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Competition and efficiency in the Dutch life insurance industry

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Abstract

The lack of available prices in the Dutch life insurance industry makes competition an elusive concept that defies direct observation. Therefore, this article investigates competition by analysing several factors which may affect the competitive nature of a market and various indirect measurement approaches. After discussing various supply and demand factors which may constitute a so-called tight oligopoly, we establish the existence of scale economies and the importance of cost X-inefficiency, since severe competition would force firms to exploit available scale economies and to reduce X-inefficiencies. Both scale economies and X-inefficiencies turn out to be substantial, although more or less comparable to those found for insurers in other countries and to other financial institutions. Further, we apply the Boone indicator, a novel approach to measuring the effects of competition. This indicator points to limited competition in comparison to other sectors in the Netherlands. Further investigations of submarkets

should reveal where policy measures in order to promote competition might be appropriate.

[†]The views expressed in this article are personal and do not necessarily reflect those of CPB or DNB

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Notes

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[1]In terms of premiums as a percentage of GDP, the Dutch market is around 40% above the European weighted average.

[2]For an overview, see Bikker (2004) or Bikker and Bos (2005).

[3]For life insurances, a second motive is the accumulation of assets. Some countries see many buyers of annuities eventually cashing out their contracts rather than annuitizing.

[4]In the Netherlands, health insurance is part of nonlife insurance, whereas in Anglo-Saxon countries, health insurance is seen as part of life insurance.

[5]A typical endowment insurance policy pays a given amount at a given date if a given person is still alive, or earlier when he or she passes away. Of course, there are many variants to these archetypes.

[6]The fiscal regime change might cause a structural break. However, re-estimation of our model for two sub-periods, before and after the change, did not give different results.

[7]For a fuller discussion we refer to CPB (2005). See also Kamerschen (2004).

[8]For a detailed analysis of the various effects we refer to CPB (2003).

[9]Concentration ratios are discussed in Bikker and Haaf (2002). where s_i represents the market share of firm i.

[10]In 1996, Japanese entrance increased sharply due to a structural change.

[11]Acquisition costs are marketing costs and sales costs, which include commissions to insurance agents.

[12]Incidentally, a new Dutch Financial Services Act (Wet Financiële Dienstverlening) has come into force at the begin of 2006, pressing for more transparency in this market, which may also work to improve competition in this submarket.

[13]See Consumentenbond, 2004, Consumentengeldgids (Personal finance guide), September, 34–37.

[14]This interpretation would be different in a market with only few firms, so that further consolidation would be impossible. Further, this interpretation would also change when new entrees incur unfavourable scale effects during the initial phase of their growth path.

[15]Note that sometimes scale economies are defined by the reciprocal of Equation 3, see, for instance, Baumol et al . (1982, p. 21) and Resti (1997).

[16]The first stochastic frontier function for production was independently proposed by Aigner et al . (1977) and Meeusen and van den Broeck (1977). Schmidt and Lovell (1979) presented its dual as a stochastic cost frontier function.

[17]This expression relies upon the predicted value of the unobservable, u_{it} , which can be calculated from expectations of u_{it} , conditional upon the observed values of v_{it} and

u_{it} , (Battese and Coelli, 1992, 1993, 1995).

[18]Note that the $E(c_{it} | u_{it}, X)$ differs from actual costs, c_{it} , due to v_{it} .

[19]An alternative definition would be the inverse of EFF_{it} , $INEFF_{it} = \exp(u_{it})$, which is bounded between 1 and ∞.

[20]See Boone and Weigand in CPB (2000) and Boone (2001, 2004).

[21]More competition can force firms to consolidate (see our scale economies discussion). Claessens and Laeven (2004) found in a world wide study on banking that concentration was positively instead of negatively related to competition.

[22]Suppose that the negative profit firms are price fighters. In a well-functioning market the price fighters will-influence profitability of the other firms.

[23]Some insurance firms can approximate their value added by comparing their embedded value over time. These data are not publicly available.

[24]The definition of production of life insurance firms is discussed further in subsection 'cost X-inefficiency'.

[25]The price of management, or wages, has been excluded by applying the two standard properties of cost functions, namely linear homogeneity in the input prices and cost exhaustion (Jorgenson, 1986).

[26]Of course, the accuracy of this optimal size is limited, as its calculated location lies far out of our sample range.

[27]This figure is based on the OLS estimates, which provides the starting values of the numerical optimization procedure. As OLS minimizes the errors terms and maximizes the degree of fit, the latter will be lower in the SCF model.

[28]This measure can be defined as where p_i denotes the firm's equilibrium output price and mc_i its marginal cost.

[29]ISIS data concern both domestic and foreign activities. Pure domestic figures would be more precise but are not available.

[30]For instance, firms in the Netherlands use more agents as selling channel than those in other countries (CEDA, 2004, p. 144).

[31]A similar picture emerges from figures of CEDA (2004), p. 198.

[32]This lagging adjustment of profitability does not disturb the international comparison, as this limitation holds also for the foreign data.

[33]Note that the variable cost may change over the size classes due to scale efficiency (just as the marginal cost may do), so that the average variable cost may differ from the marginal cost. Apart from this theoretical dissimilarity, these variables are also measured differently in practice.

[34]We have also estimated random effect models for profits (Table 8) and markets shares (Table 9). Their coefficients were quite similar to those of the fixed effect models, with even slightly higher values and higher levels of significance. This suggests that the estimates presented in Tables 8 and 9 are quite robust. We tested for random effect using the Hausman test, but this test appeared to be undefined, suffering from the ‘small sample problem’. All models include year dummies, also not shown in the tables.

[35]The value of the Boone-indicator in these estimations is around −0.85. Results can be obtained from the authors.

[36]The elasticity of this variable is the coefficient (0.45) times the average of the unit-linked fund ratio (0.33; see Table 3), so 0.15.

[37]In the basic model, the β_1 values for mc are lower than for average variable costs (namely around −1) and for one year even not significant, see Table A2 in Appendix 2.

[38]The elasticity, the first derivative of the auxiliary equation in logs, is $-0.37 + 0.01 \times 2 \times$ average production in logarithms. For the auxiliary model in natural values it is equal to mc production $\times$ (average production/average mc) $= (-0.134e-7 + (0.249e-14 \times 247707.4 \times 2) \times 247707/0.18$.

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