The informational role of dividends in the Netherlands 1961-2006*

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August 2008

Abstract

We investigate the dividend policy of Dutch firms in the period 1961-2006. Dividends are the payouts to shareholders by corporations. As such the dividend policies of firms are a measure of the relation between shareholders and managers of corporations. First, we first describe the level of dividends payout and the changes over roughly the second half of the 20th century. Next, we test a model that relates changes in profitability to dividends. The relation between profits and dividends reflects the informational role of dividends in financial markets. Based on this model, we describe the changing relevance of financial markets in the Dutch corporate system.

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1. Introduction

Dividends are the payouts of profits to shareholders. In addition to these payouts, the shareholders are entitled to sell their shares and benefit from increases in the stock price, over the period of the share ownership. Undistributed profits are added to the firm's equity and allow the firm to build reserves and invest the retained earnings to engage in new entrepreneurial activity. From the perspective of a firm, dividends require additional – external – financing in case a firm has many investment plans, and thus reduces the discretion of the management. For shareholders, dividends are perceived as a signal of confidence in the future, i.e. that upcoming investments can be financed from future profits. These diverging perspectives induce a tension in financial markets, where as a result dividend policies are informative about the balance of power of managers and financial markets.

From the perspective of financial economists, dividend policies has been an important issue ever since the seminal work of John Lintner (1956). It is some times referred to as a puzzle or controversy (Brealey and Myers, 2003). Nobel laureates Modgliani and Miller (1961) showed that dividend policy is irrelevant in a perfect capital market. Meaning that paying out dividends is as good as retaining all profits. In practice capital markets are not that perfect, indicating that not all of the assumptions made by Modgliani and Miller (1961) hold.

Lintner (1956) investigated the attitudes and motives of managers towards dividend policy, and especially to the adjustment of the dividends. He studied the process of dividend decision making and developed a model to explain dividend changes based on follow-up interviews with 28 US managers. Lintner tested his model for the period from 1918 to 1951. The findings support the conclusion based on the interviews: managers prefer stable dividends that gradually increase to an appropriate dividend-earnings target payout level, and managers try to avoid dividend cuts. Lintner in his seminal paper does not test a specific theory, nor does he develop a theory to explain his findings.

Lintner's findings relate to one of the market imperfections posed by Modigliani and Miller (1961), i.e. the issue of information structure. These so-called signalling theories are related to imperfect information, which arises in publicly listed firms where

professional managers are in charge of firm strategy and cannot perfectly inform shareholders, among others because of competitive reasons. The first actual signalling models were developed in the 1970s and in the beginning of the 1980s by Bhattacharya (1979), Miller and Rock (1985), and John and Williams (1985). Managers could use their superior knowledge on (future) earnings or (future) cash flows to signal the future prospects of the firm to the market. Managers could signal positive prospects by initiating or increasing dividends, or signal less favourable prospects by dividend reductions or more drastically by dividend omissions. Because signals are informative about the value of the firm, changes in dividends have significant effects on the share price. The signalling models predict that price declines following negative signals have a larger magnitude than similar positive effects. Thus, a sequence of equal dividend reductions and increases will result in a lower share price. As a consequence, managers are reluctant to change dividends unless they are certain they can sustain the new level over time. Both Lintner's survey and empirical findings could be explained following this line of reasoning.

The Lintner approach has been replicated extensively, as early as Brittain (1964, 1966) or Fama and Babiak (1968) and as recently as Foerster and Sapp (2006). Recent survey studies find supporting results with respect to the attitudes and motives for changing dividends over time (Baker *et al*, 1985; Brav *et al*, 2005). According to Lease *et al.* (2000) numerous researchers have replicated Lintner's methodology and most find similar corporate payout decisions for different countries. However, there are only very few studies that cover an extensive period. The Dutch setting has received little attention. Cools (1993) performed a survey under 50 Chief Financial Officers of Dutch listed non-financial firms, these firms represent 84% of the market value of all Dutch non-financial firms that are listed at the Amsterdam Stock Exchange. Cools findings are in line with Lintner, 84% aim at paying out a target payout ratio and 10% try to stabilize dividends. Thus far, there are only five examples of Dutch studies that replicate the Lintner model, Jonkhart (1981), Dorsman (1988), De Haan (1997) and Dorsman *et al.* (1999); these studies cover the periods 1972-1979, 1974-1982, 1984-1993, and 1986-1996, respectively and the findings are supportive of the Lintner model.

We aim at increasing the understanding of the development of dividend policy and its determinants in a Dutch setting. We investigate the dividend policy of Dutch firms for the period 1961-2006. The study focuses on Dutch listed non-financial firms and our sample has 4,981 observations.

Our paper makes four contributions to the understanding of dividend policy over the past fifty years. First, we describe the evolution of the dividend levels and the changes over time. Second, we test the relationships between dividends and the different key measures by applying a Lintner model. Third, we apply a signalling rationale to explain our findings. Fourth, the large long-run sample allows us to take into account the settings of specific time-periods (Van Zanden, 1997; and Sluyterman, 2005). In summary, this study will give better insight into the development of dividend policy and the factors affecting it in the Netherlands.

2. The Lintner model, signalling theory and the role of financial markets

The question why firms pay dividends has intrigued academics for quite some time. A first investigation of dividend policy is performed by Lintner (1956). Lintner investigated the attitudes and motives of managers towards dividend policy, and especially to the adjustment of the dividends. Lintner interviewed managers of 28 firms and finds that managers target a long-term payout when determining their dividend policy. Furthermore, managers prefer stable dividends that gradually increase to an appropriate target payout level, and managers try to avoid dividend cuts.

Based on the results of the interviews Lintner developed the following model to explain dividend changes.

$$\Delta D_{it} = A_i + C_i\left(r_i E_{it} - D_{i(t-1)}\right) + U_{it}, \qquad (1)$$

where ΔD_{it} = the change in dividends per share observed from period t-1 to t for firm i; A_i = the intercept term for firm i; C_i = the speed of adjustment coefficient for firm i; r_i = the target payout ratio for firm i; E_{it} = the earnings after taxes per share in period t for firm i; $D_{i(t-1)}$ = the dividends per share paid out last period for firm i; and U_{it} = the error term for firm i in period t. Lintner transformed equation (1) into a testable equation:

$$D_{it} = a_i + bE_{it} + dD_{i(t-1)} + \mu_{it}, \qquad (2)$$

where b = Cr and d = (1-C).

Lintner has tested his model for the period from 1918 to 1951. After testing the model for the period from 1918 to 1951 the results confirmed the conclusion based on the interviews. The Lintner approach gained quite some attention. It is replicated extensively, as early as Brittain (1964, 1966) or Fama and Babiak (1968) and as recently as Foerster and Sapp (2006). Recent survey studies find supporting results with respect to the attitudes and motives for changing dividends over time (Baker *et al*, 1985; Brav *et al*, 2005). According to Lease *et al.* (2000) numerous researchers have replicated Lintner's methodology and find similar corporate payout decisions for different countries. However, there are only very few studies that cover a comparable extensive period. Thusfar, the Dutch setting received little attention as there are only four studies that replicate the Lintner model using Dutch data, i.e. Jonkhart (1981), Dorsman (1988), De Haan (1997), and Dorsman *et al.* (1999) covering the 1972-1979, 1974-1982, 1984-1993, 1986-1996 time periods, respectively. Their findings are all supportive of the Lintner model.

Modgliani and Miller (1961) argue that under perfect capital markets conditions firm value is driven only by operating decisions, not by firm's payout (or other financial) decisions. Consequently, dividends should not influence a firm's value. The imperfections of capital markets have been investigated by numerous scholars. In this study we focus on market imperfections related to the information gap between firm insiders and financial markets. One of the most widely accepted theories for dividend policy is the signalling theory. This theory explains why managers pay dividends even in the face of dividend and capital gain taxation differences. The first formal signalling models were developed in the 1970s and in the beginning of the 1980s by Bhattacharya (1979), and Miller and Rock (1985). The basic idea of signalling models is that managers have private information about the future prospects and choose dividend levels to signal this private information. The signal is credible if other firms cannot deceptively mimic the signal without having the same future prospects. Managers signal the quality of a project by committing to a dividend policy. The managers have private information (i.e. information known only to the managers) about expected profitability of the project. A crucial assumption in, for example, the Bhattacharya model is that if the project should turn out to be a bad project, then the managers will need to obtain outside financing by which the

managers will incur transaction costs. The shortcoming of Bhattacharya's model is that a dividend commitment is not a contractual obligation, which means that the managers could refuse to fulfil there commitment without consequences. The implies that the firm does not have to issue costly external financing; as soon as the market realizes this traders will ignore the 'signal'.

The theory suggests that dividend increases (decreases) are viewed as positive (negative) signals for the firm's future outlook and future cash flows. Managers could use their superior knowledge on (future) earnings or (future) cash flows to signal the future prospects of the firm to the market. Managers could signal positive prospects by initiating or increasing dividends, or signal less favourable prospects by dividend reductions or more drastically by dividend omissions. Managers are reluctant to change dividends unless they are certain they can sustain the new level over time.

Many empirical papers have investigated announcements of dividend changes, mainly using recent data in the US financial markets (Pettit, 1972), Aharony and Swary, 1980, and Benartzi, Michaely and Thaler, 1997). Pettit (1972) finds that dividend increases lead to a positive result +0.395%, and decreases lead to a negative result -3.69%. Meaning that the announcements convey information, and the market is able to incorporate the new information into the share price. Benartzi, Michaely and Thaler (1997) find that share prices increase with dividend increases +0.81%, and oppositely they decrease with dividend decreases -2.53%. Aharony and Swary (1980) show that dividend announcements regardless whether preceded or followed by earnings announcements have an effect on firm value, e.g. for a dividend increase (decrease) announcement preceded by an earnings announcement +0.72% (-3.76%) resp. followed by an earnings announcement +1.03% (2.82%). The results support the expected relationships between dividend changes and firm value. Based on these empirical results dividend reductions have a larger impact. Several empirical studies have investigated the effect of dividend announcements and omissions (Asquith and Mullins, 1983; Healy and Palepu, 1988; Lang and Litzenberger, 1989; John and Lang, 1991; Lipson, Macquieira and Megginson, 1998; and Healy and Palepu, 1988). For the initiations these studies tend to find significant positive results, but for omissions much larger negative results are found, which resembles the asymmetry found between dividend increases and decreases.

3. Dutch setting

The section discusses aspects of the Dutch institutional setting that are important for understanding dividend policies in the Dutch 20th century setting.[1]

From 1810 to 1837 the Dutch commercial code was a translation of the French *Code de commerce*, followed by the first Dutch commercial code in 1837. According to article 8 of the commercial code each merchant was required to make a separate inventory and a balance sheet and to sign them personally. The code did not require publication nor did it give any references to profit and loss statements. Article 55 required directors had to report profits or losses of the past year annually to the shareholders, either during the general meeting, by sending a statement or by making the account available to shareholders. Several scandals at the beginning of the 20th century demanded regulatory changes.

The first Dutch company law was enacted in 1928 and revised in 1929; the reform of the commercial code had been a very lengthy process starting in 1871 with a very active public debate. According to Van der Heijden (1992: p. 19) the new law was based on four principles: preventive government monitoring, including the possibility of judicial suppression; transparency of the internal organization and division of powers (including financial reporting); protection of the capital against excessive payouts to shareholders; and strengthened liability of founders, management and directors. Especially the second aspect related to the transparency requirement had considerable impact. The law did not distinguish between large and open firms that had listed securities, and closed or family firms that were not publicly listed. Traditionally, firms kept as much information private as possible. For a more complete discussion of the criticisms with respect to the 1929 company law see Zeff *et al* (1992). The company law of 1929 required publication of balance sheets and profit and loss statements, but did not provide a clear framework as to what should be published. The law defined 11 items for the asset side of the balance sheet but it ignored the contents of equity and liability side of

[1] Zeff *et al* (1992) and Camfferman (1997) discuss disclosure related regulation. De Jong and Röell (2005) discuss the governance setting. Detiger (1964), Camfferman (1997) and Verburg (2000) give an overview of tax developments. Van Zanden (1997) gives an economic-historical perspective on dividends in the Dutch 20th century setting.

the balance sheet and the profit and loss statement all together. In practice, profit and loss statements were as abbreviated as the law would permit. At the time the lawmaker thought that the public only needed information on the asset side to secure its interests. The new law made it easier for firms to form secret or undisclosed reserves, i.e. fixed assets e.g. a building or machinery could be depreciated to 1 guilder immediately.

Before the second World War Dutch firms were not subject to income or profit taxation. From 1918 to 1940 distributed profits of naamloze vennootschappen were subject to a separate dividend and tantième tax.[2] During this period retained profits were tax-exempted, i.e. until distribution (Detiger, 1964; Camfferman, 1997.) Before World War II many firms made use of secret reserves to smooth or to understate their profits. According to Van Keep (1950) during the previous decades dividend stabilization was the common good. This approach was considered the right dividend policy and any deviation was perceived as a violation. According to Van Keep firms even stabilized their disclosed earnings to justify their dividend policy. Other advocates of dividend stabilization are Van Berkum (1948) and De Lange (1957). According to De Lange firms should not impose any unnecessary dividend requirements on themselves, no more than is required for gaining access to the capital market. This view was shared by Van Berkum (1948).

After World War II this attitude changed and firms became more open towards its shareholders. First, from 1940 onwards all profits were taxed (first called *winstbelasting* and from 1942 onwards *vennootschapsbelasting*). Nevertheless, there were some exemptions e.g. temporarily tax-free reserves which lead to deferred taxes, although they were rarely reported before mid-1960s (Camfferman, 1997). Second, this change in attitude can also be explained by their need for capital (beyond the traditional sources such as retained earnings and savings made by the owners), e.g. to repair war damage, to follow technological developments, to expand their operations, and the expected competition caused by the development of the European Common Market. If firms would continue to form secret reserves by depreciating these investments immediately, this would put them in a very unfavourable position for obtaining additional capital to finance

[2] Before 1918 the dividend tax used to be included in a split income tax system since 1892-1893, i.e. capital income tax (*vermogensbelasting*) and corporate tax (*bedrijfsbelasting*); and since 1914 in the general income tax (including proceeds from labour and capital) (Detiger, 1964).

their undertakings. Firms became more aware of the importance of securities markets as a source of capital, and realized that shareholders (and likewise suppliers of debt-financing) needed more information than provided by the company law of 1929. Although the forming of secret reserves used to be common practice, it was considered no longer defensible at the beginning of the 1960s. Still, this did not cause this practice to be completely abandoned by all firms. In 1965 a revised dividend tax law was enacted.

In 1970-71 the company law was again revised. The company law needed to comply with the European Economic Community's First Directive on Company Law 1968, and to increase the influence of employees within firms. Through the 'structured regime' control was taken from shareholders and transferred to directors (*raad van commissarissen*) and employees, this changed the control structure considerably in favour of management (see Van Schilfgaarde, 2001). The new company law introduced the *besloten vennootschap* abbreviated BV (closed company) in addition to the traditional *naamloze vennootschap* abbreviated NV (large and open firm, with listed securities). NVs are required to provide a higher level of transparency with respect to financial disclosure than BVs. In addition, NVs have to deposit their annual accounts at the *Handelsregister*, which is open to the public. Smaller firms preferred to become BVs. Furthermore, the new company law provided a clearer framework with respect to the content of the balance sheet and profit and loss statements. In 1974 there was a so-called dividend stop Since then there is an ongoing improvement through changing regulations, and through the development of codes of conduct first in 1997 by Peter's committee, and in 2003 by Tabaksblat's committee.

Van Zanden (1997) gives an economic-historical perspective on dividends in the Dutch 20th century setting. Van Zanden reports average payout ratios for different periods within the 20th century, the following are overlapping with the investigated period of this study: (64.4% for 1950-1959,) 51.3% for 1960-1969, 45.3% for 1970/1979, 38.4% for 1980-1984, 46.0% for 1985-1989, and 57.8% for 1990-1994. First, there is a period of recovery and growth after WWII, followed by a period of low growth starting when the US suspended the dollars fixed gold parity and the first oil shock in the beginning of the 1970s. During the 1950s retained earnings were the most important source for growth. In the 1960s and the 1970s profits of the larger firms declined, this lead to lower dividends.

From the second half of the 1980s the economy slowly picked again, this resulted in higher dividends.

In the subsequent period financing shifted from debt financing to a more important role for equity financing (see Rajan and Zingales, 2003). In the same period, corporate governance became increasingly relevant for listed firms. The role of shareholders in the Netherlands changed from muted and anonymous owner to more involved and even aggressive interest groups influencing corporate policies. During the second half of the 20th century the financial information between suppliers of finance and managers become ever more important.

4. Data and sample

The purpose of our analysis is to investigate the development of the explanatory power of signalling theory and the Lintner model over time in the Dutch setting. We investigate the dividend policy of Dutch firms for the period 1961-2006. The study focuses on Dutch listed non-financial firms.[3] Our dataset contains hand-collected data from the stock exchange book of Van Oss for the period 1961-1973, and electronic data from Statistics Netherlands (CBS) for the period 1974-1996 and from Compustat for the period 1997-2006. Our sample has 4,981 observations.

There are different types of dividend for example cash dividend, stock dividend, choice dividend (provides the opportunity for the shareholder to chose between cash or stock dividend depending on his/her preference), or regular and special dividends. The different sources use different categories in their data. Nevertheless, total dividends are reported consistently in all three sources and are therefore the most feasible measure for this study. Even though, the data used in this study is straightforward, there is an issue related to changing notions and regulations throughout the period. This is probably most important with respect to net income, which makes payout ratio a more complex measure. The used currency in this paper is the Dutch Guilder (NLG).

[3] Firms with main activities in currently the Republic of Indonesia are excluded from our sample.

5. Empirical results

Table 1 reports the summary statistics for the full sample of observations over the entire 1961-2007 period.

- Please insert Table 1 here –

The summary statistics show that the average ratio of dividends over net income is 0.440. In other words, firms distribute on average 44% of their net earnings as dividends to the shareholders. The minimum is negative (-38.0), which indicates that firms with losses also pay dividends. The variable dividend payer is a value of 0.874, which implies that 87.4% of the firm-year observations concern a dividend paying firm. In Table 2 we both distinguish dividend payers from non-payers and provide the developments over our 1961-2006 window.

- Please insert Table 2 here -

In the 1961-1965 period, the average dividend payout ratio was 62.6% for dividend payers. Obviously the ratio is zero for non-payers. As a fraction of equity, the dividends are in this period 16.8% and 1.5% of the dividend payers experienced a loss (i.e., net income was negative). For the non-payers 30.6% of the firms made a loss in this five-year window. Over time the dividend payout of dividend payers has decreased steadily from above 60% in 1960s to below 40% in the first years of the 21st century. At the same time the number of firms paying a dividend while experiencing a loss has increased over the same time period. The dividend patterns are also depicted graphically in figures 1 and 2. The first figure shows the results for dividend divided by net income (payout ratio) for the full sample.

- Please insert Figure 1 here -

In figure 1, it is shown that the payout ratio is relatively constant in the first three decennia, whereas the volatility increases much more at the beginning of the twenty-first century. In figure 2 the fraction of firms that are payers and non-payers is shown.

- Please insert Figure 2 here -

The results in figure 2 show that in the first 15 years a significant fraction of 15%-20% does not pay any dividends, a pattern which returns in the mid-1990s. The fraction of non-payers is particularly high in 2003/2004, at the burst of the stock market bubble.

Next, we test the Lintner model for the period 1961-2006. The explained variable is dividend divided by total assets for period t for firm i ($\text{Dividend}_{t,i}$ / $\text{Total Assets}_{t,i}$) and the explanatory variables $D_{t-1,i}$ and $E_{t,i}$ are respectively dividend divided by total assets for period t-1 for firm i ($\text{Dividend}_{t-1,i}$ / $\text{Total Assets}_{t-1,i}$) and net income divided by total assets for period t for firm i ($\text{Net Income}_{t,i}$ / $\text{Total Assets}_{t,i}$). We first test the Lintner model for the entire period 1961-2006. Then we perform forty-two 5-year rolling regressions for periods covering the period 1961-2006. The speed of adjustment coefficient (c) is calculated as 1 minus the coefficient of $D_{t-1,i}$ ($\text{Dividend}_{t-1,i}$ / $\text{Total Assets}_{t-1,i}$). The target payout ratio (r) is the coefficient of $E_{t,i}$ ($\text{Net Income}_{t,i}$ / $\text{Total Assets}_{t,i}$) divided by the speed of adjustment coefficient. For the significance tests we use White heteroskedasticity consistent standard errors. The adjusted R^2 is our measure of the fit of the Lintner model.

- Please insert Table 3 here -

- Please insert Figure 3 here -

In order to understand the outcomes, we now focus on the 1978-1982 regressions. The intercept is not statistically or economically different from zero, which implies that in those years dividends increased separately from increases in profits. The dividend coefficient is 0.610 and significantly different from zero. This implies that in the average firm, the dividend 61% of the dividend in the previous year plus part of current years net income. The latter is represented by the next coefficient, i.e. 0.151, also significantly

different from zero. So, both the past dividends (stable dividend) and the current profits (stable payout ratio) determine this year's dividend. The fit of the model is 0.863, where 1 would be a perfect fit. Thus, a significant part of dividends is explained by the Lintner model. The target ration is 0.386 and the speed of adjustment is 0.390. The latter implies that 39% of the change in profits is used to increase dividends, which is a conservative increase of dividends.

The key insights from the estimates are conveniently summarized in figure 3. The pattern of the target ratio largely resembles the actual payout ratio in figure 1. Most interesting are the speed of adjustment and model fit. The adjustment factor fluctuates strongly over time. In the 1960s we see high adjustment, which implies that financial markets are relatively unimportant as a fixed fraction of profits is passed to shareholders. In the 1970s the speed is lower, which may be explained by the lower profits and a conservative payout policy. As of the 1980s the speed of adjustment is higher, but never above 70%. Particularly striking are the estimates for the early 1990s and 21st century. The model fit of Linter's specification is low in the in 1960s and as of the mid 1990s.

As a robustness check we run additional tests using dividend and earnings per share, in line with Dorsman (1988) and Dorsman et al (1999). Thus, the endogenous variable is DPS_t and the explanatory variables are DPS_{t-1} and EPS_t.

- Please insert Table 4 here -

- Please insert Figure 4 here -

The results in table 4 and figure 4 indicate that the estimates are influenced by the scaling. Apparently, scaling by total assets or scaling by the number of shares outstanding leads to different effects of larger observations in the regressions. In future research we will obtain estimates based on dividend and earnings per share for the full period.

6. Conclusions

In this preliminary draft of our analysis we investigate the dividend policy of Dutch firms in the period 1961-2006. Dividends are the payouts to shareholders by corporations and thus dividend policies proxy for the power struggle between shareholders and managers

of corporations. First, we first have described the level of dividends payout and the changes over roughly the second half of the 20th century. Next, we have tested Lintner-based models that relate changes in profitability to dividends. The relation between profits and dividends reflects the informational role of dividends in financial markets. Based on this model, we describe the changing relevance of financial markets in the Dutch corporate system.

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Table 1 Summary statistics

	Mean	Median	St.Dev.	Min	Max	N
Total Assets (x1000 NLG)	2,183,896	112,311	10,048,385	8.815	158,969,028	4,963
LN Total Assets (x1000 NLG)	11.797	11.629	2.294	2.176	18.884	4,963
Total Assets$_{\text{inflation adjusted}}$ (x1000 NLG)	3,218,845	254,645	14,018,478	9	226,829,455	4,963
Equity (x1000 NLG)	858,502	43,825	5,016,182	10.697	90,490,944	4,948
Debt Ratio	0.588	0.601	0.162	0.0003	0.999	4,906
Net Income (x1000 NLG)	117,254	4,000	843,863	-6,516,806	19,200,925	4,981
Fraction of Firms with a Loss	0.069	0.000	0.254	0.000	1.000	4,981
Dividend (x1000 NLG)	56,043	1,651	415,980	0.000	10,891,000	4,981
Dividend change ($Div_{t,i}$ - $Div_{t,i-1}$) (x1000 NLG)	3,272	28.875	221,237	-9,285,000	9,448,000	4,981
Dividend / Total Assets	0.021	0.017	0.022	0.000	0.506	4,963
Dividend / Net Income	0.440	0.408	0.842	-38.000	23.389	4,973
Dividend per share (DPS)	7.259	3.797	13.352	0.000	185.185	1,100
Earnings per share (EPS)	19.951	10.677	38.063	-291.716	462.963	1,100
Dividend / Equity	0.127	0.044	2.040	0.000	69.530	4,948
Net Income / Total Assets	0.016	0.040	0.986	-49.750	0.730	4,963
Dividend payer	0.874	1.000	0.331	0.000	1.000	4,967
Dividend non-payer	0.126	0.000	0.331	0.000	1.000	4,967
Dividend former payer	0.066	0.000	0.249	0.000	1.000	4,967
Dividend never paid	0.059	0.000	0.236	0.000	1.000	4,967

The variables in this table are based on hand collected data from Van Oss for the period 1961-1973, on electronic data from Statistics Netherlands (CBS) for the period 1974-1996 and from Compustat for the period 1997-2006. All variables are based on book values and all data is in Dutch guilders (NLG), data in Euro's is changed to Dutch guilders. LN total assets is natural logarithm of total assets. Total Assets inflation adjusted are total assets corrected for inflation based on purchasing power where the base year is 2006 (purchasing power index used from www.iisg.nl). Equity is the book value of shareholder equity or total equity. Debt ratio is total debt divided by total assets. LN Sales is the natural logarithm of sales. Dividends are total dividends including cash dividends, stock dividends and choice dividends for all share types (including common shares, preference and other shares). Dividend change is the difference between dividends from period t minus dividends from period t-1 ($Div_{t,i}$ - $Div_{t,i-1}$). In addition there are ratio variables dividend divided by total assets, dividend divided by net income (equals DPS divided by EPS), dividend divided by total equity, and net income divided by total assets. Dividend per share is dividend divided by the number of outstanding shares, similarly earnings per share is net income divided by the number of outstanding shares. In line with Fama and French (2001) we included dummy variables that represent the dividend group to which firm i belongs at date t. A dividend payer is a firm that pays dividends at time t, whereas a non-payer does not pay dividends at time t. The non-payer group can be divided into firms that paid dividends at least once before time t,the former payer, or the firm that never paid dividends before time t. If a firm belongs to a specific group the dummy variable scores one, otherwise zero.

Table 2 Dividend ratios and other financial averages per period

	Dividend payer								Dividend non-payer				
Period	Dividend / Net Income	Dividend / Total Assets	Dividend / Equity	Net Income / Total Assets	Debt Ratio	LN Total Assets	Total Assets inflation adjusted	Fraction of Firms with a Loss	Net Income / Total Assets	Debt Ratio	LN Total Assets	Total Assets inflation adjusted	Fraction of Firms with a Loss
1961-1965	0.626	0.028	0.168	0.048	0.517	9.985	552,935	0.015	0.010	0.506	9.773	1,873,204	0.306
1962-1966	0.640	0.028	0.148	0.046	0.521	10.031	584,095	0.014	0.002	0.516	9.928	1,985,912	0.333
1963-1967	0.650	0.027	0.138	0.045	0.523	10.126	652,607	0.011	-0.008	0.528	9.911	1,737,653	0.378
1964-1968	0.641	0.027	0.152	0.044	0.531	10.275	815,159	0.010	-0.010	0.541	9.825	1,184,200	0.406
1965-1969	0.636	0.025	0.129	0.043	0.538	10.403	953,431	0.008	-0.014	0.557	9.901	912,791	0.412
1966-1970	0.643	0.024	0.197	0.042	0.546	10.542	1,126,869	0.005	-0.006	0.584	9.969	887,576	0.453
1967-1971	0.609	0.023	0.288	0.042	0.554	10.724	1,351,268	0.007	-0.010	0.596	9.936	576,513	0.475
1968-1972	0.579	0.022	0.393	0.041	0.568	10.902	1,556,064	0.008	-0.006	0.597	9.990	356,914	0.487
1969-1973	0.559	0.020	0.462	0.040	0.579	11.100	1,777,008	0.007	-0.013	0.612	10.142	393,601	0.520
1970-1974	0.533	0.019	0.473	0.040	0.589	11.218	1,843,238	0.007	-0.015	0.626	10.245	426,992	0.538
1971-1975	0.493	0.017	0.425	0.039	0.597	11.368	2,060,331	0.010	-0.023	0.624	10.319	463,228	0.519
1972-1976	0.482	0.016	0.308	0.038	0.612	11.579	2,329,185	0.007	-0.017	0.630	10.353	459,971	0.532
1973-1977	0.465	0.016	0.156	0.039	0.620	11.754	2,640,530	0.005	-0.028	0.676	10.507	469,865	0.528
1974-1978	0.448	0.016	0.044	0.038	0.630	11.919	2,900,056	0.006	-0.002	0.747	11.137	708,096	0.429
1975-1979	0.459	0.016	0.045	0.037	0.636	12.017	3,266,851	0.005	-	-	-	-	-
1976-1980	0.461	0.016	0.046	0.037	0.641	12.103	3,440,829	0.002	-	-	-	-	-
1977-1981	0.472	0.016	0.045	0.037	0.640	12.197	3,802,426	0.005	-	-	-	-	-
1978-1982	0.469	0.015	0.043	0.036	0.638	12.352	4,293,686	0.008	-	-	-	-	-
1979-1983	0.462	0.015	0.041	0.036	0.636	12.523	4,904,133	0.008	-	-	-	-	-
1980-1984	0.438	0.015	0.041	0.039	0.630	12.658	5,404,896	0.009	0.022	0.697	12.457	920,615	0.250
1981-1985	0.418	0.016	0.043	0.042	0.625	12.739	5,444,702	0.006	0.022	0.697	12.457	920,615	0.250
1982-1986	0.397	0.017	0.045	0.046	0.619	12.788	5,337,674	0.003	0.022	0.697	12.457	920,615	0.250
1983-1987	0.386	0.019	0.049	0.050	0.615	12.792	5,145,549	0.003	0.022	0.697	12.457	920,615	0.250
1984-1988	0.374	0.020	0.054	0.055	0.613	12.814	4,915,299	0.005	0.022	0.697	12.457	920,615	0.250
1985-1989	0.376	0.022	0.059	0.059	0.612	12.906	4,772,926	0.007	-	-	-	-	-
1986-1990	0.380	0.023	0.065	0.062	0.611	12.979	4,600,723	0.009	-	-	-	-	-
1987-1991	0.381	0.025	0.069	0.065	0.611	13.041	4,414,363	0.009	-	-	-	-	-
1988-1992	0.391	0.025	0.071	0.066	0.613	13.126	4,293,510	0.009	-	-	-	-	-
1989-1993	0.412	0.026	0.072	0.066	0.607	13.205	4,248,543	0.007	-	-	-	-	-
1990-1994	0.428	0.027	0.072	0.066	0.603	13.255	4,224,563	0.007	-	-	-	-	-
1991-1995	0.415	0.028	0.071	0.075	0.592	13.284	4,616,474	0.005	0.030	0.567	11.156	89,209	0.000
1992-1996	0.424	0.028	0.072	0.076	0.591	13.333	5,221,211	0.008	0.030	0.567	11.156	89,209	0.000
1993-1997	0.431	0.030	0.078	0.078	0.595	13.416	5,471,565	0.005	-0.014	0.534	11.407	589,405	0.500
1994-1998	0.451	0.032	0.090	0.080	0.606	13.477	5,526,855	0.009	0.020	0.621	11.684	396,229	0.435
1995-1999	0.443	0.031	0.091	0.080	0.616	13.542	5,625,951	0.009	0.027	0.626	11.733	1,070,963	0.426
1996-2000	0.467	0.031	0.093	0.071	0.632	13.670	6,168,319	0.013	-0.006	0.616	11.567	812,496	0.462
1997-2001	0.481	0.030	0.092	0.069	0.636	13.778	6,564,322	0.022	-0.284	0.625	11.633	2,055,362	0.474
1998-2002	0.486	0.028	0.087	0.065	0.639	13.878	7,053,028	0.041	-0.345	0.624	11.523	1,853,810	0.506
1999-2003	0.345	0.026	0.076	0.058	0.638	14.026	7,820,657	0.061	-0.477	0.605	11.343	1,842,255	0.573
2000-2004	0.435	0.027	0.074	0.054	0.627	14.163	8,588,048	0.080	-0.876	0.593	11.391	1,518,178	0.604
2001-2005	0.384	0.027	0.069	0.052	0.608	14.194	8,087,063	0.081	-1.434	0.586	11.418	1,694,209	0.604
2002-2006	0.381	0.028	0.071	0.054	0.605	14.319	8,481,659	0.071	-1.346	0.569	11.392	748,027	0.605

This table reports means per variable. All variables are defined in table 1.

Table 3 Lintner model regressions

	Intercept		Dividend $_{t-1}$ / Total Assets$_{t-1}$		Net Income$_t$ / Total Assets$_t$		Adj. R^2	DW	N	Speed of adj. (C)	Target (r)
1961-2006	0.014	***	0.303	*	0.001	**	0.226	1.447	4930	0.697	0.001
	(3.916)		(1.717)		(2.096)						
1961-1965	0.016	***	0.069		0.138	**	0.175	1.232	768	0.931	0.148
	(5.975)		(1.165)		(2.289)						
1962-1966	0.017	***	0.084		0.114	**	0.173	1.123	942	0.916	0.124
	(7.604)		(1.186)		(2.578)						
1963-1967	0.016	***	0.091		0.122	***	0.208	1.027	1056	0.909	0.134
	(7.591)		(1.196)		(2.810)						
1964-1968	0.005	***	0.681	***	0.058	**	0.539	2.219	1086	0.319	0.183
	(4.788)		(11.182)		(2.354)						
1965-1969	0.005	***	0.667	***	0.043	**	0.595	1.575	1047	0.333	0.128
	(4.494)		(11.668)		(2.563)						
1966-1970	0.002	**	0.810	***	0.031	***	0.756	2.094	968	0.190	0.162
	(2.280)		(18.613)		(2.617)						
1967-1971	0.001		0.859	***	0.030	***	0.806	2.265	944	0.141	0.213
	(1.290)		(20.718)		(3.558)						
1968-1972	0.001		0.815	***	0.034	***	0.758	2.111	909	0.185	0.185
	(1.514)		(14.173)		(3.223)						
1969-1973	0.001		0.801	***	0.030	***	0.727	2.153	854	0.199	0.151
	(1.108)		(11.195)		(3.246)						
1970-1974	0.001		0.762	***	0.034	***	0.711	2.357	742	0.238	0.145
	(1.280)		(9.684)		(3.001)						
1971-1975	0.002		0.693	***	0.044	***	0.622	2.354	614	0.307	0.142
	(1.315)		(5.631)		(2.870)						
1972-1976	0.004	***	0.489	***	0.063	**	0.447	1.892	534	0.511	0.123
	(3.680)		(4.855)		(2.387)						
1973-1977	0.003	***	0.606	***	0.051	*	0.588	1.143	458	0.394	0.129
	(3.739)		(9.024)		(1.919)						
1974-1978	-0.001		0.525	***	0.210	***	0.768	1.466	388	0.475	0.441
	(-1.462)		(8.979)		(10.461)						
1975-1979	0.000		0.521	***	0.210	***	0.806	1.248	401	0.479	0.439
	(-0.989)		(8.924)		(9.516)						
1976-1980	0.000		0.674	***	0.136	***	0.869	1.578	428	0.326	0.417
	(-0.712)		(12.377)		(5.565)						
1977-1981	0.000		0.651	***	0.140	***	0.876	1.867	404	0.349	0.402
	(-0.502)		(11.669)		(5.709)						
1978-1982	0.000		0.610	***	0.151	***	0.863	1.616	381	0.390	0.386
	(0.010)		(11.245)		(5.919)						
1979-1983	0.000		0.650	***	0.126	***	0.886	1.989	358	0.350	0.358
	(0.771)		(17.329)		(6.385)						
1980-1984	0.000		0.609	***	0.144	***	0.826	1.484	351	0.391	0.369
	(0.933)		(12.703)		(6.057)						
1981-1985	0.000		0.392	***	0.236	***	0.672	1.318	364	0.608	0.388
	(0.576)		(3.298)		(4.445)						
1982-1986	0.000		0.372	***	0.237	***	0.682	1.349	381	0.628	0.378
	(0.800)		(3.143)		(4.723)						
1983-1987	0.002		0.477	***	0.177	***	0.654	1.533	393	0.523	0.339
	(1.578)		(3.923)		(3.265)						
1984-1988	0.002	***	0.535	***	0.148	***	0.646	1.640	412	0.465	0.318
	(2.247)		(5.186)		(3.434)						
1985-1989	0.001	***	0.730	***	0.109	***	0.835	0.924	421	0.270	0.405
	(0.655)		(9.649)		(3.205)						
1986-1990	0.001	***	0.782	***	0.071	***	0.948	1.688	422	0.218	0.328
	(1.750)		(18.941)		(4.343)						
1987-1991	0.001	***	0.807	***	0.064	***	0.953	1.900	427	0.193	0.332
	(1.240)		(20.369)		(4.083)						
1988-1992	0.000	***	0.733	***	0.100	***	0.944	2.073	433	0.267	0.373
	(-0.051)		(13.513)		(5.228)						
1989-1993	-0.001	***	0.714	***	0.118	***	0.947	2.164	419	0.286	0.413
	(-0.992)		(14.334)		(6.743)						
1990-1994	-0.001	***	0.680	***	0.132	***	0.924	1.921	412	0.320	0.413
	(-0.629)		(13.339)		(7.672)						
1991-1995	-0.002	***	1.059	***	0.010		0.537	1.472	395	-0.059	-0.176
	(-0.794)		(3.483)		(0.162)						
1992-1996	0.005	***	0.379		0.166	***	0.275	3.258	376	0.621	0.267
	(1.679)		(1.436)		(3.025)						
1993-1997	0.004		0.376		0.193	***	0.281	4.192	395	0.624	0.309
	(1.291)		(1.364)		(3.231)						

Table continues …

Table 3 Lintner model regressions (continued)

1994-1998	0.007	***	0.421	*	0.143	***	0.279	3.763	453	0.579	0.247
	(2.296)		(1.657)		(2.653)						
1995-1999	0.008	***	0.373	**	0.130	***	0.262	2.525	493	0.627	0.207
	(2.756)		(1.985)		(3.436)						
1996-2000	0.013	***	0.327	**	0.068	*	0.309	1.940	519	0.673	0.101
	(4.141)		(2.464)		(1.815)						
1997-2001	0.010	***	0.583	***	0.001	*	0.371	2.467	534	0.417	0.003
	(4.630)		(6.468)		(1.718)						
1998-2002	0.009	***	0.568	***	0.001	*	0.397	2.297	504	0.432	0.003
	(4.502)		(6.521)		(1.712)						
1999-2003	0.008	***	0.538	***	0.001	*	0.434	1.707	450	0.462	0.002
	(4.223)		(5.666)		(1.896)						
2000-2004	0.004	***	0.808	***	0.000	*	0.616	1.681	428	0.192	0.001
	(2.844)		(10.081)		(1.793)						
2001-2005	0.002	**	0.897	***	0.000	*	0.721	1.675	403	0.103	0.001
	(2.043)		(13.450)		(1.822)						
2002-2006	0.002		0.971	***	0.000		0.778	1.901	369	0.029	0.002
	(1.491)		(15.664)		(1.477)						

In this table we estimate the Lintner model. The explained variable is dividend divided by total assets for period t for firm i ($\text{Dividend}_{t,i}$ / $\text{Total Assets}_{t,i}$) and the explanatory variables $D_{t-1,i}$ and $E_{t,i}$ are resp. dividend divided by total assets for period t-1 for firm i ($\text{Dividend}_{t-1,i}$ / $\text{Total Assets}_{t-1,i}$) and net income divided by total assets for period t for firm i ($\text{Net Income}_{t,i}$ / $\text{Total Assets}_{t,i}$). The explanatory variables are defined in table 1. In the first row the Lintner model is estimated for the period 1961-2006. The following rows report the results based on forty-two 5-year rolling periods covering the period 1961-2006. The speed of adjustment coefficient (c) and the target payout ratio (r) is calculated 1 minus the coefficient of $D_{t-1,i}$ ($\text{Dividend}_{t-1,i}$ / $\text{Total Assets}_{t-1,i}$) resp. the coefficient of $E_{t,i}$ ($\text{Net Income}_{t,i}$ / $\text{Total Assets}_{t,i}$) divided by the speed of adjustment coefficient. The symbol '***' denotes that the parameter estimate is significant at the 1% level, '**' is 5%, and '*' is 10% significance level (two-sided). The t-values, included in parentheses, are White heteroskedasticity consistent. Adj. R^2 is the adjusted R-squared, DW is the Durbin-Watson statistic, N is the number of observations.

Table 4 Lintner model regressions using DPS and EPS

	Intercept		DPS_{t-1}		EPS_t		Adj. R^2	DW	N	Speed of adj. (C)	Target (r)
1983-1996	0.391		0.699	***	0.122	***	0.901	1.902	1100	0.301	0.404
	(1.164)		(5.584)		(2.914)						
1983-1987	0.269		0.763	***	0.127	**	0.891	1.830	381	0.237	0.537
	(0.455)		(4.445)		(2.168)						
1984-1988	0.902		0.678	***	0.124	**	0.868	2.218	401	0.322	0.386
	(1.431)		(4.347)		(2.528)						
1985-1989	0.866		0.674	***	0.125	**	0.872	1.655	411	0.326	0.383
	(1.465)		(4.671)		(2.442)						
1986-1990	0.676		0.713	***	0.102	*	0.916	1.890	411	0.287	0.355
	(1.131)		(4.917)		(1.913)						
1987-1991	1.156	***	0.725	***	0.060	**	0.945	2.447	418	0.275	0.220
	(2.768)		(6.022)		(2.008)						
1988-1992	1.235	***	0.649	***	0.066	**	0.930	1.036	426	0.351	0.187
	(3.605)		(6.230)		(2.323)						
1989-1993	-0.066		0.659	***	0.152	***	0.977	1.233	414	0.341	0.447
	(-0.831)		(15.595)		(8.467)						
1990-1994	-0.177	**	0.727	***	0.141	***	0.970	1.488	409	0.273	0.518
	(-2.302)		(9.166)		(5.036)						
1991-1995	-0.144		0.914	***	0.060	***	0.963	2.172	395	0.086	0.702
	(-1.036)		(14.295)		(2.741)						
1992-1996	0.007		0.861	***	0.072	***	0.971	2.236	376	0.139	0.515
	(0.061)		(13.589)		(2.957)						

In this table we estimate the Lintner model (1956) $D_{t,i} = a_i + (1-c_i)D_{t-1,i} + c_i r_i E_{t,i} + \varepsilon_{t,i}$. The explained and the explanatory variables are conform Dorsman, Montfort and Vink (1999). The explained variable is dividend per share for period t for firm i ($DPS_{t,i}$) and the explanatory variables $D_{t-1,i}$ and $E_{t,i}$ are resp. dividend per share for period t-1 for firm i ($DPS_{t-1,i}$) and earnings per share for period t for firm i ($EPS_{t,i}$). The explanatory variables are defined in table 1. In the first row the Lintner model is estimated for the period 1983-1996. The following rows report the results based on ten 5-year rolling periods covering the period 1983-1996. The speed of adjustment coefficient (c) and the target payout ratio (r) is calculated 1 minus the coefficient of $D_{t-1,i}$ ($DPS_{t-1,i}$) resp. the coefficient of $E_{t,i}$ ($EPS_{t,i}$) divided by the speed of adjustment coefficient. The symbol '***' denotes that the parameter estimate is significant at the 1% level, '**' is 5%, and '*' is 10% significance level (two-sided). The t-values, included in parentheses, are White heteroskedasticity consistent. Adj. R^2 is the adjusted R-squared, DW is the Durbin-Watson statistic, N is the number of observations.

Figure 1 The development of the payout ratio (dividend/net income) for Dutch listed non-financial firms over the period 1961-2006.

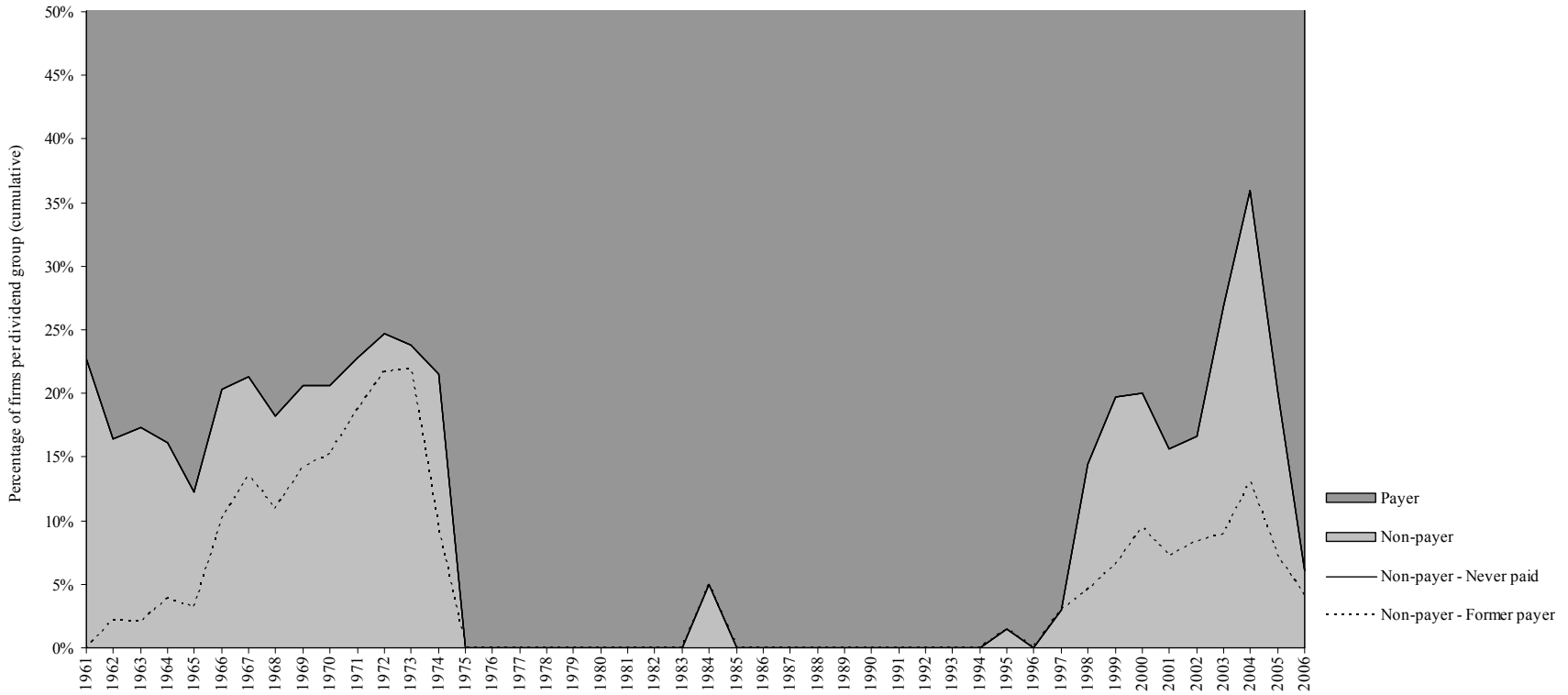

Figure 2 The relative amount of Dutch listed non-financial firms in different dividend groups. This graph shows the percentage of firms in our sample that belong to the dividend groups: payers and non-payers. The non-payers can be divided into former payers and those that never paid dividends before time t. The graph is cumulative the percentage of payers and non-payers add up to 100%, and the former payers and those that never paid add up to the non-payers.

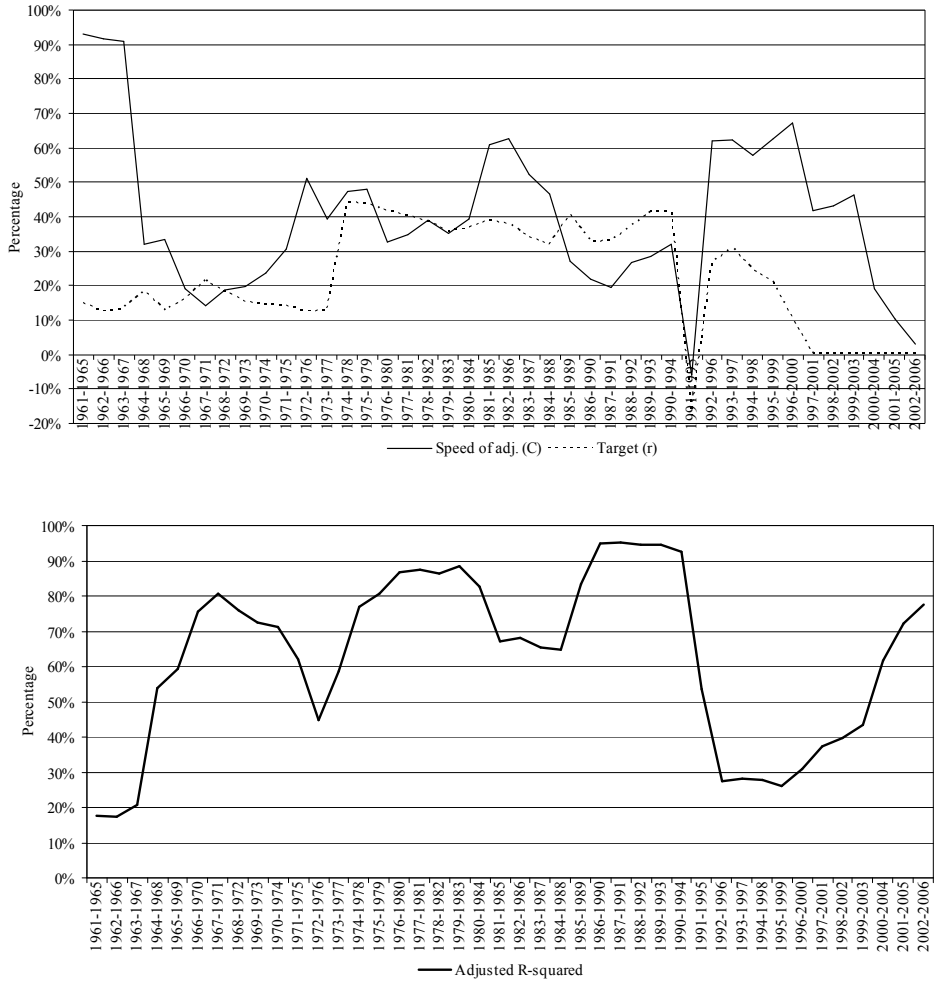

Figure 3 The average speed of adjustment coefficient and the target payout ratio of Dutch listed non-financial firms based on forty-two 5-year rolling periods including the explanatory power of the Lintner regressions (based on Table 3).

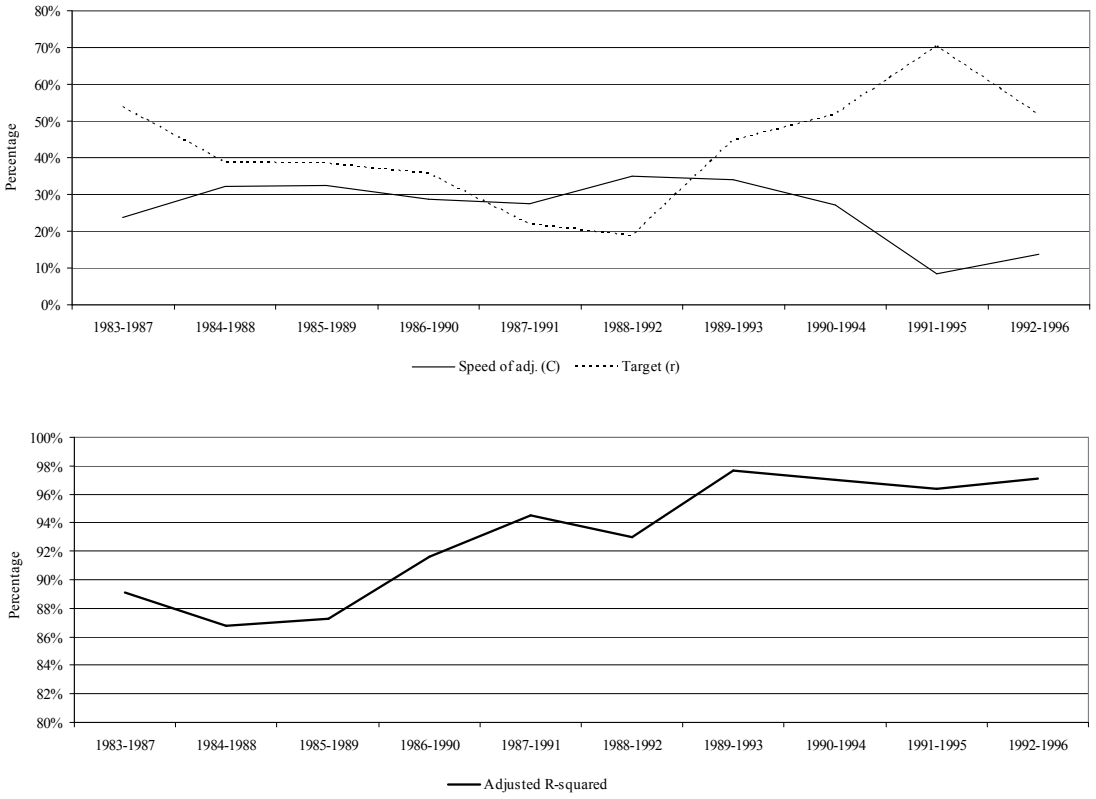

Figure 4 The average speed of adjustment coefficient and the target payout ratio of Dutch listed non-financial firms based on ten 5-year rolling periods including the explanatory power of the Lintner regressions (based on Table 4).