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GOVERNMENT POLICY AND THE EVOLUTION OF THE MARKET FOR DUTCH DAILY NEWSPAPERS ***

BY

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Summary

This paper investigates whether governments can change market structures through interventions. We study the effects of four political events over the life cycle of the market for daily newspapers in the Netherlands. We find that policy measures meant to lower entry barriers in an expanding industry created new entry and increased survival chances for potential entrants and incumbent newspapers. Exit barrier enhancing policies to reduce concentration tendencies have not been successful.

Key words: daily newspapers, entry, exit, industry evolution, political events, survival

1 INTRODUCTION

This paper studies the influence of four political events on the development of the market for daily newspapers in the Netherlands. In 1848, freedom of the press was incorporated into the new Constitution of the Kingdom of the Netherlands. This initiated the development of the Dutch newspaper industry. The second political event was the 1869 special tax cut. The abolition of this stamped paper duty removed the last obstacle to economic press freedom. The tax repeal substantially reduced the newspaper production costs which caused the number of newspapers to grow by fifty percent in the two years thereafter. The third political event is World War II. This period of turmoil caused a reversion in the industry's life cycle. During the pre-war period from 1848 onwards the market expanded in the number of available dailies, whereas after the war the expansion ended and the number of newspapers steadily declined. In reaction to the concentration tendency the Dutch government decided to install a press relief fund in 1971. The fund's goal was and is to save pluralism of daily newspapers. The

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creation of the press relief fund, which still exists today, is the fourth political event that affected the development of the industry.

We conduct an empirical analysis, allowing for political events to explain the entry and survival chances of daily newspapers in the Netherlands to obtain a thorough understanding of the influence of the government on the market structure. Duration models are the most appropriate method to investigate the influence of the political events and the industry dynamics on the duration dependence of the newspapers' survival chances (Carroll and Delacroix (1982) and Hannan and Freeman (1989)). The data set we analyzed contains annual information on every Dutch daily newspaper that existed between 1848 and 1997. Besides duration and political events, the main determinants of the survival chances of daily newspapers include the evolution of the newspaper market segments, location choices, the development of the average subscription price, and the age of the industry.

The paper is organized as follows. The next section gives a brief theoretical background of the dynamics of markets. Section 3 presents summary information on the Dutch daily newspaper industry in general and details the effects of the four events on entry and survival rates. Section 4 presents the data and the econometric method used in this study and section 5 discusses the outcomes of our empirical analysis. Section 6 concludes.

2 THEORETICAL BACKGROUND

Schumpeter (1934) noted that the fittest firms in an industry are those that gain competitive advantages through innovations, or early adoption of a new product or process. Survival chances depend on the actual firm behaviour and the characteristics of competitive environment, or as Nelson and Winter (1974) pointed out, 'the selection environment is at once the medium through which exogenous influences are transmitted to the firms in the sector: and the medium through which the firms of the sector influence each other'. Entry rates vary over time, come in waves, and often peak early in the life of an industry. These waves of entry tend to contain different types of firms. High rates of entry are often associated with high rates of innovative activities and increases in efficiency (Geroski (1995)). However, empirical literature shows that generally entrants are not the major source of innovation in an industry, but that entry stimulates incumbents' innovative activities (see e.g., Baldwin and Gorecki (1991)). Entry plays an important role in shaping the industry structure in certain phases of the industry life cycle at precisely those times when the current activities of incumbents are most out of line with exogenous changes in costs and demand. Entry is easy, but to survive is difficult. It is a stylised fact that the survival chance of most new firms is low. Geroski (1995) recognized that even for successful entrants it may take more than a decade to achieve a size comparable to the average incumbent.

In the industrial organization literature, models of industry evolution are developed to reflect the selection mechanism on the nature of industry evolution (see e.g., Jovanovic (1982), Winter (1984), and Klepper (1996)). These models predict that the longer a firm remains in the market the more it learns about its true costs and its relative efficiency and the less likely it is to fail. One group of extensions of these industry evolution models shows how chance events and exogenous factors influence the number of potential entrants to the industry (see e.g., Klepper and Graddy (1990)). Jovanovic and MacDonald (1994) modelled the influence of precipitating events, such as major exogenous changes, on the market structure. Firms that are able to adjust to the new environment early are likely to survive, while the slow movers are forced out of the market.

Another research field, organizational ecology, has also studied firm survival chances and the developments of the market. Organization ecology studies show that entry and exit rates of organizations are strongly influenced by environmental forces, embodied in the number of firms operating in any industry (see e.g., Hannan and Freeman (1989), Lomi (1995), and Swaminathan (2001)). This relationship is formulated in the density dependence model of competition and legitimation (Hannan and Carroll (1992)). According to the density dependence model, entry of firms is an inversed U-shaped function of the number of incumbent firms. The entry rate is related to the scarcity of material resources that firms compete for. Changes in competition and environmental resources determine a ceiling for the number of firms in a market (Hannan and Freeman (1977)).

Evidence shows that government policy can play an important role in changing competition and other environmental forces. For instance, Seade (1980) and Besley (1989) showed that changes in tax policy substantially alter competition and market structures. A reduction in taxation increases the number of firms entering the market. Romer (1994) showed that taxes decrease the provision of new products in small and remote markets. The imposition of taxes may increase the minimum sales necessary for a firm to overcome the fixed costs. The higher the fixed costs of production, the fewer goods will be available. Government policy can also have an impact on location choices of firms. A favourable fiscal policy and governmental incentive programmes can attract firms to establish in the particular market or region (see e.g. Holmes (1998)). However, Gustafson (1993) showed that the effect of government policy has no large impact on the entry rate and survival chances of firms in a concentrating industry.

Despite the long tradition of empirical research investigation on which factors determine whether incumbents and new firms are likely to survive, no study to our knowledge investigates the effect of political events on the entry rates and survival chances of firms during the industry life cycle. Political events may change the market structure although the effects of these shocks depend on the stage the market is in. Government actions in an expanding industry can create new opportunities for potential entrants and incumbent firms, while interventions in a concentrating industry generally do not lower the entry barrier and do not

increase the exit barrier. The ability to measure the influence of government interventions on entry and survival chances depends upon a longitudinal data set containing observations tracking firms from an industry over time. We therefore use a longitudinal database of newspaper firms from the Netherlands. Unlike the vast majority of industries, the history of the Dutch newspaper industry is well-documented.

3 THE DAILY NEWSPAPER INDUSTRY IN THE NETHERLANDS

In the Dutch daily newspaper market four political events particularly influenced the entry rates and survival chances of newspapers (see e.g., Schneider and Hemels (1979) and Hemels (1997)). These are (1) the introduction of freedom of speech, press and opinion in the Dutch Constitution in 1848; (2) the repeal of the stamped paper duty in 1869; (3) World War II; and (4) the introduction of the press relief fund in 1971. We will first describe each event. At the end of the section we will discuss the role they played in the development of the market for daily newspapers.

3.1 *Press Freedom*

One and a half century ago, in 1848, press freedom was incorporated in Article 7 of the Constitution of the Kingdom of the Netherlands. The lack of essential political freedom, such as freedom of speech and opinion, had profound consequences on the market structure before 1848. In fact, most of the early attempts to establish a new newspaper firm were forced to be unsuccessful in the regulated industry. The (local) government had supported the incumbent newspapers. These newspapers were obliged to print the city or provincial weapon on the front page of their newspapers to receive financial and political help (Schneider and Hemels (1979)). The incumbent newspapers before 1848 had a huge competitive advantage over newcomers after 1848. They had both the time and the government support to establish a substantial reading public before 1848. The introduction of press freedom lowered the entry barrier and created new survival chances for entrants. Hence, the 1848 event gave an impulse to the evolution of the industry. Indeed, a relatively high entry rate characterized the increased opportunities to enter for new newspapers. Table 1 presents the entry rates of new newspapers in a defined period over the industry life cycle. It also contains the survival rates of the newly established newspapers over 5, 10, and 15 years. We find that in the ten years after the incorporation of press freedom the market expanded with almost 50 percent. This result is derived from the information described in Hemels (1969a) and Schneider and Hemels (1979).

3.2 *The Repeal of the Stamped Paper Duty*

After 1848, a stamped paper duty still constituted an economic obstacle for incumbent and potentially new newspapers. The stamped paper duty, known as '*Dagbladzegel*,' originated from the '*timbre extraordinaire*' left over from the French Empire's tax laws installed in 1811, one year after the annexation of the Netherlands (Hemels (1969a, 1969b, 1992)). The argument for levying newspaper taxes had been that the returns of advertisements or announcements designed for publication in newspapers must occur on a paper format stamped for this purpose. This special tax system doubled the production costs and therefore constituted a high entry barrier. As a result many new newspapers frequently faced capital and cash flow problems after 1848. This led to a decrease in entry rate of new newspapers in the following period (see Table 1).

TABLE 1 – NEW NEWSPAPERS' ENTRY AND SURVIVAL RATES OVER THE DAILY NEWSPAPER LIFE CYCLE IN THE NETHERLANDS. 1848-1994

Period	Entry rate	Survival rates		
		$\leq$ 5 years	$\leq$ 10 years	$\leq$ 15 years
1848-1857	0.47	0.79	0.71	0.64
1858-1867	0.29	0.64	0.64	0.55
1868-1877	0.86	0.59	0.51	0.46
1878-1887	0.51	0.77	0.77	0.71
1888-1897	0.28	0.77	0.73	0.59
1898-1907	0.12	1.00	0.82	0.73
1908-1917	0.14	1.00	0.92	0.92
1918-1927	0.14	0.86	0.86	0.79
1928-1937	0.06	0.86	0.57	0.29
1938-1947	0.41	0.74	0.64	0.57
1948-1957	0.04	0.80	0.80	0.60
1958-1967	0.06	0.71	0.57	0.57
1968-1977	0.03	1.00	1.00	1.00
1978-1987	0.08	0.50	0.50	0.33
1988-1994	0.04	0.67	–	–

Note: The entry rate is the average of the entry rates in the sub-periods in a defined period. An entry rate is defined as the number of entrants in the defined sub-period compared to the number of newspapers one year before entrance in the sub-period. The survival rate is defined as the number of firms surviving in a given year, as a percentage of the total number of new newspapers established in the defined period.

In 1869, the Dutch government repealed the special tax system for newspapers. The arguments to abolish the newspaper taxes were:

1. the fundamentally political argument: a free press is a *sine qua non* for a parliamentary constitutionally-ruled country. Repeal of the stamped paper duty creates opportunities for new newspapers to be set up and break down the existing monopolistic structure;
2. the social-economic argument: the imposition of an approximately 50 percent levy on newspapers' gross income is not only disadvantageous for the newspapers themselves, trade and industry suffer losses as well;
3. the cultural argument: taxation of the spread of knowledge keeps news(papers) beyond the reach of many.

The abolition of the tax system removed the last remaining barrier to economic press freedom. Production costs decreased dramatically and after the abolition of this tax system a large number of new newspapers appeared in the market (Schneider and Hemels (1979)). Table 1 shows an entry rate of 86 percent for the period 1868-1877. About 59% of the entrants from this cohort survived the first five years, and less than half of them were still active in the industry 15 years later.

In 1869, before the shock, 42 daily newspapers were published. In the period 1869-1871, 21 new dailies appeared as a result of the 1869 repeal of the stamped paper duty; 14 entered, in some of the largest Dutch cities which were characterized by an oligopoly newspaper market structure, 7 new entrants appeared in small towns with no previous available local newspaper (Hemels (1969a)). A newspaper that entered as a monopolist into a local market segment generally had a lower chance to exit than the one that entered into an oligopolistic market structure. The new newspaper entering as a monopolist in a new local market, earned a monopoly profit. The newcomers in already existing markets competed with incumbents for the readership in the local market (Pfann and Kranenburg (2001)). Liberalization of the industry increased incumbents' opportunities to grow and their chances to survive because of the lower cost prices and the increased circulation.[1] The tax cut decreased the production in variable costs by approximately 50 percent and was shifted almost completely into the product's subscription price. Figure 1 shows the five-year average real subscription price of daily newspapers. The base period is 1845-1849.[2] This figure also presents the number of daily newspapers in the Netherlands at the beginning of each year (*Ntot*).

1 On the 10th of November 1868 the '*Nieuwe Rotterdamsche Courant*,' a leading daily newspaper with a large circulation, wrote: 'Is it not an anomaly that the State spends a fortune on education, while keeping people from decent and inexpensive daily readings through a stamp tax levied upon newspapers?'

2 For the entire period 1845-1997 the only time series of the deflator that is available for this study is the average five-year Consumer Price Index (CBS (1976)). Deflators on an annual basis are not available for this long time period.

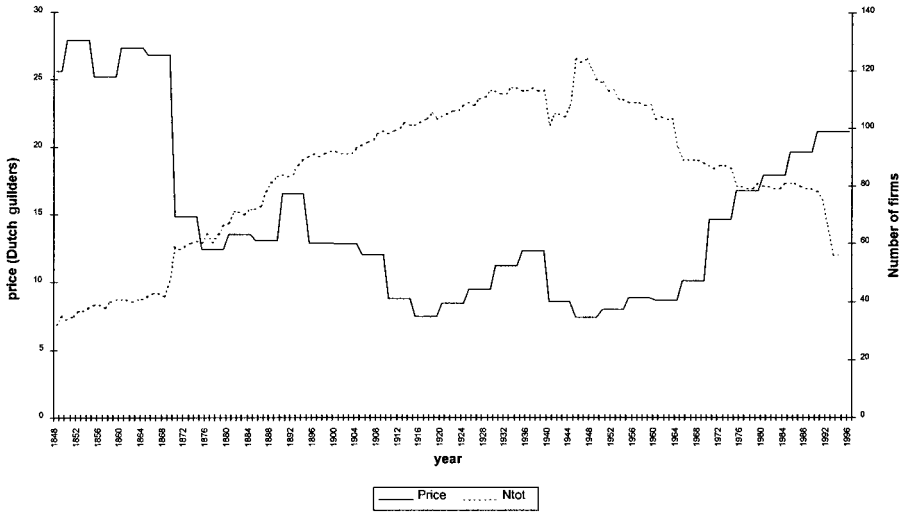

Figure 1 – The Life Cycle of the Daily Newspaper Industry, 1848–1997

3.3 *World War II*

The third political event that affected the entry and the survival rates of daily newspapers was the period of World War II. The political developments before, during, and after the war gave rise to all kinds of market changes for incumbent and new newspaper firms. During the war, pro-German newspapers entered the market, while anti-German newspapers were forced to exit (see Goedhart (1943)). After World War II the large number of entrants were the underground newspapers prohibited by the pro-German government, while the newspapers which collaborated with the pro-German government were forced to exit (cf. Schneider and Hemels (1979)). The entry rate of 41 percent for the World War II period demonstrates the new opportunities for new newspapers to enter the market. The changes in market conditions that occurred as a result of the war – transportation and communications – induced larger firm sizes and a declining number of independent newspapers. These findings imply that political change and political social structures surely affect the structure of the industry. Our entry rate findings also confirm the results from Carroll et al. (1988).

Other studies also show that shocks to the institutional environment changed the entry and exit barriers in the newspaper industry and thus affected the survival chances and opportunities for newspapers. In Finland, for instance, Amburgey et al. (1993) showed that shocks to the institutional environment, especially wars and civil disorder, increased the exit rate for newspapers. Carroll (1987) showed that wars, in particular the aftermaths, resulted in new opportunities for potential newspapers in Ireland, Argentina, and the USA.

3.4 *Press Relief Fund*

After World War II the number of daily newspapers in the Netherlands experienced a continuous decline. During the 1960s and 1970s, the market for daily newspapers was confronted with an upsurge in press concentration, especially due to the introduction of television and radio advertising in the mid sixties leading to a request for corrective governmental actions. In 1971, the Dutch government installed a press relief fund, *Bedrijfsfonds voor de Pers*, as a temporary provision to protect the multiformity in the daily newspaper industry. The press relief fund was designed to financially support the less adaptable daily newspapers that struggled for survival. This fund became a foundation in 1974 and still exists today. The government financial assistance exists of (1) general support like tax and postal concessions, (2) special measures available to newspapers in trouble, like compensation schemes, loans, and credits, and (3) specific general measures available to all newspapers such as subsidies (cf. Hemels (1997)). Although the specific amounts that newspapers receive to overcome their financial problems depend on the circulation and the geographical distribution of the individual newspaper, no well-defined formula exists to determine the individual subsidy. Between 1973 and 1997, the press fund paid out more than 19 million Dutch guilders (8.62 million EUR) for loans, credits with special facilities, and subsidies to 12 daily newspapers that struggled to survive (*Bedrijfsfonds voor de Pers* annual report 1995). The purpose of the press fund is not only to provide newspapers with financial assistance, but also to encourage potential newspapers to enter the industry. The aim, tasks, and authorities of the *Bedrijfsfonds voor de Pers* are written in the Dutch *Mediawet* and in the *Mediabesluit* (KB of 19th November 1987, STB. 573). The press relief fund turned out to be unsuccessful in fulfilling its mission. The exit barrier enhancing policy has not been successful in preventing the number of available daily newspapers to survive (Figure 1). Other studies of concentrating newspaper markets have also shown that government interventions to maintain pluralism in the daily newspaper industry have not been successful after World War II. In Sweden, for instance, Gustafsson (1993) found that government policies could not increase the exit barriers in the upsurge concentrating newspaper industry.

3.5 *The Development of the Market Structure through Time*

In the early stages of the industry the intensity of competition within a region depends on the number of newspapers in this segment, while the legitimation in regional market segments depends on the total number of newspapers in the early industry (Hannan et al. (1995)). The regional number of newspapers will have a negative effect on the survival chances of newspapers in these regions, while the total number of newspapers will have a positive effect on survival chances of these newspapers in the early increasing phase of the number of newspapers.

When the number of newspapers nears the limited readership capacity of the industry, an additional entrant greatly intensifies competition (Hannan (1997)). Changes in competition and the size of the reading public determine a ceiling, the carrying capacity, on the expansion of the number of newspapers.

Since 1848, when 30 newspapers existed, the number of newspapers increased steadily until World War II after which the market became increasingly concentrated. The survival chances for potential entrants decreased as the industry matured, and only the strongest newcomers entered the market (Agarwal and Gort (1996)). In the post-World War II period the number of daily newspapers in the Netherlands experienced a continuous decline that coincided with an increase in total circulation (Dutch Newspapers Publishers' Association annual reports). Table 1 also shows that entry rates declined dramatically for this period. After World War II, the scale of production enlarged significantly, possibly due to technological innovations. Evidence of increasing scale economies in newspaper industries is also found in other countries like Argentina, Ireland, and the USA. (see e.g., Rosse (1967, 1970), Carroll (1987)).

After World War II, daily newspapers in the Netherlands became member of the Dutch Newspapers Publishers' Association (NDP). Each year, the members negotiated about the necessary price increases. All newspapers had to agree otherwise no price increase took place, except when the government forced the newspapers to increase their prices by a small percentage to guarantee the multiformity in the daily newspaper market. Newspapers were allowed to increase their prices by at least a minimum percentage, subject to the government's approval as long as the industry could demonstrate that total costs had increased more than total revenues in the previous years. The collective price policy of the newspapers and the Dutch government restricted the possibility of newspapers to compete on subscription prices. The post-war newspaper market is best described by a structure of monopolistic competition with newspapers being price takers that could only compete by choosing advertising, attractiveness, quality of the newspaper, and production. Improvements in quality and attractiveness increased the number of copies sold (Dutch Newspapers Publishers' Association annual reports). However, these improvements also increased the first-copy costs of newspapers. Figure 1 shows that the average real subscription price falls, but in the last decades it has risen. The opposite is true for the number of newspapers.

4 ECONOMETRIC ANALYSIS

To study the political events and the evolution of the market empirically it is important to precisely define the unit of research. Our unit is a daily newspaper. To qualify as a daily newspaper, a periodical has to satisfy a few criteria. These requirements are composed from the criteria defined by Carroll (1987) and Kranenburg et al. (1998). Daily newspapers have to be published 6 days per week and have to be available to anyone willing to pay the price, regardless of class or

special interest. The content of a daily newspaper should consist of recent information of interest to a general public. Hence, special-interest newspapers such as business publications are excluded from the data. Finally, each newspaper has its own market segment and reader public within the Netherlands. We consider the entry date for a newspaper to be the year in which the first publication appeared, and the exit date to be the year in which a newspaper title does not exist in name anymore, and when it has lost its identity at the same time. In our definition if a newspaper horizontally merges with one or more newspapers, then one newspaper survives, while the other(s) exit. In constructing the life histories in this way, we maintain any historical relationships and the existing demands remain embodied in the market with a horizontal merger.

In total we have observed 261 daily newspaper publications in the Netherlands for the period between 1848 and 1997. Median duration and average age of newspapers in the market are 35 and 48 years respectively. The data set used in this paper is an extension of the one that was used by Kranenburg, Palm, and Pfann (1998). We have collected additional information about the newspapers, such as subscription prices, location characteristics, and market density. These variables vary through time and are collected on an annual basis. The focal point of the current study is to investigate the role of the government and the effect of the dynamics in determined factors on the entry and exit decisions and the duration of newspapers. We use a duration analysis to analyze the relationships between daily newspaper survival chances and explanatory variables such as political events, and the evolution of the newspaper industry (see also Agarwal and Gort (1996) and Audretsch and Mahmood (1995)). The explanatory variables in the analysis of duration of a newspaper include the total number of newspapers in the industry at the beginning of each year (*Ntot*), the average annual real subscription price of all daily newspapers (*Price*), the age of the industry (*Tind*), and regional market structure characteristics represented by the number of newspaper titles in the main appearance region(i)[3] of the newspaper in the Netherlands at the beginning of each year that the newspaper appeared in the industry (*Nregion*(*i*)).[4] The final group of explanatory variables is the four political events. First, we model the effect of the 1848 constitutional change of press freedom in the Netherlands. *Incum48* indicates whether a newspaper existed at the time freedom of speech, opinion, and press was written in the Constitution in 1848, and the variable (*Enter48*) indicates the newspapers that entered the market in the period 1848-1850 in response to the liberalization of the press in 1848. The second group of variables measures the effect of the 1869 repeal of the stamped

3 The definition of the regions in our study is based on the classification that is published by the Dutch Central Bureau of Statistics. The four regions are composed from the twelve provinces: *North* (Friesland, Groningen, and Drenthe), *East* (Gelderland, Overijssel, and, since 1986, Flevoland), *South* (Noord-Brabant, and Limburg), and *West* (Utrecht, Zuid-Holland, Noord-Holland, and Zeeland).

4 The three variables representing the other regions where the newspaper does not appear have values of zero.

paper tax on the survival chances of new entrants. We divide entrants into two groups: newspapers that emerged immediately after the 1869 tax cut as monopolists in small local market segments (*Mono69*) and those entering into local oligopolies (*Oligo69*). The variables *InWW2* (indicating if a newspaper was forced to exit the market during World War II) and *PastWW2* (indicating if a newspaper entered the market in the aftermath of World War II in 1945-1946) act to mimic the effect of World War II on the survival chances of newspapers. *Fund71* measures the effect of the last political event. It indicates whether a newspaper appeared between 1972 and 1995, the period of the press relief fund in this sample. Ideally, we would like to use more detailed firm-level data, but unfortunately these are not available over the life cycle period.

An appropriate method to describe survival and exit rates is an exponential relationship between duration and the hazard rate. The hazard rate, $h(t)$, is defined as the rate at which age newspapers cease production given that they produce until time t (see e.g. Kiefer (1988) and Lancaster (1990)). Hence, the hazard rate at time t is specified as:

$$h(t) = \lim_{dt \to 0} \frac{Pr(exit\ t, t + dt \mid no\ exit\ by\ t)}{dt} \tag{1}$$

where Pr (.) is the probability of a newspaper experiencing exit from the market between $t + dt$, conditional on being in the market up to t. A natural model with duration dependence, often used in duration analyses, is the Gompertz hazard rate model that uses a measure of duration time as proxy variable for unobserved or latent factors (see e.g., Carroll and Delacroix (1982)). In the Gompertz hazard rate model the unobserved or latent variable, like learning by doing, increases linearly over the duration t a firm spends in the industry (origin state). This leads to a monotonic declining or increasing Gompertz hazard rate. Duration dependence is negative if the hazard rate, $h(t)$, decreases with the age of a newspaper, t, $(dh(t) / dt < 0)$, implying that the exit probability reduces with the duration of a newspaper being in the market. *Vice versa*, if $(dh(t) / dt > 0)$, duration dependence is positive, increasing the exit probability of a newspaper with age. The explanatory variables included in the hazard rate model vary over the lifetime of a newspaper. Formally, we parameterize the Gompertz hazard rate model as follows

$$h(t) = exp(X\beta)*exp(\theta t)\ , \tag{2}$$

where X is a vector of the explanatory variables, β is an associated vector of coefficients, and θ is the duration dependence parameter (see e.g., Blossfeld and Rohwer (1995)). If $\theta > 0$ then the model is monotonically increasing with age and it has a negative age dependence when $\theta < 0$. Because most of the explana-

tory variables vary over time, each year for a newspaper is recorded as an interval, and the explanatory variables are updated on an annual basis. We estimate the model using a maximum likelihood method within the TDA (Transition Data Analysis) statistical program (Rohwer (1994)). When interpreting results, the coefficient indicates the effect that a variable, *ceteris paribus*, has on the hazard rate for a newspaper. A negative coefficient indicates that an increase in that particular variable decreases the hazard rate. One should recognize that a negative sign of a coefficient indicates that an increase in the variable corresponds with an increased survival chance.

5 RESULTS

The entire period: 1848-1997

The first column of Table 2 shows the estimation results of the hazard model for the entire period 1848-1997. We find that the industry age affects the survival chances of newspapers significantly. The industry age effects, *TInd* and $TInd^2$, show that the survival chances of individual newspapers increase during the pre-World War II period, while the industry age has a contrary effect on the survival chances after the war. The quadratic function of industry age has its minimum at age 83 (corresponding to the year 1931). This finding indicates that entrants before 1931 had better survival chances than the newspapers after this year. Furthermore, the estimation result also shows that the total number of newspapers in the industry influences the survival chances of newspapers significantly. From this we conclude that the survival chances of newspapers change with the evolution of the market structure and with the industry's age. The majority of the parameter estimates of the variables representing an event in the growing stage differ statistically from zero. The political developments during the war also affected the market significantly. The variable *InWW2* represents the first part of the effect of World War II, and its coefficient estimate indicates that incumbent newspapers that could appear in the unchanged situation were forced out of the market now.

The empirical findings show that the evolution of the daily newspaper market has a turning point around World War II. It is therefore interesting to test the effects of the explanatory variables on the survival chances of newspapers in the Netherlands before and after the turning period separately.

The early period: 1848-1944

The second column in Table 2 shows the results for the period 1848 until 1944. Survival chances of individual newspapers are influenced by two political events. The first political event that changed the market structure was the liberalization of the press in 1848 when the regulated market transformed into a competitive one. The variable *Incum48* indicates whether a newspaper existed at the time of the liberalization of the press in 1848. It captures the newspaper market dominance by first-movers. The negative coefficient estimate points at the fact that

TABLE 2 – ESTIMATION OF HAZARD RATE MODELS FOR DAILY NEWSPAPERS

	The entire period: 1848-1997		The early period: 1848-1944		The late period: 1945-1997	
Effect of Press Freedom 1848						
Incum48	−2.0132*	(0.8466)	−1.7833+	(0.9498)	−0.1819	(0.5986)
Enter48	−1.4627+	(0.7963)	−0.7106	(0.8738)		
Effect of Tax Repeal 1869						
Mono69	−1.1623+	(0.5934)	−1.4033+	(0.7261)	−1.1813	(1.0269)
Oligo69	0.4781	(0.3062)	0.2905	(0.3328)	1.3105+	(0.7536)
Effect of World War II						
InWW2	5.1981*	(0.2443)				
PastWW2	0.4146+	(0.2284)			0.2763	(0.2532)
Effect of Relief Fund 1971						
Fund71	−0.3659	(0.5131)			3.5780*	(1.4565)
Other Explanatory Variables						
Constant	−2.1971	(2.1154)	−3.5455	(3.2935)	0.9203	(21.0390)
Price	−0.1955	(0.1291)	−0.3585*	(0.1656)	−2.8861*	(0.6896)
$Price^2$	0.0013	(0.0038)	−0.0123*	(0.0045)	0.0826*	(0.0218)
Ntot	0.2060*	(0.0702)	−0.1219	(0.1067)	0.4734*	(0.1666)
$Ntot^2$ *(/1000)*	−0.8763*	(0.3460)	−1.3070*	(0.5939)	−2.5963*	(0.8936)
NNorth	−0.1960	(0.3027)	−0.7264*	(0.3484)	−0.0021	(0.9841)
$NNorth^2$ *(/1000)*	0.0068	(0.0180)	0.0497+	(0.0261)	0.0014	(0.0471)
NEast	−0.2170	(0.1393)	−0.7020*	(0.2274)	−0.0125	(0.4331)
$NEast^2$ *(/1000)*	0.0064+	(0.0037)	0.0295*	(0.0108)	0.0003	(0.0097)
NSouth	−0.2780	(0.2351)	−0.6698*	(0.2808)	−0.0155	(0.9976)
$NSouth^2$ *(/1000)*	0.0155	(0.0119)	0.0394*	(0.0192)	0.0046	(0.0456)
NWest	−0.0626	(0.0594)	−0.1639*	(0.0684)	−0.0334	(0.2271)
$NWest^2$ *(/1000)*	0.0006	(0.0006)	0.0023*	(0.0010)	0.0007	(0.0024)
TInd	−0.2880*	(0.0478)	−0.0948	(0.0776)	−0.2010	(0.4326)
$TInd^2$ *(/1000)*	1.7249*	(0.2730)	−1.1930*	(0.4860)	1.2629	(1.9532)
θ	−0.0066*	(0.0027)	−0.0018	(0.0039)	−0.0110*	(0.0039)
Number of Spells	12558		7865		4693	
Number of Events	206		108		98	
χ^2	437.6		123.8		160.0	
Log likelihood	−870.9137		−517.2705		−433.0985	

* significant at 5%; + significant at 10%; standard errors in parentheses

newspapers that existed at the time of the 1848 liberalization of the press had indeed lower exit chances. Newspapers that emerged immediately after the installation of press freedom in 1848, *Enter48*, did not survive longer than the ones that entered at later dates.

The repeal of the special tax system in the expanding industry increased the profit margin. Consequently, this event created new opportunities for potential newspapers to enter the market. The variables *Mono69* and *Oligo69* empirically model the effects of a tax cut and indicate whether a newspaper entered into a local monopoly or oligopoly in response to the abolition of the stamped paper duty in 1869. We find that newspapers that emerged immediately after the 1869 tax shock as monopolists in small local market segments had a higher chance to survive than the other entrants in the early period. This is an interesting result. Entrants in local small markets could benefit from the first-mover advantages in that region, while newcomers in oligopolistic markets could not.

The estimate of the squared term of the total number of newspapers in the industry, $Ntot^2$, shows a significant negative effect. This suggests that the survival chances of firms increase in an expanding industry. However, the regional number of newspapers has a marginally decreasing positive effect on the survival chances of newspapers which appeared in the particular region. The parameter estimates of *NNorth*, *NEast*, *NSouth*, *NWest* are negative, while the squared terms increase the exit chances. These results point to the fact that the intensity of competition within a region affected the survival chances of newspapers in the same region.

The estimates of the price development effect, *Price* and $Price^2$, are negative and significantly different from zero indicating that in the period before World War II a lower price corresponded with a shorter expected lifetime.

The variables *TInd* and $TInd^2$ were created to investigate the effects of the industry age on the survival chances of newspapers. The parameter estimates of these variables show a substantial influence of $TInd^2$ on the survival chances. The survival chance increases during the pre-World War II period. The results of model 2 are consistent with the increasing survival rates of entrants shown in Table 1.

The late period: 1945-1997

The last column in Table 2 presents the effects of the variables on the hazard function for the post-World War II period. Clearly, newspapers that were published after the war had different survival chances than newspapers that appeared before. At this stage the industry profit margin is driven to a level such that expected profits of many potential entrants are less than or equal to zero. However, just after the war new opportunities arose for potential entrants. The variable *PastWWII* acts to mimic the effect on survival chances of newspapers that entered in the years 1945 and 1946. The positive, but insignificant, coefficient il-

lustrates that the survival chances of these new entrants are not lower than those of incumbents.

Klepper (1996) finds that the most successful and long-lived firms come from the earliest entry cohorts. However, the parameter estimates of *Incum48* and *Mono69* do not significantly differ from zero. The parameter estimate of *Oligo69* is positive and significant. This result indicates that the effects of being a first-mover and of the abolition of the stamped paper duty on the survival chances of newspapers which entered before 1872, disappeared in the post-World War II period.[5] Newspapers that entered immediately after the abolition of the specific tax in oligopolistic markets had even lower chances to survive than the other newspapers after the war.

An increase in the average price over time points to an increase in the production costs in the newspaper industry. The parameter estimates of the price variables are significant. The survival chances of newspapers decreased, while the prices increased. This implies that the production costs increased more than the prices could rise. This suggests a positive relationship between increasing large-scale advantages and survivorship over time. This finding confirms the theoretical findings that the industry profit margin decreases in the concentrating phase of the industry.

The estimate of the variable *Fund71* that acts to mimic the effect on survival chances of newspapers that appeared after the introduction of the press relief fund is positive. This finding implies higher exit chances for all newspapers after 1971 in comparison to the other newspapers in the late period. This means that intervention by the government did not increase the survival chances of the incumbents and the entrants in the upsurge concentrating market.

Moreover, our results show that the advantage of operating in a local market segment diminished after World War II. The estimates of the total number of newspapers in the Netherlands (*Ntot* and $Ntot^2$) indicate that an increase in competition among newspapers reduces the survival chances of newspapers in the first decades of the post-war period. If fewer newspapers are in the market the survival chances for newspapers increase. The parameter estimates of the regional and national number of newspapers indicate that the market structure changed from a regional to a national market after World War II.

The estimation results of columns two and three in Table 2 indicate that the survival chances of newspapers change with the evolution of the industry structure. Comparing the results of the parameter estimates of the entire industry and the sub-periods, we find that the estimates for the entire period do not explain the differences in survival chances between newspapers in a young, growing industry on the one hand, and a mature, concentrating industry on the other.

5 The variable *Enter48* is not included in the post-World War II model, because only two newspapers that entered the market in response to the liberalization of the press in 1848 survived the war.

For all hazard rate models we find negative duration dependence ($\theta < 0$). The hazard rate of a newspaper in the first years after entry is high and then decreases gradually over time. The value of θ for the early period is not significantly different from zero (the large sample t-value for $\theta = 0$ is -0.47). The negative duration dependence is prevalent in the late period of the industry.

6 CONCLUSIONS

This paper investigated the role governments can have on the development of market structures. The analysis of the market dynamics underlined the importance of political events on the market structure and the survival chances of incumbent and potential firms. We considered four types of policy events: the liberalization of the press in 1848, the repeal of the stamped paper duty in 1869, the turmoil period of World War II, and the introduction of a press relief fund. Our results show that the estimation of a survival chance crucially depends on the state of the industry. Early in the history of the expanding daily newspaper industry, the survival chances depended on the competitors in the same regional market segment and less on the total number of newspapers in the industry. Development of the industry structure caused the effect of the regional number of newspapers to weaken substantially. In the late stages of the industry evolution the effect of the total number of newspapers in the Netherlands became more important. The intensity of competition in the industry was found to be a key variable in explaining chances of survival. Our findings also show that the political events have changed the market structure significantly. Liberalizing the daily newspaper industry increased competitiveness in the Netherlands, indeed. The entry barrier lowering policy in an expanding industry provided opportunities to enter for potential entrants. The abolition of the stamped paper duty removed the last obstacle to economic press freedom in 1869. We find that newspapers that emerged immediately after the 1869 tax cut as monopolists in small local market segments survived longer. However, their advantages reduced over time, and eventually disappeared after World War II. The third event that affected the entry and survival chances of newspapers significantly was the turmoil period of World War II. Most importantly, the technological changes that resulted from World War II changed the market from a geographically partitioned market to a nation-wide market. This structural change caused a turning point in the industry's life cycle. The introduction of a press relief fund in 1971 did not have the proposed effect. Government interventions may have delayed the concentration process in the newspaper industry, but did not stop it. The exit barriers remained very low after World War II.

To further increase insight into the economies and dynamic evolution of the industry and the structure of markets, we recommend obtaining more detailed information which will explain the entire industry life cycles more precisely. Studies of the development of increasing scale economies in industries are needed to

obtain a thorough understanding of the economies that underlie the survival possibilities of firms when concentration persists. The fact that the original local market structure is imperative for an entrant's survival chances warrants further theoretical and empirical research on the role of government policy on market dynamics.

REFERENCES

Agarwal, R. and M. Gort (1996), 'The Evolution of Markets and entry, Exit and Survival of Firms,' *Review of Economics and Statistics*, 73, pp. 489-497.

Ambugey, T.L., D. Kelly and W.P. Barnett (1993), 'Resetting the Clock: The Dynamics of Organizational Change and Failure,' *Administrative Science Quarterly*, 38, pp. 51-73.

Audretsch, D.B. and T. Mahmood (1995), 'New Firm Survival: New Results Using a Hazard Function,' *Review of Economics and Statistics*, 78, pp. 489-497.

Baldwin, J. and P. Gerocki (1991), 'Firm Entry and Exit in Canadian Manufacturing Sector,' *Canadian Journal of Economics*, 24, pp. 300-323.

Bedrijfsfonds voor de Pers (1995), annual reports 1995, The Haque.

Besley, T. (1989), 'Commodity Taxation and Imperfect Competition: A Note on the Effects of Entry,' *Journal of Public Economics*, 40, pp. 359-367.

Blossfeld, H. and G. Rohwer (1995), *Techniques of Event History Modeling: New Approaches to Causal Analysis*, Mahwah, New Jersey, Lawrence Erlbaum Associates.

Carroll, G.R. (1987), *Publish and Perish: The Organizational Ecology of Newspaper Industry*, Greenwich, JAI Press Inc.

Carroll, G.R. and J. Delacroix (1982), 'Organizational Mortality in the Newspaper Industries of Argentina and Ireland: An Ecological Approach,' *American Sociological Review*, 51, pp. 323-341.

Carroll, G.R., J. Delacroix, and J. Goodstein (1988), 'The Political Environments of Organizations: an ecological view,' *Research in Organizational Behavior*, 10, pp. 359-392.

Centraal Bureau voor de Statistiek (1976), *Het Prijsverloop, in Vroegere Eeuwen*, 's Gravenhage, Staatsuitgeverij.

Dutch Newspapers Publishers' Association, annual reports, 1950-1997, Amsterdam.

Geroski, P.A. (1995), 'What do we know about Entry?,' *International Journal of Industrial Organization*, 13, pp. 421-440.

Goedhart, H.A. (1943), 'De Pers in Nederland,' Departement van Volksvoorlichting en Kunsten, Amsterdam.

Gustafsson, K.E. (1993), 'Government Policies to Reduce Newspaper Entry Barriers,' *Journal of Media Economics*, pp. 37-43.

Hannan, M.T. (1997), 'Inertia, Density and the Structure of Organizational Populations: Entries in European Automobile Industries, 1886-1981,' *Organization Studies*, 18, pp. 193-228.

Hannan, M.T. and J. Freeman (1977), 'The Population of Ecology of Organizations,' *American Journal of Sociology*, 82, pp. 929-964.

Hannan, M.T. and J. Freeman (1989), *Organizational Ecology*, Cambridge, Harvard University Press

Hannan, M.T. and G.R. Carroll (1992), *Dynamics of Organizational Polulations: Density, Legitimation, and Competition*, New York, Oxford University Press.

Hannan, M.T., G.R. Carroll, E.A. Dundon, and J. Torres (1995), 'Organizational Evolution in Multinational Context: Entries of Automobile Manufacturers in Belgium, Britain, France, Germany, and Italy,' *American Sociological Review*, 60, pp. 509-528.

Hemels, J. (1969a), *Op de Bres voor de Pers: De Strijd voor de Klassieke persvrijheid*, Assen, Van Gorcum and Comp. N.V.

Hemels, J. (1969b), *Het Dagbladzegel in de Rariteitenkamer, 1869-1969*, Rotterdam, Nijgh and Van Ditmar.

Hemels, J. (1992), *De Pers onder het Juk van een Fiscale Druk*, Amsterdam, Otto Cramwinckel Uitgever.

Hemels, J. (1997), 'Social Contextualization of the Press: The Dutch Case,' *Communications*, 22, pp. 317-341.

Holmes, T.J. (1998), 'The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders,' *Journal of Political Economy*, 106, pp. 667-705.

Jovanovic, B. (1982), 'Selection and the Evolution of Industry,' *Econometrica*, 50, pp. 649-670.

Jovanovic, B. and G.M. MacDonald (1994), 'The Life Cycle of a Competitive Industry,' *Journal of Political Economy*, 102, pp. 322-347.

Kiefer, N.M. (1988), 'Economic Duration Data and Hazard Functions,' *Journal of Economic Literature*, 26, pp. 646-679.

Klepper, S. (1996), 'Entry, Exit, Growth, and Innovations over the Product Life Cycle,' *American Economic Review*, 86, pp. 562-583.

Klepper, S. and E. Graddy (1990), 'The Evolution of New Industries and the Determinants of Market Structure,' *Rand Journal of Economics*, 21, pp. 27-44.

Kranenburg, van H.L., F.C. Palm, and G.A. Pfann (1998), 'The Life Cycle of Daily Newspapers in The Netherlands: 1848-1997,' *De Economist*, 146, pp. 475-494.

Lancaster, T. (1990), *The Econometric Analysis of Transition Data*, Cambridge, Cambridge University Press.

Lomi, A. (1995), 'The Population Ecology of Organizational Founding: Location Dependence and Unobserved Heterogeneity,' *Administrative Science Quarterly*, 40, pp. 111-114.

Nelson, R.R. and S.G. Winter (1974), 'Neoclassical vs. Evolutionary Theories of Economic Growth: Critique and Prospectus,' *Economic Journal*, 84, pp. 886-905.

Pfann, G.A. and H.L. van Kranenburg (2001), 'Taxation and Market Structure,' *Working Paper*, 22, Irving B. Harris Graduate School of Public Policy Studies, University of Chicago.

Rohwen, G. (1994), TDA version 5.7 working papers, Bremen, University of Bremen.

Romer, P. (1994), 'New Goods, Old Theory, and the Welfare Costs of Trade Restrictions,' *Journal of Development Economics*, 43, pp. 5-38.

Rosse, J.N. (1967), 'Daily Newspapers, Monopolistic Competition, and Economies of Scale,' *American Economic Review*, 57, pp. 522-533.

Rosse, J.N. (1970), 'Estimating Cost Function Parameters without using Cost Data; Illustrated Methodology,' *Econometrica*, 38, pp. 256-275.

Schneider, M. and J. Hemels (1979), *De Nederlandse Krant 1618-1978: Van 'Nieuwstydinghe' tot dagblad*, Het Wereldvenster, Baarn.

Schumpeter, J.A. (1934), *The Theory of Economic Development*, Harvard University Press.

Seade, J. (1980), 'On the Effect of Entry,' *Econometrica*, 48, pp. 479-489.

Swaminanthan, A. (2001), 'Resource Partitioning and the Evolution of Specialist Organizations: The Role of Location and Identity in the U.S. Wine Industry,' *Academy of Management Journal*, 44, pp. 1169-1185.

Winter, S.G. (1984), 'Schumpeterian Competition in Alternative Technological Regimes,' *Journal of Economic Behavior and Organizations*, 5, pp. 287-320.