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Corporate Ownership Structure in Austria

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Abstract. This paper aims to add to the knowledge about ownership structure in Austria. It assesses ownership concentration and the relative importance of the investor categories banks, the state, families, and domestic and foreign firms on the basis of a sample of 600 of the largest non-financial corporations. Balance sheet data, internal rates of return calculations and regression estimates show that not only ownership concentration, but also the identity of the large controlling shareholder is relevant to efficient governance of corporations. While foreign control increases profitability, particularly state control is detrimental to shareholder wealth maximization. Likewise, profit margin equation estimates cannot reject the entrenchment hypothesis and/or expropriation of minority shareholders.

Key words: Corporate governance, ownership structure

JEL codes: G32, L2

I. Introduction

Many countries have recognized in recent years that mergers, corporate governance, and the quality of management decisions about company investments in capital equipment, research and development are essential for understanding slow growth, lagging productivity, and loss of markets to foreign competition. One explanation for the deficient macroeconomic performance of countries (or regions) focuses on omnipresent principal agent conflicts that arise between shareholders (principals) and managers (agents).

Different corporate control mechanisms designed to mitigate this agency conflict are in use. Edwards and Fisher (1994) distinguish between "bank-based" systems of finance for investment and "market-based" systems. Whereas market-based systems are characterized by well-functioning financial markets, the large scale presence of public corporations with dispersed share ownership, and active markets for corporate control (e.g. takeovers), in bank-based systems centralized ownership of corporations, group membership (e.g. holding companies), cross shareholdings between firms, state and family ownership, and corporate shareholdings

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of financial institutions, such as banks and insurance companies, is the rule. While market-based systems predominantly rely on external control mechanisms (e.g. takeovers and monitoring by an efficient stock exchange), control in bank-based systems is more often exerted by internal control mechanisms (e.g. board of directors and monitoring by large shareholders). Market-based systems predominate in the Anglo-Saxon countries, the United States, the United Kingdom, Canada, and Australia. Bank-based systems are prevalent in continental Europe (Germany, Austria, France, Italy, etc.), and Japan.

One key to understanding the consequences of different corporate governance mechanisms is the ownership structure of the firm. There is a considerable amount of literature about the causes and consequences of ownership structure, particularly about ownership concentration in the US, the UK, and Japan (Herman, 1981; Roe, 1994; Charkham, 1994; Demsetz and Lehn, 1985; Prowse, 1992, among others). However, there is a gap in systematic evidence for continental Europe, especially for Austria. Only recently have researchers begun to fill this gap (e.g. European Corporate Governance Network, ECGN; Charkham, 1994). Most of the studies carried out so far have focused on the analysis of ownership concentration and its effects on corporate performance.[1] The basic Berle and Means (1932) proposition that dispersed shareholders are weak compared to managers, and in conjunction the Jensen and Meckling (1976) agency costs associated with the dispersion of equity claims come to mind.

The contributions of this paper are twofold: First, it aims to add to the knowledge about ownership structure in Austria and its consequences, and it compares this structure to other countries whenever possible. Second, it stresses that the identities of owners are important to understanding firm decision processes, particularly in a European corporate governance environment.

The paper is organized as follows: Section II describes the data samples and sources. Section III explores the ownership structure of a sample of the 600 largest Austrian corporations. Equity ownership is attributed to the most important investor categories in Austrian corporate governance (state, bank, family, domestic and foreign firm ownership). Three dimensions of corporate ownership/control are distinguished, namely direct ownership, ultimate ownership, and ultimate effective control. Ownership concentration is compared to other countries. Section IV breaks down a subsample of 214 firms, for which detailed balance sheet data are available, according to investor classes and compares descriptive statistics across investor categories. The interlinkages between these ownership categories are explored more deeply. The phenomenon of pyramiding, which is omnipresent in firm-group organizations, is analysed with the use of firm level statistics. The voting rights to cash flow rights ratio (Franks and Mayer, 1997) is one measure of the extent of the separation of ownership and control. Pyramiding is one means to extend control with relatively less capital investment. Section V calculates internal rates of return for another subsample of 94 firms. Results are compared across identities of owners. Section VI estimates a profit equation. The influence of ownership concentration

and categories of owners is assessed. Section VII concludes and draws some policy implications.

II. Data Samples

Three samples will be used in this study, each with a different set of variables.

1. THE LARGEST 600 NON-FINANCIAL CORPORATIONS (SAMPLE 1)

Data about the 600 largest non-financial companies in Austria (measured by turnover) are provided by the Wirtschafts-Trend-Zeitschriftenverlagsgesellschaft m.b.H[2] and are based on information collected by a credit-rating agency, the Österreichischer Kreditschutzverband von 1870. The corporations themselves also provided data. Ownership and pyramid data are available for the year 1996. About 25% of the Austrian workforce was employed by a corporation in this sample. The aggregate turnover of these corporations accounts for about 30% of GDP.

2. A SUBSAMPLE OF 214 FIRMS (SAMPLE 2)

In addition to ownership and pyramiding data, Sample 2 contains detailed balance sheet data for the years 1991 to 1995. The raw data were provided by the Compass Verlag and the "Arbeiterkammer Österreich". Data shortcomings and the elimination of holding companies left me with 214 firms for the five year period 1991 to 1995.

3. A SUBSAMPLE OF 94 FIRMS (SAMPLE 3)

Sample 3 contains balance sheet data about 94 firms for the 20 year period between 1975 to 1994. It consists of 78 AG's and 16 GmbH's. As the identity of these firms is not known to me, I could not gather percentage ownership data. Nevertheless, the "AK Österreich" assigned dummy variables for ultimate control to the categories state, bank, private domestic, and foreign control. The time series for this sample are long enough to calculate the internal rates of return according to the Shinnar et al. (1989) methodology.

III. Corporate Ownership Structure in Austria

1. OWNERSHIP CATEGORIES

To account for the specific structure of corporate governance in Austria, sample 1 identifies different "categories" of owners/investors: bank (BA), non-bank domestic firm (NB), foreign firm (FF), state (ST), individual or family (IN), and public (PU), i.e. dispersed, ownership. In addition, control in conjunction with the structure of ownership is measured in three different ways: 1. by direct ownership, 2. by

ultimate ownership, where ultimate owners of firms owned by other domestic firms are traced back (or better "up" the pyramid) to the owner at the top of the pyramid; and 3. by the largest ultimate shareholder, where a dummy of one is assigned to the largest shareholding class among BA, FF, ST and IN. Franks and Mayer (1997) conjecture that control lies with the ownership category that constitutes ultimate control (that is on the "top" of the pyramid). Therefore, by remaining "stuck" with direct ownership one could mismeasure the actual extent of control of the respective investor class.

Table I shows the direct and ultimate ownership and the largest ultimate shareholders broken down by investor categories and eight size classes as measured by total sales. The most important shareholders in Austria are domestic and foreign firms holding together nearly 64% of total equity directly. This underlines the importance of pyramiding as a means of extending control in the Austrian corporate governance structure.

At first sight, banks and the state play only a minor role in influencing corporations through direct ownership claims. However, several factors increase the importance of the state and the (mostly state controlled) banks. First, the state more than doubles its shareholdings via indirect equity ownership (from 5.2% to 11.7%). Second, the state and the banks are the largest ultimate shareholders in more than one fifth of the 600 largest corporations. Effective control should be attributed to the shareholder who has ultimately the largest voting stake in a company. Third, and as a mirror picture to the second factor, banks in particular are very active stakeholders in listed firms (see Table II) where dispersed shareholdings are the largest. This enables them to effectively control a company with a comparatively lower equity stake. Presumably, proxy votes also contribute voting power in general meetings. Together, the state and the banks ultimately control 23 of the 62 listed corporations in the sample (35.6%). Finally, state and bank holdings are concentrated in the largest size classes. More than half of the largest 30 companies are under state or bank control. In view of the large skewness of the size distribution (see Table III), state and/or bank control is one distinguishing feature of Austrian corporate governance. Nearly 40% of the employees and 33.9% of the total sales of the 600 largest non-financial companies in Austria are under either state or bank control (see Figure 1).[3] Families and/or individuals hold 22.6% of the stakes directly, and 38.6% ultimately, and are the largest shareholders in 43.2% of the firms. In 1995, 35% of the employees in the sample were governed by families or individuals. Foreign firms are very prominent shareholders in Austria: They hold 30.3% of the shares directly, and 33.9% ultimately, and are the ultimate controllers in 213 out of the 600 largest firms (35.6%). While they command 33.5% of total sales, foreign firms employ only 26.1% of the employees.

How does this ownership structure compare to other countries? Table IV gives an overview of ownership structures in selected countries. Although time periods, samples, categories of investors, and even definitions of common stock vary

Table I. Six hundred of largest Austrian corporations: Direct ownership, ultimate ownership, and the largest ultimate shareholder by investors and size classes.

Size class	Banks			Domestic firms			Foreign firms			State			Family			Public		
	D[a]	U[b]	L[c]	D	U	L	D	U	L	D	U	L	D	U	L	D	U	L
95–100%	3.4	6.5	16.7	29.6	0.0	0.0	31.6	35.3	33.3	13.4	26.8	40.0	7.2	7.4	10.0	14.8	21.5	0.0
90–95%	8.9	9.6	10.0	32.6	0.0	0.0	32.3	29.7	30.0	8.4	18.1	23.3	8.4	19.1	36.7	9.4	23.6	0.0
75–90%	3.5	7.8	10.0	44.2	0.0	0.0	27.5	34.2	34.4	6.0	13.7	18.9	16.0	34.2	36.7	3.0	10.0	0.0
50–75%	4.5	5.9	6.1	35.1	0.0	0.0	26.7	29.1	31.8	7.4	12.8	14.2	23.1	44.3	48.0	3.3	7.6	0.0
25–50%	4.8	5.9	6.0	30.3	0.0	0.0	35.8	39.0	41.3	2.3	8.8	10.7	22.2	35.8	42.0	4.7	10.4	0.0
10–25%	2.8	3.5	2.2	29.8	0.0	0.0	29.0	35.0	37.4	1.8	4.7	7.7	32.9	48.3	52.7	3.7	7.4	0.0
5–10%	1.6	2.5	3.3	42.1	0.0	0.0	27.1	31.1	30.0	6.7	19.0	23.3	21.3	40.4	43.3	1.2	7.1	0.0
0–5%	0.3	0.3	0.0	20.0	0.0	0.0	33.6	34.6	36.7	3.3	6.7	6.7	41.6	57.2	56.7	1.2	1.2	0.0
All Firms (600)	4.0	5.6	6.3	33.6	0.0	0.0	30.3	33.9	35.6	5.2	11.7	14.9	22.6	38.6	43.2	4.3	9.8	0.0

[a] Direct ownership (percent of equity).
[b] Ultimate ownership (percent of equity).
[c] Largest ultimate shareholder (percent of firms).
Source: Trend Verlag, own calculations.

Table II. Austrian stock exchange: direct ownership, ultimate ownership, and the largest ultimate shareholder by investors and size classes.

Size class	Banks			Domestic firms			Foreign firms			State			Family			Public		
	D[a]	U[b]	L[c]	D	U	L	D	U	L	D	U	L	D	U	L	D	U	L
75–100%	11.3	12.7	25.0	24.3	0.0	0.0	5.5	5.5	0.0	9.6	21.2	43.8	9.6	15.5	31.3	39.8	45.2	0.0
50–75%	16.7	21.4	33.3	31.1	0.0	0.0	24.9	15.2	13.3	3.5	8.9	13.3	2.3	24.0	40.0	21.5	30.5	0.0
25–50%	2.7	2.7	0.0	24.8	0.0	0.0	21.8	21.1	33.3	0.0	0.0	0.0	11.2	38.3	66.7	39.5	37.9	0.0
0–25%	14.6	16.5	25.0	23.8	0.0	0.0	17.2	19.6	31.3	0.0	0.0	0.0	11.9	31.3	43.7	32.6	32.6	0.0
All Firms (62)	11.4	13.3	21.0	25.9	0.0	0.0	17.1	15.3	19.4	3.3	7.6	14.6	8.9	27.2	41.7	33.4	36.6	0.0

[a] Direct ownership (percent of equity).
[b] Ultimate ownership (percent of equity).
[c] Largest ultimate shareholder (percent of firms).
Source: Gugler, Kalss, Stomper and Zechner (1997).

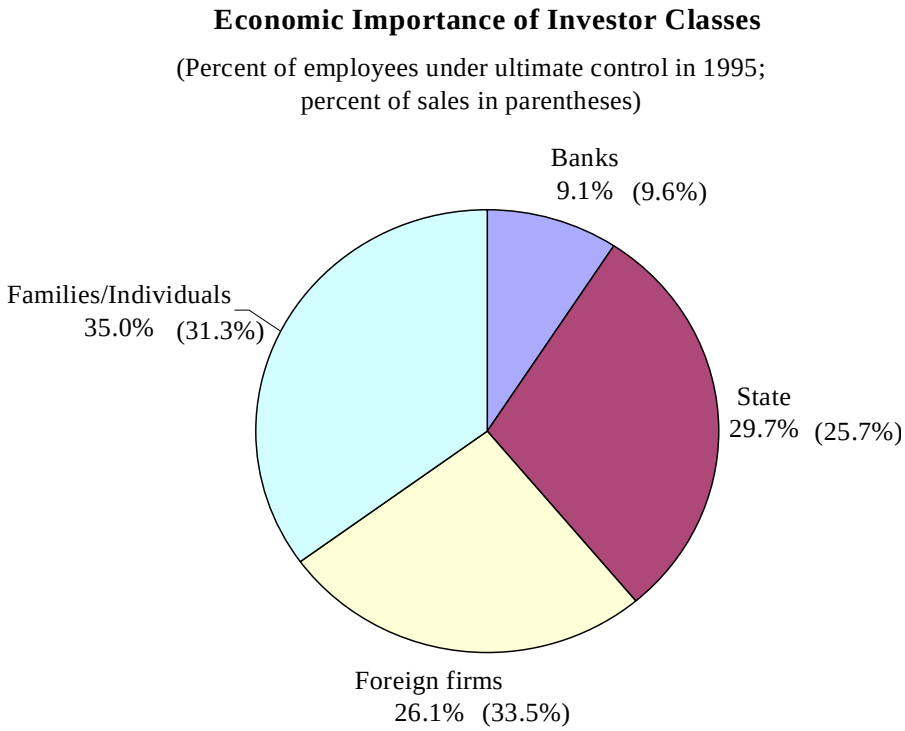

Figure 1. Economic importance of investor classes, sample 1. Data basis: Trend-Verlag, own calculations.

Table III. Size distribution: Sales and employees, Sample 1.

Size class by sales	Number of firms	Sales (in Mill. ATS)		Employees	
		Mean	Median	Mean	Median
95–100%	30	23,650	19,091	9,592	6,690
90–95%	30	9,329	9,080	2,700	2,483
75–90%	91	5,191	4,788	1,889	1,768
50–75%	149	2,584	2,481	972	823
25 - 50%	149	1,472	1,431	665	550
10–25%	91	1,020	1,018	404	378
5–10%	30	873	873	462	455
0–5%	30	812	814	375	293
All	600	3,678	1,911	1,396	662

Source: Trend-Verlag, own calculations.

across countries, some tentative conclusions concerning the importance of different investor categories can be drawn.

First, there are striking similarities in "bank-based" systems of corporate governance concerning the ownership structure of firms. In Austria, France, Germany, Italy, and Japan, the importance of families or individuals is roughly equal. On average, this category owns 20 to 25% of the equity directly. (For Italy, the 48% in the category "Families/Households/Individuals" also includes the category "Pension, Mutual Funds, Dispersed".) In contrast, in the "market-based" system of finance in the US, families own 54.4% of the shares. At the same time, dispersed holdings are of much greater significance in market-based systems of governance: while dispersed holdings are below 10% in bank-based systems, this percentage rises to around 40% in market-based systems.

A second distinguishing feature between these two systems is the relatively greater importance of the corporate sector as large and controlling shareholders in bank-based systems. If one includes not only "Non-financial business" but also the financial and foreign categories in the corporate sector, around 70% of the shares are directly owned by other corporations.[4] This compares to (a nevertheless significant) 41% in the UK and 41.9% in the US (Prowse, 1992).

A third feature common to "bank-based" systems is the relatively greater importance of banks in the governance of companies as (also) measured by equity holdings. Particularly in Japan bank holdings are significant. At first sight, banks are minor shareholders in the other countries with equity holdings between 0.2% (Italy, however see footnote b in Table IV) and 8.1% (Germany). However, as outlined above, banks are more likely to be stakeholders in larger companies so that unweighted shareholdings underestimate the economic importance of banks as controlling institutions. Likewise, banks exert influence over non-financial corporations via other means than equity holdings (proxy votes, representation on the supervisory board, supply of external finance in the form of credit). Striking is the importance of "Other Financial companies" (mainly insurance companies) particularly in UK, but also in US corporate governance. It seems that insurance companies substitute for missing bank holdings in these countries.

In addition to the broad differences between "bank"- and "market"-based systems of corporate governance, there are country specific features. As outlined above, the state is a dominant player in Austrian corporate governance. This is also the case in France, Germany, and Italy. State holdings are of minor significance in Japan and the UK, and are absent in the US. Foreign holdings are particularly large in Austria, but also of significance in Germany.

2. Ownership concentration

Direct ownership concentration is very high and prevalent in all size classes in Austria (see Table V). Even in the largest 5% of the companies the largest shareholder holds 67% of the equity on average. This percentage rises (though not

Table IV. International comparison of ownership structure: Selected countries (ultimate ownership for Austria in parentheses).

	Families households individuals	Non-financial business	Banks	Other financial	State	Foreign	Pension, mutual funds +dispersed
Austria (1996)[a]	22.6 (38.6)	33.6 (0.0)	4.0 (5.6)	–	5.2 (11.7)	30.3 (33.9)	4.3 (9.8)
France (1989)	23.9	50.5	3.5	2.6	4.3	12.8	2.5
Germany (1988)	19.4	39.3	8.1	2.7	7.1	20.0	3.4
Italy (1992)	48.0	36.9	0.2[b]	–	4.6	8.1	–
Japan (1990)	23.1	25.2	25.2	17.3	0.6	4.2	4.5
UK (1989)	20.0	8.0	–	20.0	3.0	9.0	40.0
USA (1990)	54.4	n.a.[c]	0.5	5.5	–	6.4	33.2

[a] For comparison to the US data ultimate ownership is the relevant criterion.
[b] This is likely to be an underestimate. Bianchi et al. (1997) report 9.5% for banks for a 1996 sample.
[c] Prowse (1992) reports 37.7% for "all corporations" and 4.2% under the heading "foreign" for the US in 1984.
Note: Definition of common stock: USA and UK: total market values of the securities quoted on the Stock Exchange. Germany, Italy and Austria: total par values of the securities of listed and unlisted companies. France: total market values of the securities of listed and unlisted companies. Japan: total par values of the securities quoted on the Stock Exchange.
Source: USA: Federal Reserve Board (Flow of Funds Accounts 1990). UK: Confederation of British Industry estimates. France: Banque de France (Bulletin trimestriel 1990). Germany: Deutsche Bank (Monthly Report 1989). Japan: All stock exchanges. See also Charkham (1994). Italy: Bianchi et al. (1997). Austria: Gugler, Kalss, Stomper and Zechner (1997).

monotonically) as companies become smaller, and the average largest stake in the 600 largest Austrian non-financial corporations is 82.2% (median 99.9%!). In 297 companies, the largest stake is 100%; only 97 have more than 3 direct owners. Even for listed firms (Table VI), ownership concentration remains very high: the largest shareholder owns on average 52.4% (median 53%).

By international standards, within the countries depicted, Austria is the European country with the largest ownership concentration (Table VII). Two caveats with respect to sample selection must be mentioned: To the extent that smaller firms have higher ownership concentration, larger samples mean higher ownership concentration (see France, the US and Italy in Table VII). Likewise, the larger the ratio of unlisted to listed companies in the sample, the larger is ownership concentration. Nevertheless, keeping these limitations for comparisons across countries in mind, the following conclusions seem warranted. As with Austria, concentrated equity holdings are also the primary means of controlling managers in France, Germany, Italy, and Belgium. In these countries the largest shareholder holds on average around 60% of the equity. When one includes only listed firms, this percentage drops to slightly lower 57.9% in France and 48% in Italy (see Bianchi et al., 1997; and Bloch and Kremp, 1997). In contrast, ownership concentration in the UK, the Netherlands, the US, and Japan is substantially lower, and the average equity holdings of the largest shareholder drops to around 20%. Contrary to popular belief, however, ownership concentration remains surprisingly high in the US with the largest shareholder controlling an average 22.8% of the votes. In the light of this evidence obtained from a large sample (Becht, 1997, includes 6559 listed companies) one has to question the notion that the largest part of shareholders are passive monitors in market-based systems as they have insufficient incentive and/or ability for proper monitoring.[5]

The high ownership concentration in continental European countries implies that the separation of ownership and control is not the biggest problem for the efficient governance of companies, except perhaps for the largest companies with widely dispersed equity claims. However, direct ownership holdings are likely to underestimate the extent of the effective separation. Pyramiding can extend control at a relatively low cost. Effective separation also differs across investor categories (see Section IV). Likewise, conflicts of interest can arise between majority (or even super-majority) shareholders and minority owners. Entrenchment of the former, opportunistic asset diversion and rent expropriation are not excludable (see Section VI).

Table V. Six hundred of largest Austrian corporations: Ownership concentration by company size and ownership stake size class.

Size classes by sales		Ownership distribution			
Class	Companies	Largest stake	2nd Stake	3rd Stake	Rest
95–100%	30	67.0	10.6	2.9	19.5
90–95%	30	84.1	4.1	1,0	10.8
75–90%	91	80.1	10.7	2.4	6.8
50–75%	149	83.4	9.8	1.3	5.5
25–50%	149	83.5	9.3	1.4	5.7
10–25%	91	83.9	9.2	2.1	4.8
5–10%	30	86.9	8.1	2.0	3.0
0–5%	30	78.3	11.6	3.9	6.2
All	600	82.2	9.5	1.9	6.5

Source: Trend Verlag, own calculations.

Table VI. Austrian stock exchange: Ownership concentration by company size and ownership stake size class.

Size classes by sales		Ownership distribution			
Class	Companies	Largest stake	2nd Stake	3rd Stake	Rest
75–100%	16	48.3	8.2	1.9	41.6
50–75%	15	59.6	15.5	3.1	21.8
25–50%	15	48.6	9.4	2.5	39.5
0–25%	16	53.3	9.6	3.9	33.2
All	62	52.4	10.6	2.9	34.1

Source: Trend Verlag, own calculations.

IV. Ownership Structure, Pyramiding and Some Descriptive Statistics

1. Ownership structure and pyramiding

With the use of sample 2, Tables VIII and IX go deeper into the analysis of ownership structure and pyramiding in Austria. The 214 firms in this sample are broken down according to whether or not a specific investor category has an ultimate ownership stake in the firm. This allows one a deeper look at the ownership structure of the firm and the interlinkages between investor categories. Descriptions of pyramid structures give first hints as to the extent of the separation of ownership and control across investor categories.

According to Franks and Mayer (1997), the voting rights to cash flow rights ratio (VRCFR) is a measure of the violation of one share one vote. Therefore, it

Table VII. International comparison of ownership concentration: Selected countries.

	Largest stake	2nd stake	3rd stake	Rest
Austria (1996)	82.2	9.5	1.9	6.5
France (1996)	66.2	17.8	4.8	2.2
Germany (1996)	55.9	17.6	11.1	15.4
Italy (1994)	61.1	22.5	9.2	7.2
Belgium (1992)	57.8	–	–	–
Netherlands (1995)	27.6	8.2	3.5	60.7
Japan (1984)	33.1[a]	–	–	–
USA (1992–1997)	22.8	11.3	8.0	57.9
UK (1983–1985)	15.9	36.9[a]	48.9[b]	–

[a] Five largest owners.
[b] Ten largest owners.
Source: Austria: Gugler, Kalss, Stomper and Zechner (1997): 600 largest listed and unlisted non-financial companies. UK: Leech and Leahy (1991): 470 listed companies. France: Bloch and Kremp (1997): 282,322 companies. Germany: Becht and Böhmer (1997): 402 listed companies. Netherlands: de Jong et al. (1997): 151 listed companies. Italy: Bianchi et al. (1997): 4173 listed and unlisted manufacturing firms $>$ 10 employees Belgium: Renneboog (1997): 156 listed companies. USA: Becht (1997): 6559 listed companies. Japan: Prowse (1992): 734 listed non-financial companies.

can be interpreted as a proxy for the potential of acquiring control at a relatively lower cost than with 100 percent ownership of the firm. It is calculated by taking the percentage of ownership of the largest ultimate shareholder through an unbroken chain of majority holdings as his voting rights divided by his cash flow rights. However, while pyramiding may allow the ultimate shareholder to exercise control at a low cost, it seems reasonable to expect dilution of control as the pyramid becomes larger, e.g., due to an increase in the costs of monitoring as the hierarchy expands. According to this line of reasoning, the greater the overall number of layers in the pyramid ("Pyramid-layers" in Table IX), and the "lower" the firm in the hierarchy ("Pyramid-position"), the more dilution of control the ultimate shareholder must bear for each percentage of ownership stake in this firm. Several features are worth mentioning:

Banks extend their control at a relatively low cost: ultimate mean bank holdings are only 46.7% in firms where they have a stake which is smallest across investor categories. With this amount of equity, they effectively control 77.5% of these firms. Accordingly, the average voting rights to cash flow rights ratio (VRCFR) and the average number of layers of the pyramids are highest for bank controlled firms (1.72 and 5.0, respectively). The percentage of bank-firms listed is double

the whole sample (35% versus 18.2%). Interesting are the interlinkages between ownership categories: if a bank ultimately holds a stake in a company, 41.1% are directly held by another Austrian company and 18.2% by a foreign firm. Subsequently, the NB-category is held by banks and/or is in dispersed ownership. One fifth of those firms where a bank has an ultimate stake are effectively controlled by a foreign firm. (In 20% of the firms where a bank has an ultimate stake, foreign firms are the largest ultimate shareholders across investor classes.)[6]

In contrast, Austrian firms owned by foreign firms are predominantly directly held. They do not have long pyramids (average number of layers: 3.6). Retaining control in a cost saving manner does not seem to be the primary motive behind pyramiding in foreign controlled firms, but rather geographic and functional divisionalization. The low degree of separation of ownership and control is also confirmed by the very high stake of the largest shareholder (mean 82.6%) and the low VRCFR-ratio of 1.18.

Cost of control issues are also not dominant with state pyramids (average number of layers of pyramids 4.2; average VRCFR-ratio 1.26). As with former bank-controlled firms, some former state firms were privatized by selling them off to foreign firms and retaining a minority stake.

Families extend their control mainly via holding companies. The average voting rights to cash flow rights is the second lowest (1.23), and family pyramids are shortest (average of 3.3 layers). Principal agent problems due to control dilution are likely to be minor in family controlled pyramids.

Forty percent of firms where another domestic non-financial firm has a stake are ultimately held by individuals, 24% by the state, 21% by banks, and 15% by foreign firms.

2. BALANCE SHEET DATA

Table X contains key balance sheet data about the 214 Austrian firms of sample 2 broken down by investor classes (largest ultimate shareholders). State-owned firms are largest as witnessed by all proxies for size (sales, nominal equity, total assets). Family firms are smallest. Sales growth for state firms is largest (both mean and median). Growth for foreign firms and family firms follow, while sales growth for bank firms is slowest in the nineties.

Depreciation as a ratio of the book value of capital stock is very uniform across ownership categories (18 to 23%) except for the median value of state-owned firms (13%). This might be due to the fact that many state-owned firms operate in industries where depreciation of capital is slow (more than half of the state firms are in the electric power and steel industries). Investment in physical capital is highest for bank- and foreign-owned firms, only state firms invest considerably less. Foreign-owned firms spend much more on research and development as a percentage of sales (RD-intensity) than other firms, and particularly more than state-owned firms. Compared to an overall mean of 1.7%, this intensity is 2.6% for foreign-controlled

Table VIII. Ownership structure by investor classes (in percent).

	All Firms (214)					
	BA	NB	FF	ST	IN	PU
Direct ownership	5.2	37.2	32.8	8.7	8.9	7.4
Ultimate ownership	8.7	–	35.6	17.6	24.6	13.3
Largest ultimate shareholder	14.5	–	37.4	21.0	27.1	–
Ultimate ownership > 0 of a bank (40)						
Direct ownership	27.7	41.1	18.2	0.0	3.3	9.9
Ultimate ownership	46.7	–	17.4	5.5	9.0	20.7
Largest ultimate shareholder	77.5	–	20.0	0.0	2.5	–
Ultimate ownership > 0 of a foreign firm (98)						
Direct ownership	3.5	18.4	70.3	1.5	1.8	4.6
Ultimate ownership	5.2	–	77.7	4.6	5.9	6.2
Largest ultimate shareholder	7.1	–	81.6	5.1	6.1	–
Ultimate ownership > 0 of the state (56)						
Direct ownership	0.1	54.3	6.9	33.2	0.8	4.7
Ultimate ownership	2.2	–	11.1	69.0	4.2	12.9
Largest ultimate shareholder	8.9	–	12.5	75.0	3.6	–
Ultimate ownership > 0 of a family (68)						
Direct ownership	3.6	53.3	7.3	0.0	27.9	8.1
Ultimate ownership	6.4	–	7.7	1.6	73.9	9.8
Largest ultimate shareholder	14.7	–	7.4	0.0	77.9	–
Direct ownership > 0 of another domestic non-bank firm (100)						
Direct ownership	2.7	79.6	7.6	1.8	2.6	5.7
Ultimate ownership	10.0	–	14.2	21.7	34.1	19.3
Largest ultimate shareholder	21.0	–	15.0	24.0	40.0	–

firms. The respective values for state firms and family-owned firms are 0.9% and 1.2%. Bank-controlled firms lie in between.

Profitability is highest in foreign-controlled firms (cash flow as a ratio of the book value of equity) and lowest for firms under state control. A profitability enhancing role cannot be assigned to banks, but more so to foreign control. However, bank-influenced firms exihibit a lower volatility of cash flow (as measured by the mean coefficient of variation of CF) particularly vis-à-vis foreign firms. State- and family-owned firms pay considerably less dividends as a ratio of cash flow. The reason state-owned firms pay lower dividends as a percentage of their cash flow could be that many of them are not forced to do so. One reason for family-owned firms might be that it is easier for them to cut back on dividends and invest instead,

Table IX. Ownership concentration and pyramiding

	Ownership concentration			Pyramiding			% listed
	Stake 1 (%)	Stake 2 (%)	Stake 3 (%)	Pyramid-layers	Pyramid-position	VR/CFR	
All	78.5	11.3	1.6	3.7	2.39	1.24	18.2
BA	64.8	20.9	3.6	5.0	2.95	1.72	35.0
FF	82.6	10.6	1.5	3.6	2.53	1.18	16.3
ST	80.0	12.9	1.6	4.2	2.54	1.26	12.5
IN	72.0	15.4	3.0	3.3	2.21	1.23	17.6
NB	74.6	14.8	2.5	4.5	2.86	1.38	17.0

Stake 1, 2, 3: Largest average stake (second, third).
VR/CFR: Voting rights divided by cash flow rights.

which would confirm the relative absence of principal agent problems: owner-managers "know" about good investment projects and are, as a consequence, not reluctant to cut back on dividends to pursue investment projects.

Interesting are summary measures related to the capital structure of firms: Family-controlled firms display the smallest equity to total assets ratio (29%), though have the highest total debt and bank debt to total asset ratios. This confirms the widespread belief that family-owned firms lack owner's equity ("Eigenkapital") and, therefore, have to finance their investment spending by external debt to a larger extent.

(Average) interest payments as a ratio of total (external) debt point to asymmetric information problems for family companies. On average, they pay 5.2% interest on their external debt, whereas bank-owned firms pay 4.4%, state-owned firms 4.0%, and foreign-owned firms 3.7%. Interest premia seem to be related to size, which is probably an inverse proxy for the risk of bancruptcy.

V. Internal Rates of Return

The internal rate of return (ROR) is crucial in assessing investment decisions. Despite the obvious importance of the concept of the rate of return rather few studies have tackled the measurement of RORs. Exceptions in this respect are Baumol, Heim, Malkiel and Quandt (BHMQ, 1970), Shinnar, Dressler, Feng and Avidan (SDFA, 1989), and Mueller and Reardon (1993). The economic rate of return on any investment is the discount rate that equates the present value of its expected net revenue stream to its initial outlay. In this section, internal rates of return are calculated for sample 3 and differences across ownership categories highlighted. The question is: Does it make a difference to the quality of investment decisions (measured ex post) as to whether the firm is bank, state, foreign, or family controlled?

Table X. Summary statistics: Balance sheet data; 214 firms; 1991–1995

Variable	All (214)		Bank firms		Foreign firms		State firms		Family firms	
	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.
Size and growth										
Total Sales (Mill. ATS)	2680	1325	2455	2054	3073	1301	4649	2686	1464	1063
Sales growth (%)	4.0	2.1	1.6	1.3	4.0	1.9	6.1	3.2	5.0	2.1
Nom. Equity (Mill ATS)	272	120	231	140	270	130	562	250	135	100
Total Assets (Mill ATS)	3409	1260	2691	1549	3047	1107	7979	4117	1379	869
Depreciation and investments										
Dep/capital stock (%)	23.0	19.0	23.1	20.2	23.2	20.0	22.0	13.0	22.1	20.4
Inv/capital stock (%)	22.3	19.4	24.1	22.0	25.1	22.0	17.1	12.1	23.5	21.5
Cap. stock/t. assets (%)	37.1	33.2	32.1	30.0	32.2	30.4	49.1	45.0	35.3	33.1
RD intensity (%)	1.7	0.4	1.7	0.7	2.6	1.1	0.9	0.1	1.2	0.4
Profitability and dividend payment										
CF/Equity (%)	29.0	27.1	28.2	25.3	34.1	30.4	22.2	20.1	31.5	31.2
Volatility of CF (%)	32.0	28.1	13.3	28.0	50.1	29.4	25.4	23.3	27.1	29.3
Div/CF (%)	17.0	10.1	17.2	14.1	18.9	12.2	14.5	7.2	15.4	9.2
Capital structure										
Equity/total assets (%)	33.1	31.2	34.0	32.5	33.1	31.2	36.3	33.2	29.1	29.5
Bank/total debt (%)	42.1	45.2	34.1	27.2	33.0	30.2	46.1	51.1	51.2	58.4
Int/total debt (%)	4.4	4.3	4.4	3.9	3.7	3.4	4.0	4.3	5.2	5.0
Total debt/t. assets (%)	46.0	46.1	46.0	46.1	44.0	44.2	43.0	41.2	51.4	52.1
No. Obs.	1070		155		400		225		290	

Table XI. Average real internal RORs 94 Austrian companies; 1985–1994

	Average real internal ROR (in percent)			Number of firms	
	Mean	Median	Std. dev.	<5%	>5%
A	11.0	8.4	12.4	39	55
BA	9.4	5.7	10.6	4	5
IN	7.8	8.4	8.1	8	13
FF	16.2	10.4	14.3	13	33
ST	2.4	−3.7	10.1	14	4

Average real internal rates of return over the 10 year period 1985 to 1994, 94 Austrian corporations, calculated with the SDFA (1989) prodecure.

Sample 3 covers 94 Austrian firms over the 20 year period 1975 to 1994. In this study, the SDFA (1989) procedure is used to calculate internal rates of return. The choice of procedure is based on data availability and theoretical considerations. Because only few Austrian firms are listed on the stock exchange the Mueller and Reardon (1993) procedure, which relies on the capital market's evaluation of the firm, cannot sensibly be used. The comparative advantage of the SDFA vis-à-vis the BHMQ method is that SDFA works with the total cash flow in each period, while BHMQ utilize only the limited information about the increments in profits. For a discussion of the pros and cons of the available procedures see Mueller and Yun (1995). For a short description of the SDFA procedure see the appendix.

Figure 2 displays the distribution of the rates of return of 94 Austrian companies. Perhaps surprisingly, nearly one third of the companies earned negative real returns on their investment during the 1985–1994 period. Most of the firms are located in the 0–20% return classes, and a few corporations earn returns of 20% or more.

Table XI presents RORs broken down by ownership structure (largest ultimate shareholder in 1990). The mean real ROR over the period 1985 to 1994 is 11% (median 8.4%). More than 40% of the firms (39 out of 94) earned marginal rates of returns below 5%. Foreign-controlled firms obtained the highest returns (mean 16.2%), and nearly three quarters of FF-firms (33 out of 46) are high profitability companies (ROR $>$ 5%). Bank and individually controlled firms lie in between. With a median ROR of 5.7, and 4 out of 9 bank-controlled companies earning RORs below the 5% level, again no profitability enhancing role can be attributed to banks as controlling institutions. State-owned firms display particularly low rates of return on their investments. These had a mean ROR of 2.4%, a median of −3.7% (!), and 14 out of 18 companies earned less than 5% in real terms. This points to the presence of managerial discretion and corporate governance failures in state-controlled firms.

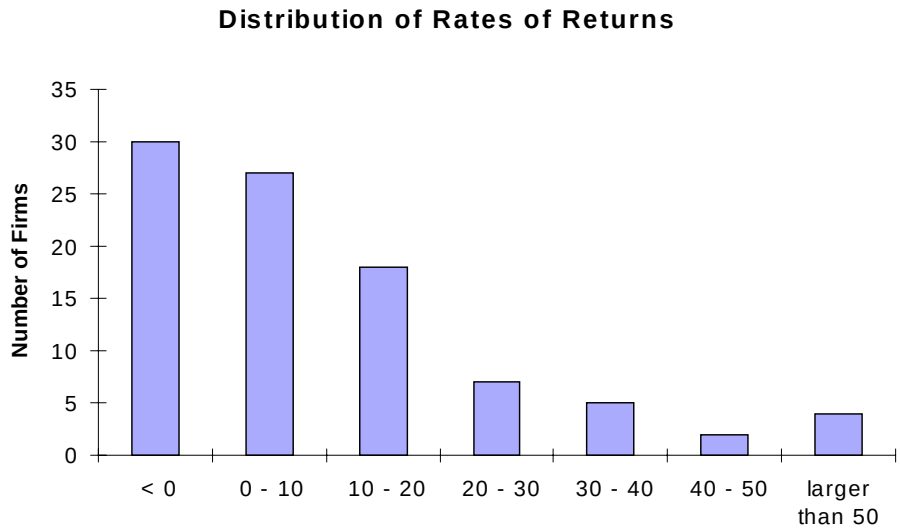

Figure 2. Distribution of rates of return. Average real internal rates of return over the 10 year period 1985 to 1994, 94 Austrian corporations, calculated with the SDFA (1989) procedure.

VI. The Effect of Ownership Structure on the Profit Margin

In this section, OLS regressions[7] are performed to examine the consequences of the structure of ownership. One observable characteristic of the firm explored here is its profitability. If diffuse ownership renders owners of shares powerless to constrain professional management by loosening the link between ownership and control, and if managers use their discretion to pursue interests different from profit maximization, a positive correlation between ownership concentration and profit rates would be expected ("Berle and Means hypothesis"). Likewise, the more concentrated ownership is, the larger the share is of the costs of deviation from value-maximization manager-owners pay. This means this profit rate should rise with ownership concentration (Jensen and Meckling (1976). Contrary to these hypotheses, Demsetz and Lehn (1985) expect no such relationship as the higher costs and lower profits from loosening owner control should be offset by lower capital acquisition costs or other profit enhancing aspects of diffuse ownership if shareholders choose to broaden ownership. Morck, Shleifer and Vishny (1988) provide another rationale why ownership concentration could be detrimental: a large shareholder who is also either running the firm or sits on the supervisory board may have enough voting power to guarantee his employment with the firm at an attractive salary and/or use the firm's assets opportunistically.[8] This "entrenchment hypothesis" predicts that corporate assets can be less valuable when managed by an individual free from checks on his control. In addition to ownership concentration, we examine the relationship between profitability and the identity of the controlling

shareholder. Does it make a difference to the profitability of the firm as to whether it is bank, state, individually or foreign controlled?

Besides these dimensions of corporate governance, several control variables are included in the regressions: industry dummies proxy for differences in profitability across industries; e.g. due to differences in entry barriers and/or competitive environment.[9] The size of the firm is measured by the book value of assets. Investment in capital stock and financial assets, as well as the standard deviation of the profit margin, are also included.

Table XII shows the results.[10] Ownership concentration is significantly negative related to the profit margin. This is contrary to the findings of Demsetz and Lehn (1985) and Prowse (1992) which find no relationship between ownership concentration and profitability. The negative correlation for Austrian firms suggests that ownership concentration is excessive, and that lower capital acquisition costs could be obtained via dispersion of ownership claims. Likewise, the results are consistent with the "entrenchment hypothesis": A very high ownership concentration, while reducing free-rider problems associated with monitoring the firm, may also provide the owner with the incentives and the means to entrench herself and/or to divert assets and profits to herself via other channels than the official earning statements. Relative to foreign controlled firms, control of all three domestic investor classes, banks, the state and families/individuals, reduce the profitability of the firm significantly (and in about equal magnitude). Presumably, better monitoring and/or management teams in foreign controlled firms explain this finding.[11]

VII. Summary and Conclusions

This paper explored the ownership structure of a sample of the 600 largest Austrian non-financial corporations. Ownership concentration is a distinct feature of "bank based" systems of finance, and ownership concentration in Austria is particularly high in comparison to other countries. Accordingly, insufficient incentives and/or abilities of large shareholders to monitor managers should not be of primary concern in Austrian corporate governance. However, pyramiding introduces some separation of ownership and control, especially in bank controlled pyramids, and state controlled pyramids may suffer from insufficient monitoring.

Balance sheet data, internal rates of return calculations and regression estimates show that not only ownership concentration, but also the identity of the large controlling shareholder are relevant to the efficient governance of corporations. While foreign control increases profitability, state control is particularly detrimental to shareholder wealth maximization. Likewise, profit margin equation estimates cannot reject the entrenchment hypothesis and/or expropriation of minority shareholders. From this standpoint, concentration of ownership seems excessive in Austria. Particularly in family controlled firms, high indebtedness, high interest payments and low own equity capital suggest that dispersion of ownership claims (e.g. via equity issues) has the potential of reducing the cost of capital. A more de-

Table XII. Regression results: Profit equation (t-statistics in parentheses)

Dependent variable Independent variables	Profit margin 18 industry dummies
ST1	−0.04 (3.24)***
DBA	−0.046 (4.01)***
DST	−0.031 (2.70)***
DIN	−0.034 (3.98)***
DFF	(reference category)
CAP	0.05 (2.07)**
FCAP	0.19 (3.17)***
ASSET	0.002 (3.31)***
STD	−0.56 (3.85)***
R^2-bar	0.23
DW	1.53
D.F.	1044

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.
Definition of variables: ST1, percentage ownership of the largest (direct) shareholder; DBA, DST, DIN, DFF, dummy with value one if respective ownership class has ultimate control; CAP, FCAP; investment in physical capital respectively financial assets as a ratio of sales; ASSET, total assets in Bill ATS; STD, standard deviation of the profits to sales ratio.

veloped capital market, especially a more developed stock exchange, surely would help in the efficient financing and governing of Austrian corporations.

Appendix: The SDFA Methodology

SDFA (1989) calculate the internal rate of return r for a company from the formula

$$\sum_{j=1}^{n} \frac{B_j}{(1+r)^j} = 1, \tag{A.1}$$

where B_j is the net cash flow (depreciation + net profit) received in year j for each unit invested in year zero and n the project life.[12] Each year's cash flow is decomposed into components attributable to past investments by

$$B_j = f b_j, \tag{A.2}$$

where f is the total capital recovery ratio – the total amount of money recovered for each unit invested – and the sequence of b_j's is the cash flow profile of the investment or a (known) depreciation profile. By allocating the yearly total net cash flows to previous investments, one can compute a yearly f_j as

$$f_j = \frac{B_j}{\sum_{k=j-n}^{j-1} I_k b_{j-k}}, \tag{A.3}$$

where I_j is investment in year j. f_j is simply equal to the net cash flow per unit of capital invested, which is the weighted sum of past investment with weights being some defined depreciation profile b_j. Once f_j is computed for any given year, one can resubstitute into equation (A.1) to obtain

$$\sum_{j=i+1}^{i+n} \frac{f_j b_{j-1}}{(1+r)^{j-1}} = 1, \tag{A.4}$$

to compute the economic rate or return r. In the present study the cash flow profile is assumed constant over the n years ($b_j = 1/n$) and n, the project life, 10 years.[13,14]

With an assumed depreciation rate of 10% one needs 10 years of data to obtain the first yearly f_j's. These are averaged to get a mean capital recovery ratio over the last 10 years of the sample. Net cash flows are deflated by the Consumer Price Index. The resulting single r per firm is interpreted as the average real internal rate of return of the respective firm over the period 1985–1994.

Notes

1. Studies also investigating the effects of investor categories (mostly banks) are Hoshi et al. (1990, 1991), Lichtenberg and Pushner (1992), Prowse (1992) and Elston (1993).
2. The name of the CD-Rom is: trend TOP 500 CD-ROM.
3. The absolute numbers are: 323,732 employees (out of 839,195) and 777,793 Mill. ATS sales (out of 2,296,807).
4. At least in Austria, the preponderance of foreign shareholders are foreign firms.
5. In line with the caveats mentioned, however, ownership dispersion is much larger in the Demsetz and Lehn (1985) sample including 511 large listed US corporations. Here, the five largest shareholders own on average only 24.8% of outstanding common equity compared to 39.8% in the Becht (1997) sample.
6. One could speculate about the interlinkages between bank holdings and foreign firm holdings. Maybe, banks play a crucial role in the transmission of information to foreign companies where targets for takeovers/mergers are concerned. Historically, many corporations which were in former bank control were purchased by foreign firms. Banks subsequently retained a minority stake.
7. Estimation is conducted with the heteroscedasticity consistent covariance matrix estimator (White, 1980).

8. E.g. she could save tax payments and/or prevent profit sharing with other shareholders (minority shareholders) if assets or cash flows are "diverted" to her and "hidden" from official earning statements.
9. Coefficient estimates are nearly identical imposing equal intercept terms across industries.
10. Results are nearly identical if one takes the profit rate (as measured by profits divided by the book value of shareholders' equity) as the independent variable.
11. Better monitoring technologies could result from a more wide spread adoption of the "M-form of organization" (Williamson, 1970) in foreign controlled firms.
12. As stated by SDFA it is generally impossible to identify exactly the cash flow from a specific investment because (1) time periods are too short, (2) the investment still earns cash flows when one observes it, (3) data is only available in aggregate form.
13. SDFA discuss various assumptions about the cash flow profile besides the uniform distribution, e.g. a uniform distribution with a d period lag, a uniform distribution with a step in the middle, etc.
14. That is, it is assumed that the effects of investment on firm profits are dissipated in 10 years.

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