Competition and Quality in the Notary Profession

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PRELIMINARY AND INCOMPLETE

Abstract

The notary profession in Europe is special in its semi-public nature. European notaries perform public tasks while maximising profits. We assess the competitiveness of this market in the Netherlands and Belgium, applying a variation of the Bresnahan-Reiss method. We evaluate the impact of a price liberalisation policy in The Netherlands in the late 1990s by measuring competition before and after liberalisation and by comparing it with the Belgian developments. We find that entry affects conduct. Yet, we find no significant increase in competition since the enforcement of price liberalisation. This is explained by the fact that although price and establishment were liberalized, the total number of notaries remained fixed until 2003. We also examine the question whether competition affects the quality of the product. We use both subjective and objective measure for the quality of notarial services. Our preliminary and somewhat puzzling finding is that service is negatively affected by competition.

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1 Introduction

The Latin style notary is an institution on the European continent. Most countries with a civil law tradition also have a Latin notary profession. In contrast, countries in which common law prevails like the United States and England have a system of 'notary public'. The main difference between the two systems rests in the status of the profession. In civil law countries, the notary has a more dominant position than in common law countries. The European notary is an impartial legal expert whose drafted documents are admissible in court without need of further proof of authenticity. By contrast, the common-law notary is generally less qualified than its European counterpart and enjoy less statutory powers.

The important position of the notary justifies the fact that the profession is often highly regulated in Europe. Though being appointed by the authorities, a notary is unlike other public servants not paid by the authorities. The price for notarial services is generally fixed by some central authority. In The Netherlands, the 1999 Notary Act enforced a price liberalisation in the profession in order to enhance competition. Customers can now compare prices of notarial services on the internet. Along with the liberalisation of prices there are indications that the quality of the notarial service deteriorated. The number of claims against Dutch notaries by their customers increased by 40% from 2001 to 2004. The number of disciplinary cases against notaries doubled in that period.

This paper examines the effect of price liberalisation on competition and on product quality. The objective of this paper is two-fold. First, we aim to measure the actual level of competition in the notary profession. The 1999 Notary Act provides us with a quasi-experiment allowing us to compare the level of competition before and after the liberalisation. This paper is, to our awareness, the first that empirically assesses competition in the Latin notary profession. Second, we assess the link between competition and quality. Here, we aim to study whether competition can be held responsible for the recent deterioration of notarial services.

We measure competition by estimating entry threshold ratios according to the method developed by Bresnahan and Reiss (1990, 1991). An entry threshold is the critical market size required to support one extra notary office in the market. In competition is effective in the market, we expect that entry of a new competitor leads to a reduction of profits for all notaries present in the market. Lower profits are reflected by higher entry thresholds. We use cross-sectional data on the geographical distribution of notaries to estimate entry thresholds at different points in time before and after the liberalisation. We also perform the same analysis for Belgium, which is quite similar in many respects but remained to have a highly regulated structure.

Our analysis contributes to the growing literature that employs and expands the methodology of Bresnahan and Reiss (1991) in different industries. Pfann and van Kranenburg (2003) compare, like we do, time periods before and after a policy reform, but then in the local newspaper market. Our basic specification follows Genesove (2004) who also analyses the

newspaper market. Other papers employing the methodology of Bresnahan and Reiss include work on physicians (Brasure, Stearns, Norton, Ricketts, 1999), hospitals (Abraham, Gaynor and Vogt, 2003 and Dranove, Shanley and Simon, 1992), banks (Cetorelli, 2002) and motels (Mazzeo, 2002).

Next to measuring competition, we aim to compare the quality of notarial services between monopoly and competitive markets. To assess the competition-quality relationship, we compare subjective and objective quality measures across local monopoly and oligopoly markets. That we add the quality dimension to our analysis relates our work to Berry and Waldfogel (2003). They also combine market structure information with quality levels. They, however, link the production function of quality to market structure. They show that when quality is largely a fixed cost, as in the newspaper industry, the market does not fragment as it grows large. The opposite is found for the restaurant industry where quality is produced by variable costs.

Our findings on the measure of competition show that entry affects conduct in the notary market. We find, however, not significant increase in competition after the implementation of the 1999 Notary Act. The price liberalisation did not have the expected effect of increasing competition among Dutch notaries. This is explained by the fact that until 2003 the total number of notaries remained fixed. We also find that competition has a negative impact on the quality of services. On both objective and subjective quality measures, monopoly notaries outperform other oligopoly markets. In addition, we find evidence of a scale effect on objective quality. In larger offices, quality does not deteriorate as a result of competition

The remainder is organised as follow. In section 2 we discuss the institutional structure in greater detail and we explain the deregulation policy. Section 3 briefly discusses methodology. Section 4 gives an overview of the data. The measures for competition are reported in section 5, whereas section 6 provides the quality estimates. Section 7 concludes.

2 Institutional background

2.1 Notaries in the Latin system compared to Anglo-Saxon notaries public

The Latin notary profession arose in Northern Italy during the eleventh or twelfth century. Most countries with a Latin notary profession have civil law, which was influenced by the French ‘code civil’. The Latin notary has an exclusive right in some family, real property and corporate services. For example for conveying real property, creating mortgages, drawing up wills and establishing public and private limited liability companies, a notary’s intervention is compulsory. These transactions are recorded in a notarial deed, which is an authentic document which can be thought of as being as reliable as a law.

When performing his tasks, the notary needs to be independent and impartial. He has to balance the interests of all parties involved in a legal transaction (including the interests of third parties). The independency and impartiality are protected by law.

The Anglo-Saxon style notary profession has a very different role (Malavet, 1996). These can be found for example in the United Kingdom, most Scandinavian countries and the United States. In these countries you find so called notaries public. This type of notary represents only one party in a legal transaction. He does not have to look after the interests of other parties involved in the transaction or the interests of third parties. In the Anglo-Saxon notarial profession, a notary is more or less comparable with a lawyer.

2.2 Regulation and entry barriers in the Latin system

Given the important role the notary has in the legal structure of countries having the Latin system it is not surprising that there is stringent regulation in most countries.[2] There exist rules on appointments, locations and notaries fees. On appointments: after a long and serious legal training and a number of years work placement a junior *can* be appointed to become a notary. The actual appointment (by the crown) takes place only if there is a vacancy due to the dead or retirement of an existing notary or if demand grows sufficiently.[3] For the opening of a new establishment extensive consultation of the organisation of notaries in the district is necessary. The fees are set by a professional organisation. All notaries are bound by these rates. For family law services the fee is fixed. For real property services the rate is a fixed; a degressive percentage of the purchase price. This leaves very little room for competition. The only way in which notaries can compete is by establishing a good reputation and by putting effort into services, like offering extensive opening hours.

In general this description is still appropriate for the current Belgian situation. In the Netherlands, however, a reform changed some of the rules.

2.3 The 1999 reform act in The Netherlands

In October 1999 the new Notaries Act was implemented. The intention of this new act is to introduce more competition in the notary's profession and hence to provide incentives for innovation and higher quality and productivity. The key issues of the act are the following. With respect to appointments, the rules were even strengthened, though there is no longer a maximum number of notaries. An appointed notary is now free to establish his office in any place he likes if he can prove that he can open an office which is cost-effective within three

[2] Though this description is based on The Netherlands it is representative for other countries that have a Latin style notarial profession. When the regulation in Belgium differs we will mention this explicitly.

[3] In The Netherlands this depends on the population and on the expected return. In Belgium there are strict rules according to populations size. The maximum number of notaries per district is fixed decreasingly; that is, the more inhabitants registered in a district, the smaller the number of notaries per inhabitant.

years. The most substantial change was the liberalisation of fees. The rates for family services and corporate services became free immediately after the enforcement of the new act (1999). The rates for real property services were gradually liberalised through a transitional arrangement (leading to fully liberalised prices in 2003). In this transitional period there were ranges determined in relation to the rates for real property services. Summarising, the tariffs where liberalised whereas entry was not made much easier.

3 Methodology

The methodology we use is similar to Bresnahan and Reiss (1991), so our description here is brief. The entry threshold indicator developed by Bresnahan and Reiss (1991) has the advantage that it allows to measure variations in competition without resorting to price-cost-margin data and that it includes all forms of competition, including unobservable effort differences, for example.

The intuition of the Bresnahan and Reiss indicator is that a fall in profits due to an increase in competition implies that firms will require a larger market size in order to remain profitable. In other words, Bresnahan and Reiss use this critical level of market size as a proxy for profitability. When profits per transaction fall, firms need to sell their products to a larger number of consumers. The critical number of consumers required for an extra firm to remain profitable is called an entry threshold. More formally, we define profits (Π) for a single firm as:

$$\Pi = \left(Pq(P) - c - e\right)S(z) - F \tag{3.1}$$

where q denotes demand per average customer, which depends possibly on the price. Variable costs are denoted by c and e denotes effort . We define the variable profit margin as:

$$V = Pq(P) - c - e \tag{3.2}$$

To obtain gross profits we multiply variable profits with an indicator for the size of the market, S, which is a function of vector z containing population size and other population characteristics, such as the age composition. Competition can affect the variable profit margin via price and/or effort related to quality, service or advertising. Now we differentiate between a monopoly, duopoly or triopoly market $k \in \{1,2,3\}$ and define profits as

$$\Pi_k = V_k \frac{S_k(z)}{k} - F \tag{3.3}$$

What we want to know is how much competition affects the variable profit margin. The innovation of Bresnahan and Reiss is to assume profit maximization by optimising on the location choice.[4] Using $\Pi_n = 0 \; \forall \; n$, the ratio of the critical market sizes of the n markets provides an indication for competition:

$$\frac{S_k}{S_{k+1}} \frac{k+1}{k} = \frac{V_{k+1}}{V_k} \tag{3.4}$$

The left-hand side of equation (3.4) (referred to as the entry threshold) is observable and indicative of how competition affects variable profits.[5] If the ratio is equal to one, we are in the extreme case of joint monopoly behaviour. Variable profitability does not change with the entry of an additional firm. If the ratio is larger than one, entry caused variable profits to decrease and competition has increased. As the number of firms keeps on increasing, competition increases and entry thresholds ratio gradually stabilize.

3.1 Econometric method

To obtain the entry thresholds, we estimate an ordered probit model, using maximum likelihood, to find the critical population size.[6] The model treats firms profitability as a latent variable, and uses information on the number of entrants as a proxy, under the assumption of free entry and under the assumption that the new entrant break even at zero profits. The probability of observing markets with no firms equals:

$$\Pr(N = 0) = \Pr(\Pi_1 < 0) \tag{3.5}$$

where Π_1 is the monopolists' profits. The profit is a function of the (logarithm of) population and of the other explanatory variables, X. The probability of observing k firms in equilibrium equals:

$$\Pr(N = k) = \Pr(\Pi_k \geq 0 \cdot and \cdot \Pi_{k+1} < 0) \tag{3.6}$$

This means that profits are positive when there are k firms but negative when there are k+1 firms. We adopt a functional form of profits used by Genesove (2002). This choice is motivated

[4] In the exposition we use a zero-profit condition for simplicity. Profit maximization is sufficient for the method to be informative.

[5] We assume identical fixed costs for a monopolist, a duopolist and a triopolist. Bresnahan and Reiss (1991) allow for differences therein for many professions. The results are not substantially affected by this.

[6] Detail on the econometric model are in the appendix.

by the fact that it is much simpler to estimate than the original functional form of Bresnahan and Reiss. We take

$$\Pi_k^* = \alpha \ln S + X'\beta \tag{3.7}$$

where Π^* is the deterministic part of profit ($\Pi_k=\Pi_k^*+\varepsilon$) , S is the market size and X are the other explanatory variables. According to the free entry condition there will be at least k firms in the market if

$$\Pr(N \geq k) = \Phi(\Pi_k^* \geq \varepsilon) = \Phi(\delta_k - \alpha \ln S - X'\beta) \tag{3.8}$$

where $\Phi(.)$ is the normal cumulative function and δ_k is the value of the k^{th} cut point estimated in the ordered probit. We are interested in the market size that is necessary to support a specific number of firms. Since an additional firm will enter the market as soon as it will be able to break even, the threshold value coincides with profits equalling zero. Hence, we solve for the minimum population necessary to support the k^{th} firm in a local market, assuming that the market has mean unobserved characteristics. Analytically, we get

$$S_k = \exp\left((\delta_k - X'\beta)/\alpha\right) \tag{3.9}$$

We find the entry threshold per firm by computing $s_k=S_k/k$. The entry threshold ratio is then s_{k+1}/s_k.

4 Data sources and descriptive statistics

4.1 Variables and data

Market definition

We need to identify local markets for notaries. Evidence from customer surveys show that customers generally tend to visit the notary situated in their neighbourhood (WODC, 2004). . We use administrative towns (“woonplaats”) to define our local markets. There are about 2430 of these towns in the Netherlands. We define the local market for a notary as a town of less than 50000 inhabitants which is located at least 7 kilometers away from another large town of 40000 inhabitants or more. In this way, we are able to obtain isolated markets so as to avoid the maximum inflow and outflow of customers out of our local markets.

To identify these isolated towns, we computed the bird-flight distance between all the centers of Dutch towns. Because we were only capable to compute bird-flight distances, the actual road distances are likely to be longer than the computed ones, and the criteria of 7km will potentially include all suburbs located within 10km of a big city.

Dependent variables

Our dependent variable is the number of notaries in a market. The KNB (Koninklijke Notariële Beroepsorganisatie, the Professional organisation for notaries) provided us with the organization's yearbook for the years 1995 and 2003 that record all the names and office addresses of notaries in the Netherlands still in activity on January 1st. After collecting the addresses, we computed the number of notaries in each of our local markets.

Independent variables

Many factors can affect the demand for notaries in a local market. We identified the following potential demand shifters: the total population in the market (POP), the percentage of people under 20 years old (YOUNG), the percentage of people above 65 years old (OLD), the average income per capita (INC) and the average housing price (HOUSE).[7]

We obtained these demographic variables at the neighbourhood level using Statline from Statistics Netherlands (Wijken en Buurten Statistics). We do not have data on house prices for the year 1995. We use instead 1997 house price data. The 2003 neighbourhood data present a number of missing values that may biased our estimates. We use instead 2001 neighbourhood data with the 2003 addresses obtained from the KNB.

Although demographic data at the zip code levels were also available, we prefer to use data at the neighbourhood level because neighbourhood data contains also income per capita and average house prices. These data are often missing at the zip code areas level. Moreover, we tested for the use of neighbourhood data versus zip code data and found that entry thresholds estimates were very similar.

4.2 Descriptive statistics

Table 4.1 gives the number of markets in which N=0,1,2 or 3 notaries are present. We included all markets with more than three notaries in the last category. This is to ensure that we have enough observation in the last group. In 2003, 84.8% of our local markets had no notaries at all. This is slightly less than in 1995 where the proportion of markets without notaries is of 85.3%. Markets without notaries are rather small with an average population of 1429 and 1531 inhabitants in 1995 and 2003, respectively. By contrast, markets with 3 or more notaries have

[7] What we use is the valuation of houses for fiscal purposes.

an average population above 30000 inhabitants. Table 4.2 provides the descriptive statistics of both datasets.

Tabel 4.1 Market counts

	1995			2003		
N	#Markets	Percent	Mean Pop	#Markets	Percent	Mean Pop
0	1429	85,3	1737	1531	84,8	1605
1	205	12,2	9310	230	12,7	9300
2	33	1,97	22978	32	1,7	22791
3+	8	0,5	33540	12	0,6	32785

Tabel 4.2 Descriptive Statistics

	1995 N=1675				2003 N=1805			
	Mean	Std Dev.	Min	Max	Mean	Std Dev.	Min	Max
Firm Counts	1,21	0,5	1	4	1,21	0,5	1	4
POP	3234	5579	80	42850	3168	5519	10	44570
YOUNG	0,32	0,05	0,09	0,55	0,31	0,04	0,11	0,74
OLD	0,11	0,04	0	0,36	0,12	0,03	0,01	0,43
INC	8,12	1,04	2,46	15,5	9,49	2,31	0,3	22,7
HOUSE	81,4	25,8	19,9	282	154	45	63	508

5 Empirical results

5.1 Results for The Netherlands

Table 5.1 reports the results of the ordered probit model for The Netherlands for 1995 and 2003. In both years population, income and the house price is significant. The signs of the first two variables are plausible and as expected. The negative sign for house price reflects the fact a high house price makes it costly for a notary to locate in the market (the fixed location costs are high).

Table 5.1	**Results for Notaries in The Netherlands (dependent variable: number of notaries in a market)**	
	1995	2003
Baseline estimates		
Ln(Population)	1,11***	1,40***
	(.06)	(.07)
Income	0,32***	0,23***
	(.09)	(.07)
Old (%)	1,42	4,73**
	(1.91)	(2.06)
Young (%)	2,25	4,28**
	(2.16)	(2.13)
House price	-0,009***	-0,008***
	(.00)	(.00)
Log likelihood	-402.54	-415,75
Implied entry thresholds (per firm)		
s1	6859	6791
s2	16889	17063
s3	28144	25665
Entry thresholds ratios		
s2/s1	2,46	2,51
s3/s2	1,66	1,50
N	1046	1514

Standard errors are given in brackets, */**/*** indicates significance at the 1/5/10% level respectively.

Table 5.1 also gives the entry thresholds estimates obtained with the functional form specification given above. For both years the threshold ratios decline with N suggesting that entry affects conduct. The estimates for the entry thresholds per firm suggest that a monopoly notary requires about 6800 people in town to start up an office. A second notary requires a much larger potential market of about 17000 people to enter. This represent an increase of about 150% compared to the monopolist notary.

We conducted a series of tests on our thresholds estimates. The results of the tests are given in Table 5.2.

Figure 5.2 Tests on entry thresholds estimates		
	chi-square	
1995		
Tests s1=s2	33,99	reject at ***
Tests s2=s3	8,81	reject at ***
2003		
Tests s1=s2	50,21	reject at ***
Tests s2=s3	9,09	reject at ***
1995 vs. 2003		
Test s1[95]=s1[03]	0,00	do not reject
Test s2[95]=s2[03]	0,02	do not reject
Test s3[95]=s3[03]	0,12	do not reject

We tested whether the thresholds remained unchanged as N increases. For both years, we tested whether the monopoly thresholds equals the duopoly thresholds, that is whether $s_1=s_2$. We can reject the null hypothesis that these thresholds are constant. Further, we tested whether the entry thresholds for 1995 significantly differs from the thresholds for 2003. The results show that there has been so significant variation in these thresholds between those two years. Therefore, the level of competition is the same before and after the price liberalisation.

How can we explain the fact that the 1999 Notary Act did not have the expected effect on competition? As mentioned in Section 2.3, the 1999 Notary Act enforced free prices and free location choice. However, until 2003 the total number of notaries remained fixed within certain margins. In other words, there has not much additional entry on the market for notaries. The market counts described in Table 4.1 show that in 2003 there are slightly more (less) monopoly (duopoly) markets than in 1995. This suggests that some notaries previously present in a duopoly market went to look for monopoly markets. However, this movement did not increase the overall competition level of the profession as shown by our the results of our tests.

5.2 Robustness

We tested our market definition by varying our distance criterion.
We tested for the role of firm size. For the year 2004, the KNB provided us with data on the number of notaries offices, the number of notaries, and the number of junior notaries.
[INCLUDE RESULTS ROBUSTNESS]

5.3 Results for Belgium

[INCLUDE RESULTS FOR BELGIUM]

5.4 Results for other professions

For the Netherlands, we obtained data on the addresses of hairdressers, plumbers, pharmacists and general physicians for the year 2003. These addresses were extracted from the General Firm Register provided by Statistics Netherlands. We reproduce the same analysis as for notaries and compute entry thresholds using 2001 demographic data. The entry thresholds are reported in Table 5.2.

Table 5.2 Estimates of entry thresholds for other professions, 2003

	plumbers	hairdressers	physicians	pharmacists
Entry thresholds per firm				
s1	1626	671	1564	5256
s2	1968	728	2175	5923
s3	2522	752	2489	6879
s4	3075	827	3057	7756
s5	3489	869	3330	8221
s6	4008	925	3657	11021
s7	4579	976	3768	12747
Entry thresholds ratios				
s2/s1	1,21	1,08	1,39	1,12
s3/s2	1,28	1,03	1,14	1,16
s4/s3	1,22	1,09	1,22	1,13
s5/s4	1,13	1,05	1,09	1,06
s6/s5	1,15	1,06	1,10	1,34
s7/s6	1,14	1,05	1,03	1,15
Wald tests				
s1=s2	reject at ***	reject at ***	reject at ***	reject at ***
s2=s3	reject at ***	do not reject	reject at ***	reject at ***
s3=s4	reject at ***	reject at **	reject at ***	reject at ***
s4=s5	reject at ***	reject at **	reject at **	do not reject
s5=s6	reject at ***	reject at **	reject at **	reject at ***
s6=s7	reject at ***	reject at **	do not reject	do not reject

We expect the plumber and hairdresser profession to serve as benchmark for competitive markets. Indeed, these professions are not regulated and have thus few barriers to entry. We find that the monopoly threshold for a hairdresser is about 10 times lower than the monopoly threshold for a notary office. Further, the ratios for hairdressers lie very close to one. The results of our Wald test show that we cannot reject the null hypothesis that the ratio between a triopoly

and a duopoly hairdresser is equal to one. These ratios confirm the fact that the hairdresser market is very competitive. The plumber market is not as competitive as expected. The decline in ratios does not occur before the third plumber enters the market.
[ADD ROBUSTNESS TESTS]

6 Quality and competition

The question we address in this section is whether competition increases or decreases quality. To address this question we estimate the following equations:

$$Q_{i,m} = \alpha + \gamma D_m + \varepsilon_{i,m} \tag{6.1}$$

where $Q_{i,m}$ is the quality indicator of the notary public *i* in market *m*. Our indicator for competition is a dummy variable that is one if market *m* is a monopoly market and zero otherwise. Next we introduce additional controls, that control for the size of the market:

$$Q_{i,m} = \alpha + \gamma D_m + X'\beta + \varepsilon_{i,m} \tag{6.2}$$

And our final specification aims at differentiating between two hypothesis on the production of quality (following Berry and Waldfogel, 2003). The first hypothesis is that quality is basically related to outlays on fixed costs, the second assumes that is are variable costs. We distinguish between these by controlling for firm "size"

$$Q_{i,m} = \alpha + \gamma D_m + \frac{1}{N} X'\beta + \varepsilon_{i,m} \tag{6.3}$$

We can alternatively use other indicators for size.

We have two indicators for the quality of the notaries public. First, we have survey data on the consumer quality perception for a sample of the Dutch notaries public (these are on average only 20 surveys per year, for 1999-2003). Second, we have data on the quality of their work that is not visible to consumers: these are the percentage of corrections that notaries have to make upon request of the land registry. For quality/service that is observable by consumers, one expects that competition leads to better quality. For non-observable quality it not very obvious what competition implies. Also, the expected impact of the price liberalisation is not straightforward. However, the data allow us to assess the claim made by the profession that competition causes quality deterioration.

6.1 Results for subjective (observable quality)

We estimate equation (6.2) using ordinary least squares. Our dependent variable is an index for quality reported from customer surveys. Customers were asked to answer the question "How do you assess the overall quality of the service of the notary you recently visited?" and to grade the services on a scale from 1 to 7, where 7 is the maximum. We obtained these data for a sample of notary offices in the Netherlands from the Economic Institute for Small and Medium Companies (EIM) who conducted this survey for the Ministry of Justice (WOCD, 2004). Table 6.1 reports the results of our estimations. When we regress our subjective quality measure, we find that monopoly markets outperform more competitive markets. The dummy for competition has a negative effect on quality. When we add the additional control variables for market characteristics and separate the questionnaire results by year, this finding stands upright. Remarkably, the negative impact of competition on perceived quality is larger in 2001 and 2002 when the liberalisation was proceeded. This suggests that competition is harmful for quality (opposite to what the theory would predict). An alternative interpretation, however, is that monopoly market are very small and that on average people are more likely to personally know their notary and assess the services therefore more positively. In the next section, we use a more objective measure of quality, namely the percentage of corrections in notarial acts brought to the land register.

Table 6.1 Results for subjective quality in The Netherlands data for 1999-2003 combined (dependent variable: quality assesment on scale 1-7)

	2003	2003
Estimation		
Competition (0 : if monopoly market, 1 otherwise)	-0.95***	
Competition * Dummy(1999)		-0.17
Competition * Dummy(2000)		-0.03
Competition * Dummy(2001)		-0,53**
Competition * Dummy(2002)		-0.67**
Ln(Population)		-2.95e-06***
Income		-0.33**
Old (%)		-5.84
Young (%)		-8.5
House price		0.01**
Constant	7.71***	13.63***
R^2-adjusted	0.21	0.42

N[a]	79	72

[a] In these estimates we include all markets, hence we do not restrict ourselves to the definition given in section 4.

6.2 Results for objective (non-observable quality)

We estimate the effect of competition on quality using an objective measure for quality, namely the percentage of corrections brought to notarial acts. The national land register provided us with the number of corrections and the total number of notarial acts registered for each notary office in the Netherlands for both years 1995 and 2003. We estimate again equation (6.2) using as a dependent variable the logarithm of the percentage of corrections. We include as explanatory variables the usual control variables and we add the logarithm of the number of notarial acts in order to control for the size of the office. Our estimates are given in Table 6.2. Note that the percentage of corrections is an indication of low quality services. Therefore, a positive coefficient of competition must be interpreted as a negative effect on quality.

Table 6.2 **Results for objective quality in The Netherlands data for 1995 and 2003 (dependent variable: percentage of corrections in notarial acts recorded by the land register) (1) all sample, (2), sample exc luding small offices processing less than 100 acts**

	(1)		(2)	
	1995	2003	1995	2003
N	346	440	327	405
Ln(pop)	0,12***	0,05	0,004	-0,10**
	(.04)	(.04)	(.04)	(.04)
Ln(wooninc)	0,44	-0,68	0,55	-0,81
	(.05)	(.55)	(.55)	(.55)
woonold	-1,9	2,11	-1,67	1,53
	(1.4)	(1.5)	(1.5)	(1.5)
woonyoung	0,85	0,54	1,55	0,94
	(1.6)	(1.6)	(1.6)	(1.6)
Ln(woonwoz)	-0,5***	-0,24	-0,38**	-0,13
	(.17)	(.18)	(.17)	(.18)
competition	0,21**	0,38***	0,017	0,15
	(.09)	(.10)	(.10)	(.10)
Ln(acts)	0,41***	0,39***	0,76***	0,83***
	(.03)	(.03)	(.07)	(.06)
R2				

Column (1) in Table 6.2 gives the estimates obtained on the whole sample of notaries offices present in the dataset of the land register. Competition has a positive significant effect on the number of corrections. This effect is larger in 2003 than in 1995. Again, we find that competition leads to a deterioration of quality. Column (2) considers only the sample of large notary offices, by excluding all offices that had processed less than 100 notarial acts in that year. When small offices are excluded, we find that competition has no significant effect on quality anymore. This suggests a form of scale effect. The deterioration of quality due to competition is especially true for small offices.
[TO BE COMPLETED - ADD ROBUSTNESS]

7 Discussion

This paper aimed to empirically assess the level of competition in the notary profession in The Netherlands and in Belgium. To our knowledge, this is the first paper that apply the entry thresholds method of Bresnahan and Reiss (1990,1991) to notarial services. In addition, this paper assessed the relationship between competition and quality in these services, a question at the core of many policy debates in the Netherlands.

We find that the price liberalisation enforced by the New Notary Act in the Netherlands in 1999 did not have the expected effect on competition. Our estimates show no significant increase in competition between 1995 and 2003. This is in line with the fact that there has been no important drop in prices since the implementation of the New Notarial Act.[8] We explain this findings by the fact that the market for notaries was not completely deregulated until 2003. Until that time, the total number of notaries remained fixed at the national level, forbidding thus the possibility of additional entry on the market. This finding allow us to draw some general conclusions on which forms of deregulation can be most effective in professional services. Liberalising prices without eliminating other barriers to entry in the profession is likely to have little effect on competition.

Our second major finding is that competition has a negative effect on the quality of services. This finding is confirmed by using both subjective and objective measures of quality. We find, however, that this does not hold for large notary offices. [TO BE COMPLETED - POLICY IMPLICATIONS]

[8] We plan to include a study on the levels of prices in further work. We have access to data on prices and turnover for a sample of notary offices from Statistics Netherlands.

References

Berry, S. and J. Waldfogel, 2003, Product Quality and Market Size, Working Paper, Yale University , University of Pennsylvania and National Bureau of Economic Research (NBER), Cambridge.

Breshnahan, T. F. and P. C. Reiss, 1990, Entry in Monopoly Markets, *Review of Economic Studies*, 57: 531-553.

Breshnahan, T. F. and P. C. Reiss, 1993, Measuring the Importance of Sunk Costs, *Annales d'Economie et de Statistique*, 31: 181-217.

Campbell, J. R. and H. A. Hopenhayn, 2002, Market Size Matters, Working Paper 9113, National Bureau of Economic Research (NBER), Cambridge.

Genesove, D. 2004, Why are there so few (and fewer and fewer) two-newspapers towns? Working Paper, Hebrew University of Jerusalem, National Bureau of Economic Research (NBER).

Fenn, P., N. Rickman and A. McGuire, 1992, Professional Liability and the Licensed Profession, *International Review of Law and Economics*,12: 479-496.

Mazzeo, M. J., 2002, Product choice and oligopoly market structure, *RAND Journal of Economics*, 33, (2): 1-22.

Law, M. T. and K. Sukkoo, 2004, Specialization and Regulation: The rise of professionals and the emergence of occupational licensing regulation, Working Paper 10467, National Bureau of Economic Research (NBER), Cambridge.

Lueck, D., R. Olsen and M. Ransom., 1995, Market and Regulatory Forces in the Pricing of Legal Services, *Journal of Regulatory Economics*, 7: 63-83, Kluwer Academic Publishers.

Pfann, G. A. and H. van Kranenburg, Tax policy, location choices, and market structure, 2003, *Journal of Law and Economics*, vol XLVI: 61-83, University of Chicago.

WODC (2004) *Eerste Trendrapportage Notariaat. Toegankelijkheid, continuïteit, kwaliteit en integriteit van het notariaat*, Den Haag.