stages of their development. But firm owners should realise that the transfer of ownership and/or control could become very difficult when the source of competitive advantage stems solely from the existence of trust in the family firm. Governance systems in firms should evolve in line with the life-cycle phase the firm. This could mean an increase in the formal aspects of the governance model when the next generation has taken over the leadership of the firm.

Summarizing, in order to study the influence of governance on performance it is important to take into account several aspects. Above we discussed briefly the influence of the organizational context, the ownership structure and the life cycle-phase of the firm. Firm performance is influenced by various aspects; examples are familiness, state of the human capital and the position in the life-cycle. A governance board may be an important means to optimise these aspects within the firm.

3 Hypotheses

The empirical focus of this paper is on potential benefits of the establishment of a governance board within SMEs. Theoretically, board functions within SMEs are centred on the contribution of resources and the strategy enhancement. Ultimately these two functions could lead to a higher performance of the firm. As noted earlier, existing research offers no clear answer to the question if an investment in governance has a positive effect on the performance of a firm (e.g., Bennett and Robson, 2004, Uhlaner et al., 2007).

Brunninge et al. (2007) articulate this with two arguments. Firstly strategic change is necessary before performance can improve. Secondly multiple goals prevail in SMEs instead of a sole focus on profit maximization. Rather than focusing only on an overall governance effect we first isolate the strategy function of a governance board. Can we find evidence that a governance board fulfils a strategy function? Van den Heuvel et al (2006) performed research on the importance of the various board tasks as perceived by the CEO. They found that the task 'formulate/ratify organizational strategy' came second after 'building organizational reputation'. In case the strategy function of a governance board does exist, there should be a relationship between the existence of a governance board and strategic planning activities (Blumentritt, 2006). Blumentritt (2006) investigated if a family firm is more engaged in strategic planning and succession planning when the firm has a board of directors or an advisory board. His analysis shows that more planning activities took place in firms equipped with an advisory board than in firms with a board of directors. This leads to the first hypothesis:

Hypothesis 1: Family SMEs with a governance board will more often engage in strategic planning activities than family SMEs with no governance board.

A governance board may not only influence the strategic process, but could also influence firm performance. This can be explained by relating it to the bivalent attributes of family firms (Taguiri and Davis, 1996). Bivalent attributes being the reasons for high performance that sometimes turn into drawbacks. Can an effective governance board prevent this from happening? In this instance the added value of a governance board lies in risk mitigation.

This can be illustrated by using the leadership role as an example of a bivalent attribute. (Miller et al., 2006). Family executives often have the status and ownership position to make courageous decisions aimed at long-term benefits. But strong command could also make the firm too dependent on the leader. Guaranteeing optimal use of the resource 'leadership' can be the added value of a governance board, by safeguarding firms not to become too dependent on the family executive. This dependency will most

likely make the firm more difficult to sell or transfer to the next generation. If this argument holds then firms with a governance board should be easier to sell or transfer than firms without such a board.

Summarizing, the dependency on critical success factors could decrease due to the instalment of a governance board. Hence, continued long-term performance is safeguarded and the continuity of the firm will increase at the same time. The continuity is especially important because of the greying of the owner population. Research confirms a steadily aging ownership in the Netherlands but also in Europe as a whole (Uhlaner, 2008). The European Commission (2002) fears that 30 percent of the firms that face[5] a transfer will not succeed in leading the firm to the next phase. Hypothesis 2b thus states:

Hypothesis 2a: Family SMEs with a governance board will show a higher continuity than family SMEs with no governance board.

Governance boards may also add value in the short run. Experts taking place in the board keep track of the changing business environment and can thus signal potential problems and opportunities for the owner-manager. Short term flexibility may be enhanced due to the establishment of the board, and consequently short term performance may be improved. Hypothesis 2b is stated as follows:

Hypothesis 2b: Family SMEs with a governance board will show a higher expected short term performance than family SMEs with no governance board.

4 Research Methodology

4.1 Sample

The empirical data used in this paper originate from a study exploring the current status of good governance and succession in Dutch family firms. The Dutch family research centre *Centrum van het Familiebedrijf*, in collaboration with the Utrecht University, set up a questionnaire consisting of 27 questions divided into three parts: succession, governance and characteristics of the firm and the owner manager. A web survey tool was used and 20,000 owner-managers were by email asked to participate in April 2007. We have targeted firms with more than 10 employees. After a reminder, in total 857 surveys were returned (a response rate of 4.3 percent). There is no agreement between scholars about the definition of a family firm (Chrisman, Chua and Sharma, 2005) As a consequence there is a variety of definitions used in research projects. To establish if a firm is a family firm we asked the owner manager whether he or she regards the firm as a family firm. After removing cases with missing values, non family firms and firms larger than 250 employees, we ended up with a final sample of 330 small and medium-sized firms. All variables and results used in the study are based on this database.

Thorough checks were made to assess the representativeness of the sample. The sample is representative for the average Dutch population with respect to age of the owner-manager, the sector and the size of the firm.

4.2 Methodology

Our primary objective is to determine the effects on strategic planning and performance caused by the instalment of a governance board. We use the availability of a written strategic plan as an indicator of the engagement of a firm in strategic planning. Two different measures are used a proxy for performance. The first measure – used a proxy for continuity – is the expected marketability of the firm. Respondents could indicate this on a 4 point scale. The second measure – used as a proxy for the short term expected performance – is the expected sales growth for 2007 as compared with 2006. This is being measured on a 5 point scale.

With respect to the explanatory variable we distinguish two kinds of firms with respect to governance: firms with and firms without a governance board

Four control variables have been included in the regression model. Firstly the variable "firm size". When a firm grows, the complexity will increase and it becomes more likely that professional management practices are required (Voordeckers et al. 2007). Firm size is measured in 3 categories: 10-19 employees, 20-99 employees and 100-259 employees. Secondly, as an indicator of firm age the variable "founder of the firm" is used. Steier (2001) and Filatotchev et al. (2006) stipulate the relation between governance practices and the generation of the family which is involved in the firm. The higher the number of the present generation, the more complex the organization will become and the more governance generally is needed. Therefore we included the item founder of the firm which measures whether the present family in the business is in its first or in a later generation.

We included the existence of a "strategic plan" as a third control variable in hypothesis 2 as we expect a high correlation between the performance indicators and the availability of a written strategic plan. For the same reason, "marketability" was included as a control variable in hypothesis 1 regarding the regression model for "sales growth".

[5] In the same study by the Centrum van het Familiebedrijf (Matser and Gerritsen 2008) 56 percent of the business owners expected a transfer within the family and 32% expected a sale of the firm or a Management Buy Out. These figures show the importance of a marketable firm.

4.3 Data description

This research confirms the research done by Hessels and Hooge (2006) that most SMEs do not have a board installed at all. 31.2 percent of the owner-managers confirmed to have a governance board whereas 68.8 percent did not have a board. Just over half of the owner-managers with a governance board indicated to have something different than a supervisory or an advisory board. Responses included family members, a private advisor and a family council. This reflects the broad variance in governance boards in Dutch family SMEs and creates an interesting topic for further research.

49.2% of the firms in the sample have 10-19 employees. Another 43.5% have in between 20 and 100 employees. Only 7.3% of the respondents indicate to have more than 100 but less than 250 employees.

The data show a strong relation between firm size and governance boards. 71 percent of the firms with more than 100 employees have a governance board, 30 percent of the firms with 20-100 employees have a board, while only 19% of the firms with 10-20 employees have a board.

With respect to the generation of the owner, 24 percent of the respondents are the founder of the firm.

The descriptive statistics and correlations among the variables used to test the hypothesis are provided in table 1. The correlation table indicates a high correlation between the existence of a governance board and the marketability of the firm. Interestingly, there is only a moderate correlation between marketability and sales growth. This suggests that these performance indicators are distinct. The correlations show a stronger relation between the board and marketability than with the sales growth. There is only a small correlation effect between governance board and strategic planning.

[Insert table 1 here]

Additional information regarding the composition of the governance boards can be found in appendix 1.

We will make use of a t-test for comparing means and regression analyses to analyse the hypotheses.

5 Main findings

5.1 Strategic planning

The first hypothesis states that family SMEs with a governance board will more often engage in strategic planning activities than family SMEs with no governance board. This is operationalised by testing if a family firm with a governance board more often has a written strategic plan, as opposed to family firms without a governance board. Does the existence of a governance board increase the likelihood that a family SME has a written strategic plan? To test this hypothesis an independent t-test has been conducted. On average, family SMEs with a governance board more often have a written strategic plan (Mean (M) = 0.56; Standard error of the mean (SE) = 0.05) than family SMEs with no governance board (M = 0.38; SE = 0.03. This difference was significant t (190) = 3.14; it represented a medium sized effect (r= 0.22). This result is consistent with earlier research (Blumentritt, 2006).

5.2 Performance

In hypothesis 2a a positive relation was expected between the existence of a governance board and the continuity of family SMEs. A regression analysis was conducted to test this hypothesis. This has led to the following results.

[Insert table 2 here]

The results indicate a significant and robust relation between the existence of a governance board and the expected marketability of the firm. Also significant but less strong is the relation between the expected sales growth and the expected marketability. This relation is the same as shown in the first regression model. No other included variables showed a significant relation with expected marketability. Interestingly, the availability of a strategic plan has a small adverse relation with the expected marketability.

Hypothesis 2b states that family SMEs with a governance board will show a higher expected short term performance than family SMEs with no governance board. To test hypothesis 2b a regression analysis was conducted to test the relation between the existence of a governance board and the expected short term sales growth. The results of the model indicate no significant relation between governance boards and expected sales growth. However the model shows a significant relation between sales growth and the availability of a strategic plan, the expected marketability of the firm and the fact that the founder is the owner manager of the firm.

[Insert table 3 here]

Summarizing, the empirical results strongly supports hypothesis 1 and 2a while giving no support to hypothesis 2b. This analysis, therefore, indicates that the existence of a governance board is related to the expected marketability of the firm and the availability of a written strategic plan.

With regards to the expected sales growth three other variables turned out to be significant. Two of them are related to the existence of a governance board, hence there may be an indirect effect.

5 Conclusion and discussion

In the context of the discussion on the relevance of good governance in small and medium-sized family firms, this study is an attempt to underpin the relevance of comparing firms with a governance board with firms that did not invest in such a contractual governance mechanism. This study is a first step that should ultimately lead to practical advice for owner managers in small and medium-sized family firms. Should a firm invest in a governance board and how should that investment be carried out? This study leads to some tentative conclusions concerning the first part of this question.

Our hypotheses that governance boards affect the existence of a written strategic plan and the expected marketability are confirmed. That a governance boards has an effect on expected sales growth was not confirmed by our data. Overall our findings support the argument that a governance board can have an added value for the firm. The upside potential of governance boards for firm performance is found in the relation with the availability of written strategic plans. Beside the upside potentials, a governance board may also serve as an insurance against downside risks by facilitating the establishment of for example an emergency succession plan. This could be the reason for the strong relation we found with the expected marketability i.e. the positive effect on the continuity of a firm. Firms with a governance board can mitigate the risk of becoming too dependent on the owner-manager(s).

The next step would be to gather more information about the way in which various governance boards function. This way we can learn more about what type of board is effective, and in which situation. Today, most research is focussed on best practices of governance in large firms. This makes sense from an efficiency and monitoring perspective. Looking at SME firms, governance best practices are more likely to be the result of attention to resources, advice and strategy. It is interesting to see which effective governance best practices are transferable to other SMEs. For example, the added value of advisory boards is broadly recognised in high tech start-ups (Morkel and Posner, 2002). The knowledge from these start-ups' advisory boards can help making governance boards in other (family) SMEs more effective.

This study has some limitations which could be improved with further research. Our study was confined to Dutch family SMEs. Furthermore it relies heavily on the self-judgement of the family executives/ respondents. There are also some concerns with respect to the low response rate and possible interaction effects. Lastly, there is the question of causality. There are at least two ways of interpreting the relationship between, for instance, governance boards and expected marketability. Do owner managers invest in a governance board because they think that it will be valued by potential buyers of the firm? Or are potential buyers more interested in firms with a governance board because they value these boards?

The possible impact of a governance board was only tested in firms with a governance board. The definition of a governance board in this paper is rather broad. It would be good addition to test if, and how, distinctive governance mechanisms interact with each other. It would be interesting to develop a scale of various contractual governance mechanisms and find out where, when and which mechanism works best. For instance, research done by Brunninge et al. (2007) found that a possible weakness of closely held SME can be overcome by utilizing outside directors on the board and/or extending the size of the top management team. Besides contractual governance there are all kinds of informal governance mechanisms, also known as relational governance. Relational governance 'relies on informal social controls based on mutual trust, a shared vision and commitment to the success of the enterprise.' (Uhlaner, 2008). To get a complete view of governance in small and medium-sized family firms it is important to include this concept of relational governance.

Furthermore, as stipulated by various researchers (e.g. Van Ees et al. 2008) it is necessary to open the 'black box' of the governance board. We have to look further to shed more light on the ambiguous results found with regard to the relation between governance boards and performance. Most research focuses on the descriptives of the board: for instance the amount of outside directors, the CEO tenure and the size of the board. It is necessary to go beyond these descriptives and investigate the processes and behaviour of the board. An interesting start could be the two concepts developed by Pugliese and Wenstøp (2007): 'board working style' and 'board quality attributes'. 'Board working style' relates to organizing and conducting board meetings and reflecting board work periodically, 'board quality attributes' relates to three attributes: in-depth knowledge of the firm, board diversity and the personal motivation to participate in the board.

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Appendix

We have asked the participating firms in the survey for other characteristics as well. See table A1 for the outcomes.

[Insert table A1 here]

The descriptive statistics show that overall owner-managers are satisfied with the functioning of the governance board. There are significant but not very high correlations between the various variables.

List of tables

Table 1 descriptive statistics and correlations variables

	Mean	SD	B	M	SG	SP	S	F
Governance board (GB) 0=no, 1 = yes	0,312	,464	1					
Marketability (M) 1= very difficult, 4 = very easy	2,139	,850	,549(**)	1				
Sales growth (SG) 1= strong decrease, 5 strong increase	3,976	,787	,231(**)	,313(**)	1			
Strategic plan (SP) *0= no, 1 = yes*	,436	,450	,172(**)	,108(*)	,194(**)	1		
Size (S) *1=10-19, 2=20-99,3=100-249*	1,603	,631	,212(**)	,194(**)	,144(**)	,160(**)	1	
Founder (F) *0= not the founder, 1= founder*	,212	,409	,050	,096	,113(**)	,096	,027	1

N=330, Spearman's correlation coefficients
* Correlation is significant at the 0.05 level (1-tailed).
** Correlation is significant at the 0.01 level (1-tailed).

Table 2: governance board and expected marketability

Explanatory variables	Expected marketability	
	Beta	T-value
Governance board	0,445	8,936 (****)
Control variables:		
Firm size	0,007	0,136
Strategic plan	-0,011	-0,218
Founder	0,023	0,475
Expected sales growth	0,200	4,064 (****)
Constant		4,476

N= 330, R^2= 0,28
*significant at 0,10 level
**significant at 0,05 level
***significant at 0,01 level
****significant at 0,001 level

Table 3: governance board and sales growth

Explanatory variables	Expected sales growth	
	Beta	T-value
Governance board	0,066	1,075
Control variables:		
Firm size	0,030	0,564
strategic plan	0,138	2.592 (***)
Founder	0,104	1,994 (**)
Marketability	0.242	4,064 (****)
Constant		21,563
R-square		0.131

N=330, R^2= 0,13
*significant at 0,10 level
**significant at 0,05 level
***significant at 0,01 level
****significant at 0,001 level

Table A1 descriptive statistics and correlations governance board

	Mean	SD	G	M	A
Overall grade of the board (G) *Grades between 1-10 (10 = perfect)*	7,17	1,533	1		
Frequency of the meetings (M) *1= once in the last 12 months 2= twice, 3= 3-6, 4 > 6*	2,6701	1,038	,116	1	
Advise function (A) *1= no advise 2= reactive advise 3= also proactive advise*	2,1197	,892	,254 (**)	,425 (**)	1
Family members in board (F) *1 = yes, 2=no*	,5299	,501	,199 (*)	,322 (**)	,114

Spearman's rank correlation n= 97
* Correlation is significant at the 0.05 level (1-tailed).
** Correlation is significant at the 0.01 level (1-tailed).

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