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Value Creation and the Impact of Corporate Real Estate Assets

An Empirical Investigation with French Listed Companies

Dauphine Real Estate Workshop

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Abstract

Managers should invest in assets (i.e. relevant profitable investments) that maximize the value of their firm. Recent trend shows that many large companies have sold most of their corporate real estate assets. The underlying motives for such behaviour are yet to be examined (at least in a French context). If real estate matters, we should observe an association between proxies of value creation and the change in real estate assets within a company. This paper investigates the association between surrogates of EVA and MVA generated by French listed companies and the weight of real estate in their assets' portfolio. Using a pool sample composed of the SBF 250 companies – over the period 1999-2004 – our empirical results show that, an increase in the proportion of real estate assets (over total assets) is negatively associated with EVA, but specifically for firms in the service industries exhibiting low real estate intensity. The regressions on MVA show a negative association with the change in the real estate for firms outside the service industries. Those results suggest the sales of real estate assets can be driven by value maximizing behaviour.

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I – Introduction

Managers should invest in assets (i.e. relevant profitable investments) that maximize the value of their firm. Recent trend shows that many large companies have sold most of their corporate real estate assets. The underlying motives for such behaviour are yet to be examined (at least in a French context). If real estate matters, we should observe an association between proxies of value creation and the change in real estate assets within a company.

This paper investigates the association between surrogates of EVA and MVA generated by French listed companies and the weight of real estate in their assets' portfolio. Using a pool sample composed of the SBF 250 companies – over the period 1999-2004 – our empirical results show that, an increase in the proportion of real estate assets (over total assets) is negatively associated with EVA, but specifically for firms in the service industries exhibiting low real estate intensity. The regressions on MVA show a negative association with the change in the real estate for firms outside the service industries. Those results suggest the sales of real estate assets can be driven by value maximizing behaviour. The remainder of the paper is organised as follows. Section 2 hereafter briefly reviews the empirical literature. Section 3 addresses methodological issues related to the sampling procedure and data description. Section 4 describes the research design, whilst section 5 presents the empirical results. The final sixth section summarizes our main findings and concludes.

II – Brief review of prior literature

Corporate real estate is defined as corporate property - industrial, office and retail space - used for business purposes, as an input in the production process by companies not primarily in the real estate business. First theoretical research on the effect of corporate real estate performance on shareholder value management has been done in the US in the late 80s and early 90s (Noha, 1993; Nourse and Roulac, 1993; Kimbler and Rutherford, 1993). Hence, Nourse and Roulac (1993) noticed that most US corporate managers did not have a formal real estate strategy and ignored or lacked interest in their property assets in their overall strategy.

Whereas the corporate real estate function is generally not considered as a strategic field of corporate management within the organization (which explains the relative ignorance regarding real estate costs or facilities), estimates have shown that more than 25% of corporate assets are in real estate and that occupancy and property costs are the company's second largest expense item after wages and human resources (Rodriguez and Sirmans, 1996). In Continental Europe, corporate real estate management seems to be inhibited. This field of management is not considered as a

priority or a discipline, and receives little attention in business education, particularly in European business schools (Nappi-Choulet, 2003b), leading to ignorance regarding real estate costs and facilities.

Thus, although corporate real estate and facilities represent significant portions of corporate balance sheets and operating expenses, their role in corporate strategy is relatively underdeveloped in Europe compared to the US (Roulac, 2002). Schaefer (1999) concludes also that real estate assets were under-managed by the vast majority of German companies.

The surge in institutional investment and financial globalisation, at a time when macroeconomic fundamentals were favourable, has created a new context for corporate real estate strategy and real estate financing decisions (Nappi-Choulet, 2003a, Louko 2004). Due to the recovery of corporate real estate markets in Europe, cost reduction through real estate outsourcing became a strategic lever for increasing shareholder value for companies whose core business was not real estate. Growth of the European institutional real estate market has raised the issue of ownership by companies. In the last decade, companies seem to have rediscovering their real estate assets, although studies from real estate companies, such DTZ, estimate that approximately 70% of European businesses are owner-occupiers, in contrast with US firms (30% respectively). Many in the real estate industry anticipate that the trend in Europe will be towards the US model with large portfolios of corporate real estate offered on the market in sale and lease back or similar transactions, taking real estate off the occupiers' balance sheet (Hill, 2003). In this context, many papers have discussed the buy versus lease dilemma.

An extensive review of existing literature on corporate real estate management can be found in Manning and Roulac (2001). The effects of real estate outsourcing decisions on the risk and returns to stockholders or shareholders have been studied very recently and scarcely. Deng and Gyourko (1999) and Seiler and al. (2001) have looked at the relationship between corporate real estate ownership and firm performance for the US. They document a negative relationship between real estate ownership and a firms's beta, but they find no significant relationship with firm outperformance. Liow and Ooi (2004) have examined the influence of corporate real estate on shareholder value using two value-based measures: Economic value added (EVA) and market value added (MVA). They found that, for non-real estate Singapore listed firms, corporate real estate has impacted negatively on firms' EVA and MVA in the period 1997-2001. Their results suggest that higher real estate intensity (defined as the proportion of total tangible assets represented by property) was associated with lower EVA and MVA. In the same issue, Brounen and Eichholtz (2005) have explored how corporate real estate ownership affects the stock performance of non-real estate companies, internationally. They find a negative but insignificant

relationship between relative real estate holdings and risk-adjusted stock performance. A sector-by-sector analysis shows that the effect of corporate real estate ownership on outperformance is to a large extern driven by the sector the company operates in. Their results show that corporate real estate holdings generally decrease the risk and the return of a firm, but that the latter is not necessarily the case for all firms.

III – Research sample and data description

3.1 Sample data

Non financial French listed companies are the target of this study. To build up our sample, we focus on the SBF 250 index, the largest Paris market place index with 250 values. *"The SBF 250 is compiled as a total index and for 12 sectors which are aggregated into 3 groups (industrial, service and financial). Selection of the sample is based on the representativeness of each company to the total capitalisation in each of 12 economic sectors and is based on the regularity of trading. Units in investment funds are excluded but shares of foreign companies listed on the Paris Stock Exchange may be included. The SBF 250 index of the Société des Bourses Françaises is designed to reflect the evolution of both the whole market and its economic components in order to be a reference in the long run for the management of funds invested in French shares. Dividend yield are excluded"*[1]. At the end of the year 2005, the 250 companies composing the index represent a market capitalisation of 989 042.223 millions euros. Particularly, the 225 non financial firms represent a market capitalisation of 780 861.501 millions euros (79% of the total market capitalisation of the index).

The list of all non financial French companies which were part of the SBF 250 index during the period 1999 to 2004 has been established thanks to information provided by Euronext. In total 322 companies are concerned, but companies whose book and financial data are not available over the whole 1998 – 2004 period are excluded. Annual book and financial data have been mainly obtained from the *Thomson One Banker* and *DataStream* databases. However, in order to keep most of the companies in the sample, missing data have been completed for the best, first by searching in the French financial *Diane* database, and at last looking for them directly in companies' annual reports when these were available. The final sample contains 131 companies (41% of the total number of companies concerned), over 7 years, namely 917 observations.

[1] Definition from the OECD.

Company's activity is a variable of major interest in our analysis. We use a classification which allows us to distinguish industrial production and service activities, and which comprises 11 sectors out of financial activities.[2] Table 2 reports the distribution of the sample companies by activity sector. Industry production represents 55.7% of our sample with 73 companies over 131. It consists of 6 activity sectors: Basic Products; Construction; Capital Goods; Car Industry; Food Products; and Other Consumer Goods. Services represent then 44.3% of the sample with 58 companies over 131. There are 5 services sectors: Retail; Hotel, Accommodation, Restaurant; Software and Computer Services; Transportation and Communication; and Other services.

3.2 Corporate Real Estate

Table 1 presents a summary of the amount of gross real estate assets hold by the sample companies during the 1998-2004 period. The total amount of corporate real estate assets hold by the sample companies increased from 91 267.2 millions euros in 1998 to 122 021 millions euros in 2004. The average increased from 696.7 millions euros in 1998 to 931.5 millions euros in 2004. Indeed, the important gap between average and median (which increased from 100.9 millions euros in 1998 to 123.1 millions euros in 2004) indicates great disparities between companies.

– Insert Table 1 about here –

The average amount of gross real estate assets varies depending on business segments (table 2). Sectors having the most important average gross real estate assets over the period are Retail (1 848.66 millions euros), Car Industry (1 813.77 millions euros) and Construction (1 805.73 millions euros). On the other hand, sectors having the less important average gross real estate assets over the period are Software and Computer services (62.20 millions euros), Other Services (274.12 millions euros) and Capital Goods (344.10 millions euros).

– Insert table 2 about here –

The real estate assets intensity - defined by Liow (2004) as the proportion of gross real estate assets over gross total tangible assets – has decreased in average from 32.5% in 1998 to 31.4% in 2004, in the considering whole sample. Sectors with the highest average proportion over the period are Hotel, Accommodation, Restaurant (53%), Retail (47.6%) and Food Products Industry (38.4%). On the other hand, sectors with the lowest average proportion over the period are Car Industry (20.7%), Software and Computer Services (31.1%) and Basic Products (21.5%). Figure 1 shows

[2] See in appendix the list of the sample companies by activity sector.

that there are marked differences in the proportion of real estate assets over total tangible assets, especially between services sectors where we can clearly distinguish two sub-groups: The first sub-group is made of two sectors, Retail and Hotel, Accommodation, Restaurant, that are very real estate intensive compare to all the others services sectors which form the second sub-group. Table 3 summarises the average proportion of gross total tangible assets represented by gross real estate assets for industry and for each of the services sub-group observed.

– Insert Figure 1 & Table 3 about here –

IV – Research design

4.1 Value creation variables

This paper empirically investigates the association between proxies of value creation for shareholders and corporate real estate. EVA (*Economic Value Added*) and MVA (*Market value Added*) are used to measure shareholders' value created by companies, where:

EVA = Net Operating Profit after Tax – WACC x Capital employed,

MVA = Market Value of Equity – Book value of Equity.

Particular attention is given to the cost of capital in this study, as it may be also affected by the importance of corporate real estate. The WACC (weighted average cost of capital) is calculated using the CAPM model for the cost of equity, and the net financial expenses (after tax) over the average of *Short Term Debt* and *Long Term Debt* for the considered period for the *Cost of Debt*.[3] Table 4 shows averaged by year values for each calculation of the WACC.

– Insert Table 4 about here –

Hence, we use three different EVA upon the choice made for the calculation of the WACC: *EVA(1)* is calculated using the average *WACC(1)* over the period; *EVA(2)* is calculated using the average *WACC(2)* over the period; *EVA_Datastream* is calculated using the average *WACC_Datastream* over the period. As the average WACC over the period is required to calculate EVA, *EVA(1)* and *EVA(2)* cannot be calculated for the year 1999, and *EVA_Datastream* for the year 1998. Table 5 shows the yearly average EVA for each calculation and the average MVA.

– Insert Table 5 about here –

[3] Using the CAPM model, *WACC(1)* is calculated using the following formula for the variable *Tax Rate*: t_1 = *Income Taxes / Income Before Taxes* if *Income Before Taxes* > 0, and $t_1 = 0$ otherwise. *WACC(2)* is calculated using the variable *Tax Rate* equal to 0.33 every year for all the companies ($t_2 = 0.33$). At last, we also calculate *WACC* from Datastream (i.e. using the formula/definition given by Datastream), which also allow us to calculate the end of period WACC for the year 1998. *WACC1* and *WACC2* are very similar, however *WACC_Datastream* is quite different.

Tables 6 and 7 resume the yearly average values of *EVA(1)* respectively for industry and services business sectors. If one considers *EVA(1)* as the measure of value creation, activity sectors having the most important average value created over the whole period are Food Products Industry, (68.45 millions euros) and Car Industry (63.49 millions euros). On the other side, activity sectors having the most average value destructed over the whole period are Transportation and Communication (-1 367.60 millions euros), Capital Goods Industry (-555.88 millions euros) and Software and Computer Services (-174.92 millions euros).

– Insert Tables 6 & 7 about here –

Considering now MVA as the measure of value creation, activity sectors having the most important average value created over the whole period are basic products (6 733.00 millions euros) and retail (3 258.03 millions euros). On the other side, activity sectors having the lowest average value created over the whole period are car industry (214.84 millions euros), other services (418.52 millions euros) and hotel, accommodation and restaurant (817.99 millions euros). These data are summarised in tables 8 and 9 respectively for industry and services sectors.

– Insert Tables 8 & 9 about here –

4.2 Empirical Models

Observation of the data shows that there are significant differences in real estate assets intensity among the different business sectors. To take this information into account, we define three groups of activity sectors: Industry (which is made up of the 6 industry production sectors), Services with high real estate intensity (which is made up of the retail sector and the hotel, accommodation and restaurant sector) and Services with low real estate intensity (which is made up of the others Services activity sectors). We create a dummy variable for each of these groups.

As a first part of our study, we use a panel regression model to measure the role played by real estate assets on the sales level of firms for each of the sub-groups we identified (industry, services with high real estate intensity, and services with low real estate intensity). This allows us to check the pertinence of this repartition. The hypothesis we want to test is whether real estate assets play a positive role in the value creation chain. We then regress sales against the set of explanatory variables:

$$Sales_TA_{it} = \gamma_0 + \gamma_1 Var_RE_{it-1}*Ind_i + \gamma_2 Var_RE_{it-1}*SerH_i + \gamma_3 Var_RE_{it-1}*SerL_i + \gamma_4 Var_Tan_{it-1}*Ind_i + \gamma_5 Var_Tan_{it-1}*SerH_i + \gamma_6 Var_Tan_{it-1}*SerL_i + \gamma_7 Var_NonTan_{it-1}*Ind_i + \gamma_8 Var_NonTan_{it-1}*SerH_i + \gamma_9 Var_NonTan_{it-1}*SerL_i + \gamma_{10} Var_Emp_{it-1}*Ind_i + \quad (1)$$

$\gamma_{11} Var_Emp_{it-1} * SerH_i + \gamma_{12} Var_Emp_{it-1} * SerL_i + \gamma_{13} D_t + a_i + u_i$

To measure the impact of the variation of real estate assets hold by companies on the value they create, we use as an explanatory variable the percentage variation of real estate assets, and we multiply it by each of the dummies representing the three activity sub-groups. This allows a different coefficient for the variable percentage variation of real estate assets for each group of activity sectors.

To control for company size effects on value creation, we divide the measure of value creation (EVA or MVA) by the amount of total assets at the beginning of the period. We then regress this variable against the set of explanatory variables:

$$EVA_TA_{it} = \alpha_0 + \alpha_1\, var_RE_{it} * Ind_i + \alpha_2\, var_RE_{it} * SerH_i + \alpha_3\, var_RE_{it} * SerL_i + \alpha_4\, var_Tan_{it} * Ind_i + \alpha_5\, var_Tan_{it} * SerH_i + \alpha_6\, var_Tan_{it} * SerL_i + \alpha_7\, var_NonTan_{it} * Ind_i + \alpha_8\, var_NonTan_{it} * SerH_i + \alpha_9\, var_NonTan_{it} * SerL_i + \alpha_{10}\, Sales_TA_{it} + \alpha_d D_t + a_i + u_{it} \quad (2)$$

$$MVA_TA_{it} = \beta_0 + \beta_1\, var_RE_{it} * Ind_i + \beta_2\, var_RE_{it} * SerH_i + \beta_3\, var_RE_{it} * SerL_i + \beta_4\, var_Tan_{it} * Ind_i + \beta_5\, var_Tan_{it} * SerH_i + \beta_6\, var_Tan_{it} * SerL_i + \beta_7\, var_NonTan_{it} * Ind_i + \beta_8\, var_NonTan_{it} * SerH_i + \beta_9\, var_NonTan_{it} * SerL_i + \beta_{10}\, Sales_TA_{it} + \beta_{11}\, average_WACC_{it} + \beta_d D_t + a_i + u_{it} \quad (3)$$

Where:

- EVA_TA_{it} is the EVA of company *i* for year *t* over total assets of company *i* for year *t*-1;
- MVA_TA_{it} is the MVA of company *i* for year *t* over total assets of company *i* for year *t*-1;
- Var_RE_{it} is the percentage variation of gross real estate assets of company *i* between year *t*-1 and year *t*;
- Var_Tan_{it} is the percentage variation of gross tangible assets excluding real estate of company *i* between year *t*-1 and year *t*;
- Var_NonTan_{it} is the percentage variation of gross non-tangible assets of company *i* between year *t*-1 and year *t*;
- Ind_i is a dummy variable equal to 1 if company *i* is part of the industry sector and 0 otherwise;
- $SerH_i$ is a dummy variable equal to 1 if company *i* is part of the services with high real estate intensity sector and 0 otherwise;
- $SerL_i$ is a dummy variable equal to 1 if company *i* is part of the services with low real estate intensity sector and 0 otherwise;

- Emp_{it-1} is the total number of employees of company I for year t-1;
- *Sales_TA* is the amount of sales of company *i* for year *t* over total assets of company *i* for year *t*-1;
- $average_WACC_{it}$ is the average WACC of company *i* over year *t*.
- D_t is a vector of year dummy;
- a_i is the unobserved fixed individual effect;
- u_{it} is the error term.

V – Empirical results

Three models are tested in the current research. Models (1, 2, and 3) respectively strive to identify (among other factors) how Corporate Real Estate affects the total sales of a firm, its value creation, and its market value added. In order to eliminate the unobserved fixed individual effects, we use the within-group transformation to estimate the coefficients of the model. With this transformation, the intercept is also eliminated. Results for Model (1) are shown in table 10. The four coefficients $\gamma_{6,7,8,9,}$ are highly significant (at the 1% threshold level) and with a positive sign. All other coefficients do not exhibit any statistical significance. This means that Corporate Real Estate assets acquired by companies do not have an impact on its assets turnover ratio (i.e. Sales/Assets). This seems particularly the case for the service industry with a low real estate intensity (i.e. coefficients $\gamma_{6,9}$), as an increase in fixed as well as intangible assets (besides real estate) has a positive impact on Total sales over total assets.

– Insert Table 10 about here –

The specific interest of this study is whether the coefficients α_1, α_2, and α_3 in model (2) and the coefficients β_1, β_2, and β_3 in model (3) are statistically different from zero and their respective signs. The results would reveal whether the percentage variation of real estate assets has a significant positive or negative impact on EVA or MVA over total assets, respectively in industry, in services with high real estate intensity, and in services with low real estate intensity. Model (2) has been estimated three times using the three different calculations of EVA. Model (3) has been estimated also three times, using as an explanatory variable the three measures of the WACC. Results are summarized in tables 11 and 12.

– Insert Tables 11 & 12 about here –

Table 11 exhibits that—whatever the specification of the model considered—the Economic Value Added created by companies is negatively affected by the increase of Corporate Real Estate for firm in the service sector with low real estate intensity (i.e. coefficients α_3 statistically significant for 2 different specification of the model). Besides, the increase of tangible assets (i.e. coefficients α_4 and α_6, overall statistically significant at the 1% level) plays also a negative role on the value creation for both firms in the industry or the service sector. These results suggest that sales of Corporate Real Estate (resp. fixed assets) may create value for services companies (resp. for companies in the industry sector). Results from Table 12 indicate that market reacted positively to the decrease of Corporate Real Estate or Tangible assets for firms in the industry sector (i.e. coefficients $\beta_{1,4}$ statistically at the 1% level). This confirms the trend observed in France over the period considered, where numerous listed companies sold a significant amount of their Real Estate for efficiency reasons. The decrease of tangible assets for firms in the service sector (but with low real estate intensity) is also positively associated with market value added (i.e. coefficient β_6). Both empirical models (i.e. with EVA or MVA as dependant variable) are significant. Regressions for MVA display an adjusted R^2 of about 47 % which suggest a quite relevant specification. Overall, regression results may suggest that the sales of fixed assets and/or Corporate Real Estate was well perceived by financial market participants as they increase the value creation for shareholders (i.e. EVA).

VI – Conclusion

This paper aims at investigating specific factors likely to affect the value created for shareholders (i.e. EVA and MVA). The underlying assumption is that Corporate Real Estate may have an impact on this value creation. Using a pool sample composed of French listed companies (i.e. the SBF 250) – over the period 1999-2004 – our empirical results show that, an increase in the proportion of real estate assets (over total assets) is negatively associated with EVA, but specifically for firms in the service industries exhibiting low real estate intensity. The regressions on MVA show a negative association with the change in the real estate for firms outside the service industries. Those results suggest the sales of real estate assets can be driven by value maximizing behaviour. One caveat should be put forward. Real estate assets on corporate balance sheets are reported at historic cost. This may under-evaluate the role of real estate assets. The current market values of these assets should be used instead, but this information is not available before 2005 and the application of the IFRS.

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Table 1: Sample Gross Real Estate Assets (millions euros)

date	Sum	Average	Median
1998	91 267.15	696.70	100.85
1999	106 648.14	814.11	103.00
2000	120 026.20	916.23	129.64
2001	122 472.77	934.91	125.34
2002	118 881.95	907.50	119.19
2003	116 341.33	888.10	134.20
2004	122 020.97	931.46	123.11

Source: Thomson One Banker

Table 2: Distribution of the sample companies by sector and average gross real estate assets in millions euros over the 1998-2004 period

SECTOR		Count	%	Average Gross Real Estate Assets over the 1998-2004 period
Industry	1 - Basic Products	10	7.6%	939.10
	2 - Construction	8	6.1%	1 805.73
	3 - Capital Goods	19	14.5%	344.10
	4 - Car Industry	6	4.6%	1 813.77
	5 - Food Products	6	4.6%	666.45
	6 - Other Consumer Goods	24	18.3%	377.19
	Total	*73*	*55.7%*	*743.95*
Services	7 - Retail	13	9.9%	1 848.66
	8 - Hotel, Accomodation, Restaurant	9	6.9%	778.11
	9 - Software and Computer Services	9	6.9%	62.20
	10 - Transportation/ Communication	16	12.2%	1 564.49
	11 - Other Services	11	8.4%	274.12
	Total	*58*	*44.3%*	*1 028.32*
Total		131	100%	869.86

Source: Thomson One Banker

Table 3: Sample yearly average proportion of gross total tangible assets represented by gross real estate assets

date	Industry		Services with high real estate intensity		Services with low real estate intensity	
	average	std deviation	average	std deviation	average	std deviation
1998	28.6%	0.14	53.1%	0.19	28.0%	0.20
1999	27.5%	0.13	53.0%	0.19	27.5%	0.20
2000	27.4%	0.12	52.3%	0.21	26.8%	0.21
2001	28.2%	0.12	51.3%	0.18	27.1%	0.22
2002	27.8%	0.13	51.7%	0.17	27.1%	0.21
2003	27.8%	0.13	49.2%	0.18	26.6%	0.21
2004	27.6%	0.13	51.7%	0.19	26.8%	0.21
average	*27.8%*	*0.13*	*51.7%*	*0.18*	*27.1%*	*0.21*
count	*73*		*22*		*36*	

Table 4: Sample yearly average end of period WACC

date	WACC1	WACC2	WACC_Datastream
1998			9.2%
1999	23.1%	24.0%	8.6%
2000	13.9%	13.9%	8.5%
2001	14.4%	14.4%	8.4%
2002	5.5%	6.7%	8.4%
2003	10.8%	10.7%	8.7%
2004	12.8%	12.7%	8.7%

Table 5: Sample yearly average EVA and MVA (millions euros)

	EVA1	EVA2	EVA_Datastream	MVA
1998				1 766.10
1999			3.07	4 258.58
2000	-446.47	-433.05	69.43	3 980.15
2001	-512.23	-451.72	-122.77	2 487.44
2002	-336.44	-265.20	-150.72	1 484.65
2003	-84.29	-68.83	-4.78	2 054.49
2004	-95.13	-76.16	110.90	2 154.15

Table 6: Sample yearly average EVA1 in industrial sectors (millions euros)

date	1 - Basic products	2 - Construction	3 - Capital goods	4 - Car industry	5 - Food products	6 - Other consumer goods
1998						
1999						
2000	-35.05	47.54	-758.83	80.40	18.47	-164.38
2001	-147.15	279.55	-1 159.93	352.06	-2.05	-129.62
2002	-115.18	-228.64	-563.82	-39.58	194.80	-113.00
2003	-174.12	-239.63	-185.37	46.74	112.33	-11.61
2004	116.67	-379.59	-111.46	-122.15	18.72	-1.06
Average	*-70.97*	*-104.16*	*-555.88*	*63.49*	*68.45*	*-83.93*
Count	*10*	*8*	*19*	*6*	*6*	*24*

Table 7: Sample yearly average EVA1 in services sectors (millions euros)

date	7 - Retail	8 - Hotel, accommodation, restaurant	9 - Software and computer services	10 - Transportation/ Communication	11 - Other services
1998					
1999					
2000	-130.82	-64.69	-265.95	-2 190.22	-93.48
2001	40.48	-27.39	-231.44	-2 622.96	-95.15
2002	6.04	-105.90	-181.88	-1 573.97	-82.28
2003	15.82	-121.32	-81.58	-170.87	-16.69
2004	-29.70	-153.27	-113.73	-280.02	-50.78
Average	*-19.63*	*-94.52*	*-174.92*	*-1 367.60*	*-67.68*
Count	*13*	*9*	*9*	*16*	*11*

Table 8: Sample yearly average MVA in industrial sectors (millions euros)

date	1 - Basic products	2 - Construction	3 - Capital goods	4 - Car industry	5 - Food products	6 - Other consumer goods
1998	1 915.70	831.66	1 423.95	410.66	1 968.80	1 923.03
1999	7 707.48	3 385.68	4 777.36	1 192.15	1 711.09	3 948.39
2000	8 928.17	2 063.86	6 079.34	725.94	2 669.05	3 868.53
2001	7 933.83	1 564.32	2 696.03	106.76	2 382.38	2 894.38
2002	5 985.44	167.42	866.35	-437.93	2 187.51	2 451.53
2003	6 911.96	987.71	1 775.52	-272.01	2 305.38	2 752.08
2004	7 748.43	1 704.30	1 598.89	-221.69	2 771.72	2 526.40
Average	*6 733.00*	*1 529.28*	*2 745.35*	*214.84*	*2 285.13*	*2 909.19*
Count	*10*	*8*	*19*	*6*	*6*	*24*

Table 9: Sample yearly average MVA in services sectors (millions euros)

date	7 - Retail	8 - Hotel, accommodation, restaurant	9 - Software and computer services	10 - Transportation/ Communication	11 - Other services
1998	3 011.18	965.77	1 567.13	3 453.06	79.45
1999	6 604.32	1 148.15	3 321.45	7 510.06	410.79
2000	4 796.51	1 030.36	3 405.55	4 804.73	702.90
2001	3 252.41	1 052.06	1 762.88	1 583.16	493.68
2002	1 760.69	375.55	194.74	1 217.00	0.65
2003	1 995.17	588.06	837.45	2 343.86	351.24
2004	1 385.93	565.97	723.08	2 833.95	890.90
Average	*3 258.03*	*817.99*	*1 687.47*	*3 392.26*	*418.52*
Count	*13*	*9*	*9*	*16*	*11*

le 10: Summary of model 1 regression results

	Sales_TA$_{it}$
$Var_RE_{it-1} * Ind_i$	0.0261 (1.14)
$Var_RE_{it-1} * SerH_i$	0.0055 (0.50)
$Var_RE_{it-1} * SerL_i$	-0.0062 (-0.48)
$Var_Tan_{it-1} * Ind_i$	0.0179 (0.94)
$Var_Tan_{it-1} * SerH_i$	0.0172 (0.18)
$Var_Tan_{it-1} * SerL_i$	0.1437 (3.74)***
$Var_NonTan_{it-1} * Ind_i$	0.2263 (5.82)***
$Var_NonTan_{it-1} * SerH_i$	0.3435 (5.18)***
$Var_NonTan_{it-1} * SerL_i$	0.1367 (4.00)***
$Var_Emp_{it-1}*Ind_i$	0.0614 (0.983)
$Var_Emp_{it-1}*SerH_i$	-0.0474 (-0.41)
$Var_Emp_{it-1}*SerL_i$	0.0.0526 (1.77)*
$T2000_t$	-0.0005 (-0.021)
$T2001_t$	-0.077 (-3.51)***
$T2002_t$	-0.1181 (-5.27)***
$T2003_t$	-0.1262 (-5.61)***
$T2004_t$	-0.096 (-4.31)***
Number of observations	780
Adjusted R^2	0.3809

ıes in parenthesis. *,**,*** significant at the 10%, 5% or 1 %
respectively

le 11: Summary of model 2 regression results

	EVA1_TA$_{it}$	EVA2_TA$_{it}$	VA_Datastream_TA$_{it}$
*var_RE$_{it}$ * Ind$_i$*	0.0130[1] (1.52)	0.0122[2] (1.57)	0.0072 (1.72)*
*var_RE$_{it}$ * SerH$_i$*	-0.0004 (-0.09)	-0.0006 (-0.151)	0.0003 (0.153)
*var_RE$_{it}$ * SerL$_i$*	-0.0132 (-2.67)***	0.0004 (0.09)	-0.0078 (-1.76)*
*var_Tan$_{it}$ * Ind$_i$*	-0.0276 (-3.52)***	-0.0255 (-3.57)***	-0.0166 (-2.48)**
*var_Tan$_{it}$ * SerH$_i$*	-0.0049 (-0.16)	-0.0112 (-0.40)	-0.0098 (-0.567)
*var_Tan$_{it}$ * SerL$_i$*	-0.0427 (-2.96)***	-0.5219 (-3.57)***	0.01518 (1.67)*
*ar_NonTan$_{it}$ * Ind$_i$*	0.0419 (2.96)***	0.0360 (2.78)***	0.0168 (2.67)***
*ar_NonTan$_{it}$ * SerH$_i$*	0.0398 (1.53)	0.0334 (1.41)	0.0207 (1.74)*
*ar_NonTan$_{it}$ * SerL$_i$*	-0.0324 (-2.42)**	-0.0436 (-3.56)***	0.0255 (3.89)***
T2000$_t$	-	-	-0.0007 (-0.18)
T2001$_t$	0.0103 (1.23)	0.0096 (1.26)	-0.0104 (-2.46)**
T2002$_t$	0.0201 (2.35)**	0.0210 (2.69)***	-0.0164 (-3.84)***
T2003$_t$	0.0288 (3.35)***	0.0238 (3.03)***	-0.0163 (-3.79)***
T2004$_t$	0.0261 (3.07)***	0.0204 (2.63)***	-0.0094 (-2.21)**
mber of observations	650	650	681
Adjusted R²	0.1358	0.1374	0.1362

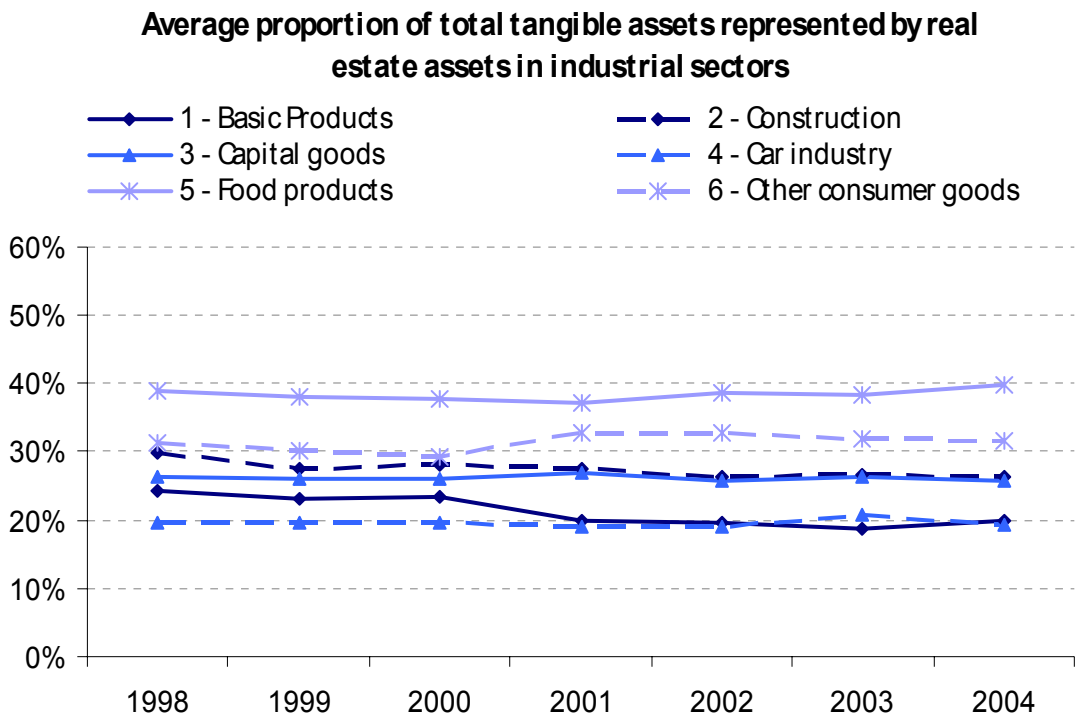
ıes in parenthesis. *,**,*** significant at the 10%, 5% or 1 % level respectively

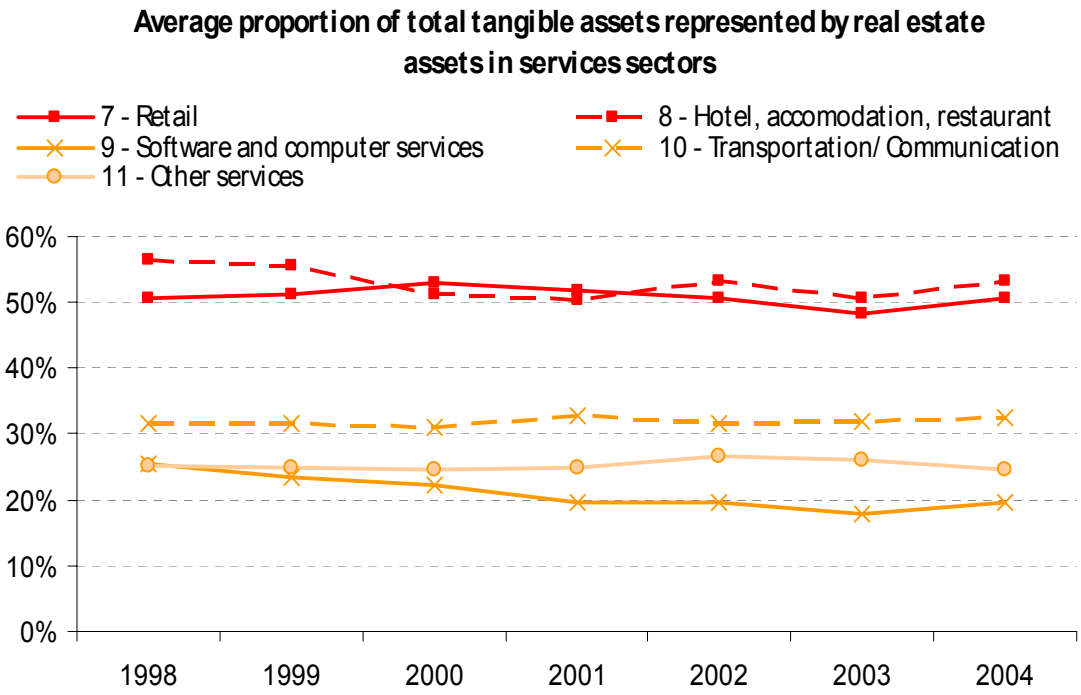
le 12: Summary of model 3 regression results

	MVA_TA$_{it}$ *sing WACC1*	**MVA_TA$_{it}$** *sing WACC2*	**MVA_TA$_{it}$** *Using VACC_Datastream*
*var_RE$_{it}$ * Ind$_i$*	-0.2195 (-3.54)***	-0.2193 (-3.55)***	-0.0521 (-0.576)
*var_RE$_{it}$ * SerH$_i$*	-0.0051 (-0.167)	-0.0055 (-0.182)	0.0014 (0.0353)
*var_RE$_{it}$ * SerL$_i$*	-0.0298 (-0.837)	-0.03667 (-1.03)	-0.1639 (-1.81)*
*var_Tan$_{it}$ * Ind$_i$*	-0.1510 (-2.66)***	-0.1528 (-2.70)***	-0.1651 (-1.19)
*var_Tan$_{it}$ * SerH$_i$*	0.0913 (0.415)	0.0927 (0.423)	-0.0131 (-0.0368)
*var_Tan$_{it}$ * SerL$_i$*	-0.2266 (-1.93)*	-0.2305 (-1.97)**	0.2185 (1.11)
*var_NonTan$_{it}$ * Ind$_i$*	-0.1191 (-1.10)	-0.1149 (-1.06)	-0.2884 (-2.17)**
*var_NonTan$_{it}$ * SerH$_i$*	-0.7761 (-4.01)***	-0.7720 (-4.0)***	-0.4371 (-1.73)*
*var_NonTan$_{it}$ * SerL$_i$*	-0.0761 (-0.766)	-0.0789 (-0.796)	0.1650 (1.18)
Sales_TA$_{it}$	2.0916 (15.7)***	2.0938 (15.8)***	1.5151 (7.19)***
average_WACC1$_{it}$	1.1412 (5.83)***	-	-
average_WACC2$_{it}$	-	1.2220 (6.05)***	-
rage_WACC_Datastream$_{it}$	-	-	1.5305 (1.43)
T2000$_t$	-	-	-0.0923 (-1.07)
T2001$_t$	-0.1451 (-2.37)**	-0.1352 (-2.20)**	-0.2826 (-3.22)***
T2002$_t$	-0.2158 (-3.32)***	-0.2076 (-3.19)***	-0.4295 (-4.76)***
T2003$_t$	-0.0836 (-1.26)	-0.0753 (-1.14)	-0.3258 (-3.59)***
T2004$_t$	-0.1764 (-2.79)***	-0.1629 (-2.57)**	-0.3610 (-4.07)***
Number of observations	650	650	681
Adjusted R^2	0.4731	0.4757	0.2572

ues in parenthesis. *,**,*** significant at the 10%, 5% or 1 % level respectively

Figure 1: Sample average proportion of gross tangible assets represented by real estate in industrial and services sectors





Appendixes

List of the sample companies by activity sector

INDUSTRY

1 – Basic Products
- Air Liquide
- Bourbon
- CFF Recycling
- Compagnie Générale de Geophysique
- Dynaction
- PCAS
- Rhodia
- Robertet SA
- Technip
- Total SA

2 - Construction
- Bouygues SA
- CS Communication Systems SA
- Ciments Francais
- Cnim CA
- Colas SA
- Lafarge
- Saint Gobain
- Vicat SA

3 – Capital Goods
- Alcatel
- Bull
- Bacou-Dalloz SA
- Carbone-Lorraine
- Dassault Aviation
- Delachaux
- Ingenico
- Latecoere
- Lisi
- Manitou
- Nord Est
- Radiall SA
- Safran SA
- Schneider Electric SA
- Somfy SA
- Stmicroelectronics
- Thales SA
- Vallourec
- Zodiac SA

4 – Car Industry
- Faurecia
- Montupet
- Peugeot SA
- Plastic Omnium
- Renault SA
- Valeo SA

5 – Food Products
- Bongrain
- Fromageries Bel
- Groupe Danone
- Pernod-Ricard
- Remy Cointreau
- Taittinger SA

6 – Other Consumer Goods
- Ales Groupe
- Altadis SA
- Arkopharma SA
- Beneteau
- Boiron SA
- Chargeurs SA
- Christian Dior
- Clarins
- DMC
- Deveaux SA
- Essilor International
- Eurofins Scientific AG
- Exacompta SA
- Groupe Gascogne
- Groupe Guillin
- Guy Degrenne SA
- Hermes International
- L'Oreal
- LVMH
- Pochet SA
- Rodriguez Group
- Skis Rossignol SA
- Smoby
- Trigano

SERVICES

7 – Retail
- Bricorama SA
- Carrefour
- Casino Guichard-Perrachon
- Etam Developement
- Finatis
- Guyenne & Gascogne SA
- Hyparlo
- Marionnaud Parfumeries
- PPR SA
- Rallye
- Société Anonyme des Galeries Lafayette
- Samse SA
- Thermador Groupe

8 – Hotel, Accommodation, Restaurant
- Accor
- CDA-Compagnie Des Alpes
- Club Mediterranee SA
- Euro Disney SCA
- Groupe Flo
- Leon De Bruxelles
- Soxiété du Louvre
- Medidep
- Sodexho Alliance SA

9 – Software and Computer Services
- Atos Origin SA
- Cap Gemini SA
- Cegedim
- Cegid SA
- Dassault Systemes SA
- GFI Informatique
- Prosodie SA
- Silicomp
- Unilog

10 – Transportation/ Communication
- Air France-KLM
- Bollore
- Bollore Investissement SA
- Eurotunnel SA
- Financière de l'Odet SA
- Fininfo
- France Telecom
- Gaumont
- Genesys SA
- Geodis SA
- High Co
- Lagardere Groupe
- Norbert Dentressangle
- SR Teleperformance
- Spir Communication
- Stef-TFE

11 – Other Services
- Altran Technologies
- Areva CI
- Electricite Strasbourg
- Fimalac
- Groupe Partouche SA
- Hotels Deauville
- LVL Medical Groupe
- Manutan International SA
- Penauille Polyservices
- Rubis
- Seche Environnement

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