Estimating the Determinants of Financial Performance of Very Small Service Firms

Peter Risseeuw[†]
Economic and Social Institute, Vrije Universiteit
De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands
phone: +31.20.4446080 fax: +31.20.4446127 e-mail: prisseeuw@econ.vu.nl

Abstract

We explain the financial performance of small real estate firms from several factors inside and outside the firm. The data used are derived from a panel consisting of 1024 members of the main Dutch real estate broker's association.

By means of correlation and regression analysis, we conclude that there are limited economies of scale. Very small firms differ essentially from their larger colleagues. They perform significantly worse, and both competitive and managerial processes work out differently for large and small firms. The competitive environment hardly affects individual firms' performance. The impact of market product combinations and market profiles differs per market segment. No evidence for economies of scope or economies of specialization was found.

Guide for the reader

In section 1, we sketch the *raison d'être* of this paper: theoretical background, and the gap we intend to fill. In section 2 we derive hypotheses, based on both theoretical conjectures and the actual market for estate agents in the Netherlands. These hypotheses are tested bivariate in section 3, and by means of a regression analysis in section 4. In section 5 we derive some conclusions.

1 Theoretical background

1.1 Success of small firms

When analyzing entrepreneurial success, one has to be careful in making assumptions about the behavior of firms and entrepreneurs. The theory of the firm provides many goals entrepreneurs and firms can strive for, like maximization of profits, value of the firm, dividend payments, cash flow, market share, managerial income, growth, etc. Continuity of the firm acts a restriction on maximizing behavior. See Scherer and Ross (1990) for a thorough survey. In the behavioral tradition (Cyert and March, 1963) a straightforward goalseeking behavior cannot exist. A firm's decisions are the outcomes of an internal negotiation process among external shareholders, working owners, managers, employees, in the case of small firms the relatives of working owners, etc. The theory of *bounded rationality* (Simon, 1982) teaches that even if clear goals exist, there is not necessarily a direct relation between stated goals and applied strategies. Firm's owners and managers operate in a situation of incomplete informa-

[†] Support for this research was provided by the Dutch broker's association NVM. The author wishes to thank Jos Janssen of the NVM for his kind cooperation, Roy Thurik for major improvements, and Enno Masurel, Alfred Kleinknecht and Menno Pradhan for valuable comments on earlier versions.

tion and uncertainty about their environment, and never can be sure about the effects of their actions. For small firms, the situation is even more unclear. They are supposed to have 'soft' goals, like labor satisfaction, employee well being, etc. d'Amboise and Muldowney (1988) describe «the goals of the small businessperson as vague, inadequately defined, pragmatic, and short-ranged». Still, in empirical research usually some kind of maximizing behavior is assumed, and performance is related to the outcomes of the corresponding financial variable.

The body of empirical research on the determinants of financial performance is large. Capon *et al.* (1990) provide a meta-analysis on 320 studies, published between 1921 and 1987 only. Most of it suffers from three major limitations: data is mainly US-based (among others noted by Kotha & Nair, 1995), applies to manufacturing industries (Birley & Westhead, 1990) and small firms are left out. Birley & Westhead (1990) note that data on small firm performance is «difficult to obtain and notoriously unreliable». Even if entrepreneurial traits are part of the analysis (as in McGee *et al.*, 1995), the research is based on large or at best medium-sized firms. If very small firms are studied, the focus is either on start-ups (Birley & Westhead 1994, Van Praag 1996), which misses the point of the importance of mature small firms, or the number of observations is too small to allow for decent statistical conclusions (as in Hornaday & Wheatley, 1986). In this paper we study very small firms in a European service industry, thus overcoming the limitations mentioned above.

There is a lively debate between the school of industrial organization and the school of strategic management whether it is industry structure or firm competencies and behavior which determines success. Roquebert *et al.* (1996) present a concise overview of this debate. Within the strategic management school, there are two main lines of thought. In the resource-based view the firm is a bundle of resources, and competitive advantage is a function of the actual bundling. Mehra (1996) looks at the firm as a bundle of market strategies, which comes close to the approach of industrial organization. We see no reason to choose rigidly between 'environment' and 'strategy'. However, incorporating both in a model can yield identification problems. Birley & Westhead (1994) explain the lack of explanatory power of their entrepreneurial taxonomy by referencing to the dominance of factors «outside the 'local' area of the business». Indeed, since the absence of influence on their environment is a common part of the definition of small firms, very small firms are completely dependent on their environment. A consequence is, that in samples containing data from firms in different industries or operating in heterogeneous markets, market related variables automatically will have a dominant effect. This is acceptable or even desired if one works at the industry level, but undesirable if one wants to work at the level of the individual firm. In this light is it remarkable that 163 out of the 205 studies at the firm level Capon *et al.* (1990) mention, 163 are sampled from multiple industries.

In the current study, we overcome this problem by looking in depth to one particular industry (Dutch real estate brokerage), making use of a large and detailed multi-year dataset. The firms in our sample compete on regionally different, but comparable markets. We are able to distinguish local market circumstances (competition, growth of regional markets), but these variables cannot dominate the analysis, because of the strong degree of homogeneity among firms and markets. By doing so, we neutralize for industry effects, and we reduce the relation *Performance = f (industry structure, firm & strategy)* to *Performance = f (firm & strategy | industry)*.

1.2 Measuring success

Measuring financial performance is not an easy task, especially in the case of small business. Return on assets is a commonly used indicator, but in the service industries this is a tricky concept. Assets tend to be of little importance, and are difficult to measure. Moreover, accounting data carry accounting noise (Palepu, 1985), and are unreliable to a certain extent. Due to difficulties with financial data of small firms, the literature gives numerous approximations for financial success: the rate in which entrepreneurs are satisfied with their profits (Birley & Westhead 1990), or the way they rank their performance to their main competitors (Brooksbank, Kirby & Wright, 1992). Being subjective and sometimes prospective, these indicators are pretty shaky.

Mehra (1996) distinguishes three dimensions of financial performance: profitability, productivity and the ability to raise long term resources. Productivity is calculated as net profit divided by number of employee, because «for a service organization (…) human resources are its biggest asset, and therefore productivity per employee is an important performance criteria». In the current study we follow this approach, using operating profits, unmitigated by 'fiscal and accounting noise'. As a nominal figure, net return is too much correlated with size to leave much room for the impact of other variables. Therefore, in the analysis we use Return on Sales (RoS).

2 Explaining the financial performance of estate agents

2.1 Market circumstances

Business cycle In the period under study (1991–1993), Dutch real estate market was prosperous, without any large shocks or the like. General market conditions and business opportunities were homogeneous and stable for all estate agents. Thus there is no need to incorporate a general business cycle indicator in our model.

Competition The more intensive competition is, the more difficult it is to generate large profits. Under perfect competition, no player can gain excess profits, while under perfect monopoly the single player can, within the limits of demand, determine profits. Both competitive regimes are seldom observed in the real world. Porter (1980) distinguishes five forces influencing competition at the industry level: competition among existing firms, (the threat of) new entrants, bargaining power of both suppliers and clients, and substitute products or services. For estate brokers in the period under study, the main force is the first one, competition among incumbent firms. Entry and exit were of little importance in the early nineties (see below), and since entry-barriers do not distinguish among the population of existing firms, these dimensions of competition are excluded from the analysis. There was no substantial threat of substitute services. There is little product differentiation, and thanks to a regime of fixed prices there was no price competition, which implies that the bargaining power of clients is not a relevant issue. This has changed in 1994 (see Section 5).

Cyert *et al.* (1993) note that in a market without product and price competition, products and services are commodities, and firms compete through quality of service, reliability of deliverance and reputation. Hall (1993) measures the impact of such intangibilities, and the rate at which they can be sustained. In his view *know-how* and *reputation* are key factors. In

the current study, all firms are subjected to the same requirements on formal skills and education, hence know-how can not discriminate. Since it is impossible to measure broker's reputations with a survey among brokers themselves, we will exclude these dimensions from the analysis.

Market concentration In the real estate brokerage industry, expertise on local markets and access to local networks are keywords. Estate brokers cover a small territory: half of the firms in the Netherlands works within a radius of 20 kilometers around their office (Masurel and Risseeuw 1993, Lukkes and Van Rooden 1986). This finding has international validity: Palm (1976) reports similar results for Minneapolis and the San Francisco Bay Area. If we want to study competition, it has to be *local* competition. Firms compete with other local firms, and thus we derive competition intensity from figures of regional markets.[1]

It is impossible to measure competition intensity directly, but there are several ways to approximate it. Market concentration is one. In a highly concentrated market, where large firms dominate, competition is less intensive, and thus higher profits can be realized. We use entropy (the Theil-coefficient) as a measure for market concentration.[2] Entropy is calculated as follows: be x_i the market share of firm i (the x_i's add to 1), then the value of entropy (E) for the market is: $E = \Sigma_i x_i \times (\ln 1/x_i)$. Low entropy denotes high concentration. If the number of firms is large enough, a rule of thumb says that a value of entropy below 3 indicates a highly concentrated market, a value between 3 and 7 indicates moderate concentration, while a value larger than 7 indicates a highly fragmented market. For the total population, entropy is 6½. Entropy varies with the number of firms in the market. Since we want to use regional markets, and the number of firms on these markets varies from less then 20 to over 100, we use local *relative* entropy, defined as $E/\ln(n)$, where n is the number of firms. Relative entropy is independent of the number of firms, and is interpreted the same way as normal entropy: the lower entropy, the higher is the market concentration. A negative relationship between competition intensity and individual firm's performance is assumed:

Hypothesis 1: *The lower relative entropy, the better firm's financial performances will be.*

Market density The number of firms in a market is a measure for the size of the market. A large market provides opportunities for the creation of niches, and thus for higher profits. A large number of players also enhances competition: customers can easily switch between suppliers, and opportunities for successful and durable collusion are suppressed. Birley and Westhead (1990) find evidence of a negative relationship between the number of *direct* competitors and individual firm's performance. We follow them in stating hypothesis 2:

Hypothesis 2: *A high market density has a negative impact on the performance of individual firms.*

2.2 Demographic characteristics

[1] The Dutch brokerage association is divided into 26 regions. In more elaborate models, competition is not only locally limited, but also by firm size. Large firms compete with other large firms, small firms compete each other on different markets. See Hannan *et al.* (1990).

[2] Other measures are the C_j-index (the market share of the j largest firms, for j usually a value of 4 or 10 is taken), the Herfindahl-Hirschmann index, the Gini-coefficient, the number of firms in the market as it is, the market share of the combined small firms ('small business presence'). Normally these measures are strongly correlated. See Scherer and Ross (1990).

A firm's demographic characteristics are those properties, that it cannot influence at all (like its age), or cannot change in the short run (e.g., size, number of outlets, etc.) These characteristics provide the framework in which the firm's management has to work.

Size The existence or absence of *economies of scale* is a central issue in small business economics. Most empirical research reports economies of scale, also in the sense of profitability (see Fiegenbaum and Karnani 1991), but there is very little research on estate brokers. Zumpano *et al.* (1993), using data of 279 American real estate firms, conclude that «…except for very large firms, modest economies of scale persist throughout almost the entire range of output.» The firms in their sample are on average ten times as large as the firms in ours, which makes it doubtful whether their conclusions are transposable. The majority of the firms in our sample belongs to the category of 'micro-enterprises' (less than 10 employees), but even within such a small range Risseeuw and Masurel (1994) report only *limited* economies of scale. Performance increases with size, but the benefits of size become smaller beyond a threshold. We state:

Hypothesis 3: *Performance increases with firm size.*

Number of outlets The more outlets, the larger the market a firm covers. Multiple outlets however may lead to managerial diseconomies: more overhead activities, higher fixed costs, etc. If there are economies of scale, a larger number of outlets means a better performance. If not, or if diseconomies exist, more outlets lead to a worse performance. In a study on retail banks, Barnett *et al.* (1994) find single unit banks performing better. They argue that a firm's emphasis on market positioning retards organizational learning. We follow them:

Hypothesis 4: *Single outlet firms perform better.*

Age of the firm Firms have a cycle of growth and decline. Newly established firms generally have an enthusiastic and energetic crew, which should enhance performance. On the other hand young firms are confronted with start-up problems (Cromie 1991). Older firms have overcome these problems, and can rely on experience and a network of existing suppliers and customers, which enhances efficiency. In Jovanovic's (1982) much quoted model, surviving firms and their managers learn, and thus improve strategies in time. Birley and Westhead (1990) find mature firms performing better. We state:

Hypothesis 5: *Performance increases with firm age.*

2.3 Strategy

Marketing strategy Within the restrictions set by the association, brokers offer a full range of real estate services: valuation, brokerage on behalf of buyers, sellers or renters, mortgage brokerage, etc. Besides these services, estate brokers offer services in the field of real estate management and insurance brokerage. We distinguish three dimensions in a firm's marketing strategy: (i) the product market combinations it carries, i.e. its services it decides to offer, (ii) its rate of specialization in a certain branch of services or market segment and (iii) its market profile, e.g. as a specialized or as an all round player.

Product market combinations The profitability of real estate brokerage services highly depends on the prosperity of the underlying real estate markets. Although the real estate market in general was prosperous, there are differences for the various market segments. The

housing market flourished throughout the research period (with mortgages in its slipstream), while the market for commercial real estate hampered. A small but profitable segment is agricultural real estate. The dominant clients in this segment are local governments, who hire brokers for specialized, mostly legal services.

We assume brokers providing services to a flourishing market to perform better than those who play on a hampering market. This assumption is not as trivial as it looks at first sight. Flourishing markets attract new players, and thus tend to be crowded and competitive, while hampering markets are abandoned by players without clear perspectives, leaving the playfield open for remaining niche-players. Nevertheless, we assume brokers playing in a booming market to make better profits. In the analysis, we will treat the markets for housing, agricultural real estate and mortgages as flourishing, commercial real estate as hampering.

Some broker's activities, like real estate management are not directly related to the cycle. These activities have a lasting portfolio nature, with yearly recurrent revenues, based on multi-year contracts. The uncertainty about contract-based future revenues is smaller than for revenues from activities that reflect the business cycle. Since profits can partly be seen as a premium for uncertainty, more certainty should lead to lower profits. We assume a threefold relation between product market combinations and performance:

Hypothesis 6A: *A high share of revenues related to a flourishing market leads to a higher return on sales.*
Hypothesis 6B: *A high share of revenues related to a hampering market leads to a lower return on sales.*
Hypothesis 6C: *A high share of revenues with a portfolio nature leads to a lower return on sales.*

Specialization A high rate of specialization is an indication of a niche market. The niche can be either geographical or product-related. In estate brokerage both types of niches do occur. If the combination of various products enhances operations, in other words if there are *economies of scope*, a high rate of specialization does not pay. Although it is common to assume a positive relationship between diversification and performance (see for instance Palepu 1985), the evidence is not strong. See Datta *et al.* (1991) for a survey of empirical studies on this topic. There are no clear conclusions. Besides, most research uses data of large manufacturing firms, like the Fortune 500. These firms are not comparable with the small scaled service firms in the current study. Birley and Westhead (1990) «assume a high percentage of sales revenue accounted for by the major product line or service group to be negatively associated with size and performance». However, they find no evidence for this assumption. Zumpano and Elder (1994), analyzing 232 American brokerage firms, report *economies of scope*. Firms with a balanced product mix perform better. However, their dataset consists of extremely homogeneous housing market brokerage firms, with a necessarily limited product range. In spite of the lack of evidence, we support the *communis opinio* on the relationship between diversification and performance also for small firms:

Hypothesis 7: *Firms with a balanced product mix perform better.*

Market profile Within the Dutch broker's association there are several specialized divisions ('strategic groups'), the largest of which is a nationwide operating franchise chain specializing in mortgage brokerage. There are three divisions specializing in commercial real estate, agricultural real estate and in real estate management. Housing market brokerage is such

a general activity, that it does not need its own division. Members of the divisions must have proven expertise on the division-related markets, and update their knowledge on a regular basis. They present themselves as specialists on the market segments in question. We assume such a profile to be a competitive advantage, leading to a better performance.

Hypothesis 8: *A high market profile leads to a better performance.*

Hypothesis 8 is related, but not identical, to hypotheses 6A–C about the product mix. The difference lies in the notion that it is relative easy to switch between activities or market segments if market circumstances change, while is much more difficult to change a market profile. A switch of profile implies switching costs, and sunk costs for the old profile. Hannan and Freeman (1977) showed that a certain amount of inertia is an asset in terms of reliability and accountability. Prudent firms should be reluctant to change their market profile too often.

Human capital management Human capital is the main asset of service firms. The quality of a firm's labor force, the available skills, competencies and personal networks are decisive success factors. Firms with more competent personnel have a competitive edge. Hall (1993) describes how know-how helps to build and sustain competitive advantage. Firms need to make sure that their stock of human capital responds to market demand. They can do so by maintaining existing, and building new capabilities. Management strategies are implemented by training incumbent personnel, by hiring competent new personnel, by making use of an incentive system, etc. In the present study all brokers are subjected to the same requirements on formal skills and education. These traits should not discriminate among firms.

Wages We have no information about the capabilities of brokers and clerical personnel, but we can approximate the quality of the labor force with the level of wages. Highly qualified personnel can negotiate higher wages and the other way round, high wages yield better motivated personnel. Moreover, they give the firm an attractive labor market profile: a firm with a good reputation can more easily attract highly qualified personnel. Although the direct impact of a high wage base on profits is negative (it implies high labor costs), our working hypothesis is that a high average salary leads to a higher productivity, and thus to higher returns on sales.

Hypothesis 9: *A high wage level leads to a better performance.*

A performance related wage structure is a means of enhancing productivity. The most common way to do so, is by paying brokers a turnover related commission instead of fixed wages. If a broker is (partly) paid on a commission basis, he can increase his earnings by realizing more transactions. The flipside of this strategy is that it may turn brokers myopic. Mamet (1984) shows what happens if in an estate broker's firm the short term interest of fast sales dominates the long term interest of a reliable reputation –one of the key factors identified by Hall (1993). Still we expect the incentive effect to have the strongest impact:

Hypothesis 10: *Firms paying personnel on a commission basis perform better.*

Quality management Quality management is a hot topic in service industries. A few brokers' firms in The Netherlands have acquired an ISO-9002 certificate, and a lot of firms have internal or externally supported quality management programs. Masurel and Risseeuw (1995) report that not less than six out of every seven firms indicate the existence of some kind of quality management program. This is surprising, in the sense that Risseeuw and Masurel (1994) report that in the same population only two thirds of the firms apply a structured plan-

ning approach. Although the variety of quality care programs is large, and the impact is difficult to measure, we assume an active quality management strategy to be an asset.

Hypothesis 11: A *quality management program improves financial performance.*

2.4 People in the firm

Competencies of the people in the firm have been discussed above. Besides skills and know-how, personal properties of the people in the firm might be important as well.

Age Experienced people work effectively, and have a larger personal network. Carson *et al.* (1995) devote an entire chapter to the importance of what they call PCNs: *Personal Contact Networks*. Thus we may assume firms with older brokers to perform better. On the other hand, the energy and drive of people decline when they grow older, which might have a negative impact on their performance. Economies of learning and diseconomies of 'burning out' work in different directions, so the impact of age may not need be linear or even monotonous. An inverted U- or V-shape is a plausible specification. For the moment, we do not state a hypothesis, but treat broker's age in an exploratory fashion.

PM 1: *The age of the brokers may have an impact on the firm's performance.*

Number of brokers & gender For most clients on the housing market, real estate transactions are big events. Relative large amounts of money are involved, and changing residence is an activity with a large emotional impact (Rouwendal 1984). A good understanding between broker and customer is essential for a firm that wants to meet its customer's expectations. From interviews preceding the current study, it appeared that multi-broker firms claim to have a competitive edge. They have more possibilities in assigning a specific broker to their customers, and thus a larger probability of realizing mutual understanding. Especially firms with one or more female brokers in the crew asserted to have this option. Moreover, multi-broker firms are more flexible and less dependent on one single person. Thus we state:

Hypothesis 12: *Firms with more than one broker perform better.*
Hypothesis 13: *Firms with female brokers perform better.*

3 Description of the data

Sample All members of the NVM (covering about 70% of Dutch real estate brokers) are obliged by association rule to participate in an annual benchmarking study. During the years, an extremely detailed database has been build about estate broker's firms. In the current analysis we use data of 1024 firms that participated in the benchmarking studies in 1991, 1992 and 1993. In this period, about 1400 NVM-estate firms were active in the market. An annual average of 2.5 percent of the total number of firms entered, while another 2.5 percent ceased to exist. The majority of exits was not for economic reasons, but because of retirement of the entrepreneur. Most entrants were spin offs from incumbent firms. A career in which a broker works as an employee and leaps to entrepreneurship at an average age of 38 is common in Dutch estate brokerage. Essentially, this system of launching new firms from within gives the industry the nature of a closed shop, but since entry barriers do not affect the incumbent firms, this dimension of the competitive environment should not influence the current analysis.

3.1 Construction of variables

Survey-based empirical research often suffers from the problem of unstable results, caused by the fact that data are strongly influenced by singular circumstances.[3] See for instance Birley and Westhead (1990) or Reid (1993), where an interesting analysis does not lead to 'strong' conclusions, mainly caused by the unavailability of robust data, that are not sensitive to singular events or circumstances. We overcome the sensitivity to singular peaks by constructing flow variables (like profits) as *the average over 3 consecutive years*. Return on Sales is calculated as $(\Sigma_{t=91..93} P_{it})/(\Sigma_{t=91..93} S_{it})$, where P_{it} stands for operating profits, and S_{it} for sales of firm i in year t.[4] Doing so, we treat the panel as a cross-section. Since entry and exit were low in 1991-1993, the loss of econometric possibilities caused by dropping the panel information, is more than compensated by the gain in reliability of the variables under study.

Classifying variables, like membership of the specialized divisions, or whether there are female brokers or not, are calculated on the basis of 2 of the 3 years under study. If the answer is 'yes' in at least 2 of the 3 years, the dummy-variable is set to one, otherwise to zero.

Below we give a brief statistical description of operating profits and the explanatory variables in the analysis, as well as the way they correlate with performance. In section 4 we present the multivariate way, where the combined impact of all variables on performance is tackled by means of a regression analysis.

3.2 Descriptive statistics & bivariate relationships

Return on Sales Average relative operating profits of the firms in the sample are 11.5%, with a standard deviation of 16.2. [5] The median is 11.7%. Only 557 of the 1024 firms in the panel had positive profits during all of the three years under study. 84 Firms show a persistent loss. Figure 1 shows the frequency distribution of return on sales.

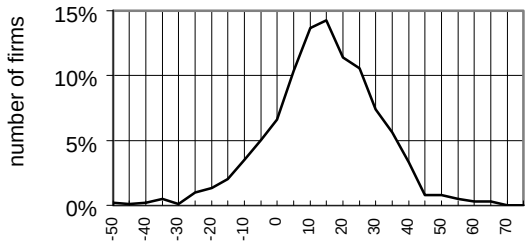

Figure 1: Distribution of Return on Sales 1991–1993 (%)

Market concentration & density Figure 2 shows entropy and mean performance for the 26 regional markets. No clear correlation becomes apparent from this figure. The relationship between market density and performance is much clearer. From Figure 3 shows a negative relationship at the aggregate level of the regional market.

---

[3] Such singularities could consist of a large transaction on the revenue side, or a large expense, e.g. a new computer network. A lot of broker's firms use a profitable year to contribute a large sum to their pension fund, which is fiscally attractive, but leads to a peak in annual costs.

[4] Since inflation was very low in 1991–1993 (a yearly average of 2.2 %), figures are not discounted.

[5] Operating profits are corrected for with labor costs for working owners of sole proprietorships, spouses working in the firm, etc.

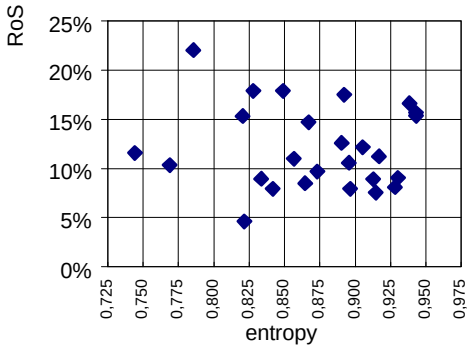

Figure 2: Return on Sales vs. Entropy

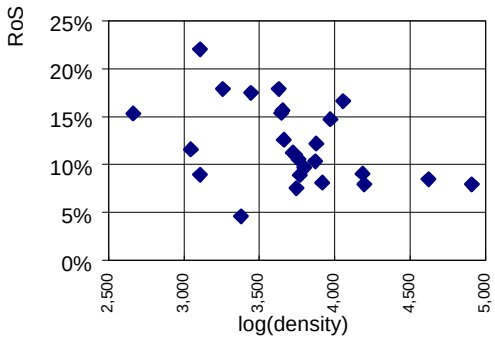

Figure 3: Return on Sales vs. Market Density

Firm size Average annual turnover of the firms in our panel is ƒ 706.000 (440.000$), with a median value of ƒ 469.000. The discrepancy between these two figures indicates a skewed firm size distribution, with a lot of small firms and relatively few large ones. The existence of economies of scale is suggested by Figure 4, where average profits are plotted versus size.

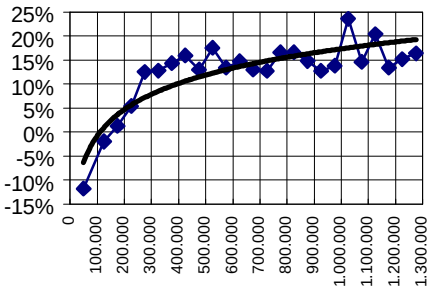

Figure 4: Return on sales 1991–1993 vs. firm size

For very small firms, average performance increases with firm size, but from an annual turnover of ƒ 250.000 upwards, the slope becomes more or less flat. If there is a *Minimum Efficient Size* in estate brokerage, we should look for it somewhere around an annual turnover of about ƒ 250.000, which is a very low threshold. On average, a turnover like this is realized with about 2 *full time* employees. Still 22 percent of the firms in our sample resides below this threshold; perhaps not efficient, but apparently viable. This is consistent with the assumption that very small firms' goals are not necessarily financial, but expressed in terms of labor satisfaction, etc.

Table 1: Average Return on Sales (%) vs. dummy-variables

	small firms			large firms			
	number	RoS	sig	number	RoS	sig	small vs. large
Subsample	224	0.0		800	14.7		
Number of outlets 1	221	0.1		708	15.2		
>1	3	-5.4	º	92	11.3	**	***
Market profile							
Mortgages 0	213	0.4		583	15.5		
1	11	-6.5	º	217	12.7	**	***
Commercial real estate 0	210	0.1		599	15.3		
1	14	-1.2	º	201	12.9	**	***
Agricultural real estate 0	204	-0.3		742	14.3		
1	20	3.4		58	19.5	***	***
Real estate management 0	223	0.0		736	15.0		
1	1	NA		64	11.2	**	
Brokers							
number of brokers =1	197	0.5		442	16.1		
>1	27	-3.1		358	13.0	***	***
female brokers 0	166	-0.4		649	15.3		
1	27	-2.3		106	12.6	*	
Quality enhancement							
provision base 0	218	0.1		668	15.3		
1	6	-3.5	º	132	11.9	**	***
quality management 0	47	-0.5		134	12.1		
1	148	1.0		619	15.3	**	**

Not all dichotomous variables count to the total number of firms (1024). Observations with missing values on less important variables were *not* excluded, in order to retain as much information as possible.
Significance is based on a one-way analysis of variance test (ANOVA).
The column 'small vs. large' indicates whether the populations of small and large firms differ.
It is calculated by means of a X^2-test on the underlying contingency table.
Significance levels: ***: 99%, **: 95%, *: 90%, º: number too small for statistical purposes.

In the analysis, we will use a turnover of *f* 250.000 as the cutting point between the 224 'small' firms and the 800 'large' firms in our sample (perhaps 'micro' and 'small' would be more convenient). The mean profit rate for the small firms is 0.3%, while for the 'large' firms it is 17.7%. Small firms appear to be fundamentally different from larger ones, other processes and mechanisms must play a role.

The correlation between return on sales and the various explanatory variables is shown in Tables 1 and 2. In Table 1 we present the relation between financial performance and the various dummy variables. The correlation between return on sales and the continuous variables is shown in Table 2. There are a lot of differences between small and large firms. Larger firms are older and more diversified (i.e., less dependent on the housing market) than small firms. Average wages are more than 20% higher in large firms. The group of small firms is very homogeneous. They are too small to have more than one outlet, they carry a fairly low market profile, and their payment structure is pretty straightforward. For most of the dummy variables, the number of firms with a 'yes'-state is too small to be used in statistical analysis. For the larger firms however, nearly all the classifying variables have some impact on performance. We will discuss variables and their correlation with return on sales in the same order as the hypotheses.

Table 2: Correlation of continuous variables with Return on Sales

	small firms			large firms			
	mean value	correl	sig	mean value	correl	sig	small vs. large
Relative performance	0.0			14.7			***
Firm size (turnover)	165000	0.342	***	857000	0.051	*	***
Firm age (years)	19.0	-0.080		25.2	-0.154	***	***
Product mix							
% Housing market	61.7	0.106	*	58.5	0.002		**
% Agricultultural estate	3.3	0.027		2.2	0.051		
% Mortgage brokerage	7.0	0.031		9.2	0.106	***	***
% Commercial estate	5.7	-0.086		8.5	-0.041		**
% Estate management	5.9	-0.075		6.3	-0.122	***	
Specialization rate (%)	71.1	0.029		66,7	0.033		***
Wage base (*f*)	47522	0.057		57541	-0.203	***	***
Age brokers	50.1	-0.272	***	46.2	-0.061	*	***
abs(47-Age brokers)	n.a.	-0.144	***	n.a.	-0.004		n.a.

'correl' is the the Pearson product-moment-correlation with return on sales, 'sig' denotes the significance of the correlation. The column 'small vs. large' indicates whether the population means of small and large firms differ. It is calculated by means of an ANOVA-test on the mean.
Significance-levels: ***: 99%, **: 95%, *: 90%

Number of outlets More than 90 percent cover their market from just one outlet.[6] Consistent with Barnett *et al*. (1994), firms with a single outlet perform better. The overhead caused by running more than one outlet has a stronger impact than the additional distribution potential.

Age of the firm Average age of the firms in the sample is 23.8 years (in 1992), with a median of 17 years. The oldest firm is 142 years old, the youngest firms were founded in 1990/ 1991. For large firms the correlation between the firm's age and its financial performance is negative, which contradicts Jovanovic's assumption of learning firms.

Product mix We find some evidence for Hypothesis 6A, stating that players on an attractive market perform better**.** Small firms gain benefits from a high share of housing market related sales. For large firms, mortgage brokerage has the expected positive correlation. There is no correlation between revenues from a hampering market (commercial real estate, Hypothesis 6B) and performance. The share of the contract based activity real estate management has the expected (Hypothesis 6C) negative correlation with financial performance.

Specialization We define the rate of specialization as the highest share in turnover of the seven activities (*(1) housing market brokerage, (2) commercial estate brokerage, (3) other estate brokerage, (4) estate management, (5) mortgage brokerage, (6) insurance brokerage* and *(7) other activities.* The average rate of specialization is high: the mean share of the most important activity in total sales is 67%. There is no correlation between specialization and performance, neither positive nor negative.[7]

Market profile For all divisions except for the agricultural estate division, *non-members* perform better than members. The professional clients in the agricultural real estate market

[6] Since the number of multi-outlet firms is very small even among large firms, there is no actual danger of multicollinearity between firm size and the number of outlets. In the analysis we will incorporate the number of outlets as a dummy-variable, with value one for firms with more then one outlet.
[7] The Herfindahl-Hirschmann-index of the shares of the activities in total sales does not work out either.

demand juridical skills and knowledge, and reduce search and transaction costs by using a certified or otherwise proven experienced agent. A broker's firm that wants to play on this market can not do without a recognizable profile. The fact that specialized mortgage brokers perform worse is surprising, especially given the positive correlation between profits and the share of mortgage brokerage revenues in sales. Apparently, customers looking for a mortgage find their way to a broker anyway, whether he carries a high market profile or not. In the case of the members of the commercial estate and the real estate management divisions, the lower performance is explained by market circumstances: the former was in a low part of the business cycle, the latter is less profitable by nature, as was explained in section 2.

Wage level Large firms pay higher wages than small firms, which is a common finding in labor economics (Brown and Medoff, 1989). Small firms have the expected positive correlation, although not significant, while for large firms the correlation between wage level and profits is clearly negative.

Productivity enhancement Incorporating an incentive by paying brokers on a commission basis does not enhance the financial performance. Contrary, those firms who employ this strategy perform worse. This is merely a matter of higher costs. Firms with commission arrangements have on average 13 percent higher labor costs, while average productivity (in terms of sales per person) is exactly the same as for firms paying straight wages.

Quality management The maintenance of a quality care program appears to work. Firms applying such a program perform slightly better. Since we have no information about what kind of quality care is involved, it is difficult to assess the validity of this relationship.

Broker's age Brokers in small firms are older than their colleagues in larger firms. In Table 2 both the correlation of return on sales with age straightforward and age calculated as an inverted V (centered round 47, being the median age of the brokers in the sample) are presented. The correlation between straight age is higher negative than the correlation with the inverted V specification (the last line in Table 2). For small firms, there is a significant negative correlation between broker's age and performance. The diseconomies of 'burning out' dominate the economies of learning and experience, and networking.

Number and gender of brokers Firms with a single broker perform better than multi-broker firms, even within the group of larger firms. This remarkable result may be caused by a principal-agent problem. In a single broker firm, the interests of the broker are straightforward, in the multi-broker situation the various interests may conflict. For the finding that firms with female brokers perform slightly worse than firms without, we have no explanation. It may be caused by size or age effects, which will be controlled for in the next section.

4 Regression Analysis

We analyze the combined influence of all variables by means of a regression analysis, in which differences in return on sales among firms are explained by the properties of the firms and their markets. We estimate $RoS_i = \alpha + \sum_j \beta_j D_{ij} + \sum_k \gamma_k X_{ik} + u_i$, where the D_{ij}'s represent the dummy variables as presented in Table 1, and the X_{jk}'s are market density and concentration and the continuous micro-variables as presented in Table 2. u_i is an error term. Non-linearities may occur in the case of size and broker's age. The former we tackle by separating

the population, for the latter several specifications were tried (as above, an inverted V and U), but a log-linear one is the only one that yields statistically interesting results (that is to say, just for small firms). We will not report about the various specifications in the trial and error process.

Table 3: Regression results: Return on Sales (%) explained by...

	Small firms			large firms		
	coefficient	T-value	signifi-cance	coefficient	T-value	signifi-cance
constant	-178.28	-2.64	***	-94.51	-6.66	***
density (log)	-3.80	-1.38	*	-1.83	-1.80	**
D number of outlets				-8.67	-5.07	***
firm size (log(turnover))	20.36	3.87	***	10.09	9.29	***
firm age (log)				-0.93	-1.55	*
D mortgage broker				-3.97	-3.41	***
D agricultural broker				5.31	2.77	***
D commercial estate broker				-2.95	-2.38	***
share mortgage brokerage				13.95	2.28	***
share commercial real estate	-22.65	-2.03	***			
share RE-Management				-13.26	-3.52	***
Wage level (standardized)	12.43	1.55	*	-13.28	-6.71	***
D provision	-10.58	-1.52	*	-3.79	-2.84	***
D number of brokers				-3.85	-3.27	***
D female brokers				-2.90	-2.02	***
average age of brokers (log)	-15.79	-1.79	**			
D quality program				3.16	2.54	***
number of firms	144			716		
R^2	0.2			0.1		
	19			87		

Variables labeled with 'D' are dummies (0,1). Significance levels: ***=99%, **=95%,*=90%

Although some of the variables in the analysis are correlated (like sales and the number of outlets), the set of demographic and strategic variables at the micro level passes a test on multicollinearity, as described in Greene (1993): the condition number of the standardized X'X-matrix containing all individual firm's variables is 14.46, which is fairly in the safe zone.

Since the differences between small and large firms are important, we run separate regressions for both populations. Both regressions are carried out stepwise, starting with the set of all candidate variables, from which the non-significant ones are eliminated one by one. In Table 3 we show the remaining significant results of both regressions. Although the explanatory power of both regressions is about the same (R^2's are about 0.20), the differences are clear. Both groups have very few factors in common:

- Market density has the expected negative impact for both groups, although it is more important for small firms. Neither group appears to be affected by market concentration.
- The impact of size on performance is positive for both groups of firms, although for the small firms it is twice as large.
- The impact of wage levels is positive (as expected) for small firms: the higher wages they pay, the better they perform. For large firms it works the other way round. The higher the wages, the lower the profits. Higher costs caused by high wages seem to have more impact than the gain of revenues caused by better personnel.
- Firms paying transaction oriented provision perform worse. As noted above, this is a very inefficient way of productivity enhancement: labor costs are higher, but productivity is not affected.

Since the results from the regressions do not differ essentially from the bivariate analysis, we discuss the results following the hypotheses as they were stated in section 2.

1: The lower relative entropy is, the better firm's financial performances will be.

Rejected. As discussed above, competition is very homogeneous among Dutch estate brokers, and market structure does not affect them.

2: A high market density has a negative impact on the performance of individual firms.

Confirmed. Firms in a large market perform worse than firms in small markets. Although the nature of competition does not matter, the number of competitors does. In a large market, customers can switch more easily between suppliers, and since there are more players, niches are more difficult to sustain.

3: Performance increases with firm size.

Confirmed. There are overall economies of scale, although for the smallest firms (up to a threshold of an annual turnover of ƒ 250.000) the impact of size on return on sales is twice as large as for the firms beyond this threshold.

4: Singe outlet firms perform better.

Confirmed. Multi-outlet firms perform significantly worse than single outlet firms. The additional revenues of a geographically larger market cannot compensate for the additional overhead costs of running more than one shop. There are clearly managerial diseconomies of scale.

5: Performance increases with firm age.

This hypothesis has to be rejected. For very small firms there is no relationship between a firm's age and its performance, for larger firms performance worsens as firms grow older, although the significance is weak.

6A: A high share of revenues related to a flourishing market leads to a higher return on sales.

Partly confirmed. Among the involved activities, only mortgage brokerage fits the hypothesis. Housing brokerage probably is too general an activity to discriminate.

6B: A high share of revenues related to a hampering market leads to a lower return on sales.

Partly confirmed. It is valid for small firms, but for large firms no impact is found. We assume large firms to be better equipped for finding and sustaining niches in hampering markets.

6C: A high share of revenues with a portfolio nature leads to a lower return on sales.

Confirmed. Real estate management is an activity with a low risk/performance profile.

7: Firms with a balanced product mix perform better.

Rejected. No relationship was found between rate of specialization and financial performance.

8: A high market profile leads to a better performance.

Rejected as such. For the smallest firms no relation was found, for the larger firms the impact of the market profile depends on the market segment. We discuss the results by division:

- Mortgages. The membership of mortgage franchise-chain leads to a lower financial performance, which is remarkable. Perhaps it is caused by the circumstances that mortgages

were really booming in the period under study, so there was no necessity for a high market profile: every broker could get the benefits anyway.

- Agricultural real estate is a real profitable niche, with few, specialized players. Clients are professional organizations, opting explicitly for proven experience.
- Commercial real estate. As indicated under Hypothesis 6B, for larger firms the share of commercial real estate in the product mix does not influence performance. We assume this to be caused by substitutability in the product mix. If there is a slump in commercial real estate, brokers can switch to the housing market. Firms wanting to keep their market profile as specialists in bad times, need to invest and maintain their portfolio, even if it yields losses. This may explain the negative impact of the membership of this division.
- Estate management. No impact from the market profile was found. Real estate management is an activity with a relatively low risk/performance profile. The market profile has no influence on performance. It is the activity itself that determines performance, not the membership of the division involved.

9: A high wage level leads to a better performance.

Neither rejected, nor confirmed. For small firms, the hypothesis proves to be true, but for large firms it works just the other way round.

10: Firms paying personnel on a commission base perform better.

Rejected. Large firms with a commission component in wages perform worse. Labor costs are higher, while sales are not affected. Moreover, the short term interest of realizing transactions may spoil the very important long term interest of a reliable reputation.

11: A quality management program improves financial performance.

Confirmed (for larger firms), although since there is no information available about the nature of quality management programs, this result should be interpreted with care.

PM 1: The age of the brokers in a firm may have an impact on the firm's performance.

Partly confirmed. For very small firms, there is a negative correlation between age of the broker(s) and performance, for larger firms there is no relationship at all.

12: Firms with more than one broker perform better.

Rejected, it works the other way: single-broker firms perform better. The cause may be a principal-agent conflict between the brokers in the firm,

13: Firms with female brokers perform better.

Rejected, firms with female brokers perform worse. We have no explanation for the rejection of hypothesis 13.

5 Conclusion

We have tried to explain real estate broker's financial performance from several angles. One of the most remarkable results is the dichotomy between very small firms (up to an annual turnover of ƒ 250.000) and larger firms (still to be classified as micro firms). The minimum efficient size level in the Dutch real estate brokerage market is very low, but still more than 20 percent of brokerage firms is able to survive below this threshold. Different from Jovanovic (1982) and Birley and Westhead (1990), we find older firms performing worse. Being young

and dynamic is not necessarily a liability. This is also true for brokers themselves: in small firms, financial performance declines as brokers grow older.

A high market profile does to pay, except for one market segment, which asks very specific expertise. Even in a sector where reputation and recommendation are key marketing factors, it is more important by which product market combination firms compete, than the way they present themselves. This may be caused by the homogenous structure of competition.

Contradictory to even broker's intuition, economies of a large organization (multiple outlets, multiple brokers) do not exist. As it appears it is the lean and flexible firm, able to adapt to market circumstances that has the best outlooks on a good financial performance. Quality management seems to help. Productivity enhancement, implemented by an individual performance related wage structure does not: it is expensive, and it does not affect productivity.

Prospects

Real estate brokerage is a sector facing a turbulent future. Above we described a sector in which only one of Porter's five forces of competition was relevant. In the near future, three out the other four will enter the stage.

- *Threat of entrants:* a profitable sector attracts new players. Moreover, the sector itself has educated a lot of young brokers, who as a group come near the most probable age of starting their own firm.
- *Increasing bargaining power of clients:* responding to government pressure the main branch association recently has released the system of fixed horizontal prices. This has put prices under pressure. It is not known yet whether the effect of attracting more clients by of lower prices can compensate for the loss of sales value per transaction.
- *Threat of substitute services:* the Internet provides new facilities for buyers end sellers of real estate to exchange information, without intervention of a broker. Although experiments in Europe until so far are small scaled, the American experience teaches that this is viable distribution channel (cf. The Washington Post, December 9, 1995). It is unclear how this new development will affect broker's markets and services, but it a major reshuffle of the current structure is not an extremely risky forecast.

From the academic point of view, we have seen that within this specific sector, it is a combination of personal and firm's traits that determines success. Further research should (and will) focus further on both tracks: education and experience of the entrepreneurs, and the competitive strategies of their firms in a changing market.

References

Barnett, W.P., H.R. Greve and D.Y. Park (1994) 'An evolutionary model of organizational performance', *Strategic Management Journal* **15**, 11–28

Birley, S. and P. Westhead (1990), 'Growth and performance contrasts between 'types' of small firms', *Strategic Management Journal* **11**, 535–557.

Birley, S. and P. Westhead, 1994 , 'A taxonomy of business start-up reasons and their impact on firm growth and size', *Journal of Business Venturing* ***9***, 7–31.

Brooksbank, R., D.A. Kirby and G. Wright, 1992, 'Marketing and company performance: an examination of medium sized manufacturing firms in Britain', *Small Business Economics* **4**, 221-236.

Brown, C. and J. Medoff (1989), 'The employer size-wage effect', *Journal of Political Economy* **97**(5), 1027–1059.

Capon, N., J.U. Farley and S. Hoenig,1990 ,'Determinants of financial performance: a meta-analysis', *Management Science* **36** (10), p. 1143-1159.

Cromie, S. (1991), 'The problems experienced by young firms', *International Small Business Journal* **3,** 43–61.

Cyert, R.M. and J. March (1963), *A behavioral theory of the firm*, Cambridge: Blackwell.

Cyert, R.M., P. Kumar, and J.R. Williams (1993), 'Information, market imperfections and strategy', *Strategic Management Journal* **14**, 47–58.

d'Amboise, G. and M. Muldowney (1988), 'Management theory for small business: attempts and requirements', *Academy of Management Review* **13**:2, 226–240.

Datta, D.K., N. Rajagopalan and A.M.A. Rasheed (1991), 'Diversification and performance: critical review and future directions', *Journal of Management Studies* **28**:5, 529–558.

Dubofsky, P. and P. Varadarajan (1987), 'Diversification and measures of performance: additional empirical evidence', *Academy of Management Journal* **30,** 597–608.

Fiegenbaum, A. and A. Karnani (1991), 'Output flexibility – a competitive advantage for small firms', *Strategic Management Journal* **12**, 101–114.

Greene, W.H. (1993), *Econometric Analysis*, New York: Macmillan.

Hall, R. (1993), 'A framework linking intangible resources and capabilities to sustainable competitive advantage', *Strategic Management Journal* **14**, 607–618.

Hannan, M.T. and J. Freeman (1977), 'The population ecology of organizations', *American Journal of Sociology* **82**, 929–964.

Hannan, M.T., J. Ranger-Moore and J. Banaszak-Holl (1990), 'Competition and the evolution of organizational size distributions', In: Singh, J.V. (ed.), *Organizational Evolution; New Directions,* Newbury Park, Cal.: Sage Publication.

Hornaday, R.W. and W.J. Wheatley, 1986, 'Managerial characteristics and the financial performance of small business', *Journal of Small Business Management* **24**, 1–7.

Jovanovic, B. (1982) 'Selection and the evolution of industry', *Econometrica* **50**, 649–670.

Kotha, S. and A. Nair, 1995 , 'Strategy and Environment as Determinants of Performance: Evidence from the Japanese Machine Tool Industry', *Strategic management journal* **16,** 497–518.

Lukkes, P. and J.H.M. van Rooden (1986), *Real estate brokerage in The Netherlands: a regiological-geographical analysis* (in Dutch), Amsterdam/Groningen: Nederlandse Geografische Studies.

Mamet, D. (1984), *Glengarry Glenn Ross: a play*, New York: Grove Press.

Masurel, E. and P.A. Risseeuw (1993), *Industry survey real estate brokerage 1992* (in Dutch), Amsterdam: VU-Uitgeverij.

Masurel, E. and P.A. Risseeuw (1995), 'Quality management among estate brokers' (in Dutch), *Vastgoed* **70,** 60–64.

McGee, J.E., M.J. Dowling and W.L. Megginson, 1995, 'Cooperative strategy and new venture performance: the role of business strategy and management experience', *Strategic Management Journal* **16**, 565–580.

Mehra, A., 1996, 'Resource and Market Based Determinants of Performance in the U.S. Banking Industry', *Strategic management journal* **17**, 307–322.

Palepu, K. (1985), 'Diversification strategy, profit performance and the entropy measure',

Strategic Management Journal **6**, 239–255.
Palm, R. (1976), 'The role of real estate agents as information mediators in two American cities', *Geografiska Annaler* **58B**, 28–41.
Porter, M. (1980), *Competitive Strategy*, New York: Free Press.
Praag, C.M van, 1996, *Determinants of successful entrepreneurship,* Amsterdam: Thesis Publishers.
Reid, G.C. (1993), *Small business enterprise: an economic analysis*, London: Routledge.
Risseeuw, P.A. and E. Masurel (1994), 'The role of planning in small firms: empirical evidence from a typical service industry', *Small Business Economics* **6**, 313–322.
Roquebert, J.A., R.L. Phillips and P.A. Westfall, 1996, 'Markets vs. Management: What 'Drives' Profitability?', *Strategic management journal* 17, 653–664.
Rouwendal, J. (1988), *Discrete choice models and housing market analysis*, Elspeet: Nomen Nescio.
Scherer, F.M. and D. Ross (1990), *Industrial Market Structure and Economic Performance* (3rd ed.), Boston: Houghton Mifflin.
Simon, H.A. (1982), *Models of bounded rationality: behavioral economics and business organizations,* Cambridge, Mass: MIT Press.
Zumpano, L.V. and H.W. Elder (1994), 'Economies of scope and density in the market for real estate brokerage services', *Journal of the American Real Estate and Urban Economics Association* **22**, 497–513.
Zumpano, L.V., H.W. Elder and G.E. Crellin (1993), 'The market for residential real estate brokerage services: cost of production and economies of scale', *Journal of real estate finance and economics* **6**, 237–250.