European Financial Management, Vol. 10, No. 3, 2004, 413–438

Effects of Market Segmentation and Bank Concentration on Mutual Fund Expenses and Returns: Evidence from Finland

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Abstract

A tremendous amount of research examines US mutual funds, but fund markets also thrive in other countries. However, research about these fast growing markets is lacking. This study addresses Finnish funds. Fast growth of the Finnish fund industry, strong bank dominance in the industry and recent EU membership make it an interesting market to examine. The Finnish fund market is also of particular interest since it had the fastest growth among the EU countries during 1996–2000. We find evidence that bank-managed and older funds charge higher expenses but investors are not compensated for paying higher expenses with higher risk-adjusted returns, suggesting a potential agency problem. Overall, Finnish fund expenses have decreased over time, consistent with EU membership reducing market segmentation and generating competition.

Keywords: *mutual funds*; *fees*; *returns*; *international*

JEL classification: *G*15, *G*18, *G*20

1. Introduction

Mutual funds are the dominant vehicle individual investors use to participate in US capital markets. With the dramatic growth in fund ownership in the 1990's has come a plethora of research concentrated in the areas of fund returns and fund costs. While

We would like to thank seminar participants at the University of South Carolina, the 2001 Eastern Finance Association meeting, the 2001 European FMA meeting, and a joint seminar of the Swedish School of Economics and Business Administration and the Helsinki School of Economics. Special thanks go to Matti Keloharju, Chuck Kwok, Eva Liljeblom, Ted Moore, Greg Niehaus, Eddie O'Neal, Eric Powers, Vesa Puttonen, an anonymous referee, and John Doukas (the editor), for helpful comments. Earlier versions of this paper were circulated under the title 'An Empirical Analysis of Finnish Mutual Fund Expenses and Returns.' Any remaining errors are the responsibility of the authors. Corresponding author: Timo P. Korkeamaki.

some research focuses on US operated international funds (e.g. see Droms and Walker, 1994; Essayyad and Wu, 1998), research on mutual funds based outside the US is limited, due in part to the recent development of fund markets in other countries.[1] However, these markets represent those with the fastest growth. Over the period 1996–2000, asset growth for funds in the 16 countries tracked by the European Federation of Funds and Investment Societies (FEFSI) averaged 32% compared to 25% in the USA.[2]

The focus of this study is the Finnish mutual fund market. Finland provides an interesting test ground for examining market growth and evolution, expense levels, and returns in foreign markets. Of the 16 countries followed by FEFSI during 1996–2000, Finland's fund market exhibited the fastest cumulative growth at 71%. Additionally, the introduction of the euro at the end of our sample period allows us to draw some inferences about how that change has affected fund expense and return dynamics. Furthermore, while the Finnish mutual fund market has grown the fastest during our sample period, strong growth potential remains. As of year-end 1999, Finnish households held only 4% of their financial assets in mutual funds, while 89% were held in individual bonds and/or stocks (50%) and cash deposits (39%).

In addition to the growth characteristics exhibited in the Finnish market, two other features make it an ideal test market. First, the Finnish market is very new and our sample begins during the market's infancy.[3] This permits an examination of whether a rapidly evolving market is becoming more competitive over time, as we would expect. Second, in contrast to the US market, the Finnish financial market, like other European markets but in contrast to the US market, is bank-dominated. Evidence of this characteristic is that 39% of Finnish financial assets are held in cash deposits. As discussed below, Finnish retail banks also dominate the fund market. At issue is whether such concentration leads to wealth maximising benefits for investors or has potentially adverse competitive effects. While we will not be able to generalise findings for the Finnish market to other markets, addressing these two characteristics provides an initial examination of issues that other European markets do or will face.

As such, the current study addresses three specific issues. First, we examine the cross-sectional determinants of fund expenses focusing on three specific hypotheses related to the Finnish market. Second, we examine the cross-sectional characteristics of Finnish fund returns, again addressing specific hypotheses related to the Finnish fund market. Finally in the process of addressing these two issues, we investigate a third, the out of sample testing of cross-sectional models of fund expenses and returns developed for studies of US funds. Our results demonstrate that while similarities exist between established fund markets and Finland, there are significant differences. When examining expenses, we find that banks charge higher expenses compared to non-bank asset managers, a finding that contrasts with US studies. However, the evidence

[1] Exceptions include Liljeblom and Loflund (1998), Dermine and Roller (1992), and Otten and Bams (2002).

[2] The information on European fund growth is found at the FEFSI's web site (www.fefsi.org) under the document 'The state of European investment funds industry.' The US figure is calculated from data obtained from Morningstar's Mutual Funds OnDisc ™ for year-end 1995 and Principia Pro for year-end 2000.

[3] In fact, the law authorising the creation of mutual funds was passed in 1989 and our sample begins in 1993.

indicates that competition has reduced expenses over time. In further contrast to US studies, Finnish domestic equity and balanced funds have higher expenses than their international counterparts, likely reflecting the higher costs of investing in a less developed market. Furthermore, older funds charge higher fees, which contrasts with US studies that find a 'learning curve effect'. When examining returns, we find that bank-managed and older funds do not compensate for higher fees with higher returns. Finally, we find no evidence of market segmentation with regard to fund returns. In fact, Finnish registered balanced funds have lower risk-adjusted returns than foreign-registered balanced funds.

The rest of the paper is organised as follows. We define research goals and specific hypotheses in Section 2. We describe the data and briefly discuss the Finnish mutual fund industry in Section 3. In Section 4, we analyse the cross-sectional determinants of Finnish fund expenses, while cross-sectional determinants of fund returns are covered in Section 5. We provide concluding remarks in Section 6.

2. Research goals and hypothesis development

In this paper, we expand the mutual fund literature in three ways. First, we examine the cross-sectional determinants of fund expenses. While some work examines the cross sectional determinants of returns in European markets (e.g. Liljeblom and Loflund, 1998), we are aware of no published work examining the determinants of expenses charged by funds outside the USA. Our contribution in this area is related to three specific hypotheses.

Fund companies face barriers when expanding into foreign markets. For example, regulatory structures and fund distribution methods often differ among countries, possibly leading to partial market segmentation. As an example, foreign fund companies must be partnered with Swiss banks to conduct business in Switzerland. Finnish funds are directly exposed to international competition due to Finland's membership in the European Union (EU). Funds registered and operated in other EU countries can market themselves in Finland while operating under the supervision of home country regulators. If market segmentation exists such that additional costs are passed on to investors, then foreign-registered funds will have higher expenses than Finnish funds. Conversely, if foreign registered funds face few entry barriers, and the funds gain scale and scope economies by registering in another country, then non-Finnish registered funds will have lower expenses.[4] So the null hypothesis regarding fund registry is:

H1: Expense ratios for foreign registered funds do not differ from expense ratios for Finnish registered funds.

The second focal point is on whether retail bank operation of funds has an impact on expenses. Retail banks introduced the first Finnish funds in 1987 and maintain a strong industry position. There are conflicting predictions as to the impact of bank ownership on expenses. One view is that banks charge higher expenses because customers do other business with the bank, and those customers are more interested

[4] Dahlquist *et al.* (2000) discusses the tax benefits of being registered in Luxembourg, where many of the foreign funds in our sample are registered. These tax benefits would also allow such funds to charge lower fees.

in convenience than price. Alternatively, banks may gain scope economies from other bank functions allowing them to charge lower expenses and be more price competitive. In US studies, Koppenhaver (2000) finds that bank managed money market funds have lower expenses than money market funds offered by other types of firms, and Frye (2001) provides similar evidence for some fixed income fund categories. Lesseig *et al.* (2001) find that banks offering equity and fixed income funds charge lower fees. Based on the competing views, the null hypothesis is:

H2: Bank owned fund expense ratios are the same as expense ratios for funds operated by other types of firms.

The final area of emphasis with regard to expenses is to examine whether the Finnish fund market has become more competitive over time. If so, we should see expenses decline over our sample period after controlling for other factors. We exploit the panel nature of our data and the fact that the early portion of the sample represents the industry's infancy to examine this issue. The formal null hypothesis is:

H3: Fund expense ratios do not differ across sample years.

Differences in expense ratios and thus rejection of any of our expense-related hypotheses above may be justified by funds with high expense ratios providing higher returns. Therefore, our second objective is to examine the cross-sectional determinants of risk-adjusted returns. Examples of work for US funds include Ippolito (1989) and Dellva and Olson (1998). Similarly, Liljeblom and Loflund (1998) and Otten and Bams (2002) analyse European fund markets, including Finland. Our study extends this work by examining two issues, namely market segmentation and the effect of bank fund sponsorship on fund returns. We first re-examine market segmentation by comparing the returns of Finnish and foreign registered funds. Given the opening of borders associated with EU membership, the Finnish market is moving toward full integration, if not already there. If markets are fully integrated, we expect no difference in returns between Finnish and foreign registered funds. However, if managers of Finnish registered funds gain informational advantages over foreign registered funds, Finnish funds may generate higher risk-adjusted returns.

Two studies shed light on the issue. Shukla and van Inwegen (1995) examine whether funds sold in the UK investing solely in US equities have returns comparable to domestic equity funds sold and managed in the USA. They find that UK funds under perform US funds. However, our study has distinct differences from Shukla and van Inwegen. First, US investors could not purchase UK funds, while Finnish investors can purchase foreign registered funds. Warther (1995) and others demonstrate that fund flows impact fund performance. So to the extent that fund share demand differs across markets, fund flows are altered and returns may vary. Second, even though foreign registered funds are managed outside of Finland, the managers do not face the time and geographic dispersion problems identified in Shukla and van Inwegen (1995), which they suggest leads to greater information asymmetry.

Furthermore, Grinblatt and Keloharju (2001) demonstrate that Finnish investors are more likely to invest in local stocks, stocks of firms where the primary language spoken is that of the investor, and stocks of firms whose senior management comes from a similar cultural background as investors. Their findings have implications for Finnish fund management. Specifically, the reverse of the Grinblatt and Keloharju

results could be true. Finnish corporate managers may be more forthcoming with information to Finnish fund managers relative to foreign fund managers. If so, there will be partial segmentation. Based on the discussion, the null hypothesis is:

H4: There is no difference in risk-adjusted returns for funds registered in Finland when compared to foreign registered funds.

Given the central role banks have in the Finnish economy as a whole and the mutual fund market in particular, it is possible for banks to gain preferential access to executives that lead to informational advantages over competitors and therefore to higher risk-adjusted returns. Lesseig *et al.* (2001) conduct a similar analysis for US based funds and finds little support for this view. As such, the null hypothesis is:

H5: Bank funds have similar risk-adjusted returns when compared to non-bank funds.

Finally, by addressing our primary objectives of studying expenses and returns of the Finnish mutual fund market, we also achieve a third objective of conducting out of sample tests of models developed for studies of US funds. Doing so allows for comparisons across markets and can lead to future extensions of the models themselves.

3. Data source and the Finnish mutual fund industry

Data source

The data source for the study is *Rahastoraportti*; a monthly periodical published by Helsinki Exchanges Ltd, which provides monthly data on a fund's net asset value, returns over various horizons, expense ratios, and fund size, similar to commercial data providers in the USA. Due to the Finnish mutual fund market's short history, the sample is relatively small, particularly for early years. However, the fact that *Rahastoraportti* tracks the entire universe of Finnish funds virtually eliminates survivorship bias in our sample. Any funds that exit the sample during the 1993–2000 period are included in the analysis until their exit.[5]

Finnish fund market

As of year-end 2000, the Finnish fund market consisted of 150 funds with total market value of approximately $15.5 billion.[6] In contrast, Morningstar reported approximately 11,795 US funds at year-end 2000, with total assets of roughly $4.4 trillion. While the earliest Finnish funds invested predominantly in equities, at the end of 2000, 56% of Finnish fund assets were in equity funds compared to 77% in the USA. However, funds investing in domestic equities represent 59% of US assets but only

[5] See Brown *et al.* (1992) for a more complete discussion of survivorship bias in US mutual fund studies.

[6] During our sample period, 5FIM equalled approximately one dollar. However, after 1998, fund size was quoted in the data source in euros. For 1999 and 2000, we first converted euros to the markka at the fixed rate of 5.94573.

12% in Finland. Given the apparent reluctance of Finnish investors to invest in the domestic equity markets, investment cash flows likely gravitate to alternatives. Finnish international funds comprise 43% of Finnish assets compared to 11% in the USA.[7] Additionally, 21% of Finnish assets are in fixed income funds, even after their delayed introduction, compared to 17% in the USA. Finally, balanced funds (funds with both equity and fixed income securities) represent 23% of Finnish assets compared to six% of US assets.

4. Analysis of fund operating expenses

The empirical specification

Our attention turns to the determinants of Finnish fund operational expenses. To examine Finnish mutual fund costs, we follow the literature that begins with Ferris and Chance (1987).[8] These studies examine the fund characteristics that explain the level of fund expenses using an Ordinary Least Squares (OLS) model. Operational expenses compensate fund operators for providing administrative services and active management of assets and represent the ongoing 'price' for investors. Services include accounting, statement processing, and regulatory filing among others. The management fee compensates managers for investing expertise. Funds collect fees on an ongoing basis, and they are calculated as a percentage of fund assets. Consistent with prior literature, we use the expense ratio ($EXPENSE_{it}$) as the dependent variable defined as the annual percentage expense ratio charged by fund i in year t.

The analytical focus is to test Hypotheses 1 through 3. To examine Hypothesis 1 regarding Finnish fund market segmentation, we define *FINLAND* as an indicator variable, equal to one if the fund is registered in Finland and zero otherwise. Under the null, the coefficient estimate will not differ from zero. To test Hypothesis 2, *BANKFUND* identifies funds operated by retail banks and is equal to one if the fund is operated by a retail bank, and zero otherwise. Results from US studies (e.g. Koppenhaver, 2000) indicate that bank funds charge lower expenses than non-bank funds, consistent with banks extending gains from scope economies to investors. However, Finnish banks play a more central role in the fund market. Banks control 45% of Finnish fund assets compared to 6% by banks in the USA. To the extent that Finnish banks have monopoly power, expenses for bank-managed funds may be higher than those for non-bank funds. Finally to test Hypothesis 3, we include *YEAR*, which takes on the values 93–100 for the years 1993 through 2000 in the sample. If the market is growing more competitive, there will be an inverse relationship between *YEAR* and fund expenses.

In addition to the variables of interest, we include control variables from prior studies. While Hypotheses 1 through 3 are the focus, this work is the first to our knowledge examining the determinants of fund expenses for a market outside of the USA. US studies show that expenses differ among fund types, with equity funds having higher expenses (e.g. Malhotra and McLeod, 1997). To control for these differences,

[7] The asset percentage for international Finnish funds may be upwardly biased since the funds are marketed in multiple countries; therefore, the assets do not represent only Finnish investors. US data is from Morningstar's Principia Plus $^{-TM}$ as of year-end 1998.

[8] More recent examples include Tufano and Sevick (1997), Dellva and Olson (1998), and Lesseig *et al*. (2000).

we define OBJ_i as an indicator variable identifying one of the nine investment objectives describing the fund's investment policies.[9]

Prior studies demonstrate that larger funds achieve economies of scale, which are passed on to investors as lower expenses (e.g. McLeod and Malhotra, 1994). As such, *FUNDSIZE* is included and measured as the natural logarithm of fund assets. Recent studies also include a measure of fund family size to reflect scope economies achieved by sharing resources across funds in one family. *FAMSIZE* controls for the effect and is measured as the natural logarithm of fund company assets under management. Beginning with Ferris and Chance (1987), studies include a variable to account for learning curve effects. As with prior studies, the variable *AGE* is measured as the natural logarithm of fund age in years since inception.[10] In the extant literature, each variable generally exhibits an inverse relationship with fund expenses (e.g. McLeod and Malhotra, 1994; Lesseig *et al*., 2002).

Recent research includes a variable to capture management ability. If management capitalises on good past performance by charging higher expenses, funds performing well in the previous year will have higher expenses than funds with lower lagged returns. As such, we include *LAGRET*, measured as a fund's previous year return. US studies present mixed results for the variable. Tufano and Sevick (1997) and Smythe (1999) find no relationship between prior year returns and expenses. However, Lesseig *et al*. (2002) find that higher lagged returns are associated with higher management fees for US funds.

Studies of US funds include variables identifying different fee structures. Early studies only differentiated between funds with a load and those that were no-load. As funds alter distribution methods, later work includes variables identifying specific fee structures. For this study, *INSTL* is an indicator variable signifying the fund is for institutional clients. *FELI*, *REDI*, and *BOTHFEE* are indicator variables identifying funds with only a front-end load, only a redemption fee, or having both a front-end load and redemption fee.[11] The omitted category represents funds that are targeted for retail investors and do not have a front-end load or redemption fee.

Institutional funds are expected to have lower expenses as large investors receive price reductions in exchange for larger investments and the fact that there are alternative investments for these investors not available to retail investors. Recent US studies (e.g. Tufano and Sevick, 1997) find support for this view. Hypotheses regarding how other fee structures influence expenses provide conflicting predictions (see

[9] The objectives included are short-term bond funds (omitted class), intermediate-term bond funds (*INTBOND*), long-term bond funds (*LONGBOND*), balanced funds (*BALANCED*), domestic equity funds (*EQUITY*), derivative funds (*DERIVATIVE*), international bond funds (*INTLBOND*), international balanced funds (*INTLBAL*), and international equity funds (*INTLEQUITY*).

[10] It should be noted that *AGE* and *YEAR* are not the same variables. First, funds that began prior to the beginning of our sample will be older than implied by the *YEAR* variable. Second, *AGE* is measured non-linearly while *YEAR* is a linear measure. To the extent that the two variables are correlated (collinear), the coefficient estimates would be degraded. However, collinearity diagnostics did not indicate a problem (see note 13).

[11] Unlike in the US where funds are classified as being for institutional investors, we define Finnish institutional funds based on minimum investment amounts. A fund is defined as institutional if the minimum initial investment is greater than FIM500,000. Several cutoff levels were used and the results were qualitatively similar.

Ferris and Chance, 1987). Malhotra and McLeod (1997) find that US funds with a sales charge, whether a front-end load or redemption fee, have higher expenses. In contrast, Dellva and Olson (1998) find that front-end load funds have lower expenses while funds with redemption fees have higher expenses. Prior studies of US funds do not explicitly control for whether a fund has both a front-end load and a redemption fee.

The complete specification for examining the impact of fund characteristics on operational expenses takes the following form:

$$\begin{aligned} EXPENSE_{it} = {} & \alpha + \beta_1 FINLAND_{it} + \beta_2 BANKFUND_{it} + \beta_3 YEAR \\ & + \sum_{i=4}^{12} \beta i(OBJ_{it}) + \beta_{13} FUNDSIZE_{it} + \beta_{14} FAMSIZE_{it} + \beta_{15} AGE_{it} \\ & + \beta_{16} LAGRET_{it} + \beta_{17} INSTL_{it} + \beta_{18} FELI_{it} \beta_{19} REDI_{it} \\ & + \beta_{20} BOTHFEE_{it} + \varepsilon. \end{aligned} \tag{1}$$

We combine sample years because each sample year is small, but doing so may lead to correlation among the regressors and error terms when using OLS since funds appear in the sample up to eight times. To address this concern, we estimate equation (1) using both OLS and a random effects model. We choose random effects over fixed effects for two reasons. First, while we have almost the entire population of funds in our sample at the outset, we drop observations due to data restrictions. Kennedy (1993) indicates random effects is more appropriate when the sample is not the entire population, but he also suggests using a Hausman test to determine between fixed and random effects. Under the null of no correlation between regressors and error terms, random effects is preferred. In all situations, we reject the null of the Hausman test (see Table 2), and as such, random effects is the preferred technique.[12]

Empirical results

Summary statistics for the full sample and as of year-end 2000 are in Table 1. For the full sample, average fund expenses are 1.44%, average size is FIM400 million, and average age is 5.63 years. Sixty-eight per cent of funds are of Finnish registry, and retail banks operate 45% of funds. The most common fee structure is one with a front-end load and redemption fee (56%) (*BOTHFEE*). The biggest differences between the full sample and year-end 2000 are with regard to expenses, size, and the percentage of Finnish registered funds. Year-end 2000 expenses are lower, which may reflect more competition or more low cost fixed income funds.

The results from estimating equation (1) are presented in Table 2. With regard to market segmentation, we cannot reject Hypothesis 1. The coefficient estimate for *FINLAND* is not statistically significant, consistent with market integration or that foreign registry leads to benefits that offset additional costs of segmentation. However, being a bank fund significantly increases expenses by 12 basis points, a finding inconsistent with results in Koppenhaver (2000) and Lesseig *et al.* (2001). Thus, we reject hypothesis two. The result is consistent with the view that banks take advantage of their customers' desire for convenience and exploit their monopoly power. This is a finding worthy of additional inquiry given the dominant role banks play in Finland

[12] We also estimate equation (1) using fixed effects, and the results are qualitatively similar to those presented.

Table 1

Summary statistics for the entire sample of Finnish funds and as of year-end 2000.

	Mean		S.D.		Minimum		Maximum	
Variables	Full sample	2000	Full sample	2000	Full sample	2000	Full sample	2000
Expense	1.436%	1.344%	0.651	0.628	0.200	0.200	3.300	3.300
Size	400.456	518.524	565.293	675.768	7.500	13.081	4269.629	4269.629
Age	5.631	5.800	3.107	3.510	1.417	1.917	16.083	16.083
Front-End Load	0.781	0.811	0.830	0.791	0.000	0.000	3.000	3.000
Redemption Fee	0.823	0.784	0.969	0.602	0.000	0.000	5.000	5.000
1-year lagged return	22.722	47.411	31.734	41.126	−60.900	−42.800	165.900	165.900
FINLAND	0.684	0.771	0.471	0.421	0.000	0.000	1.000	1.000
BANKFUND	0.446	0.443	0.498	0.498	0.000	0.000	1.000	1.000
FELI	0.108	0.107	0.315	0.311	0.000	0.000	1.000	1.000
REDI	0.307	0.262	0.459	0.441	0.000	0.000	1.000	1.000
BOTHFEE	0.558	0.584	0.497	0.495	0.000	0.000	1.000	1.000
Institutional	0.055	0.067	0.229	0.251	0.000	0.000	1.000	1.000
No Fee	0.022	0.040	0.144	0.197	0.000	0.000	1.000	1.000

This table presents summary statistics for the variables used in our *EXPENSE* empirical analysis for the Full Sample and as of year-end 2000. There are 547 observations across all years and 149 observations in 2000 that meet the criteria that the fund be at least one year old and have a lagged one-year return in addition to the other relevant data elements. Expense is the operational expense ratio expressed as a percentage of fund assets. Size is the amount of assets in the fund stated in millions of FIM. Age is the fund age in years. Front-end load is the stated up-front load. Redemption fee is the stated fee to exit a fund. One-year lagged return is each fund's return for the previous year. FINLAND is equal to 1 if the fund is registered in Finland and 0 otherwise. BANKFUND is equal to 1 if the fund is operated by a bank and 0 otherwise. FELI is equal to 1 if the fund only has a front-end load and 0 otherwise. REDI is equal to 1 if the fund only has a redemption fee and 0 otherwise. BOTHFEE is equal to 1 if the fund has a front-end load and a redemption fee and 0 otherwise. Institutional is equal to 1 if the fund is for wealth investors and 0 otherwise. No Fee is equal to 1 if the fund has no fees and is not for institutional investors and 0 otherwise.

Table 2

Estimates of equation (1) using ordinary least squares (OLS) and random effects (RE's).

Dependent Variable: *EXPENSE* No. of Observations: 547 Independent variables	OLS Coeff. Est. (P-value)	RE's Coeff. Est. (P-value)
CONSTANT	5.387 [0.000]***	5.916 [0.000]***
FINLAND	0.030 [0.547]	0.038 [0.473]
BANKFUND	0.120 [0.015]**	0.108 [0.022]**
YEAR	−0.039 [0.003]***	−0.039 [0.002]***
INTBOND	−0.030 [0.818]	−0.116 [0.489]
LONGBOND	−0.103 [0.257]	−0.069 [0.338]
BALANCED	1.041 [0.000]***	1.035 [0.000]***
EQUITY	0.860 [0.000]***	0.897 [0.000]***
DERIVATIVE	1.419 [0.000]***	1.394 [0.000]***
INTLBOND	0.085 [0.393]	0.086 [0.461]
INTLBAL	0.846 [0.000]***	0.904 [0.000]***
INTLEQUITY	0.779 [0.000]***	0.805 [0.000]***
FUNDSIZE	0.029 [0.072]*	0.022 [0.193]
FAMSIZE	−0.081 [0.000]***	−0.080 [0.001]***
AGE	0.159 [0.000]***	0.164 [0.000]***
LAGRET	0.001 [0.058]*	0.001 [0.012]*
INSTL	−0.355 [0.000]***	−0.366 [0.000]***
FELI	0.067 [0.495]	0.082 [0.484]
REDI	−0.011 [0.898]	−0.015 [0.893]
BOTHFEE	0.151 [0.123]	0.152 [0.166]
Adjusted R-square	0.678	0.675
Hausman Test P-value for RE vs. FE		[0.723]

This table presents results for the dependent variable *EXPENSE* using OLS and random effects. *INTBOND*, *LONGBOND*, *BALANCED*, *EQUITY*, *DERIVATIVE*, *INTLBOND*, *INTLBAL*, and *INTLEQUITY* equal 1 if the fund is in the intermediate bond, long-term bond, balanced, domestic equity, derivative, international bond, international balanced, or international equity categories respectively and 0 otherwise. *FUNDSIZE*, *FAMSIZE*, *AGE* are the natural logarithm of fund assets, total fund family assets, and age respectively. *LAGRET* is the fund's previous year return. *INSTL*, *FELI*, and *REDI* equal 1 if the fund is for wealthy investors, has only a *FEL*, or has only a *RED* and 0 otherwise. *BOTHFEE* equals 1 if the fund has a *FEL* and a RED and 0 otherwise. *FINLAND* equals 1 if the fund is registered in Finland and 0 otherwise. BANKFUND equals 1 if the fund is operated by a bank and 0 otherwise. *YEAR* is the two-digit year the fund appears in the sample. Models are estimated using White (1980) standard errors. P-values are in parentheses.

*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

and other European countries, as it raises questions of whether bank-centred fund industries are competitive. Finally, the coefficient estimate for *YEAR* is negative and statistically significant, leading us to reject hypothesis three. The finding indicates that expenses are declining over time, and is consistent with the Finnish market becoming more competitive.

Consistent with prior studies, wide variation in fund expenses exists based on the fund type. When compared to short-term bond funds, domestic (international) balanced, domestic (international) equity, and derivative funds have statistically higher expenses with funds investing in derivative securities (*DERIVATIVE*) having the highest expenses. The results for domestic (*BALANCED*) and international balanced funds (*INTLBAL*), and domestic (*EQUITY*) and international equity funds (*INTLEQUITY*) are of particular interest. For both pairs, international funds have lower expenses than their domestic counterparts likely reflecting the higher costs of investing in less developed Finnish capital markets. Given the ability to gain broader diversification by investing in foreign securities, international funds are formidable competitors to domestic funds based on cost. These findings contrast with studies of US funds, where international funds (only equity) have higher expenses than domestic funds (e.g. Dellva and Olson, 1998; Koch and Smythe, 1999).

Unlike US funds, Finnish funds do not pass on benefits of fund level scale economies as lower expenses. While the result is unexpected, two possible explanations exist. First, Finnish funds may not have reached efficient scale, due to the market's infancy. Second, *FUNDSIZE* and *FAMSIZE* may be collinear, thereby inflating the standard errors.[13] In contrast, funds belonging to larger fund groups have lower expenses, consistent with Tufano and Sevick (1997) and Lesseig *et al.* (2002) and with the idea that larger organisations benefit from scope economies.

The results for the variables *AGE* and *LAGRET* provide further contrast. Most studies find an inverse relationship between age and expenses. Here older funds have higher expenses, even after controlling for whether a bank sponsors the fund, the oldest group of fund providers. However, if older funds have better performance, investors may be paying a premium for superior management, a possibility explored below. The results for lagged returns are consistent with the idea that funds with higher previous year returns have higher expenses.

The results for the fee structure variables demonstrate that having a front-end load, redemption fee, or both has no influence on expenses. However, consistent with Tufano and Sevick (1997), funds designed for institutional investors charge significantly lower expenses.

In summary, the cross-sectional analysis of expenses allows us to reject hypotheses two and three and highlights differences with US fund studies. There is no evidence of market segmentation, but in contrast to US studies, Finnish banks charge higher expenses than other fund operators. Additionally, the Finnish market exhibits evidence of increased competition as expenses are declining over the sample period. Equity and balanced funds have higher expenses than fixed income funds, consistent with US studies. However, domestic equity and balanced funds have higher expenses

[13] Collinearity was examined using the condition indices of Belsley *et al.* (1980). There is some evidence that the statistical power of *FUNDSIZE* and *FAMSIZE* is reduced due to inflated standard errors. We also re-estimated the model by excluding first *FUNDSIZE* and then *FAMSIZE*. The results are qualitatively similar to those presented.

than similar international funds. Finally, older funds have higher expenses, and larger funds do not exhibit scale economies, both in contrast to US studies.

5. Analysis of fund returns

Empirical specification

Attention now turns to examining the cross-sectional determinants of risk-adjusted returns for Finnish funds. The dependent variable *RETURN* is defined as the alpha from a model constructed in the spirit of Fama and French (1993). The focus is to test hypotheses four and five regarding market segmentation and bank influence on fund operations. As with expenses, *FINLAND* is included to assess the possibility that the Finnish market exhibits segmentation (Hypothesis 4). Under the null, the variable should have no explanatory power. To test hypothesis five, *BANKFUND* is included and is defined as before. Under the null, there will be no difference in performance between funds operated by banks and funds operated by other types of firms, i.e. Finnish banks gain no informational advantages over other asset manager types that lead to higher returns. Koppenhaver (2000), Frye (2001) and Lesseig *et al.* (2001) examine whether bank ownership influences returns for US funds and find mixed results. Koppenhaver documents that bank-operated money market funds outperform money market funds from other providers. Frye finds that some categories of bank operated bond funds outperform peers managed by non-banks. In contrast, Lesseig *et al.* (2001) find no evidence of bank funds having superior performance in the equity or fixed income categories. However, each study focuses on the US fund market, where banks have only recently entered the fund market and manage only 6% of assets, compared to 45% in Finland.

The control variables reflect work from previous studies. *MKTBETA* is a measure of systematic risk, but the variable differs by fund type. For each fund type (i.e. equity, fixed income, and balanced), we estimate an OLS model to determine the risk-adjusted dependent variable *RETURN* and the variable *MKTBETA*. Fama and French (1993 and subsequent work) demonstrate that a three-factor model is superior to a one-factor model in explaining stock returns. Carhart (1997) provides similar evidence for a sample of US funds. Finally, Arshanapalli *et al.* (1998) demonstrate that a three-factor model is better at measuring alpha in international markets. As such, we estimate alpha and the market beta using a three (four) factor model for equity (balanced) funds. For fixed income funds, alpha and market beta are estimated from a single index model using the Leonia Bank government bond index as the market benchmark. To be included, funds must have 24 months of returns. The basic model we develop for estimating *RETURN* and *MKTBETA* is:

$$R_{it} - RF_t = \alpha_i + \beta_i(R_{mt} - RF_t) + \beta_{VGi}(R_{Vt} - R_{Gt}) + \beta_{LSi}(R_{Lt} - R_{St}) + \varepsilon, \quad (2)$$

where,
R_{it} = monthly return for fund i in month t;
RF_t = the three month Helibor rate;
R_{mt} = the MSCI World index published by Datastream (R_{et}) when examining equity funds and the government bond index calculated by Leonia Bank (formerly PSP) (R_{fit}) when examining fixed income funds.
R_{Vt} = the monthly Finnish value portfolio returns as reported by Datastream.
R_{Gt} = the monthly Finnish growth portfolio returns as reported by Datastream.

R_{Lt} = the monthly Finnish large cap portfolio returns as reported by Datastream.
R_{St} = the monthly Finnish small cap portfolio returns as reported by Datastream.

Liljeblom and Loflund (1998) and Kasanen *et al.* (2001) also use 3-month Helibor to proxy for the risk-free rate. We choose the MSCI World index as our primary market benchmark for two reasons. First, during our sample period, Nokia represents 60–70% of the Finnish market capitalisation. Even the HEX index, which limits the weight of each individual stock to 10% of the index, has an oversized concentration of Nokia and therefore is not a good representative benchmark for diversified portfolio performance. Second, growing portions of Finnish equity funds are international funds that do not correlate with local market indices. We are unable to construct Fama-French HML and SMB portfolios directly.[14] However, we use the portfolio returns from Datastream specific to Finland for value (R_{Vt}), growth (R_{Gt}), large (R_{Lt}), and small (R_{St}) stocks that allow us to proxy for the HML and SMB factors. To account for the influence of equity and fixed income risks facing balanced funds, we modify equation (2) as follows:

$$R_{it} - RF_t = \alpha_i + \beta_{ei}(R_{et} - RF_t) + \beta_{VGi}(R_{Vt} - R_{Gt}) + \beta_{LSi}(R_{Lt} - R_{St}) + \beta_{fii}(R_{fit} - RF_t) + \varepsilon. \quad (3)$$

When examining bond funds, only the last term in equation (3) is used to estimate excess returns and fund exposure to fixed income risk. Beginning with funds in 1995, we estimate equations (2) and (3) over 24 months and use the estimates of average monthly alpha for *RETURN* and the estimates of beta for *MKTBETA* in the analysis below. This is repeated for 1996 through 2000.

Indicator variables for fund objectives allow for differences in returns across fund types. However, returns are analysed separately for equity, bond, and balanced funds since *RETURN* and *MKTBETA* are calculated using different benchmarks. So, only indicators corresponding to the equity, bond, or balanced groups are included when examining the categories separately.

A fund's expense ratio (*EXPENSE*) for the respective year is included to measure management ability to obtain and exploit information. A positive coefficient estimate would indicate that spending additional resources leads to higher risk-adjusted returns. Research is mixed as to the effect expenses have on returns. Using domestic equity funds, Droms and Walker (1996) and Apap and Griffin (1998) find that returns are positively correlated to higher expenses. In contrast, Dellva and Olson (1998) and Indro *et al.* (1999) find an inverse relationship between expenses and returns. Finally, Liljeblom and Loflund (1998) and Otten and Bams (2002) find an inverse relationship between expenses and returns examining funds in foreign markets.

Fund size (*FUNDSIZE*) is included to capture size effects. Some argue that larger funds lose their ability to outperform peers if size leads to implicit indexing or if funds can no longer take large positions in any one firm because doing so induces adverse price moves. If supported, there will be an inverse relationship between fund size and returns. Studies of US funds generally find no relationship between size and returns.

[14] HML refers to the portfolios constructed by subtracting the returns of low book to market stocks from the returns of high book to market stocks. Similarly, SMB refers to portfolios constructed by subtracting the returns of large stocks from small stocks (see Fama and French (1993) for a more complete description).

In contrast, Liljeblom and Loflund (1998) and Otten and Bams (2002) find a positive and significant relationship between size and returns in their studies of European fund markets.

Ang *et al.* (1999) argue that larger fund families use the same economic data and experts to interpret data across many funds, leading to scope economies and higher returns. We argue that larger fund families have another advantage. If larger investors have more access to company insiders, larger fund families with firm holdings across multiple funds can obtain better information. To capture these advantages, *FAMSIZE* is measured as above. If larger families enjoy these benefits, we will see a direct relationship between family size and returns. A fund's age (*AGE*) controls for long-term past performance. For funds to become old, they are likely to have a record of good past performance. Alternatively, older funds whose past performance has been strong may not exert as much effort and 'coast' based on past success. Otten and Bams (2002) find evidence of the latter effect among European funds.

The final four variables reflect different fee structures. Prior research includes indicator variables for front-end loads and redemption fees, with mixed results.[15] Elton *et al.* (1993) and Apap and Griffin (1998) find no relationship between loads and returns. In contrast Droms and Walker (1994) find an inverse relationship between loads and returns, but they do not distinguish between a front-end load and redemption fee. The analysis below extends this aspect of the literature by segregating Finnish funds into five classes: funds with only a front-end load (*FELI*), funds with only a redemption fee (*REDI*), funds with a front-end load and redemption fee (*BOTHFEE*), funds for institutional investors (*INSTL*), and the omitted class of funds with no load fees. To examine the cross-sectional return characteristics of Finnish funds, we use the following empirical specification:

$$\begin{aligned} RETURN_{it} = {} & \alpha + \beta_1 FINLAND_{it} + \beta_2 BANKFUND_{it} + \sum_{i=3}^{12} \beta_i (OBJ_{it}) \\ & + \beta_{13} EXPENSE_{it} + \beta_{14} FUNDSIZE_{it} + \beta_{15} FAMSIZE_{it} + \beta_{16} AGE_{it} \\ & + \beta_{17} FELI_{it} + \beta_{18} REDI_{it} + \beta_{19} BOTHFEE_{it} + \beta_{20} INSTL_{it} \\ & + \beta_{20} MKTBETA_{it} + \varepsilon. \end{aligned} \tag{4}$$

Empirical results

Before examining multivariate results, univariate comparisons of *RETURN* and *MKTBETA* are presented in Table 3 where the MSCI World index is the market benchmark. When comparing risk-adjusted returns for Finnish versus foreign registered funds in Panel B, Finnish equity and balanced fund returns are higher. In contrast, foreign registered bond funds outperform Finnish bond funds. The results are consistent with a rejection of Hypothesis 4. However, we are reluctant to draw strong conclusions from the results for balanced and bond funds given the small number of foreign registered balanced funds and the marginal significance for bond funds. The univariate results for bank operated versus non-bank funds suggest a rejection of Hypothesis 5 as well. Non-bank equity and balanced funds have significantly higher risk-adjusted returns than their bank peers, while bank bond funds outperform non-bank funds. The results are

[15] Some research such as Dellva and Olson (1998) use the actual load levels, which addresses a question separate from the one being asked here.

Table 3
Univariate Comparison of Fund Alphas (*RETURN*) and Betas (*MKTBETA*).

RETURN = Alpha
Panel A: Full sample

	Alpha		Equity beta		Fixed income beta	
	Mean	STD	Mean	STD	Mean	STD
Equity (n = 269)	0.992	1.265	0.518	0.414	NA	NA
Bond (n = 145)	−0.017	0.106	NA	NA	0.625	0.431
Balanced (n = 76)	0.543	0.933	0.278	0.267	0.513	0.562

Panel B: Segregated by registry

	Alpha			Equity beta			Fixed income beta		
	FINLAND	*FOREIGN*	Diff.	*FINLAND*	*FOREIGN*	Diff.	*FINLAND*	*FOREIGN*	Diff.
Equity (102/167)	1.134	0.759	−0.375**	0.514	0.523	0.0009	NA	NA	NA
Bond (118/27)	−0.031	0.044	0.075*	NA	NA	NA	0.603	0.720	0.117
Balanced (71/5)	0.576	0.071	−0.505**	0.266	0.446	0.180***	0.518	0.441	−0.077

Table 3
Continued.

Panel C: Segregated by firm type

	Alpha			Equity beta			Fixed income beta		
	Bank	Non-bank	Diff.	Bank	Non-bank	Diff.	Bank	Non-bank	Diff.
Equity (117/152)	0.815	1.128	0.313**	0.548	0.494	−0.053	NA	NA	NA
Bond (67/78)	0.015	−0.045	−0.060***	NA	NA	NA	0.653	0.600	−0.053
Balanced (33/43)	0.318	0.716	0.398*	0.313	0.251	−0.062	0.504	0.520	0.017

This table presents abbreviated summary statistics for monthly alphas and market betas segregated by funds that are of Finnish or foreign registry and bank or non-bank operated. The 'Diff.' column represents the foreign (non-bank) minus the Finnish registered (bank) funds. Statistical comparisons are made with a t-statistic adjusted for unequal sample variances when appropriate. The numbers to the right of each fund type represent the number of Finnish (bank) versus foreign (non-bank) observations in the sub-samples. The results represent a comparison of alphas and market betas when estimating a one-factor model for fixed income funds, a three-factor model for equity funds, and a four-factor model (balanced funds as described in equations (2) and (3) in the paper.
*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

particularly striking given that market betas are generally not different between Finnish and foreign registered and bank and non-bank operated funds. Even when there is a statistical difference for balanced fund equity betas, the difference is counter to that expected.

We have one concern with the results in Table 3. The average sample beta for equity funds is only 0.518. While the equity beta for balanced funds may deviate substantially from one based on a manager's allocation between equity and bond asset classes, an average equity fund beta substantially below one raises concerns over model fit. We examine this issue in Table 4.

In Panels A and B, we present the average alpha and beta and the average Adjusted R^2 when estimating equation (2) with the MSCI World index as the market benchmark, but also separately using the HEX index as a proxy for the local market index.[16] We also separate the data both by sample year and also by whether the sample year is before 1999 (pre-euro) or 1999 and after (post-euro). We do this because Finland adopted the euro in January 1999. The results are striking. When the MSCI World index is the market benchmark, two observations stand out. First, the market beta is substantially lower during 1995–1998 but more consistent with expectations during 1999–2000. Consistent with these findings, model Adjusted R^2's are close to zero prior to 1999 but have risen dramatically since.[17] In contrast, there is little change in estimated betas or Adjusted R^2's when HEX is the market benchmark.

Similar results for balanced funds are presented in Panels C and D of Table 4. We place less emphasis on the pre/post euro beta comparisons for balanced funds since the betas for equity and fixed income exposure are affected by how fund managers allocate assets among these asset classes. However, we do feel confident in drawing similar conclusions as above when examining the Adjusted R^2's for the balanced fund return models. Once again, the average statistical fit jumps dramatically. There appears to be a structural break in model effectiveness after 1998 when using the MSCI World index. While further analysis of this issue is beyond the scope of this paper, one possible explanation for the divergence in model results could be that the introduction of the euro has led to less developed markets such as Finland's to become more fully integrated with world markets.

The univariate results indicate that we must proceed cautiously with the multivariate analysis. While the results in Table 3 are interesting, many other factors included in equation (4) are likely to explain returns cross-sectionally. Additionally, the Table 4 analysis indicates that while the MSCI World index is the theoretically appropriate market benchmark for estimating alpha and beta, doing so may unduly bias our cross-sectional results. We address this issue in our robustness tests below.

The initial multivariate results using OLS appear in Table 5 by fund type. We note that none of the results for the equity and balanced categories include funds with any load fees. Because of their late introduction, no funds of this type with sufficient return data exist. So, the omitted fee structure for these sub-samples represents funds with a front-end load and redemption fee (BOTHFEE). The results for equity funds are in column one.

Funds registered in Finland perform better than foreign registered funds, consistent with the univariate results and suggesting potential market segmentation and a

[16] We thank the referee for suggesting we examine this issue.

[17] As a reminder, the average estimated values in 1999 are likely biased downward because 1998 monthly returns are included in the estimation.

Table 4

Univariate comparison of fund alphas (*RETURN*) and betas (*MKTBETA*).

Panel A: *RETURN = Fama-French MSCI Values for Equity Funds*

	Alpha		Equity beta		Adjusted R^2	
	Mean	STD	Mean	STD	Mean	STD
Full sample (n = 269)	0.992	1.265	0.518	0.414	0.305	0.291
Pre-euro (n = 122)	0.822	1.420	0.210	0.329	0.027	0.098
Post-euro (n = 147)	1.133	1.105	0.773	0.284	0.536	0.172
1995 (n = 18)	−0.860	0.271	0.368	0.074	−0.081	0.026
1996 (n = 30)	0.833	0.745	0.222	0.174	−0.001	0.084
1997 (n = 29)	2.502	0.941	−0.283	0.204	0.113	0.104
1998 (n = 45)	0.404	1.179	0.457	0.125	0.033	0.064
1999 (n = 64)	0.605	0.844	0.802	0.257	0.448	0.119
2000 (n = 83)	1.541	1.114	0.750	0.303	0.605	0.175

Panel B: *RETURN = Fama-French Hex Values for Equity Funds*

	Alpha		Equity beta		Adjusted R^2	
	Mean	STD	Mean	STD	Mean	STD
Full sample (n = 269)	0.408	0.879	0.755	0.319	0.662	0.232
Pre-euro (n = 122)	0.373	0.878	0.792	0.222	0.683	0.251
Post-euro (n = 147)	1.133	1.105	0.773	0.284	0.645	0.213
1995 (n = 18)	0.198	0.272	0.844	0.139	0.864	0.090
1996 (n = 30)	0.497	0.682	0.729	0.350	0.578	0.342
1997 (n = 29)	0.115	0.666	0.908	0.161	0.671	0.235
1998 (n = 45)	0.526	1.189	0.738	0.125	0.689	0.195
1999 (n = 64)	0.341	0.778	0.666	0.246	0.701	0.169
2000 (n = 83)	0.511	0.951	0.770	0.453	0.601	0.234

Panel C: *RETURN = RETURN = Fama-French MSCI Values for Balanced Funds*

	Alpha		Equity beta		Fixed income beta		Adjusted R^2	
	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Full sample (n = 76)	0.543	0.933	0.513	0.562	0.278	0.267	0.341	0.293
Pre-euro (n = 39)	0.368	0.958	0.835	0.574	0.107	0.223	0.084	0.103
Post-euro (n = 37)	0.727	0.881	0.174	0.283	0.458	0.175	0.599	0.165
1995 (n = 6)	−0.781	0.516	0.945	0.249	0.213	0.098	0.030	0.076
1996 (n = 9)	0.413	0.659	0.520	0.298	0.073	0.116	0.037	0.084
1997 (n = 11)	1.489	0.736	0.494	0.605	−0.175	0.084	0.179	0.112
1998 (n = 13)	−0.082	0.144	1.290	0.491	0.321	0.096	0.060	0.063
1999 (n = 14)	0.705	0.955	0.081	0.210	0.521	0.122	0.497	0.098
2000 (n = 23)	0.741	0.855	0.230	0.310	0.420	0.194	0.662	0.168

Panel D: *RETURN* = *RETURN* = *Fama-French HEX Values for Balanced Funds*

	Alpha		Equity beta		Fixed income beta		Adjusted R^2	
	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Full sample (n = 76)	0.202	0.581	0.291	0.499	0.524	0.199	0.779	0.136
Pre-euro (n = 39)	0.190	0.394	0.358	0.582	0.565	0.160	0.795	0.123
Post-euro (n = 37)	0.214	0.724	0.221	0.389	0.481	0.227	0.762	0.147
1995 (n = 6)	0.097	0.294	0.084	0.238	0.629	0.181	0.902	0.024
1996 (n = 9)	0.316	0.637	0.128	0.350	0.622	0.168	0.794	0.139
1997 (n = 11)	0.102	0.383	0.098	0.671	0.598	0.180	0.741	0.136
1998 (n = 13)	0.222	0.199	0.864	0.416	0.467	0.078	0.791	0.105
1999 (n = 14)	0.461	0.873	0.479	0.260	0.449	0.120	0.801	0.108
2000 (n = 23)	0.063	0.606	0.064	0.374	0.501	0.274	0.739	0.164

This table presents abbreviated summary statistics for monthly alphas and market betas segregated by sample year and whether the observation is from the period prior to 1999 or 1999 and after. The results in Panels A and B represent alphas and market betas when estimating a three-factor (four-factor) model for equity (balanced) funds using the MSCI World index as the market benchmark. The results in Panels C and D represent alphas and market betas when estimating a three-factor (four-factor) model for equity (balanced) funds using the HEX Finnish index as the market benchmark. In each panel, the last two columns represent the average Adjusted R^2 values from estimating equations (2) and (3) for each fund in the sample during the appropriate time frame.

rejection of Hypothesis 4. The result is economically significant, and indicates that equity funds registered in Finland generate significantly higher risk-adjusted returns, on the order of 50 basis points. This finding is consistent with the logical arguments put forth in Grinblatt and Keloharju (2001). Finnish fund managers may gain preferential access to firm insiders based on cultural and/or linguistic factors that help Finnish managers generate higher returns. The coefficient estimate for *BANK-FUND* indicates that Hypothesis 5 is rejected for equity funds as well. The coefficient estimate is negative and significant, consistent with the univariate results and suggesting that bank managed equity funds have lower returns than funds managed by other types of firms. This finding, combined with the expense results, reflects poorly on Finnish banks. Equity funds managed by banks cost more to own and they perform poorly, even after controlling for higher expenses. These results are particularly disturbing given the large bank presence in the Finnish fund market and suggest that other bank-centred fund markets be closely scrutinised.

Looking at control variables, equity funds with higher systematic risk have lower risk-adjusted returns; a perplexing result that occurs even after controlling for size and value factors in returns. Larger equity funds have higher returns as indicated by the coefficient estimate on *FUNDSIZE*, a finding consistent with Liljeblom and Loflund (1998) and Otten and Bams (2002) but in contrast to US studies. The *AGE* variable is not a significant determinant of returns in contrast to Otten and Bams (2002). However, their empirical specification does not have the broad range of controls employed in this study. When combined with the result that older funds have higher expenses, investors would be wise to bypass older equity funds. Two fee structures significantly influence returns. Equity funds with only a front-end load have marginally lower returns, while funds for institutional (*INSTL*) investors have significantly higher returns. This is an interesting finding, suggesting that large investors benefit from higher equity fund returns even after controlling for lower expenses. One

explanation is that institutional equity fund managers are signaling their expertise to the market. This signal is costly because these investors demand lower prices, are likely to be more sophisticated, and will exit poorly performing funds. This is a new finding unique to the Finnish market.

The bond fund results are in column two of Table 5. Unlike equity funds and in contrast to univariate results, Finnish registered fixed income fund returns are no different from foreign registered funds. In contrast to the equity fund sub-sample but consistent with the univariate results, bank operated fixed income funds have higher returns than funds operated by other asset managers. This finding supports the idea that banks capitalise on their fixed income management expertise and is consistent with results in Koppenhaver (2000) and Frye (2001).

Similar to equity funds, fixed income funds with higher levels of systematic risk have lower returns. The variables identifying different fund categories reveal differences in returns even after accounting for systematic risk factors. Long-term (*LONGBOND*) and international (*INTLBOND*) bond funds have statistically higher returns than short-term bond funds. We offer two explanations. First, fund managers may be more effective at identifying informational asymmetries. Alternatively, the market benchmark may not effectively account for duration and international risks. Nonetheless, given the lack of fixed income market development in Finland, as suggested in Puttonen and Kivisaari (1997), this finding has intuitive appeal.

The coefficient estimate for *EXPENSE* contradicts other studies. Carhart (1997) (US), Liljeblom and Loflund (1998), and Otten and Bams (2002) (European) find an inverse relationship between expenses and returns, whereas the coefficient estimate is not significant in any of our samples. Finally, fee structure is also an important factor in explaining fixed income returns, although differently from equity funds. Funds with only a redemption fee have higher risk-adjusted returns relative to funds with a front-end load and redemption fee.

The results for balanced funds are presented in column three of Table 5. In contrast to the univariate results for balanced funds, Finnish balanced funds under perform foreign registered balanced funds when controlling for other factors, although the coefficient estimate is not statistically significant. Unlike equity and fixed income funds, we cannot reject Hypothesis 5 for balanced funds. Bank operated balanced funds perform no differently from non-bank funds.

Balanced funds with lower fixed income systematic risk have higher returns. As with equity funds, larger balanced funds have higher returns, consistent with a fund size effect, but funds from larger fund families have lower returns in contrast to expectations. Examining *AGE*, we find further evidence that older funds are poor investment choices. Older balanced funds have a higher cost without producing higher returns. Finally, fee structure also plays a role in explaining balanced fund returns. In contrast to equity funds, being an institutional fund leads to lower balanced fund returns. The result for institutional funds is particularly perplexing and runs counter to our earlier signalling explanation for equity funds.

Robustness tests

Since the data are pooled over six years, and because alpha and beta estimates are calculated each year from overlapping data, there is likely to be correlation among regressors and error terms when using OLS. To mitigate the problem, we re-estimate equation (4) using fixed and random effects. To determine which technique to report,

Table 5

Estimates of equation (4) using OLS for equity, fixed income, and balanced funds separately.

Dependent variable: RETURN Fund type: Independent variables	Equity coeff. est. (P-value)	Fixed income coeff. est. (P-value)	Balanced coeff. est. (P-value)
CONSTANT	−5.766 [0.001]***	−0.214 [0.273]	−0.986 [0.552]
FINLAND	0.502 [0.026]**	−0.034 [0.328]	−0.887 [0.113]
BANKFUND	−0.565 [0.008]***	0.046 [0.083]*	−0.417 [0.196]
EQBETA	−0.527 [0.018]**		0.489 [0.366]
FIBETA		−0.190 [0.041]**	−0.827 [0.000]***
DERIVATIVE	0.188 [0.658]		
INTLEQUITY	−0.065 [0.761]		
INTBOND		0.080 [0.132]	
LONGBOND		0.164 [0.053]*	
INTLBOND		0.235 [0.016]**	
INTLBAL			−0.445 [0.211]
EXPENSE	0.026 [0.903]	−0.015 [0.775]	0.410 [0.178]
FUNDSIZE	0.202 [0.024]**	−0.005 [0.601]	0.408 [0.003]***
FAMSIZE	0.134 [0.179]	0.014 [0.272]	−0.228 [0.036]**
AGE	0.102 [0.495]	0.0004 [0.985]	−0.345 [0.174]
FELI	−0.326 [0.072]*	0.028 [0.414]	0.144 [0.630]
REDI	−0.099 [0.634]	0.042 [0.024]**	−0.079 [0.701]
BOTHFEE		−0.002 [0.926]	
INSTL	0.852 [0.015]**	−0.018 [0.449]	−1.101 [0.068]*
Adjusted R-square	0.094	0.205	0.342
No. of observations	269	145	76

This table presents results for the dependent variable *RETURN* using OLS. *RETURN* is the risk-adjusted alpha from estimating equation (2) for equity and fixed income funds and equation (3) for balanced funds. *DERIVATIVE*, *INTLEQUITY*, *INTBOND*, *LONGBOND*, *INTLBOND*, and *INTLBAL* equal 1 if the fund is in the derivative, international equity, intermediate bond, long-term bond, international bond, or international balanced categories respectively and 0 otherwise. *EXPENSE* is the expense ratio expressed as a percentage of fund assets. *FUNDSIZE*, *FAMSIZE*, *AGE* are the natural logarithm of fund assets, total fund family assets, and age respectively. *BANK-FUND* equals 1 if the fund is operated by a bank and 0 otherwise. *FINLAND* equals 1 if the fund is registered in Finland and 0 otherwise. *FELI*, *REDI*, and *INSTL* equal 1 if the fund has only a *FEL*, has only a *RED*, or is for wealthy investors and 0 otherwise. *EQBETA* is the equity beta estimate from estimating equation (2) (equity) or (3) (balanced) using the MSCI World index. *FIBETA* is the fixed income beta estimate for the fixed income and balanced sub-samples using the Leonia Bank index. Models are estimated using White (1980) standard errors. P-values are in parentheses.
*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

we conduct a Hausman test. Under the null of no correlation between error terms and independent variables, random effects is the appropriate estimation technique.[18] The null is only rejected in the case of balanced funds, so random effects results are presented in Table 6 for the equity and bond sub-samples and fixed effects for the balanced sub-sample.

While there is some consistency with the results in Table 5, there are differences worth noting. In the equity sample, the *BANKFUND*, *FINLAND* and *INSTL* coefficient estimates are no longer statistically significant meaning we are unable to reject Hypotheses 4 or 5 for equity funds when using random effects. Given the panel nature of our sample and the fact that the coefficient estimates for *FINLAND* and *BANKFUND* in the random effects model do not approach statistical significance, we find little support for market segmentation or bank influence in the returns data for equity funds. However, larger fund families have funds with returns that are lower, in contrast to expectations but consistent with balanced fund results. The differences in the fixed income sample are that the coefficient estimates for *BANKFUND* and *REDI* are no longer statistically significant, although the change in the *BANKFUND* coefficient estimate is not as dramatic as is the case for equity funds. This suggests that banks cannot overcome their cost disadvantage to exploit informational advantages and provides additional evidence suggesting that investors should avoid bank funds. Finally, the primary changes between the OLS and random effects models for balanced funds are that the *FIBETA* and *INSTL* variables are no longer statistically significant, but the equity beta is positively related to returns. More importantly, the coefficient estimate for *FINLAND* is now statistically significant, leading to a rejection of Hypothesis 4 but in an unexpected manner. The inverse relationship is inconsistent with a market segmentation argument. Other variables gain or lose some statistical power, but the results are otherwise consistent with those using OLS.

The second issue addressed is based on findings from Table 4 when comparing model parameters using the MSCI World index and the HEX index separately as market benchmarks when estimating equations (2) and (3). While we believe the MSCI World index is the theoretically appropriate benchmark for the three (four) factor model, we cannot ignore the sensitivity of model parameters to the choice of index. More importantly, we recognise the potential impact this may have on the cross-sectional analysis. As such, we re-estimate equation (4) where the variables *RETURN* and *MKTBETA* are the output from estimating equations (2) and (3) using the HEX index as the market benchmark. The results are presented in Table 7.

Equity fund results appear in columns one and two. First, the explanatory power is reduced dramatically relative to the results from Tables 5 and 6. When using alpha and beta estimates where HEX is the market benchmark, the cross-sectional model of returns explains less than three% of return variation. More importantly, the coefficient estimates for *FINLAND* and *BANKFUND* are no longer significant when using OLS, while the random effects results in Table 7 are consistent with those in Table 6. For the balanced fund sub-sample, the major differences also occur when using the OLS estimation technique. *FINLAND* is now significantly negative, consistent with the earlier fixed and current random effects results. Additionally, older funds show a significant inverse relationship to returns. The random effects results for balanced funds are largely consistent with those in Table 6.

[18] See Kennedy (1993 p. 223).

Table 6

Estimates of equation (4) using Random Effects (RE's) or Fixed Effects (FE's).

Dependent variable: RETURN Fund type: Independent variables	RE's Equity coeff. est. (P-value)	RE's Fixed income coeff. est. (P-value)	FE's Balanced coeff. est. (P-value)
CONSTANT	0.957	−0.244	
	[0.534]	[0.266]	
FINLAND	0.076	−0.031	−0.791
	[0.677]	[0.405]	[0.043]**
BANKFUND	−0.062	0.041	−0.092
	[0.694]	[0.164]	[0.759]
EQBETA	0.315		1.669
	[0.196]		[0.095]*
FIBETA		−0.177	−0.381
		[0.001]***	[0.046]**
DERIVATIVE	0.016		
	[0.957]		
INTLEQUITY	−0.392		
	[0.019]**		
INTBOND		0.075	
		[0.150]	
LONGBOND		0.150	
		[0.006]***	
INTLBOND		0.225	
		[0.000]***	
INTLBAL			−0.932
			[0.005]***
EXPENSE	−0.006	−0.015	0.197
	[0.969]	[0.825]	[0.376]
FUNDSIZE	0.196	−0.005	0.314
	[0.001]***	[0.589]	[0.003]***
FAMSIZE	−0.170	0.015	−0.263
	[0.023]**	[0.210]	[0.001]***
AGE	−0.066	0.004	−0.461
	[0.600]	[0.848]	[0.044]**
FELI	−0.411	0.026	−0.090
	[0.061]*	[0.475]	[0.687]
REDI	0.054	0.036	−0.147
	[0.726]	[0.263]	[0.436]
BOTHFEE		−0.005	
		[0.888]	
INSTL	0.593	−0.022	−0.473
	[0.117]	[0.473]	[0.264]
Adjusted R-square	0.450	0.201	0.636
No. of Observations	269	145	76
Hausman Test P-value for RE vs. FE	[0.996]	[0.944]	[0.000]***

This table presents results for *RETURN* using random and fixed effects (RE's). *RETURN* is the alpha from estimating equation (2) for equity and fixed income funds and equation (3) for balanced funds. *DERIVATIVE*, *INTLEQUITY*, *INTBOND*, *LONGBOND*, *INTLBOND*, and *INTLBAL* equal 1 if the fund is in the derivative, international equity, intermediate bond, long-term bond, international bond, or international balanced categories respectively and 0 otherwise. *EXPENSE* is expense ratio. *FUNDSIZE*, *FAMSIZE*, *AGE* are the natural logarithm of fund assets, fund family assets, and age. *BANKFUND* equals 1 if the fund is operated by a bank and 0 otherwise. *FINLAND* equals 1 if the fund is registered in Finland and 0 otherwise. *FELI*, *REDI*, and *INSTL* equal 1 if the fund has only a *FEL*, has only a *RED*, or is for wealthy investors and 0 otherwise. *EQBETA* is the equity beta estimate from estimating equation (2) (equity) or (3) (balanced) using the MSCI index. *FIBETA* is the beta estimate for the fixed income and balanced subsamples using the Leonia Bank index. P-values are in parentheses.

*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

Table 7

Estimates of equation (5) using OLS and Random Effects for equity and balanced funds separately using a three-factor model and the HEX market benchmark.

Dependent variable: RETURN Fund type: Independent variables	OLS Equity coeff. est. (P-value)	RE's Equity coeff. est. (P-value)	OLS Balanced coeff. est. (P-value)	RE's Balanced coeff. est. (P-value)
CONSTANT	−0.614 [0.602]	−0.241 [0.855]	−1.253 [0.421]	−1.051 [0.449]
FINLAND	−0.020 [0.901]	−0.048 [0.766]	−0.879 [0.001]***	−0.834 [0.023]**
BANKFUND	−0.070 [0.673]	−0.044 [0.762]	−0.060 [0.790]	−0.032 [0.884]
EQBETA	−0.127 [0.556]	−0.131 [0.511]	1.045 [0.069]*	1.082 [0.009]***
FIBETA			0.158 [0.394]	0.151 [0.292]
DERIVATIVE	0.032 [0.912]	−0.015 [0.956]		
INTLEQUITY	−0.189 [0.204]	−0.224 [0.166]		
INTLBAL			−0.728 [0.000]***	−0.723 [0.001]***
EXPENSE	0.015 [0.917]	0.0062 [0.856]	0.124 [0.419]	0.107 [0.558]
FUNDSIZE	0.171 [0.023]**	0.180 [0.001]***	0.253 [0.007]***	0.243 [0.001]***
FAMSIZE	−0.083 [0.250]	−0.109 [0.099]*	−0.000 [0.118]	−0.113 [0.144]
AGE	−0.126 [0.232]	−0.139 [0.234]	−0.506 [0.005]***	−0.509 [0.003]***
FELI	−0.308 [0.013]**	−0.303 [0.139]	0.183 [0.224]	0.140 [0.603]
REDI	−0.006 [0.970]	0.033 [0.815]	−0.244 [0.206]	−0.228 [0.160]
INSTL	0.319 [0.191]	0.324 [0.363]	−0.777 [0.005]***	−0.733 [0.187]
Adjusted R-square	0.023	0.026	0.302	0.266
No. of Observations	269	269	76	76
Hausman Test P-value for RE vs. FE		[0.849]		[0.466]

This table presents results for the dependent variable *RETURN* using OLS and random effects (RE's). *RETURN* is the risk-adjusted alpha from estimating equation (5) for equity and balanced funds. *DERIVATIVE*, *INTLEQUITY*, and *INTLBAL* equal 1 if the fund is in the derivative, international equity, or international balanced categories respectively and 0 otherwise. *EXPENSE* is the operational expense ratio expressed as a percentage of fund assets. *FUNDSIZE*, *FAMSIZE*, *AGE* are the natural logarithm of fund assets, total fund family assets, and age respectively. *BANKFUND* equals 1 if the fund is operated by a bank and 0 otherwise. *FINLAND* equals 1 if the fund is registered in Finland and 0 otherwise. *FELI*, *REDI*, and *INSTL* equal 1 if the fund has only a *FEL*, has only a *RED*, or is for wealthy investors and 0 otherwise. *EQBETA* is the equity beta estimate from estimating equation (2) for equity and (3) for balanced funds using a three-factor model and the HEX World index. *FIBETA* is the fixed income beta estimate for the balanced sub-sample using the Leonia Bank index in the four-factor model. Models are estimated using White (1980) standard errors. P-values are in parentheses.

*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

6. Conclusions

This paper focuses on similarities and differences between the US and Finnish mutual fund industries. We conduct an empirical analysis of the cross-sectional determinants of Finnish mutual fund expenses and returns. We specifically test hypotheses regarding market integration, the impact of bank ownership on expenses and returns, and whether the Finnish market has become more competitive. The analysis also provides practical information for Finnish investors on which characteristics are important for choosing funds.

We find that Finnish international equity and balanced funds tend to have lower expenses than their domestic counterparts, indicative of the less developed Finnish markets. More importantly for investors, funds from larger families and funds for institutional investors have lower expenses. However, older funds and funds operated by banks have higher expenses. The examination of returns indicates that Finnish registered equity funds have higher returns but Finnish balanced funds have lower returns. Additionally, there is evidence in the case of equity funds that after controlling for expenses, bank funds have lower risk-adjusted returns. However, these results are extremely sensitive to the market benchmark used to estimate alpha and the empirical estimation technique employed. Additionally, equity and balanced funds that are larger have higher risk-adjusted returns, while these categories have lower returns when the fund belongs to a large fund family.

Finally, our results have public policy implications. Specifically, we find that fund costs are declining over time, indicative of an increasingly competitive market. However, older funds and funds operated by banks have higher expenses that are not offset by superior returns. Investigation of these findings is worth additional study not only in the Finnish market but other bank-centred markets.

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