

Geographically dispersed ownership and inter-market stock price arbitrage—Ahold's crisis of corporate governance and its implications for global standards

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Abstract

Scandals of corporate governance in the United States and Europe in the aftermath of the TMT bubble captured the public imagination. In play were the interests of senior executives in relation to investors, prompting debate over countries' standards of corporate governance in the global market place. Ahold was (and is) an especially important instance, involving significant internal accounting and reporting failures and poor public disclosure of market-sensitive information. Ahold is also a global corporation cross-listed on major financial markets. In this paper, we report the analysis of market trading in Ahold stock between Amsterdam and New York. It is shown that greater volatility in Amsterdam daily closing prices presaged the crisis to come in Ahold shares implying leakage of information to privileged local insiders. It is also shown that in the aftermath of Ahold's crisis, management responded to the lack of global investor confidence by improving transparency and governance standards consistent with the expectations of global investors. Implications are drawn for the pricing of corporate governance and the process of convergence in national standards of corporate governance. The continuity of different regimes of governance is subject to inter-market arbitrage especially if corporations seek to maintain and enhance their reputations in the global financial market place.

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1. Introduction

Over the 1990s, global capital market integration focused on firms and industries was widely perceived as inevitable (see Litterman et al., 2003). In the aftermath of the TMT

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(telecommunications, media and technology) bubble and scandals of corporate governance, the prospect of a 'one-world' market has receded (Stulz, 2005). The crisis of confidence in national systems of corporate governance has raised doubts about the integrity of the available market information on corporations' circumstances and prospects. One response has been to enhance national regulations; another response by institutional investors has been to monitor more closely corporate decision-making across jurisdictions (Clark and Hebb, 2005). At the time of negotiation over the design of a global financial accounting reporting system, these scandals strengthened the hands of those committed to independent global reporting system eschewing the compromises evident in local standards and traditions. This paper is about the emerging global market for price-sensitive information, driven in part by institutional investors vulnerable to changes in the market prices of corporations cross-listed between financial markets.

Royal Ahold is one of just a handful of global players in the food retailing and wholesaling industry (see Wrigley, 2000; Coe, 2004; Wrigley et al., 2005). Over the 1990s, it accumulated enormous geographical scope, reporting in Amsterdam market share and revenue from virtually all corners of the world (Wrigley and Currah, 2003). However, as doubts surfaced about the integrity of market information regarding Ahold's prospects and the robustness of its internal controls in its far-flung empire its market price became more volatile. In the end, this led to a crisis of corporate governance and the resignation of its CEO, retrenchment in its global ambitions and a significant loss of 'reputational' capital amongst institutional investors. To illustrate Ahold's standing amongst institutional investors, GovernanceMetrics International (GMI) attributed it a 2004 overall low rating of 4.5 (against its industry peers) and a low regional rating of 3.5 (against its European peers) (each against a possible score of 10). The Ahold story, similar to related stories of crises of governance, has been told in a variety of places; it is not our intention to go over well-trodden ground.¹ Rather, our goal is to look more carefully at the stock market response to Ahold's crisis of corporate governance in the light of inter-market arbitrage *and* the response of Ahold management to negative market sentiments. More generally, we draw implications for global capital market integration and the prospects for global convergence in national standards of corporate governance.

Information was collected on the Amsterdam daily Ahold stock market closing price for the period 1973–2004 (over 10 000 observations). We sought to characterize the history of Ahold as seen through the Amsterdam stock market, paying particular attention to the existence of distinctive episodes as well as crucial inflection points marking-off the beginning and end of different episodes in market trading and expectations. Each episode was analysed in terms of its volatility and its underlying time-series properties. Having demonstrated significant discounting in Ahold stock before the official announcement of accounting irregularities, the view from New York was analysed utilizing Granger tests of causality. Before the crisis, New York trading in Ahold

1 There are many academic and industry studies of the corporate governance scandals at Enron, WorldCom, Parmalat, and to a lesser extent Ahold. See Broekstra et al. (2004), de Jong *et al.* (2005), and Wrigley and Currah (2003) on Ahold, Coffee (2003) and Gordon (2003) on Enron, Melis (2003) on Parmalat and Sidak (2003) on WorldCom. Most of these citations were taken from www.ssrn.com—there are other such commentaries available.

stock contained information in its own right, whereas after the crisis New York-based traders relied exclusively on Amsterdam market information. It is also shown that Ahold management responded by increasing the disclosure of market-sensitive information so as to 'manage' distant market expectations. Here, we rely upon Deminor's proprietary database of European corporate governance ratings sensitive to the interests of financial markets [explained in detail in Wójcik et al. (2004)].

Ahold's 'problems' are representative of a classic issue—the power of incumbent managers when owners are unorganized and their holdings small and dispersed over many institutions (see Roe, 1994). In the Ahold case, it assumes greater significance because of the claimed distinctiveness of continental European traditions in the context of a global market for price-sensitive information across jurisdictions. Over the 1990s, ownership of Ahold was fragmented and spread over a number of markets through cross-listing (including New York). Geographically dispersed ownership, partly the result of domestic disengagement and portfolio globalization by large Dutch investors and pension funds, provided managers room to manoeuvre. Problems of accountability and management within Ahold were registered as 'surprises' on global stock markets with precipitous changes in Ahold stock prices. Thereafter, Ahold sought to re-assure institutional investors by significantly improving disclosure related to standards of corporate governance.

The Ahold story is consistent with those that argue there is a relationship between corporate governance and market value (Gompers et al., 2003; Bauer et al., 2004). We link this issue to the debate about convergence of national standards of corporate governance. In part, our argument is negative in the sense that the evidence suggests that Ahold's 'problems' were first registered in their home location notwithstanding cross-listing between markets. In another sense, however, our argument is positive in that the response of Ahold to investor sentiment was conceived to meet expectations of higher standards in global capital markets. Ahold's response is consistent with the increasing willingness of institutional investors to intervene in large but poorly governed companies whatever their 'home' jurisdictions may be: corporate engagement may be a vital ingredient in the transformation of company-specific standards of governance in relation to global standards (as suggested by Clark and Hebb, 2005; Hebb and Wójcik, 2005).

2. The geography of finance

This paper falls between two vibrant research programmes, one in economic geography on the structure and performance of global markets and the other in finance on the relationship between nation–state systems of corporate governance and stock market performance.² Of course, we do not mean to suggest that economic geography and finance are the only disciplines focused upon these issues. Making the bridge between these research programmes depends upon initial assumptions about the nature and efficiency of global stock markets. If we assume that global capital markets are

2 See, respectively, Clark and Wójcik (2003, 2005) on the regional foundations of the German model in relation to global economic imperatives (a geographical perspective), and Halling et al. (2004) on the cross-listing of firms on global financial markets and national systems of corporate governance (a finance perspective).

functionally just one market notwithstanding the history of their separate development, close attention to the institutional features of these markets and their relative performance would be irrelevant. While some analysts are convinced that the future of global capital markets is one virtual market characterized by strong efficiency in time and space, few analysts are convinced that this is an adequate characterization of contemporary circumstances (compare O'Brien, 1992).

The mapping by La Porta et al. (1997, 1998) of the legal and institutional foundations of nation-state financial markets has been widely accepted as an appropriate reference point in understanding market-by-market differentiation and the prospects for integration. Recall La Porta et al. demonstrated that there are distinctive groups of financial markets rather than just one kind of financial market or one kind of institutional structure. They mapped the historical importance of different legal traditions with respect to the rights and privileges of insiders vs. outsiders and worked 'forward' to current market structure and performance. They also argued that market liquidity can be explained by reference to these legal institutions and the degree of protection afforded 'outsiders' investing in listed companies. Their mapping exercise was, in part, an exercise in documenting the obvious just as it was an exercise in explaining the relative performance of one kind of financial market (Anglo-American) against the rest (and in particular continental European markets). Their project had a number of important consequences not least of which has been the development of related research programmes on systems of corporate governance.

At the same time, we should take care not to exaggerate the separate existence of financial markets nor should we ignore the fact that financial institutions can trade in and across these markets almost every minute of every day. There are benefits in global financial trading not least of which is the return to be had from arbitrage between markets given perceived pricing anomalies. With the rise of global portfolio managers, asset managers have taken the map of market capitalization weighted, in many cases, by institutional risk as a ready-formula for the allocation of investors' assets (Hebb and Wójcik, 2005). Not surprisingly, financial institutions have developed methods of risk-management across markets designed to protect, at least, their own positions if not integrity of the whole global trading system. In this respect, the geography of finance is about financial centres, capital flows between those centres, and the channels and networks that collect, organize, and manage information about those flows in relation to projected risk and return (Clark, 2005).

Any study of inter-market arbitrage must be sensitive to the co-existence of local opportunities with global opportunities for profit. All things being equal, including industry structure and economic growth potential, the larger the economy, the larger the volume of domestic assets to be invested.³ All things being equal, including property rights and market transparency, domestic assets are more likely to be invested locally than globally. In part, this is because it is more cost-effective to collect and assess domestic market information than it is to reach-out to the ends of the world and rely upon third-party providers of distant market information (Currah and Wrigley, 2004).

3 Of course, this is hardly an accurate characterization of the global flows of financial assets. Funded pensions (defined benefit and defined contribution) in many Anglo-American countries has meant that there are significant differences in the volume of assets and the institutions of investment even amongst OECD countries, let alone the rest of the world.

As Wilhelm and Downing (2001) point out, financial markets are enormous information processing systems that rely on the cost, quality and quantity of information for efficient decision-making.

This suggests two crucial observations relevant to the paper. In the first instance, if we assume a large proportion of assets stays local then the institutional structure of markets need not converge. If we assume, by reason of geography and history, that there are systematic differences between markets in terms of their institutional structures and legal traditions, co-existence rather than convergence is a plausible scenario. In other words, the rules regulating corporate governance could remain much as they were over past decades as long as these rules were not seen to be impediments to long-run economic growth and, at the limit, a price on the 'loyalty' of domestic investors to local capital markets. In the second instance, however, a settled map of corporate governance and financial market performance may not benefit all investors in their home location. Some firms may be tempted to list on other markets in the hope of obtaining a lower cost of capital and the interest of minority shareholders who share neither the expectations of domestic investors nor the assumption of a settled landscape of firm-specific growth opportunities in the global marketplace.

This introduces the prospect of internal differentiation within markets in that some firms may adopt higher standards of reporting consistent with their strategy of cross-listing in other markets. This is unlikely to benefit investors in their domestic markets, recognizing that local expectations are formed around existing channels of public information, market gossip and history of the firm. However, investors from other markets may be less aware of the codes of practice (formal and informal) governing the transmission of information in the 'home' market of the firm and they may rely, as they have always relied, upon the rules and regulations governing the transmission of market-sensitive information in their own market. This assumes, of course, that neither cross-listing firms nor their agents seek to exploit such differences in the nature and efficiency (for outsiders) of the channels of information between markets. In summary, the cross-listing by firms in different markets carries with it the possibility of significant geographical information asymmetries notwithstanding the confident expectations in markets normally thought better regulated and more transparent than the home markets of the firms that come to cross-list.

In a settled landscape characterized by the co-existence rather than convergence of market-specific rules of disclosure, market agents may become skilled at valuing the available information for cross-listed firms. Repeated trades allow analysts to measure the costs and benefits of informational discrepancies and test the integrity of related rules and regulations. They may also become skilled at adjusting to market volatility, using their own resources and that of market intermediaries to bridge the space-time lags in information diffusion. Institutional risk can be assessed and priced. But there may be events that fall outside of customary practice, just as there may be events so significant that trading on dispersed knowledge runs the risk of large losses. In these circumstances, customary practice may either fail (directly) or be circumvented (indirectly) by shifting back to the 'origin' of market-sensitive information. In these situations, not only is there a short-term issue of managing market trading there is also a longer-term issue as to the manner in which customary practice (inter-market arbitrage and trading) may or may not be re-established after coping with a crisis in market-specific expectations.

In this paper, we focus on one firm cross-listed between Amsterdam and New York—straddling two different institutional settings and expectations regarding the integrity of market-sensitive information. We do not mean to idealize either the Amsterdam market or the New York market. As events have shown, at the peak of the TMT boom many investors on both sides of the Atlantic were taken for a ride. However, we would argue that the New York market has traditionally protected minority investors better than the Amsterdam market. The issue, empirically speaking, is how this worked for one firm where it appears senior managers exploited the gap between the two markets in terms of information richness and in terms of the integrity attributed to market-sensitive information. After the denouement, we focus upon the response of Ahold in terms of its ‘home’ policies of corporate governance. We show that senior managers were forced to reform their disclosure policies in line with the expectations of global investors. In effect, this prompted the convergence in firm-specific standards of corporate governance between jurisdictions if not convergence between whole countries’ standards of corporate governance.

3. Background to the Ahold story

Ahold was first listed on the Amsterdam Stock Exchange in 1948 with its initial acquisition in 1951. The successor company Ahold N.V. was founded in the 1970s, and dominated the Dutch market with forays into the US market through the acquisition of the Bi-Lo supermarket chain with stores in the Carolinas and Georgia. In the 1980s, Ahold expanded again acquiring another two supermarket companies in the United States. With the first non-family chief executive appointed in 1989, Ahold broadened its base by establishing a holding company and acquiring a supermarket chain in eastern Europe.

The appointment in 1993 of Cees van der Hoeven as CEO as well as cross-listing on the NYSE (and Zurich and Brussels) were the next steps in an aggressive global acquisition strategy. Over the second half of the 1990s and the first couple of years of the new millennium, Ahold acquired or established a number of supermarket chains in Asia, eastern and western Europe, South America and the United States. By 2002, Ahold recorded sales of 72.7 billion Euros and operated worldwide with more than 5000 stores and over 280 000 employees. One hundred years or so after Albert Heijn opened his first store in Amsterdam, Ahold had become a national champion in a global industry and a firm recognized by portfolio managers as being representative of a putative new generation of global corporations (contra Doremus et al., 1998).

Ahold’s acquisition strategy was fuelled by the lower cost of capital sourced through the NYSE, combining new stock offerings with the assumption of an enormous debt load. In fact, Wrigley and Currah (2003) estimated that by the end of 2001 Ahold’s net debt stood at ~22.4 billion Euros (taking into account the capital value of leases). Its massive debt load was noted by many industry analysts; its aggressive growth strategy, its reliance upon joint venture partners and its spatially elongated administrative networks were all cause for wonder and alarm. In the 1990s world of global integration and seemingly unlimited growth prospects, any alarm bells were ignored or, at best, selectively registered. However, in the aftermath of the TMT bubble, events such as 9/11, and recognition of similar levels of unsustainable debt leverage in other ‘global’ industry leaders, Ahold’s stock prices fell precipitously. Revelation of problems of

corporate governance and a lack of transparency with respect to financial reporting turned stock price discounting into a corporate crisis.

In this context, February 2003 was an important turning point in Ahold's history. Significant accounting irregularities at Foodservice (US) and at Disco (Argentina) led to the resignation of the CEO and the CFO. Later that year, other irregularities at joint ventures in Portugal and Scandinavia were also reported. In the aftermath of the crisis, and in particular with the appointment of a new CEO Anders Moberg, the key words in Ahold's so-called 'Road to Recovery' were corporate restructuring, corporate governance and divestment. Thereafter, Ahold announced major divestments in South America and Europe followed by the announcement of planned US disinvestments. With the announcement of other accounting irregularities, shareholders 'voted with their feet' discounting, yet again, Ahold stock. In response, institutional shareholders demanded greater disclosure and transparency on governance issues, such as remuneration policy, and the rights of shareholders (see below). But the damage was done.

According to informed Dutch observers, the governance culture at Ahold and the Dutch legal setting had allowed the CEO (van der Hoeven) to build a global retail company rather than focusing on maximizing shareholder value (de Jong et al., 2005). The promise of longer-term growth was sufficient, at the time, to discount investor claims in favour of short-term value. Furthermore, over the 1990s many large Dutch institutions had deliberately run-down their holdings in Ahold and in other large Dutch companies as part of their own global portfolio investment strategies (designed to capture higher growth expectations in other markets). Even so, before the crisis a few Dutch institutional shareholders (pension funds) with still sizeable stakes in Ahold were uneasy about the governance of the company with pointed interventions at the 2001 AGM (15 May). Criticism was made about the lack of transparency of managers' compensation plans (options schemes) and the apparent breach of the 'one share-one vote-one dividend policy'. Most shareholders, however, did not support these interventions. At the time, Ahold was widely admired as a Dutch company that had become a global champion just as its CEO was lauded for his corporate leadership and vision in corporate governance.

4. Data and methodology

Having introduced both the issue of stock market differentiation and the crisis at Ahold, we now turn to modelling these effects. Two types of data are used in the paper: stock market data and corporate governance data. The former involved the daily closing price of Ahold's ordinary shares listed at Euronext Amsterdam over the period of 1 January 1973 to 22 March 2004 as well as the daily closing price of Ahold's American Depositary Receipts (ADRs) listed at the NYSE between 31 December 1993 and 22 March 2004. The start dates represent the first dates for which data were available and the end date represents the point of data collection after Ahold's new management instituted their recovery plan. In order to compare the performance of Ahold's shares against a benchmark, we used data on the daily closing values of the Euronext Amsterdam stock exchange (AEX) index for the same time period. The AEX index is based on a weighted average of the prices of the 25 largest Dutch companies in terms of market capitalization and is meant to represent the overall trend of the Euronext Amsterdam stock exchange.

Proprietary data on corporate governance was provided by Deminor Rating SA (hereafter Deminor) a corporate governance rating-agency headquartered in Brussels, with offices in major European cities (recently acquired by ISS). The objective of Deminor ratings is to provide information to investors about a company's corporate governance standards and practices. While selected Deminor ratings are available in the public domain through published reports and the website, the most useful data are only available on a subscription basis. The main users of Deminor ratings are institutional investors, both European and non-European, who use the ratings to inform their investment decisions. Deminor's customers are typically institutions such as large Dutch pension funds that invest assets on behalf of pension fund beneficiaries and participants.

Deminor distinguishes between four building blocks of corporate governance, referred to as categories (Appendix 1). The first category 'shareholders' rights and duties' captures the extent to which shareholders, including minority shareholders, can have an impact on actions undertaken by the company. The second category 'take-over defences' assesses the barriers (if any) against potential hostile take-overs that shelter corporate management from the threat of replacement. 'Disclosure' measures the availability and quality of information on corporate governance. Within the fourth category 'board structure and functioning', Deminor evaluates the diversity and experience of board members as well as their remuneration. Each category consists of subcategories, also summarized in the appendix. Deminor analysts use only publicly available information with the main sources being corporate websites, stock exchange announcements and press articles. This is a deliberate choice, reflecting a commitment to the use of available market information as opposed to 'insider' information. As such Deminor seeks to *reflect* existing (albeit non-systematic) information rather than to discover new market information.

Deminor rates all companies that are constituents of the FTSE Eurotop index—the largest 300 European companies according to market capitalization.⁴ In some cases, Deminor was not able to obtain sufficient information to rate a company; mergers and acquisitions can be significant impediments to a coherent company rating. The ratings for 2000, 2003 and 2004 covered 259, 283 and 296 companies, respectively. In the next section, we report the results of quantitative analysis of Ahold's stock price identifying distinctive periods in the time-series. Section 6 extends the quantitative analysis by investigating the relationship between Ahold's prices in Amsterdam and New York. Section 7 focuses on corporate governance at Ahold in relation to industry, country and European benchmarks—making the link between stock price volatility, inter-market arbitrage and management response to market sentiments.

5. Ahold stock market prices

Figure 1a presents the daily Euronext Amsterdam Ahold stock prices between 1 January 1973 and 22 March 2004. On first inspection, we can observe a period of rather stable prices until 1982, steady growth in stock prices between 1982 and 1995,

4 Strictly speaking, to be eligible a company must either have a free float of at least 15% or have a free float above 5% and market capitalization greater than US \$5 billion (US \$2.5 billion if it is incorporated in an emerging market country). For details of this and other European FTSE indices see FTSE (2004).

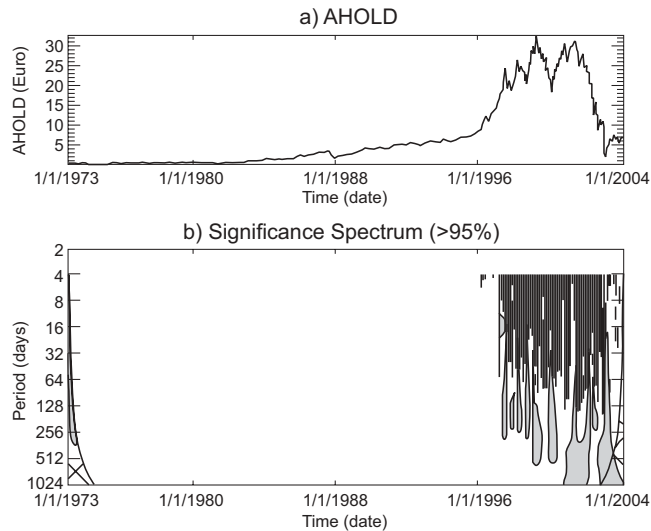


Figure 1. (a and b) The historical stock market price of Ahold as listed in Amsterdam and its wavelet significance spectrum. *Source:* Authors' calculations based on data provided by CSFB, London.

turning into exponential growth that continued until about 2000. Notice that stock price growth in the second half of the 1990s became increasingly volatile with a period of sustained stock price discounting towards the end of the period and a disastrous single-day drop of 63% on 24 February 2003.

We used a wavelet analysis to quantify the path of Ahold stock prices. The wavelet method originates from geophysics (Foufoula-Georgiou and Kumar, 1995) where it is used to analyse the time-series of climate data, including the cycles of El Nino (Wang and Wang, 1996). The method involves a transformation of a one-dimensional time-series into a two-dimensional frequency-time image. For each point in time over the series we estimate the extent to which the time-series around the point resembles a theoretical wavelet function with a given period (frequency). Wavelet analysis has been of interest in finance for two reasons: (i) if there is a statistically significant similarity between a financial time-series and a wavelet function, it implies that the data are not totally random; and (ii) being able to estimate the degree of randomness over time as well as the period (frequency) of the underlying wavelet function, we can divide the time-series into subperiods representing different regimes or episodes (along the lines suggested by Mankiw et al., 1991).

Figure 1b presents the results of the wavelet analysis of Ahold Amsterdam stock prices. We used a derivative of the Gaussian function as our wavelet function although the results would be similar if we used other specifications (see for details Torrence and Compo, 1998). The shaded area on the graph represents the period of time for which the Ahold time-series was correlated with the wavelet function at the level of significance of at least 5%. If we zoom in on the edges of this area of significance, we can establish that it starts approximately on 25 February 1997 and finishes on 21 February 2003, the last trading day before the crash on 24 February 2003. Within this 6 year period of time Ahold Amsterdam prices exhibit some periodicity, oscillating in a way

Table 1. Daily absolute basis point changes for Ahold stock price (Amsterdam) and AEX Index

	Period				
	I-III (01/02/73– 03/22/04)	I (01/02/73– 02/24/97)	I' (10/13/92– 02/24/97)	II (02/25/97– 02/21/03)	III (02/22/03– 03/22/04)
<i>Ahold</i>					
<i>N</i>	8145	6300	1140	1564	281
Mean	124	104	86	170	304
Median	73	57	65	121	218
SD	173	139	81	171	476
Kurtosis	213.2	11.7	5.3	7.8	92.9
Skewness	8.0	2.5	1.9	2.2	8.1
Minimum	0	0	0	0	0
Maximum	6297	1623	587	1456	6297
	I-III (10/13/92– 03/22/04)	I (N/A)	I' (10/13/92– 02/24/97)	II (02/25/97– 02/21/03)	III (02/22/03– 03/22/04)
<i>AEX index</i>					
<i>N</i>	2902		1108	1519	275
Mean	99		57	125	131
Median	70		47	94	93
SD	103		46	116	131
Kurtosis	9		2	4	9
Skewness	2		1	2	2
Minimum	0		0	0	1
Maximum	998		254	774	998

Note: The Ahold means for periods II and III are significantly different at 1% level from the Ahold mean for I-III; the AEX means for periods I, II and III are significantly different at 1% level from the AEX mean for I-III; the Ahold means for periods I, II and III are significantly different at 1% level from the AEX means for periods I, II and III, respectively.
Source: Authors' calculations based on data provided by CSFB, London.

that is not totally random. In contrast, before and after this period we can find no statistically significant traces of non-randomness.

Let us take the analysis further by investigating the volatility of Ahold prices within and between the identified three periods of its stock market history (we call these periods I, II and III). Table 1 contains descriptive statistics on the absolute daily changes of Ahold stock price compared with the values of the Amsterdam Euronext stock market AEX index. Since data for the AEX index were only available from 13 October 1992, the results are not quite comparable before this period and so a fourth period from 1992 to 1997 was introduced for Ahold data (referred to as I').

The first observation to be made is that the average daily absolute change was significantly higher for Ahold than for the AEX index throughout the whole period of analysis. This is not surprising, given that the index amalgamates changes in the stock prices of 25 different stocks. Second, the volatility of both the AEX index and Ahold prices grew over time between 1992 and 2003. In fact, the average absolute daily change in Ahold price in periods II and III was significantly higher than in the whole period of analysis I-III. Similarly, for the AEX index the average absolute daily change was significantly lower in period I' and significantly higher in periods II and III than in

the period I'–III. The temporal pattern and the magnitude of volatility was, however, strikingly different between Ahold and the AEX index. For the AEX, the mean and median daily absolute changes approximately doubled from period I' to period II, with no further significant growth in period III. In contrast, for Ahold the growth in volatility (with respect to daily price changes) continued in period III. When we relate the average (median) absolute daily change in Ahold price to the average (median) absolute daily change in AEX, the resulting ratio grew from ~ 1.4 before February 2003 to 2.3 afterwards.⁵

6. Ahold stock market prices—Amsterdam vs. New York

In this section, we model the relationship between Ahold stock market prices on Euronext Amsterdam and on the NYSE, using the Granger (1969) causality test. In general, the test measures the significance of past values of variable X in explaining variable Y , taking into account the effect of past values of variable Y itself. Usually causal relations are tested both ways, from X to Y and from Y to X . Specifically, we estimated the following two regressions:

$$\text{AMS}(t) = c1 + \alpha \times \text{AMS}(t - 1) + \beta \times \text{NYSE}(t - 1) + u1(t),$$

$$\text{NYSE}(t) = c2 + \gamma \times \text{NYSE}(t - 1) + \delta \times \text{AMS}(t) + u2(t),$$

where $\text{AMS}(t)$ [$\text{AMS}(t - 1)$] are the daily closing price on day t (day $t - 1$) for Ahold shares listed on Euronext Amsterdam; $\text{NYSE}(t)$ [$\text{NYSE}(t - 1)$] are the daily closing price on day t (day $t - 1$) for Ahold ADRs listed on the NYSE; $c1$ and $c2$ are constants; α , β , γ and δ are regression coefficients; and $u1$ and $u2$ are residual terms. In our analysis, $\text{NYSE}(t)$ was regressed on $\text{AMS}(t)$ instead of $\text{AMS}(t - 1)$, since the time difference between New York and Amsterdam is so significant that the NYSE closes 4 or 5 h after the close of trading in Amsterdam.⁶ Causal relations in the Granger sense are inferred through statistical significance of coefficients β and γ . In other words, we estimate the equations to determine whether $\text{NYSE}(t - 1)$ [$\text{AMS}(t)$] provides any significant information about $\text{AMS}(t)$ [$\text{NYSE}(t)$] in the presence of $\text{AMS}(t - 1)$ [$\text{NYSE}(t - 1)$].

The test was conducted for four periods of time. The first period covers the whole time-series for which data on the NYSE prices are available from the end of 1993 to 22 March 2004. The division of this period into three subperiods is based on the earlier findings establishing 25 February 1997 and 21 February 2003 as major cut-off points in Ahold's stock market history. The values of the coefficients and their statistical significance are presented in Table 2. In addition, Table 2 reports the values of F -test

5 Based on closing monthly prices, in 2003 Ahold was the single most volatile stock in EuroStoxx 50, and had the worst shareholder return of all companies included in the index. Between 1997 and 2003 Ahold lost more market value than all but a few European companies (Fernandez and Villanueva, 2004).

6 We could model the hour or two of overlap between markets, using intra-day data (compare Hupperets and Menkveld, 2002). While it may add insight about the intra-day sensitivity of the trading process, the point we are making here is entirely (market) functional: in the first instance, having to do with the relationship between the two markets, and in the second instance, having to do with the order or temporal and spatial sequencing of daily stock price information across markets.

Table 2. Granger test results

Period	Alpha	P-value	Beta	P-value	Gamma	P-value	Delta	P-value	F-test statistic	
									AMS	NYSE
12/31/93–03/22/04~I'–III	0.91	0.00	0.08	0.00	0.36	0.00	0.75	0.00	14.2	3826.0
12/31/93–02/24/97~I'	0.95	0.00	0.04	0.03	0.71	0.00	0.35	0.00	5.0	279.9
02/25/97–02/21/03II	0.75	0.00	0.21	0.00	0.14	0.00	1.02	0.00	22.4	6321.5
02/22/03–03/22/04III	1.02	0.00	–0.05	0.30	0.56	0.52	0.48	0.00	1.1	200.8

Note: ~I' means that this period of time corresponds approximately with period I' in Table 1.

Source: Authors' calculations based on CSFB data.

statistics for both the AMS and NYSE regressions. For the whole period of the analysis as well as for each of the subperiods, $AMS(t)$ provides highly significant information about $NYSE(t)$. In contrast, the contribution of $NYSE(t - 1)$ to explaining $AMS(t)$, though statistically significant, is much smaller in terms of magnitude between 1993 and February 2003, and after February 2003 it disappears altogether.

Before interpretation, we should compare our results with the findings of previous research. Investigating Italian companies traded over the 1980s on the SEAQ-International in London, Pagano and Röell (1991) found that the London market used prices from Milan to set their quotes. Grammig et al. (2005) investigated 3 months of intra-day prices of US-listed German stocks in 1999 to find Frankfurt Stock Exchange's XETRA prices dominated NYSE prices, even though the latter explained almost 18% and 10% of total variation of XETRA SAP and DaimlerChrysler prices, respectively. However, there is research showing that the home stock exchange does not always dominate price discovery. Hedvall et al. (1997) found that for Nokia the NYSE played the dominant price-discovery role, at the same time accounting for a large proportion of Nokia's stock trading volume. Eun and Sabherwal (2003) found for Canadian stock listed in the United States significant price discovery takes place in the United States. In addition, they suggest a positive relationship between the fraction of total trading that takes place in the United States and the contribution of the US market to price discovery.

In contrast, our results underscore the significance of Ahold's 'home base' in the stock market price formation of a cross-listed company reinforcing the results of Halling et al. (2004) on the 'gravitational pull' of home markets expressed through their notion of 'flow-back'. In addition, it was shown that in crisis Amsterdam dominated New York as traders went back to Amsterdam so as to minimize the space-time information 'gap'. The period when Amsterdam totally dominated New York in terms of price discovery was the period following on from the public recognition of Ahold's corporate governance scandal. It was also the period when the volatility of Ahold's share price reached its peak.

In terms of the volume of trading, Citibank (2004) showed that Ahold trade on the NYSE represented only several percentage of trading in Amsterdam. Notwithstanding the relative thinness of the NYSE trading in Ahold ADRs, Broekstra et al. (2004) reported that Ahold's annual sales in the United States passed annual sales in The Netherlands for the first time in 1996. The consolidated financial statements of Ahold reveal that between 1999 and 2003 the share of the US market in company

net sales increased from 65 to 70% while the share of the Europe market fell from 30 to 25% (Ahold, 2004). In the light of the high and growing level of 'Americanization' of Ahold's sales operations, it is striking to see the negligible role of the NYSE in price discovery and its disappearance at the moment of crisis.

7. Corporate governance at Ahold

Using proprietary data provided by Deminor, we also analysed Ahold's corporate governance compared with other European retail companies. Table 3 represents Ahold's corporate governance ratings, broken down into four building blocks: shareholders' rights and duties, take-over defences, disclosure, and board structure and functioning (for details see the Appendix section). Ahold's scores are set against the median scores of Dutch, continental European retail companies, all continental European and all European companies. Each of the first three groups is a relevant subset of the universe of European companies rated by Deminor, while the last group represents all companies included in Deminor ratings. The table presents the state and structure of corporate governance in 2004, 2003 and 2000.

The results of Table 3 show Ahold's corporate governance in 2000 and 2003 in an unfavourable light. Ahold's scores were below Dutch standards, despite the fact that the latter were low compared with the European benchmark and at best mediocre compared with a continental European benchmark. In addition, Ahold's scores were low in comparison with continental European retail companies. The overall corporate governance rating of Ahold did improve between 2000 and 2003. However, progress was considerably below the typical improvement experienced in European and particularly Dutch companies. After the scandal, between 2003 and 2004, measures of corporate governance at Ahold improved dramatically. Within 1 year, the rating for board

Table 3. Deminor ratings for Ahold compared with median ratings of FTSE Eurotop 300 firms

Year	Firms	N	Total rating	Shareholders' rights and duties	Take-over defences	Disclosure	Board structure and functioning
2004	Ahold	1	21.3	4.3	1.0	8.2	7.8
	Dutch	21	22.6	5.5	3.8	8.1	6.6
	Continental retail	7	21.0	6.6	1.0	6.5	6.7
	All Continental	209	19.9	6.5	1.0	6.7	5.2
	All European	296	22.4	7.0	2.7	7.2	5.8
2003	Ahold	1	15.0	3.7	1.0	6.4	3.9
	Dutch	19	17.6	5.2	1.0	6.7	5.0
	Continental retail	7	17.2	6.1	0.0	6.4	5.1
	All Continental	194	18.3	6.2	1.0	6.3	4.6
	All European	283	21.1	6.5	2.0	6.9	5.6
2000	Ahold	1	12.7	3.9	1.0	4.7	3.1
	Dutch	21	12.8	3.9	0.0	4.7	3.4
	Continental retail	7	13.2	5.8	0.0	3.8	3.4
	All Continental	179	14.9	6.2	1.0	4.0	3.3
	All European	259	17.9	6.6	2.0	4.7	3.9

Source: Authors' calculations based on the data provided by Deminor.

structure and functioning doubled and the rating for disclosure increased significantly. As a result, in 2004 both of these ratings for Ahold were higher than the median ratings for Dutch or European companies. The ratings for shareholders' rights and duties and for take-over defences are still relatively low, but the overall corporate governance rating of Ahold was now above the median figure for continental retail companies.

In light of Ahold's poor corporate governance score sheet in 2000 and 2003, it is perhaps not surprising that there was a corporate governance scandal at the company. While we would hesitate to suggest that corporate scandals can be predicted using past corporate governance ratings, we would nevertheless suggest that the Ahold case underscores the value and significance of such ratings (compare Larcker et al., 2004). As noted above, Ahold has a relatively dispersed ownership structure. According to Deminor, Ahold's free float increased from 49% in 2000 to 78% in 2003, making Ahold's ownership the most diluted of all continental European retail companies rated by Deminor. Diluted ownership structure does not, of course, necessarily translate into problems of governance or, for that matter, opportunities for take over: there are other issues not related to the ownership structure, but ownership dispersion at Ahold limited the effectiveness of shareholders in disciplining management; in effect, there was no other mechanism for governing the agency problem. Moreover, given the inherent difficulties of organizing Ahold's geographically dispersed shareholders and the weakness of its board, Ahold's management was on its own.

Consider Ahold's poor corporate governance in conjunction with the previous results on the growing volatility of Ahold stock market prices. Recall Clark and Wójcik's (2003) hypothesis on the relationship between corporate governance and stock price volatility. In our view, poor corporate governance and disclosure (in particular) implies a high premium on the circulation of information; where information is held internally, uncertainty among outside investors with respect to the fundamental value of a company implies relatively high stock price volatility. Empirical support for this hypothesis was elicited for Germany and can also be found in research commissioned by Institutional Shareholder Services. Covering over 5000 United States corporations, Brown and Caylor's (2004) study established a negative relationship between the quality of corporate governance and stock price volatility.⁷ The study showed that the aspect of corporate governance most strongly related to volatility was board composition (lack of independent directors, etc.). With a positive relationship between poor corporate governance ratings and stock price volatility, once Ahold's poor governance practices came to light that relationship simply strengthened.

Interpreting the corporate governance scores of Ahold, we need also to consider the significance of cross-listing between Amsterdam and New York. Ahold was the only retail corporation included in the FTSE Eurotop 300 and rated by Deminor that had its ADRs listed on the NYSE. The issue is whether the NYSE listing had any impact on Ahold's corporate governance. As noted above, traders on the NYSE followed Amsterdam prices, particularly after the shock of February 2003. The disadvantages of an overseas and/or foreign trading location in terms of access to quality information is well-documented in the finance literature (e.g. Bacidore and Sofianos, 2002). In our

7 Considering the relationship between corporate governance and stock market volatility it is interesting to mention that Fernandez and Villanueva (2004) show that between 1998 and 2003 the EuroStoxx Index was much more volatile than Dow Jones Industrial Average or the S&P500.

analysis, the potential for geographical information asymmetries between markets was compounded by poor corporate governance. We would suggest that United States traders having information about Ahold provided through the NYSE, but being far from the headquarters and management of a badly governed Ahold, had little objective reason to trust New York market information. And yet they did, seduced perhaps by the fact that US retail sales accounted for the majority of Ahold's revenue. It took the on-set of the 2003 scandal to reveal the full magnitude of corporate governance problems at Ahold, contributing to the lack of trust of institutional investors in the available public information.

There is other evidence to substantiate our claim about the relationship between the location of stock market price information and corporate governance. Hupperets and Menkveld (2002) analysed price discovery in mid-1990s for seven Dutch blue chips cross-listed between the NYSE and Amsterdam. They found the contribution of New York in relation to Amsterdam to be high for Royal Dutch Shell and Unilever, low for KLM, Philips and Aegon, and negligible for KPN and Ahold. Strikingly, if we use 2003 Deminor data and array the above companies in descending order of their overall corporate governance score, their order would be exactly the same. This finding supports our contention about the relationship between price discovery of cross-listed stocks and corporate governance. The poorer a company's corporate governance rating, the more likely that price discovery is based solely on information originating in the home stock market of the company.

8. Implications and conclusions

This paper provides a detailed analysis of the temporal and spatial components of Ahold's stock prices, taking advantage of recent developments in time-series analysis. In doing so, we deployed a framework for analysing inter-market stock price arbitrage using Granger tests of causality to determine the interplay between leading and lagging global stock markets on a 24 h basis. Another contribution of the paper is the use of a proprietary database on corporate governance ratings to measure and assess the responsiveness of one firm to the stock market interests of global investors at home and abroad. Most importantly, in this paper we link the substantive fields of economic geography and finance to interrogate the performance of global stock markets and national systems of corporate governance. We show that the economic geography of stock market information has profound implications for the performance of global stock markets even if the expectations imposed by institutional investors on recalcitrant firms are such that the market for information is becoming more global according to common expectations regarding standards of disclosure and transparency (Hebb, 2006).

For some, globalization carries with it important positive incentive effects driving nation-state regulatory regimes and the behaviour of larger firms towards best-practice. In our analysis, we found that globalization without rigorous capital market scrutiny based upon high standards of disclosure and transparency between markets can lead to the destruction of corporate value. At a time when corporate managers sought to expand Ahold's global reach, institutional investors sought to discount their Ahold holdings while expanding their global portfolios. In combination, stock-price market information became more important than ever before. Relatively poor disclosure practices and a lack of transparency in terms of managers' goals and objectives meant,

however, that market agents could not perform their pricing responsibilities in a manner consistent with the needs of the average shareholder whether located in Europe or in the United States. Consistent with Goldstein and Kavajecz (2004), we showed that as the company became embroiled in crisis over its projected revenue figures market agents retreated to Amsterdam and the gossip networks so important, it appears, when making judgments about the integrity or otherwise of corporate management in conditions of uncertainty.

Our findings are also consistent with those of Stulz (1999, p. 28, 29) who noted 'it is not the case, however, that all effects of globalization necessarily increase the monitoring of management in the short run. The reason for this is that globalization can disrupt existing relationships within a country that led the monitoring of management or large shareholders'. His observations were based upon analysis of the circumstances when Japanese banks relaxed the standards used to assess domestic debt offerings in the face of competition from foreign banks. He suggested 'in the case of Japan, therefore, globalization in the short run reduced the power of banks, but did not replace that power by the power of the market'. See, more generally, Stulz (2005) on the limits of globalization. The Ahold case exposed investors to a series of risks that were not well-appreciated in Anglo-American markets and were discounted by Dutch analysts who neither represented the interests of Anglo-American markets nor, perhaps, had the independence of judgment necessary to be critical of popular corporate officials. Cross-listing on the NYSE did not add to market information; quite the contrary, in New York investors followed Amsterdam prices when circumstances began to spin out of control.

The Ahold case reminds us that whatever the significance of globalization in terms of corporate strategy, the nation-state remains important for setting the terms and conditions of corporate governance. In the European case, where pressures have been brought to bear to discount the power of majority investors, Becht et al. (2004, p. 114) concluded their survey of European corporate governance and control noting 'limiting the power of large investors can also result in greater managerial discretion and scope for abuse'. Here, there are two options. Europe could continue along the path of *de facto* inter-jurisdictional competition, using the United Kingdom and the United States as reference points for incremental reform on the basis of country-specific corporate governance problems. To do so, would be to hope that the lure of global capital markets combined with the power of institutional investors will be sufficient to prompt Europe's largest firms to improve their governance regimes. Alternatively, a pan-European regulatory regime could be established in favour of the interests of national and international portfolio investors. This 'solution' is an issue of political economy that would put in play national regimes of accumulation and the relationships between competing claimants for corporate income such that 'national models' may be jettisoned in favour of the Anglo-American model. This prospect is viewed with alarm in some quarters (witness Dore, 2000).

Finally, the Ahold case could be thought as an instance of what Clark and Hebb (2004) referred to as 'pension fund corporate engagement': an instance where major institutional investors intervened directly with the firm to force-through reform in the interests of prompting better stock market performance. It seems that domestic and EU regulatory agencies came last to the Ahold crisis; while legal proceedings were instituted to assess the liability of Ahold's auditors and the like, the swiftest response to the crisis came from those with the biggest ownership stakes in the firm. Consistent with the

interests of minority global investors, management's 'reforms' sought to improve the capacity of those investors to assess public information about current circumstances and prospects. This is not unlike the impact that institutional investors have had on Royal Dutch Shell and Unilever and the pressures on those companies to improve their internal accountability and external transparency. These types of actions by institutional investors are arguably consistent with their role as 'universal owners' (Hawley and Williams, 2005).

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Appendix 1

Major criteria considered within the Deminor corporate governance rating categories (based on Deminor, 2004)

Shareholders' rights and duties

The major criterion concerns the respect of the one-share one-vote one-dividend principle, the violation of which implies that some shareholders are privileged over others. It is also important whether there are procedures in place to make voting easy for shareholders. Other criteria include shareholders' rights to propose items to be considered at the Annual General Meeting, attendance rates at the Annual General Meetings and whether existing shareholders maintain pre-emptive rights.

Take-over defences

This involves the presence and the strength of devices that could be used to protect the company from a hostile take over. Some of them result from the ownership structure. A majority shareholder for example makes a take over impossible unless it is agreed with them, irrespective of the interests of minority shareholders. Other devices making a take over impossible or unattractive to a hostile-bidder include management or board members making themselves impossible to dismiss (board and management insulation) or dismissible only after a hefty payment (golden parachutes).

Disclosure

This analyses the transparency of a corporation measured by the quantity and quality of non-financial information on its governance structure, including the shareholder structure, the composition and functioning of the board, availability of documents in English, accounting

standards and environmental information. Other criteria include information on executive and board remuneration, stock options, as well as the rotation and fees of auditors.

Board structure and functioning

The major factor refers to the composition of the board. The board should include members who are independent from both the company management and major shareholders. Board members should be experienced and have a diverse background, and the same person should not take the positions of the chairman of the board and the chief executive officer. Board members should meet frequently and their work should be well organized. Other criteria consider the election and the remuneration of the board.