Deregulation in Retailing: The Dutch Experience

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Abstract

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1. Introduction

Starting a retail venture was subject to important institutional requirements in the Netherlands up till 1996. Entrepreneurs were required to have got at least the *middenstandsdiploma* (retailer's certificate). For several shoptypes there were additional certificates required. The institutional requirements were an important barrier to entry in the retail sector. Other barriers to start a retail venture are relatively low. The setting up of a shop generally demands much less capital, time and knowledge investment than starting an enterprise in manufacturing. This is due to the more limited size of retail shops and the more clearly structured retail market environment resulting from the limited impact of innovations and international competition. Despite concerns of representatives of incumbent retailers, the Dutch government decided to lower the institutional barriers to entry in order to enhance market performance.[2]

The institutional entry requirements in Dutch retailing were based upon a forty year old law, the *Vestigingswet Bedrijven 1954*. Regulations for entrepreneurs were complicated and strict limiting the freedom to enter and to pursue even closely related entrepreneurial activities. A key aim of the deregulation was to increase market dynamics by simplifying (new) entry. Although the institutional entry requirements were changed in 1996, it was already announced in mid 1992 that from the 1st of January 1993 on, there would be no (criminal) prosecution by the regulator anymore. We investigate for this first period, 1993-1995, the effects of deregulation on entry, exit and number of shops in retail markets. For this we use an extension of a recently developed model by Carree and Thurik (1999). This model allows for the measurement of the speed of adjustment towards the equilibrium average number of firms on local retail markets and to compute the contributions of entry flows and exit flows to this adjustment process. It can also be used to estimate the change in the equilibrium number of firms resulting from deregulation.

Aggregate data on entry and exit rates in Dutch retailing suggest that market dynamics have increased in the period 1993-1995. Bosma and Zwinkels (1999) provide data showing that the average new entry rate in the retail sector increased by 28% when comparing the 1993-1995 period with the 1987-1992 period. The average exit rate increased as well, by 22%. In the current paper we provide statistics on the effect of deregulation at the much more disaggregate level of shoptypes. We use data of 23 shoptypes covering the period 1981-1995. The rest of the paper is organised as follows. In Section 2 we develop our error correction model which we use to measure the deregulation effects. Section 3 is used to describe the panel data set and some basic statistics on the Dutch retail sector. In Section 4 we present the empirical results and Section 5 concludes.

2. The model

Retailing constitutes a relatively simple entrepreneurial activity. There are no huge barriers to entry although there are several factors which may lenghten the time between deciding to start a retail venture and the actual entry. Such factors may include finding an adequate sales outlet, arranging credit and passing the exam(s) for retailer's certficates. A clear indication that entry barriers in the retail sector are not very high, is the limited difference between the rewards for running a store and the average wage level. Carree and Thurik (1999) report that the average reward for entreprenerial activities in Dutch retailing in the 1980s has been about 50% more than that for the activities of a (modal) employee. In case retail profits increase relative to the wage level we expect an increase in the (net) entry rate, while in the reverse case we expect more (net) exit.

Carree and Thurik (1999) model the retail market structure as follows. They assume that each local retail market has an equilibrium number of enterprises, N^*. This equilibrium number is determined, amongst others, by a critical profit level, p^* and total market demand, Q. A decrease in the critical profit level that entrepreneurs expect for their activites or as

[2] We do not provide a discussion of the economic literature concerning deregulation. See Phillips (1985) and Winston (1993) for some discussions on the consequences of deregulation.

compensation for the entrepreneurial risks, leads to an increase in the equilibrium number of firms, while an increase in demand also increases the equilibrium number of firms:

(1) $n_p = \frac{\partial N^*}{\partial p^*} \frac{p^*}{N^*} < 0$

(2) $n_Q = \frac{\partial N^*}{\partial Q} \frac{Q}{N^*} > 0$

Carree and Thurik also derive from their (oligopoly) model that n_Q should be smaller than 0.5 (p.989). The change in the equilibrium number of firms from one period to another can therefore be approximated by:

(3) $g_t = \frac{\Delta N_t^*}{N_{t-1}^*} \approx a + n_p \frac{\Delta p_t^*}{p_{t-1}^*} + n_Q \frac{\Delta Q_t}{Q_{t-1}}$

The parameter a is incorporated to correct for a structural development in the equilibrium number of firms. The Dutch retail sector has gone through a period of concentration for the past decades (Nooteboom (1986)). Supermarkets have gained market share at the expense of specialized food stores like butchers and greengrocers. Not every shoptype may have suffered to the same extent from such developments, so the structural development parameter may differ across shoptypes. The most important distinction is that between food and non-food shoptypes, because food shoptypes will have suffered most strongly from the increased market shares of supermarkets. We will thefore also present results for those two seperate groups of shoptypes.
Carree and Thurik assume that entrepreneurs adjust for disequilibria as these are characterized by profit opportunities. This reasoning is in line with the Kirznerian notion on entrepreneurial activity resulting from the perception of available opportunities to make profits (Kirzner (1973, 1979, 1997)). They derive under certain assumptions that the actual number of firms is determined by an error correction model of the form:

(4) $\Delta \ln(N_t) = g_t (\ln(N_{t-1}^*) - \ln(N_{t-1}))$

An extension to the Carree and Thurik model is that we assume that the speed of adjustment parameter g_t is time-dependent. We make this extension as we expect the speed of adjustment before and after the deregulation to be different. We do not know the value of the equilibrium number of firms, but we may derive equation (5) from equation (4):

(5) $\Delta \ln(N_t) - \frac{g_t}{g_{t-1}} \Delta \ln(N_{t-1}) = g_t (\Delta \ln(N_{t-1}^*) - \Delta \ln(N_{t-1}))$

Considering that $\ln(1+x) \approx x$ when x is small and adding a disturbance term, we have:

(6) $\Delta \frac{\Delta N_t}{N_{t-1}} = \frac{g_t - g_{t-1}}{g_{t-1}} \frac{\Delta N_{t-1}}{N_{t-2}} + g_t \left(g_{t-1} - \frac{\Delta N_{t-1}}{N_{t-2}} \right) + e_t$

We make the following assumptions about the speed of adjustment parameter g_t and the critical level of profits p_t^*. We assume that g_t takes two values, g_B before the deregulation (up till 1992) and g_A after the deregulation (from 1993 on). We assume that the critical level of profits is constant except for the deregulation date (1st of January 1993) when it shifts downwards. The

general real wage index in the Netherlands barely changed during the period of investigation, which indicates that an assumption of a constant p_t^* should not pose a problem. However, due to the deregulation measures retail ventures have become easier to start. It is therefore likely that the critical level of profit (compared to the wage level) to enter goes down. So, equation (6) has a different expression before, during and after the deregulation year (1993):

(7a) $$\Delta\frac{\Delta N_t}{N_{t-1}} = g_B\left(a + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t$$ t<1993

(7b) $$\Delta\frac{\Delta N_t}{N_{t-1}} = \frac{g_A - g_B}{g_B}\frac{\Delta N_{t-1}}{N_{t-2}} + g_A\left(a + b + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t$$ t=1993

(7c) $$\Delta\frac{\Delta N_t}{N_{t-1}} = g_A\left(a + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t$$ t>1993

where b is equal to $n_p\Delta p^*_{1993} / p^*_{1992}$. Our two main hypothesis with regard to the effects of the deregulation are that the deregulation leads to an increase in the adjustment speed and to an increase in the equilibrium number of firms.

H1 : $g_A - g_B > 0$

H2 : $b > 0$

Carree and Thurik also derive how the flows of gross entry and gross exit contribute to the adjustment process towards the equilibrium number. For example, in case the actual number exceeds the equilibrium number of firms, adjustment may take place due to decreasing entry rates or due to increasing exit rates. The relative importance of entry and exit in the adjustment process can be estimated by replacing $\Delta(\Delta N_t / N_{t-1})$ in equations (7a) and (7c) by $\Delta(Ent_t / N_{t-1})$ and $\Delta(Ext_t / N_{t-1})$, respectively. The variables Ent_t and Ext_t represent the gross number of entrants and exiting firms, and $\Delta N_t = Ent_t - Ext_t$. The equations (8a) through (9b) show the equations to be estimated:

(8a) $$\Delta\frac{Ent_t}{N_{t-1}} = g_B^E\left(a + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t^E$$ t<1993

(8b) $$\Delta\frac{Ent_t}{N_{t-1}} = g_A^E\left(a + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t^E$$ t>1993

(9a) $$\Delta\frac{Ext_t}{N_{t-1}} = g_B^X\left(a + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t^X$$ t<1993

(9b) $$\Delta\frac{Ext_t}{N_{t-1}} = g_A^X\left(a + n_Q\frac{\Delta Q_{t-1}}{Q_{t-2}} - \frac{\Delta N_{t-1}}{N_{t-2}}\right) + e_t^X$$ t>1993

Equations (8) and (9) are a system of two equations where the error terms e_t^E and e_t^X are expected to be positively correlated. Our hypotheses with regard to the effect of the deregulation are that the contribution of entry to the adjustment process increases while there is no *ex ante* reason to assume that the adjustment parameter for exit would become different.

H3 : $g_A^E - g_B^E > 0$

H4 : $g_A^X - g_B^X = 0$

3. The data

The retail sector has an important contribution to the Dutch economy. It accounted for about 23% of the total number of economically active enterprises and for about 13% of the total labour force in the Dutch private sector in 1988 (Bode, 1990). The vividity of entry and exit movements in Dutch retailing has been relatively high. The average gross entry rate per annum across all shoptypes in our sample is 8% while the average gross exit rate is 9%. Entry and exit rates across shoptypes are also highly correlated (a correlation coefficient of 0.7). This implies that shoptypes which have high entry rates can also be expected to have high exit rates and vice versa.

Our data are available at the shoptype (retail industry) level in which establishments sell relatively homogeneous goods. The data on consumer demand for product packages sold in the shoptypes have been compiled using survey data from 1979 up till 1995 on household expenditures from Statistics Netherlands (CBS). Although the survey sample size is several thousands of households, there appear to be some changes in demand from one year to another, especially in small expenditure classes, which should be subscribed to sample variation. We corrected for that by estimating a linear approximation to the real expenditure data. That is, we estimated the equation $E_{jt} = a_j + b_j t + e_{jt}$ and constructed the fitted series $E_{jt}^{fit} = \hat{a}_j + \hat{b}_j t$. The mean of both series, E_{jt} and E_{jt}^{fit}, is almost equal, but the standard deviation of the former is more than twice as large as that of the latter (7.8% versus 3.4%). We tested for the presence fo a structural break in the expenditure data (e.g. first an increase followed by a decrease), but did not find any evidence for that for the 23 shoptypes. From the fitted expenditure series we create the variable $\Delta Q_{t-1} / Q_{t-2}$ by taking into account the increase in the number of households and by taking first differentials.

The source of the data on entry and exit rates of establishments is the Central Registration Office (CRK) in The Hague. For 21 shoptypes we have available data over the 1981-1995 period (15 observations) and for two shoptype we have data available only for the last six years (6 observations) making a total of 327 observations.

4. Empirical results

In this section the empirical results of equations (7), (8) and (9) are presented. Table I shows the estimation results for the net entry equation (7). In the first column of the table the results are presented when taking all observations into account. The speed of adjustment before the deregulation is estimated to be 0.476. This means that almost half of the disequilibrium is corrected for within a one-year period. After the deregulation the speed of adjustment parameter increases by 0.086, but this increase is not significant. The structural trend in the equilibrium number of firms in retaling over the 1981-1995 period is negative and significant. However, the deregulation has led to a temporary increase of this number (b is significantly positive). This temporary increase is equivalent to the negative of about five years, on average, of structural decrease. Therefore, while we find evidence for the second hypothesis of a temporary increase in the equilibrium number of firms to be valid, we fail to find evidence for the first hypothesis of an increased speed of adjustment.

In the second column of the table we show the results when leaving out one of the shoptypes, viz. the furniture stores. This shoptype is the one with the largest average floorspace per firm. This indicates that entry barriers with respect to capital investment may be quite large. Therefore, we expect the deregulation to have had much less effect on the barriers to entry in this shoptype when compared to the rest of the shoptypes in our sample. The estimated increase in the adjustment parameter after the deregulation date is indeed higher when leaving the Furniture Stores out of the data set. The coefficient of 0.142 is significant at the 10% level. That is, there is some evidence for the first hypothesis but it should be considered as weak .
When we split the sample in food and non-food shoptypes we find that the results are roughly the same for these two groups of shoptypes with the exception of the structural trend of the equilibrium number of firms. This structural trend is about absent in non-food stores while it is clearly visible for food stores. The food stores have lost important market share to supermarkets during the 1981-1995 period in the Netherlands. The results for the two seperate groups can be found in the last two columns of Table 1.

Table 1: Estimation results for the net entry equation (7)

		No Furniture	No 1993	Non-Food	Food
g_B	0.476	0.455	0.457	0.487	0.518
	(0.043)	(0.042)	(0.050)	(0.059)	(0.073)
$g_A - g_B$	0.086	0.142	0.151	0.088	0.093
	(0.087)	(0.085)	(0.122)	(0.125)	(0.148)
a	-0.007	-0.009	-0.007	-0.003	-0.014
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
b	0.033	0.036		0.024	0.041
	(0.009)	(0.008)		(0.012)	(0.013)
n_Q	0.310	0.310	0.336	0.278	0.266
	(0.072)	(0.075)	(0.078)	(0.090)	(0.114)
R^2	0.297	0.304	0.299	0.297	0.324
N	327	312	304	192	135

Note: Standard errors in parentheses. In the second column the shoptype Furniture Stores is left out. In the third column the year 1993 is left out and in the last two columns we show results for the non-food and food shoptypes seperately.

Now we turn to the estimation of the system of two equations (8) and (9). As we suspect the error term to be correlated, we use the method of Seemingly Unrelated Regression. The estimation results can be found in Table 2. The estimated correlation coefficient of the error terms of the two equations for the total sample is 0.40. We find for the total sample that there is an increase in the adjustment speed for entry but not for exit. The increase which was found in Table 1 can therefore be contributed to relaxation of entry regulations. However, there are differences between food and non-food shoptypes. In fact, the adjustment speed seems to be unaffacted by the deregulation in the food shoptypes, while it has had a large effect for the non-food shoptypes. One reason for that may be that there are still some additional institutional requirements in food shoptypes like Bakers and Butchers to ensure that consumers can purchase food products without health hazards. There are also food shoptypes like Dairy Shops and Tobacco Shops which have been losing market share to supermarkets for year after year and for which entry has not become that much more attractive due to deregulation.
We find evidence for the third hypothesis that the ease of entry has increased after the deregulation. However, this evidence is limited to the sub sample of non-food shoptypes. We

cannot reject the fourth hypothesis of the ease of exit not to be affected by the deregulation measures. Before the deregulation date the role of exit in the adjustment process was somewhat more important than that of entry, while after the deregulation date this has clearly reversed. In fact, the contribution of entry to the total adjustment speed after the deregulation is almost twice as large as that of exit (0.39 versus 0.22, total 0.61). See the third column of Table 1 for comparison.

Table 2: Estimation results for the system of entry and exit equations (8) and (9)

		No Furniture	Non-Food	Food
g_B^E	0.181	0.171	0.170	0.233
	(0.047)	(0.049)	(0.055)	(0.091)
$g_A^E - g_B^E$	0.208	0.220	0.300	-0.004
	(0.117)	(0.116)	(0.135)	(0.211)
g_B^X	-0.270	-0.275	-0.268	-0.318
	(0.044)	(0.046)	(0.046)	(0.093)
$g_A^X - g_B^X$	0.049	0.061	0.096	0.001
	(0.107)	(0.107)	(0.106)	(0.214)
a	-0.007	-0.009	-0.004	-0.014
	(0.003)	(0.003)	(0.003)	(0.005)
n_Q	0.354	0.338	0.360	0.234
	(0.082)	(0.084)	(0.096)	(0.125)
R_E^2	0.084	0.084	0.123	0.052
R_X^2	0.122	0.120	0.187	0.094
N	304	290	178	126

Note: Standard errors in parentheses. In the second column the shoptype Furniture Stores is left out. In the last two columns we show results for the non-food and food shoptypes seperately.

5. Conclusions

The current paper investigates the effects of the 1993 deregulation for the Dutch retail sector. From the 1st January of 1993 on the regulator decided not to take legal actions anymore against entrants violating institutional requirements. Three years later the institutional barriers to entry were officially relaxed. Our results can be summarized as follows. There seems to be clear evidence for an increase in the ease of entry for non-food shoptypes. For food shoptypes we do not find such an increase. For both food and non-food shoptypes we find that an increase in the equilibrium number of firms per local market. We note that these results are preliminary in the sense that only the first three years after the deregulation have been investigated. Future research should throw light on the questions whether the increase in market dynamics was temporary or structural. Bosma and Zwinkels (1999) provide data for 1996 showing that for the total retail sector entry declines from 1995 to 1996 and exit increases somewhat. It may indicate that the period of 1993-1995 will turn out to be a cohort of entrants which is less succesful than cohorts before the deregulation period. Research into the deregulation efforts which are taking place in retailing in other European countries would also provide much additional information about the extent to which deregulation affects market dynamics in the retail sector.

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