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**Market share and price in Dutch home care:
market power or quality?**

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Abstract in English

A change of legislation in 2004 of the Dutch Exceptional Medical Expenses Act (EMEA) allowed for more competition among suppliers of home care. The new law made it possible for the 32 regional healthcare purchasing agencies to contract suppliers selectively and to negotiate over prices and quality. Since, at least in some regions, one or two providers dominate the market, there are concerns about the effect of providers' market power on the pricing of home care services. This paper tries to assess whether these concerns are justified. Using complete data on contracted prices and quantities for 2004-2006, we find that, indeed, providers with a larger market share are able to contract at a higher price. We also find significant differences in contracted prices for some healthcare purchasing agencies, which points towards differences in their regional situations and/or policies. It is conceivable that both differences in market share and differences in price are driven by unobserved differences in quality. However, our analysis based on quality data reported in a consumer survey does not support this explanation.

Key words: market structure, bargaining, healthcare

JEL code: D4, I18

Abstract in Dutch

De contracteerplicht voor de extramurale AWBZ-thuiszorg is in 2004 vervallen. Zorgkantoren kunnen nu zelf kiezen welke zorgaanbieders ze contracteren en ze kunnen onderhandelen over de prijs en de kwaliteit van de zorg. In sommige regio's is het aantal zorginstellingen beperkt. In deze regio's zijn één of twee 'dominante' aanbieders die hun onderhandelingmacht zouden kunnen gebruiken om excessieve prijzen te bedingen. In dit onderzoek is nagegaan wat de invloed is van het marktaandeel van zorgaanbieders op de gecontracteerde prijzen met zorgkantoren. De gebruikte dataset bevat informatie over gecontracteerde prijzen en volumes in de periode 2004-2006. Onze resultaten tonen aan dat instellingen met een groot marktaandeel in een regio hogere prijzen weten te realiseren. Daarnaast vinden wij dat het effect van marktaandeel op prijzen zich niet bij elk zorgkantoor even sterk voordoet. Een alternatieve verklaring voor het gevonden verband is dat een groot marktaandeel en een hoge prijs beide worden veroorzaakt door kwaliteitsverschillen. We vinden echter geen ondersteuning voor deze alternatieve verklaring.

Steekwoorden: marktstructuur, onderhandelingspositie, zorgmarkt

Contents

Summary

A change of legislation in 2004 of the Dutch Exceptional Medical Expenses Act (EMEA) allowed for more competition among suppliers of home care. The new law made it possible for the 32 regional healthcare purchasing agencies to contract suppliers selectively and to negotiate over prices and quality. Since, at least in some regions, one or two providers dominate the market, there are concerns about the effect of providers' market power on the pricing of home care services.

This paper evaluates the effect of market share on contracted prices of regional providers of home care in the Netherlands and explains the observed price differences across providers. We focus on two alternative explanations for these differences: market power and differences in quality. Both explanations are plausible: On the one hand, large providers may be able to exploit market power by raising prices above competitive levels; on the other hand, price differences across providers may be driven by quality, if healthcare purchasing agencies are willing to pay for better quality.

Our econometric analysis shows that, indeed, a larger market share is associated with a higher price. Since large firms typically deliver a broad range of functions, they maybe get a higher proportion of clients requiring complex (multi-functional) care, which in turn affects their prices. Therefore, we also incorporate a correction for client complexity. This correction leads to a slight reduction of the estimated effect of market share on price, but does not eliminate it. This supports the conjecture about higher market power of large home care providers.

However, there may be a second explanation for this finding that is unrelated to market power, because it is conceivable that larger providers deliver higher quality. If purchasing agencies prefer to contract high quality providers, and if it is more costly to produce high quality, then this would also produce a positive correlation between market share and price. Unfortunately, quality data are not available for the whole sample. Therefore, we can only check our hypothesis for a smaller sample. The findings indicate that the relationship between market share and price remains after controlling for quality. This suggests that market power, rather than quality, explains the observed price differences in home care.

At the end of the paper we discuss policy options that could countervail this market power, focusing on different time horizons.

1   Introduction

Long-term care is a policy issue of great relevance in the Dutch political arena. Traditionally, most academic research in this field has focused on institutional care at nursing homes. However, there has been a substantial increase in the use of long-term care delivered in the home care setting. An important paper addressing this topic is McKnight (2006), which analyses the effect of the change in the US Medicare reimbursement policy for the American home care market.

This paper studies the Dutch home care market. A change of legislation in 2004 of the Dutch Exceptional Medical Expense Act (EMEA)[1] allowed for more competition among suppliers of home care services. The new law made it possible for the 32 regional healthcare purchasing agencies to contract suppliers selectively and to negotiate over prices and quality. Selective contracting could create incentives for providers to offer better services. Thus, the new law created something akin to the internal market in the British National Health Service in the 1990s[2].

However, it is not clear that purchasing agencies have strong incentives to bargain over price and quality. The government sets an annual budget for contracting home care services for each purchasing agency, any unused budget must be returned to the government. Moreover, purchasing agencies may apply for additional funds if they run out of budget. All in all, purchasing agencies face only weak incentives for hard bargaining. Our results are conditional on this institutional feature of the market.

Although the change in legislation was meant to create incentives to negotiate home care services at lower prices, it only achieved a minor improvement compared to the previous situation. The outcome of negotiations is often at the regulatory maximum price[3] (in roughly 30% of contracts) or very close to it, while there was expected to be more room for price decreases.[4] In this paper we analyse two major factors that may be responsible for this outcome: providers' market power and quality.

Market power is a serious concern in the home care market. At least in some regions, one or two large providers dominate the regional market and there is ongoing concentration among providers in other regions. Especially large providers may be able to exercise market power in

[1] The Dutch term is *Algemene Wet Bijzondere Ziektekosten (AWBZ)*.

[2] See e.g. Le Grand (1999) and Enthoven (2000) for a description of the British National Health Service and its internal market.

[3] The maximum prices for all functions of care that purchasing agencies and suppliers can bargain over is set by the Dutch Healthcare Authority (*Nederlandse Zorgautoriteit, NZa*). As soon as the purchasing agency and the supplier have agreed on a tariff, this latter is submitted to the NZa that subsequently sets this ultimate tariff as the price for all clients of that particular supplier.

[4] Such an expectation is based on the evidence of the so-called 'personal budget clients'. Instead of receiving 'in-kind care' from contracted providers, these clients get a budget to buy care themselves. The budgets are set at 75% of the amount based on regulated tariffs (CTG/ZAio, 2006, p.23). This implies that there must be a substantial room for cost reductions below the regulated tariffs. Yet, prices of contracted providers, especially in personal and home care segments, are on average just some 5% lower than the regulated prices.

negotiation with the purchasing agencies responsible for contracting care, which produces a positive relationship between market share and the resulting price.

However, another possibility is that a high market share and a high price are both the result of high quality. It may be purchasing agencies use their bargaining power to induce higher quality rather than to lower the price (competition on quality). If purchasing agencies contract high quality providers, and if it is more costly to produce high quality, then this would also produce a positive correlation between market share and price. We test for this alternative explanation by including quality as a separate explanatory variable.

The paper is structured as follows. We will first explain the institutional setting and market structure in the provision of EMEA services (section 2). Next, we describe the data and the trends in the development of different market segments (section 3), after which we turn to the empirical analysis of the home-care segment. Section 4 presents the theoretical model that motivates our empirical strategy and empirical results. Section 5 concludes.

2   Institutional background

The EMEA came into force in the Netherlands in 1968. This insurance scheme covers the whole population for serious medical risks. The EMEA consists of long-term care (e.g. nursing homes), and all those treatments and services that cannot be insured individually because such expenses would be too high to bear, notably mental illness requiring prolonged nursing and care, and congenital physical or mental handicap. The target group for services provided under the Act has expanded a great deal and has become much more diverse over the past few years; it presently mainly comprises elderly people, the disabled, and mentally ill patients with chronic problems. Each individual is automatically insured for EMEA services via the basic health insurance policy, which is mandatory. The Ministry of Health, Welfare and Sport (VWS) decides on the financial means needed for this insurance.

Organisation of EMEA

The EMEA insurance delivers intramural (inpatient) services and extramural (outpatient) services. The main differences between intramural and extramural care are the following:

- Intramural services are delivered inside a medical institution, such as a nursing home, psychiatric clinics, etc. Intramural care involves more investment (e.g. in the infrastructure), it needs an extra licence for expanding the range of services, economies of scale are likely to arise, and only non-profit institutions deliver care.
- Extramural care relates to all services provided to patients living outside a medical institution. It does not involve a specific investment in expensive infrastructure, an expansion of a service (function of care)[5] can be arranged quicker and easier than intramural care because there is no need for an extra licence, there is a high concentration of firms in the market, and since January 2006 for-profit firms are allowed to enter the market.[6]

The focus of this paper is on extramural care. In the last years this sector has undergone several changes, which aimed to introduce market competition elements into the system.[7] There are currently 800,000 people eligible for EMEA extramural health services. If a person wants to receive EMEA services he first needs an indication from the so-called Assessment Body[8], whose task is to identify the right of each single individual to receive home care. Providers of

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[5] The products that are included in our dataset can be allocated into the following functions of care: house care, personal care, nursing, general supervision, activating supervision, and treatments. Please refer to Appendix 1 for a brief description of the above-mentioned functions of care.

[6] See NZa (2006).

[7] The most notable changes in the extramural EMEA sector are the following: introduction of selective contracting, possibility for clients to opt for a personal budget with which to buy care, introduction of functions of care to tailor consumers' demands, providers defray their costs on the basis of which functions of care they have delivered. Moreover, in 2007 the function 'house care' (see Appendix 1) has been transferred to the municipalities.

[8] This Institution is called in Dutch *Centrum Indicatiestelling Zorg, CIZ*.

care must have a legal permit to supply healthcare services[9]. Each single purchasing agency is in charge of buying the necessary amount of care for its own region. Figure 2.1 presents the division of the Netherlands in 32 regions.

Figure 2.1   EMEA regions in the Netherlands

Source: Zorgverzekeraars Nederland (2006)

Typically, the health insurance company with the highest market share in a region performs the role of purchasing agency in that region.[10] However, health insurers are not at risk for healthcare services under EMEA. Instead, the cost of these services is paid out of a special fund for EMEA services, which is filled by premiums paid by workers.[11] Suppliers of EMEA-care bargain with purchasing agencies over the amounts and the prices of care to be delivered. Contracts are negotiated on a yearly basis. Negotiations take place with the purchasing agency of the region in which the supplier is officially registered. It is also possible for suppliers to provide services to clients residing outside the purchasing agency's own region. If 35% or more of all clients of a supplier come from a different region than the one where the supplier is officially registered, the purchasing offices of the concerned regions are jointly responsible for contracting such a provider, and they consult with each other about the financing of care. If 85% or more of all clients of a supplier come from another region, purchasing agencies can

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[9] This permission is released by the *Centraal Informatiepunt Beroepen Gezondheidszorg, CIBG.*

[10] Some insurance companies have a high market share in more than one region. These companies have therefore control of purchasing agencies in different regions.

[11] This budget is called *Algemene Fonds Bijzondere Ziektekosten, AFBZ.*

decide to delegate negotiations with the supplier to the purchasing agency of the region where the majority of its clients is situated (CTG-ZAio and CTZ, 2005b).

Responsibilities of purchasing agencies

Purchasing agencies have several tasks and responsibilities that have been agreed upon in a series of covenants with the Ministry of Healthcare, the umbrella organization for all insurance companies[12] and the Healthcare Insurance Board[13].

Their main task – as already described above – is to purchase healthcare services in the right amount for satisfying the regional demand for home care. They thus act as monopsonists in the region. By means of their purchasing and contracting policies, purchasing agencies effectively set the amount and quality of the care contracted.[14] They should be able to influence price, product development, and product differentiation. They are allowed to contract selectively and to set different requirements for different suppliers (CTG-ZAio and CTZ, 2005).

In general, purchasing agencies deliver so-called 'in-kind care', that is clients receive a care product instead of money to buy these services themselves. However, roughly 10% of recipients of EMEA services opted for having their own budget at disposal to purchase care themselves from the supplier they like most (see footnote 4). The number of such clients is increasing in recent years; people make their own choices and decide where to buy care themselves. This is partly due to the monetization of informal care (these clients do not have to use home care professionals, but can buy care from their neighbours, families and relatives).[15] However, this can also be interpreted as a sign of dissatisfaction with the services offered by purchasing agencies.

In addition to the main task, purchasing agencies have to provide information to their clients about the content of a service provided by a supplier[16] and to minimize waiting lists for their clients for particular healthcare services. They also must keep accounts (per client) of spending the financial means of the EMEA insurance and monitor client satisfaction.

Funding of EMEA

Funding of EMEA services is arranged as follows: on the one hand purchasing agencies are reimbursed for the care services delivered by "their" providers (i.e. providers they have contracted), on the other hand they receive a fixed budget set by the Ministry of Health to cover their operation cost. Insurers incur excesses or shortfalls between actual operation costs and the

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[12] This is *Zorgverzekeraars Nederland, ZN.*

[13] *College voor zorgverzekeringen, CVZ.*

[14] Purchasing agencies must inquire the clients' experiences concerning the health services they received. Therefore they observe at least some dimensions of quality and thus can use this information when selecting among regional providers. There are more arrangements safeguarding the level of quality of home care in the Netherlands. A specific law on quality makes the provider of EMEA services responsible for their own quality levels (ICM, 2005). The Inspectorate for Healthcare (IGZ) checks whether each supplier complies with the minimum quality requirements set by law.

[15] See Van den Berg and Schut (2003).

[16] Patients must be informed about all relevant procedures (NMa, 2004; CTG/ZAio and CTZ, 2005).

budget. This structure creates an incentive for an insurance company to control the operation costs of its purchasing agency (NMa, 2004). The incentive to reduce the price of contracted care is therefore weakened to the extent that more intensive bargaining with suppliers over prices of services involves higher operation costs. Note also, that the agency would always strive for concluding contracts with all the major regional providers because failing to conclude a contract with such providers would cast a negative image on the agency and the insurer (NZa, 2007), affecting the insurer's position in the market for health insurance. Therefore, healthcare providers know they will get a deal with the purchasing agency and have thus no incentives to reduce the price.

3   Data

The dataset used in this paper contains data on contracted prices and quantities of extramural EMEA-services in the Netherlands. These services include more than one hundred different products. The dataset covers the period 2004-2006[17] and contains 38210 observations in total (about 12 000 per year).[18] The contracted prices and quantities result from negotiation between regional healthcare purchasing agencies and service providers. They cannot exceed maximum tariffs, set by the Dutch Healthcare Authority (NZa) at the national level. These maximum tariffs are also included in our dataset.

There are 32 regional healthcare purchasing agencies and about 1600 service providers (1403 in our dataset) in the Netherlands. Each service provider negotiates its tariffs and quantities with only one regional healthcare purchasing agency.

Table 1 shows the revenues based on regulatory tariffs and the revenues based on contracted prices. The percentages included in the table illustrate the difference between the regulated maximum tariffs and realised prices. Although there is a small decreasing trend in contracted prices relative to the regulated maximum prices and we observe a decline in the share of the contracts featuring maximum prices, there are still about 30% of such contracts. The average contracted price is just 6% below the maximum.

Our dataset covers 121 products. These products can be divided into two large segments, to which we refer as H and F in accordance with their official coding by the NZa[19]. The H-segment includes house cleaning and personal care, supporting and activating supervision, and nursing. The F-segment covers products that relate to mental health. Especially in the H-segment, contracted prices are close to the regulatory maximum price. The fact that prices in this segment lie closer to the regulated values than those in the F-segment allows for different interpretations. It is likely that the regulator has better insight in the cost level in the H-segment than in the F-segment. In fact, the regulator uses the results of benchmarking analyses to set maximum prices in the H-segment, while such analyses are not available for the F-segment.[20]

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[17] This excludes unreliable observations (those with missing and negative values as well as the observations for one product where the data were not expressed in the same units for each years). The complete dataset contains also data on 2003. However, data on 2003 are not fully consistent with the rest of the sample, therefore we could not use them. Until 2004, there were no restriction on the total budget of each healthcare purchasing agency; therefore, the product volumes that they could contract in those years were unrestricted. However, since 2004, the budget room available for contracting has been capped. This produced a change in incentives of health purchasing agencies, affecting both quantities and prices.

[18] See Appendix 2 for the split by year.

[19] The coding of products is in accordance with Circular CA-92.

[20] As from January 1st, 2007 the function of care "house care" has passed under the jurisprudence of a new law (WMO, *Wet Maatschappelijke Ondersteuning*). This change brought uncertainty to healthcare providers because it was not explicit what would happen with their financial reserves. This might have influenced the contract relationship in 2006 between healthcare providers and purchasing agencies, namely purchasing agencies collaborated in fixing relatively high prices in order to avoid financial distress of providers in 2007.

Another possibility is that purchasing agencies focus more on price in the F-market and more on quality in the H-market.

Table 1   Regulated maximum revenues and contracted revenues

	2004	2005	2006
Total			
Regulated maximum revenue (mln euro)	5972	6441	6371
Contracted revenue (mln euro)	5731	6094	6007
Contracted revenue as percentage of regulated revenue (%)	96%	95%	94%
Percentage of contracts featuring maximum price	53%	29%	25%
H-segment			
Regulated maximum revenue (mln euro)	4570	4912	4794
Contracted revenue (mln euro)	4488	4745	4612
Contracted revenue as percentage of regulated revenue (%)	98%	97%	96%
Percentage of contracts featuring maximum price	71%	38%	34%
F-segment			
Regulated maximum revenue (mln euro)	1402	1529	1576
Contracted revenue (mln euro)	1243	1349	1394
Contracted revenue as percentage of regulated revenue (%)	89%	88%	88%
Percentage of contracts featuring maximum price	10%	7%	2%

Figure 3.1 reveals more details on price differences between the two segments. In particular, we do observe censored data for larger sizes in the H-segment, but not in the F-segment. With just a few exceptions, providers normally specialise in delivering either H- or F-products, which makes it possible to analyse these groups separately.

Figure 3.1   The relation between the market share and the relative price in each market segment

4 Econometric analysis

We restrict our econometric analysis to the H-segment. The reason is that for the F-segment, defining regional markets is problematic. The service area of a provider does not always belong to one region, but may overlap with other regions. This is especially the case for mental care and handicap care (PWC, 2005), causing a bias in our data on regional market shares of the providers of these services (many of which are active in the F-segment). For home care, this problem is less severe. Below, we first describe the model motivating our empirical analysis, and then turn to estimation results.

4.1 Model

In a general bargaining model (Svejnar, 1986), the potential gain from bargaining is divided between the players that play a bargaining game. The gain is expressed as the sum of deviations of the players' utilities (U_i, U_j) from the disagreement payoffs $(\overline{U}_i, \overline{U}_j)$:

$$\Gamma = (U_i - \overline{U}_i) + (U_j - \overline{U}_j).\tag{1}$$

The bargaining outcome is the pair (U_i, U_j) maximising the expression:

$$V = (U_i - \overline{U}_i)^{\gamma(Z)}(U_j - \overline{U}_j)^{1-\gamma(Z)},\tag{2}$$

in which γ, dependent on some factors Z, characterises the bargaining power of players.

This model has been applied in the healthcare context in order to analyze the outcome of negotiations between service providers and organisations contracting these services (such as insurers or healthcare purchasing agencies). See, e.g. Brooks et al. (1997) for applications to hospital-insurer bargaining. Here we apply a similar approach to analyse bargaining between EMEA service providers and regional healthcare purchasing agencies responsible for contracting these services in the Netherlands.

The disagreement payoff for the healthcare purchasing agency is determined by the maximum tariff R set by the regulator, and the disagreement payoff of the provider is determined by the minimum cost at which the provider either can still provide the service. The value function is expressed by the equation:

$$V = (P \cdot Q - C \cdot Q)^{\gamma(Z)}(R \cdot Q - P \cdot Q)^{1-\gamma(Z)},\tag{3}$$

in which Q is the quantity provided, and C is the average unit cost and P is the price.

A simple rearrangement gives:

$$V = Q \cdot R \cdot \left(\frac{P}{R} - \frac{C}{R} \right)^{\gamma(Z)} \left(1 - \frac{P}{R} \right)^{1-\gamma(Z)} , \tag{4}$$

If we assume that the parties bargain only on price, and not on quantities[21], this expression is maximised at the value of P/R that satisfies to

$$\gamma = \left(\frac{P}{R} - \frac{C}{R} \right) \bigg/ \left(1 - \frac{C}{R} \right). \tag{5}$$

Under the assumption of constant returns to scale, the average unit cost C does not depend on quantity.[22] Introducing notations $p=P/R$ and $c=C/R$ for the ratios between the original variables, we obtain

$$p = \gamma(1 - c) + c \tag{6}$$

Here c represents the deviation of production cost from the regulated maximum tariffs and can be interpreted as the efficiency target set by the regulator; and γ is bargaining power of the service provider. Since the cost is unknown, the above equation does not identify γ and c separately. This means that we estimate the effect of market share on price rather than the effect of market share on the bargaining power of the provider.

We assume that the bargaining power of a service provider depends on structural characteristics, such as the provider market share in the regional market, s, and the degree of market concentration, expressed by the regional Hirschman-Herfindahl Index, $HHI=\Sigma s^2$. The provider market share s characterises the relative market position of the provider, and HHI relates to market conditions in general.[23] This leads to the followings specification of the empirical model:

$$p = \beta_0 + \beta_s s + \beta_{HHI} HHI + \varepsilon \tag{7}$$

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[21] Brooks et al. (1997) use a similar model. .

[22] The interpretation of the results remains the same if we assume variable returns to scale. We comment on this point in conclusions (section 5).

[23] Similar structural variables are included in the analysis by Melnick et al. (1992) and Halbersma et al. (2007) of bargaining power of hospitals in the US and the Netherlands respectively.

Here, the effect of structural characteristics on contracted prices p combines the effect of bargaining power and the effect of the regulatory estimate of R.

4.2   Estimation of the effect of market share

The empirical model that we estimate is specified in equation (7). Market share of each provider is computed as his regional market share based on contracted quantities and regulated prices.[24] In addition to structural variables included in that equation, we also include year dummies and regional dummies, to control for changes of the effects over the years and regional differences.

$$p = \beta_0 + \beta_s s + \beta_{HHI} HHI + \sum \beta_{year} D_{year} + \sum \beta_{region} D_{region} + \varepsilon \qquad \text{(7a)}$$

Since contracted prices are restricted by the regulated maximum tariffs, the revenues of providers cannot exceed the maximum revenues based on maximum tariffs. This means that the dependent variable (constructed as a ratio of contracted revenue and maximum revenue) is restricted by 1. OLS estimates would be biased in this case, therefore, we choose to use Tobit estimates, which are usually used for censored data. We also apply clustering by provider in our estimation. This procedure does not affect the coefficients but improves the robustness of their standard errors.

Table 2 shows estimation results (see Regression 1). The results are in line with what we expected. They support the presence of a positive relationship between market share and price. The positive and highly significant coefficient for market share indicates that the price is an increasing function of market share in the relevant range. A market share increase of 1% translates into an increase of the relative price of 0.134%. See Table 3 (section 4.3) for additional illustrations of the effect of market share on relative price.

The effect of HHI appears to be small and insignificant. This result holds even if we re-estimate the relationship excluding regional dummies (not shown here). Therefore, it is unlikely that the concentration itself is the reason for relatively high prices in some regions. The results of the Likelihood Ratio Test suggest that the inclusion of HHI does not increase the explanatory power of the model.[25] Omitting HHI from the model (not shown here) does not produce much change to the other coefficients and their t-statistics.

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[24] By using contracted quantities (instead of actual realised quantities) in defining market share, we lessen the potential endogeneity problem that may arise with respect to the use of actual quantities.

[25] The result of the Likelihood Ratio Test shows that the regression without HHI is preferable to Regression 2 (LR chi2[1]=0.11, Prob > chi2 = 0.7369).

Table 2   Tobit-estimation of the effect of structural characteristics on relative price, 2004-2006

	Regression 1	Regression 2 (controlling for complexity)	Regression 3 (adding quality, 2005 only)	Regression 4 (adding quality, assuming it does not change over time)
S	0.134***	0.085***	0.062**	0.055***
HHI	– 0.028	– 0.013		– 0.014
Number of functions		0.008***	0.009***	0.008***
Quality			0.015	0.032
Missing quality dummy			0.090	0.238
Year2	– 0.043***	– 0.044***		– 0.044***
Year3	– 0.043***	– 0.044***		– 0.044***
Const	0.981***	0.949***	0.808***	0.711***
Number of observations	2497	2497	843	2497
Number of censored observations	517	517	99	517
LL	1952	1986	823	1990
Chi2	387.4	399.4	185.3	411.3
Chi2 (regional dummies)[a]	154.2	149.8	127.4	155.5

Note: * p<.1; ** p<.05; *** p<.01

[a] Regional dummies were also included in regressions. Here we do not report the respective coefficients in order to safe space. Chi2 (regional dummies) corresponds to the test for their joint significance.

We have performed a number of specification tests for our model (Hausman test and the link test[26]). These tests accept our specification form. The proportion of censored data in the initial sample has appeared to be close to the proportion of censored data as predicted by the model.

4.3   Controlling for complexity

In order to assess whether the positive relationship between market share and price might be caused by other factors, we test for alternative models. One possible explanation for price differences across providers, is differences in the complexity of their client base. If larger providers serve more difficult clients, then we can also expect them to charge higher prices. To some extent, this is already taken care of by differentiated pricing of different products (more complex services have higher prices). But it may still be the case that there is some dispersion in the cost of delivery of each product, which is driven by the client type. More care demanding clients may end up with large providers because such clients are likely to need a broader range of services. As can be seen from Figure 4.1, small providers often provide a limited number of products, while large providers typically have a broad range.

[26] The former tests that the probit part and the truncated regression part have the same normalized coefficients, as implicitly assumed by Tobit; and the latter tests checks the potential misspecification of the functional form of the model (Pregibon, 1980).

Figure 4.1   Number of functions and market share, 2004-2006
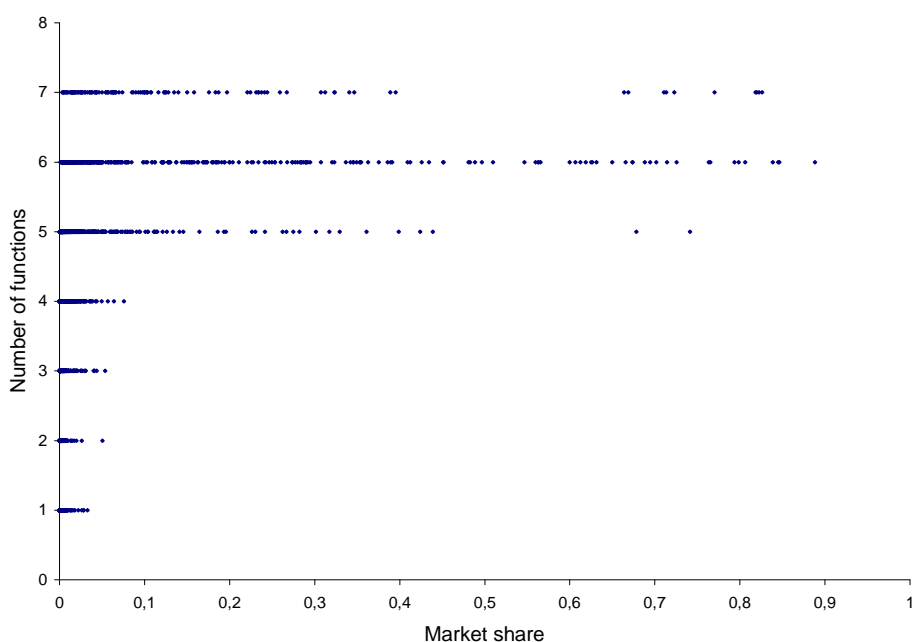
We test for the plausibility of this explanation by including the variable *number of functions* in the regression, which serves as a proxy for complexity. When defining the functions, we apply the same classification of allocation as used by the regulator (see Appendix 1). A positive coefficient reflects the effect of complexity of care on the final price. If we still find a positive and significant effect of market share on prices after controlling for this effect, then this will support our conjecture regarding a higher market power of larger providers.

Indeed, the estimation results (see Table 2, Regression 2) lend support to the argument that client complexity may be a factor driving the prices up, but it does not fully explain the existing price differentials between small and large providers. The effect of market share is still relatively large and significant.

Table 3 illustrates the potential price differences as the result of the differences in market share, based on the results of our estimates in Table 2. According to these estimates large providers who serve half of the regional market are able to charge about 4% more than small providers (where not restricted by the regulated maximum tariffs).

Table 3	Price increase as the result of change in market share				
Increase in market share		5%	25%	45%	65%
Resulting price increase (regression 1)		0.7%	3.4%	6.0%	8.7%
Resulting price increase after correction for complexity (regression 2)		0.4%	2.1%	3.8%	5.5%

Note that we also find significant differences in contracted prices for some healthcare purchasing agencies. To the extent that market share picks up market power, this must reflect other factors than relative bargaining strength. The negative coefficients for the year-dummies indicate that relative contracted prices (as compared to maximum tariffs) decreased.

4.4 Controlling for quality

Although we find a positive relationship between price and market share (and insignificant relationship with HHI), we cannot rule out that both differences in price and differences in market share are caused by differences in quality. For example, suppose healthcare purchasing agencies prefer to contract suppliers with high quality, and suppose also that it is costly to produce higher quality. Then this will result in a positive relationship between price and market share even if firms with high market share have no market power.

In order to further investigate this possibility we need to control for quality in our estimations. However, quality data are not available for the complete sample, but for a smaller sample of providers. Therefore, we can control for quality differences for this restricted sample of providers. This will allow us to check for sensitivity of the estimates obtained in Regression 2 (see Table 2) to the inclusion of quality. Besides, it may give us some insights into the relationship between quality and prices, if the coefficient for quality appears significant.

In 2005, an independent research bureau conducted a survey among 55,000 clients of 82 Dutch home care providers. The participants of the survey were asked to evaluate their care providers on different aspects of quality on a scale from 0 to 10. These evaluations were then aggregated to determine an integral quality score for each provider.[27]

Figure 4.2 shows a scatter of the available observations on quality and respective regional market shares of home care providers in 2005. The discrepancy in the quality scores is not very large. The correlation coefficient between market share and quality is -0.40, and highly significant (p=0.0034), casting doubts on the argument about a superior quality of larger providers (at least for this sample).

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[27] These data are currently publicly available on the website http://www.kiesbeter.nl.

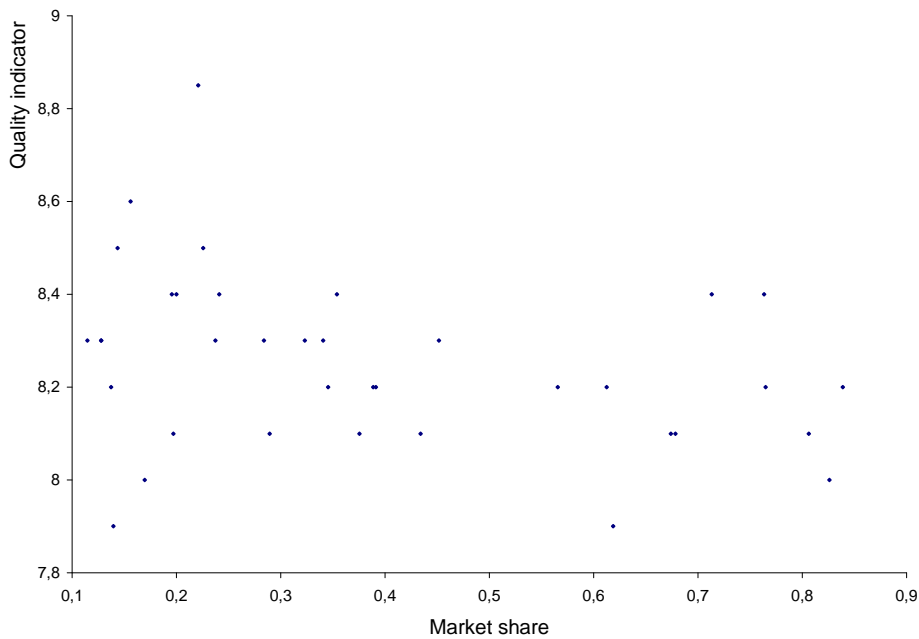**Figure 4.2   Quality and market share (smaller sample, year 2005)**

Table 2 (Regressions 3 and 4) shows the results of regressions that control for quality differences. Since quality data are available only for one year, we first report the results including this year only (Regression 3), then the results (Regression 4) for the complete sample, based on the assumption that quality (or strictly speaking quality differences) does not change over time.

The findings indicate that the relationship between market share and price remains after controlling for quality. The coefficient for quality is positive, but insignificant. This precludes firm statements about the effect of quality on prices.

5   Conclusions

This paper evaluates the effect of market share on contracted prices of regional providers of home care in the Netherlands and explains the observed price differences across providers. We focus on two alternative explanations for these differences: market power and differences in quality. Both explanations are plausible: On the one hand, large providers may be able to exploit market power by raising prices above competitive levels; on the other hand, price differences across providers may be driven by quality, if healthcare purchasing agencies are willing to pay for better quality.

Our econometric analysis shows that, indeed, a larger market share is associated with a higher price. Since large firms typically deliver a broad range of functions, they maybe get a higher proportion of clients requiring complex (multi-functional) care, which in turn affects their prices. Therefore, we also incorporate a correction for client complexity. This correction leads to a slight reduction of the estimated effect of market share on price, but does not eliminate it. This supports the conjecture about higher market power of large home care providers. This interpretation remains valid even if bigger firms would have higher costs (on which we do not have data). In a competitive market, only firms of optimal scale would remain active. If large, high-cost firms are able to pass on their costs in prices, then (ceteris paribus) this is evidence of a lack of competition.

However, there may be a second explanation for this finding that is unrelated to market power. Suppose larger providers deliver higher quality. If purchasing agencies prefer to contract high quality providers, and if it is more costly to produce high quality, then this would also produce a positive correlation between market share and price. Unfortunately, quality data are not available for the whole sample. Therefore, we can only check our hypothesis for a smaller sample. The findings indicate that the relationship between market share and price remains after controlling for quality. This suggests that market power, rather than quality, explains the observed price differences in home care.

How could policy measures countervail this market power? As we explained in section 2, healthcare purchasing agencies must fulfil strict obligations with respect to the amount of care contracted for covering the region's demand. However, the purchasing agencies lack financial incentives to buy this care efficiently since they do not bear any financial risk on the price of care they purchase from providers, while they do carry full financial risk on the operational cost of contracting and negotiating. This may be a reason why they prefer to deal with a limited number of larger suppliers rather than with numerous small suppliers so that their transaction costs are kept down and their operation cost budget is not fully exploited. Also, there are no hard negotiations taking place between large care providers and purchasing agencies because not concluding a contract with large providers would cast a negative image on the agency and the insurer, affecting the insurer's position in the market for health insurance. Therefore,

healthcare providers know they will get a deal with the purchasing agency and have thus no incentives to reduce the price.

From a policy viewpoint there are two possible solutions focusing on different time horizons. In the short run, one can think of stronger financial incentives for purchasing agencies, or imposing more efficient procedures, such as auctions, to assign EMEA services to individuals.[28] An auction mechanism stimulates competition between bidders and allows sellers and buyers to gain from the service exchange, provided that quality is clearly defined, contracted and enforced.

In the long run, an option may be that health insurers take over the responsibilities of the purchasing agencies in contracting with healthcare providers. If health insurers are made to bear all financial risks associated with carrying out this task, then they will have an incentive to bargain for a low price, possibly using an auction scheme as outlined above. Moreover, health insurers operate on a larger regional scale than purchasing agencies. As a result, health insurers will have a stronger bargaining position. However, since insurers may appear to be more focused on prices than on quality in their choice of providers, the issue of quality may arise. It is possible that the market mechanism will safeguard quality, e.g. if consumers "vote with their feet" by switching insurers in case of low quality. However it is unclear whether this mechanism creates a credible threat, since consumers of home care may not be profitable for health insurers. In principle, a risk equalization scheme could be used to address the latter problem, but whether this is feasible in practice remains an open question.

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[28] Since 2005 online auctions on postpartum services are taking place in the Netherlands via an internet website. This auction takes place between healthcare insurers and providers of care. The auction works as follows: The request for postpartum services is placed on internet and subsequently care providers have seven days at disposal to auction off.

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Appendix 1: EMEA functions of care

The EMEA insurance is currently subdivided in 7 functions of care summarised in Table A1. When an individual needs EMEA services he first has to be allocated to a function (or more) of care.

Table A1: Functions of care

	Function of Care	Description
1.	House Care	Activities related to house keeping, such as cleaning and tiding up.
2.	Personal Care	Activities related to personal care such as help with showering, dressing up, and help with eating and drinking.
3.	Nursing	Medical care given to patients, namely injections, wound care, and drug administration.
4.	General Supervision	Activities aimed at enhancing the integration of the individual into the society, e.g., support to plan daily activities.
5.	Activating Supervision	Activities related to recovering individuals from psychological illnesses, e.g., how to change behaviour in the society.
6.	Treatments	Activities aimed at curing diseases, e.g., revalidation after a stroke.
7.	Residency	This is intramural care, when the patient needs to be placed in an institution because home care help would not suffice.

Source: Decision on EMEA contracts, 25 October 2002[29].

[29] Besluit zorgaanspraken AWBZ, 25 oktober 2002, http://www.st-ab.nl/wetawbzorbza.htm.

Appendix 2: Data issues

Here we give some more details on our dataset. Table A2 shows the split of data on contracted quantities and prices by year.

Table A2: The number of observations by year

	2004	2005	2006
Total	12401	12935	12874
-segment H	8896	9394	9348
-segment F	3532	3541	3536
Number of observations with price=BW	6659	3788	3284
-segment H	6308	3538	3214
-segment F	351	250	70

While for some providers, we have only one observation on the contracted price and quantity per product for every year, for some other providers we have more than one observation per product for the same year. This occurs if negotiation has not been fully centralised at the provider level, but has been conducted by several separate units. About 7% of observations in our dataset correspond to contracts concluded by such units. The dataset does not allow us to trace these units over products. Hence we do not distinguish them as separate providers.