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PERFORMANCE EVALUATION OF EUROPEAN BOND FUNDS: UNCONDITIONAL VERSUS CONDITIONAL MODELS

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PERFORMANCE EVALUATION OF EUROPEAN BOND FUNDS: UNCONDITIONAL VERSUS CONDITIONAL MODELS

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RESUMO

A avaliação do desempenho de carteiras de investimentos é um dos tópicos mais amplamente debatidos na literatura financeira, constituindo uma temática de interesse, não só para académicos, como também para os práticos (incluindo os investidores individuais). Uma abordagem recente, designada de *Avaliação de Performance Condicional*, tem ganho relevância dada a crescente evidência empírica de que variáveis de informação pública, relacionadas com as condições económicas, representam informação útil na previsão das rendibilidades de activos financeiros. Constituindo padrões de comparação mais robustos, os modelos condicionais podem levar a diferentes conclusões acerca do desempenho dos fundos de investimento. Estudos anteriores, maioritariamente para fundos de acções e fundos de pensões, em relação ao mercado dos EUA, sugerem que medidas de desempenho condicionais conduzem, efectivamente, a conclusões diferentes não só ao nível do desempenho dos fundos mas também ao nível da persistência desse desempenho. A presente pesquisa pretende contribuir para esta área do conhecimento analisando esta questão no importante mercado que é o mercado Europeu de fundos de obrigações.

A escolha das variáveis de informação que serão utilizadas é uma questão importante no contexto dos modelos condicionais. A abordagem típica, usada em estudos anteriores, consiste em assumir, à priori, um conjunto de variáveis sem qualquer análise prévia da sua capacidade de previsão para o mercado em análise. Nesta pesquisa, começamos por fazer essa análise prévia, testando a capacidade de um conjunto de variáveis geralmente consideradas noutros mercados (como *inverse relative wealth*, *term spread*, *real bond yield*, *January dummy*), a fim de prever a rendibilidade de obrigações no contexto do mercado Europeu. Dada a particularidade do período de análise se caracterizar pela convergência para a moeda única, incluímos como variável adicional o *yield spread* em relação a obrigações do mercado alemão. Diferentes maturidades de obrigações foram também consideradas: 1-3, 3-5 e 5 ou mais anos. Os resultados indicam que as variáveis *term spread*, *IRW* e *January dummy* fornecem informação útil para prever a rendibilidade de obrigações de diferentes maturidades.

À luz desta evidência, analisamos o desempenho de uma amostra de fundos de obrigações Europeus considerando modelos não condicionais bem como modelos condicionais. Tanto quanto conhecemos, este é também o primeiro estudo que analisa o impacto da incorporação de variáveis de informação na avaliação da persistência do desempenho para fundos de obrigações. A sensibilidade dos resultados a diferentes benchmarks (single versus multi-index) é também analisada. No que diz respeito ao desempenho dos fundos, os resultados mostram que os fundos de obrigações Europeus não têm sido capazes de obter desempenhos superiores a estratégias passivas. Pelo contrário, os desempenhos têm sido negativos, sendo estatisticamente significativos, para os fundos italianos, espanhóis e do Reino Unido (em particular os fundos classificados como "Gilt" funds). Para os restantes países europeus, a maior parte dos fundos apresentam desempenhos não estatisticamente diferentes de zero (fundos alemães, fundos do Reino Unido classificados como "Corporate" e "Other bond" e fundos franceses). Os resultados são semelhantes qualquer que seja o modelo considerado na avaliação do desempenho (single versus muti-index e não condicionais versus condicionais). O modelo multi-index parece ser um modelo mais adequado, comparativamente com o single-index e acentua a evidência de desempenhos negativos. Quando as variáveis de informação são incorporadas (modelos condicionais) as estimativas da medida de desempenho aumentam ligeiramente, em particular as obtidas no contexto do modelo multi-index. Relativamente à persistência do desempenho, os resultados indicam que em alguns fundos Europeus o fenómeno se verifica. A evidência

empírica é particularmente forte para os fundos espanhóis mas também existe para os fundos alemães e franceses. Os resultados foram idênticos independentemente da metodologia utilizada (cross-section regression ou tabelas de contingências). A evidência de persistência diminui quando consideramos modelos condicionais e multi-index, o que sugere que, pelo menos, parte do fenómeno desaparece quando se consideram medidas de risco que variam ao longo do tempo.

ABSTRACT

Performance evaluation is one of the most highly debated topics in the finance literature, being an area of significant interest not only to academics but also to practitioners (including individual investors). A recent approach, called *Conditional Performance Evaluation,* has been advocated given the increasing empirical evidence that publicly available information related with economic conditions represents useful information in predicting security returns. As a more robust benchmark is assumed, conditional models may lead to different inferences on fund performance. Previous studies, mainly regarding US stock and pension funds, seem to suggest that conditional measures do change inferences on overall performance and also on the persistence of performance, thus challenging previous findings based on unconditional measures. Our research addresses this issue, in a new important and yet unstudied market, the European bond fund market.

An important question that arises in the context of conditional models is the choice of which variables to use as conditioning information. The typical approach used by previous studies involves assuming a standard set of variables, without previously analysing their predictive ability on the respective market. In this research we start by analysing the ability of several predetermined information variables in predicting bond returns in the European market. We test if variables, commonly used for that matter in the context of other markets (such as inverse relative wealth, term spread, real bond yield and a January dummy) are also useful predictors of European bond returns. Due to some particularities of the sample period of analysis, characterised by the EMU convergence, we also contribute by including the yield spread in relation to German bonds. The return predictability across different bond maturities: 1-3, 3-5 and 5 or more years to maturity is also analysed. The results indicate that variables like the term spread, IRW and a January dummy represent useful information in order to predict bond returns for different maturities.

In light of this evidence, the performance of our sample of European bond funds and its consistency is examined using both unconditional and conditional models. To our knowledge, this is the first study which analyses the impact of conditioning information in assessing the persistence phenomenon in relation to bond funds. The sensitivity of performance inferences to single and multiple benchmarks is also analysed. Regarding overall performance, the results show that, in general, bond funds are not able to outperform passive strategies. The negative performance is more evident for bond funds in Italy, Spain, Portugal and also for UK "Gilt" funds. For most German funds and UK "Corporate" and "Other Bond" funds and also for several French funds, we cannot reject the hypothesis of neutral performance. These findings are robust to whatever model (unconditional versus conditional and single versus multi-index) we use. The multi-index model seems to add some explanatory power in relation to the single-index model and it accentuates the evidence of inferior performance. When we incorporate the predetermined information variables, we observe a slight tendency towards better performance, in particular for the multi-index model. Relatively to the persistence of performance, empirical evidence indicates consistency of European bond fund performance. This evidence is particularly strong in the case of Spanish bond funds but also exists for French and German bond funds. The persistence seems to be concentrated mainly in poor performing funds. The results are similar no matter which methodology, cross-sectional regression analysis or contingency tables, is used for assessing performance persistence. The evidence of performance persistence decreases when we consider conditional multi-index alphas, which suggests that some of the persistence phenomenon is driven by time-varying betas.

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In memory of my mother

To Luís, Miguel and Beatriz

THE AUTHOR

Florinda Conceição Cerejeira Campos da Silva obtained her Undergraduate degree in Businesss Administration from the Universidade do Minho, Braga, Portugal, in July 1992. She subsequently joined the Department of Management and Public Administration of the School of Economics and Management of the Universidade do Minho, as an Assistant Lecturer, where she has been teaching several courses, in particular Financial Analysis. In 1996 she concluded the Masters degree in Management, specialization in Finance, at the Universidade do Minho. In October 1998 she started her doctoral research programme and was provided with a leave of absence, from the University, during three years and half.

During the preparation of this thesis a number of papers/working papers were produced, as listed below. The remaining parts of the thesis are unpublished.

1. SILVA, F., CORTEZ, M. C., ARMADA, M. J. R. "The Persistence of European Bond Fund Performance", NEGE Working Paper 7/2004, Universidade do Minho (paper presented at several national and international conferences/seminars);
2. SILVA, F., CORTEZ, M. C., ARMADA, M. J. R. "Bond Return Predictability: An Investigation for the European Market", NEGE Working Paper 5/2003, Universidade do Minho (paper presented at several national and international conferences/seminars);
3. SILVA, F., CORTEZ, M. C., ARMADA, M. J. R. (2003) "Conditioning Information and European Bond Fund Performance", *European Financial Management* 9 (2), 201-230.

CHAPTER 1

INTRODUCTION

1.1. MOTIVATION AND PURPOSE OF THIS RESEARCH

A substantial percentage of investments are made not by individual investors but by professional managers such as mutual fund and pension fund managers. The value of the services (if any) provided by these investment funds inevitably becomes of significant interest not only to individual investors investing in these funds, but also to practitioners and academics. Thus, the performance evaluation of investment portfolios has been widely debated in the financial literature. Evidence that portfolio managers, using dynamic strategies, can generate superior performance represents a violation of the financial markets efficiency hypothesis.

The traditional approaches to measure performance are unconditional in the sense that it is assumed that no information about the state of the economy is used to predict returns. Expected returns and risk are assumed to be constant over time. It is well recognised that these measures are biased when portfolio managers follow dynamic strategies resulting in time-varying risk (e.g.: Jensen, 1972; Dybvig and Ross, 1985; Admati and Ross, 1985; Grinblatt and Titman, 1989). Portfolio managers that correctly anticipate the market can appear as bad performers and portfolio managers that do not show that capacity can appear as good performers. This happens because traditional measures will confound time variation of expected returns and risk with abnormal performance.

In fact, the real world is a dynamic world and risk exposures are likely to vary through time and depend on conditioning information. Several studies have shown that public information variables are useful in predicting stock and bond returns (among others, Keim and Stambaugh, 1986; Fama and French, 1989; Chang and Huang, 1990; Ilmanen, 1995). This evidence has resulted in important developments on asset pricing models (e.g.: Ferson and Korajczyk, 1995; Jagannathan and Wang, 1996; Ferson and

Harvey, 1999) and, to a less extent, also on portfolio performance evaluation. As the expected return on an actively managed portfolio might change through time as the risk of the portfolio changes, unconditional asset pricing models are not well suited for evaluating some types of portfolio trading strategies and adjustments that reflect the time-varying nature of risks or risk premiums are required.

A conditional performance evaluation approach "refers to the measurement of performance of a managed portfolio taking into account the information that was available to investors at the time the returns were generated" (Farnsworth, 1997a, p. 23). It assumes that the expected returns and risk vary over time as public information changes. Once this common variation due to public information is taken into account, conditional models may lead to different conclusions on performance and on the persistence of performance. The performance measure should take a positive value only when a manager holds and makes correct use of information which is better than that held by the market.

Recent studies by Ferson and Schadt (1996), Chen and Knez (1996) and Dahlquist and Söderlind (1999), suggest that the inclusion of conditioning information sharpens inferences on performance. In a study on the performance persistence of pension funds, Christopherson, Ferson and Glassman (1998) also found that "the additional information used by a conditional measure allows us to better detect persistence in the performance of pension funds" (p. 139). Evidence of persistence of performance using unconditional measures may reflect the persistence of the confounding co-movement between risk and expected returns, rather than the persistence of management. Hence, it is important to control for this possibility before reaching any conclusion regarding the predicting capacity of past performance.

These few studies that used conditional measures in portfolio performance evaluation refer almost exclusively to stock funds or pension funds[1], composed mostly by stocks and, with exception of the Dahlquist and Söderlind study on the Swedish market, all the others relate to the US market.

With the adoption of the Euro, the European market has become the second largest mutual fund market, after the US, and is clearly in need of more research. Until now, as far as we are aware of, there are only two comprehensive studies concerning the performance of European mutual funds. These studies are Otten and Bams (2002) and Grünbichler and Pleschiutschnig (1999), on stock funds only. On the other hand, in comparison with the US market (where equity funds are the most important type of funds, and bond funds only represent 12 percent of the industry) in the European market the importance of bond funds is substantially higher, representing 24 percent of the market.[2] A different equity culture and a strong influence of banks are probably the main reasons for this higher importance of bond funds in Europe. Mutual funds are sold mainly through banks to risk averse investors, and the return of the bond funds is (wrongly) associated with sure return.

In this context, the purpose of this research is to investigate the performance of a sample of European bond funds. In particular, we aim at addressing the following questions:

- Are European bond funds capable of adding value?

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[1] An exception is the recent study of Gallagher and Jarnecic (2002), which examined security selection and market timing performance of Australian bond funds using both unconditional and conditional performance evaluation techniques. However, they used information variables similar to those used for US stock funds without any previous analysis of their predictive ability for the Australian bond market.

[2] According to the statistics published by the Portuguese Association of Mutual Fund Companies (APFIN), the "Fédération Européenne des Fonds et Sociétés d'Investissement" (FEFSI) and Investment Company Institute (ICI), December 2000. The proportion of bond funds is even higher in such markets as the Portuguese, Spanish and Italian market.

- Does the incorporation of conditioning information change inferences on performance?
- Is the capacity of adding value consistent along time?
- The incorporation of conditioning information changes the inference on this consistency?

This research endeavours to contribute to the performance evaluation literature by addressing these four questions. A major issue that can be raised in the context of conditional models is related to the choice of the variables to use as conditioning information. In order to address this matter a previous analysis for the predictive ability of a set of variables, with motivation based in economic reasons, is done and then, those which appeared as significant, are incorporated in the performance evaluation models. This represents an innovation relatively to previous research, which just assumes a set of information variables without previously testing their predictive ability for the respective market. Furthermore, this work constitutes, to our knowledge, the first comprehensive study on bond fund performance for the European market. Several measures of performance (single versus multi-index and unconditional versus conditional) are considered and compared not only in evaluating overall performance but also in assessing the consistency of that performance. As far as we know, this is also the first study which directly analyses the impact of conditioning information in assessing the persistence phenomenon for bond funds.

1.2. ORGANIZATION OF THE DISSERTATION

This dissertation is composed of six chapters. After a brief introduction (Chapter 1) we present (Chapter 2) the main characteristics as well as the evolution of the European mutual fund market which, after the introduction of Euro, has become the second largest market after the US. The objective is to describe briefly the state of the European mutual fund industry, emphasising its most recent developments and some of the existing obstacles to a truly single market.

In Chapter 3 we review and discuss the literature. This chapter presents an overview of the performance evaluation methodologies and some of the issues currently in debate, in particular those related with conditional performance evaluation. As conditional performance evaluation is based on the assumption that expected returns and risk are time-varying, we also focus and discuss the issue of return predictability on the basis of predetermined/publicly available information variables.

Our empirical analysis is structured into two chapters. We start by investigating, in Chapter 4, bond return predictability in the European market. After presenting the motivation for the selected information variables, we report and discuss the empirical evidence relative to the predictive ability of these information variables and analyse if this ability can be used to enhance bond returns. The next logical step is to incorporate into the conditional models of performance evaluation the variables we found to be useful in predicting bond returns. In fact, in Chapter 5, we examine the performance of a large sample of bond funds for six European countries using both unconditional and conditional models. We start by presenting the performance evaluation methodology. After describing our database, we report and discuss the empirical results relatively to the impact of conditioning information on the inferences of bond fund performance and also in the persistence of that performance.

Finally, in Chapter 6, we present and discuss the main contributions and conclusions of this research. The chapter concludes with a discussion of the limitations and suggests directions for future research.

CHAPTER 2

THE EUROPEAN MUTUAL FUND MARKET

2.1. INTRODUCTION

The increasing importance of mutual funds in society justifies the large amount of studies published in the financial press and also in the academia. Issues such benchmark sensitivity, performance attribution, performance persistence and survivorship bias deserve a lot of attention. Most of these studies focus on the US where historical data is easily available and the market can be considered as being in a mature phase. Thus, in terms of the academic literature on performance evaluation, the European market is far less explored than the US market, although several authors have focused on European countries individually[3]. As pointed out by Otten and Schweitzer (2002) the differences in the institutional setting of the industry in different European countries is an important explanation for the lack of studies. With the increasing integration of the European financial markets, these differences tend to disappear. Additionally, the demand for mutual fund services within the European society is increasing rapidly. In this context, the European mutual fund industry deserves further research.

Contrasting with the US market, the pan-European mutual fund history is considerably younger. The starting point was the UCITS (Undertaking for a Collective Investment in Transferable Securities) directive of 1985 which defined investment funds as "vehicles the sole objective of which is the collective investment in transferable securities of capital raised from the public and which operate on the principle of risk spreading"[4]. This directive has been implemented into national law by

[3] Among others, Cesari and Panetta (2002), on the performance of Italian equity funds, Stehle and Grewe (2001), Maag and Zimmermann (2000) respectively on German equity funds and German bond funds, and Basarrate and Rubio (1999) on Spanish equity and balanced funds.

[4] European directive 85/611/EEC of 20 December 1985. Meanwhile, a new and modernised UCITS directive went into force in February 2002.

all Member States of the European Union (EU) and of the European Economic Area. Aiming to harmonise the laws, regulations, and administrative provisions related to UCITS, this directive has a dual objective: to approximate the competitive conditions among UCITS at the European level and also to ensure an effective and uniform protection of investors.

By definition, UCITS are only open-ended investment funds (the equivalent to mutual funds in the Anglo-Saxon language) which can adopt two distinct legal forms: the contractual form and the corporate form[5]. Investment funds that fulfil the requirements imposed by the directive benefit from a European passport and can be freely marketed across borders in countries of the European Economic Area, without further authorisation, being only necessary that they be registered in the host country. Outside the UCITS directive, Member States may allow other types of investment funds in their jurisdiction, which do not benefit from the European passport such as closed-ended funds, real estate funds and other special funds.

2.2. THE EUROPEAN MUTUAL FUND INDUSTRY: RECENT DEVELOPMENTS

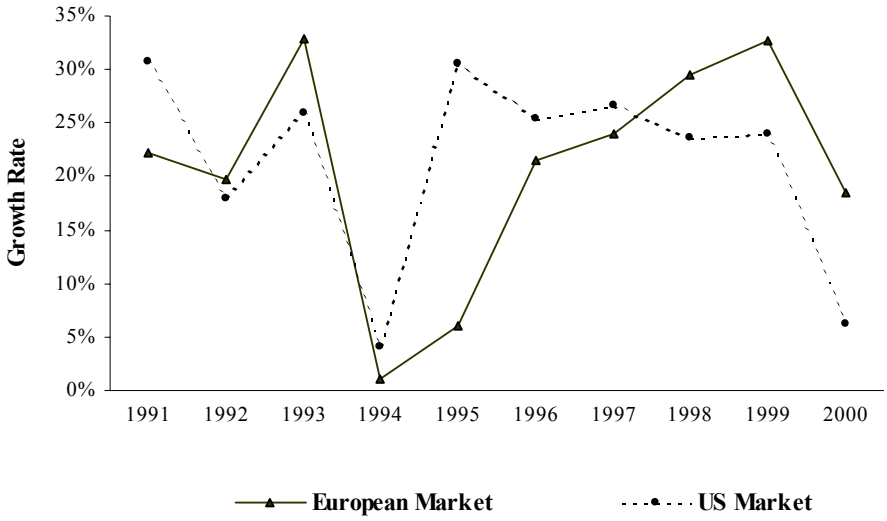
An important proportion of households' savings in European countries is now allocated to mutual funds. They represent important vehicles used by banks and also by other financial intermediaries in wealth management and play an increasingly important role in pension plans. During the 1990s, the investment fund industry has proven to be

[5] Contractual funds (common funds or unit trusts) are constituted under the law of contract (or under trust law for the case of a contractual investment fund in the UK and Ireland) and thus do not have legal personality. They issue units and investors are called unitholders. Corporate funds, on the other hand, do have a legal personality, and they issue shares and are structured like a company. Examples of these are

one of the fastest growing components in the financial sectors of European countries. This industry has been dominated by the publicly offered open-end funds, investing in transferable securities and money market funds. By the end of 2000, this segment represented around 79 percent of the investment fund market, with 3.6 trillion Euros.[6] Its total net asset value has almost tripled in the second half of the nineties.

Figure 2.1 compares the growth rate of the mutual fund industry for the European market and for the US market showing the strong growth rate of the European mutual fund market in the most recent years.

Figure 2.1 - Mutual fund market growth: European versus US market



Sources: APFIN, FEFSI and ICI.

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the French SICAVs (Société d'investissement à capital variable) and the OIECs (Open-ended investment companies) in the UK.

[6] All data are from FEFSI Statistics, "The State of the European Investment Funds Industry", 2001. Two types of products dominate the non-UCITS market: German "Spezialfonds", reserved for institutional investors, and British closed-ended investment funds.

Table 2.1 presents the main characteristics of the fund industry for the individual European countries and also for the US market. One can see that five countries dominate the European market: France, Germany, Italy, the UK and Luxembourg. Together they represent more than 75 percent of the total market. This is not surprising since the first four countries also represent about 70 percent of the population of the EU. Although having a rather small domestic market, the case of Luxembourg is a particular one and reflects the success of the strategy to establish itself as the first European centre of funds distributed at an international level. It serves mainly as an offshore centre, which results from fiscal and regulatory advantages.

Table 2.1 - Main characteristics of the UCITS market: European countries versus the US

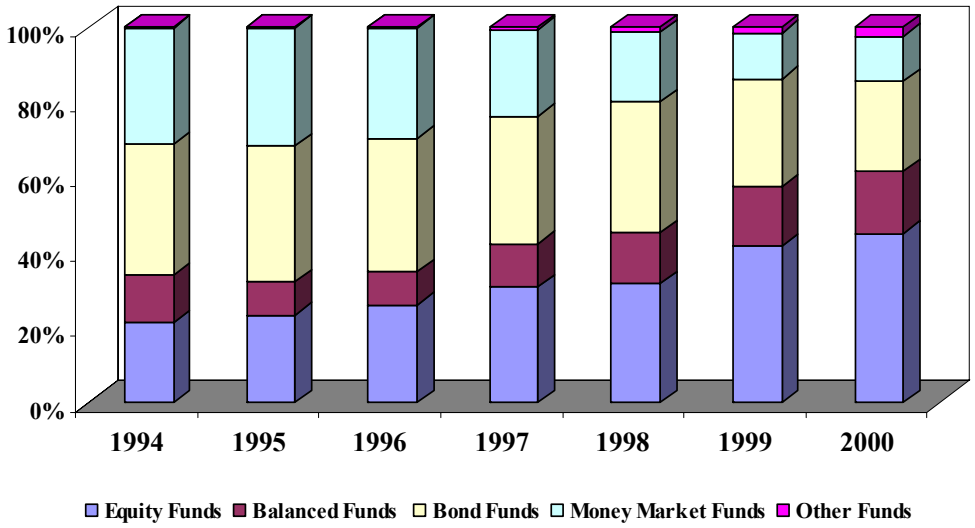
For each country, and in relation to the respective UCITS market, the table presents the Net Asset Value (NAV) in million Euros, the respective market share (in relation to the European market), the number of funds and the average fund size. It also displays the asset allocation by type of funds: Equity funds, Bond funds, Money Market funds, Balanced funds (or Hybrid funds) and Other funds. Total refers to the sum of all the European countries; Total "Euro Countries" refers to the sum of the EMU countries (11 countries) and Total EU to the sum of the 15 countries of the EU. All the data refers to the end of December 2000 (except for Hungary and Ireland that the data reports to the end of June and September, respectively).

End of December 2000	Total of Funds				Asset Allocation				
	NAV	**%**	**Nº of Funds**	**Average size**	**Equity funds**	**Bond funds**	**Money Mkt**	**Balanced**	**Others**
Austria	83223	2.3%	1733	48.0	19.1%	54.4%	1.0%	25.5%	0.0%
Belgium	74611	2.1%	918	81.3	63.1%	12.1%	1.1%	23.6%	0.1%
Czech Republic*	2137	0.1%	70	30.5	2.2%	4.4%	29.9%	63.5%	0.0%
Denmark	34434	1.0%	394	87.4	58.5%	40.3%	0.1%	1.1%	0.0%
Finland	13474	0.4%	241	55.9	47.7%	14.1%	11.6%	26.6%	0.0%
France	766100	21.5%	7144	107.2	28.3%	16.9%	28.5%	26.3%	0.0%
Germany	252578	7.1%	987	255.9	61.0%	22.5%	8.4%	6.0%	2.0%
Greece	30888	0.9%	265	116.6	25.5%	15.3%	49.7%	9.5%	0.0%
Hungary*	2061	0.1%	90	22.9	11.3%	68.6%	17.0%	3.1%	0.0%
Ireland	148741	4.2%	295	504.2	46.1%	24.6%	12.4%	16.9%	0.0%
Italy	449929	12.6%	967	465.3	34.6%	34.6%	5.0%	25.8%	0.0%
Luxembourg	792781	22.3%	6084	130.3	44.2%	33.3%	8.9%	8.5%	5.0%
Netherlands	101800	2.9%	348	292.5	67.2%	17.3%	5.2%	8.4%	1.9%
Norway*	17274	0.5%	380	45.5	64.0%	9.2%	23.9%	2.9%	0.0%
Poland*	1660	0.0%	77	21.6	16.5%	15.1%	46.9%	21.5%	0.0%
Portugal	18621	0.5%	212	87.8	15.2%	30.6%	33.2%	7.8%	13.1%
Spain	182977	5.1%	2422	75.5	32.4%	26.1%	18.2%	23.2%	0.0%
Sweden	83166	2.3%	509	163.4	75.4%	4.2%	3.5%	16.1%	0.8%
Switzerland*	87841	2.5%	323	272.0	53.0%	19.5%	0.4%	27.1%	0.0%
United Kindgom	415465	11.7%	1937	214.5	76.4%	8.7%	0.3%	7.5%	7.0%
Total	3559761	100.0%	25396	140.2	45.3%	23.8%	11.9%	16.7%	2.2%
Total "Euro Countries"	2884835	81.0%	21351	135.1	39.7%	26.7%	13.8%	18.0%	1.7%
Total EU	3448788	96.9%	24456	141.0	45.1%	24.0%	12.1%	16.5%	2.3%
United States of America	7485491		8171	916.1	56.9%	11.6%	26.5%	5.0%	0.0%

Source: adapted from APFIN Statistical Report "Trimestral Europa", December 2000.
* Non-member countries of EU at the end of December 2000.

The major types of open-end funds are equity, balanced, bond and money market funds. Although the latter are not considered as UCITS in all countries, it is a common practice to include them in the UCITS statistics. From Figure 2.2 below, we can see that the share of equity and balanced funds has increased over the last years, accounting for 62 percent of total UCITS assets at the end of 2000, a value comparable to that of the US market.

Figure 2.2 – The European Market: UCITS assets by type of funds



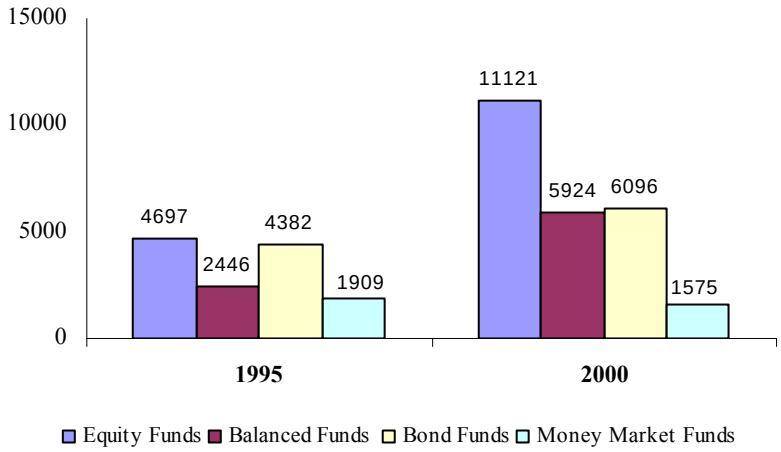
Source: APFIN and FEFSI.

This growth was supported both by the emergence of an equity culture in Europe and by the strength in the major equity indices which pushed up the value of equity investments mainly in the course of 1999 and early 2000. Notwithstanding, preferences for equity funds remain heterogeneous within European countries: Northern European countries show a strong preference for equity funds, while Southern and Central European countries maintain a strong preference for bonds and money markets

instruments. Consequently, although the share of bond funds has been decreasing slightly, they remain as the second most important type of funds, accounting for 24 percent of the market (the double of that of the US market).

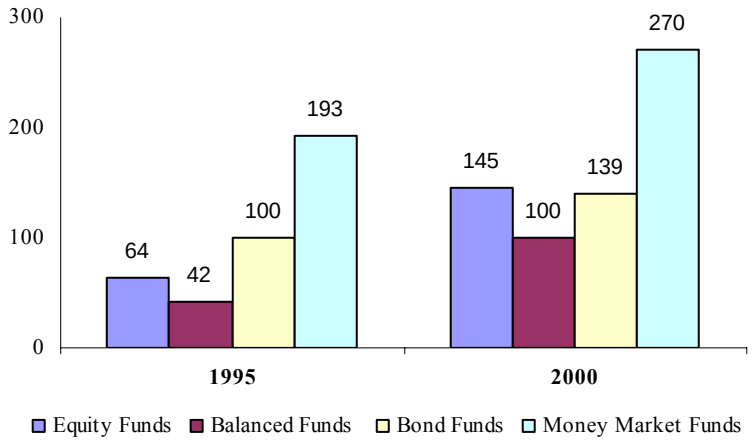
In parallel with the growth in UCITS assets value, the total number of funds has grown substantially, for all types of funds with the exception of money market funds, as shown in Figure 2.3. The average size of the funds, presented in Figure 2.4, has also registered a significant growth over the last years, although still being much smaller than the average fund size in the US (140 million Euros compared to 916 million Euros, as can be seen in Table 2.1). We may expect, however, that the on-going process of integration of European financial services will contribute to stimulate the growth of the average size of funds in Europe. This has been considered as a necessary condition for benefiting from economies of scale, due to the negative correlation between fund size and total expense ratios. The argument is that larger average sizes should induce cost savings.

Figure 2.3 – Number of funds by type of funds



Source: APFIN and FEFSI.

Figure 2.4 – Average size of funds (in million Euros)



Source: APFIN and FEFSI.

2.3. PRINCIPLES OF FUNDS' TAXATION

In comparing the performance of mutual funds for several European countries, we must be aware that these countries have different tax systems[7]. The taxation aspects of UCITS depend on the structure of the fund, the fiscal form of the fund and the domicile of the fund. Three levels of tax impact can be identified: at the investments level, at the level of the fund itself and at the investor's level. Although the most common regulations are at the investments level or at the investor's level, we can find some cases of taxation at the level of the fund itself, as in the case of Italy which is the most significant example. In Italy, fund units/shares are quoted net of taxation and unitholders are not required to include any gains they make in their income tax returns because the tax has already been paid on a full settlement basis by the fund. This affects

[7] Since 1992, FEFSI publishes a survey, which is updated annually, on the principles of taxation of UCITS, with the purpose to provide a country-by-country overview of taxation of UCITS. The most recent reports on this subject are available on FEFSI's website (http://www.fefsi.org).

the calculation of the Net Share Price (NAV) and hence the indicators of fund performance which are based on the NAV.[8]

On the other hand, most of the countries do not tax the results of investment funds directly, but require the related income to be included in individual taxpayers' income tax returns. These differences should be taken into account in evaluating and comparing fund performance in different countries as the benchmark(s) used are usually before-tax market indices returns, while in some cases we have returns of funds which are after-tax returns. In Appendix 2.1 we present a summary of the taxation principles of UCITS for the six European countries that compose the sample used in the empirical analysis carried out on Chapter 5.

2.4. PERSPECTIVES FOR THE FUTURE

With the adoption of the Euro, the European market has become the second largest mutual fund market, after the US. The question that can be raised is: will the single currency lead to a truly Single Market for investment funds with all its potential benefits for investors? We can still find a lot of barriers inhibiting its development.[9] Following we will mention some of them, although the list could be increased.

First of all, there are language barriers as each European country has its own language. The historical development of different preferences for savings between individual European countries is another obstacle which contributes for the fragmentation of the marketplace. Another, perhaps even more important barrier, is related to the fiscal legislation in each EU Member State. Indeed, in several European

[8] For this matter see publication by Assogestioni "Model for the calculation of the gross share price of an Italian open-end fund" (http://www.assogestioni.it/pdf/92041.pdf).
[9] See Heinemann (2002) for a research on the degree of integration of EU market for investment funds.

countries, we can find discriminatory taxation facing foreign UCITS[10]. The fiscal harmonisation would encourage savings and facilitate cross-border investment within the European Community. The fact that, in most European countries, banks still dominate the distribution of mutual funds, constituting one likely cause of the bias towards domestic suppliers and in-house funds (funds originating from their own group), should also be mentioned. This barrier is further reinforced by the insufficient financial literacy on the perspective of retail investors.

Another important aspect refers to performance presentation standards (and other related information such as fees and charges). For a European investor, wishing to make an investment-decision, it will be important to compare the performance of different funds from different European countries. In order to do that, he has to have a clear understanding of the impact of taxes on the performance of different funds, as mentioned in the last section. In fact, in the majority of the European countries, the performance measures that are currently reported are computed on a before-tax basis only. We think that the European Commission will follow the US Securities and Exchange Commission (SEC)[11] in requiring that mutual funds disclose both before-tax and after-tax returns, being the latter a measure adjusted to reflect taxes that would be paid by an investor in the fund.

[10] See PriceWaterHouse and FEFSI Report on the European investment funds industry "Discriminatory tax barriers in the single European investment funds market: a discussion paper", June 2001.
[11] See Disclosure of Mutual Fund After-Tax Returns, Securities Act Release Nº 7941 (Jan. 18, 2001) available at SEC website: http://www.sec.gov/.

In conclusion, several barriers have been mentioned (and others exist) that help to explain why the UCITS European market is still segmented by national borders rather than being a single market. There seems to be a broad consensus amongst fund managers, regulators and legislators on the benefits of a single market. However, there is clearly less consensus on how to achieve those benefits.

Appendix

Appendix 2.1

The different taxation principles of UCITS: the case of France, Germany, UK, Italy, Spain and Portugal.

This table presents a summary of the UCITS taxation principles for some European countries, at the end of December 2000. We have identified the tax impact at the level of the UCITS investments and at the level of UCITS itself, as both affect the NAV of the funds. Thus, the tax impact at the level of the investor was excluded.

Countries / Type of Income	FRANCE	GERMANY	UNITED KINGDOM	ITALY	SPAIN	PORTUGAL
Taxation of Income (both accumulation and distributions Units):						
• **Interest**	Exempt	A 30% of interim tax on both foreign and domestic interest income must be paid both on redistribution and reinvestment	Interest is paid to fund shareholders net of 20% of income tax	Interest is received net of withholding tax of 12,5% or 27% for short term bonds (<18 months)	Subject to a withholding tax rate of 25% when distributed to unitholders (6)	Income from Portuguese bonds is taxed at the withholding tax rate of 20%
• **Dividends**	Exempt	The fund must retain a corporate income tax of 30% on German Dividends (1)	Dividends distributed to fund shareholders carry a 10% tax credit	Dividends are received gross of a 12,5% withholding tax and of corporate tax (4)	Subject to a withholding tax rate of 25% when distributed to unitholders (6)	Dividends are taxed at a 25% rate (a reduced 12,5% in the case of listed shares), plus a gift and inheritance tax of 5%
Taxation of Capital Gains						
• **Realized**	Exempt (except for FCP when one investor being an individual holds an excess of 10% of the FCP)	Not taxable (2)	Exempt		When distributed they are subject to a 25% withholding tax rate	Exempt if the holding period is > 1 year (10% rate if this does not happen)
• **Unrealized**	Not taxable	Not taxable	Exempt		When distributed they are subject to a 25% withholding tax rate	
Others/Taxation on UCITS itself			The funds are subject to the corporation tax rate of 20%. (3)	A 12.5% tax rate is levied each year on the performance of UCITS, in discharge of all tax obligations (5)	A tax rate of 1% on the assessment base composed of all interests, dividends and capital assets increases (7)	

Source: "A FEFSI Survey Taxation Of UCITS: The Principles. 2000 Update"

Notes in relation to Appendix 2.1:

(1) For the amount of corporate income tax paid by the fund, investors receive a tax credit certificate to be used in connection with their income tax assessment.

(2) Since April 1st 1999 capital gains from the fund's futures are treated as taxable income earned by the investor from investment of capital.

(3) Allowable expenses of management may be deducted in calculating taxable profits. Interest distributions are allowed as a deduction against taxable profits of the accounting period in respect to which they are made. This means that bond funds pay little or no corporation tax.

(4) Until 1997, dividends were received net of a 10% withholding tax.

(5) Till 1997 no tax is levied on capital gains either realized or unrealized and on the average assets of UCITS 0.25% tax is levied each year, in discharge of all tax obligation of UCITS itself. The rate was reduced to 0.05% in the part of portfolio composed by private or public bonds.

(6) For Accumulation UCITS only when the unitholder sells units, he obtains capital gains which are taxable according to the general rules of capital gains taxation

(7) Where the withholding applied to the UCITS (25%) is superior to that of the tax rate (1%), the UCITS will receive a refund of the surplus of the withholding.

CHAPTER 3

REVIEW OF THE LITERATURE

3.1. INTRODUCTION

Only through measures of performance may investors and portfolio managers know if the combination of management techniques and the type of information used resulted in abnormal returns. Furthermore, it is important to determine if that performance is a result of pure luck or of management skill. Several measures have been proposed in the literature on mutual fund performance evaluation, but there is (still) a large controversy around them.

The concern with the performance evaluation of investment portfolios is prior to the Modern Portfolio Theory (MPT) introduced by Markowitz (1952). For example, Cowles (1933) compared the average return of a set of active portfolios with the return of a passive portfolio and concluded that the active portfolios had inferior performance. Cowles, however, only analysed the portfolios' return, ignoring risk. MPT has taught us that risk is an essential parameter when we wish to evaluate performance. The question is: what is risk and how should it be measured? If, relatively to return, there is a general consensus, the same is not true relatively to risk.

Markowitz formulated the investor's portfolio selection problem in terms of these two key parameters: return and risk (as measured by the variance or its square root, the standard deviation). Investors would optimally hold a portfolio with the highest expected return for a given level of risk and the minimum level of risk for a given level of expected return, a mean-variance efficient portfolio. His contribution was later important for the distinction between the variability of returns from an individual security (the overall risk) and its contribution to the risk of a portfolio (the systematic risk)[12]. The importance of diversifying a portfolio consists of reducing risk without

[12] The overall or total risk from an individual security has two components: specific risk, which can be reduced through diversification, and systematic risk, which cannot be diversified away.

giving up return and this can be achieved not only by investing in many securities but by investing in securities with low covariances among themselves. By introducing the possibility of investing in a risk-free asset, Tobin (1958) extended Markowitz's analysis. As such, the optimal portfolio results from a combination between the risk-free asset and one risky portfolio, with the latter being independent of investors' risk preferences.

Building on Markowitz's work, Sharpe (1964), Lintner (1965) and Mossin (1966) develop the Capital Asset Pricing Model (CAPM), an equilibrium model that describes the relationship between return and risk. Since specific risk can be reduced or eliminated through diversification, only systematic risk is relevant. The CAPM implies that the expected return of an asset must be linearly related to the covariance of its returns with the return of the market portfolio, as measured by beta. So, according to this model only one risk factor, the market portfolio, is sufficient to explain expected returns.

As theoretical and empirical arguments suggest that more than one factor may be required, some alternative asset pricing theories have been developed, for example: the Arbitrage Pricing Theory (APT), based on arbitrage arguments and the Intertemporal Asset Pricing Model (ICAPM), based on equilibrium arguments. The APT was introduced by Ross (1976) as an alternative to the CAPM. It is more general in the sense that it allows for multiple risk factors and it overcomes one of the major limitations of CAPM as it does not require the identification of the market portfolio. However, both the (standard) CAPM and the APT are single-period models and, therefore, assume that expected returns are identically and independently distributed. Alternatively, the

ICAPM, proposed by Merton (1973), as a continuous time model[13], allows for time-varying risk premiums. In this model the market portfolio is one of the factors and state variables emerge as additional factors. These additional factors represent investors' demand to hedge uncertainty about future investment opportunities.

Conditional models in which stock and bond returns are assumed to be predictable on the basis of lagged instrumental variables (such as public information), are another approach that allows for time-varying expected returns and risk. The information given by those variables may be correlated but is not necessarily equivalent to the state variables in the ICAPM.

Empirical tests of all these models are not conclusive, and if in theory they are distinct, in practice it is hard to distinguish them (Connor and Korajczyk, 1989). A multi-factor model may be a better model not because the correct model is the APT or the ICAPM but because it is a better candidate for a mean-variance efficient benchmark than the market portfolio. While in the earlier years, after its development, the CAPM seemed to be a good model in explaining asset returns, in more recent years several studies have identified empirical anomalies, with the most widely cited study being that of Fama and French (1992). If conditional versions of the CAPM (e.g.: Jagannathan and Wang, 1996) or the multiple factor models of the APT or ICAPM are better is still awaiting further empirical confirmation.

Thus, the sources of risk affecting security returns are still an issue in debate. As a consequence of these developments in the measurement of risk, different approaches for evaluating performance have been proposed in the financial literature. Several non-parametric measures, which have the advantage of being independent of any asset

[13] Among others, Long (1974), and more recently Fama (1996), have provided a discrete time version of the ICAPM.

pricing model, have also been developed (e.g.: Chen and Knez, 1996). The application of new econometric techniques and the growth in academic research added new dimensions to performance evaluation. Topics such as performance attribution, investment styles, survivorship bias, persistence of performance and more recently conditional performance evaluation have been the focus of the majority of the studies on mutual fund performance.

The use of conditioning information is one of the most recent developments on mutual fund performance. As there is now widespread empirical evidence suggesting that predetermined information variables (related to economic conditions) are useful in predicting stock and bond returns, then measures of performance should incorporate this evidence and, consequently, assume that expected returns and risks are time-varying (conditional) instead of constant (unconditional). Previous empirical findings on fund performance and on the persistence of performance, which are based on unconditional measures, may be biased due to the covariance between expected market returns and the conditional measure of risk. In fact, recent studies suggest that funds' performance is enhanced by applying conditional performance measures (e.g.: Ferson and Schadt, 1996; Chen and Knez, 1996; Dahlquist and Söderlind, 1999) and are also better able to detect persistence of performance (e.g.: Christopherson, Ferson and Glassman, 1998; and Christopherson, Ferson and Turner, 1999). Given its important implications for questions related to market efficiency and its economic significance for investors, the subject of conditional performance evaluation is perhaps one of the most interesting in current mutual fund research, and it is the main focus of this study.

On the other hand, the majority of the empirical studies have restricted the application of those performance measures to stock funds, in spite of the great importance that bond funds assume in some markets. The application of these same

measures to evaluate bond portfolios is not, however, straightforward. Several methodological issues arise when analysing bond funds: there is less agreement on the validity of the equilibrium pricing models for bonds; fixed interest instruments are characterised by a variety of market segments, maturities and issuers that cause problems of coverage by available indices; and the fact that fixed interest securities often exhibit non-normal and autocorrelated returns thus making statistical tests more ambiguous. Hence, bond fund performance evaluation is a topic clearly in need of more research and that we propose to analyse.

In this chapter, given that the main subject of this study is the conditional performance evaluation of bond funds, we will start by briefly reviewing some of the most relevant methodologies for evaluating their performance, giving particular attention to the benchmark problem, which is a major source of debate and criticisms and can be even more critical in the context of bond portfolios. We will then review and discuss the conditional performance evaluation approach. Since this approach is based on the assumption that stock and bond returns are predictable, we also review the literature in the area of return predictability. Finally, we will review and discuss the topic of performance persistence focusing particularly, and for reasons just mentioned above, on the literature on bond fund performance persistence.

3.2. PERFORMANCE EVALUATION IN THE CONTEXT OF ASSET PRICING MODELS

The earlier risk-adjusted techniques (frequently called traditional measures of performance evaluation) include the Sharpe (1966) measure, the Treynor (1965) measure and the Jensen (1968) measure. These measures are based on the idea that the

combination of any portfolio with the risk-free asset is located in the expected return/beta space or expected return/standard deviation space.

The Jensen measure has been the most commonly used performance measure in academic and non-academic empirical studies, and may be defined as the return above or below the one that results from the CAPM equilibrium return. One of the most important problems associated with the Jensen's measure is that, as it is derived directly from a CAPM framework, it requires the identification of the market portfolio as the benchmark portfolio and the efficiency of this portfolio is a necessary condition to validate the performance results. If this is not verified, the performance of any fund is a function of the selected index. This question was first raised by Roll (1978) on theoretical grounds. Following Roll, many other studies questioned the sensitivity of the Jensen measure to the benchmark portfolio used (e.g.: Lehmann and Modest, 1987; Grinblatt and Titman, 1989; and Elton, Gruber, Das and Hlavka, 1993), and the benchmark issue is one of the most pertinent issues in performance studies.

Grinblatt and Titman (1989) addressed the problem of the appropriate benchmark and concluded that "the appropriate benchmark portfolio consists only of those assets that can be included in the portfolio being evaluated." (p. 411). This argument implies that the missing asset problem, in tests of the CAPM, does not apply to portfolio performance evaluation. In this context, a more intuitive interpretation can be given to Jensen's measure: it is the return from the combination of a passive portfolio with a risk-free asset. Such a combination has the same risk as the active portfolio. Since the manager is free to invest in a passive portfolio and in the risk-free asset, this is a more intuitive way of viewing the Jensen's measure, independently of the validity of the CAPM (Blake, Elton and Gruber, 1993). In this context, the Jensen's measure may also be applied to bond portfolios.

The selection of only one index may, however, fail in considering alternative choices for the portfolio manager. For example, Elton, Gruber, Das and Hlavka (1993) found that the evidence of positive performance obtained previously by Ippolito (1989) can be attributed to the use of an incorrect benchmark, which did not account for the performance of small stocks. When applying a multiple index model, with 3 indices – the S&P 500 index plus a small stock index and a bond index – to the same sample, they observed that funds underperformed. The development of multiple index measures constitutes an attempt to overcome this type of problems. If it is known that the return is generated by N factors, then N diversified portfolios are sufficient to describe portfolio returns and a linear combination of these N portfolios is efficient.

Another argument for the use of multiple index measures results from the APT, which assumes that the expected return may be described as a linear function of the sensitivities to more than one factor. Deviations of this function are a measure of the manager's selection capacity. On a theoretical (and even practical) basis, multiple index versions of the Jensen's measure seem to be more appropriate than single-index versions.[14]

In spite of their attractiveness, these approaches to performance evaluation are not free of criticisms. In fact, there is still one important problem: which multiple index or multiple factor model to use? The APT does not specify the number or the identity of the factors that affect expected returns. As a consequence, several alternative techniques have been proposed and used in the evaluation of the performance of managed portfolios, such as: statistically derived factors through factor analysis and principal

[14] Sharpe (1994) formalized a generalized version of Sharpe (1966) ratio as an alternative measure in a multiple index context. While the traditional measure compares the average portfolio return subtracted from the risk-free rate with the standard deviation of the portfolio returns, his more generalized version compares the portfolio return subtracted from a benchmark return with the standard deviation of that difference. This measure is usually called "Information Ratio".

component analysis (see, for example, Lehmann and Modest, 1987), indices that represent the type of investments retained in the portfolio (e.g.: Blake, Elton and Gruber, 1993; and Sharpe, 1992) or macroeconomic variables related to aggregate economic activity, inflation and interest rates (among others, Kryzanowski, Lalancette and To, 1997; and Elton, Gruber and Blake, 1995). The set of indices that are adequate for evaluating performance is a question that has not yet been completely solved (Elton and Gruber, 1997) and the search for the "true model" continues. Recent research however, seems to indicate that good models already exist, and that no more than a small number of easily identifiable factors/indices are enough to explain the return on stock and bond portfolios (Blake, Elton and Gruber, 1993; Elton, Gruber and Blake, 1995, 1999).

3.3. SINGLE-INDEX VERSUS MULTIPLE INDEX MODELS: EVIDENCE ON BOND FUND PERFORMANCE

As we have mentioned before, compared to stock funds, there are fewer empirical studies on bond fund performance evaluation. A possible explanation for this might be the discussion about the proper risk measure for bond portfolios and the problems in applying the same measures used for stocks. Asset pricing theories, in general, assume a linear relation between the risk measures and the expected excess return of the assets. In principle, these models are applicable to all financial securities but their implications are usually examined for stocks.[15]

[15] While the risk of common stocks is generally identified as being systematic or unsystematic, the perceived risks of bonds are commonly identified as interest rate risk, duration risk, purchasing power risk and default risk. The lack of convincing empirical evidence to show that covariance risks are priced in bond markets contributes to the different descriptions of risk. Furthermore, empirical models for fixed income returns are typically directed at the problem of solving for the prices of derivative claims and its

On the other hand, prior to the 1970s, interest rates were very stable and most bond portfolios followed buy-and-hold strategies, so probably their performance did not differ much. This environment changed dramatically in the late 1970s and especially in the 1980s, when interest rates increased dramatically and became more volatile. The incentive towards more active bond management led to an increasing demand for techniques to evaluate bond portfolio managers as their performance became substantially more dispersed.

The first studies on bond portfolio performance used a single-index measure with duration, the measure of the relative price volatility to changes in interest rates for a bond, as the risk measure (Wagner and Tito, 1977a, 1977b). They derived a bond market line similar to the security market line used in evaluating equity fund performance. In this case, duration simply replaces beta as the risk variable.[16] However, it is well known that duration is an exact measure of interest rate sensitivity only if all term structure shifts are parallel and infinitesimally small. Some studies investigated the explanatory power of the single-index model using duration as the risk measure. Ilmanen (1992) found that duration explains quite well (between 80 and 90 percent) the cross-sectional variation in Government bond returns. Relatively to corporate bonds, Ilmanen, McGuire and Warga (1994) found that duration is an incomplete measure of risk and its explanatory power decreases as the credit quality declines.

As an alternative to the models based on duration, regression-based index models, commonly used for stocks, also began to be derived for bonds. Under these models, risk is measured by beta, the regression coefficient, and the intercept alpha represents the

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application to portfolios with unobserved weights, such as mutual funds, is not straightforward (Farnsworth, 1997b).

[16] This approach is described in detail in text books on investments such as Reilly and Brown (1997) and Sharpe, Alexander and Bailey (1999).

performance measure (as in Jensen's measure). Instead of a stock index, a bond index is used as the benchmark portfolio.

Gudikunst and Mccarthy (1992) use a single-index model with a broad bond market index and conclude that the performance of the funds, net of expenses, was almost equal to that of the bond market index. They also applied a multi-index model and found that other variables are important in explaining bond portfolio returns. These additional variables are the change in market duration, a yield spread on BBB-rated bonds, the standard deviation of past returns and the growth rate of total fund assets[17].

Blake, Elton and Gruber (1993) compare single-index to multiple index models using a set of different bond market indices. They argue that conclusions on bond fund performance are not substantially affected by the choice of the indices, once they account for the high yield effect, and that fewer factors as compared to the stock market seem to explain expected returns in bonds. The bond funds in the sample underperformed (by almost the amount of the average management fees) the relevant market indices.

In a later study, Elton, Gruber and Blake (1995) developed a relative[18] APT model for bonds and used this model to evaluate bond fund performance. Following previous studies on common stocks (for example Chen, Roll and Ross, 1986), they considered as factors driving bond expected returns, a set of portfolio returns (measuring variables like market returns, default risk and term risk), and two fundamental economic

[17] A similar model was applied to the Portuguese bond fund market (Silva and Armada, 1998). With very few exceptions, Portuguese bond funds showed significant negative performance.

[18] The authors differentiate between relative pricing and equilibrium models. What they develop is not an equilibrium model but a relative pricing model. They assume absence of arbitrage, which is a necessary although not sufficient equilibrium condition; it only guarantees that assets have relative prices (not absolute) consistent with equilibrium.

variables: a measure of unexpected changes in inflation and a measure of unexpected changes in Gross National Product (GNP). In the context of the (relative) APT model, bond funds continued to show neutral performance, after adding expenses, and a negative performance in a net expenses basis.

Gallo, Lockwood and Swanson (1997) also evaluated the performance of a sample of US based International bond funds against both single and multiple benchmarks. For the single benchmark model they considered an international bond market index and for the multiple benchmark they considered three risk factors: a world bond market index, an US bond index and a factor representing currency risk. Their results indicated that funds, in general, were unable to outperform either benchmark over the total sample period. Fund managers did, however, outperform the multi-index benchmark for the first half of the sample period. Furthermore, they concluded that the multi-index model was the more appropriate model for evaluating international bond fund performance.

In a research on the performance of high-yield (low-grade) bond funds, and using a single-index model with a high-yield index as the market index, Gudikunst and Mccarthy (1997) find, once again, no evidence of superior performance. By extending the work of Cornell and Green (1991) they also analyse a multi-index model as a risk-return-generating process for high-yield bond portfolios. Variables such as high-yield bond index excess return, federal Government deficit, industrial production, yield spread on BBB-rated bond index and previous fund returns' volatility were used. The results seem to indicate that high-yield bond returns are explained not only by the bond markets but also by variables representing economic conditions, as found by Cornell and Green.

Kahn (1998), using the style analysis approach of Sharpe (1992)[19], investigated bond fund performance and also found no evidence of superior performance on bond funds. Similar conclusions were reached by Singh and Dresnack (1998) relatively to US Municipal bond funds and using the single-index model with a municipal bond index as the factor index.

Recent research on global bond funds[20] (Detzler, 1999) reaches similar conclusions. Detzler's study applies a wide range of benchmarks: two single-index models (one using a world Government bond index and the other a broad bond index including US Government and corporate bonds) and three multi-index models (using bond Government indices of the major countries, a corporate bond index and exchanges rates variables). On average, the 19 global funds did not outperform any of these five benchmarks during the period of 1988 to 1995. The first multi-index model, a 10-factor benchmark, includes excess returns in local currencies on five Government bond indices: Canada, US, Germany, Japan and UK, a corporate bond factor[21] and exchange rate movements for the Canadian Dollar, Deutsch Mark, Japanese Yen and British Pound. The second one, a US dollar benchmark, includes six factors: excess returns in US dollars on the same five Government bond indices and the corporate bond factor. The third one, a fully-hedged benchmark, also includes six factors: the currency-hedged excess returns on the five Government bond indices and the corporate bond factor.

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[19] This methodology consists of separating each month portfolio returns into two main components: the return attributable to style, usually measured by an asset class factor model, and the return attributable to selection. The style return represents the return to an appropriate benchmark and the selection return measures the performance relative to the benchmark.

[20] Global bond funds invest in both US and non-US bonds (also called world bond funds). They differ from International bond funds as these usually invest exclusively in non-US bonds.

[21] This factor was included in order to capture the higher default risk of corporate bonds. As monthly returns on non-US corporate bond indices are not available, Detzler considers only a US corporate bond index.

Maag and Zimmermann (2000) investigate the performance of a sample of 40 German bond funds over the period of 1988-1996. They consider several single-index models, several multi-index models and also an asset class factor model. For any of these models they obtained alphas of the same order of magnitude: more negative than positive alphas. The conclusion that resulted from the application of all the different models and index specifications was that bond funds underperform.

So, the conclusion that can be drawn from almost all the few empirical studies is that bond funds are not able to beat the market; on average, they present neutral or even negative performance. This type of conclusion is similar to what has also been found in relation to stock funds. Furthermore, although bond fund performance, as measured by alpha, seems to be less sensitive to the benchmark problem, empirical evidence suggests that multiple benchmarks models are, in general, more appropriate.

However, performance measures obtained using these regression-based index models, besides the traditional criticisms of estimation errors and appropriateness of benchmarks, assume that returns and risk are stationary. In the case of bond portfolios this assumption can be even more critical as bond fund managers are probably more market timers than security pickers, namely for funds that include mostly Government bonds. Their performance depends heavily on the ability to predict future interest rates and on adjusting the duration of the fund accordingly. If they predict an increase (decrease) on interest rates they should decrease (increase) the duration. As duration is closely related to beta, regression-based index models with fixed betas may not be appropriate due to beta non-stationarity.

Assuming that expected returns and risk are time-varying presumes the existence of some return predictability. If this is the case, there should be some publicly available information, related with economic conditions, which represent useful information to

predict security returns. This type of empirical evidence has important implications for market efficiency, asset pricing and performance evaluation and therefore cannot be disregarded. In the next section we review and discuss the issue of return predictability.

3.4. PREDICTABILITY OF SECURITY RETURNS

The predictability of the return on financial assets is a question that has been largely debated amongst academics and practitioners. This predictability may be interpreted as evidence of rational variation of expected returns or as market inefficiency or even as a combination of the two. Assuming rationality, predictability should reflect the time-varying expected risk premium. Intuitive reasons tell us that expected risk premium changes according to economic conditions. The underlying reasoning is that the level of risk aversion changes along with the economic cycle, being higher in situations of recession (and therefore the expected risk premium would also be higher) and lower in situations of expansion (as well as the expected risk premium). Evidence that time variation in expected returns is related to business conditions and is common to stocks and bonds suggests that predictability "is real and rational" (Fama, 1991, p. 1577)[22] and consistent with intertemporal asset pricing models. In fact, several studies found that variables like dividend yield, default premium, term premium and short-term interest rates have forecasting ability and are indeed related to the current

[22] For the defensors of irrational behaviour these are not convincing arguments. The fact that time variation is common to stocks and bonds may just mean that irrational anomalies are correlated across assets and markets both at the domestic and international level. Also, its relation to business conditions may just be a sign that common anomalies in different markets are related to business conditions.

and future health of the economy (e.g.: Harvey, 1989; Chen, 1991; Estrella and Mishkin, 1998).[23]

Several other studies have shown that some variables related to economic conditions allow us to predict the excess returns on stocks and bonds. Keim and Stambaugh (1986) conclude that, for many stocks and bonds, the expected risk premiums seem to change throughout time in a way that is, at least partially, explained by variables that reflect asset price levels. The variables used were: the spread between the return on medium and long term high risk bonds (BAA) and the risk-free rate, minus the logarithm of the ratio between the real value of the stock market index and its historical average over the preceding 45 years (a detrended stock price level) and minus the stock's average price in the quintile of the companies quoted in NYSE with lower value (a small firm risk premium). They also found evidence of a January effect in the regression coefficients of these variables.

Exploring this evidence, Chang and Huang (1990) investigate the predictability of corporate bonds using one of the variables used by Keim and Stambaugh (1986) – the spread between yields on BAA-rated bonds and the risk-free rate – plus a dummy variable for the month of January and four additional variables also used by Campbell (1987). These additional variables are related to the shape of the term structure of interest rates, and include the one-month bill yield, the spread between the two-month and one-month yield, the spread between the six-month and one-month yield and one lag of the excess return on the two-month over one-month bills. The results obtained by Chang and Huang (1990) indicate that corporate bond returns are predictable on the

[23] The dividend yield and the default premium as indicators of recent health, capture a persistent effect, while, the term premium and short-term rates as indicators of future health, capture a temporary effect. The dividend yield and the default spread are high (expected returns on bonds and stock are high) under persistently poor economic conditions. The term spread and the short-term interest rates are high (as well as expected market returns) when economic conditions are weak but anticipated to improve.

basis of all of these variables. Additionally, the forecasting power is higher than that reported by Campbell (using only variables related to the term structure). Among all the variables, the lagged excess returns on two-month over one-month bills and the yield spread on BAA-rated bonds were the most important. Furthermore, the January dummy variable appeared as highly significant for low-grade bonds.

Fama and French (1989) investigate the ability of the dividend yield, a default spread and a term spread as forecasting variables. Their results show that expected returns on corporate bonds and stocks move together. The dividend yield variable, commonly used to forecast stock returns, also predicts bond returns and the default spread and term spread variables, commonly used to forecast bond returns also predict stock returns. The dividend yield and the default spread seem to vary with long-term business conditions (persistently weak or persistently strong) while the term spread seems to vary with short-term business cycles (business-cycle peaks or business-cycle troughs). Similar conclusions were reached by Chen (1991). These three variables predicted that expected returns were low when market conditions were good and higher when market conditions were bad. According to Fama and French (1989), this opposite variation can be explained by either two possible reasons: “when business conditions are poor, income is low and expected returns on bonds and stocks must be high to induce substitution from consumption to investment. When times are good and income is high, the market clears at lower levels of expected returns. It is also possible, however, that variation in expected returns with business conditions is due to variation in the risks of bonds and stocks” (p. 48).

More recently, Baker, Greenwood and Wurgler (2003), in a study on the maturity of US debt issues, also investigate the predictive ability of a set of variables

representing market conditions. They conclude that the inflation rate, the real short-term rate and the term spread predict excess bond returns.

Most of the empirical studies on the predictability of bond returns, as those we mentioned before, involve the US bond market. Recent research by Ilmanen (1995) is one of the few exceptions. The author studies the predictable variation in international Government bond returns[24] using four variables: the inverse relative wealth (the ratio of past wealth to current wealth, where wealth is measured by a stock index)[25], a bond beta (measured relatively to a stock index), a real bond yield and a term spread.[26] The first two variables are proposed as proxies for time-varying risk aversion and time-varying risk and the others as alternative proxies for the overall expected bond risk premium. Ilmanen considers both local or country specific variables and global or GNP-weighted averages of the local variables. His main conclusions are that the reward for bearing interest rate risk (the bond risk premium) is small, on average, but it varies significantly over time, and that world variables are better predictors of excess bond returns. The world inverse relative yield, the world term spread and the world real bond yield are positively related to future excess bond returns in all countries. The inverse relative wealth appears to be an important source of time variation in expected returns. Furthermore, the forecasting ability of these variables is statistical and economically significant in most of the countries, both in and out-of-sample, and dynamic trading strategies that exploit this predictability earn annual mean excess returns from 3 to 8 percent.

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[24] Six countries were analysed: US, Canada, Japan, Germany, UK and France. These markets represented more than 80 percent of the world bond markets.

[25] This variable is similar to the detrended stock price level used by Keim and Stambaugh (1986).

[26] In another paper, Ilmanen (1996) studies the predictability of Government bond returns using the same variables except the bond beta and considering only four of the countries: US, Japan, Germany and UK. In relation to only the US market, Ilmanen (1997), besides these three variables – a term spread, a real bond yield and the inverse relative wealth – included one more variable, a momentum variable, that tries to capture large trending moves in the bond market.

Other studies on the predictability of bond returns, outside the US, include Yamada (1999), on the Japanese Government bond market, and Deaves (1997) on the Canadian Government bond market. The former uses the four variables suggested by Ilmanen (1997) – a term spread, a real bond yield, the inverse relative wealth and a momentum variable. Together, these four variables capture 15 percent of the monthly variation in excess bond returns for the period 1985 to 1998.[27] The latter also uses the inverse relative wealth, as defined in Ilmanen (1995, 1996, 1997), plus a term spread, a current short-term rate (proxied by the three-month bill rate), and three alternative forms of volatility (past twenty-quarter moving windows of the standard deviation of the three-month bill rate, M1 growth[28] and real GDP growth). Deaves (1997) investigates the predictive ability of these variables across the maturity spectrum in the Canadian bond market: six-month Government Treasury bills, five-year Government bond and eighteen-year Government bond over the period of 1960 to 1994. The term spread (mainly for short and medium-term bonds) and the inverse relative wealth (for all the maturities) arise as the most important variables in predicting excess returns on the Canadian Government bond market.

While some researchers claim to have found empirical evidence that stock and bond returns are predictable, others raise questions about the power of the results. In most cases, empirical studies on predictability of returns are affected by important problems. First of all, there is the problem of data mining (also called data snooping, data dredging or just hindsight). The information variables are usually selected on the

[27] In relation to the US market and for the period of 1965-1995 these four variables capture 10 percent of the monthly variation in excess bond returns.
[28] M1 refers to the currency (bank notes and coins) in circulation plus personal chequing accounts and current bank accounts.

basis of previous investigations and tested frequently by using the same type of data and the same time period. Hence, what is found may not be true predictability but something that can simply be an artifact of the sample. Several studies have addressed this problem (e.g.: Lo and MacKinlay, 1990; Ferson, Sarkissian and Simin, 2003a).

Other problems are mainly statistical problems resulting from the methodology that is usually used: regression analysis. One is the "spurious regression" problem, as pointed out by Ferson, Sarkissian and Simin (2003a, 2003b). Many of the variables that are used behave as persistent, or as highly autocorrelated time series and, as shown in their study, spurious regression relations may be found among the levels of trending time series that are indeed independent.

The small sample bias due to dependent stochastic regressors is another problem that can be raised (e.g.: Nelson and Kim, 1993; and Stambaugh, 1999). In this case, the standard assumption that the error term is uncorrelated with the regressor does not hold. What happens is that the shocks to the predetermined variable used as regressor are correlated with shocks to returns (the dependent variable) and, as the predetermined variable is persistent (autocorrelated), the past error terms are correlated with the regressor.

Due to all these problems, return predictability using lagged information variables remains controversial. Many predictive variables have been proposed and certainly, more will be proposed in the future. Notwithstanding, there is extensive evidence that some of the proposed variables have predictive ability. Consequently, these variables should be taken into account in asset pricing models and in performance evaluation.

3.5. CONDITIONAL MEASURES OF PERFORMANCE

A performance measure should take a positive value whenever a portfolio manager holds and correctly uses information that is better than that held by the market. As pointed out by Jensen (1972), Dybvig and Ross (1985), Admati and Ross (1985) and Grinblatt and Titman (1989), that may not happen with the Jensen's measure if the portfolio's beta is not constant. If, for example, a manager adjusts his portfolio towards assets with high betas when he correctly anticipates a market increase and adjusts to lower betas in the opposite situation (a market timing strategy), the ex-post estimated beta is biased upwards comparatively with the average beta. In this case, there is an overestimation of risk, which might lead to a negative alpha, even if the portfolio manager has shown capacity to correctly anticipate the market. On the other hand, a manager that adopts an incorrect strategy, that is, increases the portfolio's beta when the market decreases and decreases portfolio's beta when the market increases (perverse timing), might obtain a positive alpha.

The returns on managers' portfolios that follow dynamic strategies are not independently and identically distributed, so the Jensen measure is not appropriate. In the particular case of bonds, there are also other reasons that may lead to the non-stationarity of returns. Bonds have a determined maturity date and a fixed return at that date so that the return's probability distribution changes as time passes. On the other hand, as we have mentioned in the previous section, duration changes as interest rate changes and, consequently, beta also changes.[29] Recognising this violation would imply that the traditional Jensen measure is even less adequate for evaluating bond portfolio's performance.

[29] Portfolio managers may also invest in derivatives and derivatives betas are not constant.

If the probability distribution of returns develops throughout time in relative harmony with economic variables, it seems reasonable that investors consider this information when making investment decisions relative to portfolios. Thus, these variables should play an important role in the formulation of the model. The importance of using variables representative of public information and of time variation of risk premiums has been recognised, having allowed for important developments both at the level of equilibrium models and at the level of performance evaluation. These approaches, still considered a relatively new area of research, are expected to substantially contribute to knowledge.

Conditional performance evaluation consists of measuring a portfolio's performance taking into consideration the public information that is available to investors at the moment the return is generated, that is, it admits that the expected return and risk vary throughout time as public information changes and, thus, controls for common variation. As stated before, unconditional measures may attribute superior performance to managers that follow dynamic strategies using only available public information. Since this may be accomplished by any investor, because the information is public, it would be incorrect to call it superior performance. Conditional performance evaluation is, therefore, consistent with a version of market efficiency, in the semi-strong form sense of Fama (1970). Only managers who correctly use more information than is generally available to the public, are considered to have potentially superior ability.

As mentioned in the previous section, recent empirical studies have shown that public information variables, related to economic conditions, are predictors of returns on stocks and bonds. The conditional performance evaluation approach extends these developments to the problem of evaluating portfolio performance. Ferson and Schadt

(1996) adjust Jensen's (1968) alpha and two simple market-timing models (Treynor and Mazuy, 1966; and Merton and Henriksson, 1981) to incorporate conditioning information. Following Shanken (1990), they assume that the conditional beta is a linear function[30] of a vector z_{t-1} of variables of information (for further details on this matter see section 5.2 of Chapter 5).

The cross products of the market's excess return and the predetermined information variables capture the covariance between the conditional beta and the conditional expected market return. Ferson and Shadt (1996) found that this covariance is the major source of bias in the traditional unconditional Jensen's alpha. These additional factors can be interpreted as the returns to dynamic strategies, which hold z_{t-1} units of the market index, financed by borrowing or selling z_{t-1} in Treasury bills. It is easy to extend this analysis to models with multiple factors (and to an APT framework), by including the cross products of each factor with the information variables.

Ferson and Schadt (1996) conclude that the inclusion of conditioning information causes a shift in the distribution of alphas to the right region of superior performance. Using the unconditional Jensen's alpha, either in the context of the CAPM or in the context of a multi-factor model, the funds of their sample (67 equity funds over the period of 1968 to 1990) tend to have negative performances. The incorporation of

[30] Two alternatives have been used in modelling time-varying returns and risk: through betas in models that admit unspecified heteroscedasticity (beta is assumed to have a specific functional relation to the lagged variables as in Shanken, 1990) and betas that specify time-varying second moments (ARCH and GARCH models). According to Ghysels (1998), assuming a functional form for betas can lead to misspecification which may bias test results.

predetermined information variables[31] enhances funds' performance. The conditioning information seems to have a greater impact on the measure of performance than moving from a single-factor to a multi-factor model. The negative bias of the unconditional measure is due to a negative covariance between fund betas and the conditional expected market return.[32] Furthermore, they find that the conditional versions of the Treynor and Mazuy (1966) and Merton and Henriksson (1981) models represent an improvement, as the evidence of perverse market timing is removed.

Kryzanowski, Lalancette and To (1997), investigated a sample of 130 Canadian equity funds over the period 1981 to 1988, using an APT model with prespecified macrofactors and with time-varying risk premiums and betas, where the time variation of betas was captured by variables similar to those of Ferson and Schadt's (1996) for the Canadian market. Consistent with Ferson and Schadt, the inclusion of time-varying betas led to an increase of Jensen's alpha. The same type of evidence was found by Sawicki and Ong (2000) for managed fund performance in the Australian market, over the period 1983-1995.

Christopherson, Ferson and Glassman (1998) extended the model of Ferson and Schadt (1996) by allowing the conditional alpha to vary with the information variables in the same way as beta. They assume that managers' abnormal returns vary over time and they track their variation as a function of the conditioning information. When

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[31] Five information variables are used: the lagged (previous month) level of the one-month treasury bill yield, the dividend yield at the end of the previous month, a term spread, a corporate bond default-related yield and a dummy variable for the month of January.

[32] This negative covariance implies that funds have lower market betas when the expected market return, given the information variables, is relatively high, and higher market betas when expected market returns are relatively low. One of the possible explanations for this relies on the flow of money into the funds. If more money flows into funds when market returns are expected to be high and if managers take some time to allocate that money according to their usual styles, then funds, at some times, would have larger cash holdings and, consequently, lower betas (see Ferson and Warther, 1996).

applying their model, to a sample of pension funds using the same information variables as Ferson and Schadt (1996), the distribution of the unconditional and conditional alphas, whatever benchmark used (a market index, a style index or multiple style indices), appears quite similar, contrasting with the findings of Ferson and Schadt.[33] Similar results were also obtained by Cai, Chan and Yamada (1997), in a study on the performance of a sample of Japanese mutual funds over the period 1981 to 1992. The Jensen alphas did not improve with the conditional model. Indeed, both the unconditional and conditional alphas were skewed to the left.

Cortez and Silva (2002) obtained distinct results. In their study, the conditional Jensen's alpha, applied to a sample of Portuguese equity funds (over the period April 1994 to March 1998) worsened funds' performance: conditioning information eliminated the evidence of superior performance.

Although reaching different conclusions about the impact of conditioning information, most of the previously mentioned studies conducted performance evaluation in the context of asset pricing models. Other alternative conditional performance measures have also been developed and analysed. Chen and Knez (1996), following Hansen and Jagannathan (1991), extend the performance evaluation theory to the case of general evaluation models. Modern evaluation theory identifies models based on the stochastic discount factors (SDF)[34] that they imply. For any evaluation model, the SDF is a m_t scalar random variable, so that for any asset that affords a

[33] Unlike mutual funds, pension funds are not subject to high frequency flows of public money.

[34] The term "stochastic discount factor" is usually ascribed to Hansen and Richard (1987). Stochastic Discount Factors can be viewed as a unified framework to represent any asset pricing model. A regression approach, with a beta pricing formulation, and the Generalized Method of Moments (GMM) approach with a SDF formulation, may be considered as competing paradigms for empirical work. However, under the same distributional assumptions, and when the same moments are estimated, the two approaches are essentially equivalent (Cochrane, 2001; Jagannathan and Wang, 2002). For a review in this subject see Ferson (2003).

certain random payoff (V_t) at time t, the price at time t-1 is given by:

$$P_{t-1} = E(m_t V_t \mid \Omega_{t-1}) \quad \textbf{[3.1]}$$

where Ω_{t-1} represents the information set available at time t-1. Supposing that there are N assets available to investors and the prices are different from zero, and since m_t is the same for all assets, it follows that:

$$E(m_t R_t \mid \Omega_{t-1}) = 1 \quad \textbf{[3.2]}$$

where R_t represents the gross returns vector (payoff divided by the price) of N assets and 1 is a N-vector of ones. If R_p is equal to the return of a portfolio made up of the N assets, and R_p is replaced by xR, where x represents the portfolio's weights vector. These portfolio weights may change over time according to the information available to the portfolio manager. Assuming that the manager holds only public information:

$$E(m_t x(\Omega_{t-1})' R_t \mid \Omega_{t-1}) = x(\Omega_{t-1})' 1 = 1 \quad \textbf{[3.3]}$$

where $x(\Omega_{t-1})$ indicates the dependence in relation to public information, x depends only on Ω_{t-1} and $\sum x = 1$.

Performance evaluation consists of identifying managers that set up portfolios using private information (that does not exist in Ω_{t-1}) for which there will be higher performance when facing situations in which [3.3] does not occur, that is, we may define alpha as:

$$\alpha_{p,t} = E(m_t R_{p,t} \mid \Omega_{t-1}) - 1 \qquad \textbf{[3.4]}$$

Assuming a conditional setting, the public information set Ω_{t-1} is replaced by a set of predetermined information variables Z_{t-1}. It follows from the law of iterated expectations that the measure of performance is:[35]

$$\alpha_{p,t} = E(m_t R_{p,t} \mid Z_{t-1}) - 1 \qquad \textbf{[3.5]}$$

The SDF in the approach of Chen and Knez (1996) does not rely on a specific asset pricing model and, hence, on its accuracy. It is efficient by construction and requires only the returns on benchmark assets. For a sample of 68 US equity funds, over the period 1968 to 1989, Chen and Knez, using both unconditional and conditional[36] measures, did not reject the hypothesis of no abnormal performance. However, as in Ferson and Schadt (1996), they also found that the conditional measures tend to increase performance estimates.

Dahlquist and Söderlind (1999) followed the same approach of Chen and Knez (1996) to evaluate the performance of a sample of 24 Swedish equity funds over the period 1991 to 1995. They considered three different measures: an unconditional measure resulting from "fixed-weight benchmark portfolios", an unconditional measure resulting from "dynamic benchmark portfolios" (which corresponds to the conditional

[35] It should be noted that $R_{p,t}$ refers to raw returns. When excess returns are used, the performance measure becomes: $\alpha_{p,t} = E(m_t r_{p,t} \mid Z_{t-1})$ where $r_{p,t}$ is the excess return of portfolio p.

[36] For the conditional model, Chen and Knez (1996) used 3 information variables: the nominal 1-month Treasury bill rate, the dividend yield on the CRSP value-weighted stock index and the difference in yield-to-maturity between bonds with greater than 15 years to maturity and bonds with 5 to 15 years to maturity (a term spread).

measure proposed by Ferson and Schadt, 1996)[37] and a conditional measure (which is similar to the conditional model with time-varying alphas of Christopherson, Ferson and Glassman, 1998)[38]. Relatively to the unconditional measures, Dahlquist and Söderlind (1999) do not find significant evidence of abnormal performance. When the conditional measure was used, the results indicate a tendency toward positive performance.

Farnsworth, Ferson, Jackson and Todd (2002) also studied the use of SDF models in evaluating the investment performance of portfolio managers. They investigated several conditional formulations of m_t, including a SDF version of the CAPM, several versions of multi-factor models, where the factors are specified as economic variables (designated as non-traded factors) and, as traded factors, the numeraire portfolio of Long (1990)[39], a SDF that is a payoff of a portfolio constructed to be mean-variance efficient, as in Chen and Knez (1996) and, based in the model of Bakshi and Chen (1998), a SDF which is an exponential of a linear function of the log returns on the primitive assets. The results show that no model clearly dominates, but some models were clearly inferior. The worst performing models were the numeraire portfolio and a linear factor model with four non-traded economic factors. Moreover, "conditional models can deliver smaller average pricing errors for dynamic strategies and control better the predictability in pricing errors, but at the cost of larger variance of the pricing errors on the primitive assets of the model" (Farnsworth, Ferson, Jackson and Todd, 2002, p. 499). The models were evaluated using artificial mutual funds that control for market timing or security selection ability. They found that the measured performance is

[37] The information variables used in this study were: two variables to capture the shape of the yield curve (a level variable and a slope variable) and the lagged return on the general stock portfolio.
[38] The conditional alpha model can be viewed as a linearized version of the conditional measure proposed in Dahlquist and Söderlind (1999) (see Söderlind, 1999).
[39] The numeraire portfolio approach to evaluate the performance of bond funds was used by Kang (1997) and Hentschel, Kang and Long (2000).

not highly sensitive to the choice of the SDF, excluding the few that perform poorly on their test assets. Also, many of the SDF models presented a bias, producing small negative alphas when true performance was neutral: around –0.19 percent per month for unconditional models and –0.12 percent for conditional models (this is less than two standard errors, as a typical standard error is 0.1 percent per month). When applied to evaluate the performance of a sample of equity mutual funds (over the period 1977 to 1993), once more they found that the measured performance is not highly sensitive to the SDF model and the overall conclusion is that the average fund performance is consistent with the null hypothesis of neutral performance.

Ferson and Khang (2002) developed a conditional version of the Grinblatt and Titman (1993) weight-based approach to measure performance. The previously discussed performance techniques are all returns-based and, consequently, they ignore potentially useful information that is often available: the composition of the managed portfolio. Ferson and Khang (2002) argue that the use of portfolio weights may be especially important when expected returns are time-varying and managers trade between return observation dates (interim trading bias). Under this scenario, returns-based approaches are likely to be biased. Using a small sample of equity pension funds for the period 1985-1994, Ferson and Khang found that unconditional weight-based measures are affected by the interim trading bias and by combining conditioning information with portfolio weights, it is possible to obtain relatively precise and reliable estimates of performance. Under unconditional weight-based measures, some funds appeared to outperform. However, this evidence disappeared when the conditional weight-based measure was used: abnormal performance of pension funds was no longer significant.

The main problem of the conditional performance evaluation approach is related to the assumed functional form for time-varying betas. According to Ghysels (1998, p. 550) "if beta risk is misspecified, there is a real possibility that we commit serious pricing errors that potentially could be bigger than a constant beta model". Considering several conditional CAPM and APT dynamic asset pricing models, this research revealed that, in many cases, the pricing errors on the primitive assets resulting from constant beta models are smaller than those with time-varying beta models. Farnsworth, Ferson, Jackson and Todd (2002) found similar evidence, although their results suggest a "refinement" of those of Ghysels (1998) as they found, as we mentioned above, that conditional models have smaller pricing errors on the dynamic strategy returns and control better for the predictable components of primitive asset returns. This implies that particular attention should be given to the specification of the functional form of betas and that the subject related to the out-of-sample performance of conditional and unconditional models is still an evolving issue.

In conclusion, although empirical evidence shows that conditional models make a difference, there is no general consensus on the sign of the impact of incorporating conditioning information. The majority of the studies find that conditional performance measures make the managed fund performance look better, while a few others find no impact or even a negative impact. Notwithstanding, in most of the cases, empirical evidence suggests that abnormal performance, after controlling for public information, is rare. Moreover, despite the problem of the assumed functional form of time-varying betas, it seems clear that as conditional performance evaluation uses more information than traditional models, it has the potential to provide more accurate performance measures. However, previous studies have used a standard set of information variables without previously analysing their predictive ability and independently of the type of

funds being evaluated. Consequently, there has been scarce analysis of how sensitive conditional performance measures are to the selected conditioning information variables.

3.6. PERSISTENCE OF PERFORMANCE

An additional core issue in performance evaluation is the analysis of past performance as a predictor of future performance. If past performance is unrelated to future performance, then performance evaluation will be irrelevant when selecting a portfolio manager.

In an efficient market, performance is expected to be random throughout time. If some funds have higher performance and others lower performance, the difference will be random throughout time. If, on the other hand, higher performance exists, unless this performance is reflected on larger management expenses charged by the funds, performance persistence is expected. The fact that funds do not raise expenses to reflect performance, but rather as a percentage of the assets held, implies that these expenses tend to be smaller for better funds. This means, once more, that if superior performances exist, it will be reflected in performance persistence.

Performance persistence means that a fund with a good performance in the past is also likely to have a good performance in the future, or that a fund that in the past was a bad performing fund is likely to continue as a poorly performing fund in the future. Evidence of performance persistence represents not only a violation of the efficient market hypothesis but also suggests that investors may realize abnormal returns by purchasing recently good performing funds and selling recently bad performing funds.

In this context, the persistence of performance has been an important issue along with overall performance and, more recently, some studies have concentrated specifically on this issue (although, once more, the focus has been on equity funds). Empirical evidence is mixed. Some studies have found evidence of fund performance persistence while others have not. Also, in some cases, the conclusion is different depending on the evaluation horizon. Hendricks, Patel and Zeckhauser (1993) found persistence only in the short run while Elton, Gruber and Blake (1996) found persistence over longer horizons. Others found that it is dependent on the period of the study. For example, Malkiel (1995) found evidence of persistence in the 1970s but not during the 1980s. Finally, some studies have found evidence of persistence only for the best performing funds (Hendricks, Patel and Zeckhauser, 1993; Elton, Gruber and Blake, 1996) while others have found evidence of persistence for the poorly performing funds (Brown, Goetzmann, Ibbotson and Ross, 1992; Christopherson, Ferson and Glassman, 1998). It seems, however, that the latter phenomenon tends to be stronger, so that persistence is mainly driven by bad performers rather than good performing funds.

Several authors argued that the findings on performance persistence might be attributed to problems related with the data, particularly to the selection or survivorship bias, a problem that can significantly influence the results on the average levels of performance and, especially, on the persistence of performance. Samples that do not include the returns of all disappearing funds introduce survivorship bias, and this bias may lead to the appearance that performance is predictable even when it is not (Brown, Goetzmann, Ibbotson and Ross, 1992). While one line of research suggests that survivorship bias imparts an upward bias to persistence measures, others argue that, if fund survival depends on average performance over several periods, then survivorship

bias induces spurious reversals resulting in no evidence of performance persistence.[40] Survivorship bias is examined empirically comparing test results for survivor-only samples with those for full samples.

Evidence in favour of persistence of superior performance suggests that some managers are capable of adding value and explains why actively managed funds continue to grow despite the general consensus that their average performance is inferior to that of passive benchmarks (Gruber, 1996). On the other hand, the existence of persistent poor performers seems more puzzling. However, possible explanations for this phenomenon have been reported. For example, Gruber (1996) argues that it can be due to the existence of two groups of investors: a sophisticated clientele and a disadvantaged clientele. While the first group makes investing decisions based on fund performance, the second group does not. This latter group includes unsophisticated investors, whose decisions are influenced by advertising and advice from brokers; institutionally disadvantaged investors, such as pension accounts which have investment restrictions; and finally, tax disadvantaged investors, a group for which capital gains taxes make inefficient to remove money from the funds held.

The studies on persistence differ on the return measure used: raw returns, net returns and risk-adjusted returns. Those that use risk-adjusted returns, in most cases consider only unconditional measures. However, evidence of performance persistence using unconditional measures may also reflect the persistence of the confounding co-movement between risk and expected returns, rather than "true" persistence of management. Before reaching any conclusion regarding the predicting capacity of past performance, it is important to control for this possibility.

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[40] On this subject see Carpenter and Lynch (1999).

Studies on persistence also differ on the methodology used: cross-sectional regressions (Kahn and Rudd, 1995), contingency tables (Khan and Rudd, 1995; Malkiel, 1995) and performance-ranked portfolios (Elton, Gruber and Blake, 1996). In cross-sectional regression analysis, future performance is regressed on the past performance. A significant positive **t** statistic for the slope coefficient in this regression will reject the null hypothesis of no persistence. Alternatively, contingency tables constitute a non-parametric methodology in which funds are categorised as winners and losers over successive periods. A winner (loser) will be a fund manager with a performance above (below) median performance, or some other reference performance. Thus, contingency tables show the frequency with which winners and losers repeat. If statistical evidence shows that winners in one period are still winners in the subsequent period this will mean that there is performance persistence. Finally, the methodology of performance-ranked portfolios consists of ranking funds by past performance and seeing whether the rankings tend to be preserved over time. In each period funds are sorted into portfolios (usually deciles or octiles) based on their average performance measured over the preceding ranking period and then the performance of these portfolios is measured over the subsequent evaluation period. Two types of tests are commonly applied: the analysis of the average difference in performance between the top and bottom portfolios and the Spearman rank correlation coefficient (e.g.: Elton, Gruber and Blake, 1996).

For the specific case of the persistence on bond fund performance, Kritzman (1983), using ranking percentiles for the period of 1972 to 1981, found no evidence of persistence. He divided fund returns into two 5-year periods. Then, he computed each manager's percentile ranking for both 5-year periods and performed a cross-sectional regression analysis using the percentile ranking in the first 5-year period as the

independent variable and the percentile ranking in the subsequent 5-year period as the dependent variable.

Considering risk-adjusted returns, Blake, Elton and Gruber (1993) also investigated the forecasting ability of past performance for bond funds. They use two different samples: a small sample, including funds that ceased to exist, and a second larger, but biased, sample.[41] Their 10-year sample period (1979 to 1988) was divided into two 5-year periods and three 3-year periods (the last 9 years). Alphas from the single-index and multi-index (mentioned in section 3.3) were calculated for these subperiods, as well as rank correlations across the adjacent periods. The results showed no forecasting ability. For the larger biased sample they found, however, some evidence of predictability, evidence that could be due either to the larger size of the sample or to the survivorship bias.

Kahn and Rudd (1995) evaluated the persistence phenomenon both on equity and fixed income funds over the period 1986 to 1993. As performance measures, they considered cumulative total returns, cumulative selection returns (resulting from style analysis) and information ratios (ratio of selection return and selection risk). Both regression analysis and contingency tables were used. The evidence supported persistence only for fixed income fund performance. However, the persistence benefits cannot cancel out the average underperformance of the fixed income funds resulting mainly from expenses.

Philpot, Hearth, Rimbey and Schulman (1998), using the Sharpe measure for a five-year holding period and the regression based approach for the sample period of

[41] The purpose of using two samples was to control for survivorship bias.

1982 to 1993, also found no evidence of persistence of bond fund performance. Moreover, they argue that the evidence of no persistence is consistent with the fact that bond funds are characterised by a relative homogeneity. Consequently, bond fund managers have little opportunity to consistently outperform one another and thus differentiate themselves. Considering more heterogeneous bond funds, designated by nonconventional bond funds (high-yield, global and convertible bond funds), Philpot, Hearth and Rimbey (2000) reached similar conclusions. Nonconventional bond funds do not show evidence of management skill or performance persistence, "…there is at best a very modest short-run persistence in relative fund performance of such funds, and this appears limited to the high-yield fund subset" (Philpot, Hearth and Rimbey, 2000, p. 257).

For other markets, Maag and Zimmermann (2000), using the Spearman rank correlation coefficient as in Blake, Elton and Gruber (1993), also find no clear evidence for or against performance persistence in German bond funds for the period of 1987 to 1996. Dahlquist, Engström and Söderlind (2000), reported similar evidence for Swedish bond funds. This study uses a cross-sectional regression approach to detect the persistence phenomenon.

In general, the results of the empirical studies on the persistence of bond funds seem to indicate that there is less evidence of performance persistence on bond funds than on stock funds. However, all these studies (either for stocks or bond funds) use a traditional two-period framework in which the performance in the current period is compared with the previous period. A more robust approach might be the multi-period framework proposed in Argawal and Naik (2000) and applied to a sample of hedge funds. As pointed out by these authors, the probability of observing a series of wins and losses due to chance is much less than observing two consecutive wins or losses and,

consequently, the multi-period framework is better in discriminating between persistence due to chance and persistence due to manager skill. Argawal and Naik found that the persistence in the multi-period framework is considerably smaller than that in the two-period framework.

On the other hand, although these studies examined both risk-unadjusted and risk-adjusted performance measures, in the latter case only unconditional measures have been considered. Thus, despite the major developments on conditional performance evaluation which have been described in the previous section, until date, we do not have knowledge of any study using both unconditional and conditional measures to evaluate the performance persistence for bond funds[42]. Conditioning information should also impact inferences on fund managed performance persistence. The confounding co-movement induced by the time variation in returns expectations may lead to wrong conclusions. The scarce existing evidence for stock funds and pension funds is not consensual.

Ferson and Schadt (1996) were the first to assess persistence on the basis of conditional models. The results of their study seem to suggest that the persistence concentrated on extreme performers may be more easily detected when conditioning information is incorporated. Christopherson, Ferson and Glassman (1998) and Christoperson, Ferson and Turner (1999) examined the performance of pension funds and concluded that conditional measures are better able to detect the persistence of performance. In the former, the authors use cross-sectional regression analysis considering alternative measures of performance and different predicting time horizons,

[42] In their study on Swedish managed funds, Dahlquist, Engström and Söderlind (2000) analysed the performance persistence of bond funds using only conditional alphas.

over the period 1979-1990. Extending the analysis of this first study (with a broader sample and extended period 1980-1996), the authors use, in the latter, rank portfolios based on quintiles of the forecasted alphas. They follow two portfolio management techniques: equal-weighted portfolios of managers in each quintile and also weighted portfolios based on the information ratio (in order to include the quality of fit information to refine the ranks as suggested in Blake, Elton and Gruber, 1996). In their study, on the European equity fund market, Otten and Bams (2002) also found that the evidence they detected for the persistence in mean returns, for funds investing in the UK, is even stronger when conditional models are considered.

A different type of results were found by Cortez and Silva (2002) when investigating the persistence in a small sample of Portuguese equity funds, over the period 1994-1998, and using the two-way contingency tables methodology. The authors found that performance results do not change when conditional measures are considered. Similar evidence, using the Spearman rank correlation coefficient for consecutive periods, was attained by Sawicki and Ong (2000) for Australian equity funds. Another type of evidence is found by Basarrate and Rubio (1999) for the Spanish market. Evaluating the performance of a sample of Spanish equity and balanced funds, they found that the predicting ability of past performance is not as strong when conditional models are used. To detect persistence, the authors used a procedure based on the behaviour of extreme winners and losers.

Overall, most of the empirical research seems to suggest that incorporating information variables does indeed change inferences on the persistence of performance, thus challenging evidence from previous literature.

3.7. CONCLUSIONS

In this chapter we have reviewed the most relevant methodologies for evaluating the performance of managed funds, focusing on their main limitations and controversial issues. In particular, we have centred our discussion on two of these limitations: the problem of the appropriate benchmark portfolio and the assumption that no information about economic conditions is used to form return expectations. In relation to the first, this problem can be even more critical if we are considering the performance evaluation of bond portfolios. Thus, we have reviewed and discussed the use of single versus multiple index benchmarks focusing in the extant empirical evidence for bond funds. Relatively to the second, if indeed public information about the state of the economy represents useful information to predict security returns (thus being the reason for time-varying expected returns and risk) this should be taken into account in performance evaluation. So, we reviewed and discussed the literature on the predictability of security returns and on how this evidence should be incorporated in performance evaluation, through a conditional performance evaluation approach.

In reviewing conditional performance evaluation, one of the most recent topics in portfolio performance literature, we described the most used methodologies and discussed the most relevant empirical evidence. This framework has been suggested not only for evaluating the average level of performance but also for evaluating the persistence of performance (although it has been applied almost exclusively to stock funds). Clearly less studied, bond funds are an important type of funds, in particular, in the context of the European mutual fund market. This investigation expands on previous research by applying the conditional approach to assess the overall performance and its consistency to a sample of European bond funds. Furthermore, rather than assuming a set of predetermined information variables, as in previous studies, we start by analysing

the predictive ability of the selected variables (Chapter 4). Then, significant variables representing useful information in predicting European bond returns, will be incorporated in the conditional models (Chapter 5). Empirical results related to the predictability in the European bond market are presented and discussed in the next chapter.

CHAPTER 4

PREDICTABILITY IN THE EUROPEAN BOND MARKET

4.1. INTRODUCTION

An important question that arises in the context of conditional models is the choice of which variables to use as conditioning information. With few exceptions, almost all studies that use the conditional performance evaluation approach assume a set of predetermined information variables as predictors of security returns. These information variables have been shown, by empirical studies investigating stock returns and mainly in the US market, as having some predictive ability. Contrasting with the stock market which has been extensively studied, the bond market, in particular outside the US, is far less explored, and therefore bond return predictability is a topic clearly in need of more research. Hence, rather than assuming a set of predetermined information variables as conditioning information, we start by analysing the ability of several variables in predicting bond returns in the European market.

As we have seen in section 3.4 of the previous chapter, the few studies on bond market predictability include Keim and Stambaugh (1986), Fama and French (1989) and Chang and Huang (1990), all on the US market. The first two studies find the presence of common predictability in both US stock and bond markets. This implies that variables found to be useful in predicting stock returns should also be useful in predicting bond returns. Chang and Huang (1990) document evidence of predictability also in the US corporate bond market. Research on bond return predictability outside the US is even scarcer. Ilmanen (1995) is one of the few exceptions. He finds strong evidence of predictability in international Government bond returns.[43]

[43] More recently Miffre and Clare (2000) and Barr and Priestley (2004), focusing on Conditional Asset Pricing, considered a set of both local and world instruments as predictors of bond returns in an international context.

Thus, the objective of this chapter is to investigate the predictive ability of a set of predetermined information variables in the case of the European bond market. This previous analysis will highlight the conditioning variables to be incorporated in the conditional models to assess the performance of our sample of European bond funds (the subject of the next chapter). We test if variables, commonly used for that matter in the context of other markets (such as inverse relative wealth, term spread, real bond yield and a January dummy) are also useful predictors of European bond returns. Due to some particularities of the sample period of analysis, characterised by the EMU convergence, we also contribute by including the yield spread in relation to German bonds. Furthermore, we consider different bond maturities: 1-3, 3-5 and 5 or more years to maturity. With a new data set, we think that the problem of data mining is somewhat overcome. Furthermore, we restrict the information variables to variables we can justify based on economic reasoning instead of using a more exhaustive statistical search (for the latter approach see, for example, Pesaran and Timmermann, 1995).

4.2. MOTIVATIONS FOR THE INFORMATION VARIABLES

As we have already pointed out, we test a set of predetermined information variables that previous studies have shown to be useful in predicting bond returns, based on economic reasons. Additionally, we also suggest that the variable yield spread in relation to German bonds may be a relevant predictor of European bond returns. Next, we present the arguments underlying the choice of each one of the variables.

Inverse Relative Wealth

This variable is suggested by Ilmanen (1995) as a proxy for time-varying risk aversion, which can be as important as time-varying risk in explaining the time variation in risk premium. The argument is that relative risk aversion (RRA) is negatively related to relative wealth and that such variation can explain the observed countercycle pattern in expected returns, as found in Fama and French (1989) and Chen (1991). Investors are more risk averse when their wealth is low relative to their past wealth. The higher risk aversion causes them to demand larger compensation for holding risky assets like stocks and long-term bonds.

The variable is motivated by the utility function:

$$U(W) = \frac{(W - \omega)^{1-\gamma}}{1-\gamma} \qquad \textbf{[4.1]}$$

where W is wealth, ω is subsistence wealth and γ is a positive constant. Assuming a positive subsistence wealth, this function implies a RRA level that is decreasing in wealth:

$$RRA = \frac{-WU_{ww}}{U_w} = \frac{\gamma}{1-\frac{\omega}{W}} \qquad \textbf{[4.2]}$$

In the above utility function, the subsistence level is fixed and the RRA varies inversely with absolute wealth. However, it is more plausible to have the subsistence level varying over time and RRA varying inversely with relative wealth. A significant positive relation should exist between this variable (inverse relative wealth) and expected excess bond returns.

Term Spread and Real Bond Yield

These two variables are used as proxies for the overall expected bond risk premium, as suggested in Ilmanen (1995). In the literature review, we mentioned several other studies that use the term spread (a measure of the slope of the term structure) as a predictor for the expected excess bond returns.

As showed in Campbell and Ammer (1993), the continuously compounded yield of a n-period nominal discount bond results from:

$$y_{n,t} = \left(\frac{1}{n}\right) E_t \sum_{i=0}^{n-1} (\pi_{t+1+i} + \mu_{t+1+i} + x_{n-i,t+1+i}) \qquad \textbf{[4.3]}$$

Where $y_{n,t}$ is the sum of three terms: the n-period average of expected inflation rates π, the n-period average of expected real rates of a one-period nominal bond μ and the n-period average of expected bond risk premium x. Therefore, the bond yield contains information about expected bond risk premium but also about expected inflation and expected short-term real rates, so it is a noisy proxy for expectations of all these events. If we subtract the expected short rates or the expected inflation rate from the bond yield we should obtain a better proxy for the expected bond risk premium. This is what motivates the use of the term spread and the real bond yield.

The term spread is the difference between the yield of a n-period bond and the yield of a one-period bond (a short term nominal rate) and the real bond yield is the difference between the yield of a n-period bond and the inflation rate over the remaining life of the bond. Neither of these two variables are a perfect proxy for the expected bond risk premium, since both contain information about it and about expected nominal or real rates. As it is not clear which of the variables is a less noisy proxy, we will use both in our empirical analysis.

Yield spread in relation to German bonds

During the 1990s, Germany was the European country with the lowest levels of inflation and interest rates and this has made the German market a reference market. Furthermore, with the process of integration into the monetary union, the yield on benchmark German bonds was used as a benchmark for the other European countries. As our sample period is a particular period of convergence towards the European monetary union (EMU), we think this variable should be included in our analysis. A priori, either one of the theories on the term structure of interest rates is consistent with the fact that, during this time of convergence, the risk premium is conditioned by the yield spread in relation to German bonds (Fonseca, 2001). For the specific case of Portugal, Fonseca (2001) finds that the term structure of interest rates changed and this occurred due to a different speed in convergence for the short-term interest rate (which is also an instrument of monetary policy, used to keep the stability of the escudo exchange rate) and for the long-term interest rate. This different speed was a necessary condition to assure the convergence process.

On the other hand, Lund (1999) suggests that this spread can represent information on the probability of joining EMU, which affected the prices of long-term bonds well before 1999. In a similar line of research, Geyer, Kossmeier and Pichler (2003) also find that, even after EMU, this spread constitutes an important source of additional risk and may reflect different market beliefs about the possible effects of an EMU failure to the individual countries (that might re-introduce exchange rate risk).

A dummy variable for the month of January

The January or turn-of-the-year effect is defined, in the finance literature, as a positive risk-adjusted premium for holding a security in the month of January. It is

frequently seen as an anomaly in the financial markets and it has been ascertained not only in stock returns but also in long-term Government and corporate bond returns (Smith, 2002; Maxwell, 1998; Chang and Huang, 1990, among others).[44]

On the other hand, Keim and Stambaugh (1986) suggested that seasonality must be a consideration of any study dealing with changing expectations. The information variables they used to predict bond and stock returns showed a January seasonality, which might suggest an increased risk around the turn of the year. A similar conclusion was found in Fama and French (1993). They observed that the January seasonality in the returns on stocks and corporate bonds seem to be largely explained by the corresponding seasonality in the risk factors. In order to explore this possibility, we also consider a dummy variable for the month of January.

4.3. THE DATA

4.3.1. Bond Market Returns

We analyse monthly continuously compounded excess returns for the period of February 1994 to December 2000, in relation to six European countries: Portugal, Spain, Italy, France, Germany and UK. These countries represented, in 2000, approximately 78 percent of the European Government bond primary market and around 70 percent of the European bond secondary market transactions.[45]

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[44] Several theories have been suggested in order to explain this January effect: tax-loss selling, seasonal buying and selling patterns, individual investor seasonal demand and window-dressing (see for example Maxwell, 1998).

[45] See "The Euro Bond Market", European Central Bank, July 2001, 2000 Annual Report of CMVM (the Portuguese equivalent to the Securities Exchange Commission) and FIBV (Fédération Internationale des Bourses de Valeurs) statistics 2000.

To measure bond market returns we use the Salomon Smith Barney World Government Bond Index (SBWGBI) for each country[46], in local currency. While stock return predictability is usually analysed in terms of US dollars, in the case of bond returns it is more appropriate to use local-currency returns since the volatility of exchange rates is substantially higher than that of interest rates. If we analyse the predictability of dollar-adjusted (or other currency) bond returns we may obtain more evidence on the predictability of exchange rates than of bond returns. We analyse three different maturity subsectors (1-3 years to maturity, 3-5 years to maturity and 5 or more years to maturity) and also the broad index for all maturities. The risk-free rate is proxied by the 3-month Interbank offered rate (IBOR). All these data are obtained from Datastream.

From Figure 4.1, we can observe that for all countries, average excess bond returns, in the period being analysed, increase with maturity.

[46] We only consider the Government bond sector since in the European market (except the case of the UK market) the corporate bond sector is not (yet) a liquid market and we only have corporate bond indices for the European region and not individually for each country. The Salomon Smith Barney World Government Bond Index was introduced in 1986 and it is a market capitalization weighted index with January 1985 as the base date. It includes Sovereign debt denominated in the domestic currency with a required minimum size outstanding that varies by market (see Salomon Smith Barney Global Index Catalog – 2001 Edition, February 2001).

Figure 4.1 – Annualized mean of excess bond returns (in percentage) for the maturity subsectors.

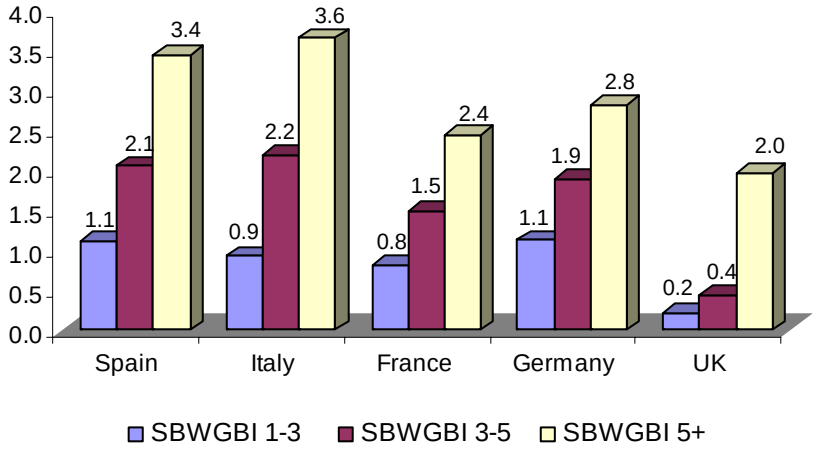

Table 4.1 reports additional statistics on these excess bond returns for the period of analysis, February 1994 to December 2000.[47] In Panel A, we present the summary statistics for each European country. The average monthly excess returns are low and vary between 0.018 (the SBWGBI 1-3 for the UK market) and 0.368 percent (the SBWGBI all maturities for the Portuguese market). Only for Portugal and for the German 1-3 maturity subsector, we can reject the null hypothesis of a mean equal to zero at the 5 percent level. Italy is the country with the highest standard deviation and, in general, also with the highest monthly excess returns. The UK presents the smallest excess returns, although not the smallest standard deviation. The maturity subsector of 5 or more years presents the higher variability and also the higher mean excess returns.

[47] The graphics for the excess bond returns are presented in Appendix 4.1. The period is characterised by the strong bear market in the first half of 1994 (due to the great increase in long-term interest rates). Another bear market is observed during the year of 1999, a year characterised by investors' enthusiasm for equity markets. The rest of the period reflects the positive returns resulting from the decrease of interest rates and inflation, as a consequence of the convergence to the EMU.

The Jarque-Bera normality test[48] indicates that, with few exceptions, excess bond returns are normally distributed.

In Panel B and C of Table 4.1, we have the cross-country correlations and, for each country, the correlations between the maturity subsectors. We can observe relatively high cross-country correlations, ranging between 0.29 and 0.94. As expected, the correlations are relatively low between each of the Latin countries and the UK. The correlations seem to increase with maturity. For all countries, the correlations between the several maturity subsectors are very high, ranging between 0.73 and 1. This might indicate that bond returns for different maturities are predicted by the same information variables.

[48] Jarque-Bera is a test statistic for testing whether the series is normally distributed. It measures the difference of the skewness and kurtosis of the series with those from the normal distribution. The test statistic is calculated as: $JB = \frac{N-k}{6}\left[S^2 + \frac{1}{4}(K-3)^2\right]$ where S is the Skewness, K is the Kurtosis and k represents the number of estimated coefficients used to create the series. Under the null hypothesis of a normal distribution, the Jarque-Bera Statistic is distributed as χ^2 with 2 degrees of freedom. The reported probability is the probability that a Jarque-Bera statistic exceeds the observed value under the null hypothesis. A small probability value leads to the rejection of a normal distribution.

Table 4.1 – Summary statistics on excess bond returns for the period February 1994 to December 2000

This table presents, in Panel A, the average monthly continuously compounded excess return in local currency, expressed in percent per month, for the three maturity subsectors of the Salomon Smith Barney WGBI (1-3 years, 3-5 years and 5 or more years) and for the broad all maturities index, for each country. Also, it reports the standard deviation of these returns (StD), the first-order autocorrelation (AC1), the T-test for the hypothesis of the mean=0 (T-test mean=0) and the Jarque-Bera statistic (Jarque-Bera), with the respective probability value in parenthesis. Panel B and Panel C present, respectively, the cross-country correlations for each maturity subsector and, for each country, the correlation between the various maturity subsectors.

	Portugal	Spain	Italy	France	Germany	UK
PANEL A - Market Indices Statistics						
SBWGBI 1-3						
Mean		0.092	0.077	0.068	0.094	0.018
StD		0.575	0.611	0.392	0.399	0.463
AC1		0.070	0.115	0.147	0.141	0.061
T-test Mean=0		1.46	1.15	1.59	2.14 **	0.36
Jarque-Bera		22.555	2.641	0.069	0.776	6.108
		(0.000)	(0.267)	(0.966)	(0.679)	(0.047)
SBWGBI 3-5						
Mean		0.171	0.182	0.124	0.158	0.037
StD		1.102	1.150	0.818	0.790	0.894
AC1		0.133	0.185	0.179	0.147	0.141
T-test Mean=0		1.42	1.44	1.38	1.82 *	0.38
Jarque-Bera		21.591	0.407	2.106	1.126	3.943
		(0.000)	(0.816)	(0.349)	(0.570)	(0.139)
SBWGBI 5+						
Mean		0.286	0.304	0.203	0.234	0.164
StD		1.832	1.951	1.590	1.331	1.860
AC1		0.181	0.194	0.138	0.142	0.057
T-test Mean=0		1.42	1.42	1.16	1.60	0.80
Jarque-Bera		3.710	0.061	3.327	4.691	7.262
		(0.156)	(0.970)	(0.189)	(0.096)	(0.026)
SBWGBI all						
Mean	0.368	0.203	0.192	0.162	0.176	0.122
StD	0.910	1.224	1.191	1.155	0.930	1.504
AC1	0.282	0.179	0.183	0.149	0.119	0.080
T-test Mean=0	3.43 ***	1.51	1.47	1.28	1.72 *	0.74
Jarque-Bera	2.067	5.982	0.099	3.109	3.580	8.181
	(0.356)	(0.050)	(0.952)	(0.211)	(0.167)	(0.017)

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Note: In the case of **Portugal** the period is restricted to January 1995 to December 2000, since the SBWGBI for Portugal only begins in 30/12/1994. Also, in this case, only the all maturities index is available.

Table 4.1 – Summary statistics on excess bond returns for the period February 1994 to December 2000 (continued)

PANEL B - Cross-Country Correlations

SBWGBI 1-3	Portugal	Spain	Italy	France	Germany	UK
Spain		1				
Italy		0.82	1			
France		0.75	0.70	1		
Germany		0.59	0.46	0.77	1	
UK		0.31	0.29	0.45	0.53	1
SBWGBI 3-5						
Spain		1				
Italy		0.85	1			
France		0.80	0.73	1		
Germany		0.71	0.60	0.89	1	
UK		0.51	0.47	0.63	0.66	1
SBWGBI 5+						
Spain		1				
Italy		0.85	1			
France		0.81	0.71	1		
Germany		0.76	0.66	0.92	1	
UK		0.67	0.61	0.75	0.75	1
SBWGBI all						
Portugal	1					
Spain	0.94	1				
Italy	0.85	0.89	1			
France	0.78	0.75	0.73	1		
Germany	0.72	0.70	0.64	0.91	1	
UK	0.56	0.61	0.61	0.70	0.73	1

PANEL C - Subsector Maturities Correlations

	SBWGBI 1-3	SBWGBI 3-5	SBWGBI 5+	SBWGBI all
Spain				
SBWGBI 1-3	1			
SBWGBI 3-5	0.97	1		
SBWGBI 5+	0.87	0.95	1	
SBWGBI all	0.93	0.98	0.99	1
Italy				
SBWGBI 1-3	1			
SBWGBI 3-5	0.97	1		
SBWGBI 5+	0.89	0.96	1	
SBWGBI all	0.94	0.98	0.99	1
France				
SBWGBI 1-3	1			
SBWGBI 3-5	0.94	1		
SBWGBI 5+	0.79	0.92	1	
SBWGBI all	0.84	0.95	1.00	1
Germany				
SBWGBI 1-3	1			
SBWGBI 3-5	0.95	1		
SBWGBI 5+	0.76	0.90	1	
SBWGBI all	0.87	0.97	0.97	1
UK				
SBWGBI 1-3	1			
SBWGBI 3-5	0.94	1		
SBWGBI 5+	0.73	0.89	1	
SBWGBI all	0.78	0.92	1.00	1

Note: Due to the restricted sample for **Portugal** the cross-country correlations for the all maturities indices, in panel B, are for the period January 1995 to December 2000.

4.3.2. Predetermined Information Variables

As predetermined information variables we consider the term spread, a real bond yield and the inverse relative wealth, plus the yield spread in relation to German bonds and a dummy variable for the month of January, as described in the previous section.

The variable inverse relative wealth (IRW), used as a proxy for time-varying risk aversion (as described in section 4.2), is defined as "the ratio of (the exponentially weighted average of) past real wealth to current real wealth" (Ilmanen, 1995, p. 489). As a proxy for aggregate wealth, a stock index is usually used. Although stock markets represent only a small part of the world wealth, they probably represent the most volatile segment and are positively correlated with others segments of wealth. We consider the MSCI stock indices for each country (obtained from Datastream) deflated by the Consumer Price Index (CPI).[49] The CPI data is obtained from the International Monetary Fund. We have taken into account the publication lag of about two or three weeks in order to consider only publicly available information. Thus, this variable is defined as:

$$IRW_t = \frac{\text{ewa } W_{t-1}}{W_t} = \frac{(W_{t-1} + coef * W_{t-2} + coef^2 * W_{t-3} + ...) * (1 - coef)}{W_t} \qquad \textbf{[4.4]}$$

Where:

ewa W_{t-1} = the exponentially weighted average of real stock market levels up to time t-1;

W_t = the real level of the stock market at time t;

coef = smoothing coefficient.

[49] This variable is similar to the detrended stock market level variable, calculated as minus the logarithm of the ratio of the real Standard & Poor's Composite Index to its previous long-run level (45 years), used by Keim and Stambaugh (1986). We also used this variable instead of the IRW and the results were similar.

Similarly to Ilmanen (1995) a 36-month window and a smoothing coefficient of 0.9 are used.[50] However, we have considered other possibilities (a 60-month and 83-month window and a smoothing coefficient of 0.8) and the results were quite similar.

As we mentioned previously, the term spread is the difference between the yield of a long-term bond and the yield of a short-term bond (a short-term nominal rate) and the real bond yield is the difference between the long-term bond yield and the expected inflation rate over the remaining life of the bond. As the long-term bond yield we considered the yield on a 10-year Government bond (or approximately), information that we obtained through the Central Banks.[51] It would be more appropriate to also use a Government bond rate as the short-term rate. However, the majority of the countries considered do not have a liquid Treasury bill market. For the countries which we could not obtain that rate, we used the 3-month Interbank offered rate.[52] The inflation rate is the recent year-on-year inflation rate. In assuming this as the expected inflation rate we implicitly assume that the inflation rate follows a random walk. Once again we have taken into account the publication lag for the CPI[53]. Both variables are in annual rates.

The variable yield spread in relation to the German bond (DM spread) is measured by the difference between the yield on the domestic 10-year Government bond (or approximately) and the yield on the equivalent German bond. Finally, the

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[50] The smoothing coefficient value of 0.9 was chosen in order to capture business cycle effects, and thus reduce the impact of short-term fluctuations.

[51] This is the most commonly used maturity for representing a long-term bond yield. For Portugal we used the yield on Treasury bonds with remaining maturity between 108 and 126 months; for Spain the yield on a 10-year government bond; for Italy the yield on the 10-year BTP (Buoni Poliennali del Tesoro); for France the ”taux de l`emprunt phare a 10 ans”; for Germany the yield on listed Federal securities with a residual maturity of 9-10 years (only bonds eligible as underlying instruments for futures contracts are included) and for UK the yield on a 10-year Government bond.

[52] This was the case for Portugal, Italy, UK and Germany. For France, we used the “taux de référence des bons de trésor à 3 mois” from the Bank of France, and for Spain the rate on 34 to 94 days Treasury bill secondary market obtained from the Bank of Spain.

[53] The inflation rate of January is used to calculate the real bond yield for the month of February and this will be used to predict excess bond returns for the month of March and so forth.

dummy for the month of January: it takes a value of 1 if the next month is the month of January and 0 otherwise.

Table 4.2 reports the summary statistics for the information variables.[54] All the variables have high first-order autocorrelations (AC1), ranging between 0.742 and 0.987.

Table 4.2 – Summary statistics on the predetermined information variables

In this table we report the mean (Mean), standard deviation (StD) and the first-order autocorrelation (AC1) for each of the information variables over the period January 1994 to November 2000. The Term Spread is the difference between the yield on a long-term Government bond and a short-term bond rate (or the 3-month interbank offered rate). The Real Bond Yield is the difference between the yield on the long-term government bond and the inflation rate. The DM spread is the difference between the yield on a domestic long-term government bond and the yield on an equivalent German bond. These three variables are expressed in annual rates. IRW (inverse relative wealth) is the ratio between the exponentially weighted average of past real wealth and current real wealth.

	Portugal	Spain	Italy	France	Germany	UK
Information Variables						
Term Spread						
Mean	1.148	1.626	0.997	1.617	1.804	0.359
StD	0.616	0.930	1.027	0.850	0.859	1.601
AC1	0.890	0.877	0.942	0.850	0.904	0.974
Real Bond Yield						
Mean	4.088	4.160	4.682	4.546	4.086	4.010
StD	2.037	1.658	1.825	0.905	0.745	1.525
AC1	0.948	0.955	0.961	0.924	0.799	0.960
IRW						
Mean	0.904	0.875	0.892	0.883	0.883	0.923
StD	0.130	0.113	0.109	0.099	0.085	0.056
AC1	0.902	0.849	0.838	0.869	0.798	0.742
DM spread						
Mean	1.461	1.666	2.058	0.197		1.048
StD	1.671	1.646	1.979	0.274		0.586
AC1	0.972	0.987	0.984	0.924		0.923

Note: For **Portugal**, the predetermined information variables are restricted to the period December 1994 to November 2000.

[54] Appendix 4.2 presents the graphics with the evolution of these variables for each of the countries. In particular for the Latin countries, we can see that the variables related with bond yields show a clearly decreasing trend during the sample period.

We tested the stationarity of these variables using the Augmented Dickey-Fuller (ADF) test[55] and concluded that, in most of the cases, we cannot reject the null hypothesis of a unit root, as shown in Table 4.3. This table reports the ADF test statistic considering three alternative regressions: with no mean, with a mean and with both a mean and trend. We report the results of the three models considering one lagged value of the dependent variable in order to account for serial correlation in the residuals. Although not reported, we also considered other numbers of lags and the results were similar.

[55] It is important to check whether the series are stationary or not before using them in a regression as standard inference procedures do not apply to regressions that contain integrated regressors. The formal method to test that is through the Unit Root Test. We followed the Augmented Dickey-Fuller test (see Dickey and Fuller, 1979). The null hypothesis is that the series is I(1) and the alternative hypothesis is that the series is stationary or I(0). We reject the null hypothesis of the series being I(1) in favour of the alternative hypothesis of a I(0) series if the test statistic has a more negative value than the MacKinnon critical value (MacKinnon, 1991).

Table 4.3 – ADF test statistics for the predetermined information variables

The ADF test statistic is reported for three alternative regressions: with no mean, with a mean and with both a mean and a trend. The results are relative to the models incorporating one lagged value of the dependent variable. At the bottom of the table, we also report the MacKinnon critical values for the 1%, 5% and 10% level of significance. The predetermined information variables are as defined previously.

	Term Spread	**Real Bond Yield**	**IRW**	**DM spread**
	ADF test statistic	ADF test statistic	ADF test statistic	ADF test statistic
Portugal				
no mean	-1.329	-2.003	-0.346	-2.713
with a mean	-1.910	-1.590	-1.863	-1.849
with a mean and trend	-1.912	-1.808	-1.795	-0.614
Spain				
no mean	-0.932	-0.793	0.209	-1.005
with a mean	-1.971	-0.480	-2.132	-0.547
with a mean and trend	-2.609	-3.773	-2.065	-1.827
Italy				
no mean	-1.250	-0.815	-0.090	-1.048
with a mean	-1.553	-0.978	-2.343	-0.661
with a mean and trend	-1.648	-2.716	-2.606	-1.881
France				
no mean	-1.380	-0.591	-0.045	-1.164
with a mean	-3.195	-1.202	-2.190	-1.758
with a mean and trend	-3.184	-2.918	-3.103	-2.769
Germany				
no mean	-0.722	-0.459	0.106	
with a mean	-1.299	-1.743	-2.240	
with a mean and trend	-2.882	-3.307	-2.158	
UK				
no mean	-1.326	-0.972	0.271	-0.798
with a mean	-1.125	-0.910	-3.111	-0.821
with a mean and trend	-1.862	-2.327	-3.093	-3.949

Critical Values (MacKinnon critical values for rejection of the hypothesis of a unit root)

Portugal		no mean	with a mean	with a mean and trend
	1%	-2.596	-3.525	-4.093
	5%	-1.945	-2.903	-3.474
	10%	-1.618	-2.589	-3.164
Other Countries				
	1%	-2.592	-3.512	-4.074
	5%	-1.944	-2.897	-3.465
	10%	-1.618	-2.586	-3.159

Note: In shaded we indicate the cases for which we reject, at the 5 percent level, the null hypothesis of a unit root in favour of the alternative hypothesis of a stationary series.

Given these results, we followed the suggestion of Ferson, Sarkissian and Simin (2003b) and use the variables subtracted by the 12-month moving average[56], in order to

[56] In monthly data, a 12-month moving average is usually adopted in order to remove possible seasonality in some information variables.

reduce the problem of spurious regression, a problem that may be found when persistent regressors are used (as mentioned in section 3.4 of Chapter 3). This simple form of stochastic detrending does not require any parameter estimation, so it is an appealing alternative to using time series models or time trends to deal with near non-stationarity.[57] After applying this procedure, in general, the new series present relatively lower values for the first-order autocorrelation.

Another issue that can be raised is related with the scale of these variables, which is not specified by theory, but can affect the results. Usually, the solution is to use mean zero variables (see Bernhardt and Jung, 1979), a procedure that we also followed.

Panel A and Panel B of Table 4.4 report the correlations between the variables (excluding the January dummy), considering both the level variables and the stochastically detrended mean zero variables. For the level variables, we find relatively high correlations, namely between the term spread and real bond yield and between the real bond yield and DM spread. When we consider the stochastically detrended and mean zero variables, we find lower correlations, except for the correlation between term spread and real bond yield for all markets (the lowest is for France with 0.47 and for all others it is superior to 0.64).

[57] This stochastic detrending procedure is equivalent to a triangular weighted average of changes in the variable, so it is stationary even if there is a unit root in the variable (Campbell, 1996).

Table 4.4 – Correlation between the predetermined information variables

Panel A reports the correlation between the predetermined information variables as defined previously (level variables). Panel B presents the correlations considering the stochastically detrended (by subtracting a 12-month moving average) and mean zero variables.

	Term Spread	Real Bond Yield	IRW	DM spread
PANEL A - Level Variables				
Portugal				
Term Spread	1			
Real Bond Yield	0.41	1		
IRW	0.49	0.22	1	
DM spread	0.34	0.90	0.42	1
Spain				
Term Spread	1			
Real Bond Yield	0.58	1		
IRW	0.59	0.40	1	
DM spread	0.51	0.91	0.59	1
Italy				
Term Spread	1			
Real Bond Yield	0.51	1		
IRW	0.36	0.52	1	
DM spread	0.37	0.90	0.63	1
France				
Term Spread	1			
Real Bond Yield	0.12	1		
IRW	-0.10	0.69	1	
DM spread	-0.20	0.78	0.72	1
Germany				
Term Spread	1			
Real Bond Yield	0.81	1		
IRW	0.02	0.37	1	
DM spread	___	___	___	___
UK				
Term Spread	1			
Real Bond Yield	0.95	1		
IRW	0.26	0.23	1	
DM spread	0.66	0.66	-0.14	1

Note: For **Portugal**, the predetermined information variables are restricted to the period December 1994 to November 2000.

Table 4.4 – Correlation between the predetermined information variables
(continued)

	Term Spread	Real Bond Yield	IRW	DM spread
PANEL B - Mean Zero Variables				
Portugal				
Term Spread	1			
Real Bond Yield	0.73	1		
IRW	0.31	0.07	1	
DM spread	0.52	0.53	0.56	1
Spain				
Term Spread	1			
Real Bond Yield	0.64	1		
IRW	0.44	0.43	1	
DM spread	0.35	0.71	0.66	1
Italy				
Term Spread	1			
Real Bond Yield	0.70	1		
IRW	0.36	0.41	1	
DM spread	0.33	0.63	0.63	1
France				
Term Spread	1			
Real Bond Yield	0.47	1		
IRW	0.05	0.38	1	
DM spread	-0.02	0.68	0.54	1
Germany				
Term Spread	1			
Real Bond Yield	0.84	1		
IRW	-0.06	0.21	1	
DM spread	___	___	___	___
UK				
Term Spread	1			
Real Bond Yield	0.83	1		
IRW	0.34	0.29	1	
DM spread	0.52	0.37	0.27	1

Note: For **Portugal**, the predetermined information variables are restricted to the period December 1994 to November 2000.

4.4. EMPIRICAL RESULTS

Excess returns, over a given time period, are regressed on a set of variables that are known to investors at the beginning of the period. We run simple and multiple regressions of the monthly continuously compounded excess bond returns on both a constant and the information variables, lagged 1 month, for each country. Table 4.5 presents the results of these regressions. The slope coefficients, t-statistics, the in-sample adjusted coefficient of determination (R^2adj.) and the joint significance of all the regressors are reported. Standard errors (and thus t-statistics) are adjusted for heteroscedasticity and autocorrelation following Newey and West (1987).[58] The Table is divided into panel A, B, C and D. Panel A presents the results for the SBWGBI 1-3 years to maturity, panel B presents the results for the SBWGBI 3-5 years to maturity, panel C presents the results for the SBWGBI 5 or more years to maturity and finally panel D presents the results for the SBWGBI all maturities. In each panel we report the results for the simple regressions, for the multiple regressions considering all the information variables, for the multiple regressions with all variables excluding the real bond yield variable and for the multiple regressions excluding the real bond yield variable and also the DM spread.

[58] Two of the assumptions of the Ordinary Least Squares (OLS) estimation are that the residuals are homoscedastic and serially independent. Violation of these assumptions has serious implications on statistical inferences. Ignoring that would lead to estimators which are unbiased and consistent but inefficient and, thus, hypothesis tests based on OLS standard errors become invalid (Greene, 2000). Newey and West (1987) proposed a covariance matrix estimator that is consistent in the presence of both heteroscedasticity and autocorrelation of unknown form. Rather than just assuming that heteroscedasticity and autocorrelation are present in the data, as it is common in most studies, we first performed tests conceived to detect these problems: the White (1980) heteroscedasticity test and the Breusch (1978) – Godfrey (1978) Lagrange multiplier test. We have found some evidence in favour of the existence of either heteroscedasticity or autocorrelation.

We also evaluated the predictive ability through out-of-sample analysis. To do that we carry out the following steps. The period of February 1994 to December 1997 (a total of 47 monthly observations) is used to estimate the coefficients for the information variables. These estimates are then used to forecast excess bond returns for January 1998. We then run a new regression using all the observations till January 1998. The new coefficients estimates are used to forecast excess bond returns for February 1998 and so forth till December 2000. Finally, the realized excess returns over the period January 1998 to December 2000 are regressed on the forecasted excess returns (a total of 36 observations). The R^2(adj.) of this out-of-sample regression is also reported in Table 4.5.[59]

As regards to the simple regressions, the variable term spread appears as highly significant both in sample and out-of-sample. Considering all the indices, it has an explanatory power that ranges from 0.4 to 14.6 percent in-sample and from 1.1 to 13.8 percent out-of-sample. For the other variables we find little evidence of predictive ability.

When multiple regressions were run, the term spread is also the most significant variable. In the case of the first multiple regression (which includes all the variables) that power is not so high due, probably, to the high correlation between the term spread and the real bond yield. When we consider the regression without the real bond yield, the R^2(adj.) decreases slightly, from between 0.6 and 24.2 percent to between 0.9 and 17.2 percent. However, the out-of-sample explanatory power is higher, ranging from 0.5

[59] We have also analysed the predictability of bond returns in subperiods. We divided the overall period into two subperiods: February 1994 to December 1997 and January 1998 to December 2000. For both subperiods we found similar evidence on the predictive ability of the variables (see Appendix 4.3 and Appendix 4.4).

and 26.9 percent (comparatively to the –2.8 and 17.2 percent of the regression including all the variables). When both the real bond yield and the DM spread variables are excluded, the results are similar: the R^2(adj.) varies between 2.0 and 16.1 percent in-sample and between 2.6 and 22.5 percent out-of-sample. These are relatively low values for the R^2(adj.), but it is a characteristic of this type of studies and the values that we obtained are comparable to those of previous studies (e.g.: Ilmanen, 1995; and Deaves 1997).

Table 4.5 - Regressions of excess bond returns on lagged information variables

The dependent variable is the monthly continuously compounded excess returns on each country Salomon Smith Barney WGBI for the three maturity subsectors and for the broad all maturities index. Panel A refers to the WGBI 1-3 years to maturity, Panel B to the WGBI 3-5 years to maturity, Panel C to the WGBI 5 or more years to maturity and Panel D to the WGBI all maturities. Each panel presents the results for the simple regressions, for the multiple regressions including all the variables and for the multiple regressions excluding, respectively, the Real Bond Yield variable and both the Real Bond Yield and the DM spread variables. Term Spread, Real Bond Yield, IRW and DM spread as defined in Table 4.2. All these variables are stochastically detrended (by subtracting a 12-month moving average) and mean zero variables. Jd is the dummy for the month of January. The coefficients and the t-statistics for each of the variables are presented (standard errors are heteroscedasticity and autocorrelation adjusted following Newey and West, 1987). R^2(adj) is the in-sample adjusted coefficient of determination, expressed in percentage. "Joint significance" is the probability for the Chi-square statistic of the Wald test for the restriction that all variables have a coefficient equal to zero. Out-of-sample is the R^2(adj) for the regression of the realized excess returns over the period January 1998 to December 2000 on the forecasted excess returns (rolling one-step ahead forecasts).

Variables	Spain	Italy	France	Germany	Uk
PANEL A - WGBI 1-3 years					
Term Spread					
coef	-0.192	-0.141	-0.095	-0.064	-0.129
t-stat	-3.927 ***	-1.852 *	-2.503 **	-1.312	-2.982 ***
R^2(adj)	12.0%	3.2%	4.9%	0.4%	5.5%
Out-of-sample	6.3%	1.1%	11.6%	5.6%	5.8%
Real Bond Yield					
coef	-0.061	-0.039	-0.129	0.006	-0.058
t-stat	-0.751	-0.693	-2.211 **	0.085	-1.158
R^2(adj)	-0.2%	-0.7%	4.7%	-1.2%	0.4%
Out-of-sample	3.6%	-0.1%	10.8%	-1.6%	4.6%
IRW					
coef	-0.106	0.909	0.747	1.034	1.112
t-stat	-0.170	1.515	1.780 *	2.624 **	1.163
R^2(adj)	-1.2%	0.6%	0.8%	3.0%	0.4%
Out-of-sample	4.1%	-2.3%	7.8%	2.1%	-1.2%
DM spread					
coef	-0.081	0.013	-0.101		0.126
t-stat	-0.777	0.155	-0.621		0.745
R^2(adj)	-0.2%	-1.2%	-0.9%		-0.5%
Out-of-sample	-2.9%	-2.3%	-2.8%		-2.9%

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 4.5 – continued.

Term Spread					
coef	-0.364	-0.269	-0.061	-0.183	-0.359
t-stat	-4.991 ***	-2.575 **	-1.202	-1.563	-2.365 **
Real Bond Yield					
coef	0.294	0.091	-0.126	0.158	0.133
t-stat	2.777 ***	0.977	-1.127	1.170	1.096
IRW					
coef	2.356	2.071	1.490	0.674	1.808
t-stat	2.880 ***	2.651 ***	2.701 ***	1.208	2.593 **
DM spread					
coef	-0.367	-0.106	-0.114		0.447
t-stat	-2.392 **	-0.871	-0.310		2.341 **
Jd					
coef	0.274	0.269	0.365	0.289	0.188
t-stat	3.574 ***	1.298	2.861 ***	2.809 ***	2.194 **
R^2(adj)	20.0%	6.1%	14.1%	6.6%	16.4%
Out-of-sample	9.2%	-2.3%	15.9%	7.1%	7.5%
Joint Significance	0.000	0.021	0.000	0.002	0.000
Term Spread					
coef	-0.232	-0.199	-0.105		-0.233
t-stat	-3.723 ***	-2.745 ***	-2.663 ***		-3.937 ***
IRW					
coef	1.593	1.910	1.522		1.887
t-stat	2.097 **	2.602 **	2.864 ***		2.663 ***
DM spread					
coef	-0.090	-0.041	-0.400		0.412
t-stat	-0.794	-0.420	-1.708 *		2.283 **
Jd					
coef	0.265	0.257	0.374		0.225
t-stat	3.075 ***	1.300	2.566 **		2.962 ***
R^2(adj)	13.5%	6.3%	13.5%		14.7%
Out-of-sample	12.5%	1.9%	14.8%		19.1%
Joint Significance	0.000	0.007	0.000		0.000
Term Spread					
coef	-0.237	-0.203	-0.101	-0.055	-0.164
t-stat	-4.103 ***	-2.772 ***	-2.476 **	-1.128	-3.495 ***
IRW					
coef	1.159	1.666	0.854	1.071	2.151
t-stat	1.672 *	3.041 ***	2.019 **	2.545 **	2.965 ***
Jd					
coef	0.264	0.259	0.352	0.292	0.201
t-stat	2.901 ***	1.341	2.351 **	2.948 ***	2.240 **
R^2(adj)	13.8%	7.2%	10.7%	5.7%	9.8%
Out-of-sample	14.0%	2.6%	15.2%	10.1%	12.6%
Joint Significance	0.000	0.002	0.003	0.001	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 4.5 - continued.

Variables	Spain	Italy	France	Germany	Uk
PANEL B - WGBI 3-5 years					
Term Spread					
coef	-0.403	-0.324	-0.246	-0.222	-0.269
t-stat	-4.260 ***	-2.444 **	-3.108 ***	-2.269 **	-3.185 ***
R^2(adj)	14.6%	5.4%	8.3%	3.9%	6.6%
Out-of-sample	9.2%	6.7%	13.8%	11.5%	13.4%
Real Bond Yield					
coef	-0.086	-0.081	-0.257	-0.092	-0.096
t-stat	-0.514	-0.779	-2.261 **	-0.736	-1.004
R^2(adj)	-0.7%	-0.5%	4.2%	-0.4%	0.0%
Out-of-sample	0.4%	0.3%	10.0%	-1.5%	-2.9%
IRW					
coef	-0.364	1.334	1.304	1.630	2.754
t-stat	-0.304	1.060	1.475	2.058 **	1.557
R^2(adj)	-1.1%	-0.1%	0.2%	1.4%	1.4%
Out-of-sample	4.8%	-2.9%	0.1%	-1.4%	3.4%
DM spread					
coef	-0.113	-0.021	-0.210		0.213
t-stat	-0.526	-0.125	-0.537		0.771
R^2(adj)	-0.7%	-1.2%	-0.9%		-0.6%
Out-of-sample	-2.9%	-2.9%	-2.1%		-2.5%
Term Spread					
coef	-0.773	-0.630	-0.225	-0.437	-0.829
t-stat	-5.391 ***	-2.950 ***	-2.168 **	-1.681 *	-2.924 ***
Real Bond Yield					
coef	0.643	0.271	-0.117	0.284	0.361
t-stat	3.088 ***	1.389	-0.489	1.015	1.583
IRW					
coef	4.217	4.042	2.829	0.929	4.235
t-stat	2.738 ***	2.446 **	2.364 **	0.830	3.113 ***
DM spread					
coef	-0.674	-0.295	-0.513		0.866
t-stat	-2.303 **	-1.222	-0.605		2.693 ***
Jd					
coef	0.457	0.580	0.708	0.547	0.208
t-stat	2.621 **	1.766 *	2.788 ***	2.505 **	0.891
R^2(adj)	24.2%	9.9%	14.3%	7.7%	21.7%
Out-of-sample	9.3%	-2.0%	13.2%	8.6%	13.2%
Joint Significance	0.000	0.021	0.000	0.008	0.000
Term Spread					
coef	-0.485	-0.423	-0.266		-0.484
t-stat	-3.816 ***	-3.220 ***	-3.385 ***		-4.563 ***
IRW					
coef	2.545	3.565	2.859		4.450
t-stat	1.754 *	2.284 **	2.461 **		3.248 ***
DM spread					
coef	-0.066	-0.104	-0.778		0.772
t-stat	-0.285	-0.515	-1.498		2.525 **
Jd					
coef	0.437	0.546	0.717		0.308
t-stat	2.134 **	1.844 *	2.643 ***		1.626
R^2(adj)	15.2%	8.4%	15.0%		17.2%
Out-of-sample	12.9%	2.8%	12.8%		26.9%
Joint Significance	0.000	0.008	0.000		0.000
Term Spread					
coef	-0.489	-0.434	-0.258	-0.207	-0.356
t-stat	-4.072 ***	-3.284 ***	-3.045 ***	-2.145 **	-4.245 ***
IRW					
coef	2.225	2.953	1.558	1.642	4.945
t-stat	1.528	2.587 **	1.836 *	1.977 *	3.564 ***
Jd					
coef	0.437	0.551	0.674	0.553	0.264
t-stat	2.111 **	1.893 *	2.322 **	2.662 **	1.284
R^2(adj)	16.2%	9.2%	12.7%	7.2%	12.6%
Out-of-sample	14.0%	4.6%	14.4%	9.7%	22.5%
Joint Significance	0.000	0.002	0.003	0.002	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 4.5 - continued.

Variables	Spain	Italy	France	Germany	UK
PANEL C - WGBI 5+ years					
Term Spread					
coef	-0.655	-0.631	-0.466	-0.434	-0.441
t-stat	-4.195 ***	-2.997 ***	-2.860 ***	-2.719 **	-2.861 ***
R^2(adj)	13.9%	7.4%	7.8%	5.7%	3.6%
Out-of-sample	6.2%	8.4%	12.3%	8.8%	3.2%
Real Bond Yield					
coef	-0.103	-0.174	-0.387	-0.256	-0.048
t-stat	-0.374	-0.972	-1.718 *	-1.492	-0.283
R^2(adj)	-0.9%	-0.1%	2.0%	2.9%	-1.2%
Out-of-sample	-2.6%	1.1%	6.6%	0.7%	8.2%
IRW					
coef	-1.441	0.444	1.445	1.587	5.189
t-stat	-0.785	0.191	0.916	1.052	1.564
R^2(adj)	-0.7%	-1.2%	-0.8%	-0.3%	1.0%
Out-of-sample	-2.6%	1.1%	6.6%	0.7%	8.2%
DM spread					
coef	-0.206	-0.133	-0.181		0.291
t-stat	-0.570	-0.454	-0.238		0.547
R^2(adj)	-0.6%	-0.9%	-1.2%		-1.0%
Out-of-sample	-2.9%	-2.8%	-1.5%		0.4%
Term Spread					
coef	-1.263	-1.140	-0.471	-0.755	-1.710
t-stat	-5.145 ***	-3.101 ***	-2.443 **	-1.684 *	-3.199 ***
Real Bond Yield					
coef	1.141	0.521	-0.062	0.417	0.955
t-stat	3.141 ***	1.569	-0.133	0.909	2.209 **
IRW					
coef	5.635	5.005	3.376	0.510	7.486
t-stat	2.077 **	1.664	1.339	0.249	2.269 **
DM spread					
coef	-1.103	-0.507	-0.747		1.397
t-stat	-2.194 **	-1.276	-0.427		2.433 **
Jd					
coef	0.680	1.041	1.179	0.868	-0.088
t-stat	1.833 *	2.269 **	2.903 ***	2.200 **	-0.154
R^2(adj)	23.0%	10.1%	8.7%	7.1%	16.5%
Out-of-sample	2.7%	-2.8%	5.3%	2.7%	3.3%
Joint Significance	0.000	0.011	0.002	0.014	0.003
Term Spread					
coef	-0.753	-0.740	-0.492		-0.796
t-stat	-3.460 ***	-3.373 ***	-3.082 ***		-3.626 ***
IRW					
coef	2.671	4.087	3.392		8.054
t-stat	1.052	1.421	1.375		2.439 **
DM spread					
coef	-0.025	-0.140	-0.887		1.148
t-stat	-0.061	-0.399	-0.829		2.188 **
Jd					
coef	0.645	0.977	1.183		0.177
t-stat	1.535	2.461 **	2.880 ***		0.399
R^2(adj)	12.7%	7.9%	9.8%		8.7%
Out-of-sample	3.8%	0.5%	5.3%		8.5%
Joint Significance	0.000	0.005	0.001		0.003
Term Spread					
coef	-0.754	-0.756	-0.482	-0.417	-0.605
t-stat	-3.628 ***	-3.409 ***	-2.897 ***	-2.711 ***	-3.595 ***
IRW					
coef	2.549	3.262	1.909	1.557	8.790
t-stat	1.031	1.522	1.102	0.953	2.652 **
Jd					
coef	0.645	0.983	1.134	0.877	0.111
t-stat	1.536	2.482 **	2.586 **	2.328 **	0.261
R^2(adj)	13.8%	8.8%	9.8%	7.0%	6.9%
Out-of-sample	4.3%	2.9%	9.0%	2.6%	6.9%
Joint Significance	0.000	0.002	0.006	0.004	0.002

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 4.5 - continued.

Variables	Portugal	Spain	Italy	France	Germany	UK
PANEL D - WGBI all maturities						
Term Spread						
coef	-0.254	-0.438	-0.354	-0.342	-0.275	-0.376
t-stat	-1.408	-4.246 ***	-2.609 **	-2.919 ***	-2.435 **	-3.011 ***
R^2(adj)	3.4%	14.0%	6.1%	7.9%	4.4%	4.2%
Out-of-Sample	10.7%	7.5%	7.6%	12.9%	10.6%	4.7%
Real Bond Yield						
coef	0.083	-0.091	-0.095	-0.302	-0.135	-0.053
t-stat	-2.085 **	-0.509	-0.897	-1.844 *	-1.017	-0.383
R^2(adj)	4.1%	-0.7%	-0.3%	2.5%	0.0%	-1.1%
Out-of-Sample	2.8%	-1.7%	0.6%	7.7%	0.0%	6.1%
IRW						
coef	-0.869	-0.722	0.690	1.231	1.459	4.340
t-stat	-0.740	-0.580	0.510	1.159	1.480	1.586
R^2(adj)	-0.5%	-0.9%	-1.0%	-0.6%	0.3%	1.1%
Out-of-Sample	0.1%	1.8%	-2.0%	-2.9%	-2.9%	-1.4%
DM spread						
coef	-0.245	-0.154	-0.053	-0.167		0.258
t-stat	-1.497	-0.657	-0.311	-0.304		0.587
R^2(adj)	1.8%	-0.4%	-1.1%	-1.1%		-0.9%
Out-of-Sample	-2.2%	-2.9%	-2.9%	-2.0%		-0.4%
Term Spread						
coef	-0.080	-0.843	-0.654	-0.336	-0.527	-1.416
t-stat	-0.301	-5.302 ***	-3.271 ***	-2.362 **	-1.715 *	-3.127 ***
Real Bond Yield						
coef	-0.132	0.737	0.271	-0.077	0.329	0.772
t-stat	-0.852	3.157 ***	1.389	-0.228	1.020	2.116 **
IRW						
coef	-0.548	4.321	3.360	2.809	0.635	6.312
t-stat	-0.381	2.415 **	1.817 *	1.532	0.464	2.430 **
DM spread						
coef	-0.012	-0.777	-0.289	-0.573		1.199
t-stat	-0.053	-2.317 **	-1.204	-0.454		2.513 **
Jd						
coef	0.370	0.509	0.626	0.919	0.632	-0.005
t-stat	1.396	2.144 **	2.006 **	2.992 ***	2.404 **	-0.012
R^2(adj)	0.6%	23.2%	8.8%	10.1%	7.1%	18.0%
Out-of-sample	5.8%	5.1%	-2.8%	7.0%	5.4%	4.7%
Joint Significance	0.207	0.000	0.026	0.001	0.018	0.001
Term Spread						
coef	-0.210	-0.513	-0.434	-0.363		-0.679
t-stat	-1.073	-3.646 ***	-3.156 ***	-3.150 ***		-3.767 ***
IRW						
coef	0.010	2.406	2.853	2.829		6.771
t-stat	0.008	1.441	1.716 *	1.581		2.591 **
DM spread						
coef	-0.112	-0.080	-0.087	-0.749		0.998
t-stat	-0.489	-0.301	-0.418	-0.968		2.273 **
Jd						
coef	0.353	0.486	0.590	0.925		0.209
t-stat	1.247	1.854 *	2.128 **	2.923 ***		0.597
R^2(adj)	0.9%	13.7%	7.2%	11.2%		10.2%
Out-of-sample	6.3%	6.5%	0.8%	6.9%		11.3%
Joint Significance	0.480	0.000	0.013	0.000		0.001
Term Spread						
coef	-0.247	-0.517	-0.443	-0.354	-0.261	-0.513
t-stat	-1.455	-3.897 ***	-3.199 ***	-2.943 ***	-2.377 **	-3.763 ***
IRW						
coef	-0.309	2.019	2.344	1.577	1.461	7.410
t-stat	-0.349	1.281	1.898 *	1.260	1.376	2.804 **
Jd						
coef	0.368	0.486	0.595	0.883	0.639	0.152
t-stat	1.296	1.829 *	2.171 **	2.610 **	2.559 **	0.446
R^2(adj)	2.0%	14.6%	8.2%	10.7%	6.6%	8.0%
Out-of-sample	7.8%	7.3%	2.9%	10.6%	5.3%	9.3%
Joint Significance	0.369	0.000	0.004	0.004	0.004	0.001

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Contrary to what is usually found for the US market, the coefficient of the term spread is negative.[60] This result can be related to the fact that this variable also captures information on expected inflation rate. Expectations about the inflation rate are positively correlated with general economic activity and, therefore, negatively correlated with expected returns. In fact, during the period of analysis, there is a positive mean for the term spread, which might signal expectations of higher inflation.

Although not being as significant as found by Ilmanen (1995), the IRW is significant for the UK market (for all indices) and also for other markets for the subsectors of 1-3 and 3-5 years to maturity. Its coefficient is positive, as should be expected. We also find that the dummy for the month of January is somewhat significant for all markets except for the UK market. It seems that expected bond market returns are higher in January. Surprisingly, the DM yield spread does not seem to have any predictive ability for the countries expected to participate in the EMU, however it appears significant for the UK market. In this case, as UK was a voluntary EMU out-country, this spread might capture the exchange rate risk of the British pound in relation to the Deutsch mark.

In general, the evidence of predictability is slightly higher for the shorter maturity indices (1-3 and 3-5 years to maturity) both in-sample and out-of-sample. Comparing the results of the three multiple regressions, the predictability out-of-sample is always higher for the one that includes the term spread, IRW and the January dummy.

[60] In a study of the Japanese market Cai, Chan and Yamada (1997) also found a negative sign for the term spread variable.

We test for the joint significance of the variables (Wald test[61]). At the 5 percent level we reject the null hypothesis that the variables are jointly equal to zero, for all markets except the Portuguese market.

In conclusion, it is important to reinforce that, considering the risk of data mining, we have limited ourselves to a reduced set of information variables. There might be others which could lead to better results.[62] Our objective was not to determine the best model for each country. Instead, we concentrate only on a few variables which, due to economic reasons, should represent useful information in predicting bond returns.

4.5. INVESTMENT IMPLICATIONS

In the previous section we found that some information variables are useful as predictors of excess bond returns in European markets. These findings should be relevant for investors. The important question is to know whether investment strategies, that exploit this return predictability, produce economically significant profits.

In order to answer this question, similarly to previous studies (e.g.: Ilmanen, 1995, 1996, 1997; Deaves, 1997) we implement and analyse the historical performance of dynamic investment strategies and compare their historical returns to the returns of passive strategies that have a constant portfolio composition regardless of the economic

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[61] The Wald test computes the test statistic by estimating the unrestricted regression without imposing the coefficient restriction specified by the null hypothesis (in this case the hypothesis that the additional coefficients are jointly equal to zero) and measuring how close the unrestricted estimates come to satisfying the restrictions. Under the null hypothesis, the Wald statistic has an asymptotic $\chi^2(q)$, with q being the number of restrictions. If the errors from the regression are assumed to be independent and identically normally distributed then we have an exact, finite sample F-statistic. We report the p-value associated with the Chi-square statistic as in our regressions we have heteroscedastic and autocorrelated errors.

[62] Variables like the level of short-term interest rates, the volatility of past interest rates, dividend yield and many others might be considered. In a preliminary analysis, we have considered some of these variables and, besides finding that they do not improve our results, we observe that as many variables are considered, the problem of multicollinearity becomes more severe.

conditions. The objective is to show if variables like term spread, IRW and others could have been used to enhance returns.

As a passive strategy we consider the strategy that involves always holding the market (stay in bonds). Another alternative strategy could involve always staying in cash and obtain a zero excess return (because this strategy is equivalent to rolling over the one-month risk-free rate). Instead, the dynamic strategy involves holding one unit of the bond (market) if its predicted premium is positive and none of the bond if its predicted premium is negative. This position is rebalanced monthly. As it is based on the sign of the predicted excess bond return, and not in its magnitude, this strategy involves a relatively low frequency of trading and no short-selling is allowed.[63]

Given that our sample period is not much long, we consider both in-sample and out-of-sample estimates of predicted excess bond returns (or risk premiums). In-sample estimation assumes that investors know in advance the statistical relation between the predetermined information variables and subsequent excess bond returns. The estimates are the fitted values from the regressions of excess bond returns on the information variables for the whole sample period. This approach might exaggerate the potential profitability of the dynamic strategy. A more reasonable approach is to forecast the next month's excess bond return using only available historical data and to update the forecast each month using new data.[64] We define, as our initial sample, the period February 1994 to December 1997. Thus, the estimates are one-step ahead forecasts

[63] Another alternative would be a scaled strategy in which the size of the position in the bond market depends on the magnitude of the predicted excess returns. This is a more transaction-intensive strategy and it assumes that Government bonds may be shorted with the full use of proceeds and, consequently, the results would be less reliable (see Ilmanen, 1995).

[64] Similarly to what we have done to calculate the out-of-sample R^2(adj.) presented in Table 4.5.

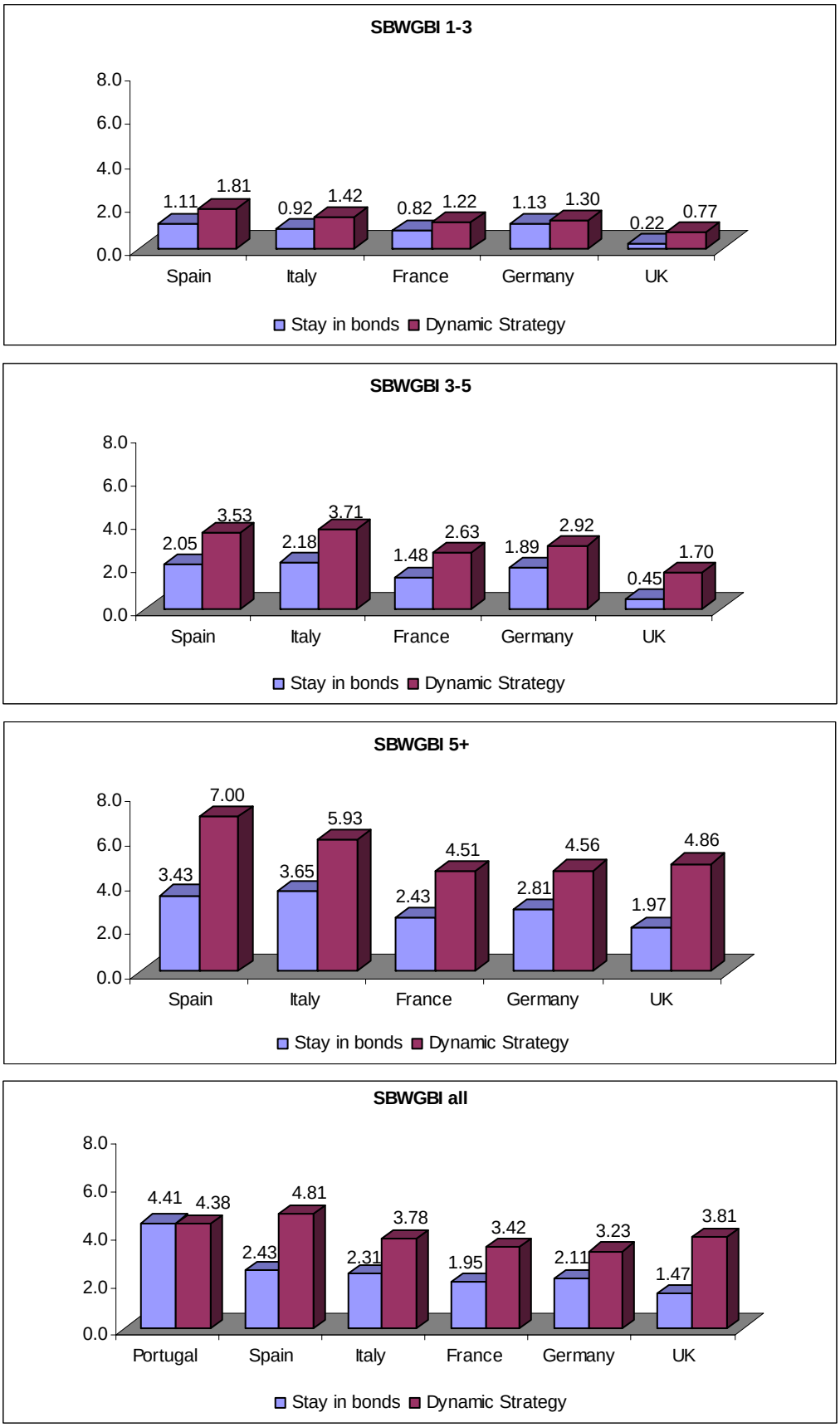
based on rolling regressions that begin in January 1998 and use all the available historical information since February 1994.

We concentrate our analysis on the multiple regression model (as reported at the bottom of each panel in Table 4.5): the model with term spread, IRW and a January dummy. This model is chosen because its variables were found to be the most significant. The introduction of the two other variables did not seem to add much in terms of explanatory power, as well as presenting some problems of high correlations.

In Figure 4.2 we compare the annualized mean excess returns for the passive trading strategy with those of the dynamic strategy considering the in-sample estimation for the period February 1994 to December 2000.[65] Only with the exception of the Portuguese market (for the all maturities index), with a very weak underperformance of about 0.035 percent, the excess returns of the dynamic strategy are superior to those of the passive strategy. The outperformance varies between 0.18 percent (for the German 1-3 maturity subsector) and 3.57 percent (for the Spanish 5+ maturity subsector). The longer maturity subsector has the higher outperformance.

[65] As the passive strategy involves always holding the market, the reported means are equal to the annualized monthly values of Table 4.1.

Figure 4.2 - Annualized mean of excess bond returns (in percentage) over the period February 1994 to December 2000: passive versus dynamic strategy



To evaluate if this outperformance is consistent over the sample period, we also examined the cumulative performance of both strategies. Figure 4.3 to Figure 4.6 show how the profits from the strategies grow over time for the bond market indices. The dark line shows the cumulative excess returns of the dynamic strategy. As it also shows the relative performance of the dynamic strategy versus the cash market, whenever this line declines it means that the dynamic strategy underperforms the cash market. The other solid line shows the cumulative excess return of the passive "stay in bonds" strategy. The dashed line shows the relative performance of the dynamic versus the passive strategy. The line representing a perfect foresight strategy should always be rising or flat (if the performance of the two strategies is equal). The relative performance of the dynamic strategy over the cash market increases gradually through most of the sample period. Most of the outperformance of the dynamic strategy relative to bonds occurred during the year of 1994, as bonds were avoided during a bear market.

Figure 4.3 - Excess returns for the passive strategy versus the dynamic strategy over the sample period February 1994 to December 2000, for the 1-3 years to maturity subsector

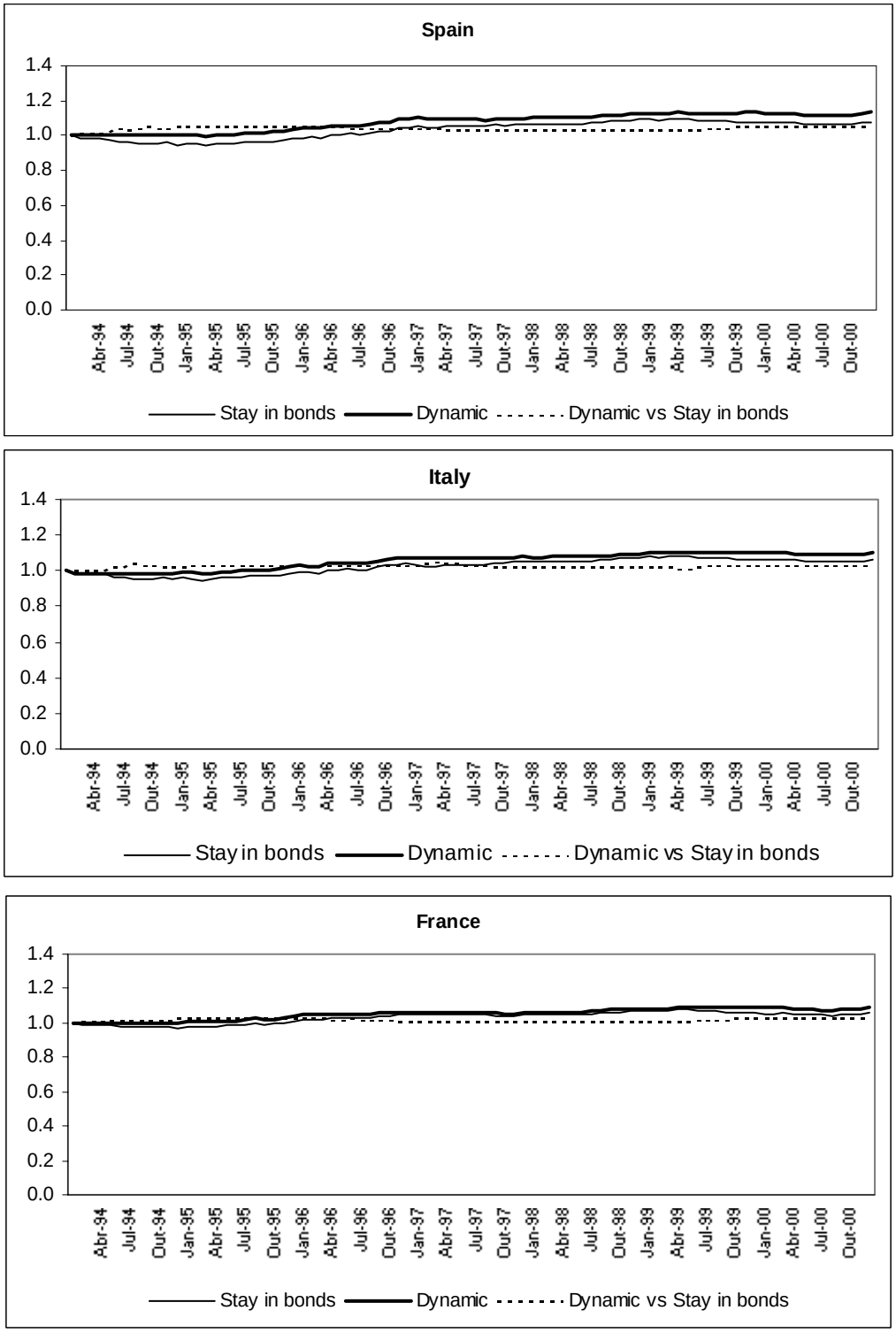
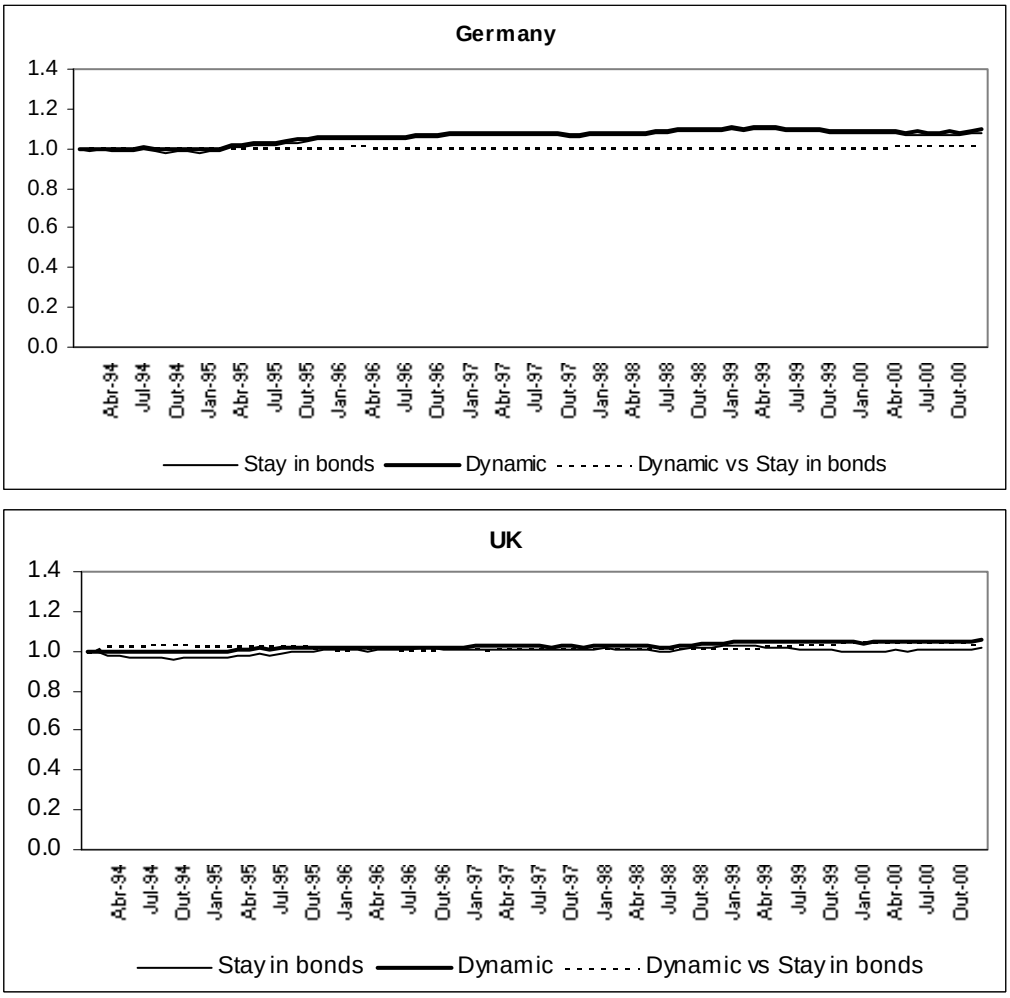
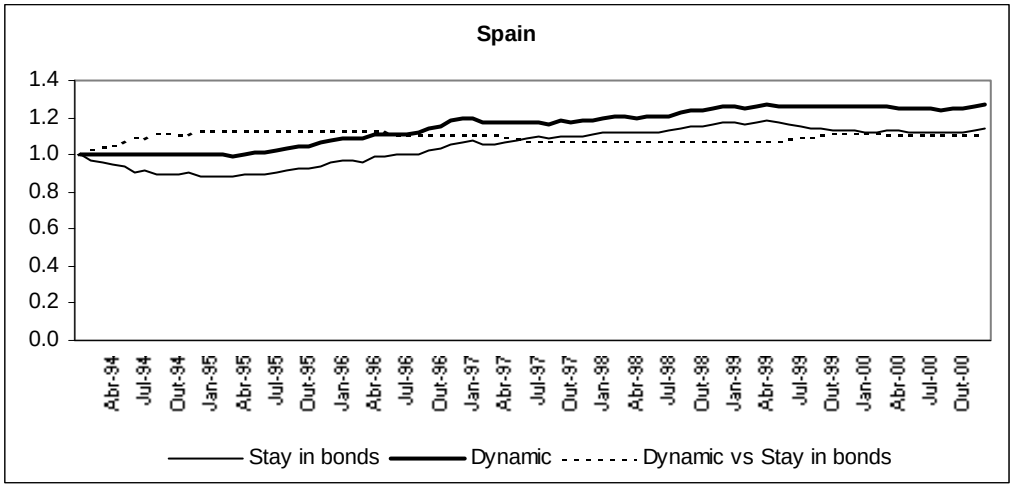


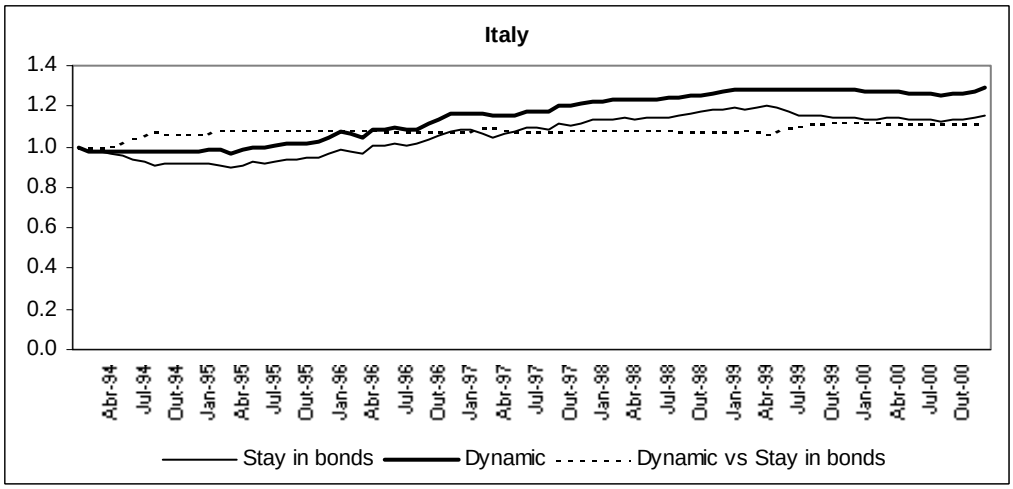
Figure 4.3 – continued.



Note: The dark line shows the cumulative excess returns of the dynamic strategy. The other solid line shows the cumulative excess returns of the passive "stay in bonds" strategy. The dashed line shows the relative performance of the dynamic versus the passive strategy.

Figure 4.4 - Excess returns for the passive strategy versus the dynamic strategy over the sample period February 1994 to December 2000, for the 3-5 years to maturity subsector





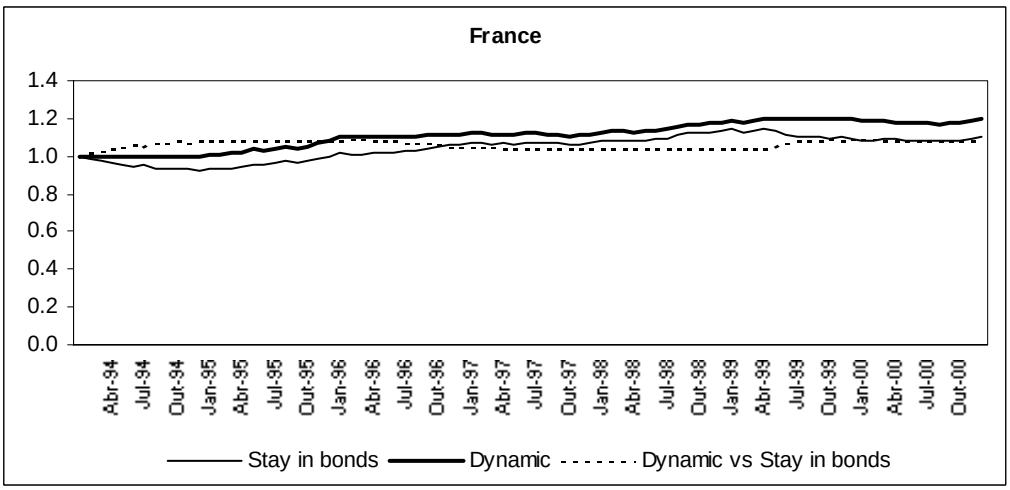
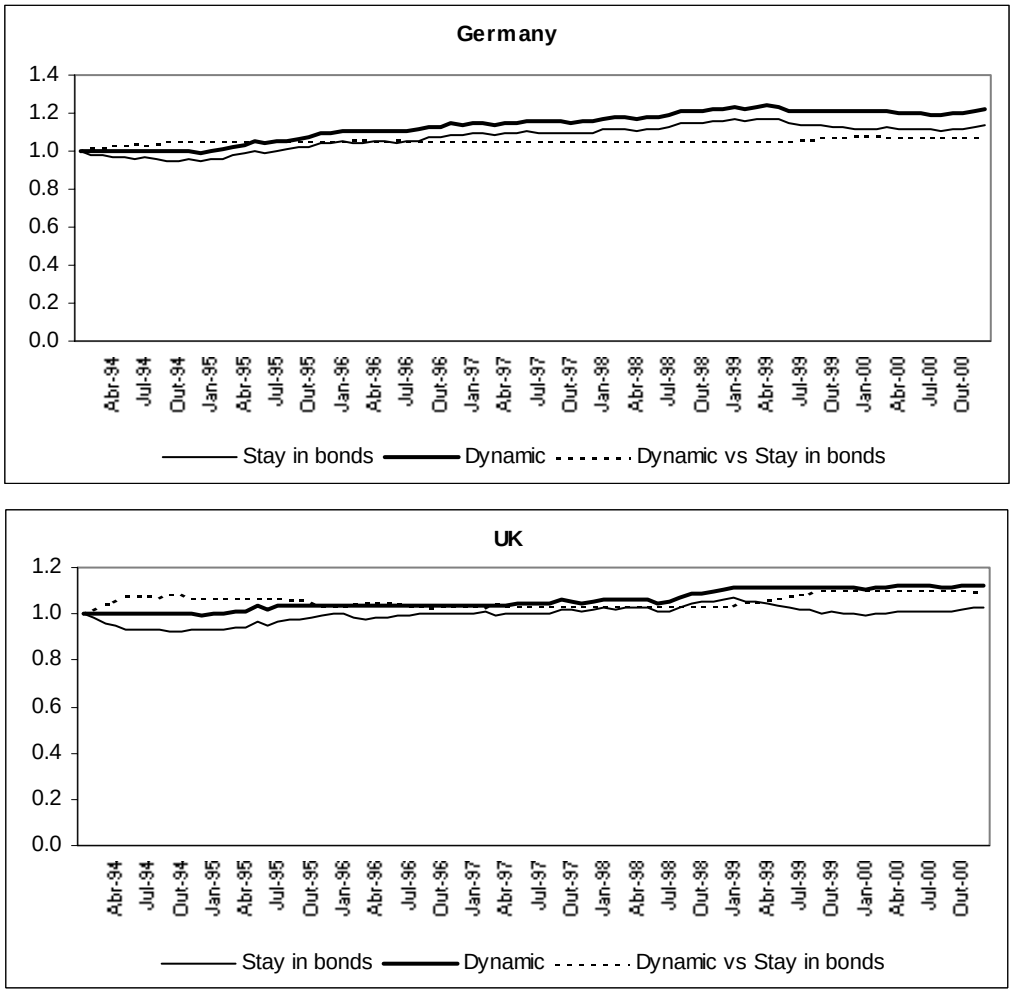
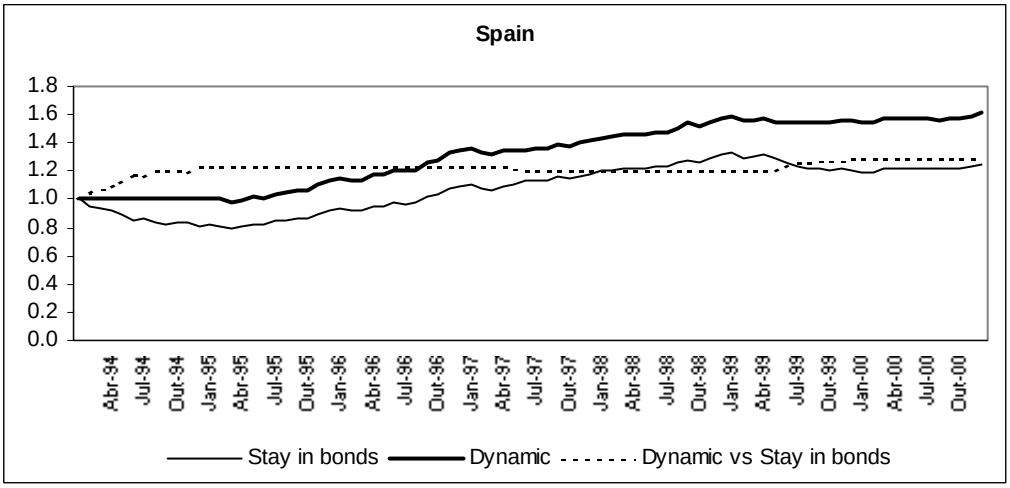


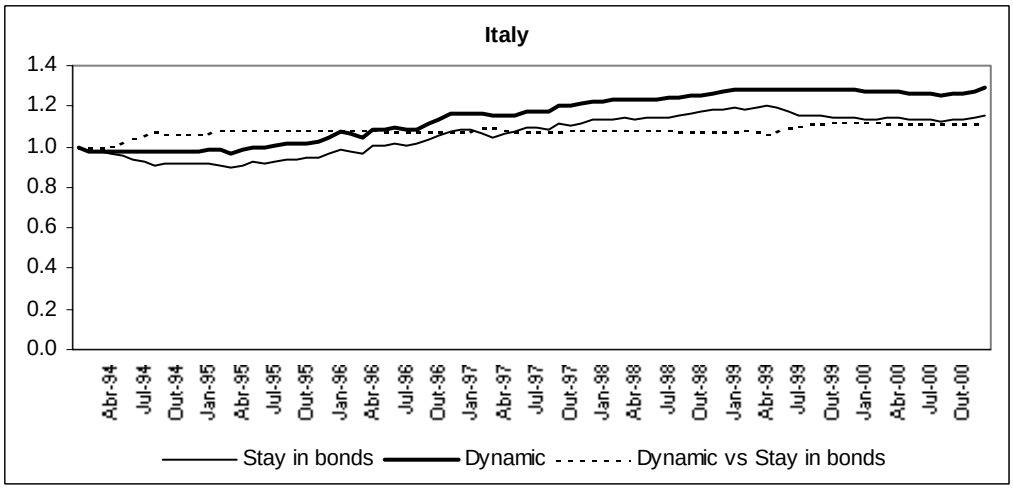
Figure 4.4 – continued.



Note: The dark line shows the cumulative excess returns of the dynamic strategy. The other solid line shows the cumulative excess returns of the passive "stay in bonds" strategy. The dashed line shows the relative performance of the dynamic versus the passive strategy.

Figure 4.5 - Excess returns for the passive strategy versus the dynamic strategy over the sample period February 1994 to December 2000, for the 5+ years to maturity subsector





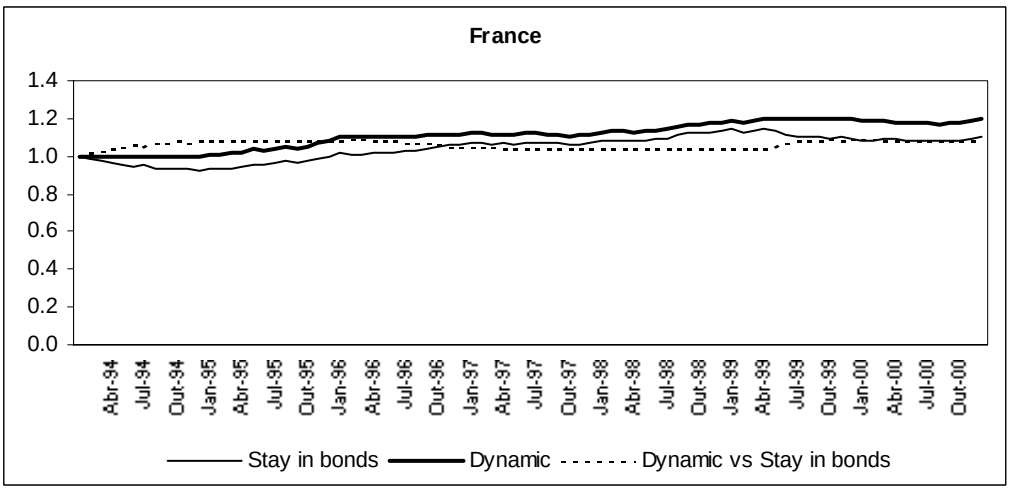
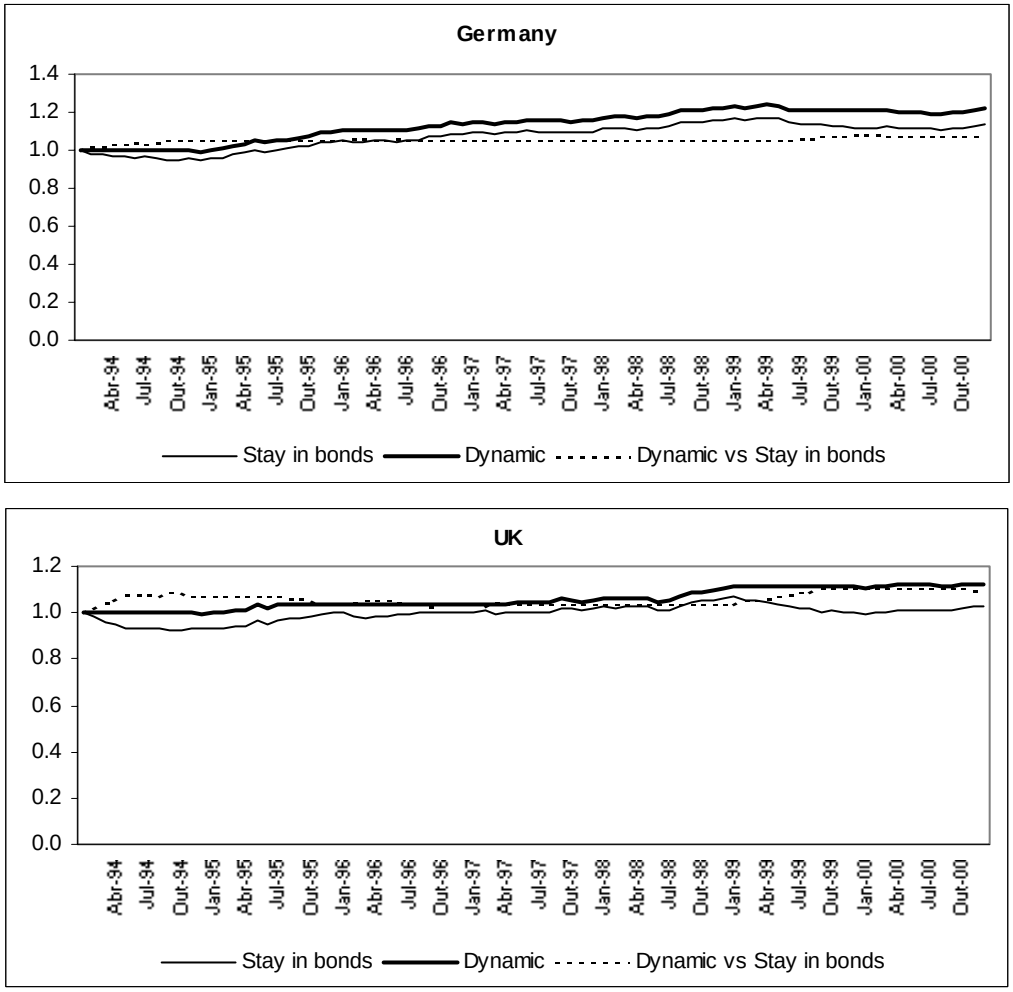


Figure 4.5 – continued.



Note: The dark line shows the cumulative excess returns of the dynamic strategy. The other solid line shows the cumulative excess returns of the passive "stay in bonds" strategy. The dashed line shows the relative performance of the dynamic versus the passive strategy.

Figure 4.6 - Excess returns for the passive strategy versus the dynamic strategy over the sample period February 1994 to December 2000, for the broad all maturities index

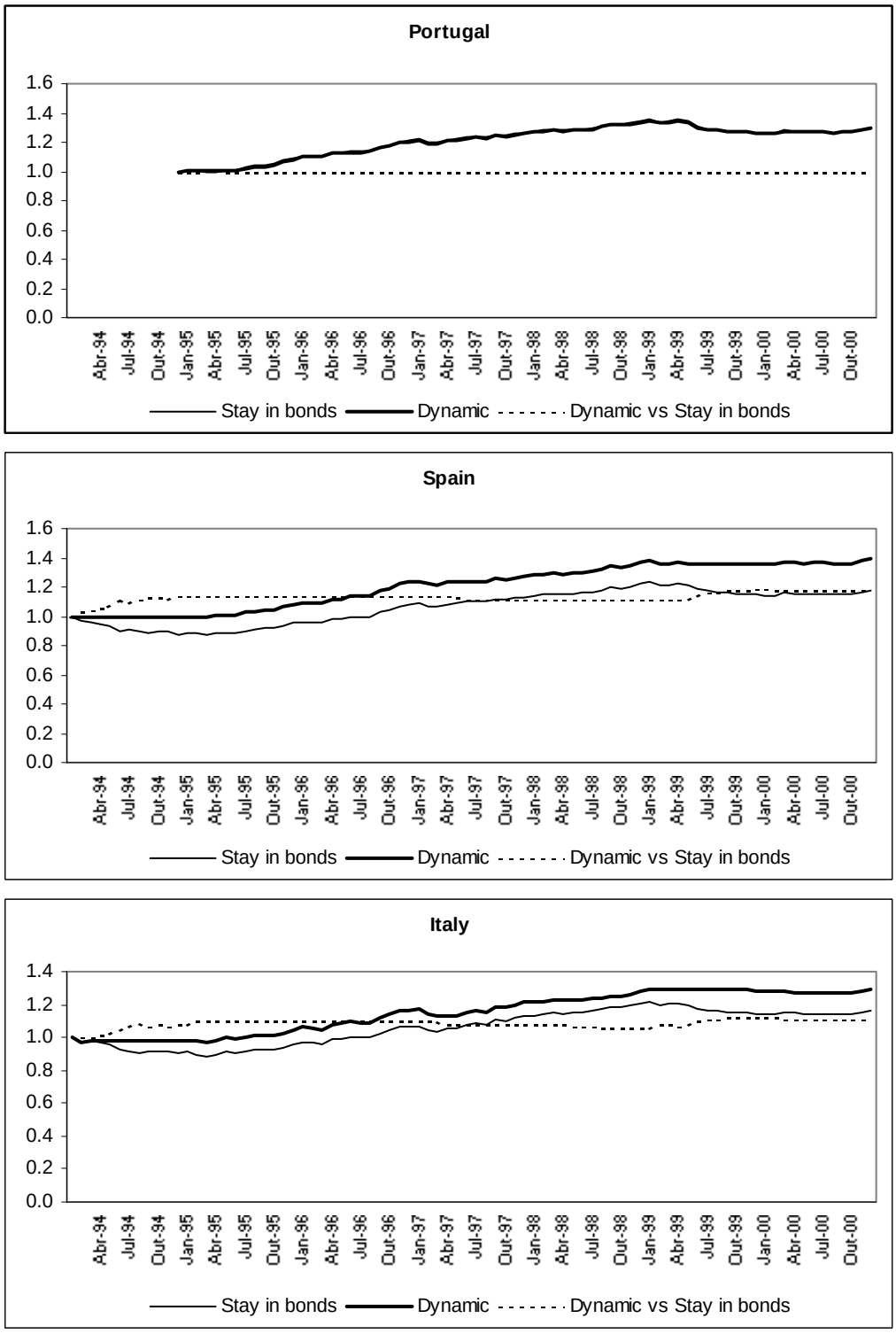
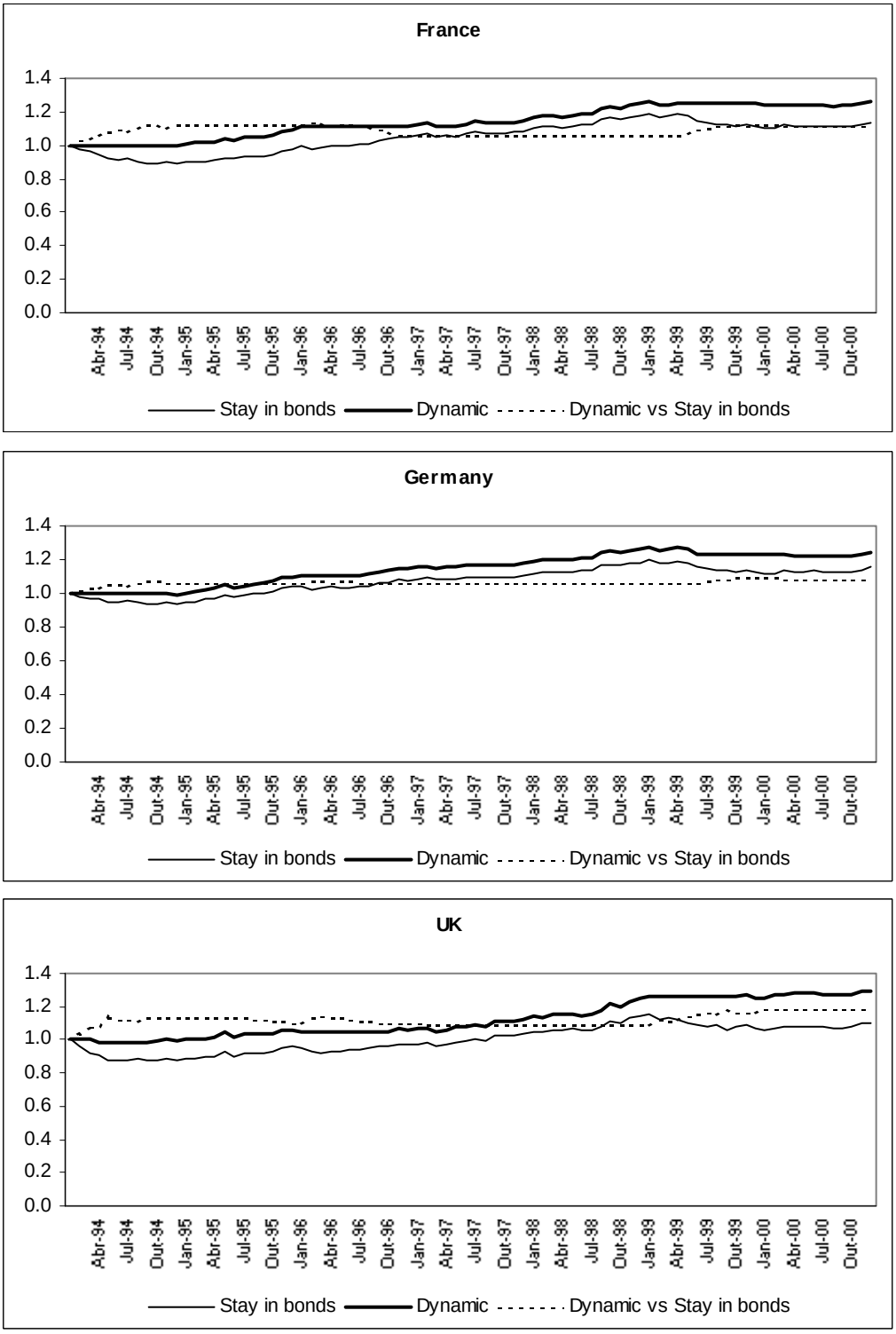


Figure 4.6 – continued.



Note: The dark line shows the cumulative excess returns of the dynamic strategy. The other solid line shows the cumulative excess returns of the passive "stay in bonds" strategy. The dashed line shows the relative performance of the dynamic versus the passive strategy.

The inferences for the risk-adjusted performance are even more favourable to the dynamic strategy, as shown in Table 4.6 below. The risk is measured by volatility, shortfall frequency and frequency of "being wrong". The volatility (measured by the standard deviation of returns) of the dynamic strategy is, as should be[66], lower than that of the static strategy. Contrary to what we found for the passive strategy, the T-test for the monthly returns of the dynamic strategy allows us to reject the hypothesis of a mean equal to zero in almost all the cases.[67] Thus, the Sharpe ratio is clearly higher.

We can see that the dynamic strategy had some success in avoiding negative returns. The shortfall probability, defined as the frequency of negative realized excess returns, ranges between 16 and 25 percent, while the corresponding values for the passive strategy ranges between 29 and 45 percent. Investors following such a dynamic strategy avoid the bond market for several months and earn zero.

Following the information variables and trading according the predicted excess bond returns, leads to a correct decision with a frequency between 57 (Italy 1-3 years to maturity) and 72 percent (for Portugal and Spain all maturities). For most of the countries, this frequency is superior to 60 percent.

[66] Since it has, at most, the same level of volatility as bonds, and the rest of the time it is invested in cash.
[67] We have also performed a T-test for the difference in returns of the two strategies and, in several cases, the differential return is statistically significant.

Table 4.6 - Performance of passive and dynamic bond trading strategies (in-sample) for the period February 1994 to December 2000

This table compares the in-sample performance of a passive/static and a dynamic bond investment strategy for each country and for each maturity subsector. Panel A reports the results of the passive strategy while Panel B presents the results of the dynamic strategy. The passive strategy involves always staying in bonds. The dynamic strategy involves buying one unit of the bond (market) if its predicted premium is positive and none of the bond if its predicted premium is negative. The expected bond risk premium is the fitted value from the regressions of realized excess bond returns on term spread, IRW and the January dummy for the whole sample period. The table reports the annualized mean (in percentage) and standard deviation of the excess returns for each trading strategy, the T-test for the hypothesis of the monthly mean=0 (for the dynamic strategy), the annualized Sharpe ratio (the ratio of the mean and standard deviation), the shortfall frequency (observed frequency of negative excess returns) and, for the dynamic strategy, the frequency of forecasts with correct sign (observed frequency of predicting positive bond risk premiums when the realized premium is positive plus observed frequency of predicting negative bond risk premiums when the realized premium is negative).

	Portugal	Spain	Italy	France	Germany	UK
Panel A - Static Strategy						
SBWGBI 1-3						
Mean		1.107	0.924	0.820	1.127	0.217
Standard Deviation		1.993	2.116	1.359	1.383	1.603
T-test mean=0		1.46	1.15	1.59	2.14 **	0.36
Sharpe Ratio		0.555	0.437	0.604	0.815	0.136
Shortfall frequency		0.42	0.41	0.45	0.39	0.45
SBWGBI 3-5						
Mean		2.053	2.181	1.483	1.890	0.446
Standard Deviation		3.816	3.984	2.832	2.735	3.097
T-test mean=0		1.42	1.44	1.38	1.82 *	0.38
Sharpe Ratio		0.538	0.547	0.523	0.691	0.144
Shortfall frequency		0.37	0.39	0.43	0.41	0.39
SBWGBI 5+						
Mean		3.433	3.649	2.435	2.812	1.967
Standard Deviation		6.346	6.757	5.506	4.612	6.445
T-test mean=0		1.42	1.42	1.16	1.60	0.80
Sharpe Ratio		0.541	0.540	0.442	0.610	0.305
Shortfall frequency		0.40	0.43	0.40	0.37	0.39
SBWGBI all						
Mean	4.411	2.435	2.306	1.945	2.110	1.469
Standard Deviation	3.153	4.240	4.124	4.001	3.223	5.212
T-test mean=0	3.43 ***	1.51	1.47	1.28	1.72 *	0.74
Sharpe Ratio	1.399	0.574	0.559	0.486	0.655	0.282
Shortfall frequency	0.29	0.40	0.41	0.40	0.37	0.40

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 4.6 - Performance of Passive and Dynamic Bond Trading Strategies for the period February 1994 to December 2000 (continued)

	Portugal	Spain	Italy	France	Germany	UK
Panel B - Dynamic Strategy						
SBWGBI 1-3						
Mean		1.806	1.420	1.217	1.304	0.765
Standard Deviation		1.339	1.596	1.057	1.277	1.093
T-test mean=0		3.55 ***	2.34 **	3.03 ***	2.69 ***	1.84 *
Sharpe Ratio		1.349	0.889	1.151	1.021	0.700
Shortfall Frequency		0.22	0.20	0.23	0.30	0.17
Frequency of forecasts with correct sign		0.66	0.57	0.60	0.63	0.61
SBWGBI 3-5						
Mean		3.528	3.712	2.627	2.915	1.700
Standard Deviation		2.471	3.199	1.985	2.209	1.992
T-test mean=0		3.76 ***	3.05 ***	3.48 ***	3.47 ***	2.24 **
Sharpe Ratio		1.428	1.160	1.323	1.320	0.853
Shortfall Frequency		0.19	0.17	0.22	0.22	0.16
Frequency of forecasts with correct sign		0.65	0.66	0.61	0.69	0.60
SBWGBI 5+						
Mean		7.000	5.933	4.513	4.563	4.858
Standard Deviation		4.603	5.555	3.513	3.540	4.481
T-test mean=0		4.00 ***	2.81 ***	3.38 ***	3.39 ***	2.85 ***
Sharpe Ratio		1.521	1.068	1.285	1.289	1.084
Shortfall Frequency		0.20	0.24	0.17	0.18	0.20
Frequency of forecasts with correct sign		0.71	0.63	0.67	0.71	0.60
SBWGBI all						
Mean	4.376	4.814	3.776	3.415	3.228	3.811
Standard Deviation	3.107	3.045	3.387	2.607	2.548	3.593
T-test mean=0	3.45 ***	4.16 ***	2.93 ***	3.45 ***	3.33 ***	2.79 ***
Sharpe Ratio	1.408	1.581	1.115	1.310	1.267	1.061
Shortfall Frequency	0.25	0.19	0.22	0.17	0.19	0.22
Frequency of forecasts with correct sign	0.72	0.72	0.65	0.67	0.71	0.58

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Note: In the case of **Portugal,** the period is restricted to January 1995 to December 2000 as explained previously.

Although the results seem to indicate that the dynamic strategy outperforms the passive one, will this survive after transactions costs are taken into account? In Table 4.7 we report the number of times that the dynamic strategy switches between the bond and cash markets during the period. As shown, this simple investment strategy implies few transactions: about one or two a year. So, transaction costs will not have a relevant impact on performance.

Table 4.7 – Number of transactions for the dynamic strategy over the period February 1994 to December 2000.

	SBWGBI 1-3	SBWGBI 3-5	SBWGBI 5+	SBWGBI all
Portugal				5
Spain	10	9	9	10
Italy	15	17	13	12
France	9	10	8	8
Germany	11	9	6	7
UK	12	14	12	14

As mentioned previously, we also conducted an out-of-sample analysis for the period January 1998 to December 2000. The results are reported in Table 4.8 below. One can observe that they are not much different from those of the in-sample analysis. However, the difference between the two strategies is not as big probably due to the fact that the shorter period considered is characterised by low bond market returns.

Table 4.8 - Performance of passive and dynamic bond trading strategies (out-of-sample) for the period January 1998 to December 2000

This table compares the out-of-sample performance of a passive/static and a dynamic bond investment strategy for each country and for each maturity subsector. Panel A reports the results of the passive strategy while Panel B presents the results of the dynamic strategy. The passive strategy involves always staying in bonds. The dynamic strategy involves buying one unit of the bond (market) if its predicted premium is positive and none of the bond if its predicted premium is negative. The expected bond risk premium is the fitted value from the rolling regressions of realized excess bond returns on term spread, IRW and the January dummy (rolling one-step ahead forecasts) that begin in January 1998 and uses all the available historical information since February 1994. The table reports the annualized mean (in percentage) and standard deviation of the excess returns for each trading strategy, the T-test for the hypothesis of the monthly mean=0, the annualized Sharpe ratio (the ratio of the mean and standard deviation), the shortfall frequency (observed frequency of negative excess returns) and, for the dynamic strategy, the frequency of forecasts with correct sign (observed frequency of predicting positive bond risk premiums when the realized premium is positive plus observed frequency of predicting negative bond risk premiums when the realized premium is negative).

	Portugal	Spain	Italy	France	Germany	UK
Panel A - Static Strategy						
SBWGBI 1-3						
Mean		0.403	0.391	0.403	0.491	0.195
Standard Deviation		1.181	1.173	1.118	1.163	1.445
T-test mean=0		0.59	0.58	0.62	0.73	0.23
Sharpe Ratio		0.341	0.333	0.360	0.422	0.135
Shortfall frequency		0.50	0.42	0.44	0.42	0.47
SBWGBI 3-5						
Mean		1.141	0.802	1.071	1.190	0.423
Standard Deviation		2.289	2.342	2.453	2.469	2.732
T-test mean=0		0.86	0.59	0.76	0.84	0.27
Sharpe Ratio		0.499	0.343	0.437	0.482	0.155
Shortfall frequency		0.39	0.39	0.44	0.44	0.42
SBWGBI 5+						
Mean		2.053	1.593	2.223	2.230	2.648
Standard Deviation		4.367	4.373	4.492	4.704	5.826
T-test mean=0		0.81	0.63	0.86	0.82	0.79
Sharpe Ratio		0.470	0.364	0.495	0.474	0.454
Shortfall frequency		0.39	0.47	0.39	0.39	0.42
SBWGBI all						
Mean	0.939	1.326	1.071	1.606	1.454	2.058
Standard Deviation	3.014	3.039	2.723	3.338	2.999	4.642
T-test mean=0	0.54	0.76	0.68	0.83	0.84	0.77
Sharpe Ratio	0.312	0.436	0.393	0.481	0.485	0.443
Shortfall frequency	0.39	0.39	0.42	0.39	0.39	0.42

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 4.8 - Performance of passive and dynamic bond trading strategies (out-of-sample) for the period January 1998 to December 2000 (continued)

	Portugal	Spain	Italy	France	Germany	UK
Panel B - Dynamic Strategy						
SBWGBI 1-3						
Mean		1.045	0.497	0.403	0.423	0.953
Standard Deviation		0.961	0.884	1.033	1.159	1.148
T-test mean=0		1.88 *	0.97	1.35	0.63	1.44
Sharpe Ratio		1.088	0.561	0.390	0.365	0.830
Shortfall Frequency		0.31	0.25	0.31	0.42	0.19
Frequency of forecasts with correct sign		0.67	0.47	0.67	0.53	0.72
SBWGBI 3-5						
Mean		2.393	1.282	1.589	1.514	2.115
Standard Deviation		1.768	1.597	2.234	2.315	2.026
T-test mean=0		2.34 **	1.39	1.23	1.13	1.81 *
Sharpe Ratio		1.353	0.803	0.711	0.654	1.044
Shortfall Frequency		0.19	0.19	0.33	0.33	0.19
Frequency of forecasts with correct sign		0.75	0.58	0.56	0.61	0.69
SBWGBI 5+						
Mean		3.808	2.507	3.812	2.729	4.135
Standard Deviation		3.440	3.223	3.638	4.249	4.944
T-test mean=0		1.92 *	1.35	1.81 *	1.11	1.45
Sharpe Ratio		1.107	0.778	1.048	0.642	0.836
Shortfall Frequency		0.19	0.25	0.22	0.25	0.28
Frequency of forecasts with correct sign		0.75	0.58	0.69	0.67	0.61
SBWGBI all						
Mean	0.939	2.744	1.648	2.155	1.894	4.297
Standard Deviation	3.014	2.350	1.984	3.041	2.723	3.545
T-test mean=0	0.54	2.02 *	1.44	1.23	1.20	2.10 **
Sharpe Ratio	0.312	1.168	0.831	0.709	0.696	1.212
Shortfall Frequency	0.39	0.19	0.22	0.25	0.25	0.25
Frequency of forecasts with correct sign	0.61	0.75	0.58	0.67	0.67	0.64

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Note: In the case of **Portugal**, the expected bond risk premium is the fitted value from the rolling regressions of realized excess bond returns on term spread, IRW and the January dummy (rolling one-step ahead forecasts) that begin in January 1998 and use all the available historical information since January 1995.

4.6. CONCLUSIONS

In this chapter we have analysed the usefulness of several information variables in predicting European bond market returns. Instead of considering a high number of variables we restrict the information set to a few variables expected to drive bond risk premiums. The variables examined were the inverse relative wealth (measured by the ratio of past wealth to current wealth), the term spread (the difference between a long-term bond yield and a short-term rate), a real bond yield (the difference between a long-term bond yield and the year-on-year inflation rate), the DM yield spread (the difference between a domestic bond yield and the yield on an equivalent German bond) and a January dummy. These variables were selected from previous research on other markets with the exception of the DM yield spread, which we considered due to the fact that our sample period is characterised by the EMU convergence. We started by pointing out the reason for selecting these specific variables and then examined their predictive ability across different bond maturities: 1-3, 3-5 and 5 or more years to maturity. The statistical problems of data mining and especially spurious regression received particular attention.

The results indicate that variables like term spread, IRW and a January dummy represent useful information to predict bond returns for different maturities. Relatively to the other variables considered, besides having some problems with correlations, they seem to add little in terms of explanatory power. The DM yield spread does not seem to have predictive ability for the countries expected to participate in the EMU, although it appears to be significant for the UK market.

Furthermore, investors using simple trading strategies, by exploiting this information, may have been able to obtain higher returns. Outperformance was

observed for all the maturities subsectors, being more evident for long-term Government bonds.

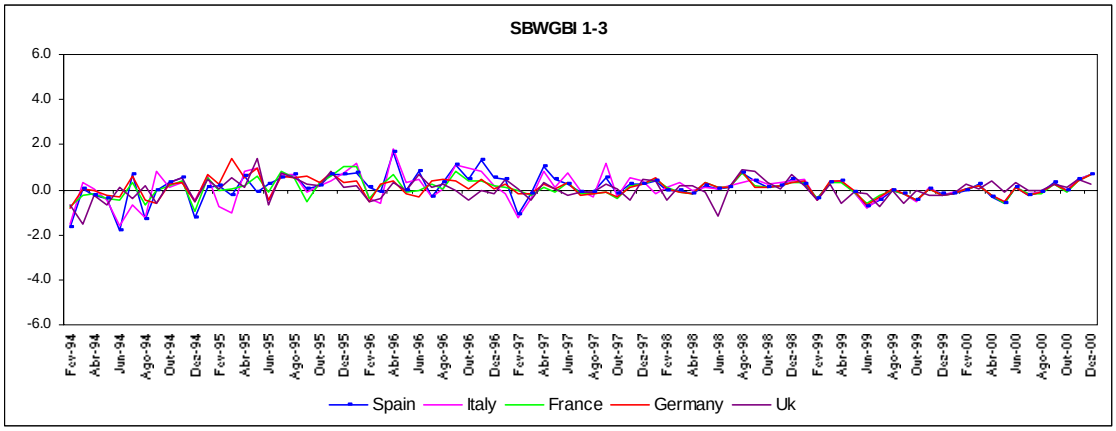
This type of evidence concerning return predictability might also have important implications on issues such as market efficiency, asset pricing and portfolio performance evaluation. These implications should be taken into account, in particular when evaluating the performance of bond funds. Indeed, if portfolio managers can enhance their returns simply by exploiting information contained on some public variables, it is not correct to interpret this added return as abnormal performance resulting from the managers´ skills. The performance measure should be positive only when the portfolio manager holds and correctly uses information that is superior to that held by the market. This is the argument underlying the Conditional Performance Evaluation approach. Incorporating variables that are predictors of returns as conditioning information should provide a more robust benchmark.

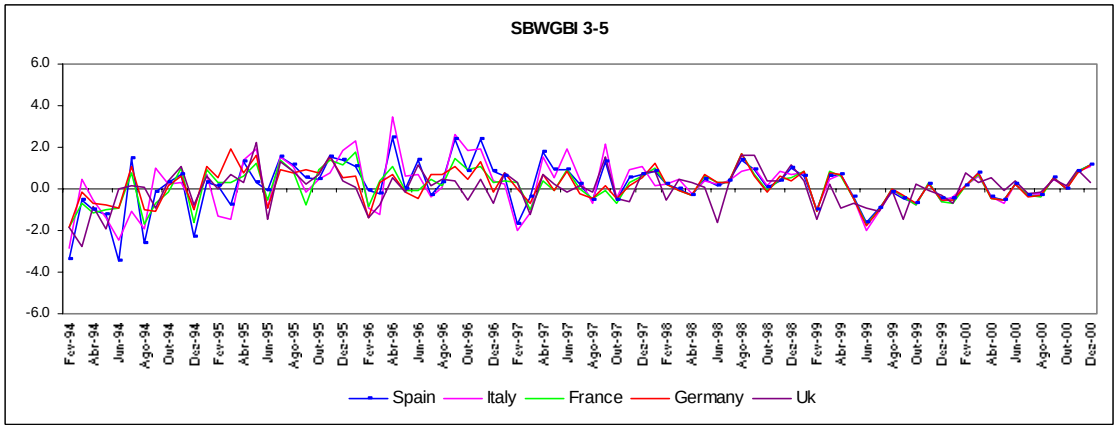
In the next chapter we will examine the impact that incorporating these information variables has upon inferences about bond fund performance, and its consistency, in the European market.

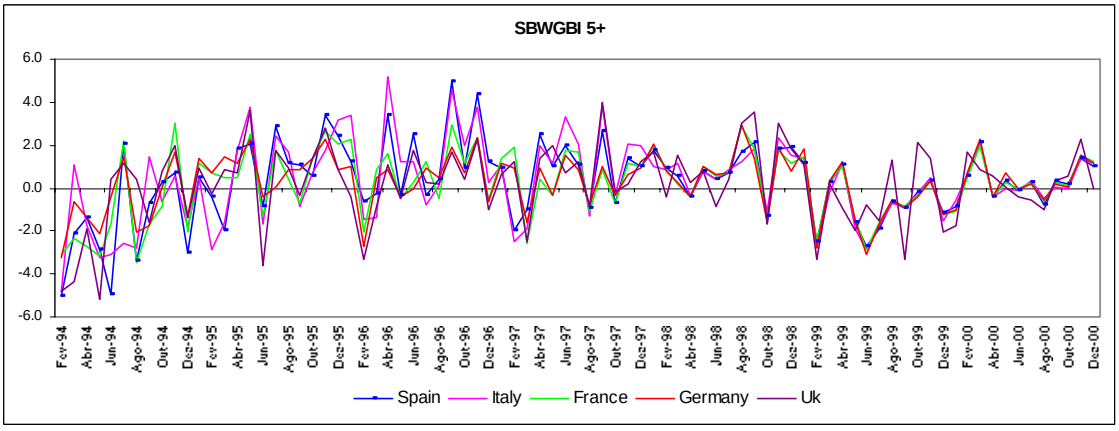
Appendices

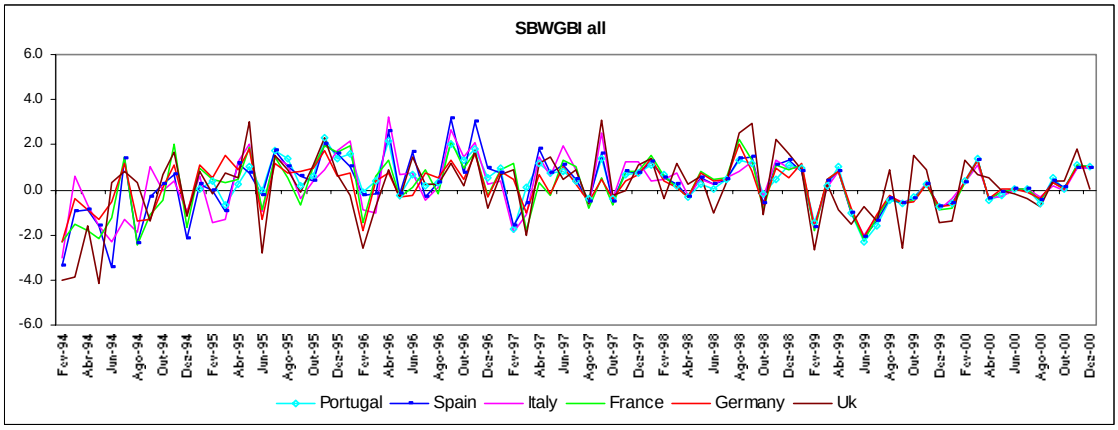
Appendix 4.1

Excess bond market returns for each maturity subsector, over the period February 1994 to December 2000



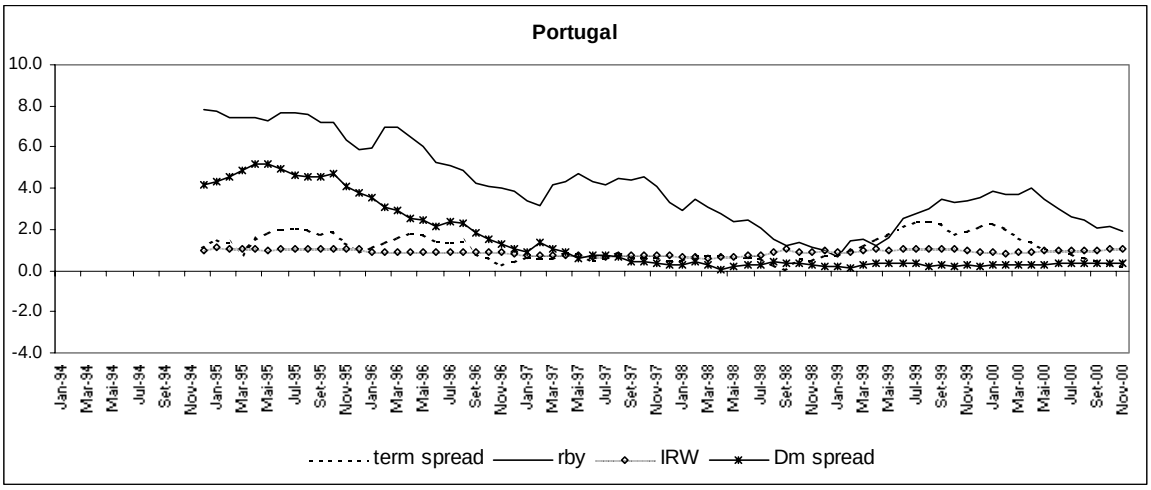


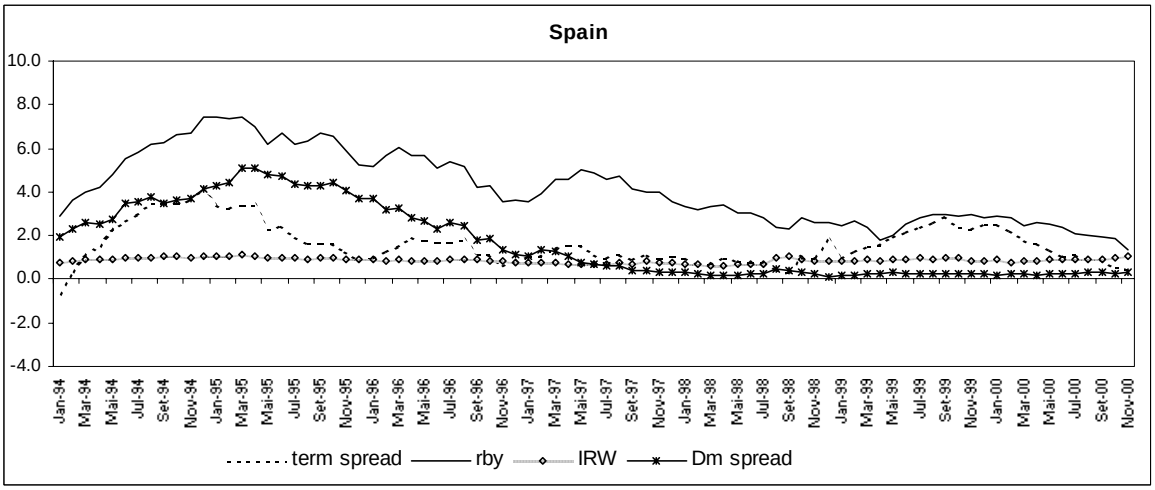


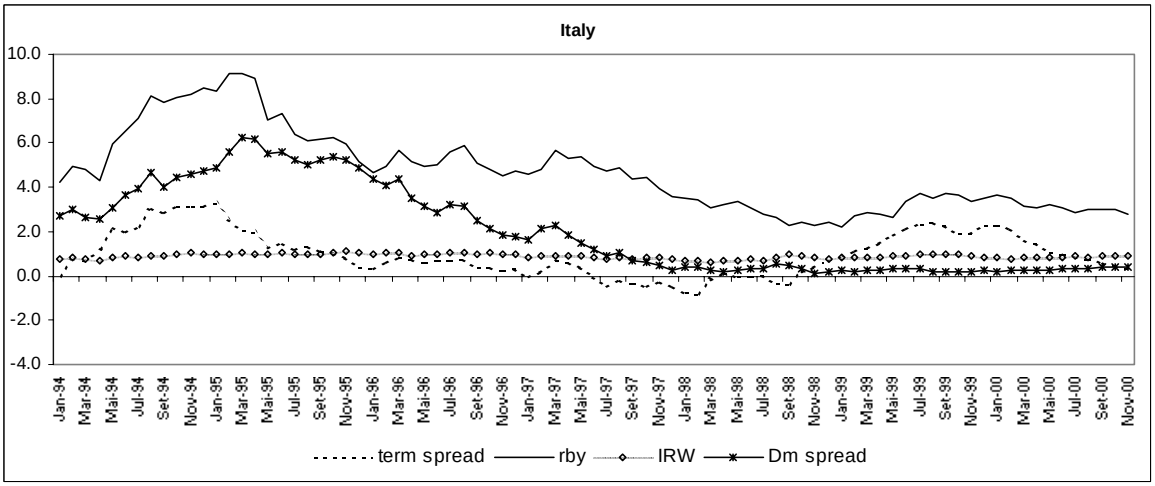


Appendix 4.2

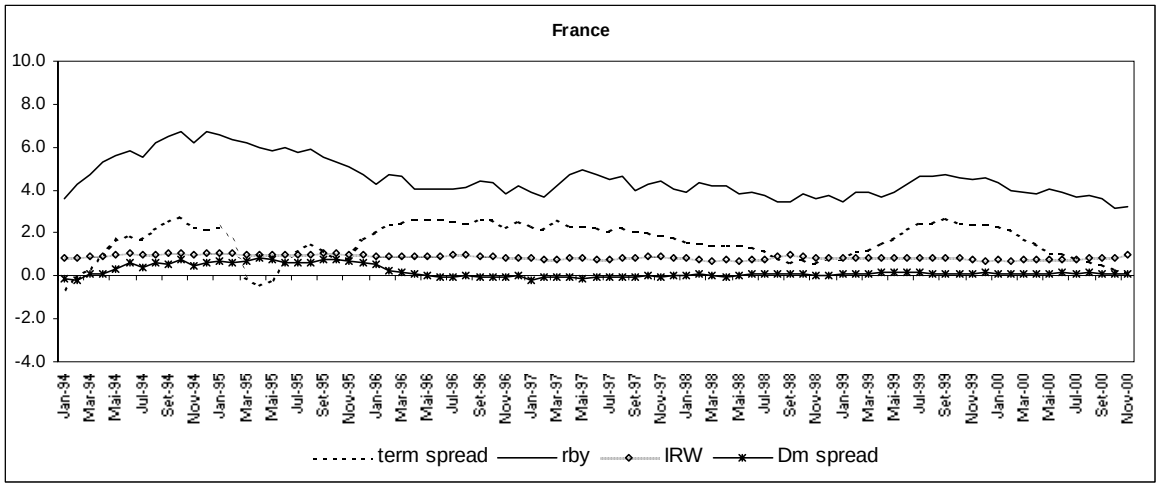
The information variables for each country, over the period January 1994 to November 2000

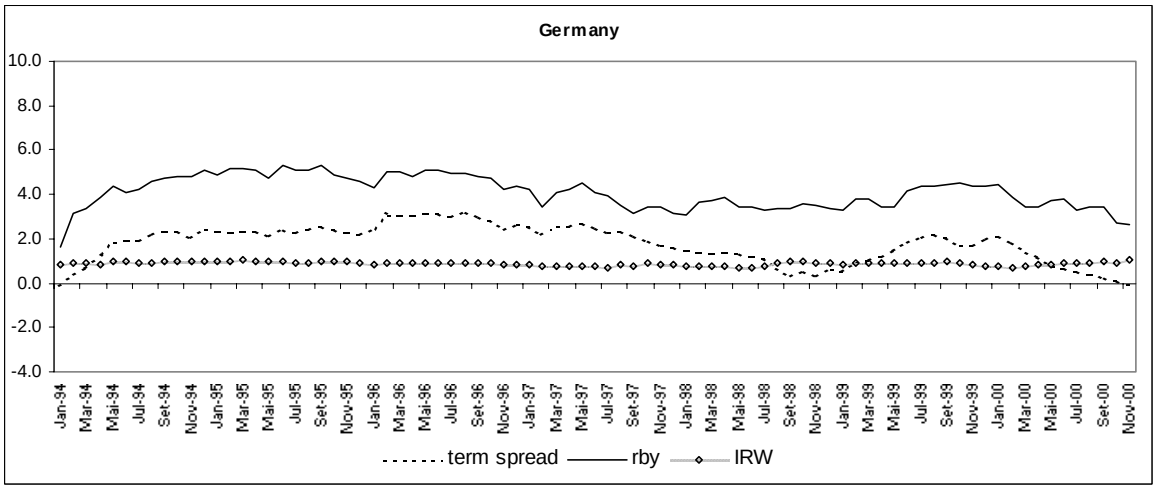


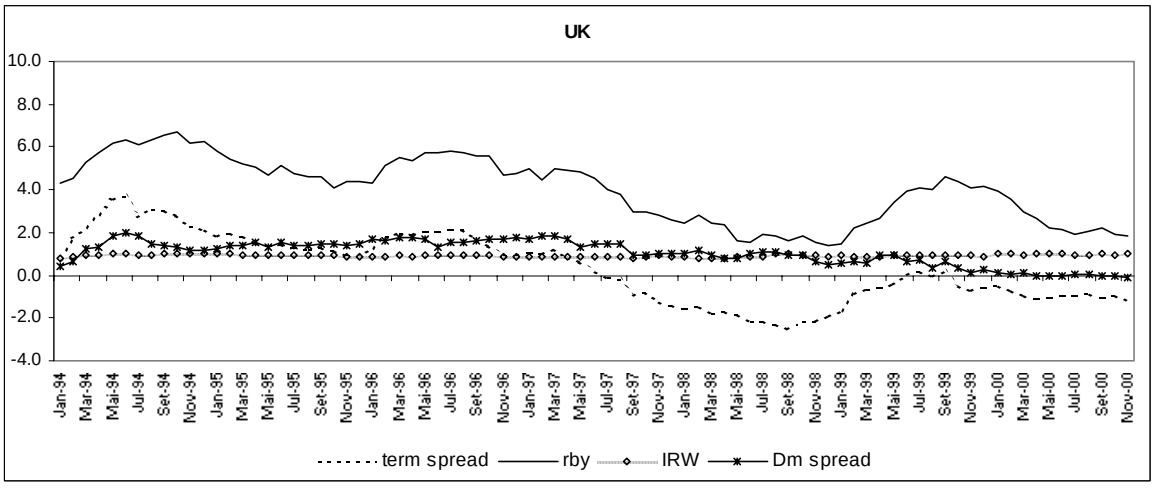




Appendix 4.2 (continued)







Appendix 4.3

Regressions of excess bond returns on lagged information variables for the subperiod February 1994 to December 1997

The dependent variable is the monthly continuously compounded excess returns on each country Salomon Smith Barney WGBI for the three maturity subsectors and for the broad all maturities index. Panel A refers to the WGBI 1-3 years to maturity, Panel B to the WGBI 3-5 years to maturity, Panel C to the WGBI 5 or more years to maturity and Panel D to the WGBI all maturities. Each panel presents the results for the simple regressions, for the multiple regressions including all the variables and for the multiple regressions excluding, respectively, the Real Bond Yield variable and both the Real Bond Yield and the DM spread variables. Term Spread, Real Bond Yield, IRW and DM spread as defined in Table 4.2. All these variables are stochastically detrended (by subtracting a 12-month moving average) and mean zero variables. Jd is the dummy for the month of January. The coefficients and the t-statistics for each of the variables are presented (standard errors are heteroscedasticity and autocorrelation adjusted following Newey and West, 1987). R^2(adj) is the in-sample adjusted coefficient of determination, expressed in percent. "Joint significance" is the probability for the Chi-square statistic of the Wald test for the restriction that all variables have a coefficient equal to zero.

Variables	Spain	Italy	France	Germany	UK
PANEL A - WGBI 1-3 years					
Term Spread					
Coef	-0.217	-0.160	-0.101	-0.057	-0.111
t-stat	-4.100 ***	-1.313	-2.369 **	-0.730	-1.900 *
R^2 (adj)	13.6%	1.8%	4.0%	-1.3%	2.2%
Real Bond Yield					
Coef	-0.047	-0.020	-0.109	0.032	0.021
t-stat	-0.458	-0.298	-1.709 *	0.373	0.236
R^2 (adj)	-1.6%	-2.1%	2.7%	-1.8%	-2.1%
IRW					
Coef	-0.669	1.506	0.198	1.635	0.009
t-stat	-0.716	1.424	0.356	1.874 *	0.008
R^2 (adj)	-1.4%	1.0%	-2.1%	3.3%	-2.2%
DM spread					
Coef	-0.069	0.022	-0.100		0.066
t-stat	-0.667	0.252	-0.639		0.341
R^2 (adj)	-1.4%	-2.1%	-1.7%		-2.0%

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.3 (continued)

Term Spread					
Coef	-0.554	-0.589	-0.130	-0.565	-0.697
t-stat	-5.128 ***	-3.463 ***	-2.413 **	-2.478 **	-4.029 ***
Real Bond Yield					
Coef	0.305	0.341	-0.178	0.395	0.383
t-stat	2.360 **	2.799 ***	-1.635	1.825 *	2.669 **
IRW					
Coef	6.064	3.852	3.180	1.525	1.451
t-stat	2.684 **	3.144 ***	3.427 ***	1.271	1.222
DM spread					
Coef	-0.518	-0.311	-0.270		0.835
t-stat	-2.735 ***	-2.865 ***	-0.766		2.460 **
Jd					
Coef	0.256	0.299	0.515	0.257	0.114
t-stat	2.583 **	0.743	2.856 ***	2.172 **	1.056
R^2 (adj)	27.9%	10.0%	17.7%	13.8%	24.9%
Joint Significance	0.000	0.000	0.001	0.000	0.000
Term Spread					
Coef	-0.450	-0.222	-0.168		-0.407
t-stat	-3.857 ***	-1.975 *	-2.886 ***		-1.948 *
IRW					
Coef	5.892	3.134	2.828		2.341
t-stat	2.397 **	2.006 *	3.287 ***		1.814 *
DM spread					
Coef	-0.248	-0.093	-0.619		0.750
t-stat	-1.976 *	-0.756	-2.415 **		1.545
Jd					
Coef	0.266	0.312	0.550		0.238
t-stat	2.666 **	0.926	2.383 **		2.278 **
R^2 (adj)	22.7%	4.6%	15.7%		12.6%
Joint Significance	0.000	0.011	0.001		0.014
Term Spread					
Coef	-0.398	-0.237	-0.124	-0.169	-0.196
t-stat	-4.073 ***	-2.083 **	-2.187 **	-1.505	-1.783 *
IRW					
Coef	3.439	2.275	0.766	2.622	2.451
t-stat	2.212 **	2.268 **	1.007	2.368 **	1.408
Jd					
Coef	0.255	0.343	0.509	0.287	0.294
t-stat	2.342 **	1.111	2.156 **	2.120 **	2.867 ***
R^2 (adj)	20.3%	6.0%	9.9%	8.3%	3.9%
Joint Significance	0.000	0.004	0.051	0.001	0.003

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.3 (continued)

Variables	Spain	Italy	France	Germany	UK
PANEL B - WGBI 3-5 years					
Term Spread					
Coef	-0.445	-0.341	-0.253	-0.220	-0.193
t-stat	-4.296 ***	-1.715 *	-2.712 ***	-1.448	-1.659
R^2 (adj)	16.0%	3.0%	7.0%	1.3%	1.3%
Real Bond Yield					
Coef	-0.050	-0.041	-0.192	-0.039	0.095
t-stat	-0.234	-0.323	-1.487	-0.240	0.588
R^2 (adj)	-2.0%	-2.0%	1.4%	-2.1%	-1.5%
IRW					
Coef	-1.409	2.784	0.363	2.675	0.701
t-stat	-0.780	1.232	0.295	1.525	0.327
R^2 (adj)	-1.3%	0.9%	-2.1%	1.8%	-2.1%
DM spread					
Coef	-0.091	0.007	-0.199		0.176
t-stat	-0.422	0.042	-0.511		0.517
R^2 (adj)	-1.8%	-2.2%	-1.8%		-1.8%
Term Spread					
Coef	-1.132	-1.317	-0.352	-1.035	-1.469
t-stat	-5.798 ***	-4.677 ***	-3.398 ***	-2.393 **	-4.595 ***
Real Bond Yield					
Coef	0.708	0.804	-0.213	0.586	0.871
t-stat	2.873 ***	3.504 ***	-0.860	1.460	3.339 ***
IRW					
Coef	10.936	8.286	6.610	3.677	3.346
t-stat	2.606 **	3.501 ***	3.594 ***	1.533	1.292
DM spread					
Coef	-0.987	-0.753	-0.907		1.664
t-stat	-2.775 ***	-3.752 ***	-1.117		2.698 **
Jd					
Coef	0.324	0.557	1.011	0.491	-0.004
t-stat	1.974 *	0.866	3.419 ***	2.675 **	-0.018
R^2 (adj)	32.7%	17.5%	18.3%	14.5%	29.2%
Joint Significance	0.000	0.000	0.000	0.000	0.000
Term Spread					
Coef	-0.891	-0.450	-0.398		-0.809
t-stat	-3.732 ***	-2.347 **	-3.673 ***		-1.919 *
IRW					
Coef	10.535	6.591	6.190		5.370
t-stat	2.174 **	2.076 **	3.540 ***		2.220 **
DM spread					
Coef	-0.359	-0.238	-1.323		1.471
t-stat	-1.496	-0.958	-2.378 **		1.544
Jd					
Coef	0.346	0.589	1.052		0.278
t-stat	1.288	1.225	2.827 ***		1.518
R^2 (adj)	24.1%	7.4%	18.9%		11.8%
Joint Significance	0.000	0.014	0.000		0.066
Term Spread					
Coef	-0.815	-0.489	-0.303	-0.447	-0.394
t-stat	-3.899 ***	-2.486 **	-2.457 **	-1.990 *	-1.859 *
IRW					
Coef	6.979	4.385	1.781	5.304	5.586
t-stat	2.095 **	2.192 **	1.204	2.362 **	1.669
Jd					
Coef	0.331	0.667	0.963	0.536	0.388
t-stat	1.297	1.614	2.484 **	2.503 **	1.824 *
R^2 (adj)	23.5%	8.0%	12.3%	12.0%	3.0%
Joint Significance	0.000	0.006	0.023	0.000	0.107

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.3 (continued)

Variables	Spain	Italy	France	Germany	UK
PANEL C - WGBI 5+ years					
Term Spread					
Coef	-0.723	-0.673	-0.479	-0.435	-0.361
t-stat	-4.184 ***	-2.189 **	-2.322 **	-1.966 *	-1.499
R^2 (adj)	16.1%	5.1%	6.1%	3.5%	0.7%
Real Bond Yield					
Coef	-0.066	-0.104	-0.245	-0.155	0.262
t-stat	-0.185	-0.470	-0.945	-0.694	0.806
R^2 (adj)	-2.1%	-1.8%	-0.7%	-1.2%	-0.9%
IRW					
Coef	-2.442	3.290	1.138	4.681	2.293
t-stat	-0.868	0.798	0.494	1.715 *	0.527
R^2 (adj)	-1.1%	-0.6%	-2.0%	2.8%	-1.9%
DM spread					
Coef	-0.154	-0.069	-0.137		0.174
t-stat	-0.426	-0.228	-0.182		0.238
R^2 (adj)	-1.8%	-2.1%	-2.2%		-2.1%
Term Spread					
Coef	-1.842	-2.478	-0.691	-1.440	-2.976
t-stat	-5.739 ***	-5.668 ***	-3.346 ***	-2.093 **	-5.079 ***
Real Bond Yield					
Coef	1.227	1.539	-0.204	0.580	1.933
t-stat	2.909 ***	4.281 ***	-0.370	0.980	3.856 ***
IRW					
Coef	17.177	13.097	11.330	8.135	7.631
t-stat	2.569 **	3.163 ***	2.786 ***	2.227 **	1.154
DM spread					
Coef	-1.645	-1.373	-1.710		2.835
t-stat	-2.707 ***	-4.105 ***	-0.942		2.617 **
Jd					
Coef	0.300	0.811	1.649	0.703	-0.739
t-stat	0.922	0.999	4.073 ***	3.000 ***	-2.825 ***
R^2 (adj)	33.4%	21.2%	10.6%	18.4%	27.5%
Joint Significance	0.000	0.000	0.000	0.000	0.000
Term Spread					
Coef	-1.424	-0.819	-0.735		-1.511
t-stat	-3.585 ***	-2.569 **	-3.396 ***		-1.826 *
IRW					
Coef	16.482	9.855	10.928		12.123
t-stat	2.105 **	1.731 *	2.848 ***		2.175 **
DM spread					
Coef	-0.556	-0.389	-2.109		2.407
t-stat	-1.371	-0.896	-1.716 *		1.376
Jd					
Coef	0.337	0.872	1.689		-0.114
t-stat	0.597	1.623	3.510 ***		-0.314
R^2 (adj)	23.3%	7.2%	12.4%		6.9%
Joint Significance	0.000	0.011	0.001		0.258
Term Spread					
Coef	-1.306	-0.884	-0.584	-0.859	-0.832
t-stat	-3.582 ***	-2.689 **	-2.251 **	-2.580 **	-1.977 *
IRW					
Coef	10.978	6.257	3.899	9.745	12.476
t-stat	1.921 *	1.763 *	1.412	2.719 ***	1.776 *
Jd					
Coef	0.314	0.999	1.547	0.748	0.066
t-stat	0.586	2.230 **	3.205 ***	2.864 ***	0.190
R^2 (adj)	22.8%	7.8%	9.0%	18.5%	2.1%
Joint Significance	0.000	0.005	0.013	0.000	0.244

*** Statistically significant at 1% ** Statistically significant at 5% *Statistically significant at 10%

Appendix 4.3 (continued)

Variables	Portugal	Spain	Italy	France	Germany	UK
PANEL D - WGBI all maturities						
Term Spread						
Coef	-0.134	0.332	-0.361	-0.352	-0.276	-0.305
t-stat	-0.857	1.881 *	-1.814 *	-2.425 **	-1.665	-1.563
R^2 (adj)	-1.2%	17.9%	3.5%	6.4%	2.0%	0.9%
Real Bond Yield						
Coef	-0.092	-0.061	-0.046	-0.201	-0.067	0.213
t-stat	-0.744	-0.264	-0.355	-1.072	-0.383	0.793
R^2 (adj)	-1.0%	-2.0%	-2.0%	-0.3%	-1.9%	-0.9%
IRW						
Coef	1.517	-1.525	2.352	0.804	3.385	1.783
t-stat	0.578	-0.812	1.001	0.477	1.717 *	0.499
R^2 (adj)	-1.1%	-1.2%	0.0%	-2.0%	2.6%	-1.9%
DM spread						
Coef	-0.052	-0.118	-0.017	-0.139		0.182
t-stat	-0.318	-0.508	-0.097	-0.256		0.302
R^2 (adj)	-2.7%	-1.6%	-2.2%	-2.1%		-2.1%
Term Spread						
Coef	-0.342	-1.226	-1.390	-0.505	-1.156	-2.500
t-stat	-0.894	-5.814 ***	-4.876 ***	-3.402 ***	-2.342 **	-5.088 ***
Real Bond Yield						
Coef	-0.084	0.774	0.866	-0.189	0.587	1.603
t-stat	-0.309	2.909 ***	3.777 ***	-0.485	1.332	3.894 ***
IRW						
Coef	5.624	12.157	7.989	8.646	5.095	6.184
t-stat	2.220 **	2.702 ***	3.239 ***	3.045 ***	1.884 *	1.185
DM spread						
Coef	-0.054	-1.121	-0.789	-1.264		2.470
t-stat	-0.233	-2.855 ***	-3.911 ***	-0.988		2.731 ***
Jd						
Coef	0.033	0.275	0.525	1.274	0.539	-0.521
t-stat	0.204	1.404	0.908	4.180 ***	2.914 ***	-2.387 **
R^2 (adj)	-1.7%	33.8%	17.8%	13.0%	16.2%	29.9%
Joint Significance	0.034	0.000	0.000	0.000	0.000	0.000
Term Spread						
Coef	-0.446	-0.961	-0.457	-0.545		-1.285
t-stat	-1.927 *	-3.755 ***	-2.301 **	-3.508 ***		-1.853 *
IRW						
Coef	5.665	11.718	6.164	8.272		9.910
t-stat	2.280 **	2.272 **	1.839 *	3.088 ***		2.215 **
DM spread						
Coef	-0.069	-0.434	-0.235	-1.635		2.116
t-stat	-0.321	-1.626	-0.923	-1.882 *		1.428
Jd						
Coef	0.015	0.298	0.560	1.311		-0.001
t-stat	0.093	0.928	1.355	3.439 ***		-0.005
R^2 (adj)	1.2%	24.7%	6.2%	14.6%		8.4%
Joint Significance	0.038	0.000	0.023	0.000		0.236
Term Spread						
Coef	-0.488	-0.869	-0.496	-0.429	-0.568	-0.688
t-stat	-2.867 ***	-3.807 ***	-2.431 **	-2.314 **	-2.264 **	-1.975 *
IRW						
Coef	5.394	7.418	3.988	2.823	6.726	10.220
t-stat	2.348 **	2.060 **	1.887 *	1.390	2.594 **	1.763 *
Jd						
Coef	0.027	0.280	0.636	1.201	0.584	0.157
t-stat	0.180	0.911	1.827 *	3.094 ***	2.740 ***	0.546
R^2 (adj)	4.2%	23.4%	6.8%	10.2%	14.8%	2.5%
Joint Significance	0.017	0.000	0.010	0.015	0.000	0.261

*** Statistically significant at 1% **Statistically significant at 5% *Statistically significant at 10%

Appendix 4.4

Regressions of excess bond returns on lagged information variables for the subperiod January 1998 to December 2000

The dependent variable is the monthly continuously compounded excess returns on each country Salomon Smith Barney WGBI for the three maturity subsectors and for the broad all maturities index. Panel A refers to the WGBI 1-3 years to maturity, Panel B to the WGBI 3-5 years to maturity, Panel C to the WGBI 5 or more years to maturity and Panel D to the WGBI all maturities. Each panel presents the results for the simple regressions, for the multiple regressions including all the variables and for the multiple regressions excluding, respectively, the Real Bond Yield variable and both the Real Bond Yield and the DM spread variables. Term Spread, Real Bond Yield, IRW and DM spread as defined in Table 4.2. All these variables are stochastically detrended (by subtracting a 12-month moving average) and mean zero variables. Jd is the dummy for the month of January. The coefficients and the t-statistics for each of the variables are presented (standard errors are heteroscedasticity and autocorrelation adjusted following Newey and West, 1987). R^2(adj) is the in-sample adjusted coefficient of determination, expressed in percent. "Joint significance" is the probability for the Chi-square statistic of the Wald test for the restriction that all variables have a coefficient equal to zero.

Variables	Spain	Italy	France	Germany	UK
PANEL B - WGBI 1-3 years					
Term Spread					
Coef	-0.141	-0.102	-0.155	-0.173	-0.154
t-stat	-1.563	-1.291	-2.893 ***	-3.206 ***	-2.290 **
R^2 (adj)	6.8%	3.7%	12.9%	12.1%	9.1%
Real Bond Yield					
Coef	-0.257	-0.166	-0.262	-0.157	-0.112
t-stat	-3.170 ***	-2.948 ***	-2.759 ***	-1.299	-2.413 **
R^2 (adj)	12.3%	9.1%	11.7%	3.2%	7.8%
IRW					
Coef	1.073	0.233	1.423	0.935	2.642
t-stat	2.256 **	0.396	2.242 **	2.017 *	2.821 ***
R^2 (adj)	4.9%	-2.5%	9.0%	4.0%	8.4%
DM spread					
Coef	-0.100	-0.016	0.520		0.599
t-stat	-0.384	-0.108	0.374		1.237
R^2 (adj)	-2.7%	-2.9%	-2.3%		4.0%

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.4 (continued)

Term Spread					
Coef	-0.107	-0.055	-0.079	-0.197	-0.107
t-stat	-0.727	-0.561	-0.546	-1.763 *	-1.539
Real Bond Yield					
Coef	-0.094	-0.185	-0.084	0.085	-0.059
t-stat	-0.399	-2.219 **	-0.305	0.461	-0.931
IRW					
Coef	1.294	0.620	0.982	0.561	2.181
t-stat	1.165	1.183	1.301	0.896	2.885 ***
DM spread					
Coef	-0.294	0.140	0.294		0.840
t-stat	-0.518	0.583	0.264		2.719 **
Jd					
Coef	0.194	0.074	0.229	0.286	0.277
t-stat	2.279 **	0.424	2.001 *	1.813 *	2.009 *
R^2 (adj)	11.5%	3.8%	11.2%	12.0%	22.5%
Joint Significance	0.001	0.003	0.000	0.000	0.000
Term Spread					
Coef	-0.143	-0.138	-0.124		-0.175
t-stat	-1.814 *	-1.685	-2.061 **		-3.410 ***
IRW					
Coef	1.573	1.014	0.984		2.029
t-stat	2.546 **	1.752 *	1.316		2.674 **
DM spread					
Coef	-0.469	-0.154	0.316		0.868
t-stat	-1.688	-0.742	0.282		3.002 ***
Jd					
Coef	0.182	0.056	0.225		0.260
t-stat	2.207 **	0.256	1.856 *		1.680
R^2 (adj)	13.5%	-0.7%	13.9%		24.2%
Joint Significance	0.017	0.232	0.000		0.000
Term Spread					
Coef	-0.153	-0.132	-0.124	-0.148	-0.133
t-stat	-1.848 *	-1.604	-2.050 **	-2.261 **	-2.701 **
IRW					
Coef	1.089	0.721	1.010	0.612	2.454
t-stat	2.392 **	1.525	1.430	1.078	3.241 ***
Jd					
Coef	0.248	0.082	0.224	0.279	0.124
t-stat	1.989 *	0.383	1.855 *	1.926 *	1.146
R^2 (adj)	12.6%	1.2%	16.3%	14.0%	13.5%
Joint Significance	0.019	0.263	0.000	0.000	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.4 (continued)

Variables	Spain	Italy	France	Germany	UK
PANEL B - WGBI 3-5 years					
Term Spread					
Coef	-0.309	-0.271	-0.366	-0.411	-0.373
t-stat	-1.788 *	-1.715 *	-3.043 ***	-3.214 ***	-3.303 ***
R^2 (adj)	9.4%	8.9%	15.4%	15.8%	16.7%
Real Bond Yield					
Coef	-0.475	-0.354	-0.608	-0.385	-0.228
t-stat	-3.176 ***	-3.101 ***	-3.259 ***	-1.910 *	-2.578 **
R^2 (adj)	10.9%	10.9%	13.5%	5.2%	9.5%
IRW					
Coef	1.587	-0.307	2.442	1.324	5.648
t-stat	2.025 **	-0.251	1.958 *	1.448	2.703 **
R^2 (adj)	1.6%	-2.8%	4.3%	0.2%	11.6%
DM spread					
Coef	-0.419	-0.230	-0.191		0.727
t-stat	-0.797	-0.830	-0.059		0.657
R^2 (adj)	-1.8%	-1.9%	-2.9%		-0.1%
Term Spread					
Coef	-0.297	-0.204	-0.250	-0.523	-0.408
t-stat	-1.034	-0.989	-0.581	-1.813 *	-2.971 ***
Real Bond Yield					
Coef	-0.040	-0.273	-0.148	0.207	0.014
t-stat	-0.084	-1.422	-0.197	0.520	0.111
IRW					
Coef	2.538	1.062	1.333	0.203	4.422
t-stat	1.213	0.863	0.926	0.162	2.543 **
DM spread					
Coef	-0.949	0.022	-0.560		1.231
t-stat	-0.825	0.047	-0.218		1.868 *
Jd					
Coef	0.338	0.190	0.430	0.523	0.340
t-stat	1.422	0.671	1.247	1.285	0.858
R^2 (adj)	11.0%	5.2%	9.3%	12.9%	26.1%
Joint Significance	0.004	0.034	0.000	0.010	0.000
Term Spread					
Coef	-0.312	-0.326	-0.328		-0.392
t-stat	-2.106 **	-2.006 *	-2.342 **		-5.640 ***
IRW					
Coef	2.656	1.642	1.335		4.457
t-stat	2.527 **	1.402	0.938		2.586 **
DM spread					
Coef	-1.023	-0.409	-0.521		1.224
t-stat	-2.021 **	-1.106	-0.196		1.967 *
Jd					
Coef	0.333	0.165	0.422		0.344
t-stat	1.414	0.480	1.174		0.872
R^2 (adj)	13.8%	4.1%	12.1%		28.4%
Joint Significance	0.029	0.310	0.000		0.000
Term Spread					
Coef	-0.334	-0.308	-0.328	-0.403	-0.332
t-stat	-2.078 **	-1.892 *	-2.364 **	-2.723 **	-5.082 ***
IRW					
Coef	1.601	0.862	1.292	0.328	5.057
t-stat	2.256 **	0.975	0.976	0.303	3.666 ***
Jd					
Coef	0.476	0.233	0.425	0.505	0.152
t-stat	1.485	0.675	1.194	1.349	0.502
R^2 (adj)	12.0%	5.0%	14.7%	14.7%	23.4%
Joint Significance	0.024	0.259	0.001	0.003	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.4 (continued)

Variables	Spain	Italy	France	Germany	UK
PANEL C - WGBI 5+ years					
Term Spread					
Coef	-0.505	-0.534	-0.643	-0.715	-0.552
t-stat	-1.659	-1.969 *	-2.919 ***	-2.842 ***	-3.047 ***
R^2 (adj)	6.1%	10.2%	13.9%	12.7%	6.6%
Real Bond Yield					
Coef	-0.564	-0.639	-1.101	-0.754	-0.261
t-stat	-2.001 *	-3.128 ***	-3.579 ***	-2.842 ***	-1.529
R^2 (adj)	2.4%	10.0%	13.1%	5.7%	0.6%
IRW					
Coef	0.510	-2.858	1.824	0.026	8.945
t-stat	0.353	-1.200	0.803	0.014	1.754 *
R^2 (adj)	-2.8%	1.5%	-1.7%	-2.9%	5.1%
DM spread					
Coef	-1.492	-0.933	-2.048		1.871
t-stat	-1.632	-2.148 **	-0.347		0.927
R^2 (adj)	1.0%	1.8%	-2.3%		1.2%
Term Spread					
Coef	-0.695	-0.409	-0.379	-0.983	-1.012
t-stat	-1.373	-1.141	-0.425	-1.799 *	-2.795 ***
Real Bond Yield					
Coef	0.443	-0.308	-0.558	0.260	0.337
t-stat	0.539	-0.795	-0.361	0.358	1.103
IRW					
Coef	3.837	0.109	-0.422	-2.301	5.809
t-stat	1.104	0.037	-0.177	-1.016	1.003
DM spread					
Coef	-2.731	-0.344	-2.287		2.838
t-stat	-1.352	-0.414	-0.492		1.851 *
Jd					
Coef	0.542	0.445	0.754	0.827	0.452
t-stat	0.969	0.815	1.110	0.940	0.443
R^2 (adj)	3.8%	5.0%	6.9%	10.6%	11.1%
Joint Significance	0.068	0.020	0.005	0.004	0.000
Term Spread					
Coef	-0.525	-0.548	-0.674		-0.624
t-stat	-1.975 *	-2.096 **	-2.706 **		-4.080 ***
IRW					
Coef	2.527	0.764	-0.411		6.684
t-stat	1.154	0.263	-0.172		1.159
DM spread					
Coef	-1.913	-0.832	-2.140		2.679
t-stat	-2.084 **	-1.290	-0.442		1.866 *
Jd					
Coef	0.598	0.417	0.726		0.549
t-stat	1.052	0.698	1.005		0.589
R^2 (adj)	5.5%	6.5%	9.3%		12.2%
Joint Significance	0.102	0.111	0.025		0.000
Term Spread					
Coef	-0.567	-0.512	-0.676	-0.833	-0.493
t-stat	-1.940 *	-1.918 *	-2.683 **	-3.297 ***	-3.436 ***
IRW					
Coef	0.553	-0.822	-0.589	-2.144	7.997
t-stat	0.398	-0.421	-0.252	-1.038	1.845 *
Jd					
Coef	0.866	0.554	0.737	0.804	0.130
t-stat	1.201	0.869	1.027	0.977	0.173
R^2 (adj)	4.1%	7.0%	11.5%	13.0%	7.3%
Joint Significance	0.241	0.131	0.019	0.005	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 4.4 (continued)

Variables	Portugal	Spain	Italy	France	Germany	UK
PANEL D - WGBI all maturities						
Term Spread						
Coef	-0.514	-0.375	-0.325	-0.484	-0.482	-0.475
t-stat	-2.235 **	-1.714 *	-1.869 *	-2.971 ***	-3.052 ***	-3.207 ***
R^2 (adj)	15.8%	7.4%	9.6%	14.3%	14.5%	8.1%
Real Bond Yield						
Coef	-0.279	-0.464	-0.418	-0.822	-0.490	-0.237
t-stat	-2.933 ***	-2.431 **	-3.359 ***	-3.535 ***	-2.486 **	-1.745 *
R^2 (adj)	12.0%	4.6%	11.3%	13.3%	6.0%	1.7%
IRW						
Coef	-0.259	0.917	-1.232	1.760	0.607	7.643
t-stat	-0.204	0.942	-0.837	1.041	0.523	1.909 *
R^2 (adj)	-2.83%	-2.08%	-0.83%	-0.90%	-2.50%	6.28%
DM spread						
Coef	-1.034	-0.923	-0.471	-1.044		1.517
t-stat	-1.268	-1.373	-1.636	-0.236		0.912
R^2 (adj)	0.6%	0.2%	0.2%	-2.6%		1.4%
Term Spread						
Coef	-0.503	-0.478	-0.237	-0.307	-0.640	-0.808
t-stat	-1.199	-1.273	-1.028	-0.472	-1.827 *	-2.882 ***
Real Bond Yield						
Coef	-0.068	0.234	-0.266	-0.353	0.195	0.240
t-stat	-0.277	0.381	-1.123	-0.313	0.411	1.024
IRW						
Coef	0.548	3.066	0.496	0.105	-0.856	5.137
t-stat	0.212	1.190	0.301	0.057	-0.578	1.156
DM spread						
Coef	-1.129	-1.811	-0.095	-1.273		2.318
t-stat	-0.769	-1.210	-0.178	-0.361		1.931 *
Jd						
Coef	0.357	0.425	0.269	0.600	0.593	0.403
t-stat	1.085	1.176	0.760	1.197	1.091	0.505
R^2 (adj)	14.3%	6.2%	4.8%	7.2%	11.8%	14.1%
Joint Significance	0.010	0.051	0.021	0.003	0.006	0.000
Term Spread						
Coef	-0.578	-0.388	-0.356	-0.493		-0.531
t-stat	-2.825 ***	-2.053 **	-2.068 **	-2.632 **		-4.584 ***
IRW						
Coef	0.980	2.373	1.062	0.111		5.761
t-stat	0.674	1.651	0.647	0.060		1.305
DM spread						
Coef	-1.386	-1.378	-0.516	-1.180		2.205
t-stat	-1.890 *	-2.164 **	-1.254	-0.321		1.953 *
Jd						
Coef	0.337	0.455	0.244	0.583		0.473
t-stat	1.015	1.236	0.600	1.099		0.642
R^2 (adj)	16.7%	8.5%	5.0%	9.8%		15.4%
Joint Significance	0.038	0.092	0.237	0.012		0.000
Term Spread						
Coef	-0.535	-0.418	-0.334	-0.494	-0.528	-0.423
t-stat	-2.424 **	-2.005 *	-1.911 *	-2.634 **	-3.150 ***	-3.999 ***
IRW						
Coef	0.323	0.951	0.077	0.013	-0.738	6.842
t-stat	0.322	1.047	0.067	0.007	-0.560	2.080 **
Jd						
Coef	0.542	0.648	0.330	0.589	0.576	0.128
t-stat	1.234	1.341	0.794	1.122	1.137	0.218
R^2 (adj)	13.9%	6.7%	5.5%	12.2%	14.0%	9.9%
Joint Significance	0.083	0.151	0.207	0.011	0.004	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

CHAPTER 5

EUROPEAN BOND FUND PERFORMANCE: THE IMPACT OF INCORPORATING CONDITIONING INFORMATION

5.1. INTRODUCTION

As we have seen from the review of the literature, the conclusion that can be drawn, from almost all the (very few) empirical studies on bond fund performance evaluation, is that bond funds are not able to beat the market, presenting on average neutral or negative performance (e.g.: Blake, Elton and Gruber, 1993; Kahn, 1998; and Detzler, 1999).[68] The majority of these studies use only unconditional measures. As far as we are aware of, until now only two studies applied conditional performance evaluation to bond funds: Dahlquist, Engström and Söderlind (2000) on Swedish bond funds and Gallagher and Jarnecic (2002) on Australian bond funds. The conclusions were similar: the conditional measures made the funds look better but their performance remained consistent with the market efficiency hypothesis. In these two cases the authors use, as conditioning information, variables suggested in other studies for stock funds without previously analysing their predictive ability for bond markets. Rather than applying this standard procedure, we looked for information variables appropriate for the type of security markets under consideration. In this context, we innovate, first, by carrying out the first comprehensive study on an important market, the European bond fund market and, secondly by using information variables that are more informative of bond returns and that we have found, in the last chapter, to have predictive ability for the European bond market.

This topic of incorporating conditioning information is one of the most recent and highly debated developments on the subject of fund performance evaluation. Assuming that returns and risk are time-varying, instead of constant, due to information related

[68] Besides, this type of conclusions are similar to those on stock fund performance studies.

with economic conditions, this should have an impact not only on overall performance but also on the persistence of that performance. Consequently, this approach may challenge the previous findings in the literature, particularly for the specific case of bond funds, as research on them is very scarce.

Thus, in this chapter we propose to examine the performance of a sample of bond funds in the European market. Our main objectives are:

1) In light of the benchmark problem mentioned in the literature review, to analyse if inferences on bond performance changes using either a single-index model or a multiple index model;
2) Considering the evidence found in the previous chapter suggesting that excess bond returns in the European market can be predicted, to analyse the impact of incorporating conditioning information on inferences about overall bond fund performance and also on the persistence of that performance.

We thereby start by presenting the methodology used to evaluate bond fund performance. Next, we will describe the data collected. After that, we provide empirical evidence on the performance of our sample of bond funds addressing the two main objectives just mentioned above. Finally, we examine and discuss the persistence phenomenon using two of the most commonly used methodologies: cross-sectional regression analysis and the non-parametric approach of contingency tables.

5.2. UNCONDITIONAL AND CONDITIONAL MODELS OF PERFORMANCE EVALUATION

To obtain an unconditional measure we use the single index model which regresses portfolio excess returns on a benchmark portfolio excess returns, usually a market index. The beta coefficient is assumed to be constant and the intercept, alpha, measures average performance (like Jensen's (1968) measure). So, we have:

$$r_{p,t} = \alpha_p + \beta_p r_{m,t} + \varepsilon_{p,t} \qquad \textbf{[5.1]}$$

where:

$r_{p,t}$ = the excess return of portfolio **p** at period **t**;

$r_{m,t}$ = the market's excess return at period **t**;

α_p = the measure of unconditional performance of portfolio **p**.

Although initially applied to stocks funds, this measure has also been extended to bond funds (as in Gudikunst and McCarthy, 1992; Blake, Elton and Gruber, 1993; and Detzler, 1999). As we have seen in the literature review, this assumption (of risk being constant) can be even more critical for the case of bond funds. The performance of these funds depends heavily on the managers' ability to predict future interest rates and on adjusting the duration of the fund accordingly. Since duration is closely related to beta, equation [5.1] may not be appropriate due to beta instability (e.g.: Bildersee and Roberts, 1981; Jarrow, 1978).

Also, several studies have shown that Jensen's alpha is biased when portfolio managers follow dynamic strategies (among others: Jensen, 1972; Dybvig and Ross, 1985). These studies argue that if performance is measured by alpha, portfolio managers

that correctly anticipate the market, and act accordingly, can appear as bad performers, while portfolio managers that do not show that capacity (or act wrongly) can appear as good performers. In order to allow for time-varying returns and risk, we assume that beta is a linear function of a vector $\mathbf{Z}_{t-1}$ of predetermined information variables, as in Ferson and Schadt (1996)**:**

$$\beta_p(\mathbf{Z}_{t-1}) = \beta_{0p} + \boldsymbol{\beta}_p^{'}\mathbf{z}_{t-1} \qquad \textbf{[5.2]}$$

where:

$\mathbf{z}_{t-1} = \mathbf{Z}_{t-1} - \mathrm{E}(\mathbf{Z})$ is the vector of deviations of $\mathbf{Z}_{t-1}$ from the average vector;

β_{0p} = the average beta (the unconditional mean of the conditional beta) of portfolio **p**;

$\boldsymbol{\beta}_p^{'}$ = the vector that measures the response of the conditional beta of portfolio **p** to the predetermined information variables.

Substituting beta in equation [5.1] by the conditional beta, it follows that:

$$r_{p,t} = \alpha_p + \beta_{0p} r_{m,t} + \boldsymbol{\beta}_p^{'}(\mathbf{z}_{t-1} r_{m,t}) + \varepsilon_{p,t} \qquad \textbf{[5.3]}$$

with α_p being now the measure of conditional performance of portfolio **p**. A portfolio manager that only uses public information contained in $\mathbf{Z}_{t-1}$ should present an alpha equal to zero. This model can also be seen as an unconditional multi-factor model, with market excess returns as the first factor and the cross products of market excess returns with each lagged information variable, as additional factors capturing the covariance between the expected market return and the conditional beta (Jagannathan and Wang, 1996).

In equation [5.3], we are assuming that the conditional alpha is constant. The model can also be extended to allow the measure of performance to vary with the information variables, as in Christopherson, Ferson and Glassman (1998).[69] As with beta, we assume that alpha is a linear function of the vector $\mathbf{Z}_{t-1}$:

$$\alpha_p(\mathbf{Z}_{t-1}) = \alpha_{0p} + \mathbf{A}_p'\mathbf{z}_{t-1} \qquad \textbf{[5.4]}$$

Therefore, the extended model becomes:

$$r_{p,t} = \alpha_{0p} + \mathbf{A}_p'\mathbf{z}_{t-1} + \beta_{0p}r_{m,t} + \boldsymbol{\beta}_p'(\mathbf{z}_{t-1}r_{m,t}) + \varepsilon_{p,t} \qquad \textbf{[5.5]}$$

where:

α_{0p} = the average alpha of portfolio **p**;

$\mathbf{A}_p'$ = the vector that measures the response of the conditional alpha of portfolio **p** to the information variables;

the remaining variables were previously defined.

$\mathbf{A}_p'\mathbf{z}_{t-1}$ captures the time variation in the measure of abnormal performance and measures the departure from the mean level of α_{0p}. Thus, under the null hypothesis of constant performance $\mathbf{A}_p'$ should be equal to zero.

Given that a single-index benchmark can fail in considering alternative investments, multi-index models may provide more appropriate benchmarks to evaluate bond fund performance. In Chapter 3, section 3.3, we have reviewed empirical research

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[69] Another motivation for the inclusion of the information variables on the intercept term is that, as pointed out by Bernhardt and Jung (1979), without these terms, the higher order coefficients β_{0p} and $\boldsymbol{\beta}_p'$ and their t-ratios can be biased.

which suggests that a few easily identifiable factors/indices are enough to explain the returns of bond portfolios (Blake, Elton and Gruber, 1993; Elton, Gruber and Blake, 1995). In order to address this issue, in our sample of European bond funds, we also consider a multi-index model as a performance benchmark.

The conditional approach can easily be extended to multiple index models, by including the cross products of each factor with the predetermined information variables. That is, we replace equation [5.2] with a similar equation for each of the **K** factor-betas of the managed portfolio. Thus, the regression equation of our conditional **K**-factor model will have (L+1)*K+1 regressors: a constant, the **K** factor-portfolios and the product of the L information variables in $\mathbf{Z}_{t-1}$ with the **K** factor-portfolios. In the case of the conditional model with time-varying alphas (expressed in equation [5.5]) it will have more L regressors corresponding to the variables in $\mathbf{Z}_{t-1}$ resulting in a model with (L+1)*(k+1) regressors.

5.3. THE DATA

5.3.1. Bond Fund Returns

Our sample includes a total number of 638 bond funds from Italy (58), Spain (157), France (266), Germany (90), UK (45) and Portugal (22). As we mentioned in Chapter 2, the first five countries represent the most important mutual fund markets in Europe (with the exception of Luxembourg, which is a major market but mainly a distribution centre).[70]

[70] The weight of these six markets in the European bond fund market (if we exclude Luxembourg) is 76.5%, as can be seen in Appendix 5.1 (Source: FEFSI and APFIN).

We select bond funds that invest mainly in the domestic market and/or in the European market, with monthly data at least since January 1994. We evaluated the performance of these bond funds for the period February 1994 to December 2000. For Portugal we considered a shorter period, from January 1995 to December 2000, as previously (Chapter 4), due to the availability of the index used as benchmark. The funds are grouped according to the type of bonds held by the fund and the classification varies from country to country, as we can see in Table 5.1. The main differences are:[71]

- Corporate bond funds, which constitute a separate category only in the UK; although in the other European countries we may find bond funds with a significant percentage of corporate bonds, they are not classified as corporate[72];
- the classification of bond funds according to the maturity of the held bonds; while for some countries we have bond funds classified as either short-term bond funds or long-term bond funds, for others this distinction is not done;
- Portugal is an exception in classifying bond funds according to the type of coupon rate: fixed rate or floating rate.

The data on Portuguese bond funds was obtained from the Portuguese Mutual Fund Association, APFIN. The information on Spanish and French bond funds was collected from Micropal.[73] The data on bond funds for Germany, UK and Italy were obtained from Datastream. As this database does not classify the funds, we previously

[71] These differences make some comparisons difficult. We think it is necessary to move towards a more homogeneous classification, in order to have a single European bond fund market.

[72] We think that this fact is related to the development of the corporate bond segment, which is clearly superior in the UK.

[73] "Source Standard & Poor`s Fund Services SARL © [2001]". We are extremely grateful to Jorge O´Neill, from Difdata (Standard & Poor`s Fund Services Exclusive Representative in Portugal) for his efforts in providing the data on French and Spanish bond funds.

contacted the domestic associations of investment funds[74] in order to obtain the list and respective classification of bond funds. With that information, we then collected the end of month total return index for each of the funds. Since Datastream, however, does not have historical records for all funds, our sample is composed by bond funds with available data (both in Datastream and Micropal) and with historical series, at least, since January 1994. Thus, our sample may be affected by survivorship bias, as we do not have data on nonsurviving funds. Notwithstanding, previous research suggests that survivorship bias has less impact upon inferences about bond fund performance compared to stock fund performance (Blake, Elton and Gruber, 1993; Dahlquist, Engström and Söderlind, 2000).[75] According to Blake, Elton and Gruber (1993) this may be due to the stability of the performance of bond funds.

All fund returns are monthly continuously compounded returns, with dividends and income distributions reinvested, and in local currency. These returns are net of management expenses but not of load charges. The monthly continuously compounded return for fund **p** at time **t** is calculated as:

$$r_{p,t} = \ln\left(\frac{NAV_{p,t} + \sum_i D^*_i}{NAV_{p,t-1}}\right) \qquad \textbf{[5.6]}$$

where:

$r_{p,t}$ = total return of fund **p** for the period **t**;

i =1,…, n represents the number of fund's distributions during period **t**;

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[74] The associations are: BVI for Germany, INVERCO for Spain, AUTIF for UK, AFG-ASFFI for France, and ASSOGESTIONI for Italy.

[75] Blake, Elton and Gruber (1993) found a survivorship bias of 1,02% for a sample of US bond funds, over the period of 1979-1988, considering alpha estimates based on a six-index model. An even lower bias is reported for other markets. Dahlquist, Engström and Söderlind (2000) estimate a bias of only 0.10% (-0.09%) per year on Swedish bond funds over the period of 1993-1997 using average excess returns (or a conditional risk-adjusted performance measure).

$NAV_{p,t}$ and $NAV_{p,t-1}$ = net asset value of fund **p** at the end of period **t** and **t-1,** respectively;

$D_i^* = (NAV_{p,t} / NAV_{p,i}) * D_i$ = value of income distribution (D) paid per unit by fund **p** at time **i** reinvested at the $NAV_{p,i}$ up to the end of period **t**.

In order to obtain excess returns the risk free rate is subtracted from this return. The risk free rate is proxied by the 3-month Interbank offered rate[76].

Due to the different taxation principles, mentioned in Chapter 2, the comparison of bond fund performance, across the different countries that constitute our sample, must be done with caution. In particular, for Italian bond funds, it should be pointed out that since June 1998 the NAV is reported after-tax. Also, in some countries, the interest received by the bond funds are on a net basis (as it is the case for Portuguese and UK bond funds), thus having impact on the reported NAV used to calculate fund returns.

[76] Alternatively, we also used the 1-month Euro rate for each country, and the results were similar.

Table 5.1 – Summary statistics for equally-weighted portfolios of bond funds

Bond funds are grouped according to the classification used by the domestic associations (BVI, Assogestioni, Autif, APFIN, AFG-ASFFI and Inverco) and also by Micropal. For Germany there are bond funds that invest mainly in Euro securities (Renten Euro), bond funds that invest mainly in European securities (Renten Europa), bond funds that invest mainly in short term and near money market Euro securities (Renten kurz.) and bond funds investing in Euro securities, funds with limitation of duration (Renten IZB). Italian funds are grouped as follows: bond funds that invest in Euro short-term securities (Short-term Euro), bond funds that invest in medium and long-term Euro securities (M/L Euro) and bond fund that invest in European securities (Europa). In the UK there are "Gilt" funds that invest mainly in UK Government securities, "Corporate" bond funds that invest mainly in investment grade securities (BBB rated or above) and UK "Other Bond" funds that invest at least 20% in non-investment grade securities (below BBB). In the case of Portugal there are two types of funds: funds that invest mainly in fixed-rate Euro securities and funds that invest in floating rate Euro securities. For France there are bond funds investing in Euro securities: short term bonds (Obbl.Euro CT), medium term bonds (Obbl.Euro MT) and long-term bonds (Obbl.Euro LT) and also bond funds investing in the European market. For Spain we have bond funds that invest mainly in short term Euro securities (RentaFija CP Euro) and bond funds that invest mainly in long-term Euro securities (RentaFija Euro). Average size in million Euros and management fees in annual percentage of assets invested as of 31/12/00. Mean excess returns and standard deviations are statistics for the period February 1994 to December 2000.

	Nº. of Funds	**Average Size** (Millions Euro)	**Management Fees** (annual %)	**Mean Excess Return** (Monthly %)	**St. Deviation**
Germany					
Renten Euro	59	209	0.46	0.118	0.887
Renten Europa	14	518	0.56	0.198	1.276
Renten Kurz.	11	288	0.44	0.042	0.402
Renten IZB	6	463	0.36	0.013	0.492
All Funds	90	284	0.46	0.115	0.833
France (1)					
Obl.Euro CT	60	136	0.99	-0.019	0.337
Obl.Euro MT	83	273	1.11	0.013	0.715
Obl.Euro LT	114	222	0.99	0.067	1.062
Obl.Europe	9	95	0.85	0.047	1.125
All Funds	266	128	1.01	0.030	0.776
UK					
Gilt	26	65	0.92	-0.059	1.558
Corporate	13	409	0.92	-0.012	1.462
Other Bond	6	459	1.20	0.142	1.522
All Funds	45	236	0.95	-0.019	1.437
Spain					
RentaFija CP Euro	108	87	1.38	-0.125 ***	0.373
RentaFija Euro	49	117	1.41	-0.047	0.639
All Funds	157	96	1.39	-0.101 **	0.454
Italy (2)					
Short-Term Euro	26	960	0.82	-0.151 ***	0.387
M/L Euro	25	1157	1.03	-0.106	0.786
Europa	7	505	1.10	-0.125	0.776
All Funds	58	990	0.98	-0.129 **	0.586
Portugal					
Euro Fixed Rate	6	80	0.79	0.033	0.621
Euro Floating Rate	16	188	0.43	-0.114 ***	0.062
All Funds	22	159	0.53	-0.074 ***	0.194
All Sample	638				

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

(1) The average size for France includes mainly French SICAVs as we could not obtain the information on the majority of the French FCPs that compose our sample.
(2) The management fees are average fees for the categories of Italian funds as reported by Assogestioni.

Table 5.1 above presents the summary statistics and main characteristics of our European bond fund sample. The average of monthly excess returns is positive for all types of bond funds in Germany, for almost all in France (the exception is "Obl.Euro CT") and for the funds classified as "Other Bond" funds in the UK (respectively 0.12 and 0.03 percent considering all the funds and 0.14 percent). However, none of these positive excess returns are statistically significant. In all other countries, bond funds present negative mean excess returns and most are statistically significant (particularly for short-term bond funds). Italian and Spanish bond funds present the most negative mean excess returns: –0.13 and –0.10 percent, respectively. With respect to the variability of the monthly excess returns, UK bond funds present clearly the highest standard deviation.

As it can be observed, the average bond fund size is highest in Italy, with a value of about 990 million Euros, and far distant from that of the other countries. At the bottom we have Spain with an average bond fund size of about 96 million Euros. With respect to management fees, the countries with the lowest average fees are Germany and Portugal, deducting about 0.5 percent annually. This value rises to almost 1 percent for bond funds in Italy, UK and France and to about 1.4 percent for Spanish bond funds.

In Appendix 5.2 we present the main statistics for each individual fund. One can see that for a large number of funds we do not reject, at the 5 percent level, the hypothesis of a normal distribution (372 funds, which represent 58 percent of our sample). Although it is commonly advocated that, given the dynamics of the term structure of interest rates and the finite live of bonds, bonds often exhibit non-normal and autocorrelated returns, this does not seem to be an obvious problem in our sample.

5.3.2. Benchmark Returns

To evaluate the performance of the bond funds of our sample we consider two models: a single index model and a 3-index model. As benchmark for the single index model we use the Salomon Smith Barney WGBI all maturities for each country. For the multiple benchmarks we use two more factors in addition to the market index: the excess return on a stock market index (the MSCI stock index for each country) and a default spread. We use the stock index as it can be viewed as a measure of expectations about general economic conditions (see Elton, Gruber and Blake, 1995; Cornell and Green, 1991) and also because some of the funds can hold a small percentage of stocks. The default spread is a measure of the default risk that may affect corporate bond returns. As we do not have information on local spreads (for most European countries the corporate bond market is still a market with a low degree of liquidity) we decided to use a spread for the aggregate Euro zone. Thus, this spread is calculated as the difference between the MSCI Euro Credit Index BBB rated and the MSCI Euro Credit Index AAA rated.[77]

In Table 5.2 below we report the correlations between these indices in each country. The correlations are relatively low for all countries, suggesting that multicollinearity should not be a problem. The correlation between the bond index and the default spread is negative in most of the countries, while those between the bond index and the stock index and between the stock index and the default spread are always positive.

[77] Although these indices do not include the UK bond market, this variable is expected to be correlated with the default spread for the UK domestic market. We thank Laura Kellie at MSCI London for providing the data on MSCI bond indices.

Table 5.2 – Correlation between the benchmark indices

This table reports the correlation between the three benchmark indices used for the multiple index model: the bond index is the monthly continuously compounded excess return on the Salomon Smith Barney WGBI for all maturities; the stock index is the monthly continuously compounded excess return on the MSCI stock index and the Default spread is the difference between the monthly continuously compounded excess return on the MSCI Euro Credit Index BBB rated and the monthly continuously compounded excess return on the MSCI Euro Credit Index AAA rated.

	SBWGBI all	MSCI stock index	Default spread
Germany			
SBWGBI all	1		
MSCI stock index	0.08	1	
Default spread	-0.25	0.20	1
France			
SBWGBI all	1		
MSCI stock index	0.30	1	
Default spread	-0.07	0.11	1
UK			
SBWGBI all	1		
MSCI stock index	0.33	1	
Default spread	-0.26	0.09	1
Spain			
SBWGBI all	1		
MSCI stock index	0.37	1	
Default spread	-0.01	0.35	1
Italy			
SBWGBI all	1		
MSCI stock index	0.37	1	
Default spread	0.01	0.08	1
Portugal			
SBWGBI all	1		
MSCI stock index	0.06	1	
Default spread	0.16	0.20	1

For the conditional single-index and multi-index models we used the three variables analysed in the previous chapter: term spread, inverse relative wealth and the dummy for the month of January. We did not consider the information variables real bond yield and DM yield spread as we have found (Chapter 4) that they do not seem to add much in terms of explanatory power.

5.4. OVERALL BOND FUND PERFORMANCE

5.4.1. Unconditional Models

We analysed the performance of our bond fund sample both in aggregate terms, considering the equally-weighted portfolio for each fund category, and for each individual fund. Table 5.3 presents the results of bond fund performance on the basis of unconditional models (considering both single and multi-index benchmarks) as described in section 5.2. The statistical significance of the estimates is based on heteroscedasticity and autocorrelated-consistent standard errors, following Newey and West (1987).[78] The analysis of this table shows that, when the unconditional single-index model is used, the equally-weighted portfolios of funds, in general, present negative performance, being more significant in Italy, Spain and Portugal. For the UK and Germany, several funds, mainly those classified as "Other Bond" funds in the UK and "Renten Europa" in Germany, have positive alphas, although they are not statistically significant. In the case of Germany only 8 out of 90 funds present statistically significant negative alphas, at the 5 percent level. For the UK there are 22 out of 45 funds with statistically significant negative alphas, (from which 19 are UK "Gilt" funds). In relation to France we can observe 142 funds (out of 266) with statistically significant negative alphas. Almost all the Italian, Spanish and Portuguese bond funds present statistically significant negative alphas (53 out of 58 funds, 140 out of 157, and all the 22 funds, respectively). The regression estimates for each individual fund are presented in Appendix 5.3.

[78] As in Chapter 4, before adjusting standard errors we have tested the assumptions of homoscedastic and independent errors following White's (1980) heteroscedasticity test and the Breusch (1978)–Godfrey (1978) Lagrange multiplier test. We have found evidence in favour of the existence of either heteroscedasticity or autocorrelation for a large number of funds.

Table 5.3 – Estimates for the unconditional single and multiple index models

For each country, we formed equally-weighted portfolios of bond funds for each fund category and for all funds. This table shows the results for both the unconditional single-index, with the Salomon Smith Barney WGBI for all maturities as the benchmark index, and the unconditional multi-index model. In addition to the monthly continuously compounded excess return on the WGBI for all maturities (Bindex), we consider two more factors: the monthly continuously compounded excess return on the MSCI stock index (Sindex) and the difference between the monthly continuously compounded excess return on the MSCI Euro Credit Index BBB rated and the monthly continuously compounded excess return on the MSCI Euro Credit Index AAA rated (Def). We present the estimates for the alphas (in percentage) and the regression coefficients with their significance based on heteroscedasticity and autocorrelation adjusted errors (following Newey and West, 1987), and also the R^2 (adj.) for each of the equally-weighted portfolios of funds. The number of individual funds presenting statistically significant positive, not different from zero and negative alphas, at the 5% level, is also reported (N +/0/-). Bonf.(+) and Bonf.(-) are the bonferroni p-values for the null hypothesis that all funds have alphas equal to zero against the alternative that at least one has a positive alpha and the same null hypothesis against the alternative that at least one has a negative alpha. The W(p-val) is the probability value for the Chi-square statistic of the Wald test for the restriction that the coefficients for the additional factors are jointly equal to zero. The number of funds for which we reject that hypothesis, at the 5% level, are reported in brackets.

	Nº of	Unconditional single-index				Unconditional multi-index						
	Funds	α_p	β_p	R^2(adj.)	N +/0/- alphas	α_p	Bindex	Sindex	Def	R^2(adj.)	N +/0/- alphas	W(p-val)
Germany												
Renten Euro	59	-0.035	0.872 ***	83.6%	0/54/5	-0.074 **	0.886 ***	0.024 ***	0.191 **	87.7%	0/41/18	0.000 [48]
Renten Europa	14	0.028	0.987 ***	49.6%	0/14/0	-0.095	0.983 ***	0.104 ***	0.346 **	75.3%	0/13/1	0.000 [14]
Renten Kurz.	11	-0.019	0.350 ***	64.9%	0/10/1	-0.036	0.360 ***	0.008 **	0.111 **	67.8%	0/7/4	0.001 [5]
Renten IZB	6	-0.067 **	0.457 ***	74.5%	0/4/2	-0.081 ***	0.476 ***	0.000	0.147 ***	76.1%	0/4/2	0.001 [3]
All Funds	90	-0.026	0.799 ***	79.7%	0/82/8	-0.073 **	0.809 ***	0.033 ***	0.202 ***	87.4%	0/65/25	0.000 [70]
Bonf.(+)		9.270				12.111						
Bonf.(-)		0.001				0.000						
France												
Obl.Euro CT	60	-0.063 ***	0.268 ***	84.1%	0/24/36	-0.072 ***	0.274 ***	-0.001	0.134 ***	87.6%	0/15/45	0.000 [46]
Obl.Euro MT	83	-0.083 ***	0.594 ***	92.0%	0/31/52	-0.095 ***	0.594 ***	0.003	0.133 ***	92.8%	0/21/62	0.000 [45]
Obl.Euro LT	114	-0.079 ***	0.900 ***	95.6%	0/61/53	-0.089 ***	0.895 ***	0.005	0.082 **	95.8%	0/52/62	0.007 [31]
Obl.Europe	9	-0.088	0.832 ***	72.7%	0/8/1	-0.121 **	0.786 ***	0.035 ***	0.094	75.1%	0/8/1	0.000 [4]
All Funds	266	-0.077 ***	0.660 ***	94.6%	0/124/142	-0.088 ***	0.657 ***	0.004	0.110 ***	95.1%	0/96/170	0.000 [126]
Bonf.(+)		12.400				27.333						
Bonf.(-)		0.000				0.000						

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 5.3 – Estimates for the unconditional single and multiple index models (continued)

	Nº of	Unconditional single-index				Unconditional multi-index						
	Funds	α_p	β_p	R^2(adj.)	N +/0/- alphas	α_p	Bindex	Sindex	Def	R^2(adj.)	N +/0/- alphas	W(p-val)
UK												
Gilt	26	-0.181 ***	0.997 ***	92.5%	0/7/19	-0.190 ***	0.981 ***	0.023 *	0.040	92.7%	0/7/19	0.101 [1]
Corporate	13	-0.113	0.823 ***	71.5%	0/10/3	-0.166 **	0.733 ***	0.132 ***	0.230 **	83.1%	0/9/4	0.000 [8]
Other Bond	6	0.076	0.545 ***	28.2%	0/6/0	-0.010	0.432 ***	0.184 ***	0.464 ***	50.4%	0/6/0	0.000 [3]
All Funds	45	-0.127 **	0.886 ***	85.9%	0/23/22	-0.159 ***	0.836 ***	0.076 ***	0.151	89.9%	0/22/23	0.000 [12]
Bonf.(+)		5.873				7.138						
Bonf.(-)		0.000				0.000						
Spain												
RentaFija CP Euro	108	-0.184 ***	0.289 ***	89.7%	0/9/99	-0.189 ***	0.280 ***	0.005 ***	0.038 **	90.6%	0/5/103	0.000 [16]
RentaFija Euro	49	-0.149 ***	0.503 ***	92.7%	0/8/41	-0.156 ***	0.499 ***	0.003	0.079 *	93.1%	0/5/44	0.046 [31]
All Funds	157	-0.173 ***	0.356 ***	92.2%	0/17/140	-0.179 ***	0.348 ***	0.004 **	0.051 **	92.8%	0/10/147	0.000 [47]
Bonf.(+)		67.786				73.58						
Bonf.(-)		0.000				0.000						
Italy												
Short-Term Euro	26	-0.204 ***	0.278 ***	72.9%	0/1/25	-0.203 ***	0.274 ***	0.002	-0.018	72.3%	0/1/25	0.736 [4]
M/L Euro	25	-0.229 ***	0.640 ***	93.8%	0/2/23	-0.230 ***	0.625 ***	0.007 **	-0.026	94.0%	0/1/24	0.126 [4]
Europa	7	-0.228 ***	0.532 ***	66.4%	0/1/6	-0.222 ***	0.505 ***	0.013 *	-0.141 *	67.4%	0/1/6	0.047 [4]
All Funds	58	-0.218 ***	0.465 ***	89.0%	0/4/54	-0.217 ***	0.453 ***	0.006	-0.036	89.2%	0/3/55	0.113 [12]
Bonf.(+)		27.04				15.204						
Bonf.(-)		0.000				0.000						
Portugal												
Euro Fixed Rate	6	-0.190 ***	0.606 ***	78.8%	0/0/6	-0.192 ***	0.613 ***	0.007	-0.104 ***	79.0%	0/0/6	0.011 [3]
Euro Floating Rate	16	-0.125 ***	0.029 ***	16.6%	0/0/16	-0.126 ***	0.027 ***	0.000	0.020	16.9%	0/0/16	0.197 [2]
All Funds	22	-0.143 ***	0.186 ***	75.9%	0/0/22	-0.144 ***	0.187 ***	0.002	-0.014	75.6%	0/0/22	0.429 [5]
Bonf.(+)		0.332				0.205						
Bonf.(-)		0.000				0.000						
All Sample	638				0/250/388						0/196/442	[272]

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Considering each country's sample, we tested the hypothesis that all alphas are jointly equal to zero using the Bonferroni's p-value. This is a one-tailed test of the null hypothesis that all alphas are zero against the alternative that, at least one, is positive (Bonf.+) or negative (Bonf.-). It is computed as the smallest of the p-values for the individual tests (the maximum t-statistic and the minimum t-statistic)[79] multiplied by the number of funds. For all countries, we do not reject the hypothesis that the alphas are jointly equal to zero against the alternative of superior performance, but we do reject it against the alternative of negative performance.

It can also be observed that the index used, the Salomon Smith Barney WGBI for all maturities for each country[80], explains a large percentage of excess bond fund returns for the categories of funds that include mainly Government bonds. For other types of bond funds, as corporate bond funds and funds that invest mainly in the European market (excluding the domestic market), the results suggest that the index used is probably not the most appropriate. This is the case for the funds "Renten Europa" in Germany and "Other Bond" funds in the UK. The same applies to short-term bond funds as they may be considered much like money market funds. In the case of the "Euro floating rate" bond funds in Portugal, what might explain the low R^2 (adj.) is the fact that their excess returns are almost constant (they all have very small standard deviations), so they can be viewed almost as risk-free funds.

When the unconditional multi-index model is used the two additional factors, the stock market excess returns and the default spread, add some explanatory power in

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[79] The first is the most positive t-statistic and the second is the most negative t-statistic.

[80] Due to concerns about independence and transparency of this index, we also considered other bond market indices as possible benchmarks for the single-index model. In Appendix 5.4 we present the table with the Spearman's Rank Correlation Coefficient between the rankings of bond fund performance according to alternative benchmarks: besides the Salomon Smith Barney WGBI all maturities we also considered the Datastream all lives Government bond index, the JPM Government bond index and the Merrill Lynch all maturities bond index. We can observe that the bond fund performance rankings are not sensitive to the use of alternative bond market indices.

relation to the unconditional single-index (see Appendix 5.3 for the detailed analysis of the regressions estimates for each individual fund). The stock index is an important factor for several funds, mainly for Germany and UK and in a less extent for Spain, Italy and France. The sign of its coefficient, as expected, is positive for almost all the equally-weighted portfolios (the only exception refers to French "Obl.Euro CT" funds, which present a negative coefficient, although not being statistically different from zero) and also for almost all individual funds. The default spread is also significant for several funds, particularly for Germany and France. Some Spanish funds as well as some UK "Corporate" and "Other Bond" funds, also present significant coefficients on this variable. Its sign is positive for most of the cases, as also expected.

The explanatory power of the multi-index is superior to that of the single-index model for a large number of funds. We tested for the joint significance of these two additional factors (heteroscedasticity and autocorrelated-consistent Wald p-value[81]) and at the 5 percent level we do not reject the null hypothesis that the coefficients of the two factors are equal to zero for the Portuguese bond funds, for the UK "Gilt" funds and for the majority of Italian bond funds. For all other groups of bond funds we can reject that hypothesis.

In addition, we can observe that the alphas of the funds, in general, decrease comparatively to those of the unconditional single-index (see also the frequency distribution of fund's alphas in Appendix 5.5). Furthermore, in the cases of "Renten Europa" funds in Germany and UK "Other Bond" funds with a positive (although not statistically significant) intercept in the unconditional single-index model, their alphas

[81] See footnote 59.

become negative. This outcome is consistent with the findings of Elton, Gruber, Das and Hlavka (1993) in relation to the Ippolito (1989) study and with other studies on stock fund performance and reinforces the idea that single-index models might overestimate fund performance. Multiple factor benchmarks, in general, produce lower alphas. This happens because multiple factor benchmarks control for risk better, causing the risk-adjusted performance to be lower. In our sample, the number of funds that present statistically significant negative alphas increase from 388 to 442, representing a shift in 54 funds.

5.4.2. Conditional Models

The objective of the analysis reported in Chapter 4 was to provide guidance on which variables to use as conditioning information. The results indicate that from the set of predetermined information variables considered, mainly three of them represent useful information to predict excess bond returns in European markets: term spread, IRW and a January dummy. Therefore, these are the variables considered in the conditional performance evaluation models.

The results of the conditional models, expressed in equation [5.3] and its extension to multi-index models, are presented in Table 5.4.[82] Incorporating the information variables does not seem to change the results much: the funds, on average, continue to have negative alphas. Again, the joint Bonferroni tests do not reject the null hypothesis that all the alphas are equal to zero against the alternative of positive performance, but allow us to reject that hypothesis against the alternative of negative performance for all countries.

[82] Regression estimates for each individual fund are reported in Appendix 5.6.

Table 5.4 – Estimates for the conditional single and multiple index models

For each country, we formed equally-weighted portfolios of bond funds for each fund category and for all funds. This table shows the results for both the conditional single and multiple index models. The predetermined information variables are the term spread (term), the IRW and a dummy variable for the month of January (jd). Term is the difference between the yield on a long-term government bond and a short-term bond rate (or the 3-month interbank offered rate). IRW is the ratio between the exponentially weighted average of past real wealth and current wealth. All these variables are stochastically detrended (by subtracting a 12-month moving average) and mean zero variables. Bindex, Sindex and Def as defined in table 5.3. We present the estimates for alpha (in percentage) and for the average conditional beta(s) and also the R^2(adj.) for each of the equally-weighted portfolios of funds. The statistical significance of the estimates is based on heteroscedasticity and autocorrelation adjusted errors (following Newey and West, 1987). The number of individual funds presenting statistically significant positive, not different from zero and negative alphas, at the 5% level, is also reported (N +/0/-). Bonf.(+) and Bonf.(-) are the bonferroni p-values for the null hypothesis that all funds have alphas equal to zero against the alternative that at least one has a positive alpha and the same null hypothesis against the alternative that at least one has a negative alpha. The W(p-val) is the probability value for the Chi-square statistic of the Wald test for the restriction that the coefficients on the additional variables (the cross products between the factors and the predetermined information variables) are jointly equal to zero. The number of funds for which we reject that hypothesis, at the 5% level, are reported in brackets.

	Nº of	Conditional single-index					Conditional multi-index						
	Funds	α_p	β_{0p}	R^2(adj.)	N +/0/- alphas	W(p-val)	α_p	BIndex	SIndex	Def	R^2(adj.)	N +/0/- alphas	W(p-val)
Germany													
Renten Euro	59	-0.021	0.855 ***	83.3%	2/54/3	0.478 [8]	-0.069	0.885 ***	0.024 ***	0.182 **	86.5%	0/49/10	0.703 [19]
Renten Europa	14	0.066	0.958 ***	49.1%	0/14/0	0.284 [2]	-0.082	1.009 ***	0.107 ***	0.372 *	73.9%	0/14/0	0.000 [10]
Renten Kurz	11	-0.009	0.353 ***	64.7%	0/10/1	0.180 [3]	-0.033	0.368 ***	0.010 **	0.127 ***	66.3%	0/9/2	0.001 [5]
Renten IZB	6	-0.042	0.430 ***	77.7%	0/4/2	0.000 [2]	-0.053	0.450 ***	-0.002	0.116 **	77.8%	0/4/2	0.000 [5]
All Funds	90	-0.008	0.781 ***	79.3%	2/82/6	0.324 [17]	-0.065	0.812 ***	0.033 ***	0.200 **	86.3%	0/76/14	0.263 [39]
Bonf.(+)		0.867					7.592						
Bonf.(-)		0.005					0.000						
France													
Obl.Euro CT	60	-0.065 ***	0.262 ***	84.8%	0/24/36	0.022 [29]	-0.079 ***	0.272 ***	-0.002	0.134 ***	87.6%	0/15/45	0.016 [44]
Obl.Euro MT	83	-0.086 ***	0.589 ***	92.5%	0/32/51	0.003 [39]	-0.097 ***	0.595 ***	0.001	0.125 ***	92.8%	0/25/58	0.229 [46]
Obl.Euro LT	114	-0.085 ***	0.905 ***	96.3%	0/56/58	0.003 [49]	-0.085 ***	0.905 ***	0.003	0.066 *	96.5%	0/64/50	0.001 [81]
Obl.Europe	9	-0.060	0.843 ***	73.5%	0/9/0	0.063 [5]	-0.060	0.806 ***	0.035 ***	0.023	75.8%	0/9/0	0.133 [6]
All Funds	266	-0.080 ***	0.659 ***	95.2%	0/121/145	0.002 [122]	-0.086 ***	0.662 ***	0.003	0.098 ***	95.6%	0/113/153	0.087 [177]
Bonf.(+)		7.972					70.805						
Bonf.(-)		0.000					0.000						

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 5.4 – Estimates for the conditional single and multiple index models (continued)

	Nº of Funds	Conditional single-index					Conditional multi-index						
		α_p	β_{0p}	R^2(adj.)	N +/0/- alphas	W(p-val)	α_p	BIndex	SIndex	Def	R^2(adj.)	N +/0/- alphas	W(p-val)
UK													
Gilt	26	-0.168 ***	0.992 ***	93.6%	0/8/18	0.000 [17]	-0.164 ***	0.966 ***	0.023	0.078	93.7%	0/10/16	0.000 [20]
Corporate	13	-0.031	0.799 ***	75.6%	0/12/1	0.001 [10]	-0.124 *	0.721 ***	0.124 ***	0.189	83.8%	0/12/1	0.000 [10]
Other Bond	6	0.190	0.488 ***	41.3%	0/6/0	0.000 [5]	0.081	0.403 ***	0.146 ***	0.353	53.7%	0/6/0	0.013 [5]
All Funds	45	-0.081	0.869 ***	88.9%	0/26/19	0.000 [32]	-0.120 **	0.820 ***	0.069 ***	0.147	91.2%	0/28/17	0.000 [35]
Bonf.(+)		2.546					1.143						
Bonf.(-)		0.000					0.003						
Spain													
RentaFija CP Euro	108	-0.177 ***	0.278 ***	90.7%	0/6/102	0.006 [20]	-0.181 ***	0.275 ***	0.003 *	0.050 **	90.9%	0/5/103	0.000 [40]
RentaFija Euro	49	-0.171 ***	0.514 ***	93.2%	0/3/46	0.001 [44]	-0.185 ***	0.520 ***	0.003	0.067 *	93.5%	0/2/47	0.001 [93]
All Funds	157	-0.175 ***	0.352 ***	92.6%	0/9/148	0.016 [64]	-0.182 ***	0.352 ***	0.003	0.055 **	92.9%	0/7/150	0.000 [133]
Bonf.(+)		51.310					31.510						
Bonf.(-)		0.000					0.000						
Italy													
Short-Term Euro	26	-0.198 ***	0.278 ***	72.7%	0/1/25	0.596 [5]	-0.192 ***	0.265 ***	0.002	0.034	73.3%	0/1/25	0.000 [25]
M/L Euro	25	-0.220 ***	0.640 ***	93.8%	0/1/24	0.608 [6]	-0.214 ***	0.614 ***	0.008 **	-0.001	94.3%	0/0/25	0.000 [18]
Europa	7	-0.214 ***	0.530 ***	67.5%	0/1/6	0.434 [1]	-0.213 ***	0.506 ***	0.007	0.008	66.5%	0/1/6	0.191 [4]
All Funds	58	-0.210 ***	0.465 ***	89.1%	0/3/55	0.419 [12]	-0.204 ***	0.445 ***	0.005	0.015	89.5%	0/2/56	0.000 [47]
Bonf.(+)		31.616					19.992						
Bonf.(-)		0.000					0.000						
Portugal													
Euro Fixed Rate	6	-0.189 ***	0.595 ***	82.5%	0/1/5	0.001 [5]	-0.181 ***	0.601 ***	0.008	-0.040	81.8%	0/1/5	0.000 [4]
Euro Floating Rate	16	-0.128 ***	0.026 ***	19.9%	0/0/16	0.010 [8]	-0.129 ***	0.029 ***	-0.001	0.009	18.9%	0/0/16	0.072 [11]
All Funds	22	-0.144 ***	0.181 ***	78.7%	0/1/21	0.000 [13]	-0.143 ***	0.185 ***	0.001	-0.005	76.8%	0/1/21	0.001 [15]
Bonf.(+)		0.878					2.054						
Bonf.(-)		0.000					0.000						
All Sample	638				2/242/394	[260]						0/227/411	[446]

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

The effects on the estimates of alphas are, however, somewhat mixed, as revealed by the distribution of the funds' alphas in Appendix 5.7 and Appendix 5.8. For some countries the alphas increase slightly, in particular in the context of the multi-index model. This is the case for German, UK and French bond funds with more 11, 6 and 17 funds (in comparison with the unconditional multi-index model), respectively, presenting alphas not statistically different from zero. In an opposite direction, the alphas on Spanish and Italian bond funds decrease slightly. We have 3 and 1 more funds, respectively, with statistically significant negative alphas. Overall, comparatively to the unconditional multi-index model, the number of funds that present either a positive or not statistically different from zero alpha is higher (196 funds with zero alphas against 227 funds with zero alphas, which represents an increase in 31 funds).

The inclusion of the information variables seems to add explanatory power to the model. Although the R^2 (adj.) of the portfolios of funds remain similar, or even decreases slightly, at the individual fund level we can observe that for both models (single and multi-index), we reject the hypothesis, at the 5 percent level, that the coefficients for the additional variables are jointly equal to zero for a large number of funds. For the conditional multi-index model we reject that hypothesis for 39 German funds, 177 French funds, 35 UK funds, 133 Spanish funds, 47 Italian funds and 15 Portuguese funds (a total of 446 representing approximately 70 percent of the funds). In the case of the conditional single index model we reject the null hypothesis for 260 funds (41 percent of the funds).

The evidence suggests that the measures of risk are time-varying, being stronger for the conditional multi-index and weaker for the conditional single-index model. Table 5.5 shows, in more detail, the estimates for the slope coefficients of the

conditional beta function.[83] The variable IRW is the most significant one in the conditional single-index model, namely for the UK and French markets. This variable also appears as one of the most significant one in the conditional multi-index model. There seems to exist a significant negative relation between the conditional beta and IRW. This is contrary to what we found in the analysis of bond return predictability, as higher IRW tends to forecast higher excess bond returns. The fact that the sign of this relation is the opposite of what should be expected can be due to the same reasons pointed out by Ferson and Schadt (1996) for the case of stock funds. Possible explanations are the impact of new cash flows into the funds and the fact that the betas of the underlying securities change through time. We think that the latter is, probably, the most reasonable explanation as we are dealing with bond funds.

[83] Regression estimates for each individual fund are reported in Appendix 5.9.

Table 5.5 – Estimates of conditional betas

This table presents the coefficients' estimates for the conditional beta function for the equally-weighted portfolios of funds and for both the single and multiple index models. The predetermined variables Term, IRW and Jd are as defined in table 5.4. The conditional beta for the Bindex is designated by b1, b2 identifies the conditional beta for Sindex and b3 the conditional beta for the Def. Bindex, Sindex and Def as defined in table 5.3. The number of funds with positive (N+) or negative (N-) coefficients with respect to the lagged information variables are also reported, with the number of those which are statistically significant, at the 5% level, reported in brackets.

	Nº of	Conditional single-index			Conditional multi-index								
	Funds	term	irw	jd	b1term	b1irw	b1jd	b2term	b2irw	b2jd	b3term	b3irw	b3jd
Germany													
Renten Euro	59	0.073	0.092	0.020	0.051	0.158	-0.141	-0.002	0.007	0.028	0.059	-0.522	-0.066
Renten Europa	14	0.100	-2.017	0.042	-0.016	-1.508 *	-0.442 ***	-0.006	0.000	0.034	0.175	1.559	0.299
Renten Kurz.	11	0.032	0.179	-0.121	0.034	0.176	-0.177 ***	0.002	0.020	0.014	0.095	0.023	-0.139
Renten IZB	6	0.137 ***	0.502	-0.011	0.150 ***	0.464	-0.124 **	-0.004	-0.010	0.029 ***	0.031	-0.211	0.033
All Funds	90	0.077	-0.198	0.004	0.045	-0.078	-0.191 *	-0.002	0.006	0.027	0.080	-0.111	-0.011
N+		64	50	47	60	53	9	39	38	74	69	36	47
		[14]	[4]	[0]	[13]	[4]	[0]	[0]	[3]	[17]	[1]	[0]	[2]
N-		26	40	43	30	37	81	51	52	16	21	54	43
		[1]	[6]	[4]	[2]	[4]	[18]	[0]	[1]	[0]	[0]	[0]	[2]
France													
Obl.Euro CT	60	0.004	-0.298	0.091 ***	0.001	-0.317	0.116 ***	-0.001	0.004	-0.011 *	0.013	-0.463	0.032
Obl.Euro MT	83	0.001	-0.608 *	0.116 ***	0.003	-0.509	0.084 **	-0.003	-0.052	0.003	0.003	-0.351	-0.064
Obl.Euro LT	114	-0.016	-0.973 ***	0.091 **	0.003	-0.715 **	-0.016	-0.008	-0.143 **	0.023 **	0.005	-0.282	-0.183
Obl.Europe	9	0.033	-1.932 **	-0.084	0.043	-1.152 *	-0.374 **	-0.014	-0.293 **	0.019	-0.085	2.576	0.582
All Funds	266	-0.005	-0.739 ***	0.093 ***	0.004	-0.576 *	0.033	-0.005	-0.086	0.009	0.003	-0.248	-0.072
N+		116	39	229	136	42	184	80	78	155	154	91	110
		[27]	[0]	[67]	[29]	[2]	[46]	[3]	[9]	[35]	[9]	[2]	[13]
N-		150	227	37	130	224	82	186	188	111	112	175	156
		[27]	[72]	[2]	[16]	[45]	[16]	[12]	[43]	[23]	[6]	[7]	[14]
UK													
Gilt	26	-0.031	-1.891 ***	0.009	-0.041	-1.720 ***	-0.137	0.025 *	-0.295	0.021	0.161	-0.031	-0.137
Corporate	13	0.099	-4.154 ***	0.102	-0.017	-2.491 **	-0.337 ***	0.017	-0.255	0.028	-0.060	-0.884	0.863 **
Other Bond	6	0.137	-7.013 ***	0.804	-0.040	-5.260 ***	0.537 **	0.012	-0.352	-0.042	-0.551	0.410	0.850 *
All Funds	45	0.029	-3.227 ***	0.142	-0.034	-2.415 ***	-0.105	0.021	-0.291	0.015	0.002	-0.219	0.284
N+		21	1	21	33	19	3	13	34	7	28	30	24
		[1]	[0]	[5]	[3]	[2]	[0]	[2]	[7]	[2]	[1]	[0]	[2]
N-		24	44	24	12	26	42	32	11	38	17	15	21
		[6]	[33]	[0]	[0]	[6]	[23]	[4]	[1]	[6]	[1]	[1]	[1]

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 5.5 – Estimates of conditional betas (continued)

	Nº of Funds	Conditional single-index			Conditional multi-index								
		term	irw	jd	b1term	b1irw	b1jd	b2term	b2irw	b2jd	b3term	b3irw	b3jd
Spain													
RentaFija CP Euro	108	0.018 *	-0.448 ***	0.045	0.017	-0.405 **	-0.285 ***	0.000	0.008	0.047 ***	0.010	-0.024	0.366 ***
RentaFija Euro	49	-0.033 **	-0.081	0.069 **	-0.032 *	-0.068	-0.290 **	-0.002	0.046 *	0.052 **	0.063 *	-1.020 *	0.328 **
All Funds	157	0.002	-0.334 **	0.053 *	0.002	-0.300 **	-0.287 ***	-0.001	0.020	0.049 ***	0.027	-0.335	0.354 ***
N+		83	56	110	80	59	30	66	97	131	110	62	138
		[19]	[4]	[25]	[23]	[6]	[2]	[0]	[26]	[58]	[17]	[3]	[60]
N-		74	101	47	77	98	127	91	60	26	47	95	19
		[26]	[21]	[0]	[20]	[27]	[52]	[4]	[1]	[3]	[1]	[15]	[5]
Italy													
Short-Term Euro	26	0.014	-0.396	0.007	0.015	-0.604 *	0.059	0.005	0.035	-0.012 *	0.092	1.470 *	-0.006
M/L Euro	25	0.029	-0.299	0.018	0.020	-0.345	0.094 *	0.009 *	0.013	-0.013 **	0.054	1.226 **	-0.095
Europa	7	0.040	-1.312	0.102	0.050	-1.267	0.105	-0.006	0.012	0.018	0.200	1.609	-0.193
All Funds	58	0.024	-0.465	0.023	0.021	-0.572	0.080 *	0.005	0.023	-0.009	0.089	1.382 **	-0.067
N+		41	11	34	40	6	45	47	42	12	45	52	22
		[6]	[0]	[2]	[7]	[0]	[9]	[6]	[2]	[2]	[7]	[9]	[3]
N-		17	47	24	18	52	13	11	16	46	13	6	36
		[1]	[6]	[2]	[1]	[9]	[0]	[2]	[0]	[22]	[0]	[0]	[4]
Portugal													
Euro Fixed Rate	6	-0.057	1.395 ***	0.126	-0.061	1.366 ***	0.321	0.009	-0.014	-0.019	-0.071 *	0.557	-0.373
Euro Floating Rate	16	-0.003	-0.062	0.050 ***	-0.004	-0.087	-0.023	-0.002	-0.002	0.006	-0.003	0.362	0.053
All Funds	22	-0.018	0.335 **	0.071 ***	-0.019	0.309 *	0.071	0.001	-0.006	-0.001	-0.021	0.415	-0.063
N+		9	12	19	9	10	8	9	9	14	10	17	12
		[1]	[4]	[10]	[1]	[5]	[2]	[1]	[0]	[5]	[1]	[1]	[2]
N-		13	10	3	13	12	14	13	13	8	12	5	10
		[2]	[0]	[0]	[3]	[2]	[2]	[4]	[1]	[2]	[1]	[0]	[1]
All Sample	638												
N+		334	169	460	358	189	279	254	298	393	416	288	353
		[68]	[12]	[109]	[76]	[19]	[59]	[12]	[47]	[119]	[36]	[15]	[82]
N-		304	469	178	280	449	359	384	340	245	222	350	285
		[63]	[138]	[8]	[42]	[93]	[111]	[26]	[47]	[56]	[9]	[23]	[27]

***Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

The dummy for the month of January is another variable with some significance and, in general, for all countries. However, the evidence is mixed. For several funds there seems to exist a negative relation between the conditional betas and the month of January, while for others that relation is positive.

It would be important to investors in bond funds to know when they are most likely to present superior performance. Is it better in up markets or when the market is expected to enter into recession? The analysis of the sign of the estimates for the conditional alpha function, resulting from equation [5.5] and reported in Table 5.6, can help us answer this question. This table shows that there is a relationship between the predetermined information variables and bond fund performance for both the single and the multi-index conditional models.[84]

The variable term spread appears significant for several funds, mainly for Spanish, German and French bond funds, and with a negative sign. The negative sign indicates that abnormal performance is above average when term spread takes on low values. According to the results obtained in the previous chapter, as a low term spread predicts higher bond returns, we may therefore conclude that bond funds seem to present above average abnormal performance in up bond markets. The January dummy is also significant for several funds, in particular for German, French and UK bond funds, and also with a negative sign. It appears that bond funds have below average alphas in the month of January. The IRW seems to have a weak relation with bond fund performance, although with some significance in the UK, Spanish and Portuguese markets. For those cases in which it appears as significant, its sign is not clear: for the UK market it has a negative sign while for the Spanish market some funds present a positive sign.

[84] The estimates for the conditional alpha function for each individual fund are presented in Appendix 5.10.

Considering all funds of the sample, most of them have a positive sign. If IRW reflects wealth-dependent RRA, it should peak during cyclical contractions and be low in expansions. A positive sign of the IRW is consistent with a higher performance in an up bond market.

Using the heteroscedaticity and autocorrelated-consistent Wald test we conclude that, for a large number of funds, in particular for the conditional multi-index model, we reject the hypothesis that the coefficients on the lagged information variables are jointly equal to zero (for a total of 348 funds, representing approximately 55 percent of the sample).

Table 5.6 – Estimates of time-varying alphas

This table presents the coefficients' estimates for the conditional alpha function for the equally-weighted portfolios of funds and for both the single and multiple index models. The predetermined variables Term, IRW and Jd are as defined in table 5.4. The number of funds with positive (N+) or negative (N-) coefficients with respect to the lagged information variables are also reported, with those which are statistically significant, at the 5% level, included in brackets. The W(p-val) is the probability value for the Chi-square statistic of the Wald test for the restriction that the coefficients on the lagged information variables are jointly equal to zero. The number of funds for which we reject that hypothesis, at the 5% level, are reported in brackets.

	Nº of	Conditional single-index						Conditional multi-index					
	Funds	α_{0p}	term	irw	jd	R^2(adj.)	W(p-val)	α_{0p}	term	irw	jd	R^2(adj.)	W(p-val)
Germany													
Renten Euro	59	-0.007	-0.119 ***	0.167	-0.262 *	84.2%	0.000 [47]	-0.057	-0.133 **	0.214	-0.521 ***	88.5%	0.000 [59]
Renten Europa	14	0.069	-0.231 *	-0.272	0.158	49.2%	0.339 [4]	-0.081	-0.257 *	-0.403	-0.204	75.6%	0.019 [7]
Renten Kurz.	11	-0.003	-0.003	0.562	-0.065	64.8%	0.019 [6]	-0.026	-0.012	0.701 **	-0.093	67.3%	0.000 [4]
Renten IZB	6	-0.040	-0.025	0.479	0.067	77.6%	0.255 [3]	-0.048	-0.030	0.662 **	-0.004	78.2%	0.002 [5]
All Funds	90	0.003	-0.116 **	0.168	-0.150	80.0%	0.012 [60]	-0.057	-0.131 **	0.207	-0.385 ***	88.1%	0.000 [75]
N+		35	8	55	23			30	10	38	19		
		[3]	[0]	[4]	[4]			[2]	[1]	[3]	[2]		
N-		55	82	35	67			60	80	52	71		
		[5]	[42]	[0]	[28]			[5]	[37]	[0]	[52]		
France													
Obl.Euro CT	60	-0.063 ***	-0.011	0.049	-0.018	84.3%	0.893 [15]	-0.074 ***	-0.021	0.228	-0.090	87.8%	0.005 [30]
Obl.Euro MT	83	-0.078 ***	-0.047 **	0.114	-0.090 *	92.7%	0.001 [44]	-0.086 ***	-0.061 **	0.419	-0.128	93.4%	0.000 [58]
Obl.Euro LT	114	-0.077 ***	-0.045 *	-0.183	-0.159 **	96.4%	0.000 [58]	-0.076 ***	-0.058 **	0.169	-0.138 **	96.7%	0.000 [61]
Obl.Europe	9	-0.061	-0.081	-1.296	0.020	73.8%	0.520 [0]	-0.059	-0.100	-0.961	-0.061	76.1%	0.626 [1]
All Funds	266	-0.074 ***	-0.039 *	-0.076	-0.099 **	95.4%	0.000 [117]	-0.078 ***	-0.052 **	0.222	-0.121 *	96.0%	0.000 [150]
N+		13	49	129	79			14	33	202	74		
		[0]	[1]	[2]	[8]			[0]	[1]	[14]	[13]		
N-		253	217	137	187			252	233	64	192		
		[132]	[52]	[6]	[72]			[134]	[67]	[3]	[70]		
UK													
Gilt	26	-0.149 ***	-0.053	0.524	-0.269	93.6%	0.262 [5]	-0.160 ***	-0.093 **	0.575	-0.311 *	93.7%	0.046 [8]
Corporate	13	-0.025	-0.024	-3.712 ***	-0.199	76.8%	0.001 [3]	-0.156 *	-0.012	-5.579 ***	-0.184	86.6%	0.002 [8]
Other Bond	6	0.182	-0.250 **	-6.179 ***	-0.008	48.8%	0.000 [4]	0.017	-0.223 **	-8.795 ***	-0.075	63.9%	0.000 [4]
All Funds	45	-0.069	-0.071	-1.594 *	-0.214	89.3%	0.006 [12]	-0.135 **	-0.087 **	-2.452 **	-0.243 *	92.1%	0.023 [20]
N+		13	13	21	14			6	6	20	12		
		[0]	[0]	[0]	[0]			[0]	[0]	[1]	[2]		
N-		32	32	24	31			39	39	25	33		
		[18]	[3]	[7]	[12]			[18]	[6]	[7]	[11]		

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 5.6 – Estimates of time-varying alphas (continued)

	Nº of	Conditional single-index						Conditional multi-index					
	Funds	α_{0p}	term	irw	jd	R^2(adj.)	W(p-val)	α_{0p}	term	irw	jd	R^2(adj.)	W(p-val)
Spain													
RentaFija CP Euro	108	-0.174 ***	-0.056 ***	0.170	0.039	92.3%	0.018 [20]	-0.177 ***	-0.058 ***	0.247	0.068 **	92.7%	0.032 [28]
RentaFija Euro	49	-0.165 ***	-0.064 ***	-0.099	-0.021	94.2%	0.000 [50]	-0.180 ***	-0.061 **	-0.133	-0.064	94.5%	0.006 [57]
All Funds	157	-0.172 ***	-0.059 ***	0.086	0.020	93.9%	0.012 [70]	-0.178 ***	-0.059 ***	0.128	0.027	94.1%	0.056 [85]
N+		0	25	91	91			0	25	95	94		
		[0]	[0]	[8]	[14]			[0]	[0]	[22]	[26]		
N-		157	132	66	66			157	132	62	63		
		[149]	[68]	[2]	[14]			[151]	[63]	[17]	[15]		
Italy													
Short-Term Euro	26	-0.196 ***	0.020	0.250	-0.031	72.4%	0.401 [1]	-0.192 ***	0.014	0.180	0.012	72.5%	0.821 [1]
M/L Euro	25	-0.214 ***	-0.008	0.032	-0.119 **	93.6%	0.025 [5]	-0.211 ***	0.003	-0.180	-0.136 *	94.1%	0.219 [6]
Europa	7	-0.227 ***	0.052	0.263	0.248	67.3%	0.371 [0]	-0.218 ***	0.034	0.324	0.164	65.6%	0.395 [1]
All Funds	58	-0.207 ***	0.012	0.157	-0.035	88.8%	0.523 [6]	-0.203 ***	0.012	0.042	-0.034	89.1%	0.928 [8]
N+		1	40	37	17			1	37	30	22		
		[0]	[2]	[0]	[1]			[0]	[1]	[0]	[1]		
N-		57	18	21	41			57	21	28	36		
		[55]	[0]	[0]	[9]			[56]	[0]	[1]	[9]		
Portugal													
Euro Fixed Rate	6	-0.170 ***	-0.044	0.139	-0.248 *	82.9%	0.007 [4]	-0.170 ***	-0.057	0.275	-0.155	81.6%	0.066 [4]
Euro Floating Rate	16	-0.127 ***	-0.022	0.202 ***	0.037	25.5%	0.007 [7]	-0.127 ***	-0.026	0.247 ***	0.005	26.2%	0.033 [6]
All Funds	22	-0.139 ***	-0.028 *	0.185 **	-0.040	79.4%	0.000 [11]	-0.139 ***	-0.034 *	0.255 **	-0.038	77.5%	0.010 [10]
N+		0	3	19	14			0	3	19	9		
		[0]	[0]	[5]	[2]			[0]	[0]	[8]	[1]		
N-		22	19	3	8			22	19	3	13		
		[21]	[1]	[0]	[2]			[21]	[2]	[0]	[3]		
All Sample	638						[276]						[348]
N+		62	138	352	238			51	142	385	230		
		[3]	[3]	[19]	[29]			[2]	[3]	[48]	[45]		
N-		576	500	286	400			587	496	253	408		
		[380]	[166]	[15]	[137]			[395]	[175]	[28]	[160]		

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

5.4.3. Management Fees

Whatever the model considered, whether single index versus multi-index or unconditional versus conditional models, results indicate a tendency towards negative performance. However, as mentioned in section 5.3.1, the bond fund returns used in our sample are net of management fees. Previous studies, reviewed in section 3.3 of Chapter 3, have found for the US market that the underperformance of bond funds is mainly due to management expenses (Blake, Elton and Gruber, 1993; Elton, Gruber and Blake, 1995; Kahn and Rudd, 1995). In order to test if management fees can also explain the evidence of negative performance we obtained for European bond funds, we repeat the analysis of the two previous sections, on the equally-weighted portfolios of funds, considering bond fund returns before expenses. To obtain these returns, we add back the management fees reported in Table 5.1 to the bond fund returns for each of the equally-weighted portfolios.[85]

In Table 5.7 we report the estimates for the alphas using the fund returns before fees. These new estimates show a tendency for higher alphas and thus indicate that some of the observed underperformance is effectively due to management fees. Particularly for French and UK bond funds (which charge relatively high fees), and considering the conditional multi-index model, the alphas are higher and become not statistically different from zero. Nevertheless, for the Latin countries the strong evidence of negative performance is still maintained.

[85] We divided the annual percentage of the fee by 12 to obtain a monthly value. Since the annual percentage of management fees, as reported in Table 5.1, are values at the end of December 2000, the returns before fees we obtain are not the real ones but only an approximation. In the more recent years we have observed a decrease in management fees and consequently this procedure underestimates before fees returns.

Table 5.7 – European bond fund performance before management fees

This table reports the alphas for each of the equally-weighted portfolios of funds (as described in Table 5.1) for the six European countries that compose our bond fund sample, considering both unconditional and conditional models in the single and multi-index version, when returns are gross of management fees.

	Nº of Funds	Unconditional SI	Unconditional MI	Conditional SI		Conditional MI	
		α_p	α_p	α_p	α_{0p}	α_p	α_{0p}
Germany							
Renten Euro	59	0.003	-0.036	0.017	0.031	-0.030	-0.019
Renten Europa	14	0.072	-0.047	0.109	0.112	-0.034	-0.033
Renten Kurz.	11	0.018	0.001	0.028	0.034	0.004	0.011
Renten IZB	6	-0.037	-0.051 *	-0.012	-0.010	-0.023	-0.018
All Funds	90	0.013	-0.035	0.031	0.041	-0.027	-0.018
France							
Obl.Euro CT	60	0.020	0.010	0.018	0.020	0.004	0.008
Obl.Euro MT	83	0.009	-0.003	0.007	0.015	-0.004	0.006
Obl.Euro LT	114	0.004	-0.006	-0.003	0.005	-0.002	0.006
Obl.Europe	9	-0.017	-0.050	0.011	0.010	0.011	0.011
All Funds	266	0.007	-0.004	0.004	0.011	-0.002	0.006
UK							
Gilt	26	-0.104 ***	-0.114 ***	-0.091 ***	-0.073 **	-0.088 *	-0.084 *
Corporate	13	-0.036	-0.089	0.045	0.052	-0.047	-0.079
Other Bond	6	0.176	0.090	0.290 **	0.282 **	0.181	0.117
All Funds	45	-0.048	-0.080 **	-0.002	0.010	-0.041	-0.056
Spain							
RentaFija CP Euro	108	-0.069 ***	-0.074 ***	-0.062 ***	-0.059 ***	-0.066 ***	-0.062 ***
RentaFija Euro	49	-0.031 *	-0.038 **	-0.053 **	-0.048 **	-0.067 **	-0.063 ***
All Funds	157	-0.057 ***	-0.063 ***	-0.059 ***	-0.056 ***	-0.067 ***	-0.062 ***
Italy							
Short-Term Euro	26	-0.136 ***	-0.135 ***	-0.130 ***	-0.127 ***	-0.124 ***	-0.124 ***
M/L Euro	25	-0.143 ***	-0.144 ***	-0.134 ***	-0.128 ***	-0.129 ***	-0.125 ***
Europa	7	-0.136 **	-0.131 **	-0.122 *	-0.135 **	-0.121 *	-0.126 *
All Funds	58	-0.136 ***	-0.136 ***	-0.128 ***	-0.126 ***	-0.123 ***	-0.122 ***
Portugal							
Euro Fixed Rate	6	-0.124 ***	-0.126 ***	-0.123 ***	-0.104 ***	-0.115 ***	-0.104 ***
Euro Floating Rate	16	-0.089 ***	-0.090 ***	-0.092 ***	-0.091 ***	-0.093 ***	-0.091 ***
All Funds	22	-0.098 ***	-0.100 ***	-0.100 ***	-0.095 ***	-0.099 ***	-0.094 ***

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

5.4.4. Concluding Comments

In this section, we have examined, in some detail, the performance of our sample of European bond funds. Our main conclusions can be separated into those related to the benchmark issue and those concerning the impact of incorporating conditioning information.

We have considered and compared two alternatives for the benchmark for bond fund performance: a single and a multiple index model. The results seem to indicate that

a single index model is not the most appropriate. For a large number of funds, particularly German and French bond funds, we observe that the single-index model overestimates bond fund performance, which is consistent with previous findings on fund performance.

Results also suggest that incorporating publicly available information in performance evaluation models impacts positively on the performance estimates of bond funds (especially German, French and UK bond funds). This outcome has also been obtained in previous studies, mainly for stock funds. Hence, our results suggest that both additional risk factors and conditioning information impacts on bond fund performance.

Overall, we find that European bond funds exhibit negative performance, in particular bond funds of Latin countries, even when considering before management fees returns. For several UK, French and German bond funds we do not reject the hypothesis of neutral performance. Might this evidence mean that Latin bond fund managers are worse than other European bond fund managers? As we have already mentioned, the results must be interpreted with caution as the performance across different European countries is not easily comparable due to the different taxation principles. We believe that a possible explanation of the poor bond fund performance for those countries is related to the impact of taxes in NAV and, thus, in fund returns.

Although overall fund performance indicates negative or neutral performance, it may happen that some funds present consistently higher performance, while others present consistently poor performance. Furthermore, will conditional models be better able to detect this persistence phenomenon? In order to answer this question, the next logical step is to examine the consistency of performance on the basis of both unconditional and conditional models. This issue is discussed in the next section.

5.5. PERFORMANCE PERSISTENCE

The results on the performance of bond funds for the European market over the period between 1994 and 2000 are consistent with previous findings, not only in relation to the evidence of neutral or even negative performance, but also in relation to the impact of conditioning information on the performance measures, as when predetermined information variables are incorporated a slight tendency towards a better performance is observed. Studies on stock funds, such as Ferson and Schadt (1996), Chen and Knez (1996), Kryzanowski, Lalancette and To (1997) and Dahlquist and Söderlind (1999), as well as the studies on bond funds by Gallagher and Jarnecic (2002) and Dahlquist, Engström and Söderlind (2000), also found that the distribution of alphas shifts to the right region of superior performance when conditional models are used.

The assumption that expected returns and risk are conditioned on predetermined publicly available information should also affect findings concerning performance persistence (the ability of managers to deliver consistently superior returns or positive alphas - also known as a "hot hands" phenomenon). While for the case of stock funds previous findings seem to suggest that inferences on the persistence of performance change when information variables are incorporated, for the case of bond funds this question has not yet been examined.

Hence, the objective in this section is to test the hypothesis of no performance persistence in our sample of European bond funds. Our approach to measure persistence is based on cross-sectional regressions of the future performance measure on the past performance measure and also on two-way contingency tables[86] (e.g.: Kahn and Rudd,

[86] See Appendix 5.11 for the description of this methodology.

1995). The persistence is analysed considering the performance evaluation models from the previous section. We consider the last six years of our sample period: January 1995 to December 2000.[87] This period is divided in two consecutive subperiods of three years (January 1995 to December 1997 and January 1998 to December 2000). For each one of these subperiods we calculate, for each fund, both excess returns and alphas.

Table 5.8 and Table 5.9 below report the cross-sectional regressions statistics, resulting from regressing the alphas for the second subperiod on the alphas for the first subperiod, for the unconditional and conditional models (considering both the single-index and multi-index versions). A significant positive t-statistic for the slope coefficient rejects the null hypothesis that past performance is unrelated to future performance and consequently is evidence of persistence.

The coefficients of the cross-section regressions are always positive. Using the unconditional alphas we find strong evidence in favour of performance persistence for Spanish, French and German bond funds for either the single or the multiple index models. For these funds, the regression coefficients are statistically significant at the 5 percent level. This evidence is maintained (and is even slightly stronger) when conditional single-index alphas are used, but it decreases when we consider conditional multi-index alphas. For the French bond funds the regression coefficient is no longer statistically significant while the statistically significance of the regression coefficient for the German bond funds decreased from 1 percent to 5 percent level. UK bond funds show statistically significant coefficients when single-index alphas are used, either unconditional or conditional, but they become not statistically different from zero in the context of multiple index alphas.

[87] In the case of Portugal this period coincides with the overall sample period, while for the other countries we exclude the period February to December 1994.

Table 5.8 – Persistence of bond fund performance: cross-sectional regression analysis for unconditional alphas

This table reports, for each European country, the statistics for the cross-section regression of the alphas for the subperiod January 1998 to December 2000 on the alphas for the subperiod January 1995 to December 1997, considering the unconditional single and multi-index models.

	Unconditional Single-index				Unconditional multi-index			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	-0.043	-6.169	0.328	7.830 ***	-0.050	-7.061	0.241	2.844 ***
France	-0.055	-9.178	0.197	3.109 ***	-0.075	-10.926	0.171	2.575 **
UK	-0.121	-5.903	0.190	2.198 **	-0.135	-5.752	0.104	0.908
Spain	-0.088	-7.223	0.418	5.703 ***	-0.089	-6.504	0.435	5.417 ***
Italy	-0.096	-4.151	0.115	1.202	-0.103	-5.358	0.125	1.641
Portugal	-0.070	-2.150	0.252	1.320	-0.055	-1.825	0.324	1.913 *

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 5.9 – Persistence of bond fund performance: cross-sectional regression analysis for conditional alphas

This table reports, for each European country, the statistics for the cross-section regression of the alphas for the subperiod January 1998 to December 2000 on the alphas for the subperiod January 1995 to December 1997, considering the conditional single and multi-index models.

	Conditional Single-index				Conditional multi-index			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	0.007	0.630	0.396	8.648 ***	0.014	1.825	0.177	2.537 **
France	-0.031	-4.974	0.312	4.954 ***	-0.070	-14.148	0.014	0.453
UK	-0.062	-2.403	0.390	3.190 ***	-0.046	-1.532	0.065	0.465
Spain	-0.070	-6.007	0.478	6.820 ***	-0.084	-5.464	0.496	5.507 ***
Italy	-0.093	-5.033	0.124	1.674 *	-0.128	-7.519	0.047	0.693
Portugal	-0.111	-12.858	0.026	0.658	-0.082	-4.534	0.156	1.805 *

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Overall, it seems that some of the persistence found using single-index alphas is driven by the two additional factors considered in the multi-index models and also that some of the persistence found with the multi-index alphas is driven by time-varying betas (the latter is similar to what was found, in some extent, by Otten and Bams, 2002).

Although frequently adopted, this approach of using the alpha for a future subperiod as the dependent variable can be problematic since most of the likely sources of biases in alphas are correlated over time (due to missing priced factors, for example), which can generate spurious evidence of persistent performance. An alternative approach consists of using the future excess return as the dependent variable. Christopherson, Ferson and Glassman (1998) argue that, besides avoiding this problem, with this alternative approach "the regressions focus directly on the question of the most practical: to what extent can the past alpha be used to predict future relative returns?" (p. 131). We repeated the cross-sectional regression analysis considering this alternative approach. Table 5.10 and Table 5.11 present the statistics of the cross-section regressions of future excess returns on past alphas. The results are not much different. The regression coefficients, with the exception of the Portuguese bond funds in the context of conditional multi-index alphas, are also positive. Again, German, Spanish and French bond funds present statistically significant coefficients at the 1 percent level.[88]

[88] We have also considered the cross-section regressions of future information or appraisal ratios (defined as alpha divided by the standard error of the regression used to estimate alpha) on past appraisal ratios. This measure accounts for the differences in volatility. Managers following high volatility strategies but with no true skill will either by chance consistently show up as winners or be removed from the business through poor performance. Brown, Goetzmann, Ibbotson and Ross (1992) suggest that it might be possible to mitigate some of the survival effect by simply standardizing performance measures by the residual standard deviation. They argue that, due to the existence of a distribution of strategies of different volatilities, even in the absence of any true persistence, survivorship bias will generate the appearance that winners repeat. The tables with these results are presented in Appendix 5.12. The evidence of performance persistence is even stronger: all countries present statistically significant, at the 1% level, regression coefficients.

Table 5.10 - Persistence of bond fund performance: cross-section regressions of excess returns on unconditional alphas

This table reports, for each European country, the statistics for the cross-section regression of the excess returns for the subperiod January 1998 to December 2000 on the alphas for the subperiod January 1995 to December 1997 considering the unconditional single and multi-index models.

	Unconditional Single-index				Unconditional multi-index			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	0.045	7.051	0.319	8.322 ***	0.071	8.377	0.266	2.596 ***
France	0.024	3.280	0.063	0.826	0.035	4.528	0.197	2.597 ***
UK	0.000	-0.023	0.056	0.627	-0.002	-0.070	0.015	0.124
Spain	-0.041	-3.146	0.494	6.258 ***	-0.038	-2.786	0.505	6.278 ***
Italy	-0.057	-2.629	0.121	1.350	-0.051	-2.859	0.143	1.999 *
Portugal	-0.083	-2.515	0.067	0.344	-0.089	-2.854	0.028	0.158

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Table 5.11 - Persistence of bond fund performance: cross-section regressions of excess returns on conditional alphas

This table reports, for each European country, the statistics for the cross-section regression of the excess returns for the subperiod January 1998 to December 2000 on the alphas for the subperiod January 1995 to December 1997 considering the conditional single and multi-index models.

	Conditional Single-index				Conditional multi-index			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	0.038	5.837	0.224	8.753 ***	0.068	9.496	0.320	4.972 ***
France	0.033	5.020	0.203	3.020 ***	0.031	5.260	0.122	3.311 ***
UK	-0.003	-0.164	0.052	0.523	0.009	0.300	0.081	0.607
Spain	-0.035	-2.432	0.526	6.118 ***	-0.043	-3.192	0.469	5.944 ***
Italy	-0.055	-2.900	0.127	1.675 *	-0.064	-4.071	0.094	1.503
Portugal	-0.085	-10.867	0.072	1.960 *	-0.112	-5.170	-0.092	-0.879

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Moreover, comparing these results with those of Table 5.8 and Table 5.9 it appears that unconditional alphas from the single-index model are less useful in predicting future performance as measured by excess returns than by their own future values. In contrast, the alphas from conditional multi-index models seem to be more

useful in predicting future excess returns than their own future values. This may be an indication of biases in the alphas.

For the contingency tables analysis we sort the funds into winners and losers in the first subperiod and winners and losers in the second subperiod. Funds are categorised as winners and losers by ranking fund performance according to whether they are above or below median performance. If we find statistical evidence that winners in one period remain winners in the subsequent period the null hypothesis of no persistence will be rejected. To test this hypothesis we calculate the Chi-square statistic[89] and its p-value. A high p-value indicates we cannot reject the null hypothesis at some predetermined confidence level.[90] We also provide the Chi-square statistic considering Yates's continuity correction (described in Appendix 5.11), a recommended correction particularly when the sample size is small (see Cortez, Paxson and Armada, 1999). This may be a problem for the case of Portugal, as our sample is relatively small (22 bond funds), or in the case of contingency tables considering only funds with positive (or negative) performance.

We start by analysing the contingency tables using, as performance measure, funds' excess returns. The results are reported in Table 5.12 below.

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[89] The Chi-square statistic is calculated as (see Appendix 5.11):

$$\chi^2 = (WW - D_1)^2 / D_1 + (WL - D_2)^2 / D_2 + (LW - D_3)^2 / D_3 + (LL - D_4)^2 / D_4$$

where:

$$D_1 = (WW + WL) * (WW + LW) / N$$

$$D_2 = (WW + WL) * (WL + LL) / N$$

$$D_3 = (LW + LL) * (WW + LW) / N$$

$$D_4 = (WL + LL) * (LW + LL) / N$$

This statistic is compared to the Chi-square distribution with one degree of freedom.

[90] Carpenter and Lynch (1999) examined the specification and power of various persistence tests. They found that the Chi-squared test based on the number of winners and losers is well specified, powerful, and more robust to the presence of survivorship bias when compared to other test methodologies.

Table 5.12 - Persistence of bond fund performance: contingency tables based on funds' excess returns

In this table we report the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with excess returns>median, repeated subsequent period; LL correspond to funds with excess returns<median, repeated subsequent period; WL and LW are funds with performance reversals. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Germany	31	14	14	31	12.844 ***	0.000	11.378 ***	0.001
France	103	30	30	103	80.135 ***	0.000	77.955 ***	0.000
UK	15	7	7	16	6.412 **	0.011	4.990 **	0.025
Spain	53	25	25	54	20.691 ***	0.000	19.265 ***	0.000
Italy	19	10	10	19	5.586 **	0.018	4.414 **	0.036
Portugal	8	3	3	8	4.545 **	0.033	2.909 *	0.088

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

As can be observed, we reject the hypothesis of no persistence, at the 5 percent level, for all European countries (for the case of Portuguese bond funds, the Chi-square statistic with Yates correction is only significant at the 10 percent level). However, this consistency in performance may simply reflect the differential return between high risk and low risk funds and not management skills. In order to control for this possibility we examine the contingency tables considering risk-adjusted alphas. According to theory, one should expect that risk-adjusted returns would exhibit lower performance persistence given that excess returns in an efficient market are obtainable only by assuming more risk.

In Table 5.13, we report the contingency table of winners and losers based on unconditional alphas. The statistical significance of the Chi-square test statistic indicates the existence of persistence, although it is not as strong as the previously found with excess returns, as expected. Similarly to the results obtained with the cross-section regressions, this evidence is strong for German, French and Spanish bond funds (with significant Chi-square statistics at the 1 percent level). Furthermore, that evidence is

slightly stronger when we consider the unconditional multi-index alphas. In this case, we also find some evidence of persistence for UK, Italian and Portuguese bond funds.

Table 5.13 - Persistence of bond fund performance: contingency tables based on funds' unconditional alphas

In this table we report the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with alphas>median, repeated subsequent period; LL correspond to funds with alphas<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A presents the contingency tables based on unconditional single-index alphas for each European country and Panel B the contingency tables based on unconditional multi-index alphas. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Unconditional SI Alphas								
Germany	31	14	14	31	12.844 ***	0.000	11.378 ***	0.001
France	81	52	52	81	12.647 ***	0.000	11.789 ***	0.001
UK	13	9	9	14	1.793	0.181	1.083	0.298
Spain	52	26	26	53	17.889 ***	0.000	16.564 ***	0.000
Italy	19	10	10	19	5.586 **	0.018	4.414 **	0.036
Portugal	7	4	4	7	1.636	0.201	0.727	0.394
Panel B - Unconditional MI Alphas								
Germany	29	16	16	29	7.511 ***	0.006	6.400 ***	0.011
France	83	50	50	83	16.376 ***	0.000	15.398 ***	0.000
UK	15	7	7	16	6.412 **	0.011	4.990 **	0.025
Spain	50	28	28	51	20.691 ***	0.000	19.265 ***	0.000
Italy	18	11	11	18	3.379 *	0.066	2.483	0.115
Portugal	8	3	3	8	4.545 **	0.033	2.909 *	0.088

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Based on conditional alphas, the resulting contingency tables are those presented below in Table 5.14. Again we find evidence of performance persistence, although this evidence decreases when instead of using conditional single-index alphas we use conditional multi-index alphas, similarly to the results from the cross-sectional regression analysis. The statistical significance of the Chi-square test, considering either

conditional single-index or conditional multi-index alphas, confirms the persistence found previously for German, French and Spanish bond funds.[91]

Table 5.14 - Persistence of bond fund performance: contingency tables based on funds' conditional alphas

In this table we report the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with alphas>median, repeated subsequent period; LL correspond to funds with alphas<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A presents the contingency tables based on conditional single-index alphas for each European country and Panel B the contingency tables based on conditional multi-index alphas. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Conditional SI Alphas								
Germany	35	10	10	35	27.778 ***	0.000	25.600 ***	0.000
France	88	45	45	88	27.805 ***	0.000	26.526 ***	0.000
UK	16	6	6	17	9.789 ***	0.002	8.011 ***	0.005
Spain	53	25	25	54	20.691 ***	0.000	19.265 ***	0.000
Italy	18	11	11	18	3.379 *	0.066	2.483	0.115
Portugal	7	4	4	7	1.636	0.201	0.727	0.394
Panel B - Conditional MI Alphas								
Germany	28	17	17	28	5.378 **	0.020	4.444 **	0.035
France	77	56	56	77	6.632 **	0.010	6.015 **	0.014
UK	12	10	10	13	0.551	0.458	0.197	0.657
Spain	53	25	25	54	20.691 ***	0.000	19.265 ***	0.000
Italy	16	13	13	16	0.621	0.431	0.276	0.599
Portugal	7	4	4	7	1.636	0.201	0.727	0.394

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

By comparing the results in Table 5.14 with those of Table 5.13, we can observe that, in the context of the single index model, when conditional alphas are considered instead of unconditional alphas, the evidence of performance consistency increases slightly. The inverse occurs in the context of the multi-index model. Hence, it seems that time-varying betas together with the additional factors considered in the multi-

[91] Appendix 5.13 reports the tables with contingency tables based on appraisal ratios. The results are similar to those obtained in the cross-sectional regression analysis. The persistence is strong and generalizes to all countries.

index model drive some of the evidence that there is a relationship between past and future performance.

Although evidence in favour of performance persistence is found for German, French and Spanish bond funds, we are not capable of identifying if this persistence is due to good performing funds or to poor performing funds. A common conclusion of previous studies is that persistence is concentrated in the extreme performing and mainly in the poorly performing funds (Gruber, 1996; Christopherson, Ferson and Glassman, 1998). In order to assess if this phenomenon is observed in our sample of European bond funds, we repeat the two-way contingency tables considering only funds with negative performance measures in the first period. The results obtained from the contingency tables based on alphas, presented in Table 5.15, seem to indicate that persistence is more evident for the poor performing funds, particularly for the case of Spanish bond funds. This is not surprising given the strong evidence of underperformance we found previously for the Spanish funds. In the case of German and French bond funds, it seems that some funds are also persistently poor performers.[92]

[92] Appendix 5.14 reports the results considering appraisal ratios. In the case of Germany, France and UK, as we have a significant number of funds with positive performance measures, we also analysed the contingency tables including only the funds with positive performance in the first subperiod. We find a slight evidence in favour of persistent positive performance for German and French bond funds, a finding which is not observed for UK bond funds.

Table 5.15 - Bond fund performance persistence: contingency tables considering only funds with negative alphas in the first period

The table reports the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with alphas >median, repeated subsequent period; LL correspond to funds with alphas<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A and B present the results for the unconditional models and Panel C and Panel D present the results for the conditional models. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Unconditional SI Alphas								
Germany	8	5	5	9	1.801	0.180	0.915	0.339
France	67	51	51	68	4.594 **	0.032	4.054 **	0.044
UK	7	8	8	8	0.034	0.853	0.030	0.862
Spain	51	26	26	51	16.234 ***	0.000	14.961 ***	0.000
Italy	18	10	10	19	5.063 **	0.024	3.941 **	0.047
Portugal	7	4	4	7	1.636	0.201	0.727	0.394
Panel B - Unconditional MI Alphas								
Germany	23	8	8	23	14.516 ***	0.000	12.645 ***	0.000
France	75	47	47	75	12.852 ***	0.000	11.951 ***	0.001
UK	11	7	7	12	2.179	0.140	1.316	0.251
Spain	50	27	27	51	14.249 ***	0.000	13.062 ***	0.000
Italy	17	11	11	18	2.959 *	0.085	2.117	0.146
Portugal	8	3	3	8	4.545 **	0.033	2.909 *	0.088
Panel C- Conditional SI Alphas								
Germany	4	5	5	4	0.222	0.637	0.000	1.000
France	78	39	39	79	26.556 ***	0.000	25.228 ***	0.000
UK	8	6	6	9	0.852	0.356	0.304	0.581
Spain	52	26	26	52	17.333 ***	0.000	16.026 ***	0.000
Italy	17	11	11	18	2.959 *	0.085	2.117	0.146
Portugal	7	3	3	7	3.200 *	0.074	1.800	0.180
Panel D - Conditional MI Alphas								
Germany	19	12	12	19	3.161 *	0.075	2.323	0.128
France	68	50	50	68	5.492 **	0.019	4.898 **	0.027
UK	9	9	9	10	0.026	0.873	0.029	0.866
Spain	52	25	25	52	18.935 ***	0.000	17.558 ***	0.000
Italy	16	12	12	16	1.143	0.285	0.643	0.423
Portugal	7	4	4	7	1.636	0.201	0.727	0.394

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

In summary, our results concerning the capacity of past performance to predict future performance suggest that performance persistence is more sensitive to the performance measure considered than to the methodology used to assess this phenomenon. By comparing the results from unconditional and conditional alphas, we conclude that in the case of the single-index model, it seems that conditional alphas lead

to stronger evidence of performance persistence. On the other hand, in the case of the multi-index model, conditional alphas lead to a lower evidence of persistence. Furthermore, considering only conditional alphas, we conclude that the persistence is reduced when using conditional multi-index alphas instead of conditional single-index model alphas. This suggests that the additional factors considered in the multi-index model and, in particular, the time-varying betas related with those additional factors drive some of the evidence that there is a relationship between past and future performance. A somewhat similar conclusion was reached by Basarrate and Rubio (1999) for the case of Spanish stock funds. This contrasts, however, with most of the previous studies (on stock funds only and mainly for the US market) which find that performance persistence seems to be more significant when conditional measures are used.

Notwithstanding, whatever measure of performance used and considering both cross-sectional regression analysis and contingency tables methodologies, a robust result is that consistency in performance is found for Spanish, French and German bond funds, although mainly concentrated in the poor performing funds.[93] Thus, it seems somewhat puzzling that investors still remain in these funds. However, as we have seen in the literature review, possible explanations such as the existence of disadvantaged investors (Gruber, 1996) might help to solve the puzzle. In several European countries (mostly Continental countries) banks dominate the mutual fund industry. Banks usually

[93] It is important to note, however, that a possible explanation for the strong persistence found in these countries could be the high number of funds in the sample. It is probably easier to find a significant persistent pattern with a larger sample than with a small sample, a limitation inherent to the methodologies used to assess performance persistence.

market more to individual investors than to institutional investors and individual investors may be less likely to monitor abnormal performance. Instead they tend to invest based on marketing efforts or the general reputation of the bank.

5.6. CONCLUSIONS

In this chapter we investigate the performance of European bond funds which, as far as we are aware of, has not yet been studied. In particular, we analysed the impact of conditioning information on bond fund performance evaluation and on the persistence of that performance. In the previous chapter, we have found that variables, such as: term spread, inverse relative wealth and a January dummy, are useful predictors of excess bond returns. In light of these results, we incorporated these variables in the conditional evaluation of bond fund performance. In addition, both a single and a multi-index model were considered. Our conclusions can be divided into those related to the performance of our sample of European bond funds and related to the sensitivity of the performance inferences to the models used (single versus multi-index and unconditional versus conditional models).

In terms of fund performance, the results show that, in general, bond funds exhibit negative performance, in particular bond funds in Italy, Spain and Portugal. UK "Gilt" funds present negative performance as well. For most German funds and UK "Corporate" and "Other Bond" funds, we cannot reject the hypothesis of neutral performance. A large number of French funds also present neutral performance. This evidence is robust to all scenarios (unconditional versus conditional and single versus multi-index models) considered and are consistent with the results of previous studies.

Furthermore, our results suggest that, at least in part, negative performance is due to management fees.

The multi-index model (which besides considering a bond market index also includes a stock market index and a default spread) seems to add some explanatory power comparatively to the single-index model. As well as an increase of the R^2 (adj.), the two additional factors are statistically significant for a large number of funds. In addition, and consistent with the results of other studies on stock and also bond funds, we observe that the measure of performance decreases, which suggests that multiple index models can do a better job in capturing additional sources of bond risk.

The results of the conditional models suggest that conditional betas are time-varying. We find evidence of a negative relation between conditional betas and the inverse relative wealth variable and, to some extent, also with the January dummy variable. The sign of this relationship is the opposite of what we found to be the relation between these variables and expected bond market returns (in Chapter 4). This apparent contradiction might be explained by the fact that the risk of the funds' underlying securities changes through time. Furthermore, we also find some evidence supportive of time-varying alphas, consistent with the conventional wisdom that it is easier for a fund manager to look good in an up market.

Finally, when we incorporate the predetermined information variables we observe a slight tendency towards a better performance, in particular for the conditional multi-index model, with more 31 funds presenting neutral rather than negative performance. This type of evidence is consistent with previous studies on stock funds (Ferson and Schadt, 1996; Chen and Knez, 1996; Kryzanowski, Lalancette and To, 1997; Dahlquist and Söderlind, 1999) and also on bond funds (Dahlquist, Engström and Söderlind, 2000; Gallagher and Jarnecic, 2002), which show that the distribution of alphas shift to the

right region of superior performance when conditional models are used, and are in favour of the argument that the additional information incorporated by a conditional measure allows for a better assessment of performance.

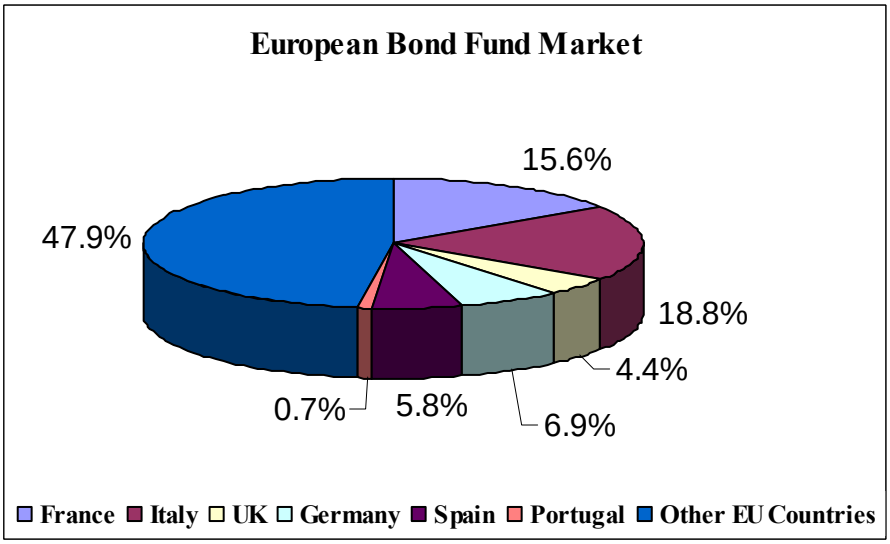
Relatively to the persistence phenomenon we find empirical evidence suggesting that there is some consistency in the performance of European bond funds particularly in the case of Spanish, French and German bond funds. The results were similar either considering the cross-sectional regression analysis or the contingency tables. This evidence is in accordance with Kahn and Rudd's (1995) study, who found strong evidence of persistence for US fixed-income funds. Furthermore, we observe that the evidence in persistence decreases when we consider conditional alphas, particularly for the multi-index model, which indicates that some of the persistence phenomenon might be driven by time-varying betas.

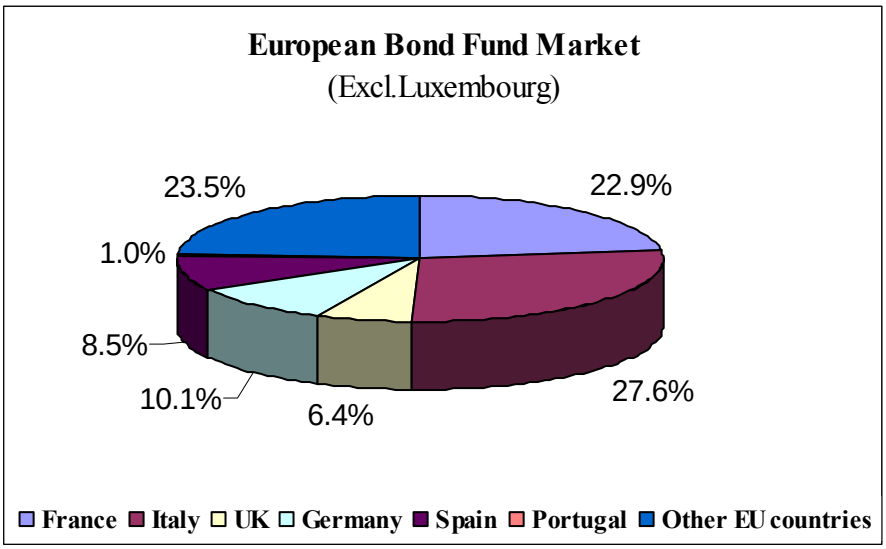
In conclusion, our results indicate that, similarly to stock funds, incorporating conditioning information has impact on bond fund performance inferences. Considering overall performance, we find that using conditional models improve funds' performance slightly. With respect to the persistence of performance, the evidence suggests that the phenomenon is weaker when conditional alphas are used (although we still found evidence in favour of persistence mainly concentrated in the poor performers).

Appendices

Appendix 5.1

The European bond fund market: weight of the countries included in our sample





Source: FEFSI and APFIN

Appendix 5.2

Summary statistics on each individual bond fund

For each individual fund of our sample, we report the respective classification category resulting from its investment policy as well as the mean, maximum, minimum and standard deviation of monthly continuously compounded excess returns. Furthermore, concerning the probability distribution of these returns we also report the skewness, the kurtosis, the Jarque-Bera test statistic and its probability. The last four columns present the number of observations for each fund, the first-order autocorrelation coefficient, the Ljung-Box Q-statistic for the null hypothesis that there is no autocorrelation up to order 1 and its probability.

Bond Funds		Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
Germany	GBF1	Rteuro	0.10	0.31	1.85	-2.19	0.88	-0.59	2.94	4.82	0.09	83	0.28	6.82	0.01
	GBF2	Rteuro	0.09	0.28	1.73	-2.73	0.96	-0.78	3.35	8.83	0.01	83	0.30	7.80	0.01
	GBF3	Rteuro	0.11	0.29	1.86	-2.09	0.91	-0.51	2.47	4.51	0.11	83	0.30	7.55	0.01
	GBF4	Rteuro	0.17	0.36	1.86	-2.33	0.86	-0.49	2.68	3.74	0.15	83	0.25	5.15	0.02
	GBF5	Rteuro	0.11	0.33	2.32	-2.14	0.80	-0.36	3.00	1.78	0.41	83	0.21	3.89	0.05
	GBF6	Rteuro	0.10	0.27	1.92	-2.22	0.92	-0.50	2.52	4.32	0.12	83	0.25	5.26	0.02
	GBF7	Rteuro	0.07	0.29	1.68	-2.54	0.88	-0.88	3.47	11.38	0.00	83	0.28	6.56	0.01
	GBF8	Rteuro	0.14	0.42	1.88	-2.21	0.90	-0.55	2.75	4.41	0.11	83	0.23	4.72	0.03
	GBF9	Rteuro	0.09	0.36	1.94	-2.30	0.96	-0.49	2.46	4.27	0.12	83	0.23	4.64	0.03
	GBF10	Rteuro	0.09	0.13	2.06	-2.60	1.02	-0.40	2.65	2.63	0.27	83	0.20	3.49	0.06
	GBF11	Rteuro	0.09	0.39	1.79	-2.31	0.89	-0.58	2.75	4.95	0.08	83	0.25	5.30	0.02
	GBF12	Rteuro	0.15	0.37	1.88	-2.14	0.88	-0.52	2.74	4.01	0.13	83	0.25	5.32	0.02
	GBF13	Rteuro	0.19	0.38	2.14	-2.55	0.95	-0.51	2.70	3.90	0.14	83	0.26	5.85	0.02
	GBF14	Rteuro	0.05	0.20	2.00	-2.57	0.99	-0.46	2.66	3.37	0.19	83	0.20	3.48	0.06
	GBF15	Rteuro	0.23	0.35	3.07	-4.82	1.55	-0.56	3.46	5.07	0.08	83	0.23	4.72	0.03
	GBF16	Rteuro	0.10	0.33	1.97	-2.18	0.96	-0.56	2.68	4.71	0.10	83	0.28	6.49	0.01
	GBF17	Rteuro	0.15	0.42	2.23	-2.20	0.94	-0.50	2.82	3.58	0.17	83	0.06	0.30	0.59
	GBF18	Rteuro	0.09	0.26	1.75	-2.51	0.93	-0.59	2.80	5.00	0.08	83	0.23	4.68	0.03
	GBF19	Rteuro	0.15	0.36	1.95	-2.07	0.93	-0.40	2.45	3.30	0.19	83	0.25	5.20	0.02
	GBF20	Rteuro	0.15	0.40	1.83	-2.24	0.87	-0.49	2.61	3.85	0.15	83	0.25	5.35	0.02
	GBF21	Rteuro	0.07	0.17	1.44	-1.83	0.75	-0.47	2.54	3.73	0.15	83	0.28	6.78	0.01
	GBF22	Rteuro	0.08	0.25	1.79	-2.26	0.83	-0.50	2.95	3.52	0.17	83	0.26	5.86	0.02
	GBF23	Rteuro	0.15	0.30	1.42	-1.34	0.70	-0.37	2.26	3.76	0.15	83	0.22	4.33	0.04
	GBF24	Rteuro	0.05	0.21	1.60	-2.38	0.89	-0.58	2.92	4.70	0.10	83	0.27	6.03	0.01
	GBF25	Rteuro	0.15	0.36	1.71	-2.22	0.83	-0.46	2.61	3.46	0.18	83	0.26	5.75	0.02
	GBF26	Rteuro	0.13	0.34	2.12	-2.13	0.93	-0.58	2.83	4.73	0.09	83	0.28	6.90	0.01
	GBF27	Rteuro	-0.09	-0.01	3.37	-5.99	1.37	-0.72	6.49	49.33	0.00	83	0.27	6.13	0.01
	GBF28	Rteuro	0.11	0.35	1.96	-2.43	0.92	-0.45	2.65	3.17	0.20	83	0.28	6.64	0.01
	GBF29	Rteuro	0.12	0.29	1.88	-1.97	0.87	-0.38	2.59	2.56	0.28	83	0.28	6.96	0.01
	GBF30	Rteuro	0.19	0.33	2.13	-1.83	0.93	-0.20	2.45	1.61	0.45	83	0.18	2.78	0.10
	GBF31	Rteuro	0.11	0.34	2.16	-2.14	0.87	-0.53	2.87	3.88	0.14	83	0.25	5.18	0.02
	GBF32	Rteuro	0.09	0.27	1.64	-1.73	0.77	-0.49	2.61	3.87	0.14	83	0.25	5.29	0.02
	GBF33	Rteuro	0.17	0.26	2.37	-3.09	1.27	-0.51	2.67	3.96	0.14	83	0.11	1.04	0.31
	GBF34	Rteuro	0.16	0.34	2.49	-2.90	1.18	-0.43	2.85	2.58	0.28	83	-0.02	0.05	0.83
	GBF35	Rteuro	0.07	0.24	3.20	-4.14	1.31	-0.40	3.42	2.83	0.24	83	0.15	1.92	0.17
	GBF36	Rteuro	0.04	0.33	2.19	-2.96	1.09	-0.40	2.52	3.07	0.22	83	0.22	3.98	0.05
	GBF37	Rteuro	0.16	0.46	2.36	-2.92	1.22	-0.45	2.63	3.24	0.20	83	0.21	3.63	0.06
	GBF38	Rteuro	0.06	0.36	1.94	-2.44	0.92	-0.64	2.92	5.62	0.06	83	0.22	4.09	0.04
	GBF39	Rteuro	0.10	0.34	1.90	-2.33	0.89	-0.52	2.79	3.96	0.14	83	0.25	5.22	0.02
	GBF40	Rteuro	0.15	0.35	1.86	-2.29	0.89	-0.52	2.70	4.10	0.13	83	0.26	5.93	0.02
	GBF41	Rteuro	0.13	0.40	2.09	-2.37	1.00	-0.47	2.74	3.33	0.19	83	0.18	2.66	0.10
	GBF42	Rteuro	0.17	0.62	2.78	-3.44	1.46	-0.60	2.67	5.42	0.07	83	0.18	2.72	0.10
	GBF43	Rteuro	0.14	0.35	1.75	-2.98	0.92	-0.81	3.75	11.11	0.00	83	0.15	1.85	0.17
	GBF44	Rteuro	0.13	0.35	1.70	-2.29	0.91	-0.51	2.44	4.66	0.10	83	0.24	4.90	0.03
	GBF45	Rteuro	0.12	0.35	1.96	-2.26	0.92	-0.49	2.71	3.56	0.17	83	0.26	5.70	0.02
	GBF46	Rteuro	0.06	0.31	1.47	-2.49	0.90	-0.79	3.18	8.81	0.01	83	0.31	8.14	0.00
	GBF47	Rteuro	0.16	0.36	1.90	-2.40	0.96	-0.49	2.52	4.07	0.13	83	0.25	5.29	0.02
	GBF48	Rteuro	0.13	0.36	1.75	-2.06	0.88	-0.46	2.56	3.56	0.17	83	0.31	8.00	0.01
	GBF49	Rteuro	0.11	0.35	2.02	-2.54	0.90	-0.58	3.07	4.72	0.09	83	0.25	5.47	0.02
	GBF50	Rteuro	0.12	0.38	1.89	-2.37	0.91	-0.52	2.62	4.26	0.12	83	0.23	4.48	0.03

Appendix 5.2 (continued)

Bond Funds		Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
	GBF51	Rteuro	0.18	0.50	2.13	-2.83	1.28	-0.53	2.42	5.03	0.08	83	0.16	2.32	0.13
	GBF52	Rteuro	0.12	0.28	1.70	-2.21	0.85	-0.51	2.56	4.29	0.12	83	0.22	4.29	0.04
	GBF53	Rteuro	0.15	0.39	1.91	-2.11	0.90	-0.43	2.45	3.66	0.16	83	0.22	4.09	0.04
	GBF54	Rteuro	0.07	0.22	1.89	-2.17	0.87	-0.41	2.55	3.06	0.22	83	0.22	4.12	0.04
	GBF55	Rteuro	0.13	0.31	1.64	-2.15	0.86	-0.46	2.43	4.08	0.13	83	0.24	5.09	0.02
	GBF56	Rteuro	0.15	0.46	2.15	-2.96	0.96	-0.61	3.23	5.29	0.07	83	0.26	5.75	0.02
	GBF57	Rteuro	0.14	0.38	1.89	-2.20	0.88	-0.46	2.61	3.39	0.18	83	0.27	6.25	0.01
	GBF58	Rteuro	0.13	0.29	1.68	-2.62	0.91	-0.61	2.83	5.22	0.07	83	0.22	4.10	0.04
	GBF59	Rteuro	0.12	0.36	1.84	-3.02	1.00	-0.70	3.00	6.73	0.03	83	0.17	2.56	0.11
	GBF60	Rteuropa	0.13	0.27	3.18	-3.50	1.34	-0.15	3.05	0.34	0.85	83	0.24	5.02	0.03
	GBF61	Rteuropa	0.14	0.37	2.16	-3.26	1.10	-0.54	2.99	4.11	0.13	83	0.21	3.67	0.06
	GBF62	Rteuropa	0.28	0.44	4.12	-4.15	1.56	-0.13	3.11	0.27	0.87	83	0.24	4.90	0.03
	GBF63	Rteuropa	0.12	0.23	2.22	-2.84	1.05	-0.44	3.06	2.70	0.26	83	0.20	3.47	0.06
	GBF64	Rteuropa	0.25	0.25	3.56	-3.23	1.29	-0.11	3.27	0.43	0.81	83	0.22	3.96	0.05
	GBF65	Rteuropa	0.09	0.12	2.77	-2.67	1.23	-0.01	2.49	0.90	0.64	83	0.13	1.44	0.23
	GBF66	Rteuropa	0.23	0.35	3.58	-4.10	1.45	-0.19	3.17	0.60	0.74	83	0.23	4.48	0.03
	GBF67	Rteuropa	0.26	0.41	3.87	-3.77	1.53	-0.04	2.92	0.04	0.98	83	0.23	4.53	0.03
	GBF68	Rteuropa	0.74	0.57	15.31	-18.63	5.36	-0.74	4.84	19.16	0.00	83	-0.11	1.10	0.30
	GBF69	Rteuropa	0.12	0.26	2.07	-2.30	0.94	-0.35	2.59	2.27	0.32	83	0.19	3.03	0.08
	GBF70	Rteuropa	0.07	0.32	3.00	-2.73	1.12	-0.21	2.76	0.81	0.67	83	0.18	2.71	0.10
	GBF71	Rteuropa	0.17	0.27	2.72	-3.89	1.23	-0.50	3.28	3.68	0.16	83	0.22	4.22	0.04
	GBF72	Rteuropa	0.09	0.41	2.02	-4.40	1.06	-1.17	5.46	39.76	0.00	83	0.20	3.48	0.06
	GBF73	Rteuropa	0.11	0.22	2.73	-3.76	1.28	-0.47	3.17	3.11	0.21	83	0.23	4.49	0.03
	GBF74	Rtkurz	0.03	0.01	0.89	-0.61	0.30	0.27	3.11	1.06	0.59	83	0.36	10.85	0.00
	GBF75	Rtkurz	0.13	0.07	3.56	-1.30	0.67	2.04	11.13	286.27	0.00	83	-0.03	0.06	0.81
	GBF76	Rtkurz	0.10	0.18	1.22	-1.85	0.59	-0.72	3.52	8.08	0.02	83	0.07	0.38	0.54
	GBF77	Rtkurz	0.06	0.13	1.28	-1.36	0.54	-0.34	2.85	1.73	0.42	83	0.28	6.61	0.01
	GBF78	Rtkurz	0.07	0.14	1.30	-2.04	0.53	-0.66	5.08	21.00	0.00	83	0.35	10.73	0.00
	GBF79	Rtkurz	-0.08	-0.01	0.49	-1.25	0.34	-1.51	5.72	57.27	0.00	83	0.05	0.21	0.64
	GBF80	Rtkurz	0.04	0.05	1.26	-0.91	0.46	0.16	2.96	0.37	0.83	83	0.28	6.84	0.01
	GBF81	Rtkurz	0.11	0.12	1.41	-1.59	0.55	-0.28	3.80	3.30	0.19	83	0.17	2.56	0.11
	GBF82	Rtkurz	0.00	0.08	1.72	-2.85	0.86	-0.54	3.52	5.00	0.08	83	-0.02	0.03	0.86
	GBF83	Rtkurz	0.02	0.05	0.83	-0.80	0.36	-0.07	2.73	0.31	0.86	83	0.25	5.39	0.02
	GBF84	Rtkurz	-0.01	0.12	2.58	-1.82	0.72	-0.19	4.35	6.76	0.03	83	0.13	1.34	0.25
	GBF85	Rtlzb	-0.07	-0.03	0.59	-1.22	0.27	-1.27	6.88	74.17	0.00	83	0.28	6.93	0.01
	GBF86	Rtlzb	-0.05	-0.03	0.55	-1.07	0.30	-0.83	4.78	20.49	0.00	83	0.13	1.34	0.25
	GBF87	Rtlzb	0.04	0.00	1.27	-1.78	0.58	-0.39	3.88	4.80	0.09	83	0.32	8.86	0.00
	GBF88	Rtlzb	0.05	0.03	1.15	-1.59	0.54	-0.37	3.47	2.64	0.27	83	0.32	8.78	0.00
	GBF89	Rtlzb	0.03	-0.01	2.20	-2.65	0.69	-0.49	6.18	38.44	0.00	83	0.34	9.85	0.00
	GBF90	Rtlzb	0.09	0.20	2.02	-2.60	0.91	-0.73	3.65	8.76	0.01	83	0.30	7.92	0.01
France	FBF1	ObleuroCT	0.05	0.08	1.38	-1.29	0.45	0.00	3.77	2.07	0.36	83	0.24	5.00	0.03
	FBF2	ObleuroCT	-0.07	-0.01	1.26	-2.39	0.73	-0.94	4.35	18.43	0.00	83	0.23	4.48	0.03
	FBF3	ObleuroCT	0.00	0.06	0.93	-1.35	0.45	-0.55	3.53	5.17	0.08	83	0.05	0.19	0.67
	FBF4	ObleuroCT	-0.06	-0.03	0.65	-1.33	0.35	-0.69	4.55	14.99	0.00	83	0.19	2.99	0.08
	FBF5	ObleuroCT	-0.01	0.00	1.08	-1.11	0.51	-0.13	2.45	1.28	0.53	83	0.23	4.41	0.04
	FBF6	ObleuroCT	-0.08	-0.06	1.06	-1.17	0.46	-0.17	2.68	0.75	0.69	83	0.34	9.69	0.00
	FBF7	ObleuroCT	-0.02	-0.02	0.54	-0.66	0.28	-0.20	2.60	1.11	0.57	83	0.13	1.46	0.23
	FBF8	ObleuroCT	-0.01	0.01	0.53	-0.72	0.27	-0.21	2.87	0.65	0.72	83	0.08	0.48	0.49
	FBF9	ObleuroCT	0.02	-0.02	0.85	-0.78	0.32	0.10	3.08	0.17	0.92	83	0.04	0.10	0.75
	FBF10	ObleuroCT	-0.01	-0.03	0.79	-1.00	0.33	-0.21	3.20	0.73	0.70	83	0.03	0.07	0.80
	FBF11	ObleuroCT	0.01	-0.02	0.87	-0.96	0.36	0.11	2.93	0.18	0.91	83	0.21	3.92	0.05
	FBF12	ObleuroCT	0.07	0.05	1.46	-0.85	0.38	0.75	4.55	16.12	0.00	83	0.37	11.77	0.00
	FBF13	ObleuroCT	0.00	0.01	0.91	-0.77	0.26	-0.08	5.48	21.36	0.00	83	0.06	0.27	0.60
	FBF14	ObleuroCT	-0.08	-0.08	0.21	-0.42	0.10	-0.08	4.49	7.79	0.02	83	0.19	3.17	0.08
	FBF15	ObleuroCT	-0.14	-0.15	1.09	-1.43	0.48	-0.09	3.04	0.11	0.94	83	0.13	1.55	0.21
	FBF16	ObleuroCT	-0.11	-0.05	0.89	-1.70	0.56	-0.60	3.37	5.37	0.07	83	0.29	7.33	0.01
	FBF17	ObleuroCT	-0.01	0.03	1.19	-0.89	0.42	0.09	2.92	0.14	0.93	83	0.27	6.12	0.01
	FBF18	ObleuroCT	-0.03	-0.03	0.98	-1.97	0.45	-0.94	6.02	43.85	0.00	83	0.36	11.04	0.00
	FBF19	ObleuroCT	-0.03	-0.01	0.92	-1.09	0.43	-0.16	2.72	0.65	0.72	83	0.24	4.75	0.03
	FBF20	ObleuroCT	-0.17	-0.11	0.89	-1.58	0.46	-0.97	5.00	26.79	0.00	83	0.15	1.80	0.18
	FBF21	ObleuroCT	-0.03	-0.01	0.75	-0.81	0.33	-0.16	2.91	0.36	0.83	83	0.03	0.09	0.77
	FBF22	ObleuroCT	-0.05	0.02	1.38	-1.15	0.49	-0.07	3.07	0.09	0.95	83	0.16	2.13	0.15
	FBF23	ObleuroCT	0.05	0.04	0.91	-0.78	0.41	-0.05	2.40	1.27	0.53	83	0.19	3.09	0.08
	FBF24	ObleuroCT	0.01	0.01	0.89	-0.68	0.34	0.28	2.78	1.26	0.53	83	0.13	1.52	0.22
	FBF25	ObleuroCT	0.04	0.02	0.97	-1.29	0.39	-0.15	4.22	5.43	0.07	83	0.07	0.42	0.52
	FBF26	ObleuroCT	0.00	0.03	0.74	-0.94	0.39	-0.24	2.44	1.85	0.40	83	0.10	0.77	0.38

Appendix 5.2 (continued)

Bond Funds	Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
FBF27	ObleuroCT	0.00	0.06	1.11	-1.74	0.49	-0.59	4.21	9.90	0.01	83	0.32	8.55	0.00
FBF28	ObleuroCT	0.04	0.07	0.78	-0.81	0.35	-0.07	2.47	1.02	0.60	83	0.28	6.85	0.01
FBF29	ObleuroCT	0.02	0.05	0.95	-1.14	0.48	-0.15	2.48	1.22	0.54	83	0.18	2.81	0.09
FBF30	ObleuroCT	-0.04	-0.03	0.76	-1.26	0.39	-0.32	3.18	1.55	0.46	83	0.14	1.59	0.21
FBF31	ObleuroCT	0.01	0.06	0.91	-1.86	0.48	-1.08	5.34	35.11	0.00	83	0.14	1.69	0.19
FBF32	ObleuroCT	0.02	0.00	0.95	-0.93	0.38	-0.07	3.06	0.08	0.96	83	0.19	3.20	0.07
FBF33	ObleuroCT	0.03	0.01	0.93	-0.99	0.39	-0.06	2.89	0.09	0.96	83	0.17	2.40	0.12
FBF34	ObleuroCT	0.00	0.01	0.53	-0.76	0.22	-0.47	4.16	7.70	0.02	83	0.13	1.43	0.23
FBF35	ObleuroCT	-0.05	-0.03	1.04	-1.64	0.51	-0.72	4.12	11.41	0.00	83	0.26	5.90	0.02
FBF36	ObleuroCT	-0.05	-0.03	0.50	-0.48	0.21	0.03	2.61	0.54	0.76	83	0.35	10.22	0.00
FBF37	ObleuroCT	0.00	0.03	1.30	-1.12	0.38	0.21	4.22	5.75	0.06	83	0.32	9.00	0.00
FBF38	ObleuroCT	-0.01	-0.01	0.82	-1.09	0.37	-0.43	3.39	3.15	0.21	83	0.14	1.66	0.20
FBF39	ObleuroCT	0.03	0.04	1.27	-1.85	0.53	-0.82	4.79	20.43	0.00	83	0.07	0.46	0.50
FBF40	ObleuroCT	-0.04	-0.04	1.00	-2.03	0.48	-0.93	5.56	34.53	0.00	83	0.32	9.05	0.00
FBF41	ObleuroCT	-0.01	0.01	0.83	-0.85	0.35	-0.15	2.99	0.32	0.85	83	0.26	5.94	0.02
FBF42	ObleuroCT	-0.04	-0.04	0.63	-0.89	0.35	-0.18	2.57	1.10	0.58	83	0.15	1.96	0.16
FBF43	ObleuroCT	-0.02	-0.02	1.03	-1.31	0.47	-0.20	2.95	0.56	0.76	83	0.25	5.48	0.02
FBF44	ObleuroCT	-0.06	-0.06	0.11	-0.23	0.05	-0.03	5.13	15.68	0.00	83	0.14	1.59	0.21
FBF45	ObleuroCT	-0.01	-0.02	1.05	-0.77	0.34	0.56	4.03	7.92	0.02	83	0.25	5.43	0.02
FBF46	ObleuroCT	-0.02	0.05	1.09	-1.36	0.51	-0.10	2.48	1.09	0.58	83	0.25	5.52	0.02
FBF47	ObleuroCT	0.00	0.00	0.81	-1.11	0.34	-0.28	3.33	1.45	0.48	83	0.32	8.57	0.00
FBF48	ObleuroCT	0.00	-0.02	0.98	-0.78	0.36	0.29	3.09	1.16	0.56	83	0.19	3.19	0.07
FBF49	ObleuroCT	-0.03	-0.04	0.81	-0.95	0.38	-0.25	2.79	0.98	0.61	83	0.29	7.17	0.01
FBF50	ObleuroCT	0.01	0.02	0.91	-1.75	0.47	-0.80	4.43	15.85	0.00	83	0.17	2.49	0.12
FBF51	ObleuroCT	0.00	-0.01	0.88	-0.83	0.39	0.08	2.34	1.58	0.45	83	0.27	6.17	0.01
FBF52	ObleuroCT	0.00	-0.04	0.90	-0.88	0.37	0.13	2.44	1.31	0.52	83	0.29	7.29	0.01
FBF53	ObleuroCT	-0.02	0.01	0.86	-1.05	0.42	-0.26	2.76	1.12	0.57	83	0.20	3.26	0.07
FBF54	ObleuroCT	-0.02	-0.03	0.76	-0.93	0.33	-0.03	3.18	0.13	0.94	83	0.22	4.01	0.05
FBF55	ObleuroCT	0.01	0.03	0.75	-0.95	0.32	-0.34	3.30	1.86	0.39	83	0.04	0.13	0.72
FBF56	ObleuroCT	-0.11	-0.10	0.02	-0.28	0.04	-0.44	5.56	25.37	0.00	83	0.34	9.70	0.00
FBF57	ObleuroCT	0.01	0.00	1.12	-1.44	0.50	-0.28	3.31	1.40	0.50	83	-0.06	0.30	0.58
FBF58	ObleuroCT	-0.06	-0.07	1.11	-1.71	0.40	-0.45	6.51	45.36	0.00	83	0.44	16.92	0.00
FBF59	ObleuroCT	-0.01	0.05	0.68	-0.93	0.38	-0.25	2.23	2.93	0.23	83	0.11	0.96	0.33
FBF60	ObleuroCT	-0.07	-0.04	0.93	-2.06	0.39	-2.02	11.90	330.16	0.00	83	0.11	1.06	0.30
FBF61	ObleuroMT	-0.02	0.05	1.09	-4.28	0.69	-2.85	18.82	978.41	0.00	83	0.26	5.59	0.02
FBF62	ObleuroMT	0.02	0.12	1.86	-2.84	1.02	-0.48	2.70	3.56	0.17	83	0.23	4.63	0.03
FBF63	ObleuroMT	0.00	0.21	1.68	-3.73	0.98	-1.49	6.14	64.70	0.00	83	0.30	7.94	0.01
FBF64	ObleuroMT	0.02	0.12	1.62	-1.99	0.82	-0.46	2.75	3.08	0.21	83	0.34	9.98	0.00
FBF65	ObleuroMT	0.03	0.08	1.57	-1.59	0.70	-0.14	2.46	1.25	0.54	83	0.21	3.85	0.05
FBF66	ObleuroMT	-0.03	-0.01	1.16	-1.54	0.54	-0.39	3.18	2.22	0.33	83	0.19	3.25	0.07
FBF67	ObleuroMT	-0.05	0.01	1.53	-2.19	0.66	-0.34	3.40	2.12	0.35	83	0.20	3.35	0.07
FBF68	ObleuroMT	0.00	0.21	1.78	-3.44	0.96	-1.08	4.60	24.97	0.00	83	0.27	6.03	0.01
FBF69	ObleuroMT	-0.04	-0.02	1.29	-1.83	0.66	-0.46	3.08	2.89	0.24	83	0.08	0.49	0.48
FBF70	ObleuroMT	-0.01	0.08	1.91	-2.84	1.04	-0.64	3.16	5.71	0.06	83	0.14	1.62	0.20
FBF71	ObleuroMT	0.03	0.10	1.85	-2.93	0.81	-0.57	4.12	8.75	0.01	83	0.29	7.46	0.01
FBF72	ObleuroMT	0.08	0.13	1.79	-1.93	0.88	-0.15	2.53	1.07	0.59	83	0.22	4.23	0.04
FBF73	ObleuroMT	-0.08	-0.04	1.64	-1.58	0.64	-0.13	3.06	0.25	0.88	83	0.36	11.05	0.00
FBF74	ObleuroMT	-0.15	-0.03	1.40	-2.57	0.72	-1.22	5.35	39.91	0.00	83	0.39	12.76	0.00
FBF75	ObleuroMT	0.04	0.10	1.57	-2.06	0.80	-0.35	2.65	2.09	0.35	83	0.15	1.99	0.16
FBF76	ObleuroMT	-0.03	0.02	1.55	-1.69	0.70	-0.27	2.64	1.44	0.49	83	0.23	4.60	0.03
FBF77	ObleuroMT	-0.03	0.01	1.39	-1.69	0.67	-0.34	2.63	2.12	0.35	83	0.24	5.02	0.03
FBF78	ObleuroMT	-0.03	0.02	1.53	-1.61	0.68	-0.26	2.59	1.52	0.47	83	0.24	4.94	0.03
FBF79	ObleuroMT	0.01	0.06	1.72	-1.94	0.82	-0.12	2.43	1.31	0.52	83	0.23	4.59	0.03
FBF80	ObleuroMT	-0.04	0.15	1.67	-2.79	0.83	-1.03	4.36	20.90	0.00	83	0.43	15.71	0.00
FBF81	ObleuroMT	0.03	0.13	1.74	-2.17	0.79	-0.39	2.76	2.26	0.32	83	0.18	2.92	0.09
FBF82	ObleuroMT	-0.01	0.14	1.60	-2.17	0.74	-0.42	2.95	2.47	0.29	83	0.21	3.86	0.05
FBF83	ObleuroMT	-0.05	0.06	2.04	-2.89	0.94	-0.52	3.59	4.98	0.08	83	0.07	0.45	0.50
FBF84	ObleuroMT	0.04	0.10	2.09	-3.07	1.04	-0.36	3.02	1.81	0.40	83	0.19	3.05	0.08
FBF85	ObleuroMT	-0.01	0.06	1.44	-2.65	0.83	-0.53	3.16	4.04	0.13	83	0.21	3.67	0.06
FBF86	ObleuroMT	0.00	0.10	1.90	-3.03	1.04	-0.62	3.26	5.62	0.06	83	0.24	5.10	0.02
FBF87	ObleuroMT	-0.04	0.03	1.61	-2.43	0.84	-0.54	2.91	4.08	0.13	83	0.25	5.47	0.02
FBF88	ObleuroMT	0.13	0.25	1.83	-2.09	0.93	-0.27	2.28	2.78	0.25	83	0.26	5.78	0.02
FBF89	ObleuroMT	0.13	0.22	2.12	-2.23	0.96	-0.27	2.38	2.37	0.31	83	0.19	3.19	0.07
FBF90	ObleuroMT	0.06	0.03	1.37	-1.37	0.58	-0.12	2.74	0.43	0.81	83	0.20	3.35	0.07
FBF91	ObleuroMT	0.05	0.16	1.95	-2.59	0.91	-0.32	2.97	1.40	0.50	83	0.23	4.63	0.03
FBF92	ObleuroMT	0.13	0.23	2.34	-2.18	0.88	-0.34	2.86	1.64	0.44	83	0.12	1.16	0.28

Appendix 5.2 (continued)

Bond Funds	Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
FBF93	ObleuroMT	0.02	0.09	1.71	-2.95	0.87	-0.57	3.41	5.13	0.08	83	0.26	5.60	0.02
FBF94	ObleuroMT	0.00	0.08	1.45	-2.26	0.77	-0.38	2.85	2.03	0.36	83	0.35	10.35	0.00
FBF95	ObleuroMT	0.04	0.20	1.83	-2.54	0.96	-0.40	2.69	2.49	0.29	83	0.25	5.21	0.02
FBF96	ObleuroMT	-0.07	-0.01	1.44	-1.76	0.69	-0.28	2.64	1.51	0.47	83	0.35	10.55	0.00
FBF97	ObleuroMT	0.04	0.11	1.57	-1.87	0.73	-0.09	2.49	1.03	0.60	83	0.28	6.54	0.01
FBF98	ObleuroMT	0.02	0.09	2.08	-1.95	0.78	-0.09	2.95	0.12	0.94	83	0.33	9.23	0.00
FBF99	ObleuroMT	0.02	0.12	1.56	-2.18	0.74	-0.41	3.14	2.45	0.29	83	0.19	3.15	0.08
FBF100	ObleuroMT	0.09	0.16	1.70	-1.92	0.82	-0.35	2.61	2.19	0.34	83	0.21	3.93	0.05
FBF101	ObleuroMT	0.00	0.09	1.42	-2.15	0.79	-0.45	2.81	2.89	0.24	83	0.15	1.99	0.16
FBF102	ObleuroMT	0.04	0.11	1.63	-1.87	0.74	-0.26	2.81	1.05	0.59	83	0.03	0.07	0.79
FBF103	ObleuroMT	0.00	0.02	1.14	-1.81	0.52	-0.45	3.52	3.78	0.15	83	0.18	2.82	0.09
FBF104	ObleuroMT	0.05	0.05	1.10	-1.25	0.55	0.00	2.42	1.16	0.56	83	0.29	7.25	0.01
FBF105	ObleuroMT	0.08	0.14	1.80	-2.65	0.86	-0.34	3.33	1.93	0.38	83	0.24	4.96	0.03
FBF106	ObleuroMT	0.05	0.14	1.79	-2.19	0.96	-0.30	2.38	2.61	0.27	83	0.19	3.05	0.08
FBF107	ObleuroMT	0.05	0.06	2.13	-1.41	0.75	0.11	2.49	1.05	0.59	83	0.19	3.12	0.08
FBF108	ObleuroMT	0.00	-0.01	1.24	-1.23	0.55	-0.10	2.22	2.23	0.33	83	0.29	7.00	0.01
FBF109	ObleuroMT	-0.03	0.02	1.64	-2.02	0.83	-0.21	2.56	1.27	0.53	83	0.09	0.65	0.42
FBF110	ObleuroMT	-0.05	-0.07	1.52	-1.54	0.52	0.10	4.12	4.50	0.11	83	0.08	0.52	0.47
FBF111	ObleuroMT	-0.01	0.01	1.01	-1.50	0.48	-0.39	3.38	2.64	0.27	83	0.12	1.25	0.26
FBF112	ObleuroMT	0.05	0.15	1.54	-1.87	0.81	-0.39	2.37	3.46	0.18	83	0.17	2.40	0.12
FBF113	ObleuroMT	0.05	0.13	1.57	-1.91	0.81	-0.38	2.38	3.39	0.18	83	0.18	2.66	0.10
FBF114	ObleuroMT	0.05	0.15	1.56	-1.86	0.82	-0.38	2.30	3.70	0.16	83	0.17	2.48	0.12
FBF115	ObleuroMT	-0.02	0.00	1.28	-2.09	0.69	-0.40	2.82	2.31	0.32	83	0.25	5.38	0.02
FBF116	ObleuroMT	0.04	0.19	1.92	-3.06	1.08	-0.47	2.91	3.13	0.21	83	0.25	5.22	0.02
FBF117	ObleuroMT	0.00	0.06	1.59	-2.00	0.74	-0.50	3.37	3.86	0.15	83	0.03	0.06	0.80
FBF118	ObleuroMT	-0.01	0.12	1.51	-1.92	0.71	-0.23	2.69	1.06	0.59	83	0.05	0.20	0.65
FBF119	ObleuroMT	-0.01	0.10	1.73	-3.09	0.94	-0.84	4.05	13.67	0.00	83	0.15	1.90	0.17
FBF120	ObleuroMT	-0.04	-0.02	0.85	-1.01	0.36	-0.05	2.92	0.05	0.98	83	0.17	2.41	0.12
FBF121	ObleuroMT	-0.09	-0.02	2.12	-3.54	0.87	-1.10	5.96	46.91	0.00	83	-0.14	1.62	0.20
FBF122	ObleuroMT	0.02	0.01	1.34	-1.89	0.62	-0.55	4.07	8.19	0.02	83	0.04	0.15	0.70
FBF123	ObleuroMT	0.03	0.09	1.88	-2.57	0.95	-0.39	2.66	2.49	0.29	83	0.21	3.73	0.05
FBF124	ObleuroMT	0.03	0.14	1.63	-2.26	0.78	-0.69	3.47	7.31	0.03	83	0.18	2.63	0.11
FBF125	ObleuroMT	0.01	0.04	1.55	-2.11	0.73	-0.30	2.60	1.79	0.41	83	0.19	2.96	0.09
FBF126	ObleuroMT	-0.07	-0.02	1.15	-1.34	0.50	-0.26	3.54	1.97	0.37	83	0.38	12.10	0.00
FBF127	ObleuroMT	0.02	0.10	1.19	-1.83	0.67	-0.46	2.69	3.26	0.20	83	0.23	4.62	0.03
FBF128	ObleuroMT	0.03	0.06	1.56	-1.66	0.72	-0.19	2.62	1.00	0.61	83	0.10	0.78	0.38
FBF129	ObleuroMT	0.03	0.14	1.26	-1.68	0.71	-0.25	2.16	3.29	0.19	83	0.30	7.65	0.01
FBF130	ObleuroMT	-0.08	0.03	1.42	-4.20	0.77	-2.25	12.29	368.57	0.00	83	0.52	23.66	0.00
FBF131	ObleuroMT	0.06	0.09	1.97	-1.78	0.78	-0.03	2.68	0.37	0.83	83	0.29	7.38	0.01
FBF132	ObleuroMT	0.00	0.10	1.94	-2.43	0.99	-0.47	2.72	3.36	0.19	83	0.23	4.72	0.03
FBF133	ObleuroMT	-0.02	0.12	1.73	-2.91	1.02	-0.56	2.92	4.38	0.11	83	0.28	6.64	0.01
FBF134	ObleuroMT	-0.08	0.03	1.71	-2.52	0.85	-0.47	3.21	3.26	0.20	83	0.24	5.10	0.02
FBF135	ObleuroMT	0.02	0.04	1.38	-1.73	0.64	-0.26	2.79	1.09	0.58	83	0.02	0.03	0.87
FBF136	ObleuroMT	0.07	-0.02	1.56	-1.54	0.56	0.03	3.60	1.25	0.53	83	0.11	1.00	0.32
FBF137	ObleuroMT	0.00	0.02	1.04	-0.77	0.45	0.16	2.01	3.70	0.16	83	0.25	5.42	0.02
FBF138	ObleuroMT	0.10	0.24	1.56	-1.89	0.77	-0.37	2.46	2.92	0.23	83	0.25	5.35	0.02
FBF139	ObleuroMT	0.02	0.06	1.23	-2.12	0.73	-0.53	2.94	3.86	0.14	83	0.28	6.70	0.01
FBF140	ObleuroMT	-0.01	0.11	1.77	-2.80	0.85	-0.64	4.00	9.14	0.01	83	0.38	12.22	0.00
FBF141	ObleuroMT	0.09	0.20	1.72	-2.21	0.89	-0.30	2.61	1.76	0.41	83	0.13	1.55	0.21
FBF142	ObleuroMT	0.04	0.13	1.69	-1.97	0.76	-0.20	2.90	0.57	0.75	83	0.24	4.82	0.03
FBF143	ObleuroMT	0.23	0.21	2.49	-1.89	0.88	0.19	2.98	0.50	0.78	83	0.26	5.97	0.02
FBF144	ObleuroLT	0.10	0.20	2.47	-2.35	1.09	-0.26	2.56	1.60	0.45	83	0.18	2.85	0.09
FBF145	ObleuroLT	0.07	0.11	2.67	-2.97	1.02	-0.40	3.12	2.27	0.32	83	0.25	5.42	0.02
FBF146	ObleuroLT	0.01	0.27	2.19	-5.34	1.39	-0.95	4.35	18.93	0.00	83	0.19	3.14	0.08
FBF147	ObleuroLT	0.04	0.10	2.35	-3.02	1.23	-0.45	2.66	3.21	0.20	83	0.18	2.66	0.10
FBF148	ObleuroLT	0.11	0.18	2.42	-2.16	1.00	-0.24	2.43	1.94	0.38	83	0.22	4.16	0.04
FBF149	ObleuroLT	0.08	0.13	1.71	-2.24	0.86	-0.37	2.95	1.86	0.39	83	0.23	4.68	0.03
FBF150	ObleuroLT	0.16	0.26	2.86	-3.38	1.51	-0.35	2.38	2.98	0.23	83	0.18	2.65	0.10
FBF151	ObleuroLT	0.15	0.32	2.32	-2.55	1.23	-0.32	2.19	3.68	0.16	83	0.21	3.91	0.05
FBF152	ObleuroLT	0.12	0.05	2.57	-2.40	1.17	-0.06	2.35	1.50	0.47	83	0.14	1.62	0.20
FBF153	ObleuroLT	0.11	0.06	2.33	-2.75	1.19	-0.20	2.47	1.53	0.47	83	0.15	1.93	0.17
FBF154	ObleuroLT	0.07	0.11	1.51	-1.88	0.73	-0.02	2.58	0.60	0.74	83	0.33	9.15	0.00
FBF155	ObleuroLT	0.04	0.16	2.35	-4.21	1.02	-0.91	5.91	40.79	0.00	83	0.30	7.58	0.01
FBF156	ObleuroLT	0.06	0.12	2.99	-3.35	1.37	-0.16	2.55	1.07	0.59	83	0.07	0.43	0.51
FBF157	ObleuroLT	0.13	0.26	2.33	-2.46	1.07	-0.20	2.53	1.30	0.52	83	0.21	3.60	0.06
FBF158	ObleuroLT	0.02	0.20	2.13	-2.80	1.01	-0.53	3.02	3.95	0.14	83	0.13	1.35	0.25

Appendix 5.2 (continued)

Bond Funds	Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
FBF159	ObleuroLT	0.08	0.18	2.00	-2.38	1.07	-0.36	2.45	2.86	0.24	83	0.27	6.12	0.01
FBF160	ObleuroLT	0.07	0.11	2.10	-2.14	0.96	-0.20	2.47	1.52	0.47	83	0.25	5.32	0.02
FBF161	ObleuroLT	0.16	0.18	3.79	-4.83	1.86	-0.41	2.80	2.44	0.30	83	-0.01	0.01	0.94
FBF162	ObleuroLT	0.06	0.17	1.71	-2.24	0.87	-0.33	2.45	2.54	0.28	83	0.14	1.73	0.19
FBF163	ObleuroLT	0.00	-0.01	2.04	-2.99	1.03	-0.45	3.03	2.85	0.24	83	0.05	0.17	0.68
FBF164	ObleuroLT	0.04	0.11	2.33	-2.92	1.14	-0.32	2.84	1.51	0.47	83	0.19	3.03	0.08
FBF165	ObleuroLT	0.18	0.37	2.95	-3.70	1.38	-0.37	2.88	1.96	0.38	83	0.09	0.73	0.39
FBF166	ObleuroLT	0.21	0.32	2.65	-2.68	1.27	-0.27	2.34	2.50	0.29	83	0.13	1.35	0.25
FBF167	ObleuroLT	0.12	0.14	2.05	-2.02	0.84	-0.19	2.55	1.22	0.54	83	0.24	5.03	0.03
FBF168	ObleuroLT	0.14	0.22	2.08	-2.04	0.86	0.03	2.58	0.64	0.73	83	0.23	4.59	0.03
FBF169	ObleuroLT	0.09	0.24	1.96	-2.60	1.02	-0.35	2.49	2.58	0.28	83	0.23	4.43	0.04
FBF170	ObleuroLT	0.08	-0.02	2.48	-2.35	1.11	0.02	2.70	0.31	0.86	83	0.20	3.53	0.06
FBF171	ObleuroLT	0.00	0.05	2.88	-4.77	1.31	-0.57	4.39	11.21	0.00	83	-0.05	0.20	0.66
FBF172	ObleuroLT	0.01	0.14	1.36	-2.17	0.60	-0.63	4.52	13.45	0.00	83	0.07	0.37	0.54
FBF173	ObleuroLT	0.09	0.18	2.25	-2.88	1.11	-0.40	2.68	2.60	0.27	83	0.16	2.29	0.13
FBF174	ObleuroLT	-0.09	0.03	1.97	-3.58	1.08	-0.65	3.50	6.71	0.03	83	0.39	13.21	0.00
FBF175	ObleuroLT	0.17	0.44	2.75	-3.54	1.50	-0.44	2.60	3.28	0.19	83	0.17	2.48	0.12
FBF176	ObleuroLT	0.14	0.24	2.10	-2.36	1.03	-0.21	2.35	2.08	0.35	83	0.28	6.71	0.01
FBF177	ObleuroLT	0.16	0.32	2.79	-3.35	1.51	-0.38	2.39	3.32	0.19	83	0.17	2.50	0.11
FBF178	ObleuroLT	-0.04	0.09	2.60	-4.48	1.28	-0.89	4.56	19.33	0.00	83	0.10	0.83	0.36
FBF179	ObleuroLT	0.03	0.24	2.10	-3.13	1.34	-0.45	2.44	3.89	0.14	83	0.19	2.94	0.09
FBF180	ObleuroLT	-0.03	-0.01	2.18	-2.70	1.04	-0.20	2.68	0.89	0.64	83	0.22	4.30	0.04
FBF181	ObleuroLT	-0.08	-0.03	2.47	-3.93	1.22	-0.58	3.61	6.00	0.05	83	0.32	8.60	0.00
FBF182	ObleuroLT	0.11	0.44	3.18	-3.73	1.67	-0.42	2.46	3.47	0.18	83	0.19	2.94	0.09
FBF183	ObleuroLT	0.01	0.01	2.09	-3.06	1.14	-0.38	2.60	2.56	0.28	83	0.17	2.50	0.11
FBF184	ObleuroLT	-0.17	0.23	1.86	-4.69	1.20	-1.70	6.20	75.31	0.00	83	0.46	18.23	0.00
FBF185	ObleuroLT	0.11	0.10	1.93	-2.61	1.02	-0.28	2.59	1.63	0.44	83	0.24	5.14	0.02
FBF186	ObleuroLT	0.04	0.24	2.41	-2.30	1.07	-0.22	2.46	1.68	0.43	83	0.27	6.39	0.01
FBF187	ObleuroLT	0.07	-0.07	1.94	-2.05	0.84	0.09	2.70	0.41	0.81	83	0.23	4.47	0.04
FBF188	ObleuroLT	0.11	0.22	2.64	-3.07	1.37	-0.26	2.37	2.32	0.31	83	0.22	4.05	0.04
FBF189	ObleuroLT	0.04	0.17	1.85	-2.53	1.06	-0.44	2.54	3.37	0.19	83	0.20	3.58	0.06
FBF190	ObleuroLT	-0.02	0.01	2.13	-2.98	0.96	-0.29	3.07	1.21	0.55	83	0.24	4.76	0.03
FBF191	ObleuroLT	-0.04	-0.08	1.68	-1.48	0.69	0.07	2.58	0.68	0.71	83	0.14	1.56	0.21
FBF192	ObleuroLT	0.11	0.11	2.04	-2.36	1.06	-0.28	2.40	2.37	0.31	83	0.14	1.62	0.20
FBF193	ObleuroLT	0.14	0.50	2.49	-3.43	1.46	-0.47	2.43	4.13	0.13	83	0.17	2.53	0.11
FBF194	ObleuroLT	0.03	0.14	2.14	-2.03	0.95	-0.28	2.38	2.44	0.30	83	0.29	7.36	0.01
FBF195	ObleuroLT	0.12	0.30	2.59	-4.24	1.56	-0.52	2.74	4.04	0.13	83	0.06	0.35	0.56
FBF196	ObleuroLT	0.06	0.17	2.19	-3.56	1.12	-0.43	3.11	2.64	0.27	83	0.13	1.51	0.22
FBF197	ObleuroLT	-0.04	0.10	2.06	-3.18	1.10	-0.54	3.25	4.19	0.12	83	0.17	2.33	0.13
FBF198	ObleuroLT	0.00	0.16	1.96	-2.72	1.05	-0.45	2.79	2.92	0.23	83	0.16	2.20	0.14
FBF199	ObleuroLT	0.06	0.20	2.05	-2.53	0.97	-0.31	2.56	2.00	0.37	83	0.22	4.07	0.04
FBF200	ObleuroLT	0.23	0.20	3.85	-4.94	2.15	-0.36	2.43	2.93	0.23	83	0.12	1.26	0.26
FBF201	ObleuroLT	0.13	0.26	2.12	-2.89	1.11	-0.40	2.64	2.63	0.27	83	0.19	2.98	0.08
FBF202	ObleuroLT	0.18	0.35	2.64	-3.27	1.44	-0.34	2.41	2.78	0.25	83	0.16	2.30	0.13
FBF203	ObleuroLT	0.04	0.17	2.43	-2.47	0.96	-0.34	2.89	1.62	0.44	83	0.23	4.50	0.03
FBF204	ObleuroLT	0.12	0.18	3.00	-3.39	1.49	-0.36	2.43	2.94	0.23	83	0.18	2.91	0.09
FBF205	ObleuroLT	0.12	0.25	1.89	-2.11	0.96	-0.18	2.35	1.92	0.38	83	0.20	3.42	0.06
FBF206	ObleuroLT	-0.05	0.25	2.56	-4.58	1.47	-0.96	3.94	15.88	0.00	83	0.37	11.91	0.00
FBF207	ObleuroLT	0.00	0.17	2.36	-3.43	1.15	-0.61	3.13	5.28	0.07	83	0.28	6.56	0.01
FBF208	ObleuroLT	0.04	0.12	2.12	-2.72	0.97	-0.47	3.14	3.18	0.20	83	0.07	0.48	0.49
FBF209	ObleuroLT	0.09	0.16	2.33	-2.45	1.21	-0.21	2.20	2.82	0.24	83	0.15	1.93	0.16
FBF210	ObleuroLT	0.10	0.06	3.81	-4.65	1.69	-0.27	2.80	1.17	0.56	83	0.07	0.39	0.53
FBF211	ObleuroLT	-0.03	0.05	1.74	-2.64	0.81	-0.68	3.80	8.52	0.01	83	-0.04	0.11	0.75
FBF212	ObleuroLT	0.00	0.11	1.57	-2.47	0.74	-0.46	3.38	3.38	0.18	83	0.14	1.74	0.19
FBF213	ObleuroLT	0.19	0.39	2.83	-3.39	1.52	-0.35	2.35	3.18	0.20	83	0.18	2.86	0.09
FBF214	ObleuroLT	0.07	0.19	2.64	-3.68	1.28	-0.58	3.24	4.80	0.09	83	0.28	6.84	0.01
FBF215	ObleuroLT	0.10	0.26	2.06	-3.02	1.14	-0.44	2.64	3.15	0.21	83	0.25	5.47	0.02
FBF216	ObleuroLT	0.04	0.07	1.71	-1.93	0.66	-0.14	3.19	0.37	0.83	83	0.11	0.96	0.33
FBF217	ObleuroLT	0.07	0.22	2.75	-3.57	1.34	-0.38	2.97	2.01	0.37	83	0.23	4.66	0.03
FBF218	ObleuroLT	0.06	0.19	2.09	-2.62	0.88	-0.55	3.20	4.38	0.11	83	0.26	5.69	0.02
FBF219	ObleuroLT	0.04	0.14	2.00	-2.15	0.90	-0.12	2.78	0.38	0.83	83	0.27	6.37	0.01
FBF220	ObleuroLT	0.02	0.06	1.70	-2.65	0.92	-0.48	2.87	3.21	0.20	83	0.21	3.94	0.05
FBF221	ObleuroLT	0.05	0.08	1.94	-2.56	1.01	-0.36	2.53	2.51	0.28	83	0.21	3.80	0.05
FBF222	ObleuroLT	0.17	0.40	2.86	-3.56	1.55	-0.39	2.47	3.07	0.22	83	0.17	2.59	0.11
FBF223	ObleuroLT	0.04	0.16	2.47	-3.57	1.27	-0.63	3.31	5.76	0.06	83	0.22	4.32	0.04
FBF224	ObleuroLT	-0.02	0.03	1.53	-2.25	0.75	-0.56	3.59	5.59	0.06	83	0.10	0.77	0.38

Appendix 5.2 (continued)

Bond Funds		Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
	FBF225	ObleuroLT	0.11	0.25	1.75	-2.28	0.93	-0.41	2.38	3.63	0.16	83	0.25	5.34	0.02
	FBF226	ObleuroLT	0.03	0.09	1.91	-2.66	1.12	-0.44	2.45	3.68	0.16	83	0.31	8.20	0.00
	FBF227	ObleuroLT	0.08	0.16	1.92	-2.81	1.02	-0.37	2.67	2.32	0.31	83	0.20	3.46	0.06
	FBF228	ObleuroLT	-0.06	-0.02	2.36	-3.79	1.08	-0.60	3.71	6.71	0.03	83	0.12	1.32	0.25
	FBF229	ObleuroLT	0.03	0.00	3.15	-1.89	0.85	0.79	4.44	15.73	0.00	83	0.18	2.67	0.10
	FBF230	ObleuroLT	0.08	0.10	3.11	-4.23	1.25	-0.58	3.78	6.78	0.03	83	0.17	2.50	0.11
	FBF231	ObleuroLT	0.01	0.26	2.58	-4.70	1.47	-0.82	3.70	11.04	0.00	83	0.26	6.00	0.01
	FBF232	ObleuroLT	0.08	0.16	1.96	-2.66	1.08	-0.40	2.38	3.53	0.17	83	0.21	3.93	0.05
	FBF233	ObleuroLT	0.10	0.15	2.52	-2.51	1.07	-0.18	2.54	1.18	0.55	83	0.14	1.77	0.18
	FBF234	ObleuroLT	0.08	0.20	2.01	-2.56	1.09	-0.45	2.50	3.69	0.16	83	0.16	2.14	0.14
	FBF235	ObleuroLT	0.11	0.20	1.85	-2.31	1.03	-0.33	2.42	2.66	0.26	83	0.23	4.40	0.04
	FBF236	ObleuroLT	-0.06	-0.08	2.30	-2.91	1.10	-0.08	2.78	0.24	0.89	83	0.25	5.24	0.02
	FBF237	ObleuroLT	0.07	0.24	2.94	-4.47	1.36	-0.77	3.86	10.81	0.00	83	0.25	5.39	0.02
	FBF238	ObleuroLT	0.17	0.06	2.58	-1.99	0.92	0.27	2.95	1.03	0.60	83	0.08	0.58	0.45
	FBF239	ObleuroLT	0.00	0.08	1.47	-1.40	0.64	0.13	2.44	1.33	0.52	83	0.26	5.78	0.02
	FBF240	ObleuroLT	0.03	0.12	2.79	-2.78	1.11	-0.18	2.75	0.68	0.71	83	0.25	5.30	0.02
	FBF241	ObleuroLT	0.07	0.09	2.40	-3.05	1.21	-0.24	2.57	1.43	0.49	83	0.18	2.73	0.10
	FBF242	ObleuroLT	0.16	0.16	4.06	-4.40	1.58	-0.10	3.28	0.41	0.81	83	0.01	0.01	0.93
	FBF243	ObleuroLT	0.03	0.04	2.70	-1.81	0.89	0.12	2.90	0.25	0.88	83	0.22	4.00	0.05
	FBF244	ObleuroLT	-0.08	-0.01	1.37	-2.28	0.66	-0.45	3.48	3.65	0.16	83	0.05	0.18	0.67
	FBF245	ObleuroLT	-0.01	0.08	1.71	-2.22	0.92	-0.47	2.56	3.67	0.16	83	0.17	2.36	0.12
	FBF246	ObleuroLT	0.11	0.19	2.14	-1.95	1.03	-0.22	2.13	3.32	0.19	83	0.22	4.28	0.04
	FBF247	ObleuroLT	0.02	0.00	2.65	-2.19	1.11	0.15	2.45	1.37	0.50	83	0.13	1.34	0.25
	FBF248	ObleuroLT	0.06	0.23	2.57	-2.83	1.18	-0.31	2.39	2.61	0.27	83	0.22	4.26	0.04
	FBF249	ObleuroLT	0.09	0.25	2.40	-3.11	1.22	-0.38	2.67	2.37	0.31	83	0.18	2.74	0.10
	FBF250	ObleuroLT	0.08	0.12	2.66	-3.49	1.45	-0.36	2.46	2.82	0.24	83	0.20	3.38	0.07
	FBF251	ObleuroLT	0.12	0.26	3.08	-3.31	1.26	-0.45	3.02	2.76	0.25	83	0.14	1.71	0.19
	FBF252	ObleuroLT	0.19	0.20	2.66	-3.89	1.29	-0.48	3.17	3.33	0.19	83	0.17	2.42	0.12
	FBF253	ObleuroLT	0.16	0.35	2.98	-3.68	1.56	-0.41	2.46	3.38	0.18	83	0.19	3.13	0.08
	FBF254	ObleuroLT	-0.02	0.03	2.27	-3.43	1.23	-0.64	3.36	6.08	0.05	83	0.27	6.22	0.01
	FBF255	ObleuroLT	0.12	0.20	2.63	-3.25	1.42	-0.33	2.35	2.98	0.23	83	0.21	3.93	0.05
	FBF256	ObleuroLT	0.09	0.30	2.12	-2.80	1.06	-0.41	2.77	2.57	0.28	83	0.10	0.86	0.35
	FBF257	ObleuroLT	0.17	0.12	2.44	-1.89	0.99	-0.04	2.36	1.44	0.49	83	0.21	3.61	0.06
	FBF258	Obleurope	0.16	0.35	2.98	-3.21	1.17	-0.26	3.07	0.92	0.63	83	0.15	2.02	0.16
	FBF259	Obleurope	-0.01	-0.01	4.56	-4.96	1.17	-0.30	7.92	85.03	0.00	83	0.10	0.90	0.34
	FBF260	Obleurope	-0.01	0.07	2.10	-4.24	0.95	-1.06	6.75	64.28	0.00	83	0.01	0.00	0.96
	FBF261	Obleurope	-0.01	0.15	2.55	-4.02	1.43	-0.80	3.48	9.55	0.01	83	0.18	2.92	0.09
	FBF262	Obleurope	0.19	0.40	4.07	-7.49	1.86	-0.88	5.82	38.17	0.00	83	0.14	1.65	0.20
	FBF263	Obleurope	0.00	0.22	2.54	-3.95	1.39	-0.90	3.65	12.77	0.00	83	0.33	9.08	0.00
	FBF264	Obleurope	-0.08	0.05	2.44	-4.14	0.93	-1.43	7.91	111.55	0.00	83	0.16	2.11	0.15
	FBF265	Obleurope	0.12	0.14	4.57	-4.01	1.74	0.13	2.81	0.37	0.83	83	0.19	3.17	0.08
	FBF266	Obleurope	0.06	0.26	2.53	-4.08	1.26	-0.60	3.36	5.46	0.07	83	0.19	2.94	0.09
UK	UKBF1	ukgilt	0.05	0.25	3.62	-3.65	1.56	-0.46	2.98	2.91	0.23	83	0.02	0.04	0.85
	UKBF2	ukgilt	-0.11	0.02	2.32	-4.04	1.21	-0.79	4.25	13.91	0.00	83	0.23	4.70	0.03
	UKBF3	ukgilt	-0.18	-0.10	1.93	-3.50	0.90	-0.76	4.85	19.81	0.00	83	0.08	0.59	0.44
	UKBF4	ukgilt	-0.03	0.14	3.30	-4.64	1.65	-0.51	3.55	4.69	0.10	83	0.07	0.36	0.55
	UKBF5	ukgilt	0.10	0.04	4.54	-8.20	2.35	-0.66	4.02	9.64	0.01	83	0.06	0.31	0.58
	UKBF6	ukgilt	0.14	0.06	4.72	-9.70	2.43	-0.88	5.18	27.22	0.00	83	0.08	0.60	0.44
	UKBF7	ukgilt	-0.02	0.27	3.51	-4.81	1.61	-0.57	3.47	5.20	0.07	83	0.05	0.20	0.66
	UKBF8	ukgilt	-0.01	0.21	3.48	-4.80	1.63	-0.49	3.17	3.44	0.18	83	0.03	0.10	0.76
	UKBF9	ukgilt	-0.24	0.07	3.43	-6.57	1.79	-1.28	5.96	53.17	0.00	83	0.12	1.15	0.28
	UKBF10	ukgilt	-0.19	0.06	3.44	-6.56	1.82	-1.25	5.79	48.61	0.00	83	0.09	0.72	0.40
	UKBF11	ukgilt	-0.08	0.15	3.74	-5.48	1.92	-0.77	3.61	9.59	0.01	83	0.01	0.01	0.91
	UKBF12	ukgilt	-0.03	0.14	3.42	-5.69	1.59	-0.71	4.45	14.31	0.00	83	0.00	0.00	1.00
	UKBF13	ukgilt	-0.04	0.21	3.52	-5.13	1.72	-0.56	3.37	4.87	0.09	83	0.03	0.10	0.75
	UKBF14	ukgilt	-0.09	0.20	3.25	-5.73	1.71	-0.91	4.03	15.03	0.00	83	0.08	0.56	0.46
	UKBF15	ukgilt	0.04	0.32	4.15	-6.02	1.91	-0.76	4.01	11.58	0.00	83	0.06	0.27	0.60
	UKBF16	ukgilt	-0.05	0.06	3.82	-6.34	1.89	-0.89	4.20	15.96	0.00	83	0.06	0.31	0.58
	UKBF17	ukgilt	-0.11	0.25	2.64	-5.62	1.56	-1.05	4.41	22.11	0.00	83	0.16	2.09	0.15
	UKBF18	ukgilt	-0.06	0.27	2.65	-5.57	1.61	-0.91	4.00	14.89	0.00	83	0.14	1.68	0.20
	UKBF19	ukgilt	0.11	0.24	4.44	-6.35	2.38	-0.48	3.00	3.13	0.21	83	-0.03	0.09	0.76
	UKBF20	ukgilt	-0.02	0.21	3.66	-5.47	1.86	-0.70	3.70	8.37	0.02	83	0.07	0.38	0.54
	UKBF21	ukgilt	0.07	0.29	4.35	-5.53	1.90	-0.52	3.62	5.06	0.08	83	0.02	0.02	0.89
	UKBF22	ukgilt	-0.11	0.10	2.74	-3.25	1.27	-0.43	2.91	2.53	0.28	83	0.03	0.07	0.79
	UKBF23	ukgilt	-0.08	0.09	3.53	-5.56	1.50	-0.61	4.48	12.61	0.00	83	0.03	0.09	0.77
	UKBF24	ukgilt	-0.22	0.13	3.75	-6.17	1.82	-1.27	5.68	47.19	0.00	83	0.12	1.13	0.29

Appendix 5.2 (continued)

Bond Funds		Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
	UKBF25	ukgilt	-0.17	0.07	2.96	-4.32	1.31	-0.87	4.66	19.89	0.00	83	0.17	2.35	0.13
	UKBF26	ukgilt	-0.21	-0.18	1.41	-3.57	0.72	-1.68	9.44	182.63	0.00	83	0.33	9.44	0.00
	UKBF27	ukcorporate	-0.08	0.14	3.01	-5.20	1.58	-0.85	4.25	15.36	0.00	83	0.04	0.15	0.70
	UKBF28	ukcorporate	0.06	0.30	3.76	-3.97	1.58	-0.41	3.31	2.71	0.26	83	-0.01	0.02	0.90
	UKBF29	ukcorporate	0.12	0.23	3.69	-3.29	1.61	-0.14	2.79	0.42	0.81	83	0.05	0.20	0.65
	UKBF30	ukcorporate	0.01	0.39	3.55	-8.08	1.87	-1.38	6.56	70.01	0.00	83	0.13	1.53	0.22
	UKBF31	ukcorporate	-0.23	-0.06	4.51	-5.23	1.85	-0.08	2.88	0.13	0.94	83	0.21	3.68	0.06
	UKBF32	ukcorporate	0.03	0.32	5.58	-8.60	2.36	-0.59	4.64	14.10	0.00	83	-0.08	0.60	0.44
	UKBF33	ukcorporate	0.00	0.21	5.84	-5.72	2.12	-0.11	3.29	0.46	0.79	83	0.23	4.49	0.03
	UKBF34	ukcorporate	0.05	0.18	5.87	-5.70	2.10	-0.13	3.36	0.70	0.70	83	0.25	5.25	0.02
	UKBF35	ukcorporate	0.02	0.17	5.27	-4.51	1.61	-0.05	3.95	3.17	0.21	83	0.01	0.01	0.93
	UKBF36	ukcorporate	-0.04	0.11	3.95	-5.59	1.73	-0.59	3.71	6.54	0.04	83	0.02	0.03	0.86
	UKBF37	ukcorporate	-0.02	0.16	3.88	-6.21	1.73	-0.88	4.47	18.18	0.00	83	0.03	0.08	0.78
	UKBF38	ukcorporate	0.02	0.22	3.41	-4.11	1.51	-0.47	3.36	3.53	0.17	83	-0.04	0.12	0.73
	UKBF39	ukcorporate	-0.10	-0.15	5.46	-6.43	2.07	-0.26	3.78	3.01	0.22	83	0.19	3.23	0.07
	UKBF40	ukother	0.21	0.43	4.46	-6.01	1.88	-0.33	3.92	4.39	0.11	83	0.26	5.85	0.02
	UKBF41	ukother	0.04	-0.11	5.31	-8.03	2.19	-0.17	4.34	6.66	0.04	83	0.08	0.49	0.49
	UKBF42	ukother	0.10	0.33	7.09	-5.20	1.92	0.39	4.36	8.52	0.01	83	0.13	1.44	0.23
	UKBF43	ukother	0.04	0.21	4.06	-4.27	1.46	-0.29	3.77	3.20	0.20	83	0.13	1.34	0.25
	UKBF44	ukother	0.23	0.24	5.07	-2.55	1.42	0.48	3.96	6.42	0.04	83	0.18	2.67	0.10
	UKBF45	ukother	0.23	0.05	7.35	-15.41	3.55	-0.80	6.28	45.94	0.00	83	0.00	0.00	0.97
Spain	SBF1	RFeuro	0.01	0.10	3.75	-5.14	1.21	-0.67	6.86	57.60	0.00	83	0.26	5.88	0.02
	SBF2	RFeuro	-0.01	-0.15	3.40	-3.44	0.85	0.61	8.95	127.63	0.00	83	0.05	0.25	0.62
	SBF3	RFeuro	-0.01	0.02	2.15	-2.26	0.77	-0.21	3.58	1.77	0.41	83	0.32	8.71	0.00
	SBF4	RFeuro	-0.04	-0.06	1.53	-1.95	0.67	-0.36	3.41	2.35	0.31	83	0.28	6.75	0.01
	SBF5	RFeuro	-0.07	-0.05	2.03	-2.32	0.79	-0.21	4.02	4.20	0.12	83	0.35	10.27	0.00
	SBF6	RFeuro	-0.03	-0.05	1.46	-2.04	0.54	-0.24	5.27	18.60	0.00	83	0.24	5.01	0.03
	SBF7	RFeuro	0.10	0.05	4.24	-2.72	1.19	0.54	4.69	13.91	0.00	83	0.22	3.97	0.05
	SBF8	RFeuro	0.04	0.06	3.09	-2.67	0.82	0.16	5.40	20.27	0.00	83	-0.01	0.01	0.92
	SBF9	RFeuro	0.07	0.10	3.51	-2.91	1.16	0.20	3.91	3.42	0.18	83	0.22	4.11	0.04
	SBF10	RFeuro	-0.04	-0.06	1.79	-2.37	0.72	-0.30	4.10	5.47	0.06	83	0.25	5.33	0.02
	SBF11	RFeuro	-0.06	0.00	1.63	-2.26	0.68	-0.40	3.96	5.39	0.07	83	0.29	7.31	0.01
	SBF12	RFeuro	-0.12	-0.07	2.00	-2.65	0.71	-0.52	5.38	23.32	0.00	83	0.33	9.20	0.00
	SBF13	RFeuro	-0.13	0.01	1.38	-2.70	0.61	-0.96	6.33	50.94	0.00	83	0.38	12.53	0.00
	SBF14	RFeuro	-0.10	-0.06	1.51	-1.79	0.65	-0.04	3.59	1.23	0.54	83	0.27	6.07	0.01
	SBF15	RFeuro	-0.10	-0.07	0.89	-1.23	0.37	-0.40	3.84	4.61	0.10	83	0.23	4.48	0.03
	SBF16	RFeuro	0.02	0.13	1.58	-2.44	0.71	-0.58	3.99	8.05	0.02	83	0.39	12.83	0.00
	SBF17	RFeuro	-0.02	0.06	1.96	-1.56	0.65	0.04	3.68	1.64	0.44	83	0.39	13.35	0.00
	SBF18	RFeuro	-0.02	0.03	1.62	-1.72	0.67	-0.09	2.86	0.18	0.91	83	0.28	6.55	0.01
	SBF19	RFeuro	-0.01	0.01	1.81	-1.65	0.67	0.04	3.01	0.02	0.99	83	0.30	7.47	0.01
	SBF20	RFeuro	-0.07	-0.06	1.69	-2.42	0.67	-0.51	4.56	11.96	0.00	83	0.36	10.91	0.00
	SBF21	RFeuro	-0.10	-0.04	1.24	-1.82	0.59	-0.24	3.06	0.80	0.67	83	0.32	8.92	0.00
	SBF22	RFeuro	-0.08	0.00	1.60	-2.65	0.72	-0.84	4.66	19.24	0.00	83	0.32	8.96	0.00
	SBF23	RFeuro	-0.04	-0.02	1.85	-2.30	0.71	-0.01	3.95	3.16	0.21	83	0.28	6.53	0.01
	SBF24	RFeuro	-0.03	-0.03	1.90	-1.54	0.61	0.26	3.71	2.65	0.27	83	0.29	7.36	0.01
	SBF25	RFeuro	-0.05	0.07	1.46	-2.69	0.77	-0.78	4.21	13.42	0.00	83	0.11	1.05	0.31
	SBF26	RFeuro	-0.14	-0.13	1.66	-1.82	0.63	0.05	3.82	2.39	0.30	83	0.27	6.13	0.01
	SBF27	RFeuro	0.03	0.06	3.62	-2.28	1.10	0.50	3.79	5.57	0.06	83	0.12	1.24	0.27
	SBF28	RFeuro	-0.10	0.01	1.81	-2.57	0.79	-0.43	3.54	3.55	0.17	83	0.53	24.46	0.00
	SBF29	RFeuro	0.00	0.01	1.58	-1.09	0.50	0.40	3.45	2.88	0.24	83	0.23	4.57	0.03
	SBF30	RFeuro	-0.15	-0.17	0.88	-0.86	0.34	0.55	3.83	6.53	0.04	83	0.16	2.16	0.14
	SBF31	RFeuro	-0.08	-0.16	2.16	-2.28	0.76	0.28	4.41	7.96	0.02	83	0.17	2.40	0.12
	SBF32	RFeuro	-0.10	-0.08	2.10	-3.41	0.94	-0.48	4.14	7.67	0.02	83	0.28	6.78	0.01
	SBF33	RFeuro	-0.11	-0.04	0.81	-1.68	0.54	-0.58	2.83	4.80	0.09	83	0.36	10.83	0.00
	SBF34	RFeuro	0.08	0.10	2.82	-2.46	0.68	0.12	6.82	50.55	0.00	83	0.23	4.48	0.03
	SBF35	RFeuro	-0.13	-0.09	1.28	-2.83	0.63	-0.81	5.80	36.16	0.00	83	0.34	9.90	0.00
	SBF36	RFeuro	0.00	-0.09	1.96	-2.17	0.69	0.15	4.36	6.66	0.04	83	0.08	0.60	0.44
	SBF37	RFeuro	-0.10	-0.08	1.26	-1.78	0.53	-0.66	4.44	13.22	0.00	83	0.22	4.30	0.04
	SBF38	RFeuro	0.00	0.04	1.99	-2.42	0.72	-0.11	4.44	7.30	0.03	83	0.33	9.57	0.00
	SBF39	RFeuro	-0.06	0.01	2.02	-2.56	0.76	-0.46	4.47	10.39	0.01	83	0.35	10.55	0.00
	SBF40	RFeuro	0.02	0.07	1.88	-2.64	0.72	-0.50	4.37	9.94	0.01	83	0.38	12.38	0.00
	SBF41	RFeuro	-0.18	-0.10	1.34	-2.51	0.76	-0.71	3.47	7.78	0.02	83	0.25	5.23	0.02
	SBF42	RFeuro	-0.13	-0.10	0.90	-1.24	0.33	-0.43	5.19	19.15	0.00	83	0.30	7.60	0.01
	SBF43	RFeuro	0.06	0.04	1.62	-1.91	0.69	0.01	3.38	0.50	0.78	83	0.21	3.71	0.05
	SBF44	RFeuro	-0.03	-0.05	1.69	-1.39	0.65	0.42	3.36	2.85	0.24	83	0.19	3.23	0.07
	SBF45	RFeuro	-0.10	0.02	1.87	-2.15	0.80	-0.46	3.47	3.70	0.16	83	0.48	20.18	0.00

Appendix 5.2 (continued)

Bond Funds	Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
SBF46	RFeuro	-0.12	-0.08	1.01	-1.63	0.54	-0.44	3.07	2.73	0.26	83	0.35	10.73	0.00
SBF47	RFeuro	0.02	-0.01	1.66	-2.22	0.76	-0.02	3.26	0.24	0.89	83	0.16	2.19	0.14
SBF48	RFeuro	0.03	0.11	1.93	-2.37	0.77	-0.42	4.18	7.27	0.03	83	0.20	3.53	0.06
SBF49	RFeuro	-0.11	-0.02	1.40	-2.97	0.65	-1.33	7.65	99.32	0.00	83	0.22	4.08	0.04
SBF50	RFcortoeuro	-0.03	0.06	2.09	-2.66	0.78	-0.45	4.42	9.80	0.01	83	0.18	2.84	0.09
SBF51	RFcortoeuro	-0.04	-0.05	1.62	-1.98	0.70	-0.15	3.90	3.15	0.21	83	0.31	8.36	0.00
SBF52	RFcortoeuro	-0.11	-0.05	0.84	-1.77	0.50	-0.89	4.33	17.13	0.00	83	0.10	0.92	0.34
SBF53	RFcortoeuro	-0.02	0.07	2.23	-3.72	1.05	-0.73	5.08	22.36	0.00	83	0.34	9.69	0.00
SBF54	RFcortoeuro	-0.12	-0.04	0.89	-2.69	0.59	-1.71	8.15	132.13	0.00	83	0.32	8.71	0.00
SBF55	RFcortoeuro	-0.13	-0.04	1.02	-2.90	0.58	-1.71	8.78	155.80	0.00	83	0.36	10.92	0.00
SBF56	RFcortoeuro	-0.06	-0.05	1.73	-1.73	0.66	-0.27	3.72	2.83	0.24	83	0.41	14.34	0.00
SBF57	RFcortoeuro	-0.09	-0.10	1.04	-1.41	0.39	-0.31	4.87	13.44	0.00	83	0.29	7.38	0.01
SBF58	RFcortoeuro	-0.14	-0.13	0.27	-0.62	0.17	-0.38	3.58	3.18	0.20	83	0.19	3.17	0.08
SBF59	RFcortoeuro	-0.06	-0.01	1.16	-1.99	0.58	-0.90	5.30	29.37	0.00	83	0.25	5.44	0.02
SBF60	RFcortoeuro	-0.10	-0.06	1.12	-1.78	0.51	-0.61	3.97	8.39	0.02	83	0.37	11.82	0.00
SBF61	RFcortoeuro	0.03	0.09	1.93	-2.40	0.76	-0.48	4.17	7.87	0.02	83	0.32	9.03	0.00
SBF62	RFcortoeuro	-0.04	0.05	1.34	-2.77	0.67	-1.12	5.95	47.55	0.00	83	0.33	9.09	0.00
SBF63	RFcortoeuro	0.00	0.08	1.39	-2.53	0.69	-0.98	5.18	29.80	0.00	83	0.31	8.21	0.00
SBF64	RFcortoeuro	-0.04	-0.09	2.04	-2.04	0.64	0.19	5.99	31.41	0.00	83	0.22	4.28	0.04
SBF65	RFcortoeuro	0.03	-0.01	2.08	-1.84	0.59	0.00	6.51	42.61	0.00	83	0.18	2.63	0.11
SBF66	RFcortoeuro	-0.04	-0.01	1.65	-1.10	0.54	0.38	3.62	3.31	0.19	83	0.33	9.28	0.00
SBF67	RFcortoeuro	-0.11	-0.05	1.02	-1.18	0.48	0.01	2.68	0.36	0.84	83	0.22	4.09	0.04
SBF68	RFcortoeuro	-0.31	-0.20	5.75	-7.82	1.30	-1.18	20.51	1080.22	0.00	83	-0.14	1.60	0.21
SBF69	RFcortoeuro	-0.08	0.02	1.87	-3.52	0.85	-1.08	6.14	50.32	0.00	83	0.41	14.51	0.00
SBF70	RFcortoeuro	-0.06	-0.12	1.74	-2.10	0.70	0.23	4.37	7.27	0.03	83	0.33	9.18	0.00
SBF71	RFcortoeuro	-0.16	-0.19	1.71	-2.59	0.78	-0.35	4.71	11.79	0.00	83	0.37	11.64	0.00
SBF72	RFcortoeuro	-0.04	-0.07	1.09	-1.39	0.44	-0.23	3.89	3.49	0.17	83	0.22	4.04	0.04
SBF73	RFcortoeuro	-0.20	-0.14	1.81	-2.37	0.55	-0.59	7.16	64.66	0.00	83	0.36	11.06	0.00
SBF74	RFcortoeuro	-0.09	-0.08	0.74	-0.91	0.24	-0.07	5.07	14.84	0.00	83	0.38	12.21	0.00
SBF75	RFcortoeuro	-0.16	-0.18	0.37	-0.61	0.18	0.43	3.48	3.41	0.18	83	0.16	2.29	0.13
SBF76	RFcortoeuro	-0.10	-0.13	0.45	-0.60	0.18	0.45	4.16	7.43	0.02	83	0.21	3.75	0.05
SBF77	RFcortoeuro	-0.16	-0.19	0.30	-0.63	0.18	0.39	3.33	2.45	0.29	83	0.17	2.45	0.12
SBF78	RFcortoeuro	-0.13	-0.15	0.38	-0.65	0.18	0.27	4.05	4.81	0.09	83	0.21	3.61	0.06
SBF79	RFcortoeuro	-0.06	-0.11	0.58	-1.02	0.24	-0.10	6.36	39.09	0.00	83	0.25	5.49	0.02
SBF80	RFcortoeuro	-0.16	-0.15	0.46	-2.44	0.34	-3.86	26.17	2062.61	0.00	83	0.37	11.56	0.00
SBF81	RFcortoeuro	-0.19	-0.21	0.28	-0.58	0.17	0.55	3.25	4.37	0.11	83	0.13	1.47	0.23
SBF82	RFcortoeuro	-0.04	-0.07	0.62	-0.68	0.21	0.63	4.61	14.41	0.00	83	0.24	5.08	0.02
SBF83	RFcortoeuro	-0.19	-0.22	0.25	-0.57	0.17	0.67	3.35	6.64	0.04	83	0.15	1.90	0.17
SBF84	RFcortoeuro	-0.19	-0.21	0.29	-0.62	0.17	0.41	3.40	2.91	0.23	83	0.14	1.59	0.21
SBF85	RFcortoeuro	-0.10	-0.05	1.04	-2.12	0.53	-0.86	4.84	21.86	0.00	83	0.24	5.07	0.02
SBF86	RFcortoeuro	-0.09	-0.01	1.20	-2.85	0.68	-1.76	8.27	138.97	0.00	83	0.14	1.56	0.21
SBF87	RFcortoeuro	0.02	0.03	1.71	-1.44	0.59	0.47	3.65	4.56	0.10	83	0.38	12.39	0.00
SBF88	RFcortoeuro	0.08	0.11	1.63	-1.96	0.58	-0.13	4.38	6.79	0.03	83	0.06	0.26	0.61
SBF89	RFcortoeuro	-0.19	-0.17	1.16	-2.52	0.52	-0.95	7.29	76.22	0.00	83	0.32	8.74	0.00
SBF90	RFcortoeuro	-0.15	-0.11	0.79	-1.27	0.39	-0.40	3.27	2.53	0.28	83	0.50	21.41	0.00
SBF91	RFcortoeuro	-0.16	-0.16	1.36	-2.82	0.60	-0.91	7.21	72.74	0.00	83	0.37	11.64	0.00
SBF92	RFcortoeuro	-0.15	-0.06	1.61	-2.28	0.68	-0.54	4.34	10.27	0.01	83	0.38	12.63	0.00
SBF93	RFcortoeuro	-0.10	-0.04	0.98	-1.70	0.51	-0.73	4.23	12.64	0.00	83	0.25	5.57	0.02
SBF94	RFcortoeuro	-0.13	-0.07	1.36	-3.32	0.66	-1.82	9.53	193.13	0.00	83	0.49	20.58	0.00
SBF95	RFcortoeuro	0.01	0.06	1.87	-2.49	0.79	-0.69	5.00	20.39	0.00	83	0.24	4.97	0.03
SBF96	RFcortoeuro	-0.09	-0.10	1.13	-1.95	0.47	-0.68	5.03	20.59	0.00	83	0.27	6.45	0.01
SBF97	RFcortoeuro	-0.19	-0.12	0.73	-2.00	0.36	-1.66	10.08	211.48	0.00	83	0.30	7.79	0.01
SBF98	RFcortoeuro	-0.11	-0.05	1.16	-2.22	0.58	-0.59	5.16	20.95	0.00	83	0.22	4.00	0.05
SBF99	RFcortoeuro	-0.06	-0.01	1.60	-2.17	0.63	-0.70	4.26	12.33	0.00	83	0.37	11.54	0.00
SBF100	RFcortoeuro	-0.19	-0.10	1.24	-3.52	0.66	-2.10	10.84	273.39	0.00	83	0.38	12.41	0.00
SBF101	RFcortoeuro	-0.19	-0.21	0.43	-0.67	0.23	0.46	3.47	3.64	0.16	83	0.22	4.07	0.04
SBF102	RFcortoeuro	-0.12	-0.12	0.14	-0.51	0.09	-1.32	8.89	143.77	0.00	83	0.34	9.85	0.00
SBF103	RFcortoeuro	-0.21	-0.16	0.37	-2.13	0.34	-2.47	14.73	560.17	0.00	83	0.42	15.10	0.00
SBF104	RFcortoeuro	0.01	0.09	1.68	-1.71	0.57	0.02	4.13	4.46	0.11	83	0.29	7.21	0.01
SBF105	RFcortoeuro	-0.06	-0.04	1.42	-2.51	0.42	-1.85	20.03	1050.18	0.00	83	0.28	6.65	0.01
SBF106	RFcortoeuro	-0.16	-0.08	1.22	-4.12	0.69	-2.90	16.80	774.78	0.00	83	0.15	2.03	0.15
SBF107	RFcortoeuro	-0.12	-0.08	1.25	-3.02	0.65	-1.52	7.79	111.12	0.00	83	0.20	3.32	0.07
SBF108	RFcortoeuro	-0.11	0.03	1.78	-2.62	0.68	-0.57	4.75	15.08	0.00	83	0.37	11.61	0.00
SBF109	RFcortoeuro	-0.19	-0.02	1.31	-7.51	1.23	-4.74	28.04	2478.86	0.00	83	0.57	28.04	0.00
SBF110	RFcortoeuro	-0.17	-0.09	0.33	-1.27	0.29	-1.25	5.17	37.87	0.00	83	0.42	15.08	0.00
SBF111	RFcortoeuro	-0.13	-0.17	0.98	-0.91	0.32	0.62	4.99	18.90	0.00	83	0.35	10.77	0.00

Appendix 5.2 (continued)

Bond Funds		Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
	SBF112	RFcortoeuro	-0.17	-0.13	0.53	-2.33	0.32	-3.89	26.84	2175.46	0.00	83	0.37	11.57	0.00
	SBF113	RFcortoeuro	-0.18	-0.12	0.35	-2.06	0.32	-3.36	18.32	967.97	0.00	83	0.45	17.60	0.00
	SBF114	RFcortoeuro	-0.19	-0.12	0.13	-2.22	0.28	-5.26	35.77	4096.06	0.00	83	0.42	15.27	0.00
	SBF115	RFcortoeuro	-0.18	-0.13	0.31	-2.33	0.30	-4.70	33.08	3435.50	0.00	83	0.36	11.27	0.00
	SBF116	RFcortoeuro	-0.12	-0.12	0.24	-0.56	0.13	-0.17	4.28	6.09	0.05	83	0.27	6.08	0.01
	SBF117	RFcortoeuro	-0.55	-0.44	6.13	-6.65	1.28	0.75	17.07	692.29	0.00	83	-0.11	1.03	0.31
	SBF118	RFcortoeuro	-0.15	-0.17	0.61	-0.54	0.15	2.06	12.02	340.41	0.00	83	0.05	0.17	0.68
	SBF119	RFcortoeuro	-0.16	-0.10	0.58	-1.46	0.40	-0.79	3.96	11.82	0.00	83	0.43	15.58	0.00
	SBF120	RFcortoeuro	-0.18	-0.12	0.48	-1.42	0.38	-1.03	4.46	21.92	0.00	83	0.46	18.14	0.00
	SBF121	RFcortoeuro	-0.10	-0.02	0.64	-1.60	0.47	-0.66	3.17	6.19	0.05	83	0.35	10.39	0.00
	SBF122	RFcortoeuro	-0.20	-0.15	0.41	-1.79	0.38	-2.98	12.61	441.75	0.00	83	0.11	1.08	0.30
	SBF123	RFcortoeuro	-0.07	-0.01	1.67	-2.80	0.68	-0.66	6.07	38.53	0.00	83	0.29	7.44	0.01
	SBF124	RFcortoeuro	-0.12	-0.06	1.18	-1.70	0.45	-0.27	4.97	14.45	0.00	83	0.44	16.58	0.00
	SBF125	RFcortoeuro	-0.20	-0.15	0.37	-2.31	0.33	-3.28	21.90	1384.40	0.00	83	0.33	9.46	0.00
	SBF126	RFcortoeuro	-0.13	-0.07	0.40	-1.90	0.32	-2.83	15.74	672.14	0.00	83	0.47	19.16	0.00
	SBF127	RFcortoeuro	-0.14	-0.12	0.65	-0.78	0.26	0.05	4.53	8.11	0.02	83	0.07	0.36	0.55
	SBF128	RFcortoeuro	-0.14	-0.10	0.55	-1.44	0.22	-2.36	17.25	779.24	0.00	83	0.29	7.36	0.01
	SBF129	RFcortoeuro	-0.19	-0.14	0.38	-2.03	0.33	-2.40	13.97	496.14	0.00	83	0.39	13.02	0.00
	SBF130	RFcortoeuro	-0.06	-0.07	0.41	-0.45	0.09	1.00	12.66	336.83	0.00	83	-0.10	0.82	0.37
	SBF131	RFcortoeuro	-0.18	-0.14	0.41	-2.35	0.36	-2.85	17.34	823.68	0.00	83	0.37	11.95	0.00
	SBF132	RFcortoeuro	-0.09	-0.09	1.50	-1.27	0.31	0.34	13.02	349.13	0.00	83	0.16	2.29	0.13
	SBF133	RFcortoeuro	-0.11	-0.09	0.74	-1.40	0.35	-0.48	4.77	14.08	0.00	83	0.22	4.13	0.04
	SBF134	RFcortoeuro	0.02	0.02	1.50	-1.53	0.54	0.12	4.27	5.74	0.06	83	0.20	3.26	0.07
	SBF135	RFcortoeuro	-0.11	-0.02	1.40	-2.61	0.59	-1.08	7.18	76.82	0.00	83	0.26	5.65	0.02
	SBF136	RFcortoeuro	-0.12	-0.15	1.27	-1.49	0.49	-0.17	4.28	6.06	0.05	83	0.44	16.71	0.00
	SBF137	RFcortoeuro	-0.20	-0.08	0.45	-2.53	0.52	-2.59	10.43	283.90	0.00	83	0.36	10.91	0.00
	SBF138	RFcortoeuro	-0.17	-0.15	0.42	-1.60	0.30	-1.58	8.74	148.68	0.00	83	0.39	13.27	0.00
	SBF139	RFcortoeuro	-0.10	-0.13	1.22	-1.45	0.45	0.10	4.15	4.68	0.10	83	0.47	19.17	0.00
	SBF140	RFcortoeuro	-0.11	-0.12	1.18	-2.27	0.55	-0.84	6.24	45.94	0.00	83	0.32	8.83	0.00
	SBF141	RFcortoeuro	-0.13	-0.06	0.97	-2.27	0.47	-1.58	8.52	140.03	0.00	83	0.34	9.92	0.00
	SBF142	RFcortoeuro	-0.16	-0.07	1.48	-2.51	0.64	-0.70	5.24	24.08	0.00	83	0.52	23.31	0.00
	SBF143	RFcortoeuro	-0.19	-0.14	0.38	-1.97	0.33	-2.23	12.62	389.07	0.00	83	0.38	12.65	0.00
	SBF144	RFcortoeuro	-0.02	-0.08	1.23	-0.63	0.31	1.73	7.51	111.60	0.00	83	0.04	0.15	0.70
	SBF145	RFcortoeuro	-0.01	-0.03	1.13	-0.49	0.28	1.07	5.65	39.96	0.00	83	0.20	3.28	0.07
	SBF146	RFcortoeuro	-0.10	-0.16	1.85	-1.72	0.50	0.50	6.77	52.69	0.00	83	0.25	5.25	0.02
	SBF147	RFcortoeuro	-0.17	-0.12	0.42	-1.57	0.30	-1.53	8.06	120.92	0.00	83	0.47	19.23	0.00
	SBF148	RFcortoeuro	-0.17	-0.16	0.41	-1.40	0.30	-1.59	7.65	109.76	0.00	83	0.24	4.74	0.03
	SBF149	RFcortoeuro	-0.19	-0.18	0.07	-0.61	0.08	-1.16	11.19	250.91	0.00	83	0.18	2.78	0.10
	SBF150	RFcortoeuro	-0.12	-0.12	0.32	-0.39	0.10	0.54	7.11	62.53	0.00	83	0.27	6.34	0.01
	SBF151	RFcortoeuro	-0.30	-0.16	0.97	-8.10	1.02	-5.99	44.21	6368.85	0.00	83	0.02	0.04	0.85
	SBF152	RFcortoeuro	-0.19	-0.19	0.15	-0.53	0.09	-0.45	8.20	96.30	0.00	83	0.33	9.24	0.00
	SBF153	RFcortoeuro	-0.11	-0.04	1.39	-2.39	0.60	-1.11	7.13	76.03	0.00	83	0.27	6.47	0.01
	SBF154	RFcortoeuro	-0.36	-0.07	2.68	-5.91	1.31	-2.03	8.88	176.61	0.00	83	0.43	15.83	0.00
	SBF155	RFcortoeuro	-0.16	-0.15	2.99	-5.79	1.06	-1.25	13.02	368.66	0.00	83	0.01	0.01	0.91
	SBF156	RFcortoeuro	-0.10	-0.11	0.35	-0.52	0.14	0.32	4.38	7.99	0.02	83	0.28	6.87	0.01
	SBF157	RFcortoeuro	-0.17	-0.09	0.77	-2.94	0.54	-2.37	12.30	377.08	0.00	83	0.46	17.86	0.00
Italy	IBF1	BTeuro	-0.11	-0.12	0.93	-1.53	0.39	-0.99	6.21	49.14	0.00	83	0.09	0.74	0.39
	IBF2	BTeuro	-0.16	-0.12	0.42	-1.36	0.27	-1.86	8.94	170.33	0.00	83	0.04	0.17	0.68
	IBF3	BTeuro	-0.10	-0.04	0.31	-1.97	0.34	-2.82	14.55	571.25	0.00	83	0.33	9.29	0.00
	IBF4	BTeuro	-0.27	-0.13	1.03	-3.31	0.65	-2.06	8.97	182.00	0.00	83	0.28	6.81	0.01
	IBF5	BTeuro	-0.14	-0.14	0.22	-0.76	0.20	-0.33	3.00	1.52	0.47	83	0.20	3.29	0.07
	IBF6	BTeuro	-0.11	-0.08	0.87	-1.74	0.43	-1.55	7.32	97.84	0.00	83	0.19	3.25	0.07
	IBF7	BTeuro	-0.14	-0.06	0.74	-2.14	0.47	-1.89	8.63	159.37	0.00	83	0.22	4.00	0.05
	IBF8	BTeuro	-0.10	-0.11	0.81	-1.25	0.34	-0.53	4.59	12.59	0.00	83	0.06	0.30	0.58
	IBF9	BTeuro	-0.12	-0.09	1.23	-2.01	0.60	-0.51	3.92	6.45	0.04	83	0.19	3.13	0.08
	IBF10	BTeuro	-0.08	0.02	2.35	-4.39	1.01	-0.96	6.42	53.09	0.00	83	0.13	1.42	0.23
	IBF11	BTeuro	-0.18	-0.11	0.52	-1.68	0.36	-2.11	9.38	202.41	0.00	83	0.15	2.03	0.15
	IBF12	BTeuro	-0.15	-0.08	0.83	-2.82	0.59	-2.03	9.32	195.14	0.00	83	0.24	5.12	0.02
	IBF13	BTeuro	-0.12	-0.13	0.75	-1.17	0.33	-0.66	4.64	15.40	0.00	83	0.03	0.10	0.75
	IBF14	BTeuro	-0.12	-0.13	0.87	-2.63	0.37	-3.36	25.92	1972.56	0.00	83	-0.03	0.06	0.81
	IBF15	BTeuro	-0.22	-0.15	0.15	-2.02	0.33	-3.57	17.33	886.11	0.00	83	0.12	1.28	0.26
	IBF16	BTeuro	-0.20	-0.14	0.47	-1.80	0.39	-2.04	8.76	172.38	0.00	83	0.24	4.76	0.03
	IBF17	BTeuro	-0.16	-0.11	0.46	-1.60	0.35	-1.76	7.55	114.50	0.00	83	0.39	12.91	0.00
	IBF18	BTeuro	-0.16	-0.15	0.19	-0.78	0.20	-0.91	3.96	14.63	0.00	83	0.09	0.74	0.39
	IBF19	BTeuro	-0.24	-0.16	0.31	-2.43	0.43	-2.71	12.32	401.70	0.00	83	0.41	14.31	0.00
	IBF20	BTeuro	-0.12	-0.12	0.40	-0.93	0.26	-0.48	3.56	4.31	0.12	83	0.07	0.38	0.54

Appendix 5.2 (continued)

Bond Funds		Category	Mean	Median	Max.	Min.	StdDev.	Skew.	Kurt.	JBera	Prob.	N	AC(1)	Q-Stat	Prob
	IBF21	BTeuro	-0.15	-0.14	0.49	-1.36	0.30	-1.40	6.88	79.20	0.00	83	0.01	0.02	0.90
	IBF22	BTeuro	-0.12	-0.12	2.52	-3.55	0.97	-0.53	5.08	18.87	0.00	83	0.07	0.36	0.55
	IBF23	BTeuro	-0.10	-0.10	0.89	-1.45	0.29	-0.84	8.66	120.57	0.00	83	-0.16	2.29	0.13
	IBF24	BTeuro	-0.18	-0.13	0.80	-1.96	0.38	-1.79	9.56	193.15	0.00	83	0.15	1.81	0.18
	IBF25	BTeuro	-0.52	-0.29	2.10	-4.35	1.03	-0.76	5.50	29.60	0.00	83	0.34	9.69	0.00
	IBF26	BTeuro	0.15	0.25	1.44	-5.11	0.93	-4.25	24.51	1849.12	0.00	83	0.06	0.36	0.55
	IBF27	M/Leuro	-0.08	0.00	1.42	-2.27	0.69	-0.82	4.24	14.70	0.00	83	0.14	1.59	0.21
	IBF28	M/Leuro	-0.08	-0.07	1.64	-2.29	0.73	-0.13	3.17	0.32	0.85	83	0.12	1.27	0.26
	IBF29	M/Leuro	-0.06	0.04	1.98	-4.14	0.99	-1.10	5.94	46.73	0.00	83	0.17	2.61	0.11
	IBF30	M/Leuro	-0.07	-0.05	2.15	-2.46	0.83	-0.03	3.74	1.89	0.39	83	0.12	1.21	0.27
	IBF31	M/Leuro	-0.15	-0.04	1.71	-3.20	0.93	-0.98	4.90	25.67	0.00	83	0.32	8.52	0.00
	IBF32	M/Leuro	-0.09	-0.01	2.16	-2.94	0.93	-0.52	4.15	8.40	0.02	83	0.18	2.77	0.10
	IBF33	M/Leuro	-0.16	-0.04	1.65	-2.73	0.90	-0.48	3.10	3.18	0.20	83	0.20	3.34	0.07
	IBF34	M/Leuro	-0.17	-0.01	1.64	-2.76	0.90	-0.46	3.06	2.91	0.23	83	0.19	3.20	0.07
	IBF35	M/Leuro	-0.08	0.02	1.26	-2.03	0.69	-0.46	3.08	2.98	0.23	83	0.08	0.54	0.46
	IBF36	M/Leuro	-0.08	-0.06	0.95	-1.83	0.53	-0.28	3.30	1.36	0.51	83	-0.01	0.00	0.95
	IBF37	M/Leuro	-0.11	-0.09	1.67	-2.58	0.77	-0.83	4.50	17.35	0.00	83	0.22	4.24	0.04
	IBF38	M/Leuro	-0.16	-0.06	1.52	-2.99	0.90	-0.84	3.82	12.02	0.00	83	0.25	5.28	0.02
	IBF39	M/Leuro	-0.15	-0.06	1.78	-3.10	0.81	-0.64	3.98	8.97	0.01	83	0.24	5.03	0.03
	IBF40	M/Leuro	-0.12	-0.08	2.47	-3.19	1.00	-0.42	3.97	5.69	0.06	83	0.22	4.05	0.04
	IBF41	M/Leuro	-0.09	-0.05	1.10	-1.55	0.51	-0.46	2.97	2.89	0.24	83	0.11	0.96	0.33
	IBF42	M/Leuro	0.01	0.00	2.95	-2.84	0.93	0.49	5.06	18.11	0.00	83	0.08	0.54	0.46
	IBF43	M/Leuro	-0.21	-0.08	1.66	-4.06	0.90	-1.65	7.77	116.26	0.00	83	0.19	3.06	0.08
	IBF44	M/Leuro	-0.20	-0.08	1.79	-3.30	0.99	-0.70	3.69	8.50	0.01	83	0.36	10.96	0.00
	IBF45	M/Leuro	-0.13	-0.05	1.64	-2.53	0.81	-0.53	3.37	4.29	0.12	83	0.11	1.00	0.32
	IBF46	M/Leuro	-0.13	-0.08	1.44	-2.01	0.75	-0.35	3.03	1.74	0.42	83	0.09	0.65	0.42
	IBF47	M/Leuro	-0.06	-0.05	3.31	-2.53	1.07	0.05	3.80	2.21	0.33	83	0.09	0.76	0.38
	IBF48	M/Leuro	-0.17	-0.08	1.70	-4.12	0.90	-1.23	6.72	68.79	0.00	83	0.17	2.35	0.13
	IBF49	M/Leuro	-0.09	-0.03	1.33	-3.70	0.87	-1.12	5.58	40.42	0.00	83	0.23	4.42	0.04
	IBF50	M/Leuro	-0.03	0.01	2.35	-2.68	0.98	-0.10	3.10	0.18	0.91	83	0.12	1.15	0.28
	IBF51	M/Leuro	0.01	0.07	2.29	-1.94	0.82	-0.03	3.01	0.01	0.99	83	0.18	2.86	0.09
	IBF52	Europa	-0.10	-0.06	2.51	-3.67	1.07	-0.72	4.91	19.85	0.00	83	0.14	1.78	0.18
	IBF53	Europa	-0.14	-0.08	1.89	-3.66	0.78	-1.02	6.84	65.37	0.00	83	0.17	2.52	0.11
	IBF54	Europa	-0.03	-0.07	2.34	-3.68	1.07	-0.09	3.70	1.82	0.40	83	0.15	1.91	0.17
	IBF55	Europa	-0.13	0.05	1.08	-3.74	0.85	-1.41	5.94	57.46	0.00	83	0.30	7.70	0.01
	IBF56	Europa	-0.14	0.02	1.51	-3.63	0.92	-1.01	4.70	24.20	0.00	83	0.15	1.94	0.16
	IBF57	Europa	-0.05	-0.02	2.44	-2.36	1.02	0.15	2.62	0.82	0.66	83	-0.03	0.07	0.80
	IBF58	Europa	-0.28	-0.21	6.44	-4.14	1.65	0.63	6.60	50.30	0.00	83	0.25	5.37	0.02
Portugal	PBF1	EuroFloat	-0.11	-0.11	0.02	-0.27	0.06	-0.08	2.99	0.07	0.96	72	0.01	0.01	0.91
	PBF2	EuroFix	-0.12	-0.13	0.30	-0.65	0.18	0.01	3.91	2.48	0.29	72	0.15	1.69	0.19
	PBF3	EuroFloat	-0.13	-0.12	0.16	-0.92	0.12	-3.43	24.19	1488.28	0.00	72	0.31	7.15	0.01
	PBF4	EuroFloat	-0.14	-0.14	0.39	-0.66	0.17	0.37	5.01	13.80	0.00	72	0.04	0.12	0.73
	PBF5	EuroFloat	-0.14	-0.14	-0.03	-0.37	0.06	-1.25	5.80	42.20	0.00	72	0.62	28.78	0.00
	PBF6	EuroFloat	-0.11	-0.12	0.15	-0.46	0.10	-0.34	4.45	7.71	0.02	72	0.00	0.00	0.99
	PBF7	EuroFloat	-0.12	-0.12	0.05	-0.36	0.06	-0.47	5.05	15.25	0.00	72	0.35	9.31	0.00
	PBF8	EuroFloat	-0.12	-0.13	0.06	-0.40	0.07	-0.91	7.07	59.50	0.00	72	0.07	0.37	0.55
	PBF9	EuroFix	-0.01	0.04	1.38	-2.02	0.67	-0.39	3.08	1.87	0.39	72	0.32	7.54	0.01
	PBF10	EuroFloat	-0.15	-0.14	0.01	-0.82	0.13	-2.20	11.18	258.86	0.00	72	0.45	15.25	0.00
	PBF11	EuroFloat	-0.09	-0.11	0.33	-0.31	0.10	1.56	8.11	107.63	0.00	72	-0.11	0.83	0.36
	PBF12	EuroFix	0.07	0.09	1.41	-1.92	0.75	-0.41	2.70	2.27	0.32	72	0.33	8.30	0.00
	PBF13	EuroFloat	-0.10	-0.10	0.29	-0.36	0.10	1.03	6.88	58.01	0.00	72	-0.24	4.14	0.04
	PBF14	EuroFloat	-0.07	-0.07	0.16	-0.30	0.07	-0.18	4.27	5.26	0.07	72	0.35	8.93	0.00
	PBF15	EuroFix	0.16	0.12	2.23	-2.06	0.90	-0.18	2.91	0.40	0.82	72	0.28	5.96	0.02
	PBF16	EuroFloat	-0.14	-0.14	0.05	-0.38	0.06	-0.46	5.70	24.37	0.00	72	0.51	19.81	0.00
	PBF17	EuroFloat	-0.11	-0.10	0.16	-0.36	0.08	0.04	5.13	13.65	0.00	72	-0.06	0.26	0.61
	PBF18	EuroFloat	-0.12	-0.11	0.24	-0.46	0.14	0.01	3.67	1.35	0.51	72	0.13	1.22	0.27
	PBF19	EuroFloat	-0.05	-0.07	0.48	-0.56	0.17	0.50	4.69	11.49	0.00	72	0.03	0.05	0.83
	PBF20	EuroFix	0.00	0.02	1.48	-2.10	0.72	-0.29	3.12	1.06	0.59	72	0.33	7.91	0.01
	PBF21	EuroFix	0.09	0.16	2.38	-1.88	0.82	-0.19	3.08	0.46	0.80	72	0.18	2.39	0.12
	PBF22	EuroFloat	-0.13	-0.13	0.04	-0.34	0.08	-0.23	3.56	1.58	0.45	72	0.36	9.55	0.00

Appendix 5.3

Estimates for the unconditional single and multiple index models: individual funds

This table shows the results for both the unconditional single-index, with the Salomon Smith Barney WGBI for all maturities as the benchmark index, and the unconditional multi-index model for each individual fund. In addition to the monthly continuously compounded excess return on the Salomon Smith Barney WGBI for all maturities (Bindex), we consider two more factors: the monthly continuously compounded excess return on the MSCI stock index (Sindex) and the difference between the monthly continuously compounded excess return on the MSCI Euro Credit Index BBB rated and the monthly continuously compounded excess return on the MSCI Euro Credit Index AAA rated (Def). For each fund we present the estimates for the alphas and the regression coefficients, with their t-statistics based on heteroscedasticity and autocorrelation adjusted errors (following Newey and West, 1987), and also the R^2 (adj.). The W(p-val) is the probability value for the Chi-square statistic of the Wald test for the restriction that the coefficients for the additional factors are jointly equal to zero.

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
Germany															
GBF1	-0.050	-1.284	0.841	22.061	79.2%	-0.071	-1.608	0.859	20.426	0.007	1.137	0.160	1.633	79.8%	0.093
GBF2	-0.066	-1.056	0.878	16.954	72.2%	-0.104	-1.617	0.895	15.577	0.022	3.134	0.207	1.853	75.0%	0.001
GBF3	-0.046	-1.154	0.903	20.395	84.8%	-0.066	-1.660	0.913	24.002	0.010	1.575	0.113	1.227	85.4%	0.000
GBF4	0.020	0.584	0.832	19.628	81.0%	-0.001	-0.033	0.851	20.579	0.006	0.964	0.165	1.893	81.8%	0.027
GBF5	-0.024	-0.815	0.776	15.650	80.4%	-0.034	-0.942	0.785	16.549	0.003	0.318	0.075	0.804	80.2%	0.713
GBF6	-0.061	-1.694 *	0.914	24.919	84.3%	-0.085	-2.163 **	0.932	22.708	0.008	1.651	0.172	1.871	85.3%	0.000
GBF7	-0.060	-0.869	0.766	10.511	65.8%	-0.113	-1.681 *	0.778	12.241	0.038	5.482	0.224	2.247	74.4%	0.000
GBF8	-0.006	-0.147	0.854	18.323	78.0%	-0.045	-1.103	0.878	23.135	0.018	3.155	0.243	2.655	81.4%	0.000
GBF9	-0.081	-2.479 **	0.974	29.395	88.5%	-0.105	-3.162 ***	0.992	30.220	0.010	2.042	0.167	2.274	89.5%	0.001
GBF10	-0.079	-1.304	0.944	17.665	73.9%	-0.131	-2.231 **	0.968	19.715	0.029	5.105	0.286	2.297	79.0%	0.000
GBF11	-0.061	-1.554	0.877	22.043	84.5%	-0.079	-1.863 *	0.883	20.342	0.011	2.206	0.087	1.073	85.1%	0.010
GBF12	0.002	0.043	0.841	18.242	78.0%	-0.039	-0.966	0.868	22.929	0.018	3.100	0.269	2.585	81.8%	0.000
GBF13	0.027	0.670	0.928	17.099	82.4%	-0.001	-0.016	0.950	18.247	0.010	1.686	0.201	2.370	83.7%	0.001
GBF14	-0.129	-4.573 ***	0.999	19.818	88.6%	-0.143	-4.894 ***	1.024	21.870	-0.003	-0.465	0.177	2.486	89.1%	0.045
GBF15	0.010	0.078	1.228	7.290	53.8%	-0.109	-0.860	1.217	8.504	0.106	8.180	0.295	1.624	71.4%	0.000
GBF16	-0.067	-1.660	0.958	25.633	85.5%	-0.089	-2.032 **	0.978	24.324	0.007	1.361	0.171	1.947	86.2%	0.006
GBF17	0.040	0.580	0.616	5.024	36.2%	-0.062	-1.030	0.611	8.224	0.088	7.612	0.279	2.177	70.8%	0.000
GBF18	-0.073	-1.750 *	0.920	18.119	83.9%	-0.105	-2.622 **	0.943	21.670	0.013	2.316	0.221	2.776	86.0%	0.000
GBF19	-0.014	-0.509	0.947	34.893	89.5%	-0.030	-1.025	0.957	30.825	0.007	1.315	0.103	1.520	89.8%	0.082
GBF20	0.007	0.195	0.841	19.003	80.8%	-0.031	-0.883	0.862	23.180	0.019	3.764	0.229	2.689	84.3%	0.000
GBF21	-0.056	-1.450	0.729	19.115	81.2%	-0.083	-2.130 **	0.753	19.619	0.008	2.038	0.209	2.634	83.4%	0.002
GBF22	-0.061	-1.831 *	0.822	20.118	84.3%	-0.080	-2.332 **	0.835	20.023	0.008	1.484	0.125	2.130	85.0%	0.002
GBF23	0.043	0.954	0.611	8.610	64.7%	0.011	0.216	0.619	9.672	0.023	2.200	0.141	1.950	69.1%	0.005
GBF24	-0.100	-2.187 **	0.847	17.885	78.3%	-0.130	-2.856 ***	0.860	18.138	0.017	2.387	0.164	1.777	80.3%	0.003
GBF25	0.005	0.131	0.796	13.550	80.3%	-0.020	-0.504	0.829	15.982	0.001	0.226	0.255	2.999	82.2%	0.002
GBF26	-0.024	-0.460	0.853	11.669	72.1%	-0.058	-1.038	0.878	12.279	0.013	1.764	0.237	2.180	74.2%	0.001
GBF27	-0.153	-1.110	0.370	1.573	5.1%	-0.303	-2.149 **	0.399	2.604	0.108	2.792	0.607	2.114	33.4%	0.009
GBF28	-0.056	-1.813 *	0.925	20.230	88.0%	-0.071	-2.115 **	0.939	20.952	0.004	0.599	0.123	1.862	88.2%	0.111
GBF29	-0.031	-0.886	0.854	26.101	83.0%	-0.049	-1.300	0.872	27.508	0.004	0.623	0.154	1.489	83.5%	0.160
GBF30	0.091	0.922	0.542	4.457	28.5%	0.004	0.046	0.554	6.818	0.065	6.528	0.324	3.041	49.9%	0.000
GBF31	-0.037	-0.954	0.857	20.626	83.5%	-0.072	-1.928 *	0.878	25.466	0.017	4.228	0.221	3.361	86.5%	0.000
GBF32	-0.038	-1.122	0.739	15.610	79.6%	-0.060	-1.616	0.766	19.962	0.003	0.602	0.214	2.067	81.1%	0.028
GBF33	0.046	0.383	0.729	4.250	27.6%	-0.104	-1.221	0.685	9.813	0.151	10.469	0.205	1.115	78.1%	0.000
GBF34	0.029	0.284	0.766	6.130	35.5%	-0.108	-2.089 **	0.722	14.743	0.141	13.901	0.168	1.416	85.7%	0.000
GBF35	-0.106	-0.904	1.010	7.015	51.0%	-0.212	-2.205 **	0.994	9.697	0.098	5.512	0.228	1.933	71.6%	0.000
GBF36	-0.132	-2.389 **	0.962	14.499	66.7%	-0.148	-2.532 **	0.958	13.074	0.016	1.483	0.025	0.216	66.6%	0.196
GBF37	-0.024	-0.297	1.053	12.437	63.9%	-0.083	-0.993	1.062	12.242	0.044	3.813	0.228	1.310	69.3%	0.000
GBF38	-0.106	-3.242 ***	0.930	21.522	88.6%	-0.118	-3.262 ***	0.933	20.313	0.009	1.531	0.051	0.844	88.8%	0.182
GBF39	-0.046	-1.350	0.854	18.994	79.1%	-0.071	-1.826 *	0.881	21.124	0.004	0.654	0.220	1.859	80.2%	0.042
GBF40	-0.003	-0.072	0.855	18.848	80.1%	-0.041	-1.059	0.876	22.635	0.019	3.651	0.234	2.644	83.6%	0.000
GBF41	-0.035	-0.897	0.940	16.378	76.4%	-0.065	-1.460	0.965	18.373	0.010	1.071	0.228	1.700	77.7%	0.046
GBF42	-0.063	-0.900	1.345	14.655	73.4%	-0.104	-1.289	1.356	14.726	0.028	1.937	0.182	0.819	74.7%	0.031
GBF43	-0.006	-0.121	0.850	9.373	74.3%	-0.040	-0.756	0.871	10.153	0.015	1.978	0.214	2.284	76.4%	0.000
GBF44	-0.026	-0.923	0.914	26.057	87.6%	-0.047	-1.623	0.933	28.500	0.006	1.284	0.167	2.290	88.4%	0.001
GBF45	-0.030	-0.678	0.872	17.320	77.6%	-0.072	-1.726 *	0.886	23.120	0.027	4.351	0.206	2.184	82.2%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
GBF46	-0.089	-1.786 *	0.866	20.542	79.6%	-0.109	-1.971 *	0.884	16.886	0.006	1.027	0.158	1.554	80.2%	0.068
GBF47	0.000	0.010	0.906	18.819	76.1%	-0.024	-0.516	0.918	17.977	0.013	1.363	0.138	1.439	76.8%	0.067
GBF48	-0.014	-0.317	0.843	19.433	79.8%	-0.041	-0.881	0.855	18.927	0.015	2.167	0.151	1.559	81.3%	0.012
GBF49	-0.049	-1.522	0.881	26.293	82.3%	-0.063	-1.733 *	0.901	22.807	-0.001	-0.092	0.152	1.363	82.5%	0.315
GBF50	-0.043	-1.380	0.902	25.904	85.0%	-0.066	-2.084 **	0.918	25.246	0.011	2.063	0.155	2.300	86.1%	0.000
GBF51	-0.044	-1.045	1.264	17.814	83.9%	-0.084	-1.833 *	1.273	19.052	0.028	3.684	0.168	1.509	86.0%	0.000
GBF52	-0.034	-1.470	0.858	24.819	88.8%	-0.050	-2.043 **	0.871	25.145	0.006	1.250	0.118	2.009	89.3%	0.011
GBF53	-0.008	-0.356	0.914	29.893	88.5%	-0.023	-0.879	0.924	30.613	0.006	1.106	0.097	1.375	88.7%	0.089
GBF54	-0.060	-1.148	0.747	12.585	63.9%	-0.108	-2.212 **	0.757	13.821	0.034	4.840	0.192	1.744	70.6%	0.000
GBF55	-0.020	-0.580	0.848	19.913	83.1%	-0.042	-1.184	0.874	23.200	0.003	0.500	0.211	2.477	84.2%	0.008
GBF56	-0.014	-0.371	0.932	17.422	82.0%	-0.043	-1.186	0.954	16.921	0.011	1.412	0.209	2.375	83.4%	0.004
GBF57	-0.008	-0.226	0.857	18.400	82.8%	-0.030	-0.782	0.887	21.629	0.000	0.031	0.232	2.379	84.0%	0.028
GBF58	-0.018	-0.311	0.854	15.776	75.3%	-0.061	-1.039	0.869	16.469	0.027	3.902	0.212	2.040	79.8%	0.000
GBF59	-0.044	-0.678	0.929	13.316	74.3%	-0.061	-0.867	0.932	11.771	0.012	1.808	0.068	0.620	74.4%	0.049
GBF60	-0.049	-0.407	1.029	9.683	50.1%	-0.135	-1.160	1.085	9.775	0.038	2.114	0.560	2.138	57.3%	0.018
GBF61	-0.021	-0.259	0.933	11.602	61.6%	-0.091	-1.250	0.951	13.917	0.048	6.219	0.308	2.112	70.7%	0.000
GBF62	0.077	0.538	1.174	8.128	48.2%	-0.032	-0.244	1.222	8.728	0.063	3.370	0.589	2.116	58.0%	0.000
GBF63	-0.031	-0.378	0.843	11.306	55.0%	-0.096	-1.333	0.859	11.293	0.045	5.074	0.284	1.787	63.5%	0.000
GBF64	0.072	0.650	1.018	9.274	52.9%	-0.025	-0.254	1.075	10.651	0.046	3.441	0.605	2.943	63.6%	0.000
GBF65	-0.063	-0.667	0.891	7.273	44.7%	-0.168	-1.822 *	0.910	10.588	0.077	5.593	0.416	2.134	62.5%	0.000
GBF66	0.043	0.329	1.083	8.009	47.6%	-0.054	-0.441	1.122	8.481	0.058	3.219	0.500	1.872	56.4%	0.001
GBF67	0.060	0.435	1.150	8.419	48.1%	-0.038	-0.300	1.191	8.907	0.057	3.006	0.518	1.888	56.0%	0.003
GBF68	0.569	1.158	0.990	1.214	1.8%	-0.113	-0.347	0.596	1.824	0.804	6.533	-0.117	-0.233	77.2%	0.000
GBF69	-0.031	-0.741	0.851	16.862	70.1%	-0.066	-1.486	0.850	16.431	0.030	2.323	0.100	0.782	73.6%	0.015
GBF70	-0.090	-1.217	0.921	13.901	58.4%	-0.135	-2.010 **	0.933	11.857	0.031	3.071	0.198	1.345	61.3%	0.002
GBF71	-0.003	-0.033	0.973	8.165	53.2%	-0.100	-0.974	1.001	9.884	0.064	6.439	0.439	2.408	66.8%	0.000
GBF72	-0.088	-1.387	0.993	11.248	75.2%	-0.113	-1.910 *	0.964	11.854	0.039	4.012	-0.084	-0.784	79.0%	0.000
GBF73	-0.059	-0.492	0.966	8.151	48.4%	-0.159	-1.437	1.008	10.087	0.059	5.068	0.530	2.646	60.9%	0.000
GBF74	-0.019	-0.788	0.258	9.476	62.3%	-0.021	-0.795	0.267	10.305	-0.004	-1.349	0.056	1.473	62.4%	0.113
GBF75	0.083	1.275	0.286	3.185	14.7%	0.079	1.113	0.311	4.097	-0.012	-0.789	0.146	0.927	14.3%	0.605
GBF76	0.027	0.452	0.415	6.462	41.6%	0.037	0.584	0.413	5.944	-0.007	-0.884	-0.039	-0.363	40.8%	0.581
GBF77	-0.029	-0.915	0.508	14.160	76.1%	-0.040	-1.223	0.521	13.971	0.001	0.357	0.104	2.370	76.4%	0.027
GBF78	-0.009	-0.191	0.434	8.783	57.7%	-0.018	-0.353	0.445	10.004	0.001	0.117	0.089	1.482	57.3%	0.300
GBF79	-0.098	-3.267 ***	0.108	3.308	7.5%	-0.108	-3.166 ***	0.116	3.412	0.004	0.567	0.077	1.448	7.2%	0.348
GBF80	-0.027	-0.808	0.385	8.618	60.5%	-0.039	-1.136	0.408	9.889	-0.004	-0.788	0.168	2.982	62.6%	0.008
GBF81	0.057	1.048	0.283	3.999	22.4%	0.055	1.002	0.293	3.943	-0.004	-0.561	0.058	0.661	20.8%	0.698
GBF82	-0.074	-0.970	0.427	3.685	20.4%	-0.166	-2.488 **	0.412	4.807	0.086	7.006	0.197	2.125	57.3%	0.000
GBF83	-0.039	-1.676 *	0.317	11.965	67.4%	-0.048	-2.011 **	0.330	12.692	-0.001	-0.257	0.097	2.821	68.3%	0.019
GBF84	-0.081	-1.238	0.425	7.558	29.2%	-0.128	-2.159 **	0.448	7.246	0.025	3.483	0.270	1.421	36.8%	0.000
GBF85	-0.105	-3.956 ***	0.189	5.067	41.1%	-0.113	-4.364 ***	0.202	5.045	-0.001	-0.249	0.100	2.087	42.7%	0.087
GBF86	-0.090	-3.619 ***	0.217	5.552	44.5%	-0.109	-4.962 ***	0.243	6.822	0.000	0.065	0.204	4.373	54.2%	0.000
GBF87	-0.053	-1.280	0.503	10.045	65.8%	-0.052	-1.220	0.516	9.951	-0.008	-1.252	0.071	1.281	65.8%	0.269
GBF88	-0.033	-0.867	0.468	10.350	65.7%	-0.035	-0.877	0.479	9.888	-0.005	-0.946	0.069	1.203	65.4%	0.388
GBF89	-0.064	-0.847	0.535	4.658	51.6%	-0.089	-1.145	0.557	4.667	0.007	0.939	0.193	2.201	52.9%	0.036
GBF90	-0.057	-1.009	0.831	10.392	72.7%	-0.089	-1.455	0.859	10.253	0.009	1.444	0.247	2.093	74.5%	0.010
France															
FBF1	0.004	0.113	0.310	7.437	63.6%	-0.010	-0.284	0.320	9.001	-0.003	-0.661	0.211	3.379	68.2%	0.000
FBF2	-0.164	-3.204 ***	0.551	8.328	75.4%	-0.179	-3.472 ***	0.547	8.388	0.006	0.888	0.135	1.488	75.9%	0.138
FBF3	-0.058	-3.348 ***	0.363	15.880	86.3%	-0.070	-4.489 ***	0.362	16.116	0.003	0.890	0.124	4.592	88.1%	0.000
FBF4	-0.101	-3.982 ***	0.240	8.264	63.1%	-0.116	-5.035 ***	0.242	9.575	0.002	0.513	0.173	3.670	68.8%	0.000
FBF5	-0.075	-3.297 ***	0.400	14.872	83.0%	-0.081	-3.994 ***	0.411	20.294	-0.005	-1.131	0.133	3.369	84.4%	0.003
FBF6	-0.133	-4.751 ***	0.322	11.817	65.3%	-0.143	-5.239 ***	0.334	13.494	-0.005	-1.206	0.170	3.163	67.9%	0.004
FBF7	-0.052	-4.840 ***	0.223	14.768	83.1%	-0.059	-6.550 ***	0.228	18.202	-0.001	-0.566	0.098	4.239	85.6%	0.000
FBF8	-0.044	-3.679 ***	0.209	12.167	81.1%	-0.050	-5.034 ***	0.215	14.062	-0.002	-0.742	0.104	4.463	84.3%	0.000
FBF9	-0.005	-0.158	0.159	4.565	31.7%	-0.016	-0.532	0.166	5.173	-0.002	-0.317	0.165	3.004	36.5%	0.011

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index								
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF10	-0.045	-2.482 **	0.229	9.746	62.0%	-0.053	-3.310 ***	0.239	10.764	-0.004	-1.275	0.144	2.887	65.8%	0.015
FBF11	-0.035	-1.331	0.251	7.343	66.3%	-0.042	-1.659	0.255	8.081	0.000	-0.097	0.100	2.180	67.4%	0.092
FBF12	0.048	1.043	0.164	4.295	23.4%	0.010	0.260	0.128	4.696	0.030	3.122	0.216	4.259	50.1%	0.000
FBF13	-0.017	-0.563	0.110	3.098	23.4%	-0.010	-0.326	0.130	4.035	-0.013	-3.274	0.035	0.551	28.9%	0.004
FBF14	-0.086	-8.167 ***	0.039	3.251	17.8%	-0.087	-7.999 ***	0.042	3.386	-0.002	-0.927	0.028	1.506	18.0%	0.208
FBF15	-0.194	-7.717 ***	0.353	11.168	71.5%	-0.207	-8.416 ***	0.344	11.394	0.008	1.555	0.083	1.601	72.7%	0.039
FBF16	-0.182	-6.163 ***	0.420	14.439	75.8%	-0.184	-6.300 ***	0.430	14.317	-0.005	-1.032	0.078	1.132	75.9%	0.451
FBF17	-0.055	-1.820 *	0.301	8.681	67.1%	-0.074	-2.769 ***	0.305	10.726	0.002	0.507	0.221	4.889	73.4%	0.000
FBF18	-0.088	-2.593 **	0.330	8.819	70.9%	-0.096	-3.097 ***	0.331	9.338	0.001	0.333	0.096	1.859	71.4%	0.045
FBF19	-0.086	-3.338 ***	0.318	12.627	72.1%	-0.097	-4.296 ***	0.331	16.949	-0.005	-1.418	0.205	4.379	77.2%	0.000
FBF20	-0.210	-3.955 ***	0.241	3.705	36.2%	-0.232	-4.421 ***	0.218	4.022	0.019	1.962	0.108	1.388	41.4%	0.003
FBF21	-0.062	-2.300 **	0.218	7.179	59.2%	-0.070	-2.565 **	0.227	8.189	-0.004	-0.870	0.133	2.765	62.4%	0.022
FBF22	-0.101	-3.941 ***	0.339	9.448	62.7%	-0.117	-4.781 ***	0.341	11.356	0.002	0.324	0.184	2.876	65.4%	0.011
FBF23	0.000	-0.006	0.317	17.649	79.7%	-0.008	-0.396	0.323	18.529	-0.002	-0.841	0.120	2.871	81.4%	0.014
FBF24	-0.035	-1.536	0.250	10.129	70.0%	-0.044	-2.159 **	0.258	12.044	-0.003	-0.887	0.144	3.018	73.6%	0.010
FBF25	-0.003	-0.097	0.263	8.089	59.9%	-0.012	-0.505	0.280	9.394	-0.008	-2.356	0.200	3.555	65.9%	0.001
FBF26	-0.051	-2.286 **	0.294	8.974	76.8%	-0.060	-2.789 ***	0.289	9.367	0.005	1.182	0.072	1.911	77.9%	0.006
FBF27	-0.053	-1.695 *	0.358	11.293	70.9%	-0.065	-2.377 ***	0.365	12.101	-0.001	-0.206	0.162	2.939	72.9%	0.006
FBF28	-0.005	-0.213	0.262	14.622	74.5%	-0.012	-0.623	0.265	15.626	0.000	-0.079	0.096	3.209	75.7%	0.003
FBF29	-0.043	-3.093 ***	0.396	18.356	90.0%	-0.046	-3.503 ***	0.405	23.962	-0.004	-1.063	0.080	2.319	90.6%	0.068
FBF30	-0.086	-3.318 ***	0.253	8.297	56.9%	-0.093	-3.649 ***	0.257	8.466	-0.001	-0.143	0.104	2.089	57.6%	0.111
FBF31	-0.047	-1.894 *	0.371	11.548	80.1%	-0.059	-2.488 **	0.367	12.357	0.005	1.092	0.104	2.581	81.3%	0.000
FBF32	-0.026	-1.129	0.278	13.592	70.6%	-0.036	-1.879 *	0.293	17.533	-0.007	-2.296	0.195	5.428	76.7%	0.000
FBF33	-0.018	-0.681	0.279	8.420	68.6%	-0.026	-1.075	0.296	10.860	-0.008	-2.496	0.183	4.445	73.9%	0.000
FBF34	-0.029	-2.025 **	0.152	8.906	63.6%	-0.033	-2.642 ***	0.158	10.324	-0.003	-1.112	0.085	2.176	66.5%	0.091
FBF35	-0.111	-3.353 ***	0.348	9.919	62.0%	-0.121	-4.326 ***	0.372	11.814	-0.012	-1.936	0.245	2.368	67.7%	0.056
FBF36	-0.058	-2.009 **	0.039	2.466	3.5%	-0.067	-2.601 **	0.047	3.079	-0.003	-0.996	0.139	4.068	12.0%	0.000
FBF37	-0.047	-1.872 *	0.261	7.589	63.4%	-0.060	-2.929 ***	0.272	8.762	-0.003	-0.996	0.208	3.727	70.0%	0.001
FBF38	-0.053	-2.661 **	0.266	10.406	67.1%	-0.059	-3.491 ***	0.278	12.045	-0.005	-1.484	0.140	2.552	69.9%	0.038
FBF39	-0.032	-1.144	0.376	11.649	65.8%	-0.046	-1.706 *	0.381	12.656	0.000	-0.006	0.176	3.226	67.6%	0.001
FBF40	-0.093	-2.835 ***	0.354	9.323	71.2%	-0.104	-3.351 ***	0.359	10.132	-0.001	-0.148	0.151	2.991	72.9%	0.003
FBF41	-0.046	-2.046 **	0.235	11.777	61.6%	-0.054	-2.465 **	0.244	13.181	-0.003	-0.726	0.139	2.700	64.6%	0.026
FBF42	-0.081	-5.911 ***	0.280	16.270	84.6%	-0.083	-6.830 ***	0.287	19.914	-0.004	-1.276	0.073	2.795	85.5%	0.018
FBF43	-0.082	-3.668 ***	0.360	14.740	78.1%	-0.091	-4.683 ***	0.369	17.700	-0.003	-0.967	0.151	3.503	80.1%	0.002
FBF44	-0.064	-9.920 ***	0.012	2.205	4.7%	-0.067	-12.476 ***	0.014	2.992	-0.001	-1.026	0.047	2.799	20.4%	0.015
FBF45	-0.045	-1.571	0.219	6.593	54.6%	-0.055	-2.281 **	0.236	8.565	-0.008	-2.879	0.205	3.721	63.1%	0.000
FBF46	-0.082	-4.416 ***	0.410	19.257	85.7%	-0.085	-4.785 ***	0.419	21.195	-0.004	-1.384	0.084	2.079	86.1%	0.065
FBF47	-0.036	-1.418	0.230	6.830	59.6%	-0.044	-1.802 *	0.236	7.344	-0.002	-0.569	0.123	2.564	61.8%	0.030
FBF48	-0.044	-1.514	0.254	6.933	65.1%	-0.055	-2.078 **	0.265	8.720	-0.004	-1.737	0.182	4.194	70.6%	0.000
FBF49	-0.083	-5.604 ***	0.301	21.717	85.5%	-0.086	-6.035 ***	0.309	24.197	-0.004	-1.402	0.075	3.566	86.3%	0.001
FBF50	-0.023	-0.454	0.224	4.460	28.8%	-0.034	-0.681	0.244	5.203	-0.009	-1.332	0.244	2.332	34.0%	0.056
FBF51	-0.042	-1.412	0.259	10.729	59.6%	-0.054	-2.043 **	0.272	15.208	-0.005	-1.368	0.206	3.979	65.8%	0.000
FBF52	-0.043	-1.581	0.256	10.500	63.3%	-0.054	-2.208 **	0.267	14.433	-0.004	-1.421	0.178	3.812	68.2%	0.000
FBF53	-0.076	-4.313 ***	0.324	17.177	80.9%	-0.080	-4.761 ***	0.332	20.104	-0.004	-1.176	0.089	3.088	81.6%	0.008
FBF54	-0.060	-3.300 ***	0.246	11.724	74.9%	-0.064	-3.900 ***	0.251	12.666	-0.002	-0.722	0.082	2.007	75.8%	0.109
FBF55	-0.029	-1.451	0.223	8.765	64.0%	-0.034	-1.710 *	0.223	8.310	0.002	0.346	0.047	1.506	63.7%	0.297
FBF56	-0.110	-16.833 ***	0.008	1.592	3.0%	-0.113	-19.996 ***	0.010	2.158	-0.001	-0.727	0.039	3.306	19.8%	0.003
FBF57	-0.055	-2.255 **	0.386	11.495	78.1%	-0.067	-3.088 ***	0.395	12.509	-0.002	-0.449	0.185	4.737	80.9%	0.000
FBF58	-0.100	-3.051 ***	0.264	5.940	58.5%	-0.108	-3.461 ***	0.268	6.239	0.000	-0.083	0.105	1.611	59.2%	0.273
FBF59	-0.062	-2.987 ***	0.297	12.775	81.3%	-0.074	-3.935 ***	0.290	13.652	0.007	1.782	0.094	2.460	83.7%	0.001
FBF60	-0.080	-1.738 *	0.080	1.700	4.6%	-0.092	-1.605	0.084	1.830	0.000	0.066	0.151	1.342	6.0%	0.307
FBF61	-0.084	-1.579	0.388	10.252	41.5%	-0.084	-1.511	0.384	9.965	0.002	0.215	-0.023	-0.231	40.0%	0.969
FBF62	-0.116	-3.815 ***	0.839	19.219	89.8%	-0.124	-3.933 ***	0.846	24.953	-0.003	-0.309	0.120	1.710	89.8%	0.232
FBF63	-0.117	-1.907 *	0.751	10.025	77.4%	-0.131	-1.963 *	0.738	11.454	0.011	0.940	0.070	0.871	77.4%	0.320
FBF64	-0.087	-2.506 **	0.653	18.884	84.5%	-0.099	-2.955 ***	0.667	19.007	-0.006	-0.939	0.214	4.094	85.8%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF65	-0.064	-2.449 **	0.563	15.997	85.2%	-0.070	-2.670 ***	0.581	19.107	-0.009	-1.423	0.157	3.430	86.4%	0.002
FBF66	-0.097	-3.011 ***	0.393	12.123	71.5%	-0.085	-2.804 ***	0.420	12.907	-0.018	-3.177	0.015	0.286	74.1%	0.005
FBF67	-0.131	-3.720 ***	0.514	9.738	80.3%	-0.132	-3.569 ***	0.524	10.454	-0.006	-1.074	0.059	1.285	80.1%	0.283
FBF68	-0.126	-2.454 **	0.788	12.623	88.9%	-0.140	-2.631 **	0.777	13.578	0.010	1.226	0.084	1.608	89.2%	0.087
FBF69	-0.122	-5.148 ***	0.509	16.898	80.1%	-0.134	-5.758 ***	0.503	17.649	0.007	1.196	0.103	1.857	80.6%	0.054
FBF70	-0.145	-3.868 ***	0.836	18.252	85.5%	-0.169	-4.311 ***	0.821	20.574	0.014	1.629	0.169	2.502	86.5%	0.002
FBF71	-0.072	-1.830 *	0.636	11.934	81.7%	-0.076	-2.055 **	0.654	14.414	-0.010	-1.208	0.136	1.504	82.2%	0.303
FBF72	-0.042	-1.535	0.720	19.067	89.3%	-0.052	-2.074 **	0.730	23.730	-0.003	-0.525	0.166	3.040	90.0%	0.004
FBF73	-0.153	-4.234 ***	0.462	11.368	70.0%	-0.166	-4.830 ***	0.476	12.644	-0.005	-1.009	0.219	2.869	72.2%	0.015
FBF74	-0.239	-4.406 ***	0.542	9.251	76.0%	-0.248	-4.395 ***	0.546	9.002	0.000	-0.024	0.117	2.248	76.0%	0.072
FBF75	-0.062	-2.811 ***	0.650	21.921	88.7%	-0.077	-3.742 ***	0.647	29.120	0.005	0.658	0.150	3.545	89.5%	0.000
FBF76	-0.119	-4.302 ***	0.554	22.639	84.6%	-0.132	-5.058 ***	0.557	27.298	0.002	0.321	0.147	3.838	85.4%	0.000
FBF77	-0.118	-4.472 ***	0.540	23.450	85.1%	-0.131	-5.346 ***	0.540	27.161	0.003	0.549	0.152	4.169	86.2%	0.000
FBF78	-0.120	-4.415 ***	0.546	23.655	84.7%	-0.131	-5.093 ***	0.546	27.766	0.003	0.515	0.129	3.579	85.3%	0.001
FBF79	-0.099	-3.332 ***	0.664	14.187	87.3%	-0.099	-3.556 ***	0.681	17.716	-0.010	-1.781	0.096	1.556	87.7%	0.127
FBF80	-0.147	-2.164 **	0.638	8.866	78.0%	-0.166	-2.372 **	0.624	9.338	0.012	1.559	0.142	2.135	79.0%	0.027
FBF81	-0.069	-2.760 ***	0.631	16.464	85.6%	-0.062	-2.571 **	0.649	20.043	-0.012	-1.650	0.032	0.532	85.9%	0.254
FBF82	-0.103	-3.608 ***	0.580	14.180	82.2%	-0.095	-3.469 ***	0.596	16.093	-0.011	-1.408	-0.001	-0.013	82.4%	0.327
FBF83	-0.153	-2.956 ***	0.619	9.538	57.7%	-0.185	-3.409 ***	0.609	11.002	0.013	1.322	0.299	2.748	60.1%	0.002
FBF84	-0.096	-2.835 ***	0.840	16.003	87.5%	-0.100	-3.007 ***	0.848	18.207	-0.004	-0.412	0.085	1.328	87.3%	0.391
FBF85	-0.118	-3.867 ***	0.676	17.897	87.4%	-0.118	-4.010 ***	0.682	20.486	-0.004	-0.457	0.043	0.784	87.2%	0.732
FBF86	-0.140	-2.727 ***	0.846	16.270	87.2%	-0.150	-2.900 ***	0.841	17.374	0.005	0.615	0.085	1.314	87.2%	0.070
FBF87	-0.146	-4.227 ***	0.680	19.694	86.9%	-0.141	-4.145 ***	0.689	20.155	-0.006	-0.717	-0.004	-0.072	86.8%	0.653
FBF88	0.003	0.123	0.770	26.888	90.6%	0.000	-0.014	0.774	29.863	-0.002	-0.254	0.065	1.192	90.5%	0.460
FBF89	0.007	0.213	0.778	16.774	87.9%	0.007	0.201	0.787	20.005	-0.006	-0.663	0.057	0.805	87.8%	0.670
FBF90	-0.011	-0.302	0.439	12.951	75.5%	-0.032	-1.073	0.436	16.843	0.007	1.927	0.220	4.596	79.2%	0.000
FBF91	-0.071	-2.410 **	0.749	21.345	89.3%	-0.066	-2.295 **	0.766	25.911	-0.011	-1.701	0.050	0.761	89.5%	0.234
FBF92	0.023	0.399	0.644	14.407	70.9%	-0.012	-0.230	0.615	10.895	0.025	1.678	0.211	2.266	74.4%	0.050
FBF93	-0.087	-2.132 **	0.669	13.398	78.5%	-0.090	-2.233 **	0.672	13.992	-0.001	-0.186	0.048	0.697	78.0%	0.761
FBF94	-0.098	-3.242 ***	0.619	17.288	85.4%	-0.106	-3.738 ***	0.625	18.542	-0.002	-0.325	0.116	2.601	85.5%	0.020
FBF95	-0.090	-2.934 ***	0.785	21.767	89.8%	-0.097	-3.054 ***	0.791	25.505	-0.002	-0.278	0.109	1.710	89.9%	0.212
FBF96	-0.145	-3.199 ***	0.486	12.349	65.6%	-0.170	-3.640 ***	0.483	13.076	0.007	1.356	0.252	3.775	68.7%	0.000
FBF97	-0.052	-1.614	0.585	17.202	85.3%	-0.060	-2.019 **	0.599	20.960	-0.006	-1.526	0.167	3.028	86.3%	0.005
FBF98	-0.079	-2.268 **	0.590	13.419	76.8%	-0.095	-2.752 ***	0.597	15.236	0.000	-0.079	0.208	2.793	78.0%	0.015
FBF99	-0.073	-2.101 **	0.559	16.636	75.7%	-0.095	-2.609 **	0.560	17.826	0.005	0.703	0.251	4.543	78.3%	0.000
FBF100	-0.018	-0.546	0.641	18.642	81.8%	-0.030	-0.923	0.656	20.906	-0.006	-0.907	0.212	2.883	83.0%	0.016
FBF101	-0.100	-2.885 ***	0.629	13.701	84.9%	-0.096	-2.718 ***	0.637	14.185	-0.005	-0.876	0.006	0.108	84.6%	0.675
FBF102	-0.055	-1.369	0.572	10.934	80.2%	-0.056	-1.456	0.566	10.745	0.004	0.508	-0.013	-0.161	79.8%	0.875
FBF103	-0.064	-1.755 *	0.374	9.825	67.7%	-0.073	-1.983 *	0.383	9.738	-0.003	-0.562	0.143	2.438	68.8%	0.031
FBF104	-0.014	-0.394	0.378	11.030	62.2%	-0.038	-1.308	0.376	12.973	0.007	1.452	0.255	3.882	67.4%	0.000
FBF105	-0.023	-0.545	0.659	13.609	79.0%	-0.048	-1.357	0.656	16.122	0.008	0.911	0.252	3.697	81.1%	0.000
FBF106	-0.084	-3.550 ***	0.797	23.737	91.7%	-0.090	-3.774 ***	0.802	31.745	-0.002	-0.257	0.093	1.732	91.8%	0.144
FBF107	-0.037	-0.753	0.539	11.521	68.7%	-0.066	-1.500	0.509	12.803	0.025	3.038	0.147	2.181	72.5%	0.000
FBF108	-0.063	-2.048 **	0.421	14.979	79.2%	-0.076	-2.713 ***	0.425	16.737	0.001	0.118	0.159	5.361	80.8%	0.000
FBF109	-0.139	-4.919 ***	0.675	26.277	88.5%	-0.142	-4.915 ***	0.682	24.731	-0.004	-0.553	0.066	0.930	88.4%	0.637
FBF110	-0.089	-1.428	0.231	4.064	25.5%	-0.116	-2.066 **	0.203	2.966	0.023	1.630	0.136	1.284	31.6%	0.151
FBF111	-0.065	-1.679 *	0.323	7.587	59.4%	-0.072	-1.951 *	0.336	8.077	-0.006	-0.922	0.158	2.823	61.2%	0.007
FBF112	-0.046	-1.225	0.625	15.796	78.9%	-0.077	-2.397 **	0.613	16.631	0.014	1.415	0.269	4.774	82.4%	0.000
FBF113	-0.052	-1.399	0.633	16.451	80.4%	-0.082	-2.552 **	0.623	17.624	0.013	1.370	0.262	4.790	83.6%	0.000
FBF114	-0.050	-1.319	0.635	16.209	79.3%	-0.082	-2.561 **	0.623	17.524	0.015	1.491	0.278	5.010	83.1%	0.000
FBF115	-0.105	-4.243 ***	0.549	13.953	84.4%	-0.105	-4.390 ***	0.563	17.441	-0.009	-1.338	0.077	1.452	84.6%	0.238
FBF116	-0.105	-2.923 ***	0.877	21.006	88.4%	-0.117	-3.351 ***	0.885	24.750	-0.002	-0.219	0.180	2.498	88.8%	0.017
FBF117	-0.092	-3.250 ***	0.561	16.417	75.3%	-0.098	-3.568 ***	0.563	16.589	0.000	-0.005	0.081	0.918	74.9%	0.649
FBF118	-0.095	-2.985 ***	0.529	13.999	73.8%	-0.109	-2.975 ***	0.528	15.213	0.004	0.497	0.149	2.066	74.4%	0.113
FBF119	-0.133	-3.526 ***	0.746	14.985	83.6%	-0.141	-3.627 ***	0.730	17.361	0.011	1.395	0.001	0.018	83.6%	0.342

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index								
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF120	-0.085	-4.025 ***	0.260	9.656	70.5%	-0.089	-3.868 ***	0.264	9.157	-0.001	-0.275	0.064	1.208	70.5%	0.389
FBF121	-0.147	-1.721 *	0.352	3.302	20.9%	-0.184	-1.845 *	0.357	3.408	0.006	0.521	0.430	2.791	25.5%	0.019
FBF122	-0.056	-1.780 *	0.458	10.789	71.9%	-0.072	-2.459 **	0.463	12.243	0.001	0.191	0.196	3.344	73.8%	0.001
FBF123	-0.099	-3.783 ***	0.778	18.666	89.5%	-0.106	-4.047 ***	0.779	22.666	0.001	0.112	0.092	1.595	89.5%	0.152
FBF124	-0.067	-2.262 **	0.610	18.716	81.0%	-0.075	-2.425 **	0.612	17.514	0.001	0.117	0.097	1.398	80.9%	0.374
FBF125	-0.079	-2.134 **	0.557	11.099	76.5%	-0.093	-2.491 **	0.556	11.999	0.003	0.545	0.147	2.096	77.0%	0.011
FBF126	-0.115	-2.702 ***	0.307	7.116	49.3%	-0.104	-2.356 **	0.325	7.871	-0.013	-1.983	-0.026	-0.397	50.1%	0.137
FBF127	-0.070	-2.847 ***	0.551	22.085	89.1%	-0.078	-3.431 ***	0.551	26.484	0.002	0.424	0.097	2.536	89.4%	0.005
FBF128	-0.053	-1.542	0.531	11.951	73.2%	-0.070	-2.315 **	0.530	14.403	0.005	0.502	0.184	2.953	74.4%	0.001
FBF129	-0.058	-1.446	0.547	19.201	78.5%	-0.082	-2.294 **	0.535	18.560	0.012	1.876	0.192	4.243	81.0%	0.000
FBF130	-0.160	-2.012 **	0.481	5.352	51.8%	-0.181	-1.930 *	0.479	5.318	0.006	0.701	0.209	1.452	52.8%	0.342
FBF131	-0.040	-1.220	0.626	14.228	85.6%	-0.052	-1.841 *	0.644	18.006	-0.008	-1.800	0.239	4.631	87.7%	0.000
FBF132	-0.131	-4.933 ***	0.812	29.917	90.0%	-0.141	-5.341 ***	0.809	31.055	0.004	0.577	0.096	2.758	90.0%	0.011
FBF133	-0.153	-3.755 ***	0.819	18.663	85.8%	-0.162	-3.899 ***	0.823	21.751	-0.001	-0.083	0.126	1.575	85.9%	0.195
FBF134	-0.183	-3.704 ***	0.666	15.278	81.5%	-0.196	-4.038 ***	0.664	15.867	0.004	0.518	0.132	2.894	81.7%	0.002
FBF135	-0.057	-2.665 ***	0.506	19.502	83.3%	-0.072	-3.394 ***	0.502	19.414	0.006	1.122	0.141	4.089	84.5%	0.000
FBF136	0.013	0.327	0.380	6.037	59.7%	0.016	0.380	0.379	5.995	0.000	-0.029	-0.032	-0.418	58.8%	0.916
FBF137	-0.049	-1.594	0.319	10.166	67.9%	-0.071	-2.664 ***	0.306	11.575	0.013	1.967	0.169	5.454	73.8%	0.000
FBF138	-0.003	-0.079	0.620	18.955	85.8%	-0.030	-1.128	0.588	22.940	0.025	4.114	0.113	2.643	89.4%	0.000
FBF139	-0.076	-2.554 **	0.582	18.841	84.2%	-0.084	-2.938 ***	0.594	19.885	-0.005	-0.741	0.156	3.086	85.0%	0.009
FBF140	-0.112	-1.691 *	0.621	10.562	71.0%	-0.125	-1.925 *	0.609	10.269	0.010	0.927	0.074	0.836	70.9%	0.535
FBF141	-0.025	-1.012	0.737	19.826	91.9%	-0.039	-1.607	0.728	20.826	0.008	1.644	0.099	1.888	92.3%	0.023
FBF142	-0.062	-2.206 **	0.608	18.339	84.9%	-0.073	-2.709 ***	0.617	20.497	-0.003	-0.625	0.161	2.725	85.6%	0.024
FBF143	0.155	1.699 *	0.468	6.171	36.9%	0.076	1.097	0.364	7.409	0.080	5.194	0.276	2.660	63.4%	0.000
FBF144	-0.049	-2.502 **	0.915	37.327	94.1%	-0.055	-2.599 **	0.922	42.099	-0.003	-0.926	0.102	1.613	94.2%	0.252
FBF145	-0.061	-1.131	0.783	11.819	77.7%	-0.051	-1.013	0.808	12.103	-0.017	-1.835	0.045	0.313	77.9%	0.175
FBF146	-0.175	-3.048 ***	1.136	15.040	89.2%	-0.171	-3.039 ***	1.139	16.617	-0.002	-0.254	-0.033	-0.269	89.0%	0.904
FBF147	-0.133	-5.645 ***	1.050	35.580	96.4%	-0.146	-7.459 ***	1.030	38.286	0.015	2.732	0.038	0.802	96.8%	0.009
FBF148	-0.017	-0.534	0.809	15.362	87.4%	-0.011	-0.359	0.837	19.062	-0.018	-1.970	0.098	1.229	88.1%	0.099
FBF149	-0.035	-0.819	0.684	17.022	83.4%	-0.052	-1.365	0.674	16.165	0.010	1.114	0.136	2.184	84.1%	0.029
FBF150	-0.039	-1.109	1.251	21.837	91.8%	-0.031	-0.877	1.265	30.091	-0.010	-0.873	-0.005	-0.048	91.8%	0.306
FBF151	-0.019	-0.676	1.028	24.185	92.9%	-0.032	-1.086	1.029	29.561	0.002	0.324	0.148	2.034	93.1%	0.053
FBF152	-0.031	-0.709	0.959	16.649	89.1%	-0.040	-0.878	0.956	18.958	0.004	0.498	0.082	1.286	89.0%	0.125
FBF153	-0.053	-1.664	0.976	18.443	90.2%	-0.057	-1.719 *	0.973	22.721	0.002	0.226	0.029	0.401	89.9%	0.727
FBF154	-0.022	-0.443	0.537	7.838	71.3%	-0.020	-0.422	0.568	9.074	-0.019	-2.331	0.167	2.497	73.3%	0.003
FBF155	-0.069	-0.942	0.677	7.214	58.2%	-0.108	-1.431	0.656	7.574	0.021	1.595	0.311	2.699	61.3%	0.000
FBF156	-0.115	-2.458 **	1.104	13.536	86.6%	-0.104	-2.201 **	1.128	15.190	-0.017	-1.421	0.021	0.238	86.6%	0.312
FBF157	-0.013	-0.422	0.879	18.677	89.8%	-0.020	-0.734	0.896	22.510	-0.008	-0.954	0.171	2.456	90.2%	0.043
FBF158	-0.107	-3.799 ***	0.803	19.323	84.4%	-0.116	-3.400 ***	0.793	17.215	0.008	0.886	0.039	0.472	84.3%	0.639
FBF159	-0.060	-1.791 *	0.882	25.366	91.0%	-0.080	-2.435 **	0.874	30.937	0.009	1.433	0.168	4.139	91.7%	0.000
FBF160	-0.057	-2.274 **	0.791	19.582	90.7%	-0.074	-3.204 ***	0.793	24.293	0.003	0.364	0.194	3.811	91.5%	0.000
FBF161	-0.078	-1.335	1.492	21.983	85.2%	-0.111	-1.883 *	1.443	23.376	0.036	3.175	0.086	0.640	86.1%	0.003
FBF162	-0.052	-1.982 *	0.715	19.163	89.8%	-0.059	-2.220 **	0.725	23.666	-0.005	-0.572	0.136	2.639	90.2%	0.016
FBF163	-0.136	-4.652 **	0.825	25.511	84.6%	-0.162	-5.048 ***	0.813	29.066	0.013	1.434	0.213	2.980	86.0%	0.000
FBF164	-0.111	-1.797 *	0.903	11.872	83.8%	-0.102	-1.676 *	0.916	13.357	-0.010	-1.052	-0.027	-0.255	83.6%	0.284
FBF165	0.032	0.479	0.939	11.915	61.0%	0.036	0.510	0.888	12.726	0.029	2.201	-0.331	-1.803	62.3%	0.064
FBF166	0.035	0.893	1.057	17.360	92.3%	0.036	0.904	1.066	18.139	-0.006	-0.910	0.045	0.690	92.2%	0.591
FBF167	0.015	0.299	0.618	8.735	72.1%	0.004	0.064	0.621	8.497	0.001	0.103	0.147	1.669	72.2%	0.248
FBF168	0.032	0.691	0.643	13.120	73.8%	-0.003	-0.066	0.616	13.147	0.024	2.592	0.222	2.821	77.6%	0.000
FBF169	-0.039	-0.773	0.785	13.550	79.2%	-0.085	-2.076 **	0.726	16.724	0.045	4.374	0.178	2.739	85.6%	0.000
FBF170	-0.068	-1.630	0.887	13.123	85.0%	-0.073	-1.891 *	0.900	15.310	-0.006	-0.579	0.128	1.104	85.0%	0.538
FBF171	-0.159	-2.466 **	0.966	10.627	72.7%	-0.173	-2.511 **	0.953	11.068	0.011	0.681	0.081	0.697	72.3%	0.536
FBF172	-0.057	-1.045	0.408	6.289	62.0%	-0.058	-1.058	0.418	6.603	-0.006	-0.788	0.067	0.889	61.5%	0.571
FBF173	-0.060	-1.416	0.907	13.191	88.7%	-0.057	-1.419	0.915	15.066	-0.005	-0.476	0.016	0.196	88.5%	0.893
FBF174	-0.226	-3.702 ***	0.832	16.729	78.4%	-0.233	-3.433 ***	0.829	16.191	0.003	0.326	0.063	0.637	78.0%	0.810

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF175	-0.039	-1.688 *	1.281	43.301	96.7%	-0.038	-1.688 *	1.270	42.090	0.006	0.857	-0.072	-1.908	96.7%	0.156
FBF176	0.005	0.112	0.829	19.959	86.9%	-0.008	-0.169	0.808	18.132	0.016	1.654	0.017	0.291	87.3%	0.179
FBF177	-0.043	-1.186	1.247	22.093	90.9%	-0.040	-1.083	1.254	29.381	-0.005	-0.357	0.009	0.090	90.7%	0.907
FBF178	-0.196	-3.443 ***	0.972	11.022	76.5%	-0.212	-3.276 ***	0.967	12.122	0.007	0.473	0.149	1.529	76.4%	0.229
FBF179	-0.145	-4.286 ***	1.107	21.413	90.2%	-0.147	-4.286 ***	1.105	25.078	0.002	0.147	0.015	0.183	90.0%	0.943
FBF180	-0.158	-3.253 ***	0.799	14.512	79.0%	-0.189	-3.858 ***	0.768	18.581	0.026	2.501	0.159	1.612	81.1%	0.012
FBF181	-0.206	-1.934 *	0.806	7.750	57.7%	-0.246	-2.219 **	0.769	8.133	0.031	1.680	0.224	1.545	59.6%	0.103
FBF182	-0.110	-2.501 **	1.363	34.035	88.7%	-0.117	-2.514 **	1.344	31.086	0.013	1.124	-0.040	-0.352	88.6%	0.525
FBF183	-0.143	-3.353 ***	0.917	20.061	86.0%	-0.146	-3.471 ***	0.918	22.936	0.000	0.032	0.043	0.492	85.7%	0.820
FBF184	-0.310	-2.894 ***	0.887	7.325	72.5%	-0.313	-2.820 ***	0.886	7.385	0.002	0.115	0.026	0.213	71.8%	0.971
FBF185	-0.029	-0.902	0.832	14.790	87.8%	-0.033	-1.084	0.846	16.808	-0.007	-1.094	0.111	1.605	87.8%	0.272
FBF186	-0.098	-2.718 ***	0.868	18.290	86.8%	-0.108	-3.066 ***	0.876	20.459	-0.002	-0.264	0.157	2.859	87.0%	0.014
FBF187	0.000	-0.003	0.462	4.249	39.2%	-0.003	-0.038	0.433	3.843	0.018	0.911	-0.131	-0.871	39.3%	0.481
FBF188	-0.080	-2.446 **	1.148	24.925	93.1%	-0.085	-2.472 **	1.153	31.926	-0.001	-0.178	0.083	1.170	93.0%	0.383
FBF189	-0.100	-3.180 ***	0.871	26.648	90.7%	-0.104	-3.232 ***	0.876	27.096	-0.002	-0.202	0.070	1.135	90.5%	0.468
FBF190	-0.132	-2.975 ***	0.700	13.430	70.9%	-0.155	-3.465 ***	0.681	14.138	0.016	1.582	0.141	1.332	71.7%	0.107
FBF191	-0.105	-2.183 **	0.387	8.928	41.6%	-0.126	-2.654 ***	0.353	9.251	0.025	2.700	0.048	0.431	44.1%	0.021
FBF192	-0.029	-0.678	0.857	14.570	87.6%	-0.031	-0.743	0.877	17.737	-0.011	-1.240	0.130	2.369	87.9%	0.059
FBF193	-0.066	-2.838 ***	1.245	62.676	97.2%	-0.062	-2.750 ***	1.237	64.965	0.004	0.877	-0.086	-1.916	97.2%	0.149
FBF194	-0.085	-2.532 **	0.741	18.531	81.7%	-0.100	-2.797 ***	0.726	19.657	0.012	1.482	0.083	1.155	82.0%	0.086
FBF195	-0.083	-2.502 **	1.278	29.046	90.0%	-0.090	-2.492 **	1.259	32.938	0.013	1.197	-0.037	-0.391	89.9%	0.475
FBF196	-0.084	-1.935 *	0.885	23.250	83.0%	-0.102	-2.256 **	0.883	26.971	0.005	0.538	0.185	2.235	83.4%	0.043
FBF197	-0.154	-1.515	0.707	8.929	54.4%	-0.234	-2.959 ***	0.627	8.375	0.066	3.164	0.413	3.822	68.7%	0.000
FBF198	-0.132	-3.586 ***	0.825	19.371	81.5%	-0.147	-3.999 ***	0.829	18.561	0.001	0.143	0.181	1.599	81.8%	0.271
FBF199	-0.070	-2.583 **	0.797	22.591	90.0%	-0.067	-2.434 **	0.812	26.830	-0.009	-1.135	0.052	0.794	90.1%	0.505
FBF200	-0.047	-0.589	1.722	18.376	85.1%	-0.057	-0.740	1.695	22.146	0.018	0.804	-0.035	-0.229	84.9%	0.680
FBF201	-0.012	-0.392	0.903	19.886	88.7%	-0.009	-0.297	0.923	24.209	-0.012	-1.260	0.076	1.028	88.9%	0.436
FBF202	-0.013	-0.395	1.197	22.284	91.5%	-0.012	-0.354	1.210	30.869	-0.008	-0.653	0.059	0.603	91.4%	0.796
FBF203	-0.083	-2.350 **	0.755	13.029	82.9%	-0.066	-2.003 **	0.781	15.752	-0.020	-1.793	-0.027	-0.336	83.7%	0.145
FBF204	-0.075	-1.941 *	1.231	22.950	90.8%	-0.071	-1.815 *	1.239	31.660	-0.005	-0.386	0.003	0.038	90.7%	0.881
FBF205	-0.003	-0.116	0.782	16.492	88.9%	-0.009	-0.339	0.794	20.054	-0.005	-0.672	0.130	1.930	89.1%	0.139
FBF206	-0.242	-2.861 ***	1.197	11.494	88.9%	-0.227	-2.760 ***	1.192	12.620	-0.001	-0.062	-0.195	-1.923	89.0%	0.113
FBF207	-0.157	-3.134 ***	0.947	18.230	89.6%	-0.186	-3.660 ***	0.927	18.716	0.018	1.836	0.202	2.235	91.0%	0.042
FBF208	-0.080	-3.263 ***	0.772	24.222	84.8%	-0.102	-3.860 ***	0.760	25.366	0.012	1.769	0.170	2.130	85.8%	0.020
FBF209	-0.072	-2.058 **	0.992	17.961	89.9%	-0.080	-2.211 **	0.987	19.648	0.005	0.467	0.061	0.945	89.7%	0.395
FBF210	-0.123	-2.265 **	1.369	20.800	87.4%	-0.126	-2.322 **	1.400	23.618	-0.018	-1.046	0.200	1.384	87.6%	0.384
FBF211	-0.126	-3.609 ***	0.609	13.821	75.0%	-0.127	-3.477 ***	0.624	15.499	-0.009	-1.148	0.098	1.083	75.0%	0.327
FBF212	-0.091	-1.910 *	0.549	8.837	72.1%	-0.106	-2.325 **	0.559	9.193	-0.003	-0.353	0.226	2.153	73.6%	0.094
FBF213	-0.020	-0.568	1.266	22.071	92.0%	-0.017	-0.472	1.275	31.058	-0.006	-0.497	0.017	0.172	91.9%	0.831
FBF214	-0.102	-2.396 **	1.055	20.774	90.3%	-0.097	-2.259 **	1.071	21.547	-0.010	-0.836	0.040	0.581	90.3%	0.701
FBF215	-0.058	-1.790 *	0.943	24.265	90.7%	-0.063	-1.969 *	0.955	30.331	-0.006	-0.607	0.129	1.957	90.8%	0.120
FBF216	-0.037	-1.052	0.496	10.247	74.7%	-0.043	-1.211	0.505	10.574	-0.004	-0.564	0.114	1.302	74.8%	0.378
FBF217	-0.108	-1.791 *	1.079	14.518	86.1%	-0.141	-2.307 **	1.066	15.779	0.015	1.214	0.280	3.353	87.4%	0.002
FBF218	-0.052	-1.509	0.714	16.415	86.7%	-0.043	-1.213	0.727	18.786	-0.009	-1.119	-0.024	-0.332	86.7%	0.423
FBF219	-0.073	-1.980 *	0.700	17.748	80.1%	-0.085	-2.223 **	0.710	18.199	-0.003	-0.412	0.191	1.905	80.7%	0.150
FBF220	-0.097	-3.525 ***	0.751	16.200	88.0%	-0.100	-3.873 ***	0.759	19.905	-0.004	-0.466	0.087	1.087	88.0%	0.545
FBF221	-0.085	-2.747 ***	0.829	21.289	90.2%	-0.097	-3.317 ***	0.836	27.999	-0.001	-0.188	0.167	2.357	90.7%	0.047
FBF222	-0.037	-1.092	1.292	24.403	92.3%	-0.036	-1.042	1.295	33.640	-0.002	-0.184	0.005	0.046	92.1%	0.973
FBF223	-0.125	-2.514 **	1.038	19.228	88.6%	-0.126	-2.558 **	1.040	19.536	-0.001	-0.090	0.022	0.333	88.3%	0.943
FBF224	-0.114	-3.970 ***	0.568	16.996	75.7%	-0.123	-4.135 ***	0.570	15.780	0.001	0.087	0.105	1.247	75.5%	0.434
FBF225	-0.011	-0.316	0.756	23.536	88.7%	-0.034	-1.155	0.732	29.487	0.020	3.153	0.120	2.330	90.3%	0.000
FBF226	-0.124	-3.887 ***	0.922	26.029	90.4%	-0.134	-4.153 ***	0.924	27.301	0.001	0.140	0.124	2.029	90.5%	0.043
FBF227	-0.057	-1.419	0.827	23.115	86.8%	-0.068	-1.802 *	0.825	24.051	0.004	0.429	0.113	1.744	86.8%	0.078
FBF228	-0.189	-3.295 ***	0.817	13.758	76.0%	-0.200	-2.998 ***	0.791	12.528	0.018	1.137	-0.029	-0.216	76.1%	0.491
FBF229	-0.040	-0.430	0.404	6.463	29.1%	-0.083	-1.181	0.338	4.785	0.049	2.521	0.092	0.743	37.5%	0.021

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF230	-0.070	-0.946	0.931	9.117	73.4%	-0.071	-0.933	0.933	8.578	-0.001	-0.048	0.031	0.226	72.7%	0.973
FBF231	-0.185	-2.667 ***	1.226	14.718	93.2%	-0.185	-2.855 ***	1.207	16.174	0.011	1.197	-0.115	-1.053	93.3%	0.405
FBF232	-0.050	-0.835	0.809	12.392	74.7%	-0.110	-2.199 **	0.748	15.450	0.050	4.696	0.301	3.258	83.1%	0.000
FBF233	-0.043	-1.158	0.866	16.556	86.7%	-0.043	-1.088	0.884	20.324	-0.011	-1.138	0.096	1.225	86.8%	0.368
FBF234	-0.068	-2.052 **	0.898	15.934	89.6%	-0.073	-2.199 **	0.902	19.024	-0.002	-0.191	0.084	1.148	89.4%	0.436
FBF235	-0.030	-1.178	0.853	25.974	91.9%	-0.033	-1.368	0.867	32.475	-0.007	-1.009	0.113	1.830	92.0%	0.185
FBF236	-0.191	-3.113 ***	0.802	11.793	71.1%	-0.230	-3.464 ***	0.781	13.154	0.021	1.608	0.312	2.264	73.9%	0.060
FBF237	-0.113	-2.182 **	1.102	20.169	88.0%	-0.104	-1.956 *	1.113	18.310	-0.009	-0.805	-0.029	-0.260	87.8%	0.567
FBF238	0.076	1.279	0.572	5.165	50.9%	0.083	1.277	0.603	5.394	-0.020	-1.084	0.095	0.756	51.1%	0.364
FBF239	-0.058	-1.085	0.373	9.114	44.7%	-0.082	-1.481	0.365	8.995	0.010	1.168	0.219	2.015	47.5%	0.128
FBF240	-0.112	-3.358 ***	0.905	18.414	89.4%	-0.100	-2.839 ***	0.926	23.608	-0.015	-1.731	-0.015	-0.166	89.7%	0.209
FBF241	-0.094	-3.027 ***	0.999	23.734	90.6%	-0.104	-3.365 ***	1.005	26.022	-0.001	-0.091	0.132	1.596	90.6%	0.199
FBF242	-0.006	-0.041	1.035	5.161	56.8%	-0.031	-0.183	1.034	5.190	0.006	0.216	0.265	1.214	56.5%	0.461
FBF243	-0.076	-1.584	0.642	12.693	68.2%	-0.078	-1.599	0.637	12.421	0.003	0.304	-0.009	-0.074	67.4%	0.954
FBF244	-0.142	-2.832 ***	0.397	8.287	46.9%	-0.173	-3.398 ***	0.364	8.241	0.027	2.411	0.150	1.778	52.1%	0.000
FBF245	-0.130	-4.337 ***	0.732	20.432	83.6%	-0.159	-5.110 ***	0.705	18.276	0.023	2.741	0.165	2.757	86.0%	0.002
FBF246	-0.024	-0.703	0.841	17.979	89.5%	-0.030	-0.868	0.841	18.759	0.001	0.192	0.067	0.933	89.3%	0.571
FBF247	-0.111	-2.002 **	0.782	11.830	66.1%	-0.136	-2.380 **	0.748	10.458	0.026	2.823	0.076	0.553	67.1%	0.017
FBF248	-0.099	-3.314 ***	0.983	23.380	92.3%	-0.125	-4.377 ***	0.957	26.670	0.021	3.629	0.140	2.097	93.5%	0.000
FBF249	-0.073	-2.959 ***	1.029	28.147	94.7%	-0.081	-3.269 ***	1.027	36.014	0.002	0.318	0.074	1.205	94.7%	0.163
FBF250	-0.113	-3.451 ***	1.209	28.877	92.3%	-0.106	-3.222 ***	1.220	36.148	-0.008	-0.754	-0.012	-0.163	92.2%	0.488
FBF251	-0.047	-0.836	1.009	11.201	85.2%	-0.036	-0.643	1.000	11.148	0.003	0.279	-0.171	-1.874	85.3%	0.169
FBF252	0.039	0.487	0.953	10.776	72.7%	0.008	0.111	0.891	9.629	0.044	3.158	-0.018	-0.115	75.3%	0.002
FBF253	-0.053	-1.607	1.298	26.298	92.7%	-0.050	-1.521	1.300	35.549	-0.002	-0.145	-0.027	-0.355	92.5%	0.816
FBF254	-0.180	-2.946 ***	0.966	12.776	82.4%	-0.187	-2.833 ***	0.956	12.336	0.008	0.897	0.026	0.169	82.1%	0.642
FBF255	-0.072	-2.203 **	1.197	27.571	94.7%	-0.073	-2.198 **	1.206	34.495	-0.005	-0.509	0.068	0.865	94.6%	0.678
FBF256	-0.052	-1.061	0.858	13.653	86.8%	-0.047	-0.938	0.874	16.601	-0.010	-0.973	0.037	0.453	86.7%	0.614
FBF257	0.045	1.055	0.774	13.469	81.5%	0.013	0.332	0.734	14.299	0.031	4.417	0.123	1.993	84.4%	0.000
FBF258	0.025	0.412	0.830	12.604	66.5%	-0.002	-0.042	0.801	11.976	0.024	1.911	0.138	0.938	67.4%	0.021
FBF259	-0.083	-0.703	0.458	5.597	19.4%	-0.154	-1.193	0.447	4.086	0.023	0.913	0.715	2.045	28.7%	0.117
FBF260	-0.095	-1.233	0.498	5.202	35.8%	-0.114	-1.628	0.457	5.205	0.028	2.060	-0.026	-0.107	36.6%	0.120
FBF261	-0.165	-1.422	0.954	12.010	59.0%	-0.194	-1.798 *	0.857	14.945	0.064	4.713	-0.233	-1.134	63.8%	0.000
FBF262	0.031	0.190	0.958	8.157	34.6%	-0.009	-0.056	0.893	8.734	0.048	2.044	0.065	0.156	34.9%	0.026
FBF263	-0.171	-1.862 *	1.058	12.291	76.7%	-0.155	-1.798 *	1.048	13.528	0.002	0.145	-0.237	-2.168	76.8%	0.087
FBF264	-0.185	-2.810 ***	0.650	7.802	65.3%	-0.189	-3.086 ***	0.633	8.446	0.011	1.096	-0.058	-0.331	64.9%	0.546
FBF265	-0.067	-0.533	1.183	9.403	61.2%	-0.169	-1.498	1.077	12.394	0.086	5.240	0.511	2.742	70.5%	0.000
FBF266	-0.082	-1.138	0.904	16.468	68.5%	-0.102	-1.458	0.863	15.290	0.029	2.047	-0.024	-0.154	69.1%	0.072
UK															
UKBF1	-0.066	-1.311	0.959	20.444	85.4%	-0.074	-1.403	0.952	19.388	0.013	0.630	0.049	0.292	85.2%	0.651
UKBF2	-0.200	-3.778 ***	0.720	12.477	80.4%	-0.199	-3.534 ***	0.710	12.641	0.008	0.384	-0.042	-0.339	80.0%	0.884
UKBF3	-0.235	-3.233 ***	0.433	8.185	52.4%	-0.233	-3.210 ***	0.398	7.236	0.030	1.553	-0.122	-0.654	52.8%	0.250
UKBF4	-0.151	-4.083 ***	1.023	20.730	87.4%	-0.152	-3.822 ***	1.008	20.439	0.014	0.800	-0.038	-0.241	87.1%	0.714
UKBF5	-0.066	-0.576	1.324	11.841	71.7%	-0.115	-0.973	1.322	10.560	0.048	1.009	0.450	1.502	72.6%	0.189
UKBF6	-0.022	-0.181	1.354	10.279	70.0%	-0.084	-0.667	1.364	9.497	0.050	1.055	0.596	1.709	71.6%	0.158
UKBF7	-0.146	-5.069 ***	1.033	20.986	92.6%	-0.150	-5.063 ***	1.025	23.660	0.011	0.703	0.013	0.121	92.5%	0.751
UKBF8	-0.137	-2.971 ***	1.026	20.527	89.2%	-0.150	-2.920 ***	1.017	19.625	0.021	1.031	0.099	0.570	89.3%	0.393
UKBF9	-0.370	-4.535 ***	1.080	10.726	82.3%	-0.358	-4.516 ***	1.048	11.422	0.018	1.045	-0.198	-0.911	82.2%	0.481
UKBF10	-0.319	-3.825 ***	1.080	10.676	79.7%	-0.316	-3.774 ***	1.058	11.677	0.016	0.721	-0.093	-0.363	79.4%	0.770
UKBF11	-0.224	-5.385 ***	1.211	23.059	89.7%	-0.233	-5.613 ***	1.182	22.633	0.035	2.486	-0.003	-0.022	89.9%	0.039
UKBF12	-0.114	-1.022	0.709	6.596	44.1%	-0.099	-0.898	0.606	5.517	0.078	1.694	-0.427	-1.720	46.7%	0.132
UKBF13	-0.173	-3.029 ***	1.062	15.508	86.6%	-0.180	-3.118 ***	1.069	16.662	0.002	0.086	0.089	0.467	86.3%	0.889
UKBF14	-0.214	-3.846 ***	1.045	16.738	84.0%	-0.229	-3.885 ***	1.018	18.861	0.039	2.027	0.055	0.311	84.3%	0.128
UKBF15	-0.106	-2.016 **	1.200	19.598	89.4%	-0.125	-2.482 **	1.205	20.700	0.014	0.846	0.193	1.214	89.5%	0.104
UKBF16	-0.201	-3.873 ***	1.197	20.054	90.5%	-0.220	-4.437 ***	1.200	21.349	0.016	1.000	0.183	1.273	90.6%	0.063
UKBF17	-0.226	-5.032 ***	0.983	18.210	89.8%	-0.237	-5.128 ***	0.982	19.459	0.011	0.789	0.092	0.746	89.7%	0.314

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
UKBF18	-0.175	-3.044 ***	0.973	16.601	82.2%	-0.189	-3.332 ***	0.973	17.675	0.013	0.785	0.123	0.897	82.0%	0.239
UKBF19	-0.072	-0.806	1.464	19.695	85.6%	-0.078	-0.837	1.459	21.033	0.010	0.422	0.041	0.203	85.3%	0.870
UKBF20	-0.167	-4.256 ***	1.189	22.347	92.3%	-0.176	-4.560 ***	1.174	25.134	0.022	1.892	0.039	0.254	92.3%	0.093
UKBF21	-0.072	-1.525	1.165	18.603	85.3%	-0.078	-1.853 *	1.120	15.655	0.046	1.561	-0.074	-0.329	85.6%	0.175
UKBF22	-0.205	-5.069 ***	0.786	15.224	86.4%	-0.222	-5.262 ***	0.783	18.131	0.019	1.568	0.143	1.194	86.8%	0.061
UKBF23	-0.166	-1.628	0.676	6.572	45.3%	-0.155	-1.510	0.593	5.360	0.064	1.465	-0.330	-1.521	46.9%	0.216
UKBF24	-0.356	-5.242 ***	1.094	10.795	81.6%	-0.357	-5.137 ***	1.096	10.189	-0.001	-0.030	0.016	0.079	81.2%	0.997
UKBF25	-0.264	-4.298 ***	0.773	10.428	78.9%	-0.271	-4.397 ***	0.776	9.949	0.005	0.284	0.076	0.493	78.5%	0.748
UKBF26	-0.258	-3.926 ***	0.354	4.213	53.4%	-0.268	-3.658 ***	0.358	3.970	0.006	0.293	0.101	0.734	52.8%	0.696
UKBF27	-0.187	-2.556 **	0.849	12.922	65.0%	-0.196	-2.651 ***	0.826	10.877	0.030	1.223	0.023	0.109	64.6%	0.410
UKBF28	-0.055	-1.006	0.956	13.966	83.1%	-0.084	-1.619	0.948	14.574	0.035	1.992	0.240	1.529	84.2%	0.004
UKBF29	0.006	0.073	0.915	11.507	72.9%	-0.005	-0.055	0.927	11.202	0.000	0.001	0.131	0.817	72.4%	0.697
UKBF30	-0.122	-1.454	1.115	10.931	80.5%	-0.136	-1.694 *	1.080	11.769	0.045	2.043	0.028	0.174	80.8%	0.022
UKBF31	-0.344	-2.191 **	0.907	9.021	54.0%	-0.394	-2.708 ***	0.865	8.460	0.087	2.652	0.344	1.466	57.2%	0.001
UKBF32	-0.079	-0.452	0.925	5.982	33.8%	-0.130	-0.905	0.566	5.438	0.374	4.543	-0.555	-1.681	63.9%	0.000
UKBF33	-0.056	-0.207	0.433	2.210	8.3%	-0.204	-1.031	0.198	1.772	0.354	9.030	0.691	2.498	49.2%	0.000
UKBF34	-0.005	-0.018	0.432	2.175	8.4%	-0.157	-0.824	0.206	1.821	0.350	9.327	0.760	2.827	50.2%	0.000
UKBF35	-0.058	-0.468	0.653	6.593	36.3%	-0.104	-0.762	0.677	6.623	0.022	0.465	0.487	2.091	37.3%	0.095
UKBF36	-0.167	-2.213 **	1.033	15.169	80.9%	-0.184	-2.353 **	1.017	15.631	0.031	1.349	0.109	0.653	81.0%	0.131
UKBF37	-0.144	-1.925 *	1.039	14.300	81.1%	-0.171	-2.497 **	0.998	15.581	0.063	3.169	0.129	0.910	82.6%	0.000
UKBF38	-0.087	-1.350	0.869	12.130	75.0%	-0.097	-1.550	0.849	10.677	0.029	0.983	0.042	0.255	74.9%	0.442
UKBF39	-0.171	-0.711	0.577	2.939	16.6%	-0.293	-1.475	0.377	2.593	0.298	3.848	0.556	1.741	46.4%	0.000
UKBF40	0.149	0.645	0.484	2.740	13.9%	0.031	0.161	0.399	2.553	0.190	3.326	0.848	2.658	33.2%	0.000
UKBF41	-0.041	-0.202	0.685	4.964	21.2%	-0.084	-0.402	0.714	4.564	0.015	0.279	0.486	1.167	20.6%	0.494
UKBF42	0.040	0.180	0.520	3.713	15.6%	0.013	0.057	0.427	2.729	0.110	2.274	-0.016	-0.042	17.7%	0.070
UKBF43	-0.015	-0.103	0.440	3.919	19.6%	-0.053	-0.414	0.334	3.029	0.132	3.567	0.050	0.184	28.7%	0.000
UKBF44	0.166	1.132	0.535	6.044	31.5%	0.148	1.006	0.491	5.313	0.058	1.567	0.044	0.218	32.1%	0.198
UKBF45	0.154	0.416	0.606	1.833	5.4%	-0.113	-0.374	0.227	0.880	0.598	4.296	1.374	1.795	48.5%	0.000
Spain															
SBF1	-0.159	-2.263 **	0.852	6.807	74.1%	-0.173	-2.565 **	0.842	7.364	0.005	0.589	0.162	1.276	74.1%	0.010
SBF2	-0.106	-1.418	0.461	4.011	43.1%	-0.110	-1.476	0.443	3.894	0.009	0.595	-0.018	-0.097	42.1%	0.806
SBF3	-0.132	-5.501 ***	0.599	21.474	89.4%	-0.137	-5.713 ***	0.607	22.213	-0.004	-1.143	0.099	1.689	89.5%	0.217
SBF4	-0.145	-6.900 ***	0.525	26.363	90.6%	-0.147	-6.930 ***	0.528	23.271	-0.001	-0.343	0.048	1.214	90.5%	0.458
SBF5	-0.188	-5.039 ***	0.585	19.482	81.7%	-0.192	-4.928 ***	0.581	17.223	0.002	0.254	0.031	0.453	81.3%	0.711
SBF6	-0.106	-3.955 ***	0.395	12.441	80.9%	-0.117	-4.421 ***	0.393	13.381	0.002	0.438	0.134	2.060	82.2%	0.039
SBF7	-0.075	-1.455	0.853	8.594	76.4%	-0.097	-2.059 **	0.850	9.830	0.003	0.270	0.284	1.413	77.4%	0.126
SBF8	-0.069	-1.435	0.551	7.948	67.2%	-0.075	-1.646	0.568	10.029	-0.008	-0.887	0.148	1.482	67.1%	0.333
SBF9	-0.112	-2.975 ***	0.882	16.377	86.4%	-0.125	-3.439 ***	0.871	17.946	0.006	1.080	0.138	1.733	86.6%	0.013
SBF10	-0.153	-5.982 ***	0.553	18.904	87.9%	-0.155	-5.816 ***	0.551	18.847	0.001	0.270	0.028	0.709	87.6%	0.617
SBF11	-0.162	-5.850 ***	0.501	21.534	82.0%	-0.174	-5.881 ***	0.493	20.296	0.004	1.077	0.128	1.916	82.9%	0.080
SBF12	-0.228	-5.510 ***	0.528	14.392	83.0%	-0.233	-5.408 ***	0.533	13.188	-0.002	-0.384	0.087	1.267	82.9%	0.424
SBF13	-0.222	-4.848 ***	0.436	9.695	76.5%	-0.228	-4.975 ***	0.424	10.263	0.006	1.303	0.025	0.302	76.4%	0.247
SBF14	-0.185	-4.186 ***	0.432	11.351	65.4%	-0.198	-4.775 ***	0.417	11.155	0.008	1.466	0.110	1.459	66.3%	0.002
SBF15	-0.152	-9.462 ***	0.269	14.986	79.4%	-0.160	-10.408 ***	0.261	16.795	0.004	1.685	0.070	1.092	80.8%	0.022
SBF16	-0.075	-1.493	0.456	9.843	60.7%	-0.085	-1.699 *	0.475	10.626	-0.009	-1.552	0.204	2.087	61.5%	0.057
SBF17	-0.116	-4.189 ***	0.480	13.585	81.6%	-0.126	-4.440 ***	0.487	12.690	-0.003	-0.573	0.161	2.365	82.5%	0.050
SBF18	-0.126	-4.848 ***	0.509	17.823	86.6%	-0.135	-5.532 ***	0.505	19.104	0.003	0.864	0.115	2.397	87.2%	0.011
SBF19	-0.108	-3.591 ***	0.494	16.215	82.0%	-0.118	-4.078 ***	0.484	16.032	0.005	1.196	0.099	1.446	82.6%	0.100
SBF20	-0.162	-3.273 ***	0.440	10.239	63.2%	-0.168	-3.408 ***	0.423	8.730	0.009	1.112	0.011	0.110	63.0%	0.357
SBF21	-0.187	-6.691 ***	0.435	18.168	80.2%	-0.196	-7.447 ***	0.428	16.340	0.004	0.870	0.092	1.696	80.7%	0.038
SBF22	-0.177	-3.471 ***	0.502	12.317	72.6%	-0.178	-3.327 ***	0.505	12.855	-0.002	-0.262	0.018	0.236	71.9%	0.952
SBF23	-0.153	-4.574 ***	0.532	18.454	84.3%	-0.164	-4.905 ***	0.530	19.942	0.001	0.284	0.151	2.384	85.1%	0.007
SBF24	-0.126	-5.835 ***	0.462	16.119	85.7%	-0.128	-5.567 ***	0.464	16.233	-0.001	-0.168	0.040	0.702	85.5%	0.053
SBF25	-0.169	-7.793 ***	0.609	17.499	92.8%	-0.173	-7.984 ***	0.602	17.482	0.003	0.797	0.037	0.926	92.8%	0.053
SBF26	-0.236	-11.585 ***	0.492	18.786	91.0%	-0.242	-12.431 ***	0.500	21.353	-0.004	-1.873	0.114	2.219	91.5%	0.074

*** Statistically significant 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
SBF27	-0.134	-3.075 ***	0.810	10.991	81.1%	-0.147	-3.549 ***	0.803	12.125	0.004	0.468	0.150	1.044	81.2%	0.188
SBF28	-0.217	-3.815 ***	0.569	22.873	77.8%	-0.218	-3.688 ***	0.574	22.645	-0.002	-0.577	0.035	0.511	77.3%	0.789
SBF29	-0.071	-2.750 ***	0.339	7.155	67.6%	-0.079	-3.250 ***	0.345	7.625	-0.003	-0.612	0.133	2.358	68.3%	0.054
SBF30	-0.170	-4.175 ***	0.105	2.229	13.5%	-0.168	-3.973 ***	0.109	2.304	-0.002	-0.302	-0.003	-0.032	11.5%	0.938
SBF31	-0.133	-1.677 *	0.274	3.400	18.7%	-0.156	-2.131 **	0.277	3.624	0.000	-0.026	0.321	1.936	21.1%	0.074
SBF32	-0.242	-5.901 ***	0.711	15.877	85.3%	-0.252	-6.199 ***	0.691	15.911	0.011	2.783	0.053	0.821	85.6%	0.001
SBF33	-0.187	-5.307 ***	0.376	10.503	71.6%	-0.185	-5.222 ***	0.361	10.572	0.007	1.274	-0.092	-1.536	71.7%	0.249
SBF34	-0.027	-0.863	0.507	12.432	82.5%	-0.035	-1.122	0.500	11.344	0.004	0.789	0.082	1.022	82.6%	0.028
SBF35	-0.214	-4.767 ***	0.434	9.598	70.2%	-0.219	-5.048 ***	0.407	9.099	0.014	2.402	-0.043	-0.502	70.9%	0.007
SBF36	-0.097	-2.201 **	0.462	8.827	66.6%	-0.096	-2.011 **	0.437	7.648	0.012	0.990	-0.114	-0.939	67.0%	0.459
SBF37	-0.170	-5.813 ***	0.351	6.473	65.8%	-0.172	-6.005 ***	0.356	7.500	-0.003	-0.480	0.052	0.663	65.2%	0.797
SBF38	-0.108	-2.221 **	0.511	18.195	74.4%	-0.104	-2.102 **	0.529	17.152	-0.009	-2.393	0.017	0.340	74.3%	0.057
SBF39	-0.175	-4.261 ***	0.563	15.952	82.9%	-0.180	-4.276 ***	0.564	16.807	0.000	-0.057	0.072	0.991	82.7%	0.487
SBF40	-0.089	-2.423 **	0.531	19.936	80.1%	-0.094	-2.497 **	0.529	18.084	0.001	0.204	0.064	0.963	79.9%	0.520
SBF41	-0.285	-6.605 ***	0.530	10.393	72.5%	-0.277	-6.614 ***	0.522	9.220	0.003	0.417	-0.141	-1.420	72.6%	0.364
SBF42	-0.172	-6.440 ***	0.215	7.384	64.5%	-0.176	-6.744 ***	0.210	7.499	0.003	0.933	0.029	0.581	64.2%	0.315
SBF43	-0.042	-0.984	0.490	9.710	75.3%	-0.058	-1.398	0.474	9.566	0.009	0.938	0.147	1.490	77.0%	0.032
SBF44	-0.115	-3.132 ***	0.445	8.963	70.6%	-0.125	-3.792 ***	0.465	10.454	-0.010	-1.930	0.216	2.792	72.4%	0.013
SBF45	-0.215	-4.256 ***	0.592	25.453	82.2%	-0.218	-4.067 ***	0.591	22.843	0.001	0.123	0.028	0.395	81.8%	0.922
SBF46	-0.197	-6.629 ***	0.388	12.733	77.3%	-0.205	-6.846 ***	0.378	10.923	0.006	1.465	0.070	1.852	77.8%	0.033
SBF47	-0.084	-1.604	0.520	9.215	69.0%	-0.121	-2.828 ***	0.447	10.286	0.039	5.204	0.207	2.539	82.4%	0.000
SBF48	-0.100	-4.031 ***	0.616	24.558	95.2%	-0.107	-4.382 ***	0.619	24.723	-0.001	-0.415	0.112	2.710	95.6%	0.012
SBF49	-0.210	-6.960 ***	0.489	12.898	84.9%	-0.211	-7.449 ***	0.474	12.946	0.007	1.304	-0.036	-0.540	84.9%	0.379
SBF50	-0.149	-4.044 ***	0.581	13.341	83.3%	-0.155	-4.216 ***	0.584	14.007	-0.001	-0.307	0.090	1.049	83.1%	0.504
SBF51	-0.142	-4.539 ***	0.515	11.182	80.0%	-0.151	-5.158 ***	0.538	13.575	-0.011	-1.498	0.218	2.711	81.7%	0.021
SBF52	-0.186	-10.010 ***	0.387	19.517	89.7%	-0.188	-9.995 ***	0.386	18.481	0.001	0.205	0.031	0.999	89.6%	0.368
SBF53	-0.176	-2.967 ***	0.789	12.307	83.9%	-0.189	-3.129 ***	0.772	12.284	0.009	1.188	0.099	1.005	84.1%	0.044
SBF54	-0.213	-5.811 ***	0.447	10.090	85.9%	-0.212	-5.984 ***	0.442	10.456	0.002	0.509	-0.028	-0.498	85.6%	0.862
SBF55	-0.216	-5.836 ***	0.419	9.105	78.5%	-0.217	-6.077 ***	0.415	9.969	0.002	0.497	0.000	0.002	78.0%	0.708
SBF56	-0.163	-5.254 ***	0.510	23.495	88.9%	-0.166	-5.099 ***	0.514	22.554	-0.002	-0.715	0.058	1.227	88.8%	0.449
SBF57	-0.146	-6.798 ***	0.288	15.225	80.1%	-0.151	-7.058 ***	0.295	12.778	-0.003	-0.649	0.100	2.606	81.1%	0.007
SBF58	-0.158	-13.747 ***	0.112	10.318	66.6%	-0.161	-13.713 ***	0.112	9.339	0.000	0.128	0.037	1.739	67.0%	0.171
SBF59	-0.152	-5.790 ***	0.435	14.553	84.7%	-0.159	-6.075 ***	0.430	13.365	0.003	0.664	0.075	1.298	85.0%	0.057
SBF60	-0.180	-8.581 ***	0.390	25.453	87.5%	-0.182	-8.060 ***	0.387	22.807	0.002	0.467	0.020	0.457	87.3%	0.688
SBF61	-0.090	-2.679 ***	0.571	18.080	85.5%	-0.098	-2.793 ***	0.563	18.468	0.005	1.143	0.072	1.201	85.6%	0.165
SBF62	-0.145	-3.951 ***	0.509	12.951	86.5%	-0.147	-3.956 ***	0.501	13.757	0.004	1.138	-0.009	-0.185	86.2%	0.463
SBF63	-0.110	-3.603 ***	0.532	17.135	89.7%	-0.111	-3.686 ***	0.522	17.994	0.005	1.719	-0.021	-0.522	89.6%	0.195
SBF64	-0.120	-2.290 **	0.412	7.256	61.2%	-0.143	-3.014 ***	0.402	7.381	0.006	0.951	0.268	2.504	65.8%	0.000
SBF65	-0.043	-0.843	0.373	6.265	59.2%	-0.062	-1.306	0.366	6.542	0.004	0.715	0.230	2.525	62.8%	0.002
SBF66	-0.120	-4.663 ***	0.380	8.523	74.0%	-0.126	-5.008 ***	0.388	9.289	-0.004	-0.748	0.113	1.968	74.3%	0.140
SBF67	-0.168	-4.658 ***	0.306	6.143	59.8%	-0.170	-4.603 ***	0.314	7.040	-0.004	-0.803	0.053	0.957	59.1%	0.608
SBF68	-0.357	-3.885 ***	0.252	2.472	4.5%	-0.375	-4.253 ***	0.232	2.208	0.011	0.751	0.171	0.728	3.0%	0.333
SBF69	-0.204	-3.546 ***	0.631	10.242	82.2%	-0.217	-3.742 ***	0.629	9.917	0.002	0.185	0.168	1.745	82.8%	0.084
SBF70	-0.150	-2.528 **	0.437	6.688	58.2%	-0.153	-2.453 **	0.470	7.405	-0.017	-1.373	0.174	1.721	59.5%	0.085
SBF71	-0.256	-3.096 ***	0.454	6.372	50.1%	-0.264	-3.011 ***	0.480	7.058	-0.013	-1.043	0.202	1.830	50.6%	0.086
SBF72	-0.095	-2.214 **	0.287	7.491	63.0%	-0.104	-2.461 **	0.282	8.108	0.003	0.626	0.105	1.574	64.1%	0.206
SBF73	-0.261	-5.276 ***	0.289	5.725	40.8%	-0.267	-5.218 ***	0.293	5.593	-0.002	-0.318	0.098	1.117	40.0%	0.532
SBF74	-0.121	-5.805 ***	0.155	8.780	61.3%	-0.127	-6.370 ***	0.154	8.603	0.001	0.262	0.075	1.745	63.0%	0.039
SBF75	-0.181	-11.967 ***	0.110	5.842	54.8%	-0.182	-11.346 ***	0.111	5.455	0.000	-0.098	0.017	0.480	53.8%	0.891
SBF76	-0.123	-8.109 ***	0.107	5.783	53.3%	-0.124	-7.797 ***	0.111	5.538	-0.002	-0.649	0.031	0.942	52.9%	0.585
SBF77	-0.184	-12.095 ***	0.107	5.852	53.5%	-0.184	-11.363 ***	0.108	5.418	0.000	-0.100	0.011	0.323	52.4%	0.949
SBF78	-0.151	-11.020 ***	0.111	6.542	55.4%	-0.151	-10.240 ***	0.116	6.160	-0.002	-0.714	0.018	0.579	54.9%	0.731
SBF79	-0.089	-3.758 ***	0.129	4.412	44.1%	-0.085	-3.370 ***	0.135	4.306	-0.003	-0.557	-0.029	-0.634	44.0%	0.575
SBF80	-0.200	-4.705 ***	0.198	3.477	49.5%	-0.199	-4.745 ***	0.194	3.754	0.002	0.501	-0.031	-0.479	48.5%	0.856

*** Statistically significant 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
SBF81	-0.210	-15.673 ***	0.102	5.894	52.3%	-0.211	-14.586 ***	0.102	5.354	0.000	-0.027	0.006	0.199	51.1%	0.980
SBF82	-0.060	-3.181 ***	0.122	5.216	47.8%	-0.059	-2.821 ***	0.131	4.920	-0.005	-0.834	0.018	0.443	47.9%	0.698
SBF83	-0.213	-14.505 ***	0.093	5.186	46.1%	-0.213	-13.483 ***	0.093	4.792	0.000	-0.104	0.007	0.211	44.8%	0.977
SBF84	-0.212	-15.430 ***	0.103	5.927	53.3%	-0.212	-14.532 ***	0.104	5.416	0.000	-0.020	0.007	0.225	52.2%	0.974
SBF85	-0.187	-8.516 ***	0.403	17.418	88.1%	-0.194	-8.443 ***	0.405	16.573	0.000	-0.106	0.098	2.136	88.7%	0.097
SBF86	-0.185	-4.615 ***	0.482	9.627	75.7%	-0.196	-4.839 ***	0.476	9.050	0.003	0.712	0.132	1.526	76.4%	0.122
SBF87	-0.061	-1.917 *	0.405	9.664	69.4%	-0.075	-2.633 **	0.398	10.081	0.004	0.831	0.165	2.157	71.1%	0.029
SBF88	0.008	0.172	0.377	6.261	63.1%	-0.004	-0.079	0.379	7.265	-0.001	-0.130	0.170	1.844	64.2%	0.091
SBF89	-0.258	-6.666 ***	0.350	6.527	67.6%	-0.248	-6.784 ***	0.344	6.998	0.002	0.507	-0.156	-2.082	68.9%	0.073
SBF90	-0.198	-4.822 ***	0.215	9.129	44.3%	-0.197	-4.374 ***	0.225	8.427	-0.005	-1.127	0.032	0.360	43.4%	0.521
SBF91	-0.256	-6.167 ***	0.454	11.065	84.2%	-0.261	-6.344 ***	0.456	11.100	-0.001	-0.191	0.081	1.477	84.3%	0.151
SBF92	-0.253	-6.415 ***	0.499	18.127	81.4%	-0.260	-6.277 ***	0.498	17.699	0.000	0.105	0.089	1.437	81.4%	0.308
SBF93	-0.175	-9.039 ***	0.392	19.475	87.7%	-0.179	-8.527 ***	0.393	16.536	-0.001	-0.149	0.062	1.497	87.8%	0.279
SBF94	-0.199	-2.623 **	0.349	5.610	40.8%	-0.210	-2.849 ***	0.322	5.738	0.014	2.220	0.040	0.370	41.3%	0.005
SBF95	-0.108	-3.212 ***	0.595	15.155	85.4%	-0.117	-3.433 ***	0.583	15.047	0.006	1.266	0.063	0.887	85.5%	0.040
SBF96	-0.156	-4.731 ***	0.312	9.754	66.0%	-0.165	-5.334 ***	0.292	9.336	0.011	2.574	0.045	0.799	67.7%	0.005
SBF97	-0.236	-6.814 ***	0.201	4.071	45.9%	-0.233	-6.989 ***	0.182	3.878	0.009	2.661	-0.110	-1.599	47.5%	0.026
SBF98	-0.188	-5.587 ***	0.400	9.353	71.7%	-0.200	-6.087 ***	0.398	9.559	0.002	0.347	0.146	1.989	72.8%	0.021
SBF99	-0.152	-3.916 ***	0.453	16.754	77.5%	-0.155	-3.832 ***	0.446	16.842	0.004	0.576	0.017	0.220	77.2%	0.739
SBF100	-0.261	-3.584 ***	0.355	3.403	42.2%	-0.259	-3.562 ***	0.362	3.621	-0.003	-0.326	-0.006	-0.057	40.9%	0.911
SBF101	-0.214	-10.309 ***	0.137	5.579	53.4%	-0.217	-11.025 ***	0.149	6.731	-0.006	-2.731	0.092	3.107	56.6%	0.001
SBF102	-0.131	-10.452 ***	0.037	2.697	26.3%	-0.131	-10.768 ***	0.032	2.612	0.003	2.143	-0.020	-1.086	27.3%	0.089
SBF103	-0.250	-8.101 ***	0.220	5.365	63.6%	-0.246	-8.281 ***	0.213	5.928	0.003	1.024	-0.077	-1.685	63.8%	0.242
SBF104	-0.082	-3.532 ***	0.436	13.338	87.6%	-0.082	-3.470 ***	0.445	14.440	-0.004	-1.590	0.034	0.793	87.5%	0.282
SBF105	-0.080	-1.216	0.123	1.508	12.0%	-0.077	-1.196	0.119	1.638	0.002	0.276	-0.063	-0.645	10.2%	0.774
SBF106	-0.252	-3.734 ***	0.441	4.614	60.6%	-0.258	-3.917 ***	0.437	5.051	0.003	0.369	0.059	0.521	59.9%	0.423
SBF107	-0.211	-4.340 ***	0.454	7.025	72.1%	-0.221	-4.618 ***	0.451	7.410	0.002	0.395	0.110	1.351	72.3%	0.202
SBF108	-0.210	-6.083 ***	0.505	16.756	81.9%	-0.222	-6.726 ***	0.486	15.279	0.010	2.148	0.088	1.891	83.2%	0.000
SBF109	-0.303	-1.618	0.582	2.723	32.8%	-0.305	-1.553	0.544	2.900	0.019	1.217	-0.127	-0.714	31.9%	0.391
SBF110	-0.206	-9.302 ***	0.202	12.565	69.9%	-0.205	-9.172 ***	0.201	11.187	0.001	0.308	-0.019	-0.875	69.3%	0.669
SBF111	-0.175	-7.653 ***	0.200	5.459	58.9%	-0.176	-8.065 ***	0.197	5.335	0.002	0.560	-0.002	-0.040	58.0%	0.751
SBF112	-0.208	-4.947 ***	0.180	3.412	46.7%	-0.208	-5.277 ***	0.168	3.587	0.006	1.386	-0.049	-0.777	46.6%	0.327
SBF113	-0.214	-4.928 ***	0.178	3.634	46.5%	-0.214	-5.129 ***	0.164	3.797	0.007	1.575	-0.054	-1.057	46.7%	0.280
SBF114	-0.215	-4.981 ***	0.133	2.379	32.6%	-0.213	-5.247 ***	0.121	2.520	0.006	1.386	-0.075	-1.229	33.0%	0.378
SBF115	-0.207	-4.787 ***	0.156	2.822	39.0%	-0.205	-5.141 ***	0.141	2.977	0.008	1.767	-0.094	-1.439	40.4%	0.209
SBF116	-0.134	-14.066 ***	0.086	7.046	68.5%	-0.134	-14.275 ***	0.087	7.500	0.000	-0.450	0.006	0.347	67.8%	0.900
SBF117	-0.503	-3.902 ***	-0.254	-1.632	4.8%	-0.547	-3.688 ***	-0.381	-2.256	0.066	2.057	0.080	0.231	12.8%	0.106
SBF118	-0.164	-10.238 ***	0.059	2.609	21.8%	-0.168	-12.116 ***	0.063	2.910	-0.002	-0.994	0.075	1.730	25.3%	0.212
SBF119	-0.215	-6.666 ***	0.278	15.119	71.0%	-0.219	-6.960 ***	0.260	14.120	0.009	2.999	-0.017	-0.427	72.0%	0.010
SBF120	-0.232	-7.222 ***	0.256	14.021	67.8%	-0.238	-7.727 ***	0.240	12.803	0.008	3.163	0.018	0.388	68.8%	0.001
SBF121	-0.162	-4.642 ***	0.318	10.169	67.7%	-0.168	-4.687 ***	0.299	9.346	0.010	2.189	0.006	0.095	68.5%	0.069
SBF122	-0.248	-6.475 ***	0.229	4.557	55.5%	-0.250	-6.602 ***	0.224	4.426	0.003	0.599	0.013	0.240	54.7%	0.634
SBF123	-0.174	-3.643 ***	0.492	8.446	78.5%	-0.187	-4.122 ***	0.490	9.542	0.002	0.403	0.164	1.769	79.6%	0.024
SBF124	-0.185	-7.086 ***	0.338	14.225	83.8%	-0.189	-7.574 ***	0.329	14.130	0.005	1.801	0.017	0.353	84.0%	0.030
SBF125	-0.240	-7.104 ***	0.207	4.216	58.8%	-0.237	-7.424 ***	0.205	4.693	0.001	0.295	-0.057	-0.943	58.4%	0.397
SBF126	-0.170	-4.289 ***	0.172	3.506	43.7%	-0.167	-4.770 ***	0.157	3.826	0.008	1.928	-0.106	-1.123	45.5%	0.079
SBF127	-0.179	-11.999 ***	0.172	10.179	64.2%	-0.183	-13.367 ***	0.174	9.716	-0.001	-0.250	0.053	1.511	64.3%	0.252
SBF128	-0.162	-6.963 ***	0.112	3.653	38.6%	-0.160	-7.101 ***	0.111	3.857	0.001	0.203	-0.034	-0.717	37.5%	0.767
SBF129	-0.232	-8.318 ***	0.214	5.675	63.8%	-0.229	-8.588 ***	0.207	6.288	0.003	1.120	-0.071	-1.482	63.9%	0.332
SBF130	-0.062	-5.619 ***	0.011	2.086	1.0%	-0.064	-5.185 ***	0.011	1.608	0.000	0.287	0.018	0.967	-0.3%	0.624
SBF131	-0.233	-7.005 ***	0.239	5.398	65.3%	-0.229	-7.276 ***	0.232	6.112	0.003	1.013	-0.082	-1.488	65.5%	0.328
SBF132	-0.131	-6.271 ***	0.194	6.073	56.4%	-0.131	-6.175 ***	0.187	6.615	0.004	0.942	-0.028	-0.596	55.7%	0.637
SBF133	-0.157	-8.463 ***	0.244	8.414	73.0%	-0.160	-8.846 ***	0.241	9.045	0.001	0.562	0.044	0.917	72.9%	0.199
SBF134	-0.056	-1.851 *	0.382	11.703	75.2%	-0.067	-2.450 **	0.382	13.461	0.001	0.190	0.148	2.506	76.5%	0.013
SBF135	-0.197	-6.543 ***	0.448	12.776	86.5%	-0.198	-7.000 ***	0.438	12.870	0.005	1.409	-0.019	-0.359	86.4%	0.297

*** Statistically significant 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
SBF136	-0.189	-4.924 ***	0.327	8.207	67.2%	-0.184	-4.991 ***	0.312	8.264	0.007	1.851	-0.126	-2.175	68.0%	0.039
SBF137	-0.272	-5.139 ***	0.335	5.350	61.8%	-0.266	-5.056 ***	0.328	5.849	0.003	0.703	-0.111	-2.207	61.8%	0.079
SBF138	-0.213	-8.747 ***	0.191	6.597	61.3%	-0.212	-8.752 ***	0.185	7.026	0.003	0.945	-0.042	-0.933	60.9%	0.533
SBF139	-0.169	-5.174 ***	0.327	12.611	77.5%	-0.174	-5.355 ***	0.330	13.523	-0.002	-0.678	0.071	1.600	77.4%	0.275
SBF140	-0.197	-6.105 ***	0.408	12.132	83.5%	-0.205	-6.608 ***	0.401	11.844	0.004	0.933	0.070	1.354	83.9%	0.010
SBF141	-0.204	-5.997 ***	0.345	9.843	79.8%	-0.210	-6.352 ***	0.332	9.998	0.007	1.811	0.030	0.682	80.4%	0.001
SBF142	-0.234	-3.510 ***	0.372	10.013	49.7%	-0.251	-3.576 ***	0.368	9.898	0.002	0.498	0.214	1.809	51.6%	0.150
SBF143	-0.236	-8.751 ***	0.220	6.348	67.6%	-0.233	-8.965 ***	0.213	6.985	0.003	1.171	-0.068	-1.484	67.8%	0.317
SBF144	-0.026	-0.773	0.046	2.175	2.0%	-0.035	-1.071	0.006	0.345	0.020	4.564	-0.049	-0.909	13.2%	0.000
SBF145	-0.042	-1.822 *	0.143	4.457	37.7%	-0.050	-2.364 **	0.119	3.587	0.013	4.964	0.010	0.209	43.7%	0.000
SBF146	-0.165	-3.816 ***	0.317	5.762	58.8%	-0.184	-5.027 ***	0.324	6.754	-0.003	-0.522	0.288	3.749	65.4%	0.000
SBF147	-0.206	-8.210 ***	0.199	7.371	65.5%	-0.204	-8.066 ***	0.195	7.900	0.002	0.736	-0.048	-1.312	65.2%	0.393
SBF148	-0.212	-9.307 ***	0.190	6.599	59.8%	-0.207	-8.858 ***	0.190	6.719	0.000	-0.070	-0.059	-1.217	59.8%	0.361
SBF149	-0.187	-19.848 ***	0.000	-0.062	-1.2%	-0.194	-22.627 ***	-0.013	-1.851	0.007	2.581	0.039	2.085	33.4%	0.005
SBF150	-0.130	-13.598 ***	0.049	5.753	32.0%	-0.134	-14.774 ***	0.051	5.449	-0.001	-0.936	0.063	2.473	38.7%	0.047
SBF151	-0.404	-3.573 ***	0.490	2.586	33.8%	-0.378	-3.878 ***	0.444	2.903	0.022	1.499	-0.530	-1.833	38.1%	0.186
SBF152	-0.199	-16.857 ***	0.043	4.613	30.6%	-0.202	-16.981 ***	0.045	4.204	-0.001	-0.570	0.045	1.801	34.1%	0.196
SBF153	-0.204	-5.906 ***	0.452	12.396	86.0%	-0.208	-6.290 ***	0.437	12.594	0.008	1.906	-0.012	-0.276	86.2%	0.048
SBF154	-0.410	-2.154 **	0.224	3.200	3.2%	-0.499	-2.681 ***	0.115	2.383	0.058	4.095	0.770	2.079	22.8%	0.000
SBF155	-0.174	-1.814 *	0.053	0.681	-0.8%	-0.268	-3.473 ***	-0.193	-3.021	0.128	4.189	0.278	1.535	59.2%	0.000
SBF156	-0.113	-9.144 ***	0.075	4.453	39.8%	-0.115	-9.911 ***	0.065	4.162	0.005	3.140	-0.011	-0.483	42.7%	0.005
SBF157	-0.245	-4.474 ***	0.355	6.005	65.0%	-0.239	-4.786 ***	0.348	7.195	0.003	0.539	-0.109	-0.896	65.0%	0.657
Italy															
IBF1	-0.165	-5.290 ***	0.265	7.838	66.4%	-0.168	-5.214 ***	0.267	7.645	-0.001	-0.235	0.047	0.970	65.9%	0.618
IBF2	-0.184	-6.986 ***	0.150	4.899	43.7%	-0.186	-6.809 ***	0.149	4.556	0.000	0.026	0.026	0.772	42.5%	0.736
IBF3	-0.141	-3.407 ***	0.205	4.478	52.4%	-0.138	-3.565 ***	0.200	4.830	0.003	0.689	-0.061	-1.066	52.2%	0.545
IBF4	-0.355	-5.043 ***	0.419	5.593	58.3%	-0.350	-5.187 ***	0.400	5.815	0.009	1.376	-0.118	-1.221	58.7%	0.297
IBF5	-0.163	-9.325 ***	0.130	9.223	59.7%	-0.163	-9.469 ***	0.127	8.212	0.002	0.641	-0.008	-0.307	59.0%	0.787
IBF6	-0.158	-3.426 ***	0.270	5.234	55.1%	-0.160	-3.447 ***	0.274	4.944	-0.002	-0.338	0.035	0.693	54.2%	0.739
IBF7	-0.196	-4.040 ***	0.307	5.331	60.0%	-0.197	-4.097 ***	0.312	5.107	-0.002	-0.461	0.023	0.389	59.1%	0.790
IBF8	-0.141	-5.861 ***	0.236	8.794	67.4%	-0.147	-5.998 ***	0.233	7.992	0.001	0.316	0.071	2.170	67.7%	0.049
IBF9	-0.203	-5.092 ***	0.447	15.330	79.0%	-0.209	-5.247 ***	0.429	13.776	0.008	1.672	0.045	0.867	79.4%	0.036
IBF10	-0.225	-3.022 ***	0.761	8.791	79.7%	-0.227	-3.196 ***	0.740	7.905	0.010	1.390	-0.017	-0.163	79.6%	0.341
IBF11	-0.226	-5.790 ***	0.229	5.100	55.3%	-0.230	-5.874 ***	0.221	4.495	0.004	0.855	0.043	1.085	55.0%	0.447
IBF12	-0.230	-3.919 ***	0.399	5.626	63.6%	-0.232	-3.998 ***	0.388	5.102	0.005	0.652	0.009	0.082	63.0%	0.797
IBF13	-0.169	-8.530 ***	0.235	10.870	72.6%	-0.173	-8.588 ***	0.232	9.991	0.002	0.508	0.052	1.820	72.7%	0.131
IBF14	-0.160	-4.259 ***	0.199	3.567	39.6%	-0.159	-4.676 ***	0.201	3.530	-0.001	-0.250	-0.014	-0.144	38.1%	0.954
IBF15	-0.252	-5.736 ***	0.173	3.088	37.3%	-0.245	-6.074 ***	0.167	3.132	0.003	0.823	-0.105	-1.340	38.4%	0.278
IBF16	-0.249	-5.781 ***	0.252	5.271	58.9%	-0.247	-5.914 ***	0.255	5.273	-0.002	-0.469	-0.019	-0.331	58.0%	0.844
IBF17	-0.209	-5.378 ***	0.240	6.594	65.4%	-0.206	-5.589 ***	0.243	6.821	-0.001	-0.311	-0.035	-0.698	64.9%	0.670
IBF18	-0.181	-11.624 ***	0.132	11.085	61.4%	-0.183	-11.284 ***	0.132	10.132	0.000	-0.125	0.031	1.179	61.0%	0.495
IBF19	-0.283	-5.121 ***	0.242	4.542	44.9%	-0.279	-5.248 ***	0.249	4.262	-0.003	-0.567	-0.044	-0.776	44.1%	0.649
IBF20	-0.158	-8.834 ***	0.180	11.802	69.8%	-0.161	-9.061 ***	0.175	10.390	0.002	0.819	0.022	1.138	69.6%	0.396
IBF21	-0.187	-7.779 ***	0.198	7.289	62.2%	-0.188	-7.766 ***	0.196	6.952	0.001	0.469	0.010	0.286	61.3%	0.840
IBF22	-0.255	-3.859 ***	0.710	9.540	75.7%	-0.263	-4.199 ***	0.663	8.902	0.022	3.962	-0.002	-0.022	77.3%	0.000
IBF23	-0.136	-6.259 ***	0.173	5.979	48.6%	-0.144	-6.628 ***	0.165	5.266	0.004	1.162	0.088	2.409	50.5%	0.006
IBF24	-0.225	-4.818 ***	0.210	3.826	42.6%	-0.217	-4.979 ***	0.205	3.809	0.003	0.482	-0.119	-1.256	43.7%	0.334
IBF25	-0.511	-3.042 ***	-0.026	-0.181	-1.1%	-0.484	-3.054 ***	0.033	0.224	-0.028	-1.419	-0.241	-1.303	1.1%	0.124
IBF26	0.057	0.535	0.486	3.582	38.0%	0.068	0.640	0.473	3.456	0.007	1.071	-0.187	-1.178	37.6%	0.186
IBF27	-0.182	-6.107 ***	0.531	14.126	85.0%	-0.182	-5.692 ***	0.529	14.045	0.001	0.383	-0.004	-0.063	84.6%	0.929
IBF28	-0.189	-5.530 ***	0.559	18.856	83.8%	-0.190	-5.459 ***	0.550	18.235	0.004	0.791	-0.015	-0.223	83.5%	0.712
IBF29	-0.209	-3.825 ***	0.760	11.681	83.9%	-0.211	-3.753 ***	0.736	10.565	0.012	1.383	-0.035	-0.393	84.0%	0.178
IBF30	-0.194	-6.818 ***	0.658	18.579	89.1%	-0.194	-6.787 ***	0.652	18.144	0.003	0.692	-0.017	-0.288	88.9%	0.744
IBF31	-0.279	-3.940 ***	0.663	10.614	71.1%	-0.282	-3.984 ***	0.657	11.790	0.003	0.389	0.023	0.130	70.4%	0.694
IBF32	-0.233	-6.231 ***	0.727	20.135	87.4%	-0.231	-6.853 ***	0.699	23.326	0.014	1.956	-0.092	-0.852	88.2%	0.121

*** Statistically significant 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.3 (continued)

	Unconditional single-index					Unconditional multi-index									
	α_p	t-stat	β_p	t-stat	R^2(adj.)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
IBF33	-0.290	-7.469 ***	0.703	18.845	86.6%	-0.291	-8.082 ***	0.699	17.619	0.002	0.270	-0.004	-0.056	86.3%	0.962
IBF34	-0.304	-7.821 ***	0.705	18.945	86.4%	-0.304	-8.472 ***	0.700	17.563	0.002	0.274	-0.014	-0.210	86.1%	0.932
IBF35	-0.179	-6.582 ***	0.531	17.075	83.5%	-0.180	-6.961 ***	0.515	16.411	0.008	1.926	-0.034	-0.794	83.6%	0.142
IBF36	-0.146	-4.255 ***	0.338	6.708	58.0%	-0.153	-4.974 ***	0.312	6.316	0.012	2.367	0.042	0.613	59.5%	0.044
IBF37	-0.230	-5.265 ***	0.608	13.504	88.0%	-0.228	-5.395 ***	0.594	13.666	0.007	1.543	-0.067	-1.880	88.2%	0.076
IBF38	-0.291	-4.611 ***	0.665	8.982	76.6%	-0.282	-4.604 ***	0.669	9.027	-0.002	-0.250	-0.118	-1.503	76.4%	0.233
IBF39	-0.277	-7.302 ***	0.637	20.824	86.9%	-0.278	-7.186 ***	0.646	17.703	-0.004	-0.744	0.030	0.512	86.7%	0.717
IBF40	-0.268	-5.899 ***	0.788	19.026	88.3%	-0.261	-5.847 ***	0.783	19.927	0.003	0.554	-0.103	-2.428	88.3%	0.044
IBF41	-0.165	-7.829 ***	0.401	16.367	85.8%	-0.164	-7.848 ***	0.402	14.954	0.000	-0.150	-0.019	-0.529	85.5%	0.867
IBF42	-0.111	-1.521	0.632	7.268	65.5%	-0.118	-1.631	0.614	6.932	0.008	1.174	0.046	0.483	65.1%	0.326
IBF43	-0.340	-5.149 ***	0.675	8.844	79.9%	-0.335	-5.554 ***	0.649	9.080	0.013	1.880	-0.135	-1.097	80.7%	0.137
IBF44	-0.345	-5.402 ***	0.763	15.399	83.4%	-0.343	-5.290 ***	0.757	16.678	0.003	0.390	-0.043	-0.413	83.1%	0.881
IBF45	-0.254	-11.324 ***	0.655	21.062	91.7%	-0.251	-10.757 ***	0.660	20.809	-0.002	-0.522	-0.030	-0.718	91.6%	0.685
IBF46	-0.239	-8.407 ***	0.575	20.765	84.2%	-0.239	-8.543 ***	0.551	17.297	0.012	2.160	-0.049	-1.287	84.9%	0.057
IBF47	-0.190	-1.987 *	0.663	8.414	53.4%	-0.213	-2.806 ***	0.514	7.175	0.071	4.464	-0.025	-0.188	70.6%	0.000
IBF48	-0.305	-5.402 ***	0.685	9.405	81.0%	-0.301	-5.526 ***	0.686	9.353	-0.001	-0.122	-0.045	-0.393	80.6%	0.925
IBF49	-0.220	-4.377 ***	0.654	10.988	80.5%	-0.209	-4.497 ***	0.652	10.794	0.001	0.196	-0.168	-2.428	81.0%	0.039
IBF50	-0.180	-5.624 ***	0.770	20.933	87.9%	-0.195	-5.918 ***	0.752	15.881	0.009	1.045	0.167	1.787	88.7%	0.187
IBF51	-0.111	-4.011 ***	0.644	16.103	88.3%	-0.116	-4.144 ***	0.636	16.041	0.004	0.978	0.054	0.893	88.2%	0.379
IBF52	-0.248	-3.431 ***	0.768	9.440	72.3%	-0.247	-3.975 ***	0.678	9.096	0.043	5.257	-0.235	-1.897	79.2%	0.000
IBF53	-0.251	-4.716 ***	0.593	10.816	80.7%	-0.247	-4.935 ***	0.602	9.587	-0.004	-0.627	-0.031	-0.486	80.4%	0.740
IBF54	-0.177	-2.680 ***	0.770	11.662	73.7%	-0.203	-3.310 ***	0.707	9.449	0.030	3.772	0.221	2.905	77.7%	0.000
IBF55	-0.234	-2.625 **	0.537	6.667	55.7%	-0.221	-2.489 **	0.564	6.795	-0.013	-1.206	-0.120	-1.080	56.1%	0.270
IBF56	-0.275	-4.647 ***	0.694	12.024	80.7%	-0.276	-4.671 ***	0.685	10.339	0.004	0.545	-0.005	-0.058	80.3%	0.810
IBF57	-0.192	-2.874 ***	0.713	14.859	69.0%	-0.221	-5.040 ***	0.586	15.505	0.061	5.555	0.103	1.579	83.6%	0.000
IBF58	-0.217	-0.966	-0.348	-1.452	5.2%	-0.143	-0.692	-0.286	-1.264	-0.028	-1.134	-0.918	-2.609	12.3%	0.003
Portugal															
PBF1	-0.111	-12.960 ***	0.006	0.830	-0.5%	-0.111	-13.155 ***	0.005	0.681	0.000	0.045	0.019	1.228	-1.1%	0.361
PBF2	-0.158	-8.577 ***	0.105	4.165	27.6%	-0.159	-8.365 ***	0.105	4.101	0.002	0.751	-0.011	-0.486	25.7%	0.750
PBF3	-0.141	-6.894 ***	0.027	2.399	2.6%	-0.143	-7.014 ***	0.024	2.323	0.001	0.398	0.033	1.745	1.6%	0.086
PBF4	-0.174	-11.268 ***	0.090	3.067	21.7%	-0.175	-10.905 ***	0.094	3.363	0.003	1.320	-0.058	-2.259	22.8%	0.074
PBF5	-0.145	-10.482 ***	0.008	0.779	0.1%	-0.146	-10.678 ***	0.005	0.547	0.000	0.246	0.031	2.107	4.0%	0.091
PBF6	-0.111	-6.470 ***	0.016	0.936	0.5%	-0.113	-6.329 ***	0.013	0.771	0.002	0.781	0.025	1.133	0.3%	0.166
PBF7	-0.123	-9.857 ***	0.001	0.085	-1.4%	-0.124	-9.709 ***	-0.001	-0.057	0.001	0.663	0.012	0.860	-2.9%	0.406
PBF8	-0.126	-10.873 ***	0.011	1.272	0.8%	-0.127	-11.024 ***	0.009	0.983	0.001	0.526	0.027	1.924	2.2%	0.124
PBF9	-0.233	-4.999 ***	0.601	8.550	66.4%	-0.231	-4.769 ***	0.614	9.486	0.004	0.521	-0.164	-2.225	66.8%	0.037
PBF10	-0.152	-5.868 ***	-0.005	-0.267	-1.3%	-0.152	-5.483 ***	-0.002	-0.130	0.002	0.806	-0.036	-0.867	-2.2%	0.609
PBF11	-0.105	-12.248 ***	0.028	2.019	5.7%	-0.104	-11.156 ***	0.027	2.038	-0.003	-1.544	0.022	0.781	6.8%	0.278
PBF12	-0.186	-4.182 ***	0.698	11.825	71.6%	-0.193	-4.582 ***	0.705	12.580	0.013	1.676	-0.138	-2.173	72.4%	0.004
PBF13	-0.103	-9.350 ***	0.011	1.138	-0.3%	-0.104	-8.968 ***	0.008	0.872	0.000	-0.065	0.037	1.435	0.2%	0.326
PBF14	-0.073	-5.095 ***	0.001	0.096	-1.4%	-0.074	-5.327 ***	-0.002	-0.187	-0.001	-0.891	0.042	2.983	3.2%	0.011
PBF15	-0.172	-5.959 ***	0.911	15.212	85.3%	-0.164	-4.895 ***	0.919	15.487	-0.008	-0.825	-0.047	-0.697	85.3%	0.117
PBF16	-0.139	-10.692 ***	0.000	0.053	-1.4%	-0.139	-10.442 ***	-0.001	-0.081	0.000	0.061	0.014	0.945	-3.2%	0.633
PBF17	-0.114	-9.521 ***	0.016	1.431	1.8%	-0.115	-9.713 ***	0.013	1.214	0.000	-0.041	0.033	2.064	2.9%	0.087
PBF18	-0.156	-11.838 ***	0.107	7.992	50.6%	-0.159	-12.040 ***	0.103	8.331	0.001	0.682	0.041	2.505	51.9%	0.015
PBF19	-0.090	-3.654 ***	0.113	3.540	34.9%	-0.089	-3.703 ***	0.110	3.594	-0.003	-1.175	0.047	0.994	35.3%	0.454
PBF20	-0.242	-5.576 ***	0.669	10.085	71.6%	-0.243	-5.176 ***	0.683	11.744	0.011	1.290	-0.219	-2.572	73.3%	0.006
PBF21	-0.148	-2.213 **	0.653	8.014	52.2%	-0.160	-2.411 **	0.650	7.987	0.017	1.818	-0.045	-0.373	52.4%	0.134
PBF22	-0.136	-9.603 ***	0.029	2.776	10.8%	-0.138	-9.827 ***	0.026	2.458	0.000	0.349	0.034	1.880	13.5%	0.169

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.4

Spearman's rank correlation coefficient: alternative bond market indices

This table reports the Spearman's Rank Correlation Coefficient between the rankings of bond fund performance according to alternative benchmarks: besides the Salomon Smith Barney WGBI all maturities we also considered the Datastream all lives Government bond index, the JPM Government bond index and the Merrill Lynch all maturities bond index. All the data is from Datastream. This statistic is computed as:

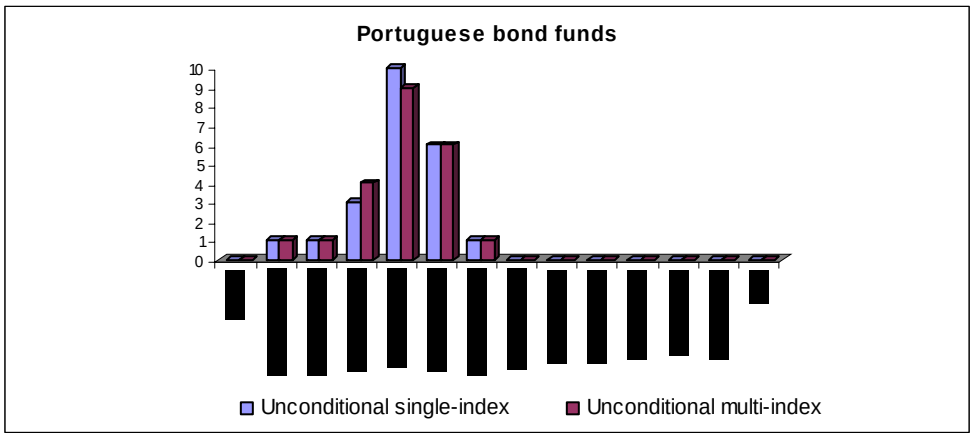
$$\rho = 1 - \frac{6\sum_{i=1}^{n} d_i^2}{n(n^2 - 1)}$$

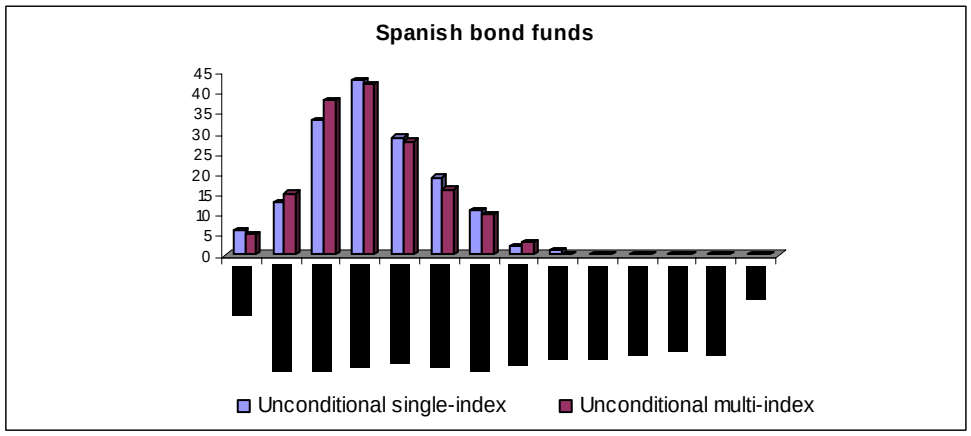
where d_i are the differences of the ranked pairs. The null hypothesis is that the performance rankings are randomly ordered against the two-sided alternative of existence of some correlation. If ρ exceeds the $1 - \alpha/2$ quantile or if ρ is less than the $\alpha/2$ quantile, the null hypothesis will be rejected at the level α.

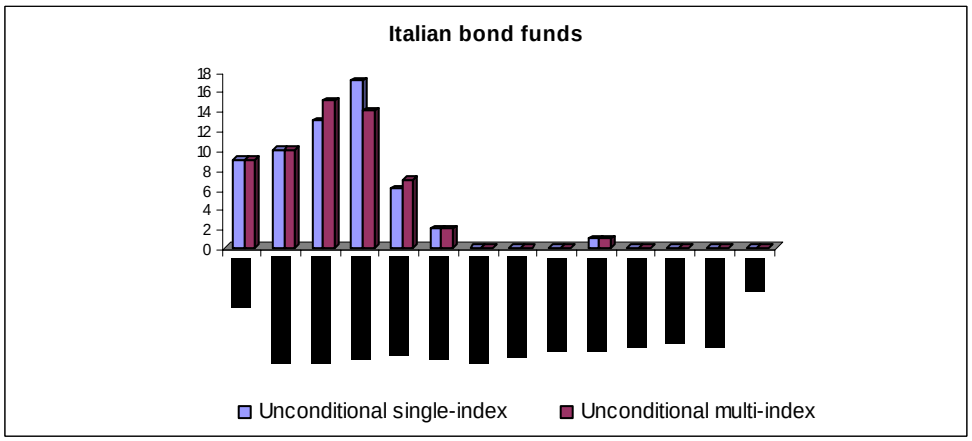
	SBWGBI	ML	Datastream	JPM
Germany				
SBWGBI				
ML	0.997			
Datastream	0.999	0.998		
JPM	0.998	0.998	0.999	
France				
SBWGBI				
ML	0.996			
Datastream	1.000	0.996		
JPM	0.999	0.999	0.998	
UK				
SBWGBI				
ML	0.999			
Datastream	1.000	0.999		
JPM	1.000	0.999	1.000	
Spain				
SBWGBI				
ML	0.991			
Datastream	0.994	0.976		
JPM	1.000	0.990	0.995	
Italy				
SBWGBI				
ML	0.996			
Datastream	0.999	0.992		
JPM	0.997	0.999	0.994	
Portugal				
SBWGBI				
ML	0.903			
Datastream	-----	-----		
JPM	0.992	0.858	-----	

Note: All Spearman's Rank Correlation Coefficients are statistical significant, at the 1% level.

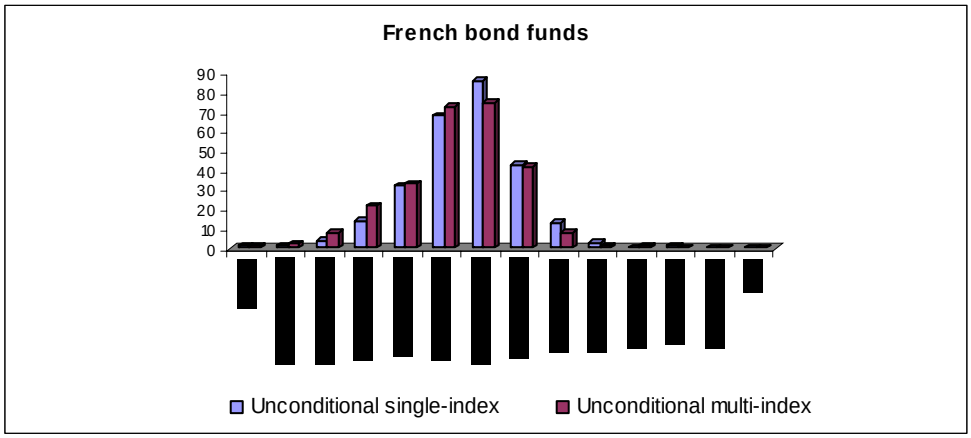
Appendix 5.5
Bond funds alphas: unconditional models

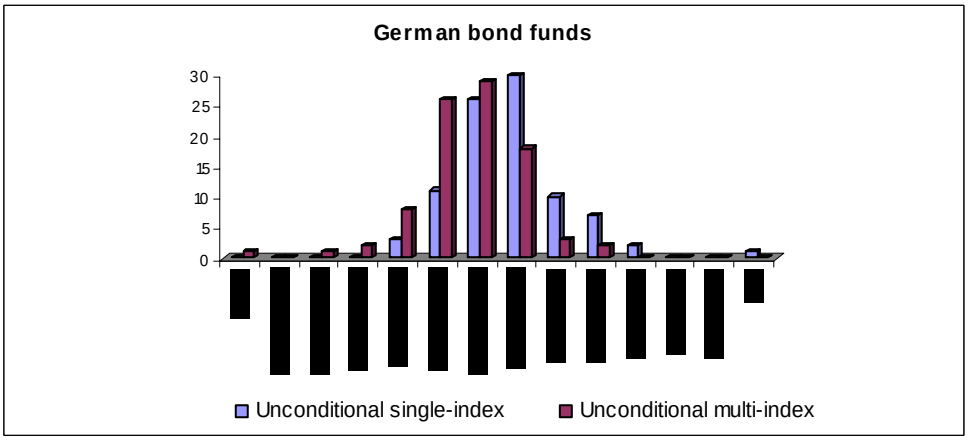


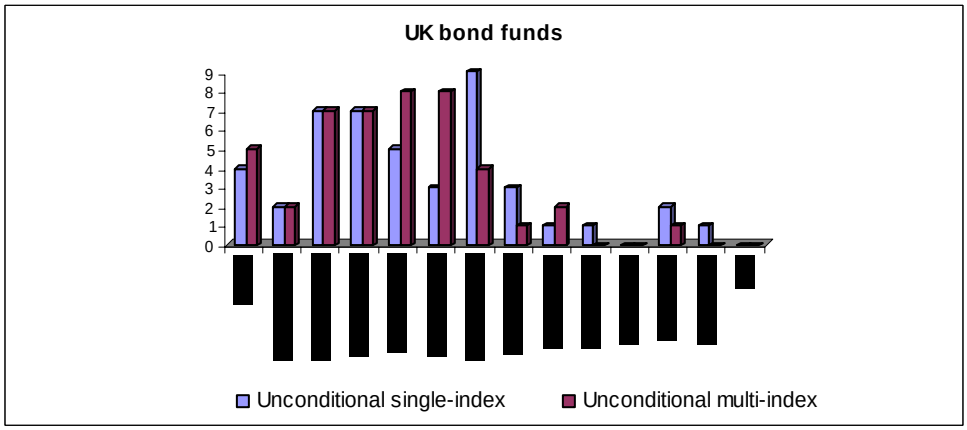




Appendix 5.5 (continued)







Appendix 5.6

Estimates for the conditional single and multiple index models: individual funds

This table shows the results for both the conditional single and multiple index models for each individual fund. Benchmark indices as defined in Appendix 5.3 The predetermined information variables are the term spread (term), the IRW and a dummy variable for the month of January (jd). Term is the difference between the yield on a long-term government bond and a short-term bond rate (or the 3-month interbank offered rate). IRW is the ratio between the exponentially weighted average of past real wealth and current wealth. All these variables are stochastically detrended (by subtracting a 12-month moving average) and mean zero variables. We present the estimates for alpha and for the average conditional beta(s) and also the R^2(adj.) for each of the funds. The statistical significance of the estimates is based on heteroscedasticity and autocorrelation adjusted errors following Newey and West (1987). The W(p-val) is the probability value for the Chi-square statistic of the Wald test for the restriction that the coefficients on the additional variables (the cross products between the factors and the predetermined information variables) are jointly equal to zero.

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
Germany																
GBF1	-0.046	-1.074	0.834	17.935	78.4%	0.960	-0.070	-1.304	0.854	15.385	0.006	0.775	0.153	1.396	77.6%	0.624
GBF2	-0.040	-0.621	0.859	17.754	71.9%	0.060	-0.082	-1.122	0.885	14.115	0.020	2.015	0.190	1.455	73.3%	0.091
GBF3	-0.034	-0.950	0.885	21.477	84.8%	0.211	-0.054	-1.322	0.911	20.680	0.002	0.332	0.095	1.089	85.8%	0.000
GBF4	0.008	0.214	0.832	18.189	80.7%	0.526	-0.014	-0.333	0.852	16.262	0.006	0.777	0.130	1.667	80.4%	0.442
GBF5	-0.045	-1.377	0.798	14.360	80.3%	0.161	-0.062	-1.706 *	0.803	14.247	0.007	0.832	0.070	1.025	79.1%	0.256
GBF6	-0.051	-1.366	0.912	26.350	84.6%	0.032	-0.075	-1.625	0.940	21.004	0.007	1.044	0.147	1.564	84.6%	0.077
GBF7	-0.003	-0.052	0.696	11.685	69.1%	0.000	-0.049	-0.747	0.725	13.462	0.035	3.770	0.200	1.577	74.8%	0.000
GBF8	0.001	0.013	0.837	16.416	77.9%	0.210	-0.048	-0.929	0.883	18.420	0.015	2.110	0.214	2.108	80.2%	0.444
GBF9	-0.062	-1.747 *	0.964	29.186	88.4%	0.090	-0.095	-2.226 **	0.989	26.526	0.009	1.283	0.178	2.151	88.9%	0.000
GBF10	-0.067	-1.076	0.939	17.412	73.1%	0.724	-0.136	-2.104 **	0.972	18.124	0.030	3.742	0.309	2.541	78.6%	0.000
GBF11	-0.053	-1.393	0.855	19.371	84.6%	0.203	-0.069	-1.403	0.867	15.660	0.009	1.286	0.058	0.680	84.0%	0.745
GBF12	0.008	0.191	0.820	15.242	77.7%	0.553	-0.040	-0.772	0.866	18.036	0.015	1.827	0.235	2.075	80.3%	0.593
GBF13	0.038	0.852	0.918	16.488	82.1%	0.559	0.010	0.194	0.942	15.372	0.011	1.262	0.186	2.180	82.3%	0.714
GBF14	-0.137	-4.058 ***	0.999	20.002	88.3%	0.952	-0.157	-4.104 ***	1.026	20.777	-0.003	-0.389	0.165	2.368	88.4%	0.300
GBF15	0.068	0.621	1.191	7.595	55.3%	0.024	-0.060	-0.479	1.237	10.002	0.104	6.090	0.412	1.752	71.9%	0.000
GBF16	-0.056	-1.397	0.950	25.902	85.4%	0.103	-0.084	-1.617	0.975	21.936	0.006	0.859	0.154	1.573	85.2%	0.029
GBF17	0.126	2.390 **	0.505	3.781	43.9%	0.009	0.002	0.034	0.561	7.099	0.092	9.713	0.312	2.271	76.1%	0.000
GBF18	-0.051	-1.286	0.889	17.431	84.0%	0.122	-0.090	-2.199 **	0.923	18.240	0.007	1.022	0.195	2.659	86.0%	0.000
GBF19	-0.012	-0.417	0.957	29.852	89.2%	0.757	-0.034	-0.889	0.971	23.882	0.008	1.086	0.105	1.406	88.9%	0.538
GBF20	0.005	0.131	0.827	15.810	80.4%	0.615	-0.043	-0.984	0.869	18.147	0.017	2.608	0.204	2.248	83.0%	0.778
GBF21	-0.051	-1.256	0.700	16.491	81.6%	0.276	-0.076	-1.700 *	0.733	16.258	0.003	0.562	0.178	2.185	82.9%	0.156
GBF22	-0.050	-1.552	0.796	21.191	85.4%	0.001	-0.069	-1.867 *	0.811	18.887	0.008	1.114	0.094	1.683	84.8%	0.082
GBF23	0.095	2.126 **	0.544	6.567	69.5%	0.033	0.053	1.005	0.575	8.771	0.018	1.797	0.087	1.017	72.7%	0.002
GBF24	-0.100	-1.835 *	0.845	15.051	77.5%	1.000	-0.138	-2.309 **	0.875	13.603	0.019	1.952	0.147	1.672	78.3%	0.960
GBF25	-0.028	-0.678	0.822	15.150	80.9%	0.083	-0.062	-1.437	0.871	17.193	0.001	0.101	0.238	2.986	82.2%	0.001
GBF26	0.033	0.610	0.789	11.735	75.0%	0.002	0.010	0.162	0.815	11.420	0.006	0.732	0.198	1.851	76.7%	0.000
GBF27	-0.083	-0.626	0.276	0.874	5.4%	0.682	-0.303	-1.905	0.422	2.288	0.119	4.340	0.618	2.137	37.4%	0.000
GBF28	-0.070	-2.001 **	0.947	18.287	87.8%	0.494	-0.087	-2.123 **	0.973	18.275	0.006	0.741	0.135	2.098	87.3%	0.717
GBF29	-0.033	-0.806	0.855	23.625	82.5%	0.749	-0.061	-1.164	0.884	21.539	0.005	0.669	0.147	1.386	81.9%	0.741
GBF30	0.162	1.699 *	0.427	3.446	34.6%	0.013	0.084	0.786	0.468	5.272	0.057	5.133	0.252	2.005	52.1%	0.000
GBF31	-0.020	-0.506	0.842	17.829	83.4%	0.196	-0.065	-1.583	0.881	20.688	0.015	2.694	0.211	3.274	85.8%	0.084
GBF32	-0.024	-0.696	0.723	14.982	80.0%	0.062	-0.058	-1.276	0.761	17.578	0.001	0.206	0.198	1.892	81.5%	0.001
GBF33	0.127	1.206	0.639	3.198	28.8%	0.135	-0.068	-0.777	0.680	9.853	0.151	11.740	0.263	1.645	79.0%	0.000
GBF34	0.063	0.600	0.712	4.554	34.3%	0.623	-0.124	-2.075 **	0.732	11.018	0.144	12.663	0.184	1.471	85.2%	0.271
GBF35	0.005	0.046	0.926	6.036	55.0%	0.171	-0.124	-1.181	0.974	10.562	0.100	3.907	0.255	1.572	73.5%	0.000
GBF36	-0.106	-1.811 *	1.054	18.015	71.9%	0.170	-0.116	-1.883 *	1.060	15.624	0.020	2.076	0.104	0.856	71.3%	0.179
GBF37	0.020	0.251	1.032	12.277	64.1%	0.230	-0.038	-0.392	1.038	11.054	0.049	4.352	0.243	1.326	69.9%	0.000
GBF38	-0.104	-3.163 ***	0.928	22.451	88.4%	0.808	-0.118	-3.174 ***	0.927	20.681	0.010	1.416	0.046	0.884	87.9%	0.342
GBF39	-0.046	-1.197	0.844	17.108	78.7%	0.398	-0.077	-1.526	0.872	15.821	0.006	0.784	0.193	1.717	78.8%	0.788
GBF40	0.003	0.063	0.838	16.523	79.8%	0.590	-0.045	-0.941	0.880	18.258	0.017	2.428	0.210	2.256	82.4%	0.508
GBF41	-0.049	-1.094	0.949	16.445	75.7%	0.866	-0.087	-1.441	0.985	15.925	0.011	1.152	0.184	1.416	76.0%	0.732
GBF42	-0.069	-0.884	1.362	15.122	72.4%	0.976	-0.141	-1.347	1.381	13.368	0.038	2.784	0.191	0.973	72.7%	0.865
GBF43	-0.026	-0.576	0.857	9.942	73.7%	0.817	-0.075	-1.624	0.887	10.258	0.016	1.554	0.194	2.361	74.9%	0.090
GBF44	-0.034	-1.103	0.910	24.827	87.3%	0.625	-0.058	-1.545	0.935	23.850	0.005	0.778	0.159	2.110	87.5%	0.650
GBF45	-0.028	-0.639	0.857	14.406	77.0%	0.813	-0.085	-1.639	0.900	18.130	0.025	3.281	0.189	1.838	81.2%	0.293

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
GBF46	-0.087	-1.767 *	0.854	19.587	79.1%	0.619	-0.105	-1.649	0.876	15.646	0.003	0.421	0.148	1.190	78.3%	0.567
GBF47	-0.009	-0.195	0.897	16.858	75.4%	0.761	-0.035	-0.652	0.909	14.164	0.013	1.134	0.121	1.341	74.5%	0.793
GBF48	0.003	0.077	0.812	19.596	80.1%	0.069	-0.030	-0.589	0.823	16.438	0.017	2.238	0.143	1.580	80.3%	0.237
GBF49	-0.052	-1.346	0.895	25.773	82.0%	0.646	-0.069	-1.390	0.912	19.985	0.001	0.130	0.156	1.548	81.8%	0.017
GBF50	-0.037	-1.025	0.885	19.990	84.7%	0.687	-0.058	-1.400	0.904	16.429	0.009	1.157	0.119	1.679	84.8%	0.954
GBF51	-0.060	-1.192	1.286	16.418	83.7%	0.546	-0.122	-1.940 *	1.316	17.222	0.032	3.231	0.195	1.615	85.2%	0.273
GBF52	-0.048	-1.820 *	0.870	25.575	88.7%	0.185	-0.073	-2.361 **	0.891	23.959	0.006	1.034	0.116	1.890	88.7%	0.081
GBF53	-0.014	-0.491	0.932	29.898	88.3%	0.647	-0.045	-1.228	0.947	26.256	0.009	1.384	0.116	1.592	88.2%	0.118
GBF54	-0.072	-1.277	0.735	10.702	63.4%	0.458	-0.139	-2.352 **	0.766	10.574	0.037	3.364	0.193	1.832	68.6%	0.537
GBF55	-0.036	-0.955	0.853	20.138	83.0%	0.358	-0.061	-1.392	0.887	21.031	0.000	-0.045	0.171	2.030	83.6%	0.001
GBF56	0.003	0.062	0.912	15.011	81.6%	0.579	-0.021	-0.482	0.936	13.413	0.007	0.732	0.168	1.941	82.3%	0.367
GBF57	-0.002	-0.038	0.845	18.351	82.7%	0.215	-0.027	-0.534	0.879	20.153	-0.002	-0.284	0.219	2.096	83.4%	0.067
GBF58	-0.006	-0.098	0.838	15.905	74.5%	0.659	-0.059	-0.944	0.856	15.201	0.029	3.032	0.235	2.052	78.5%	0.151
GBF59	-0.030	-0.485	0.908	13.672	73.9%	0.268	-0.036	-0.557	0.929	12.299	0.000	0.027	-0.022	-0.173	73.2%	0.601
GBF60	-0.012	-0.092	1.040	11.087	49.8%	0.147	-0.122	-0.960	1.112	9.667	0.048	2.082	0.665	2.256	56.2%	0.000
GBF61	0.016	0.197	0.910	10.982	61.1%	0.347	-0.071	-0.891	0.958	12.600	0.052	4.172	0.304	1.772	68.9%	0.309
GBF62	0.117	0.769	1.186	9.379	48.9%	0.167	-0.018	-0.124	1.270	9.280	0.072	2.928	0.693	2.055	57.7%	0.000
GBF63	0.010	0.118	0.824	12.132	54.6%	0.275	-0.079	-0.940	0.862	11.368	0.050	3.814	0.290	1.584	61.5%	0.032
GBF64	0.088	0.737	1.021	9.533	52.8%	0.079	-0.038	-0.341	1.118	10.020	0.044	2.489	0.630	2.724	63.0%	0.000
GBF65	-0.044	-0.439	0.857	5.733	43.6%	0.445	-0.159	-1.291	0.917	8.502	0.071	5.381	0.396	1.821	59.5%	0.000
GBF66	0.073	0.518	1.109	9.145	48.0%	0.294	-0.051	-0.385	1.180	8.984	0.069	2.975	0.619	1.943	55.8%	0.000
GBF67	0.080	0.525	1.187	9.545	48.8%	0.190	-0.046	-0.325	1.262	9.184	0.068	2.855	0.639	1.962	55.8%	0.000
GBF68	0.675	1.373	0.655	0.619	-0.1%	0.706	-0.151	-0.446	0.710	1.754	0.785	5.815	-0.333	-0.594	75.5%	0.110
GBF69	-0.019	-0.395	0.846	14.385	69.2%	0.857	-0.049	-0.803	0.851	13.314	0.027	2.572	0.076	0.578	72.4%	0.652
GBF70	-0.067	-0.763	0.947	13.247	57.8%	0.040	-0.109	-1.233	0.968	11.264	0.033	2.403	0.231	1.179	59.7%	0.000
GBF71	0.037	0.355	0.950	8.344	52.7%	0.393	-0.075	-0.718	0.999	10.489	0.072	4.317	0.495	2.157	65.4%	0.725
GBF72	-0.039	-0.728	0.967	12.749	76.7%	0.252	-0.063	-1.159	0.943	12.751	0.038	3.325	-0.077	-0.580	79.3%	0.000
GBF73	0.005	0.038	0.905	8.625	50.3%	0.002	-0.123	-1.059	0.980	9.711	0.063	3.766	0.587	2.581	60.4%	0.002
GBF74	-0.023	-0.816	0.259	8.466	63.4%	0.199	-0.025	-0.770	0.270	8.347	-0.006	-1.407	0.027	0.539	62.3%	0.144
GBF75	0.045	0.770	0.328	5.324	15.2%	0.661	0.076	0.967	0.341	6.534	-0.015	-0.819	0.063	0.372	18.2%	0.630
GBF76	0.068	1.145	0.431	7.494	48.7%	0.005	0.076	1.208	0.409	6.123	-0.001	-0.181	0.006	0.045	46.5%	0.000
GBF77	-0.013	-0.356	0.496	13.970	76.4%	0.019	-0.024	-0.596	0.515	12.203	-0.001	-0.209	0.097	1.784	75.3%	0.001
GBF78	-0.015	-0.324	0.442	9.679	56.7%	0.728	-0.040	-0.647	0.454	9.945	0.004	0.357	0.117	1.575	55.4%	0.021
GBF79	-0.120	-3.203 ***	0.111	2.735	10.6%	0.160	-0.139	-2.891 ***	0.112	2.570	0.011	1.038	0.108	1.454	6.5%	0.717
GBF80	-0.016	-0.408	0.373	7.368	61.5%	0.075	-0.026	-0.593	0.403	7.820	-0.007	-1.136	0.132	2.032	61.4%	0.312
GBF81	0.090	1.793 *	0.381	5.565	47.9%	0.000	0.082	1.391	0.404	5.585	0.000	0.048	0.167	1.974	46.3%	0.000
GBF82	-0.035	-0.439	0.383	2.744	20.0%	0.272	-0.178	-2.268 **	0.427	4.155	0.096	7.725	0.316	2.641	56.6%	0.002
GBF83	-0.033	-1.190	0.305	10.877	67.5%	0.178	-0.040	-1.281	0.320	10.331	-0.003	-0.584	0.069	1.519	66.2%	0.247
GBF84	-0.045	-0.674	0.368	6.724	30.2%	0.124	-0.121	-1.674 *	0.392	6.114	0.036	3.650	0.291	1.647	40.3%	0.062
GBF85	-0.094	-3.693 ***	0.177	4.983	44.4%	0.162	-0.101	-4.548 ***	0.191	4.975	-0.002	-0.367	0.084	1.924	43.6%	0.019
GBF86	-0.092	-3.742 ***	0.207	5.140	43.3%	0.645	-0.114	-5.693 ***	0.239	6.271	0.000	-0.096	0.178	4.164	51.2%	0.079
GBF87	-0.041	-1.078	0.488	10.364	69.9%	0.011	-0.034	-0.743	0.492	10.773	-0.010	-1.197	0.033	0.474	67.8%	0.016
GBF88	-0.035	-0.947	0.449	10.484	70.1%	0.003	-0.023	-0.524	0.452	10.610	-0.008	-1.134	0.028	0.404	67.7%	0.004
GBF89	0.017	0.272	0.466	4.854	62.1%	0.000	0.004	0.058	0.494	4.463	-0.002	-0.265	0.143	1.584	60.8%	0.000
GBF90	-0.008	-0.142	0.793	11.031	74.0%	0.034	-0.047	-0.621	0.829	9.313	0.007	0.817	0.233	1.697	74.4%	0.000
France																
FBF1	-0.015	-0.394	0.303	8.196	64.5%	0.364	-0.040	-1.082	0.321	9.532	-0.003	-0.770	0.191	2.971	68.1%	0.215
FBF2	-0.136	-3.593 ***	0.513	8.997	78.6%	0.003	-0.144	-3.532 ***	0.506	8.826	0.007	0.916	0.077	1.037	79.2%	0.000
FBF3	-0.049	-2.789 ***	0.342	17.841	87.5%	0.038	-0.071	-4.124 ***	0.348	18.442	0.003	0.770	0.122	3.701	89.1%	0.000
FBF4	-0.082	-3.403 ***	0.217	8.153	67.5%	0.000	-0.091	-3.877 ***	0.226	9.584	-0.001	-0.213	0.162	3.273	70.6%	0.000
FBF5	-0.081	-3.369 ***	0.396	20.082	84.5%	0.082	-0.083	-3.873 ***	0.410	20.664	-0.007	-1.878	0.138	4.725	86.0%	0.070
FBF6	-0.133	-4.119 ***	0.319	10.684	65.1%	0.361	-0.144	-4.445 ***	0.337	11.797	-0.007	-1.602	0.170	3.154	65.7%	0.475
FBF7	-0.055	-4.637 ***	0.220	18.942	83.1%	0.150	-0.061	-5.093 ***	0.226	18.388	-0.001	-0.411	0.101	4.548	85.5%	0.000
FBF8	-0.043	-3.728 ***	0.204	13.819	80.7%	0.543	-0.054	-5.514 ***	0.213	14.668	-0.002	-0.708	0.108	5.132	84.2%	0.011
FBF9	-0.040	-1.258	0.161	5.935	37.3%	0.001	-0.083	-2.636 **	0.174	5.746	0.000	0.051	0.200	4.471	44.1%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF10	-0.039	-1.784 *	0.216	10.076	61.7%	0.482	-0.062	-3.224 ***	0.231	10.162	-0.004	-1.021	0.142	2.964	65.0%	0.133
FBF11	-0.055	-2.120 **	0.263	9.812	71.4%	0.005	-0.061	-2.267 **	0.261	9.202	0.001	0.214	0.108	3.092	73.2%	0.000
FBF12	0.057	1.348	0.122	2.930	35.0%	0.000	0.021	0.627	0.125	5.537	0.023	2.840	0.182	3.766	63.2%	0.000
FBF13	-0.041	-1.487	0.120	3.297	26.1%	0.284	-0.036	-1.107	0.133	3.848	-0.012	-2.748	0.036	0.606	26.8%	0.121
FBF14	-0.090	-8.023 ***	0.041	2.943	16.0%	0.814	-0.089	-8.117 ***	0.045	3.126	-0.002	-1.193	0.019	1.140	14.6%	0.014
FBF15	-0.172	-6.639 ***	0.360	11.771	73.9%	0.000	-0.178	-6.084 ***	0.361	10.712	0.005	0.874	0.071	1.346	74.4%	0.000
FBF16	-0.171	-5.702 ***	0.404	13.014	76.1%	0.133	-0.151	-5.244 ***	0.416	12.701	-0.009	-1.779	0.025	0.378	76.2%	0.011
FBF17	-0.059	-1.896 *	0.297	10.558	70.3%	0.012	-0.087	-2.873 ***	0.309	11.664	0.001	0.302	0.217	5.505	75.3%	0.003
FBF18	-0.060	-2.040 **	0.317	10.033	75.4%	0.001	-0.058	-2.011 **	0.325	10.409	-0.003	-0.867	0.075	1.332	74.1%	0.057
FBF19	-0.096	-3.232 ***	0.313	13.662	71.8%	0.269	-0.131	-5.093 ***	0.331	17.657	-0.005	-1.500	0.239	6.765	77.9%	0.000
FBF20	-0.168	-3.936 ***	0.208	3.808	45.3%	0.045	-0.221	-5.071 ***	0.190	3.925	0.020	2.984	0.121	1.538	51.6%	0.000
FBF21	-0.082	-3.204 ***	0.217	7.755	61.7%	0.009	-0.099	-4.128 ***	0.228	7.885	-0.003	-0.841	0.152	2.932	63.6%	0.000
FBF22	-0.111	-4.231 ***	0.339	9.622	63.9%	0.069	-0.138	-5.372 ***	0.354	11.923	0.000	0.055	0.178	2.962	65.1%	0.058
FBF23	-0.001	-0.037	0.319	14.049	79.1%	0.840	-0.021	-0.861	0.328	13.681	-0.001	-0.369	0.133	2.901	80.4%	0.035
FBF24	-0.035	-1.431	0.239	10.460	70.7%	0.059	-0.053	-2.181 **	0.254	12.922	-0.004	-1.473	0.156	2.961	73.5%	0.000
FBF25	-0.011	-0.380	0.249	8.652	60.5%	0.170	-0.038	-1.263	0.269	9.970	-0.007	-2.127	0.208	3.028	67.9%	0.000
FBF26	-0.074	-3.863 ***	0.306	12.015	82.3%	0.000	-0.083	-4.446 ***	0.306	11.027	0.006	1.564	0.072	1.765	83.6%	0.000
FBF27	-0.027	-0.837	0.337	11.555	72.8%	0.011	-0.045	-1.521	0.358	12.780	-0.005	-1.256	0.153	2.507	73.6%	0.001
FBF28	-0.017	-0.729	0.264	14.443	74.7%	0.440	-0.019	-0.839	0.272	13.108	0.000	0.104	0.085	2.498	75.5%	0.004
FBF29	-0.057	-4.024 ***	0.403	28.892	91.9%	0.007	-0.052	-3.761 ***	0.407	29.387	-0.003	-1.064	0.087	4.173	92.9%	0.000
FBF30	-0.085	-3.241 ***	0.241	7.796	57.1%	0.288	-0.102	-4.061 ***	0.252	7.626	-0.003	-0.782	0.112	1.999	55.5%	0.460
FBF31	-0.028	-1.439	0.352	12.279	81.4%	0.018	-0.039	-1.838 *	0.351	13.793	0.005	0.846	0.086	1.835	81.8%	0.000
FBF32	-0.028	-1.027	0.264	14.766	71.1%	0.048	-0.047	-1.884 *	0.284	16.535	-0.007	-2.186	0.206	4.902	76.9%	0.000
FBF33	-0.028	-1.067	0.276	8.782	68.9%	0.193	-0.043	-1.661	0.294	10.299	-0.008	-2.121	0.200	4.326	73.4%	0.000
FBF34	-0.028	-2.005 **	0.144	9.767	65.8%	0.005	-0.032	-2.492 **	0.152	10.446	-0.003	-1.419	0.079	2.038	67.6%	0.000
FBF35	-0.090	-2.200 **	0.329	9.849	63.2%	0.051	-0.096	-2.898 ***	0.364	11.011	-0.016	-2.288	0.196	2.311	69.1%	0.065
FBF36	-0.060	-1.779 *	0.036	1.935	0.1%	0.936	-0.070	-2.273 **	0.045	2.576	-0.004	-1.326	0.154	3.058	7.9%	0.000
FBF37	-0.061	-2.480 **	0.269	8.386	66.2%	0.014	-0.081	-4.519 ***	0.292	9.498	-0.005	-1.385	0.203	3.865	72.5%	0.000
FBF38	-0.037	-1.580	0.251	10.933	67.6%	0.326	-0.049	-2.337 **	0.269	11.671	-0.007	-1.686	0.121	2.208	68.9%	0.045
FBF39	-0.013	-0.419	0.351	11.972	67.6%	0.069	-0.047	-1.311	0.371	12.365	-0.002	-0.377	0.198	2.935	70.2%	0.000
FBF40	-0.067	-2.457 **	0.333	9.554	73.8%	0.006	-0.067	-2.480 **	0.346	10.825	-0.004	-1.023	0.120	2.157	74.2%	0.000
FBF41	-0.040	-1.573	0.222	9.737	61.5%	0.254	-0.049	-1.975 *	0.231	9.781	-0.005	-1.251	0.144	2.774	63.4%	0.321
FBF42	-0.094	-7.879 ***	0.281	17.664	85.8%	0.004	-0.093	-7.166 ***	0.290	16.818	-0.004	-1.481	0.075	2.624	86.6%	0.002
FBF43	-0.078	-3.036 ***	0.353	15.742	79.3%	0.028	-0.093	-3.805 ***	0.367	15.861	-0.005	-1.655	0.162	4.102	80.3%	0.029
FBF44	-0.060	-8.689 ***	0.007	1.436	8.1%	0.003	-0.062	-10.528 ***	0.011	2.451	-0.002	-2.073	0.044	2.907	25.7%	0.040
FBF45	-0.064	-2.272 **	0.218	7.989	57.1%	0.030	-0.094	-4.119 ***	0.241	10.873	-0.008	-3.189	0.228	4.648	66.6%	0.000
FBF46	-0.091	-4.331 ***	0.418	18.817	85.5%	0.629	-0.105	-4.965 ***	0.425	17.389	-0.003	-0.673	0.103	2.379	85.4%	0.086
FBF47	-0.052	-2.122 **	0.240	9.960	64.8%	0.034	-0.070	-2.966 ***	0.247	10.093	-0.001	-0.352	0.134	3.125	65.4%	0.135
FBF48	-0.069	-2.513 **	0.262	9.657	69.0%	0.002	-0.104	-4.507 ***	0.282	13.908	-0.004	-1.459	0.205	5.250	75.8%	0.000
FBF49	-0.091	-5.566 ***	0.300	21.570	85.9%	0.261	-0.096	-5.835 ***	0.307	19.517	-0.004	-1.277	0.073	3.733	85.9%	0.144
FBF50	-0.061	-1.215	0.235	5.276	34.0%	0.018	-0.066	-1.530	0.259	5.680	-0.008	-1.310	0.242	1.844	36.5%	0.000
FBF51	-0.051	-1.534	0.262	13.989	60.5%	0.098	-0.074	-2.318 **	0.283	18.901	-0.006	-1.457	0.225	4.374	65.5%	0.000
FBF52	-0.049	-1.646	0.255	12.611	64.3%	0.238	-0.067	-2.402 **	0.273	16.082	-0.006	-1.681	0.187	4.024	67.4%	0.157
FBF53	-0.083	-4.102 ***	0.326	20.910	81.1%	0.374	-0.091	-4.194 ***	0.339	18.945	-0.005	-1.193	0.083	2.524	80.7%	0.765
FBF54	-0.072	-3.668 ***	0.245	13.392	76.2%	0.054	-0.084	-4.284 ***	0.256	12.431	-0.003	-0.873	0.084	1.998	76.0%	0.174
FBF55	-0.041	-1.733 *	0.230	9.627	66.3%	0.016	-0.043	-1.840 *	0.223	8.418	0.003	0.688	0.061	2.002	64.6%	0.005
FBF56	-0.113	-17.380 ***	0.007	1.749	7.7%	0.067	-0.116	-20.833 ***	0.009	1.913	-0.001	-0.587	0.043	3.274	22.1%	0.000
FBF57	-0.053	-1.923 *	0.372	11.016	78.8%	0.339	-0.083	-3.193 ***	0.390	14.166	-0.002	-0.450	0.221	5.860	83.1%	0.016
FBF58	-0.099	-4.189 ***	0.256	6.292	62.2%	0.008	-0.102	-4.271 ***	0.264	6.701	-0.003	-0.943	0.091	1.362	60.8%	0.000
FBF59	-0.079	-4.237 ***	0.296	14.697	83.3%	0.000	-0.100	-5.398 ***	0.297	13.714	0.008	1.725	0.096	2.629	85.9%	0.000
FBF60	-0.067	-1.429	0.053	0.923	6.2%	0.116	-0.101	-1.369	0.069	1.147	-0.003	-0.370	0.123	0.905	4.4%	0.000
FBF61	-0.091	-1.620	0.378	10.647	40.0%	0.013	-0.138	-1.668 *	0.383	9.858	0.000	0.042	-0.027	-0.295	40.9%	0.049
FBF62	-0.124	-3.559 ***	0.850	24.453	90.6%	0.176	-0.115	-3.141 ***	0.863	30.738	-0.004	-0.514	0.076	1.359	91.1%	0.660
FBF63	-0.070	-1.638	0.720	10.242	78.4%	0.048	-0.101	-2.027 **	0.708	12.090	0.009	0.727	0.069	0.711	77.3%	0.001
FBF64	-0.068	-1.768 *	0.637	19.083	84.6%	0.119	-0.084	-2.303 **	0.665	17.695	-0.010	-1.450	0.210	3.937	85.0%	0.651

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF65	-0.089	-3.032 ***	0.581	18.605	86.5%	0.079	-0.092	-3.288 ***	0.603	18.480	-0.008	-1.364	0.151	2.898	87.8%	0.002
FBF66	-0.117	-3.430 ***	0.404	12.876	72.0%	0.208	-0.103	-2.987 ***	0.430	11.564	-0.018	-2.519	-0.004	-0.070	72.7%	0.889
FBF67	-0.174	-6.008 ***	0.534	12.510	84.6%	0.002	-0.176	-5.999 ***	0.540	12.372	-0.003	-0.591	0.049	1.061	83.7%	0.000
FBF68	-0.076	-2.366 **	0.743	14.053	91.1%	0.000	-0.089	-2.800 ***	0.735	16.408	0.006	0.799	0.047	0.725	90.7%	0.000
FBF69	-0.121	-4.821 ***	0.507	19.855	79.7%	0.875	-0.154	-6.373 ***	0.510	17.253	0.007	1.166	0.134	1.911	80.3%	0.685
FBF70	-0.123	-3.908 ***	0.806	16.813	85.8%	0.385	-0.166	-3.894 ***	0.807	17.946	0.013	1.477	0.186	2.096	86.0%	0.515
FBF71	-0.101	-3.164 ***	0.669	15.470	84.4%	0.006	-0.087	-3.178 ***	0.688	17.916	-0.009	-1.153	0.109	1.200	84.7%	0.003
FBF72	-0.048	-1.528	0.725	22.329	90.6%	0.014	-0.054	-1.661	0.744	22.920	-0.006	-0.978	0.168	3.687	91.2%	0.148
FBF73	-0.144	-3.652 ***	0.451	10.467	70.1%	0.410	-0.164	-4.042 ***	0.479	11.513	-0.010	-2.033	0.199	2.593	71.0%	0.423
FBF74	-0.202	-4.540 ***	0.527	9.775	76.8%	0.332	-0.190	-4.589 ***	0.544	9.860	-0.004	-0.488	0.052	0.766	78.0%	0.000
FBF75	-0.052	-2.298 **	0.643	27.571	89.5%	0.004	-0.043	-1.774 *	0.643	26.756	0.004	0.489	0.129	4.013	91.1%	0.002
FBF76	-0.130	-4.127 ***	0.549	23.486	85.6%	0.058	-0.141	-4.405 ***	0.559	21.611	-0.001	-0.216	0.138	3.264	85.5%	0.071
FBF77	-0.120	-4.281 ***	0.531	24.112	86.0%	0.019	-0.130	-4.539 ***	0.537	21.993	0.000	-0.041	0.144	3.838	86.2%	0.040
FBF78	-0.131	-4.267 ***	0.542	24.875	85.8%	0.062	-0.142	-4.533 ***	0.549	22.900	0.000	-0.026	0.121	2.787	85.5%	0.027
FBF79	-0.134	-4.467 ***	0.687	22.556	89.2%	0.109	-0.127	-4.120 ***	0.703	23.028	-0.011	-2.019	0.117	2.792	89.4%	0.000
FBF80	-0.097	-1.777 *	0.594	9.603	80.5%	0.038	-0.128	-2.068 **	0.585	9.330	0.009	1.235	0.131	1.654	80.0%	0.379
FBF81	-0.078	-2.672 ***	0.627	14.318	85.5%	0.431	-0.058	-1.876 *	0.638	16.862	-0.014	-1.916	-0.003	-0.046	85.6%	0.208
FBF82	-0.111	-3.224 ***	0.580	11.423	81.6%	0.918	-0.087	-2.428 **	0.588	12.791	-0.012	-1.523	-0.045	-0.619	81.6%	0.843
FBF83	-0.117	-2.260 **	0.541	9.561	61.9%	0.000	-0.174	-2.855 ***	0.564	11.160	-0.001	-0.100	0.349	3.493	64.5%	0.000
FBF84	-0.102	-2.737 ***	0.850	21.381	88.9%	0.166	-0.090	-2.314 **	0.856	19.907	-0.004	-0.470	0.061	1.145	88.7%	0.141
FBF85	-0.122	-3.758 ***	0.688	22.692	88.6%	0.163	-0.105	-3.054 ***	0.690	22.392	-0.003	-0.442	0.010	0.212	88.5%	0.157
FBF86	-0.109	-2.241 **	0.833	18.596	88.1%	0.013	-0.097	-1.894 *	0.822	18.414	0.003	0.379	0.077	1.395	87.9%	0.156
FBF87	-0.145	-3.720 ***	0.687	21.423	87.4%	0.493	-0.111	-2.874 ***	0.693	17.770	-0.008	-0.867	-0.020	-0.449	87.8%	0.001
FBF88	-0.016	-0.515	0.775	29.573	90.8%	0.204	-0.022	-0.652	0.779	29.012	-0.003	-0.371	0.073	1.342	90.3%	0.000
FBF89	-0.024	-0.682	0.798	23.122	90.3%	0.017	-0.009	-0.249	0.805	21.762	-0.006	-0.821	0.047	0.746	89.7%	0.002
FBF90	-0.011	-0.262	0.427	12.676	76.2%	0.027	-0.043	-1.062	0.433	15.299	0.006	1.306	0.228	4.232	78.7%	0.547
FBF91	-0.080	-2.632 **	0.757	25.495	90.1%	0.097	-0.064	-1.877 *	0.772	23.503	-0.013	-1.888	0.048	0.826	89.9%	0.008
FBF92	0.025	0.400	0.632	13.771	70.0%	0.763	-0.031	-0.459	0.587	11.196	0.034	2.189	0.236	2.288	74.9%	0.000
FBF93	-0.086	-2.230 **	0.664	14.644	78.7%	0.075	-0.105	-2.761 ***	0.668	15.548	-0.002	-0.321	0.047	0.630	77.6%	0.011
FBF94	-0.099	-2.963 ***	0.630	26.081	88.1%	0.000	-0.105	-3.320 ***	0.648	21.711	-0.005	-0.827	0.100	2.305	87.8%	0.000
FBF95	-0.095	-2.966 ***	0.791	26.643	90.9%	0.009	-0.099	-2.949 ***	0.801	25.560	-0.004	-0.626	0.116	2.204	90.7%	0.001
FBF96	-0.135	-2.658 ***	0.480	12.759	65.9%	0.176	-0.163	-2.992 ***	0.498	13.206	0.001	0.216	0.249	3.712	67.4%	0.094
FBF97	-0.069	-1.841 *	0.591	19.333	85.6%	0.291	-0.094	-2.426 **	0.608	20.686	-0.006	-1.495	0.176	3.086	86.0%	0.350
FBF98	-0.080	-1.967 *	0.592	14.068	77.1%	0.341	-0.103	-2.507 **	0.616	15.261	-0.004	-0.566	0.188	2.291	77.0%	0.851
FBF99	-0.061	-1.609	0.535	15.814	75.7%	0.249	-0.099	-2.445 **	0.550	15.080	0.001	0.136	0.280	5.417	77.0%	0.595
FBF100	-0.019	-0.509	0.625	18.102	81.8%	0.127	-0.054	-1.508	0.647	18.691	-0.007	-1.010	0.245	3.653	82.8%	0.000
FBF101	-0.123	-4.413 ***	0.639	20.880	86.5%	0.029	-0.116	-3.681 ***	0.644	16.850	-0.005	-0.766	-0.007	-0.137	85.7%	0.011
FBF102	-0.071	-1.934 *	0.578	11.064	80.1%	0.622	-0.063	-1.600	0.569	9.986	0.006	0.969	-0.037	-0.419	79.2%	0.076
FBF103	-0.085	-2.143 **	0.378	9.929	67.3%	0.393	-0.100	-2.424 **	0.394	8.869	-0.003	-0.434	0.174	3.113	67.2%	0.249
FBF104	-0.031	-0.793	0.368	10.766	64.6%	0.000	-0.077	-2.334 **	0.381	13.463	0.005	0.870	0.266	4.743	68.4%	0.000
FBF105	-0.016	-0.363	0.653	13.862	81.1%	0.000	-0.019	-0.435	0.654	13.964	0.006	0.640	0.239	3.563	82.2%	0.000
FBF106	-0.097	-3.521 ***	0.805	39.810	93.0%	0.000	-0.092	-3.227 ***	0.810	34.551	-0.002	-0.275	0.089	2.424	93.1%	0.000
FBF107	-0.062	-1.347	0.549	12.271	72.6%	0.001	-0.070	-1.526	0.530	11.936	0.024	2.959	0.143	2.202	77.7%	0.000
FBF108	-0.080	-2.397 **	0.424	20.007	80.8%	0.031	-0.093	-2.839 ***	0.439	17.297	-0.001	-0.129	0.145	4.665	82.0%	0.012
FBF109	-0.136	-4.115 ***	0.682	27.289	88.6%	0.439	-0.117	-3.438 ***	0.678	22.192	-0.003	-0.461	0.069	1.175	88.6%	0.000
FBF110	-0.123	-1.928 *	0.229	4.226	25.5%	0.086	-0.156	-2.423 **	0.196	2.631	0.029	1.817	0.135	1.225	30.2%	0.475
FBF111	-0.104	-2.696 ***	0.331	8.563	61.7%	0.051	-0.121	-3.344 ***	0.345	8.087	-0.005	-0.676	0.199	4.076	63.0%	0.005
FBF112	-0.056	-1.483	0.618	17.931	80.8%	0.000	-0.072	-1.878 *	0.625	14.125	0.012	1.092	0.234	4.380	84.6%	0.000
FBF113	-0.058	-1.561	0.623	18.982	82.2%	0.000	-0.070	-1.857 *	0.631	14.966	0.011	0.991	0.222	4.399	85.7%	0.000
FBF114	-0.055	-1.452	0.625	18.620	81.1%	0.000	-0.072	-1.882 *	0.632	14.787	0.012	1.095	0.241	4.701	85.1%	0.000
FBF115	-0.122	-5.258 ***	0.563	20.818	88.8%	0.000	-0.102	-4.450 ***	0.575	24.360	-0.011	-2.181	0.062	1.463	90.2%	0.000
FBF116	-0.093	-2.511 **	0.876	24.566	89.3%	0.029	-0.078	-2.243 **	0.902	23.279	-0.007	-0.727	0.132	2.114	90.7%	0.074
FBF117	-0.087	-2.679 ***	0.546	15.794	75.5%	0.303	-0.103	-2.838 ***	0.551	14.080	0.001	0.068	0.125	1.254	74.6%	0.010
FBF118	-0.095	-3.133 ***	0.526	13.371	74.3%	0.248	-0.119	-3.577 ***	0.533	15.549	0.005	0.693	0.167	2.505	73.7%	0.054
FBF119	-0.094	-3.044 ***	0.727	20.376	84.7%	0.006	-0.116	-2.541 **	0.714	20.790	0.010	1.302	0.027	0.286	84.0%	0.027

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF120	-0.101	-4.668 ***	0.270	9.575	72.2%	0.023	-0.102	-3.801 ***	0.268	8.464	0.000	0.037	0.073	1.479	70.8%	0.144
FBF121	-0.132	-1.490	0.286	2.558	22.7%	0.223	-0.186	-1.532	0.312	2.754	0.003	0.270	0.387	2.003	23.6%	0.039
FBF122	-0.037	-1.301	0.434	9.650	73.1%	0.203	-0.068	-2.045 **	0.445	10.070	0.001	0.125	0.214	2.634	73.8%	0.008
FBF123	-0.132	-5.032 ***	0.803	27.037	91.5%	0.007	-0.129	-4.510 ***	0.807	27.855	0.003	0.391	0.065	1.432	92.1%	0.000
FBF124	-0.075	-2.268 **	0.609	17.538	80.4%	0.864	-0.088	-2.252 **	0.614	14.889	0.000	0.015	0.125	1.656	79.7%	0.559
FBF125	-0.092	-2.426 **	0.558	16.351	79.7%	0.001	-0.112	-3.085 ***	0.568	13.975	0.001	0.171	0.140	1.822	78.9%	0.005
FBF126	-0.127	-3.148 ***	0.300	6.199	48.0%	0.755	-0.112	-2.764 ***	0.316	7.353	-0.017	-2.495	-0.057	-0.920	46.8%	0.190
FBF127	-0.071	-2.590 **	0.549	22.254	89.4%	0.063	-0.070	-2.351 **	0.554	21.702	0.001	0.197	0.076	2.124	89.5%	0.295
FBF128	-0.075	-2.173 **	0.541	13.346	74.5%	0.228	-0.074	-2.043 **	0.545	12.629	0.005	0.488	0.159	2.961	75.7%	0.639
FBF129	-0.067	-1.564	0.529	18.258	78.7%	0.058	-0.086	-2.044 **	0.534	15.197	0.009	1.170	0.155	2.688	80.4%	0.075
FBF130	-0.110	-1.890 *	0.448	5.659	53.7%	0.009	-0.145	-1.721 *	0.448	5.669	0.002	0.214	0.233	1.305	51.6%	0.309
FBF131	-0.062	-1.694 *	0.625	17.527	87.6%	0.009	-0.082	-2.434 **	0.648	20.126	-0.010	-2.382	0.232	5.438	89.6%	0.001
FBF132	-0.132	-4.379 ***	0.808	33.620	90.9%	0.003	-0.132	-3.951 ***	0.807	26.596	0.001	0.172	0.066	1.431	90.7%	0.000
FBF133	-0.154	-3.363 ***	0.821	22.395	87.2%	0.021	-0.145	-3.247 ***	0.829	21.329	-0.004	-0.467	0.105	1.237	87.0%	0.001
FBF134	-0.171	-3.250 ***	0.649	13.557	81.6%	0.370	-0.189	-3.475 ***	0.659	12.559	0.000	-0.020	0.105	1.907	80.4%	0.823
FBF135	-0.070	-3.463 ***	0.497	17.619	83.7%	0.109	-0.087	-3.352 ***	0.493	16.194	0.008	1.234	0.148	2.888	83.9%	0.198
FBF136	-0.037	-1.050	0.415	6.139	65.5%	0.096	-0.025	-0.602	0.408	5.627	0.003	0.407	-0.024	-0.369	62.9%	0.000
FBF137	-0.058	-1.729 *	0.323	12.699	71.9%	0.002	-0.076	-2.801 ***	0.321	14.810	0.011	1.967	0.144	3.940	80.0%	0.000
FBF138	-0.008	-0.224	0.612	17.266	86.5%	0.000	-0.032	-1.031	0.592	19.794	0.025	4.078	0.085	2.153	90.2%	0.064
FBF139	-0.073	-2.499 **	0.576	19.745	84.0%	0.311	-0.059	-1.973 *	0.595	19.054	-0.007	-0.955	0.127	2.293	84.8%	0.040
FBF140	-0.065	-1.086	0.580	10.927	73.0%	0.014	-0.067	-1.115	0.559	10.701	0.007	0.603	0.058	0.671	71.9%	0.179
FBF141	-0.014	-0.483	0.736	18.421	92.3%	0.004	-0.022	-0.591	0.735	17.662	0.007	1.040	0.073	1.345	92.2%	0.166
FBF142	-0.068	-2.126 **	0.606	21.560	86.4%	0.007	-0.097	-3.307 ***	0.618	20.255	-0.004	-0.887	0.179	3.509	86.9%	0.000
FBF143	0.165	1.909 *	0.407	4.876	38.6%	0.429	0.053	0.628	0.387	9.773	0.071	5.525	0.194	2.062	65.9%	0.103
FBF144	-0.058	-2.611 **	0.923	37.793	93.9%	0.718	-0.086	-3.197 ***	0.935	35.343	-0.001	-0.284	0.106	1.326	93.8%	0.159
FBF145	-0.048	-0.802	0.770	11.078	77.1%	0.918	-0.032	-0.657	0.792	11.785	-0.015	-1.679	-0.055	-0.452	82.3%	0.000
FBF146	-0.183	-3.762 ***	1.120	14.747	89.3%	0.487	-0.134	-2.847 ***	1.103	18.415	-0.003	-0.261	-0.120	-0.917	89.6%	0.002
FBF147	-0.112	-4.815 ***	1.026	38.365	97.0%	0.000	-0.118	-5.250 ***	1.017	35.705	0.011	1.834	-0.007	-0.148	97.2%	0.000
FBF148	-0.052	-1.376	0.836	16.383	89.1%	0.128	-0.037	-0.958	0.855	18.253	-0.018	-2.087	0.093	1.232	89.4%	0.021
FBF149	-0.024	-0.611	0.675	15.366	83.9%	0.035	-0.025	-0.687	0.669	12.287	0.008	0.701	0.126	2.188	83.7%	0.151
FBF150	-0.074	-1.902 *	1.291	38.235	93.5%	0.071	-0.040	-0.979	1.302	37.646	-0.010	-1.003	-0.018	-0.249	93.8%	0.034
FBF151	-0.030	-0.912	1.040	31.579	93.7%	0.044	-0.047	-1.262	1.052	36.930	0.001	0.107	0.142	1.921	94.1%	0.079
FBF152	-0.030	-0.664	0.959	19.816	89.5%	0.117	-0.047	-0.915	0.967	21.900	0.002	0.281	0.077	1.182	88.8%	0.020
FBF153	-0.056	-1.512	0.997	34.219	92.0%	0.002	-0.054	-1.282	1.004	34.666	0.001	0.104	0.005	0.084	92.0%	0.211
FBF154	-0.073	-1.573	0.573	8.944	76.0%	0.067	-0.077	-1.589	0.601	9.616	-0.018	-2.825	0.205	4.720	78.4%	0.000
FBF155	-0.039	-0.529	0.668	8.749	57.2%	0.574	-0.122	-1.267	0.667	8.645	0.018	1.792	0.359	2.707	62.3%	0.000
FBF156	-0.188	-4.293 ***	1.156	25.494	90.6%	0.000	-0.157	-3.171 ***	1.157	21.269	-0.010	-0.868	0.006	0.079	90.7%	0.000
FBF157	-0.011	-0.345	0.905	27.558	91.8%	0.000	-0.007	-0.215	0.925	25.204	-0.010	-1.206	0.153	2.497	92.1%	0.000
FBF158	-0.107	-3.164 ***	0.821	23.142	84.2%	0.629	-0.127	-3.103 ***	0.815	16.852	0.009	0.843	0.096	1.163	83.9%	0.054
FBF159	-0.056	-1.498	0.875	29.206	92.1%	0.000	-0.060	-1.577	0.879	32.956	0.005	0.724	0.142	3.047	93.2%	0.000
FBF160	-0.057	-1.918 *	0.797	25.094	92.3%	0.001	-0.067	-2.198 **	0.812	28.551	-0.001	-0.140	0.194	4.649	93.3%	0.000
FBF161	-0.064	-1.068	1.497	19.876	84.7%	0.894	-0.147	-1.773 *	1.468	19.402	0.039	2.652	0.155	0.892	84.8%	0.887
FBF162	-0.058	-2.333 **	0.714	21.028	90.1%	0.341	-0.054	-2.175 **	0.731	22.852	-0.007	-1.008	0.124	3.526	91.5%	0.055
FBF163	-0.127	-4.119 ***	0.816	22.295	84.2%	0.892	-0.155	-3.519 ***	0.804	23.667	0.016	1.634	0.255	3.207	85.0%	0.635
FBF164	-0.126	-2.249 **	0.913	14.472	84.7%	0.162	-0.079	-1.246	0.912	13.054	-0.013	-1.460	-0.027	-0.229	84.3%	0.129
FBF165	-0.020	-0.243	0.995	14.124	64.7%	0.000	0.029	0.334	0.929	17.355	0.036	3.416	-0.409	-1.819	66.1%	0.000
FBF166	0.025	0.709	1.072	17.578	92.9%	0.007	0.024	0.538	1.072	17.245	-0.005	-0.783	0.054	0.600	92.4%	0.000
FBF167	0.009	0.172	0.632	9.573	75.2%	0.031	0.002	0.030	0.639	8.661	-0.003	-0.330	0.154	1.775	74.8%	0.022
FBF168	0.024	0.545	0.629	10.574	73.9%	0.253	-0.026	-0.496	0.641	12.624	0.018	1.921	0.186	2.529	78.7%	0.012
FBF169	-0.009	-0.185	0.772	12.213	80.1%	0.024	-0.068	-1.714 *	0.729	16.732	0.044	4.376	0.136	2.342	86.5%	0.002
FBF170	-0.129	-3.200 ***	0.936	24.385	90.2%	0.000	-0.115	-2.961 ***	0.940	21.657	-0.005	-0.575	0.158	1.948	90.9%	0.000
FBF171	-0.147	-2.540 **	0.932	10.776	72.7%	0.547	-0.197	-2.427 **	0.952	11.761	0.005	0.299	0.124	0.998	72.0%	0.187
FBF172	-0.086	-1.761 *	0.426	7.275	62.9%	0.454	-0.083	-1.810 *	0.443	7.244	-0.005	-0.622	0.125	1.666	64.2%	0.002
FBF173	-0.102	-2.887 ***	0.944	20.748	91.3%	0.051	-0.079	-2.325 **	0.933	18.856	0.001	0.056	0.015	0.240	91.8%	0.059
FBF174	-0.220	-3.385 ***	0.837	16.822	77.9%	0.836	-0.213	-2.698 ***	0.839	17.434	-0.002	-0.152	0.027	0.171	77.4%	0.344

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF175	-0.014	-0.606	1.263	47.826	97.4%	0.001	0.002	0.085	1.259	38.918	0.000	-0.003	-0.104	-2.411	97.3%	0.000
FBF176	0.012	0.293	0.798	17.506	87.8%	0.056	0.024	0.488	0.783	16.286	0.009	0.986	-0.015	-0.250	88.6%	0.000
FBF177	-0.081	-1.968 *	1.286	39.034	92.6%	0.043	-0.048	-1.059	1.291	33.857	-0.005	-0.393	-0.008	-0.123	93.0%	0.000
FBF178	-0.138	-2.903 ***	0.928	13.606	79.5%	0.037	-0.181	-2.669 ***	0.931	13.429	0.005	0.432	0.213	1.496	78.9%	0.025
FBF179	-0.175	-4.580 ***	1.122	27.010	91.2%	0.165	-0.156	-4.115 ***	1.130	24.414	-0.001	-0.085	-0.015	-0.234	91.6%	0.003
FBF180	-0.146	-2.549 **	0.767	12.371	80.1%	0.005	-0.157	-2.702 ***	0.745	17.509	0.023	2.848	0.037	0.427	85.0%	0.000
FBF181	-0.250	-1.989 *	0.804	6.530	58.0%	0.038	-0.294	-2.059 **	0.820	7.432	0.026	1.680	0.073	0.523	63.2%	0.000
FBF182	-0.085	-1.792 *	1.370	33.613	88.6%	0.028	-0.099	-1.571	1.357	26.300	0.008	0.646	-0.023	-0.165	88.0%	0.000
FBF183	-0.141	-2.965 ***	0.943	25.006	86.4%	0.268	-0.126	-2.667 ***	0.955	25.783	0.001	0.076	-0.003	-0.050	88.5%	0.001
FBF184	-0.223	-2.763 ***	0.865	8.335	74.5%	0.106	-0.182	-2.414 **	0.872	9.610	-0.004	-0.277	-0.091	-0.732	75.3%	0.000
FBF185	-0.053	-1.690 *	0.864	27.625	91.1%	0.000	-0.056	-1.872 *	0.885	24.705	-0.009	-1.247	0.126	2.147	90.9%	0.000
FBF186	-0.124	-2.741 ***	0.898	28.341	89.0%	0.024	-0.135	-2.939 ***	0.915	21.360	-0.003	-0.282	0.164	2.987	89.1%	0.001
FBF187	-0.042	-0.521	0.505	4.161	41.2%	0.424	-0.017	-0.180	0.466	3.688	0.019	1.138	-0.126	-0.797	43.1%	0.000
FBF188	-0.079	-2.101 **	1.155	42.200	94.2%	0.000	-0.060	-1.479	1.163	45.630	-0.007	-1.137	0.049	0.655	94.6%	0.000
FBF189	-0.107	-2.781 ***	0.881	30.487	91.2%	0.244	-0.100	-2.793 ***	0.897	25.285	-0.005	-0.625	0.074	1.609	91.4%	0.038
FBF190	-0.149	-3.359 ***	0.695	12.180	70.6%	0.181	-0.156	-3.393 ***	0.688	13.642	0.014	1.475	0.111	1.073	70.8%	0.057
FBF191	-0.127	-2.276 **	0.396	7.603	40.8%	0.131	-0.121	-1.687 *	0.370	8.713	0.025	2.333	0.046	0.415	42.9%	0.002
FBF192	-0.076	-2.117 **	0.880	18.837	88.7%	0.108	-0.071	-1.876 *	0.900	19.362	-0.009	-1.056	0.131	2.113	89.3%	0.203
FBF193	-0.061	-2.487 **	1.242	58.449	97.2%	0.238	-0.042	-1.476	1.235	55.415	0.000	0.074	-0.117	-2.664	97.3%	0.001
FBF194	-0.102	-2.533 **	0.757	22.868	83.1%	0.009	-0.109	-2.394 **	0.757	23.160	0.009	1.124	0.056	0.706	83.3%	0.008
FBF195	-0.083	-2.566 **	1.270	34.455	89.6%	0.929	-0.102	-1.829 *	1.241	32.026	0.014	1.277	0.046	0.329	89.6%	0.603
FBF196	-0.083	-2.032 **	0.849	27.770	83.4%	0.040	-0.110	-2.050 **	0.845	24.153	0.001	0.098	0.207	2.637	83.4%	0.235
FBF197	-0.077	-0.813	0.635	10.388	57.6%	0.000	-0.164	-2.092 **	0.556	8.225	0.070	3.289	0.416	3.381	70.2%	0.000
FBF198	-0.134	-3.692 ***	0.828	20.930	81.1%	0.194	-0.157	-2.997 ***	0.840	16.802	-0.003	-0.229	0.218	1.573	81.1%	0.022
FBF199	-0.092	-3.022 ***	0.814	30.716	91.2%	0.062	-0.084	-2.993 ***	0.829	27.171	-0.010	-1.324	0.049	0.940	91.2%	0.161
FBF200	-0.089	-0.945	1.772	23.776	86.6%	0.056	-0.029	-0.291	1.755	23.100	0.017	0.896	-0.139	-1.069	88.3%	0.000
FBF201	-0.031	-0.924	0.917	28.371	90.2%	0.016	-0.012	-0.348	0.933	26.235	-0.014	-1.651	0.070	1.098	90.4%	0.018
FBF202	-0.034	-0.997	1.224	42.059	93.4%	0.005	0.003	0.073	1.230	39.339	-0.010	-0.941	0.059	0.817	94.1%	0.000
FBF203	-0.099	-2.264 **	0.766	10.744	82.6%	0.928	-0.061	-1.264	0.779	12.512	-0.020	-1.871	-0.069	-0.774	83.0%	0.931
FBF204	-0.101	-2.147 **	1.255	29.554	92.1%	0.102	-0.050	-0.930	1.256	29.707	-0.007	-0.616	-0.045	-0.581	92.7%	0.032
FBF205	-0.034	-1.139	0.805	30.577	91.5%	0.001	-0.032	-1.028	0.822	26.328	-0.007	-0.927	0.136	2.610	91.9%	0.000
FBF206	-0.223	-3.318 ***	1.198	12.146	88.8%	0.810	-0.175	-2.752 ***	1.183	14.835	-0.002	-0.231	-0.322	-2.977	90.4%	0.061
FBF207	-0.129	-3.000 ***	0.907	19.688	90.2%	0.021	-0.135	-3.915 ***	0.905	25.938	0.014	1.459	0.123	1.973	92.6%	0.000
FBF208	-0.070	-2.842 ***	0.777	25.944	84.3%	0.827	-0.100	-2.406 **	0.773	24.771	0.012	1.438	0.209	2.206	85.1%	0.000
FBF209	-0.095	-2.566 **	1.012	22.987	92.2%	0.004	-0.080	-2.005 **	1.001	22.137	0.003	0.394	0.059	1.212	92.4%	0.000
FBF210	-0.120	-1.907 *	1.390	29.385	87.8%	0.122	-0.057	-0.942	1.416	23.540	-0.021	-1.331	0.171	1.599	89.8%	0.012
FBF211	-0.151	-4.256 ***	0.613	15.132	75.5%	0.270	-0.157	-3.275 ***	0.626	15.351	-0.007	-0.771	0.158	1.602	75.2%	0.134
FBF212	-0.115	-2.663 ***	0.567	10.256	73.0%	0.060	-0.157	-3.609 ***	0.587	10.058	-0.003	-0.285	0.303	4.265	75.7%	0.031
FBF213	-0.056	-1.357	1.300	40.169	93.5%	0.127	-0.023	-0.528	1.309	42.214	-0.006	-0.618	0.002	0.022	93.9%	0.004
FBF214	-0.083	-1.922 *	1.057	24.325	90.8%	0.207	-0.029	-0.758	1.075	23.030	-0.016	-1.185	-0.003	-0.049	91.7%	0.002
FBF215	-0.059	-1.625	0.956	34.171	91.3%	0.269	-0.046	-1.368	0.980	30.988	-0.009	-0.887	0.092	1.521	92.1%	0.418
FBF216	-0.072	-2.286 **	0.510	11.288	75.5%	0.101	-0.098	-3.068 ***	0.527	10.751	-0.003	-0.320	0.160	2.213	75.3%	0.004
FBF217	-0.073	-1.279	1.055	12.073	86.5%	0.079	-0.113	-1.688 *	1.075	13.388	0.008	0.579	0.245	2.920	87.6%	0.373
FBF218	-0.039	-1.050	0.712	14.772	86.6%	0.772	-0.004	-0.110	0.714	18.990	-0.011	-1.308	-0.068	-0.889	86.8%	0.490
FBF219	-0.068	-1.485	0.709	14.715	80.0%	0.643	-0.081	-1.771 *	0.742	14.451	-0.009	-0.980	0.177	1.739	80.4%	0.000
FBF220	-0.118	-4.883 ***	0.770	25.791	91.3%	0.000	-0.098	-3.685 ***	0.775	23.342	-0.006	-0.740	0.078	1.132	92.0%	0.000
FBF221	-0.088	-2.938 ***	0.835	26.712	91.2%	0.002	-0.102	-3.208 ***	0.850	31.557	-0.004	-0.610	0.150	2.271	91.6%	0.008
FBF222	-0.064	-1.590	1.316	40.258	93.3%	0.100	-0.031	-0.728	1.317	34.317	-0.004	-0.349	-0.002	-0.025	94.0%	0.022
FBF223	-0.110	-2.239 **	1.023	21.426	89.1%	0.000	-0.059	-1.299	1.028	18.568	-0.006	-0.449	-0.062	-1.037	90.2%	0.004
FBF224	-0.112	-3.329 ***	0.567	15.362	74.8%	0.947	-0.134	-3.352 ***	0.575	12.494	0.000	0.016	0.144	1.727	74.6%	0.135
FBF225	-0.026	-0.720	0.744	21.962	89.5%	0.000	-0.042	-1.142	0.731	28.169	0.019	3.076	0.086	1.785	91.5%	0.000
FBF226	-0.123	-3.214 ***	0.930	26.987	90.9%	0.096	-0.117	-2.924 ***	0.932	26.772	-0.001	-0.074	0.097	1.488	91.6%	0.000
FBF227	-0.041	-0.941	0.810	21.414	87.0%	0.226	-0.052	-1.235	0.822	19.771	-0.001	-0.048	0.101	1.952	86.7%	0.165
FBF228	-0.170	-3.143 ***	0.828	15.917	75.9%	0.076	-0.188	-2.347 **	0.780	15.356	0.023	1.929	0.028	0.189	77.6%	0.000
FBF229	-0.007	-0.067	0.381	5.894	29.8%	0.229	0.024	0.300	0.309	3.637	0.050	2.432	-0.034	-0.340	45.7%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
FBF230	-0.126	-1.769 *	0.967	8.981	74.6%	0.248	-0.097	-1.133	0.962	7.774	0.001	0.039	0.046	0.317	72.5%	0.325
FBF231	-0.118	-2.277 **	1.197	17.662	94.2%	0.040	-0.115	-2.260 **	1.187	17.606	0.005	0.632	-0.183	-1.680	94.3%	0.089
FBF232	-0.035	-0.587	0.785	10.021	75.2%	0.019	-0.107	-2.273 **	0.764	15.492	0.048	3.598	0.201	3.189	84.8%	0.019
FBF233	-0.096	-3.474 ***	0.895	21.626	88.6%	0.002	-0.085	-2.523 **	0.904	21.053	-0.007	-0.845	0.110	1.721	88.5%	0.007
FBF234	-0.098	-3.102 ***	0.917	22.813	92.3%	0.000	-0.111	-3.091 ***	0.932	22.337	-0.003	-0.341	0.079	1.473	92.2%	0.000
FBF235	-0.024	-0.821	0.858	32.506	92.2%	0.206	-0.032	-1.066	0.882	38.871	-0.010	-1.610	0.111	2.307	92.7%	0.001
FBF236	-0.165	-2.574 **	0.757	9.803	72.9%	0.063	-0.194	-2.769 ***	0.765	14.529	0.013	1.184	0.165	1.473	77.7%	0.000
FBF237	-0.104	-2.409 **	1.111	18.943	87.8%	0.449	-0.052	-1.140	1.122	16.324	-0.012	-1.046	-0.098	-0.984	87.9%	0.097
FBF238	-0.004	-0.056	0.654	7.647	63.9%	0.000	0.031	0.454	0.659	7.416	-0.011	-0.864	0.103	1.050	62.7%	0.000
FBF239	-0.074	-1.205	0.341	7.787	46.0%	0.026	-0.104	-1.858 *	0.350	8.342	0.004	0.437	0.183	2.060	51.7%	0.000
FBF240	-0.148	-4.264 ***	0.913	22.157	90.9%	0.018	-0.111	-2.915 ***	0.920	24.925	-0.015	-2.110	-0.016	-0.193	91.3%	0.012
FBF241	-0.117	-3.131 ***	1.011	25.453	91.2%	0.080	-0.114	-2.879 ***	1.029	19.702	-0.003	-0.234	0.116	1.655	91.7%	0.010
FBF242	0.023	0.200	0.991	4.903	57.6%	0.410	-0.057	-0.399	1.040	6.257	-0.002	-0.096	0.328	1.647	56.9%	0.416
FBF243	-0.070	-1.328	0.653	12.934	67.9%	0.391	-0.047	-0.803	0.651	12.642	0.000	-0.042	-0.016	-0.137	66.8%	0.000
FBF244	-0.144	-3.232 ***	0.375	7.762	45.9%	0.304	-0.197	-3.261 ***	0.377	9.909	0.023	2.254	0.145	1.383	49.1%	0.277
FBF245	-0.110	-3.811 ***	0.718	20.769	83.7%	0.040	-0.160	-3.877 ***	0.707	16.712	0.020	1.936	0.155	2.051	85.3%	0.011
FBF246	-0.038	-0.960	0.855	18.255	90.3%	0.011	-0.048	-1.087	0.854	17.993	0.001	0.171	0.073	0.921	89.7%	0.008
FBF247	-0.092	-1.576	0.760	11.298	68.1%	0.000	-0.127	-1.794 *	0.744	9.629	0.017	1.546	0.057	0.320	66.6%	0.000
FBF248	-0.113	-3.644 ***	0.978	31.673	93.7%	0.000	-0.142	-3.887 ***	0.952	40.705	0.021	3.170	0.152	2.276	95.1%	0.000
FBF249	-0.082	-3.274 ***	1.034	40.364	95.6%	0.004	-0.073	-3.113 ***	1.031	40.739	0.001	0.147	0.056	1.183	95.8%	0.023
FBF250	-0.139	-3.479 ***	1.237	44.669	93.7%	0.016	-0.109	-2.791 ***	1.240	35.947	-0.008	-0.770	-0.026	-0.394	93.8%	0.000
FBF251	-0.076	-1.398	1.015	10.204	85.7%	0.241	-0.034	-0.575	0.985	10.734	0.004	0.385	-0.212	-2.643	85.5%	0.224
FBF252	0.033	0.395	0.960	10.495	72.6%	0.525	0.002	0.018	0.901	9.007	0.050	2.990	-0.079	-0.509	74.7%	0.133
FBF253	-0.074	-1.796 *	1.323	41.417	93.9%	0.088	-0.032	-0.762	1.321	36.660	-0.003	-0.248	-0.052	-1.062	94.5%	0.009
FBF254	-0.119	-2.721 ***	0.920	11.539	84.2%	0.073	-0.083	-1.593	0.901	11.542	0.000	0.046	0.003	0.020	83.6%	0.000
FBF255	-0.100	-2.683 ***	1.208	35.565	95.4%	0.000	-0.073	-1.931 *	1.208	42.201	-0.005	-0.839	0.035	0.525	96.0%	0.000
FBF256	-0.070	-1.727 *	0.875	17.526	88.0%	0.179	-0.027	-0.484	0.878	16.957	-0.011	-1.259	0.027	0.333	88.6%	0.105
FBF257	0.028	0.660	0.780	19.138	86.1%	0.000	-0.006	-0.138	0.760	22.474	0.027	4.296	0.109	1.800	89.6%	0.000
FBF258	0.030	0.395	0.864	13.953	66.5%	0.313	0.038	0.444	0.822	14.978	0.029	3.058	0.099	0.681	68.9%	0.002
FBF259	-0.101	-0.920	0.495	5.699	17.2%	0.482	-0.084	-0.828	0.534	4.658	0.018	0.836	0.632	2.447	37.2%	0.000
FBF260	-0.029	-0.405	0.480	4.603	36.3%	0.478	-0.030	-0.376	0.438	4.881	0.030	1.861	-0.100	-0.399	34.4%	0.016
FBF261	-0.086	-0.734	0.936	11.185	60.8%	0.010	-0.073	-0.695	0.833	12.321	0.063	4.133	-0.260	-1.170	64.7%	0.152
FBF262	-0.014	-0.076	1.004	7.871	36.0%	0.043	0.000	-0.001	0.928	8.086	0.054	2.107	-0.098	-0.186	34.7%	0.060
FBF263	-0.149	-1.693 *	1.083	13.051	76.6%	0.235	-0.101	-1.055	1.069	13.649	0.002	0.127	-0.311	-2.325	76.8%	0.061
FBF264	-0.061	-1.422	0.593	10.850	75.2%	0.000	-0.028	-0.478	0.601	12.850	-0.007	-0.798	-0.184	-1.243	76.6%	0.000
FBF265	-0.046	-0.334	1.209	7.130	62.0%	0.007	-0.208	-1.331	1.144	10.272	0.093	4.700	0.488	2.312	70.4%	0.000
FBF266	-0.080	-0.991	0.922	13.257	69.5%	0.005	-0.057	-0.753	0.887	12.449	0.029	2.042	-0.056	-0.354	70.6%	0.005
UK																
UKBF1	-0.060	-1.164	0.955	23.977	85.8%	0.036	-0.070	-0.985	0.963	17.528	0.004	0.161	0.066	0.429	85.0%	0.035
UKBF2	-0.193	-3.991 ***	0.698	12.284	81.5%	0.074	-0.172	-3.394 ***	0.697	12.652	-0.006	-0.392	-0.018	-0.179	81.2%	0.002
UKBF3	-0.224	-3.169 ***	0.431	9.073	52.7%	0.064	-0.277	-3.860 ***	0.389	6.306	0.044	1.382	-0.162	-0.906	51.0%	0.210
UKBF4	-0.161	-3.733 ***	1.027	30.501	88.0%	0.088	-0.148	-2.111 **	0.978	21.769	0.029	1.452	-0.014	-0.103	87.7%	0.005
UKBF5	-0.045	-0.372	1.320	11.465	70.7%	0.971	-0.026	-0.174	1.235	9.211	0.075	1.582	0.613	2.037	75.8%	0.000
UKBF6	0.007	0.056	1.349	10.010	69.0%	0.957	0.000	-0.003	1.272	8.478	0.084	1.736	0.761	2.253	74.6%	0.000
UKBF7	-0.180	-6.040 ***	1.032	42.481	94.1%	0.001	-0.138	-2.887 ***	1.000	34.122	0.011	0.942	0.031	0.347	94.4%	0.000
UKBF8	-0.173	-3.513 ***	1.025	40.598	90.6%	0.000	-0.174	-2.132 **	0.992	22.982	0.028	1.321	0.088	0.573	90.8%	0.000
UKBF9	-0.358	-4.311 ***	1.078	10.945	82.4%	0.509	-0.356	-3.905 ***	1.030	10.621	0.029	1.145	-0.173	-0.884	81.8%	0.263
UKBF10	-0.296	-3.411 ***	1.076	11.148	80.0%	0.285	-0.295	-3.294 ***	1.049	11.293	0.020	0.689	-0.014	-0.059	79.4%	0.123
UKBF11	-0.199	-3.816 ***	1.203	28.607	90.2%	0.000	-0.173	-2.315 **	1.156	21.636	0.030	1.605	0.030	0.186	89.9%	0.055
UKBF12	-0.059	-0.438	0.696	8.573	48.6%	0.027	-0.095	-0.595	0.684	8.651	0.026	0.740	-0.282	-1.066	53.5%	0.003
UKBF13	-0.164	-2.952 ***	1.060	16.309	86.7%	0.505	-0.169	-2.322 **	1.071	15.270	-0.002	-0.092	0.145	0.872	86.0%	0.086
UKBF14	-0.187	-3.043 ***	1.041	26.682	85.8%	0.000	-0.254	-2.937 ***	1.001	27.010	0.056	1.944	0.104	0.690	86.2%	0.000
UKBF15	-0.076	-1.419	1.195	37.840	91.4%	0.000	-0.047	-0.615	1.166	32.209	0.015	0.876	0.199	1.589	91.8%	0.000
UKBF16	-0.169	-3.273 ***	1.190	40.622	92.5%	0.000	-0.137	-1.904 *	1.161	36.279	0.015	0.915	0.182	1.464	92.8%	0.000
UKBF17	-0.207	-5.016 ***	0.974	21.930	90.7%	0.000	-0.182	-3.677 ***	0.957	22.857	0.006	0.388	0.069	0.674	90.8%	0.001

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
UKBF18	-0.151	-2.591 **	0.964	18.758	82.6%	0.011	-0.136	-1.905 *	0.949	18.851	0.010	0.461	0.082	0.772	82.0%	0.075
UKBF19	-0.081	-0.853	1.468	22.452	85.7%	0.309	0.045	0.344	1.443	18.378	-0.003	-0.101	0.137	0.646	85.7%	0.014
UKBF20	-0.180	-3.728 ***	1.191	43.870	93.5%	0.000	-0.170	-2.429 **	1.153	36.967	0.033	2.379	0.084	0.621	93.7%	0.000
UKBF21	-0.110	-1.802 *	1.174	34.188	86.6%	0.000	-0.087	-1.188	1.072	15.710	0.083	2.281	-0.053	-0.245	88.2%	0.000
UKBF22	-0.217	-5.660 ***	0.774	19.100	87.8%	0.006	-0.229	-4.064 ***	0.767	18.915	0.016	1.255	0.130	1.127	87.4%	0.000
UKBF23	-0.127	-1.007	0.667	9.376	52.4%	0.003	-0.167	-1.096	0.677	9.041	0.013	0.378	-0.188	-0.848	56.8%	0.000
UKBF24	-0.301	-4.287 ***	1.088	13.307	84.3%	0.000	-0.281	-2.897 ***	1.106	12.291	-0.021	-0.611	0.075	0.402	83.0%	0.000
UKBF25	-0.244	-3.802 ***	0.769	11.544	79.8%	0.004	-0.269	-3.417 ***	0.765	10.037	0.009	0.328	0.040	0.305	78.6%	0.029
UKBF26	-0.214	-3.981 ***	0.351	5.015	58.9%	0.008	-0.266	-3.514 ***	0.376	5.091	0.001	0.035	0.106	0.837	56.7%	0.001
UKBF27	-0.145	-1.817 *	0.832	16.963	66.3%	0.001	-0.204	-1.642	0.821	12.834	0.025	0.865	0.003	0.018	63.1%	0.001
UKBF28	-0.032	-0.661	0.944	18.682	85.3%	0.008	-0.034	-0.491	0.942	16.396	0.021	1.039	0.277	1.916	85.1%	0.083
UKBF29	-0.032	-0.404	0.914	13.153	73.7%	0.055	0.048	0.638	0.908	11.213	-0.017	-0.470	0.073	0.435	72.7%	0.300
UKBF30	-0.066	-0.924	1.101	13.633	83.0%	0.045	0.000	0.001	1.051	12.937	0.024	0.805	0.036	0.208	82.2%	0.458
UKBF31	-0.245	-1.585	0.861	10.715	59.7%	0.002	-0.328	-1.999 **	0.842	8.842	0.049	1.108	0.332	1.797	60.9%	0.000
UKBF32	0.046	0.286	0.899	6.585	33.9%	0.166	-0.282	-1.742 *	0.560	3.825	0.425	4.771	-0.510	-1.695	70.3%	0.025
UKBF33	0.132	0.539	0.397	2.461	11.9%	0.008	-0.235	-0.981	0.190	1.557	0.385	8.310	0.598	1.851	49.1%	0.014
UKBF34	0.191	0.779	0.394	2.425	12.6%	0.008	-0.165	-0.731	0.195	1.606	0.377	8.360	0.657	2.153	49.9%	0.009
UKBF35	-0.001	-0.007	0.620	6.527	37.1%	0.059	0.043	0.285	0.646	6.343	-0.016	-0.400	0.319	1.320	39.0%	0.004
UKBF36	-0.171	-2.189 **	1.026	25.247	83.6%	0.000	-0.169	-1.859 *	1.006	20.174	0.022	0.647	0.097	0.507	82.3%	0.000
UKBF37	-0.079	-1.134	1.018	27.035	84.9%	0.000	-0.073	-0.803	0.970	24.067	0.046	2.200	0.129	0.904	84.7%	0.000
UKBF38	-0.047	-0.831	0.858	18.266	78.6%	0.000	-0.051	-0.697	0.861	13.963	0.008	0.250	0.032	0.197	76.6%	0.000
UKBF39	0.038	0.179	0.528	3.491	23.2%	0.019	-0.164	-0.637	0.381	2.529	0.264	3.203	0.411	1.278	45.6%	0.000
UKBF40	0.308	1.502	0.429	3.115	23.6%	0.014	0.055	0.249	0.360	2.363	0.187	2.816	0.739	1.654	33.6%	0.081
UKBF41	0.022	0.110	0.664	5.503	27.5%	0.002	-0.049	-0.205	0.693	4.072	-0.018	-0.215	0.539	1.257	27.8%	0.000
UKBF42	0.117	0.527	0.449	3.598	25.9%	0.001	0.230	0.927	0.343	1.917	0.034	0.511	-0.038	-0.086	25.1%	0.000
UKBF43	0.082	0.724	0.383	4.142	30.1%	0.000	-0.027	-0.186	0.282	3.008	0.123	2.847	-0.031	-0.101	34.1%	0.004
UKBF44	0.230	1.602	0.491	5.925	34.6%	0.000	0.277	1.987 *	0.425	3.628	0.026	0.438	-0.065	-0.267	30.8%	0.007
UKBF45	0.381	1.069	0.511	1.615	8.6%	0.131	-0.001	-0.002	0.318	1.514	0.527	5.374	0.975	1.931	55.9%	0.000
Spain																
SBF1	-0.235	-3.465 ***	0.891	12.590	78.5%	0.148	-0.234	-3.108 ***	0.886	13.161	0.007	0.708	0.137	0.801	77.7%	0.025
SBF2	-0.172	-2.961 ***	0.479	4.507	48.6%	0.004	-0.187	-2.738 ***	0.478	3.859	0.009	0.478	0.003	0.016	46.9%	0.000
SBF3	-0.150	-4.263 ***	0.611	23.552	89.2%	0.683	-0.163	-4.198 ***	0.628	22.143	-0.004	-0.832	0.073	1.215	89.3%	0.000
SBF4	-0.168	-6.209 ***	0.540	22.301	90.8%	0.104	-0.183	-6.873 ***	0.553	22.601	0.000	-0.023	0.012	0.311	90.5%	0.179
SBF5	-0.186	-4.936 ***	0.568	16.201	82.1%	0.077	-0.195	-4.742 ***	0.592	17.981	-0.006	-0.880	0.029	0.377	82.0%	0.001
SBF6	-0.104	-4.113 ***	0.394	12.497	80.2%	0.996	-0.120	-4.505 ***	0.401	16.393	0.000	0.085	0.156	3.204	83.5%	0.000
SBF7	-0.161	-3.536 ***	0.913	12.710	80.0%	0.025	-0.197	-3.313 ***	0.959	13.871	0.003	0.323	0.282	2.266	83.2%	0.000
SBF8	-0.144	-4.066 ***	0.610	12.984	69.9%	0.000	-0.154	-3.925 ***	0.607	15.453	0.000	0.014	0.086	1.020	67.5%	0.000
SBF9	-0.161	-3.066 ***	0.914	17.629	87.2%	0.033	-0.173	-2.870 ***	0.924	17.137	0.007	0.912	0.113	1.058	86.8%	0.043
SBF10	-0.164	-5.244 ***	0.549	18.618	89.1%	0.001	-0.162	-4.748 ***	0.533	17.269	0.001	0.208	0.015	0.286	88.7%	0.000
SBF11	-0.164	-4.869 ***	0.498	16.115	81.5%	0.773	-0.182	-4.801 ***	0.496	15.945	0.003	0.520	0.159	2.319	82.4%	0.023
SBF12	-0.204	-5.962 ***	0.505	13.710	83.3%	0.281	-0.206	-6.190 ***	0.536	13.195	-0.010	-1.758	0.108	1.521	83.8%	0.012
SBF13	-0.188	-4.542 ***	0.412	12.631	78.2%	0.030	-0.209	-4.270 ***	0.415	14.123	0.004	0.757	0.068	0.989	79.9%	0.000
SBF14	-0.189	-4.018 ***	0.436	8.423	65.3%	0.465	-0.226	-4.016 ***	0.421	8.926	0.010	1.798	0.061	0.789	66.0%	0.000
SBF15	-0.157	-8.648 ***	0.271	14.747	78.7%	0.884	-0.174	-8.382 ***	0.274	15.123	0.005	1.351	0.084	1.459	81.8%	0.042
SBF16	-0.128	-1.895 *	0.493	12.287	61.8%	0.142	-0.125	-1.674 *	0.502	10.453	-0.007	-0.960	0.160	1.485	61.1%	0.002
SBF17	-0.156	-4.102 ***	0.500	14.563	83.2%	0.007	-0.175	-4.466 ***	0.518	13.150	-0.003	-0.553	0.124	1.726	83.8%	0.000
SBF18	-0.170	-5.528 ***	0.534	20.352	88.0%	0.000	-0.190	-6.058 ***	0.540	23.946	0.005	1.327	0.075	1.858	88.4%	0.001
SBF19	-0.144	-3.841 ***	0.517	18.627	82.7%	0.039	-0.165	-4.498 ***	0.521	19.849	0.008	1.201	0.064	0.921	82.7%	0.018
SBF20	-0.197	-3.037 ***	0.457	12.348	62.9%	0.191	-0.236	-2.988 ***	0.432	8.189	0.017	1.191	-0.062	-0.583	64.4%	0.032
SBF21	-0.207	-5.916 ***	0.448	15.695	80.0%	0.592	-0.233	-6.750 ***	0.459	17.551	0.005	0.966	0.049	0.860	80.9%	0.056
SBF22	-0.164	-3.520 ***	0.476	13.962	72.6%	0.007	-0.176	-3.125 ***	0.499	13.119	-0.007	-0.948	0.005	0.052	71.1%	0.000
SBF23	-0.189	-5.200 ***	0.553	17.931	84.8%	0.051	-0.208	-5.244 ***	0.558	16.992	0.004	0.748	0.102	2.107	85.0%	0.000
SBF24	-0.171	-6.160 ***	0.491	20.932	87.8%	0.000	-0.175	-6.290 ***	0.492	18.953	0.002	0.737	0.023	0.515	87.6%	0.000
SBF25	-0.145	-7.059 ***	0.593	17.675	93.7%	0.016	-0.155	-8.704 ***	0.605	19.204	0.001	0.296	0.075	1.582	94.1%	0.000
SBF26	-0.278	-14.126 ***	0.520	23.337	93.1%	0.002	-0.284	-13.785 ***	0.523	22.213	-0.001	-0.415	0.094	2.593	92.9%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat		β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat		Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
SBF27	-0.194	-4.123	***	0.860	14.521	82.4%	0.003	-0.225	-4.153	***	0.888	16.686	0.006	0.701	0.139	1.536	83.8%	0.000
SBF28	-0.238	-3.399	***	0.573	21.130	77.7%	0.106	-0.244	-3.073	***	0.584	18.199	-0.004	-0.759	0.008	0.088	75.5%	0.324
SBF29	-0.152	-4.661	***	0.390	14.579	77.5%	0.000	-0.167	-4.707	***	0.383	11.327	0.005	0.865	0.040	0.591	77.5%	0.000
SBF30	-0.227	-6.604	***	0.151	3.430	23.8%	0.098	-0.226	-6.700	***	0.168	3.659	0.003	0.320	-0.003	-0.039	26.9%	0.000
SBF31	-0.197	-2.166	**	0.302	3.780	23.5%	0.004	-0.214	-2.782	***	0.344	4.153	-0.010	-0.733	0.292	1.504	22.9%	0.001
SBF32	-0.278	-5.321	***	0.721	24.322	86.2%	0.013	-0.288	-5.260	***	0.687	22.653	0.016	4.398	0.041	0.380	86.1%	0.000
SBF33	-0.180	-4.561	***	0.356	8.715	71.7%	0.108	-0.186	-4.285	***	0.356	7.698	0.005	0.718	-0.068	-1.128	69.6%	0.067
SBF34	-0.014	-0.461		0.492	11.295	82.3%	0.321	-0.030	-0.844		0.497	9.661	0.002	0.309	0.116	1.274	82.1%	0.025
SBF35	-0.185	-4.033	***	0.407	9.237	70.2%	0.547	-0.213	-4.151	***	0.415	9.350	0.008	1.314	-0.026	-0.363	71.3%	0.000
SBF36	-0.100	-2.660	***	0.475	7.889	65.8%	0.543	-0.113	-2.515	**	0.461	7.229	0.016	1.141	-0.086	-0.664	64.7%	0.220
SBF37	-0.202	-4.783	***	0.373	12.258	67.9%	0.382	-0.208	-4.523	***	0.395	15.363	-0.003	-0.528	0.058	1.154	66.0%	0.094
SBF38	-0.131	-2.718	***	0.535	13.699	74.2%	0.472	-0.118	-2.223	**	0.530	13.007	-0.005	-1.303	-0.031	-0.425	73.5%	0.225
SBF39	-0.160	-3.766	***	0.556	14.216	82.5%	0.824	-0.176	-3.797	***	0.562	14.182	0.001	0.096	0.084	0.933	82.6%	0.000
SBF40	-0.101	-2.328	**	0.522	21.645	80.5%	0.199	-0.103	-2.170	**	0.517	17.045	0.001	0.235	0.079	1.100	78.8%	0.051
SBF41	-0.264	-6.558	***	0.512	9.055	74.3%	0.102	-0.249	-5.452	***	0.512	7.978	0.004	0.460	-0.097	-0.988	74.3%	0.000
SBF42	-0.160	-6.893	***	0.201	7.825	64.5%	0.061	-0.165	-5.748	***	0.206	7.338	-0.001	-0.213	0.022	0.397	66.0%	0.000
SBF43	-0.076	-1.808	*	0.521	9.174	75.6%	0.607	-0.133	-3.337	***	0.546	19.125	0.009	1.873	0.126	1.629	83.8%	0.000
SBF44	-0.197	-7.422	***	0.492	16.621	78.2%	0.000	-0.199	-6.840	***	0.494	15.553	-0.005	-1.045	0.104	1.230	79.5%	0.000
SBF45	-0.221	-3.643	***	0.584	20.404	82.0%	0.026	-0.226	-3.176	***	0.587	16.200	-0.001	-0.184	0.025	0.242	80.1%	0.275
SBF46	-0.218	-5.653	***	0.396	11.618	77.3%	0.055	-0.230	-5.893	***	0.394	9.103	0.007	1.592	0.047	1.050	78.0%	0.033
SBF47	-0.110	-2.012	**	0.530	8.329	68.3%	0.554	-0.182	-5.113	***	0.514	16.220	0.037	5.345	0.180	2.184	85.1%	0.000
SBF48	-0.106	-4.608	***	0.622	30.215	95.6%	0.094	-0.108	-4.226	***	0.623	25.238	0.000	0.005	0.106	3.606	96.3%	0.000
SBF49	-0.167	-6.663	***	0.444	17.627	88.7%	0.003	-0.158	-5.685	***	0.450	17.369	-0.002	-0.482	0.016	0.352	88.1%	0.000
SBF50	-0.135	-3.474	***	0.582	13.174	83.7%	0.125	-0.150	-3.489	***	0.612	14.680	-0.003	-0.597	0.133	1.735	84.1%	0.004
SBF51	-0.173	-5.164	***	0.540	13.562	80.7%	0.493	-0.192	-5.386	***	0.585	16.843	-0.013	-2.046	0.216	4.043	82.9%	0.000
SBF52	-0.171	-8.527	***	0.374	17.870	90.5%	0.010	-0.172	-9.329	***	0.386	18.205	-0.002	-0.578	0.056	1.377	91.1%	0.000
SBF53	-0.172	-3.484	***	0.780	12.057	84.2%	0.345	-0.196	-3.369	***	0.764	11.688	0.009	1.148	0.111	0.885	83.4%	0.450
SBF54	-0.176	-7.544	***	0.410	13.253	88.6%	0.041	-0.169	-6.754	***	0.407	13.216	-0.004	-1.020	0.001	0.017	87.8%	0.000
SBF55	-0.188	-5.556	***	0.387	14.793	82.2%	0.052	-0.176	-5.069	***	0.395	14.926	-0.005	-1.164	0.024	0.532	81.3%	0.000
SBF56	-0.175	-5.172	***	0.515	20.377	88.7%	0.547	-0.183	-4.707	***	0.526	16.278	-0.004	-0.989	0.015	0.223	88.5%	0.016
SBF57	-0.148	-7.012	***	0.292	11.955	79.7%	0.713	-0.162	-7.834	***	0.314	15.486	-0.005	-1.598	0.086	2.193	82.1%	0.000
SBF58	-0.162	-13.158	***	0.114	8.896	65.5%	0.906	-0.166	-12.390	***	0.118	8.467	0.000	0.166	0.037	1.707	66.1%	0.000
SBF59	-0.145	-6.003	***	0.426	12.844	84.7%	0.654	-0.157	-6.096	***	0.431	12.201	0.001	0.142	0.097	1.467	84.0%	0.497
SBF60	-0.172	-6.705	***	0.385	21.535	87.1%	0.908	-0.182	-7.525	***	0.396	22.741	0.001	0.191	0.043	0.774	87.5%	0.000
SBF61	-0.090	-2.197	**	0.568	17.349	85.4%	0.530	-0.097	-2.247	**	0.570	16.632	0.002	0.460	0.125	1.695	85.2%	0.000
SBF62	-0.133	-4.423	***	0.482	16.758	88.7%	0.000	-0.128	-3.884	***	0.476	15.727	0.000	-0.098	0.020	0.377	87.6%	0.000
SBF63	-0.098	-3.916	***	0.508	19.885	90.9%	0.000	-0.096	-3.572	***	0.499	18.279	0.002	0.489	-0.021	-0.486	90.1%	0.000
SBF64	-0.106	-2.311	**	0.402	5.778	60.7%	0.557	-0.131	-2.822	***	0.418	6.452	-0.001	-0.179	0.274	2.348	65.3%	0.000
SBF65	-0.018	-0.450		0.355	5.501	58.3%	0.776	-0.041	-0.910		0.374	5.982	-0.003	-0.518	0.222	2.118	62.1%	0.003
SBF66	-0.177	-5.359	***	0.423	12.963	79.0%	0.012	-0.207	-5.590	***	0.436	14.002	0.002	0.458	0.033	0.554	80.6%	0.000
SBF67	-0.231	-5.026	***	0.351	11.125	67.1%	0.005	-0.229	-4.421	***	0.375	13.280	-0.003	-0.675	-0.004	-0.064	66.0%	0.000
SBF68	-0.215	-3.282	***	0.125	0.865	8.3%	0.010	-0.221	-2.732	***	0.078	0.476	-0.003	-0.165	0.385	1.483	2.9%	0.067
SBF69	-0.182	-3.834	***	0.610	11.417	83.4%	0.203	-0.196	-3.968	***	0.604	11.904	-0.002	-0.218	0.195	2.017	83.9%	0.000
SBF70	-0.213	-3.028	***	0.489	8.532	60.6%	0.085	-0.204	-2.510	**	0.504	7.455	-0.012	-0.904	0.143	1.365	58.8%	0.005
SBF71	-0.312	-3.231	***	0.501	7.619	50.9%	0.215	-0.314	-2.761	***	0.513	6.830	-0.007	-0.484	0.215	1.587	47.9%	0.000
SBF72	-0.138	-3.036	***	0.317	8.600	65.8%	0.000	-0.155	-3.449	***	0.320	8.792	0.008	1.288	0.111	1.361	67.6%	0.000
SBF73	-0.298	-4.873	***	0.293	7.737	47.6%	0.004	-0.301	-4.514	***	0.301	6.540	-0.005	-0.680	0.067	0.617	42.8%	0.106
SBF74	-0.121	-5.505	***	0.148	7.972	61.6%	0.264	-0.132	-5.875	***	0.153	8.520	-0.001	-0.385	0.069	1.259	66.1%	0.000
SBF75	-0.203	-15.977	***	0.118	6.532	61.3%	0.006	-0.199	-12.418	***	0.120	5.673	0.000	-0.015	0.011	0.335	59.5%	0.000
SBF76	-0.148	-12.064	***	0.116	6.647	61.3%	0.004	-0.144	-9.401	***	0.122	5.660	-0.002	-0.610	0.022	0.727	59.8%	0.000
SBF77	-0.204	-15.744	***	0.115	6.287	59.1%	0.018	-0.199	-12.040	***	0.116	5.533	0.000	-0.020	0.006	0.198	57.6%	0.000
SBF78	-0.170	-15.706	***	0.116	6.394	60.6%	0.015	-0.164	-11.407	***	0.122	5.768	-0.003	-0.872	0.013	0.448	59.2%	0.001
SBF79	-0.117	-6.773	***	0.136	4.475	51.0%	0.007	-0.102	-4.621	***	0.140	4.514	-0.003	-0.649	-0.037	-1.014	52.9%	0.000
SBF80	-0.193	-7.348	***	0.175	4.269	58.4%	0.011	-0.177	-6.141	***	0.166	5.123	0.000	-0.031	0.030	0.590	60.9%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat		β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat		Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
SBF81	-0.231	-18.529	***	0.109	6.194	58.0%	0.020	-0.226	-15.289	***	0.110	5.421	0.000	0.130	-0.003	-0.095	55.7%	0.001
SBF82	-0.093	-6.615	***	0.136	5.589	57.2%	0.009	-0.084	-4.271	***	0.144	5.042	-0.003	-0.787	0.004	0.093	55.6%	0.002
SBF83	-0.232	-17.155	***	0.100	5.481	51.0%	0.074	-0.229	-14.411	***	0.104	4.899	0.000	0.017	0.000	0.011	48.9%	0.000
SBF84	-0.230	-18.889	***	0.109	6.105	58.2%	0.035	-0.225	-15.204	***	0.110	5.400	0.000	0.076	0.008	0.242	56.9%	0.001
SBF85	-0.178	-8.772	***	0.401	18.548	88.3%	0.150	-0.187	-9.061	***	0.406	18.086	-0.001	-0.211	0.114	2.357	89.2%	0.000
SBF86	-0.129	-4.575	***	0.424	12.353	79.8%	0.000	-0.119	-4.437	***	0.426	11.422	-0.005	-0.908	0.276	2.383	82.0%	0.000
SBF87	-0.111	-2.859	***	0.432	12.748	74.5%	0.000	-0.120	-3.008	***	0.429	13.789	0.002	0.432	0.092	1.249	78.8%	0.000
SBF88	-0.044	-1.470		0.409	7.832	68.1%	0.055	-0.080	-2.853	***	0.425	8.461	0.006	1.075	0.130	1.507	69.8%	0.014
SBF89	-0.262	-9.418	***	0.336	6.428	70.3%	0.204	-0.247	-7.742	***	0.352	6.969	-0.003	-0.593	-0.137	-1.868	71.4%	0.001
SBF90	-0.209	-4.573	***	0.217	7.273	42.9%	0.620	-0.204	-4.869	***	0.232	6.696	-0.005	-1.101	0.071	0.770	45.0%	0.000
SBF91	-0.230	-7.538	***	0.430	13.053	84.7%	0.182	-0.231	-6.828	***	0.422	12.951	-0.004	-1.172	0.082	1.520	85.8%	0.014
SBF92	-0.249	-5.324	***	0.495	16.319	80.8%	0.954	-0.262	-4.899	***	0.491	18.853	0.000	0.114	0.116	1.457	82.7%	0.000
SBF93	-0.169	-8.430	***	0.384	15.240	87.4%	0.894	-0.182	-8.791	***	0.399	16.873	-0.003	-1.123	0.084	1.723	87.8%	0.081
SBF94	-0.169	-2.345	**	0.310	6.479	41.0%	0.239	-0.197	-2.558	**	0.288	5.820	0.012	1.840	0.036	0.291	38.6%	0.000
SBF95	-0.104	-3.445	***	0.593	12.511	84.9%	0.886	-0.120	-3.552	***	0.591	11.919	0.006	1.137	0.074	0.781	84.2%	0.000
SBF96	-0.152	-3.995	***	0.295	15.942	73.4%	0.000	-0.163	-4.371	***	0.285	15.929	0.008	2.172	0.043	0.851	74.4%	0.000
SBF97	-0.203	-6.845	***	0.164	3.671	53.9%	0.048	-0.192	-5.849	***	0.153	2.952	0.004	1.015	-0.057	-0.805	51.8%	0.000
SBF98	-0.189	-6.302	***	0.404	7.675	71.4%	0.794	-0.213	-6.227	***	0.414	8.190	0.002	0.351	0.144	1.527	71.8%	0.005
SBF99	-0.133	-3.136	***	0.445	17.532	77.2%	0.583	-0.142	-3.280	***	0.442	17.348	0.005	0.681	0.042	0.436	76.0%	0.003
SBF100	-0.274	-3.973	***	0.354	3.938	44.3%	0.666	-0.266	-3.452	***	0.367	3.606	-0.007	-0.657	0.026	0.252	39.1%	0.915
SBF101	-0.249	-15.093	***	0.165	9.268	63.5%	0.001	-0.255	-15.243	***	0.175	9.314	-0.002	-1.042	0.060	2.012	66.0%	0.000
SBF102	-0.123	-15.762	***	0.027	2.870	34.2%	0.049	-0.120	-15.047	***	0.022	2.719	0.001	0.852	-0.024	-1.052	34.6%	0.000
SBF103	-0.236	-10.579	***	0.201	6.872	70.7%	0.275	-0.222	-8.673	***	0.196	7.212	0.000	-0.115	-0.048	-1.171	70.3%	0.000
SBF104	-0.117	-5.751	***	0.455	19.414	90.8%	0.000	-0.114	-5.346	***	0.466	17.450	-0.006	-1.809	-0.031	-0.662	90.8%	0.000
SBF105	-0.082	-1.741	*	0.113	2.397	18.2%	0.450	-0.061	-1.298		0.109	2.825	-0.002	-0.519	-0.071	-0.870	13.2%	0.000
SBF106	-0.175	-4.788	***	0.390	6.930	69.9%	0.035	-0.209	-5.320	***	0.395	8.070	0.001	0.148	0.113	1.213	70.9%	0.000
SBF107	-0.202	-5.990	***	0.453	10.033	76.8%	0.041	-0.234	-6.839	***	0.448	9.706	0.007	1.331	0.097	1.377	77.5%	0.006
SBF108	-0.206	-4.895	***	0.500	16.608	81.5%	0.629	-0.228	-5.037	***	0.488	14.127	0.012	1.955	0.074	1.244	81.9%	0.000
SBF109	-0.260	-2.083	**	0.514	3.948	43.5%	0.234	-0.240	-1.548		0.448	4.607	0.014	0.842	0.056	0.173	41.2%	0.354
SBF110	-0.193	-8.338	***	0.192	15.758	70.4%	0.387	-0.186	-8.166	***	0.202	12.282	-0.003	-1.097	-0.025	-0.905	72.0%	0.016
SBF111	-0.196	-8.248	***	0.213	5.818	59.6%	0.507	-0.195	-8.254	***	0.227	5.663	0.001	0.222	-0.019	-0.411	60.4%	0.000
SBF112	-0.174	-5.883	***	0.146	4.385	62.0%	0.082	-0.158	-5.153	***	0.131	4.817	0.001	0.213	0.009	0.201	61.8%	0.049
SBF113	-0.170	-5.645	***	0.138	4.538	59.2%	0.006	-0.157	-4.910	***	0.124	4.644	0.001	0.279	0.003	0.074	57.4%	0.001
SBF114	-0.169	-6.331	***	0.090	2.629	54.9%	0.001	-0.151	-5.841	***	0.072	3.052	0.000	0.067	-0.009	-0.247	56.9%	0.001
SBF115	-0.169	-6.078	***	0.118	3.348	55.7%	0.068	-0.150	-5.335	***	0.101	3.800	0.002	0.606	-0.036	-0.885	57.5%	0.130
SBF116	-0.149	-21.184	***	0.095	11.166	75.9%	0.000	-0.146	-23.974	***	0.096	10.414	0.000	0.082	0.002	0.166	75.7%	0.000
SBF117	-0.542	-5.697	***	-0.252	-1.845	2.8%	0.429	-0.581	-5.150	***	-0.348	-2.053	0.063	1.555	-0.192	-0.458	12.3%	0.011
SBF118	-0.179	-11.907	***	0.072	3.488	30.5%	0.003	-0.183	-12.332	***	0.084	3.957	-0.003	-1.106	0.077	1.876	32.4%	0.000
SBF119	-0.201	-5.339	***	0.257	13.676	71.8%	0.049	-0.195	-5.140	***	0.246	12.227	0.007	1.969	0.002	0.039	73.0%	0.000
SBF120	-0.221	-5.718	***	0.239	13.543	68.1%	0.228	-0.219	-5.596	***	0.231	11.149	0.006	2.163	0.018	0.346	69.8%	0.002
SBF121	-0.148	-3.541	***	0.301	8.669	67.6%	0.246	-0.165	-3.508	***	0.306	7.820	0.006	1.004	0.041	0.635	69.4%	0.000
SBF122	-0.170	-6.660	***	0.170	5.808	72.9%	0.000	-0.163	-6.037	***	0.175	5.351	-0.005	-1.500	0.110	1.886	72.2%	0.000
SBF123	-0.164	-4.301	***	0.483	11.173	79.0%	0.263	-0.197	-4.931	***	0.500	16.274	0.001	0.103	0.154	2.757	83.1%	0.000
SBF124	-0.181	-7.674	***	0.327	14.320	84.6%	0.262	-0.194	-7.021	***	0.326	13.194	0.002	0.775	-0.014	-0.267	85.1%	0.000
SBF125	-0.235	-10.011	***	0.194	5.828	65.9%	0.248	-0.217	-9.078	***	0.197	6.593	-0.003	-1.023	-0.033	-0.935	67.3%	0.000
SBF126	-0.139	-5.647	***	0.146	6.303	51.9%	0.050	-0.154	-5.746	***	0.131	7.399	0.008	2.400	-0.165	-2.675	63.5%	0.000
SBF127	-0.178	-9.752	***	0.170	7.276	62.9%	0.991	-0.172	-9.953	***	0.165	7.140	0.000	-0.059	0.066	2.006	63.3%	0.000
SBF128	-0.166	-8.609	***	0.111	4.246	43.4%	0.241	-0.149	-8.379	***	0.106	4.184	-0.001	-0.379	-0.028	-0.747	44.6%	0.119
SBF129	-0.219	-10.204	***	0.196	6.804	68.5%	0.320	-0.204	-8.648	***	0.192	7.078	0.000	-0.074	-0.042	-1.004	68.2%	0.000
SBF130	-0.057	-4.196	***	0.007	1.095	0.0%	0.306	-0.055	-3.529	***	0.007	1.055	0.000	-0.178	0.026	1.552	-3.1%	0.249
SBF131	-0.206	-9.649	***	0.210	6.821	73.0%	0.182	-0.187	-7.910	***	0.207	7.981	-0.002	-0.694	-0.038	-0.996	73.8%	0.000
SBF132	-0.101	-7.198	***	0.170	4.650	60.2%	0.000	-0.093	-5.359	***	0.177	4.734	-0.001	-0.271	0.015	0.237	60.0%	0.000
SBF133	-0.187	-8.423	***	0.263	16.047	81.2%	0.000	-0.188	-8.525	***	0.268	17.029	0.002	0.736	0.044	1.142	81.5%	0.000
SBF134	-0.081	-3.323	***	0.392	10.731	75.4%	0.427	-0.103	-4.251	***	0.403	10.622	0.002	0.514	0.125	2.138	75.7%	0.320
SBF135	-0.166	-6.583	***	0.415	19.763	89.8%	0.000	-0.161	-5.789	***	0.420	17.590	-0.002	-0.525	0.022	0.508	89.1%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.6 (continued)

	Conditional single-index						Conditional multi-index									
	α_p	t-stat	β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat	Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
SBF136	-0.167	-4.961 ***	0.303	6.736	67.7%	0.167	-0.158	-3.954 ***	0.304	6.319	0.003	0.518	-0.121	-1.566	67.3%	0.164
SBF137	-0.188	-5.183 ***	0.270	6.616	72.2%	0.000	-0.157	-4.445 ***	0.267	7.471	-0.006	-1.390	0.016	0.278	74.3%	0.000
SBF138	-0.200	-10.053 ***	0.175	7.251	64.9%	0.294	-0.190	-8.640 ***	0.176	7.025	0.000	0.046	0.006	0.178	65.0%	0.000
SBF139	-0.194	-5.422 ***	0.339	12.667	78.2%	0.234	-0.206	-5.080 ***	0.341	12.562	-0.001	-0.242	0.020	0.438	77.7%	0.000
SBF140	-0.175	-6.141 ***	0.384	14.718	87.1%	0.000	-0.174	-5.757 ***	0.389	13.443	-0.003	-0.738	0.094	2.272	87.1%	0.000
SBF141	-0.167	-6.622 ***	0.309	15.128	83.1%	0.003	-0.176	-6.584 ***	0.303	14.720	0.002	0.921	0.051	1.635	82.8%	0.000
SBF142	-0.260	-3.071 ***	0.381	9.007	50.2%	0.325	-0.299	-3.161 ***	0.384	9.710	0.004	0.687	0.238	1.474	52.8%	0.000
SBF143	-0.216	-10.676 ***	0.198	7.667	72.8%	0.151	-0.203	-8.784 ***	0.197	7.840	-0.001	-0.282	-0.034	-0.801	72.7%	0.000
SBF144	-0.026	-0.712	0.043	1.626	-1.6%	0.960	-0.037	-0.907	0.004	0.179	0.022	4.445	-0.037	-0.664	5.7%	0.000
SBF145	-0.057	-2.364 **	0.145	3.882	37.3%	0.027	-0.070	-2.788 ***	0.130	3.041	0.014	3.633	0.018	0.346	41.1%	0.000
SBF146	-0.178	-5.280 ***	0.337	5.708	58.4%	0.589	-0.206	-6.297 ***	0.356	6.670	-0.002	-0.428	0.290	3.700	66.1%	0.000
SBF147	-0.190	-8.320 ***	0.182	8.301	68.9%	0.176	-0.181	-6.769 ***	0.182	7.917	-0.001	-0.358	-0.022	-0.530	67.5%	0.000
SBF148	-0.203	-11.019 ***	0.179	6.156	59.1%	0.407	-0.191	-9.147 ***	0.186	6.277	-0.001	-0.515	-0.011	-0.228	61.6%	0.000
SBF149	-0.185	-17.606 ***	-0.006	-0.734	0.9%	0.098	-0.196	-20.116 ***	-0.008	-1.118	0.006	2.227	0.039	1.877	37.0%	0.001
SBF150	-0.137	-14.856 ***	0.050	5.935	33.7%	0.386	-0.143	-14.895 ***	0.050	5.596	-0.001	-0.564	0.050	2.405	44.2%	0.000
SBF151	-0.214	-3.171 ***	0.332	2.883	53.8%	0.000	-0.131	-1.636	0.256	3.707	0.005	0.388	-0.303	-2.099	64.0%	0.000
SBF152	-0.200	-15.987 ***	0.043	3.798	28.9%	0.828	-0.198	-17.210 ***	0.043	3.533	-0.001	-0.727	0.053	1.761	36.7%	0.000
SBF153	-0.154	-5.798 ***	0.407	17.959	90.0%	0.000	-0.155	-5.298 ***	0.406	15.966	0.001	0.153	0.034	0.828	89.3%	0.000
SBF154	-0.405	-1.939 *	0.234	2.400	-0.3%	0.964	-0.494	-2.339 **	0.171	2.461	0.057	3.584	0.608	2.120	20.8%	0.790
SBF155	-0.096	-0.878	-0.047	-0.465	1.6%	0.038	-0.259	-2.797 ***	-0.206	-2.345	0.128	4.012	0.413	1.680	60.8%	0.367
SBF156	-0.114	-9.747 ***	0.068	4.823	55.4%	0.000	-0.116	-9.144 ***	0.066	4.553	0.003	1.628	-0.004	-0.184	54.8%	0.000
SBF157	-0.211	-7.381 ***	0.331	9.762	66.7%	0.474	-0.222	-5.703 ***	0.314	13.490	0.004	0.660	-0.152	-1.275	68.7%	0.060
Italy																
IBF1	-0.144	-5.421 ***	0.267	9.529	69.4%	0.209	-0.138	-4.864 ***	0.261	7.950	0.002	0.420	0.060	0.984	69.1%	0.000
IBF2	-0.169	-6.730 ***	0.151	5.230	44.9%	0.434	-0.161	-6.440 ***	0.143	4.244	0.000	0.113	0.096	1.932	46.6%	0.000
IBF3	-0.117	-4.010 ***	0.207	5.090	57.0%	0.334	-0.111	-3.813 ***	0.190	4.912	0.006	1.556	-0.065	-1.115	62.3%	0.000
IBF4	-0.339	-6.402 ***	0.422	5.568	57.4%	0.719	-0.336	-6.260 ***	0.382	5.361	0.014	2.029	-0.199	-1.874	61.2%	0.004
IBF5	-0.150	-9.722 ***	0.131	13.385	64.2%	0.000	-0.143	-9.420 ***	0.123	9.653	0.003	1.744	0.030	0.919	71.8%	0.000
IBF6	-0.143	-3.608 ***	0.272	5.357	54.6%	0.898	-0.139	-3.373 ***	0.272	4.934	-0.001	-0.170	0.104	1.282	53.2%	0.007
IBF7	-0.185	-4.179 ***	0.309	5.264	59.0%	0.935	-0.180	-4.338 ***	0.310	5.098	-0.002	-0.370	0.093	1.270	59.4%	0.000
IBF8	-0.134	-6.099 ***	0.237	9.028	67.1%	0.287	-0.130	-5.960 ***	0.231	7.928	0.002	0.848	0.134	2.795	70.9%	0.000
IBF9	-0.198	-5.231 ***	0.453	17.152	79.6%	0.000	-0.197	-5.390 ***	0.434	13.709	0.007	1.249	0.154	1.784	80.8%	0.000
IBF10	-0.255	-3.822 ***	0.753	8.612	80.2%	0.070	-0.234	-4.037 ***	0.689	7.858	0.004	0.533	0.081	0.940	83.3%	0.001
IBF11	-0.211	-6.268 ***	0.231	5.159	55.4%	0.451	-0.209	-6.382 ***	0.220	4.332	0.003	0.777	0.130	2.748	56.7%	0.000
IBF12	-0.209	-4.073 ***	0.405	5.809	64.3%	0.142	-0.199	-3.889 ***	0.376	5.176	0.004	0.489	0.113	1.031	65.2%	0.000
IBF13	-0.161	-7.523 ***	0.236	10.964	72.7%	0.799	-0.158	-7.565 ***	0.229	9.904	0.003	1.018	0.094	2.432	74.7%	0.000
IBF14	-0.189	-5.359 ***	0.193	4.278	50.7%	0.002	-0.176	-5.525 ***	0.180	4.651	-0.002	-0.471	0.055	0.893	52.7%	0.001
IBF15	-0.235	-6.064 ***	0.177	3.193	39.6%	0.421	-0.226	-6.380 ***	0.156	3.057	0.003	0.813	-0.056	-0.940	42.1%	0.000
IBF16	-0.236	-6.357 ***	0.252	5.289	58.7%	0.788	-0.227	-6.469 ***	0.241	4.984	-0.002	-0.397	0.025	0.404	58.9%	0.003
IBF17	-0.194	-6.004 ***	0.242	7.138	67.1%	0.388	-0.187	-6.118 ***	0.232	7.305	0.000	-0.030	-0.007	-0.117	69.7%	0.000
IBF18	-0.173	-10.640 ***	0.132	12.296	62.5%	0.171	-0.169	-11.047 ***	0.130	10.931	0.001	0.711	0.054	1.553	66.0%	0.000
IBF19	-0.260	-4.387 ***	0.247	4.848	46.6%	0.034	-0.255	-4.668 ***	0.249	4.481	-0.006	-0.724	0.069	0.790	46.8%	0.007
IBF20	-0.150	-8.139 ***	0.180	13.570	70.1%	0.336	-0.146	-8.048 ***	0.173	10.859	0.004	1.645	0.029	0.890	71.9%	0.000
IBF21	-0.182	-7.737 ***	0.198	7.228	61.4%	0.563	-0.177	-7.706 ***	0.190	6.279	0.003	0.902	0.045	1.116	61.8%	0.000
IBF22	-0.291	-5.008 ***	0.698	9.489	76.3%	0.033	-0.280	-5.614 ***	0.621	8.561	0.021	3.714	0.082	0.864	80.0%	0.002
IBF23	-0.129	-5.324 ***	0.175	6.010	48.4%	0.604	-0.130	-5.136 ***	0.165	5.326	0.004	1.275	0.155	2.491	53.5%	0.000
IBF24	-0.213	-4.949 ***	0.214	3.923	43.7%	0.369	-0.203	-4.610 ***	0.192	3.680	0.004	0.772	-0.107	-1.066	43.1%	0.000
IBF25	-0.524	-3.062 ***	-0.042	-0.290	-1.4%	0.145	-0.521	-3.043 ***	0.017	0.117	-0.038	-1.535	-0.225	-0.846	-2.6%	0.001
IBF26	0.037	0.394	0.498	3.947	39.8%	0.121	0.039	0.401	0.492	4.126	0.003	0.309	-0.071	-0.506	36.6%	0.211
IBF27	-0.152	-6.243 ***	0.533	18.106	86.8%	0.012	-0.147	-5.973 ***	0.524	14.469	0.001	0.294	0.042	0.484	85.8%	0.003
IBF28	-0.199	-5.785 ***	0.562	18.481	83.6%	0.546	-0.193	-5.421 ***	0.550	17.326	0.004	0.773	0.067	0.768	83.9%	0.000
IBF29	-0.203	-3.688 ***	0.768	11.451	83.5%	0.307	-0.196	-3.447 ***	0.731	11.018	0.012	1.515	0.047	0.490	83.8%	0.000
IBF30	-0.213	-7.214 ***	0.657	19.085	89.2%	0.548	-0.205	-7.425 ***	0.638	16.882	0.005	0.959	-0.010	-0.148	89.1%	0.000
IBF31	-0.256	-4.415 ***	0.662	11.500	71.0%	0.512	-0.242	-4.253 ***	0.623	13.659	0.005	0.460	-0.003	-0.015	69.9%	0.023
IBF32	-0.220	-7.443 ***	0.735	21.967	87.9%	0.014	-0.200	-7.485 ***	0.668	22.434	0.015	3.069	-0.076	-0.864	90.8%	0.000

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

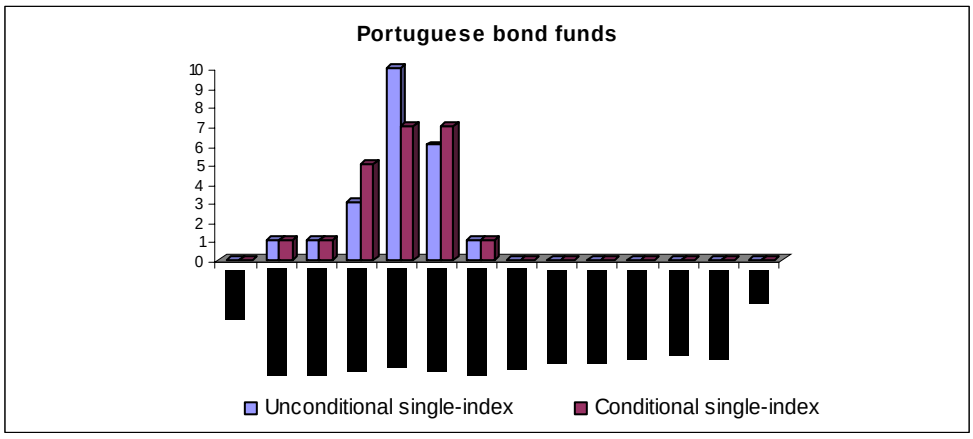
Appendix 5.6 (continued)

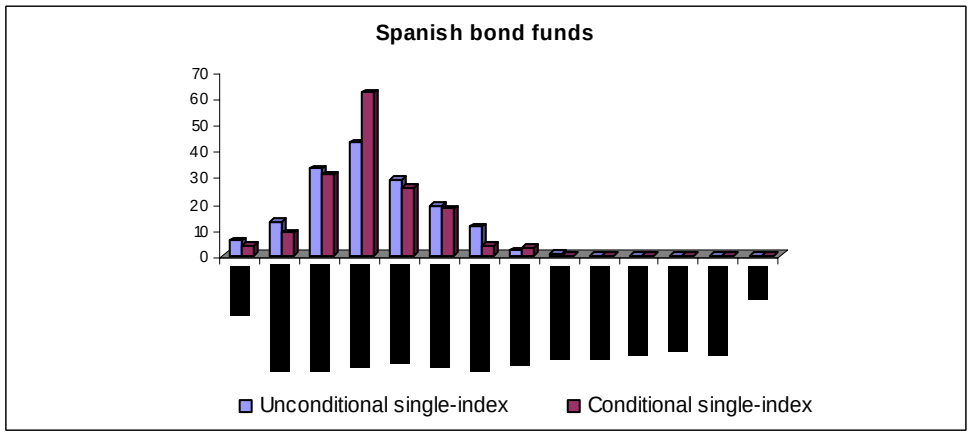
	Conditional single-index						Conditional multi-index									
	α_p	t-stat		β_{0p}	t-stat	R^2(adj.)	W(p-val)	α_p	t-stat		Bindex	t-stat	Sindex	t-stat	Def	t-stat	R^2(adj.)	W(p-val)
IBF33	-0.282	-6.511	***	0.699	18.735	86.3%	0.359	-0.275	-6.568	***	0.687	17.531	0.006	0.915	-0.025	-0.328	86.6%	0.000
IBF34	-0.295	-6.818	***	0.702	18.549	86.1%	0.573	-0.289	-6.958	***	0.693	17.154	0.006	0.858	-0.028	-0.371	86.4%	0.000
IBF35	-0.158	-5.807	***	0.531	19.550	84.1%	0.097	-0.150	-4.970	***	0.506	17.581	0.006	1.503	0.063	0.979	84.2%	0.001
IBF36	-0.117	-3.316	***	0.329	7.563	63.1%	0.002	-0.114	-3.403	***	0.305	8.603	0.013	2.718	0.083	0.995	66.0%	0.000
IBF37	-0.208	-6.122	***	0.612	14.591	88.5%	0.416	-0.201	-5.427	***	0.590	12.215	0.008	1.679	-0.029	-0.444	87.9%	0.000
IBF38	-0.280	-4.403	***	0.659	9.110	78.5%	0.360	-0.273	-4.583	***	0.640	8.944	0.001	0.107	-0.265	-2.425	79.7%	0.053
IBF39	-0.278	-6.343	***	0.638	20.684	86.6%	0.884	-0.274	-6.214	***	0.648	16.456	-0.005	-0.731	0.098	1.002	86.0%	0.040
IBF40	-0.250	-6.199	***	0.790	22.038	89.0%	0.046	-0.250	-5.775	***	0.798	19.916	0.001	0.147	-0.029	-0.423	88.4%	0.098
IBF41	-0.144	-7.063	***	0.403	22.130	87.8%	0.000	-0.138	-6.587	***	0.403	16.964	0.001	0.263	0.002	0.046	87.3%	0.000
IBF42	-0.142	-2.325	**	0.629	7.655	66.7%	0.354	-0.148	-2.165	**	0.624	7.132	0.005	0.531	0.130	0.992	64.1%	0.795
IBF43	-0.329	-5.465	***	0.673	8.817	80.1%	0.108	-0.313	-5.953	***	0.608	9.965	0.013	1.862	-0.100	-1.001	84.4%	0.000
IBF44	-0.328	-5.556	***	0.762	16.641	83.2%	0.801	-0.318	-5.490	***	0.735	18.696	0.006	0.712	-0.063	-0.498	84.3%	0.000
IBF45	-0.231	-10.250	***	0.657	24.237	92.5%	0.080	-0.221	-9.575	***	0.656	21.302	-0.001	-0.415	0.026	0.428	92.5%	0.001
IBF46	-0.231	-7.188	***	0.575	22.125	84.5%	0.052	-0.233	-6.997	***	0.547	14.737	0.013	2.188	-0.028	-0.537	84.5%	0.147
IBF47	-0.192	-1.702	*	0.671	7.767	51.9%	0.867	-0.199	-2.176	**	0.486	5.786	0.073	4.577	-0.130	-0.876	70.0%	0.246
IBF48	-0.319	-5.838	***	0.678	9.032	80.8%	0.202	-0.305	-6.612	***	0.654	9.531	0.000	-0.002	-0.011	-0.118	82.3%	0.001
IBF49	-0.192	-3.607	***	0.657	12.048	82.1%	0.002	-0.184	-3.592	***	0.652	10.917	0.000	0.063	-0.080	-0.907	82.4%	0.001
IBF50	-0.185	-5.562	***	0.771	19.628	87.6%	0.732	-0.190	-5.304	***	0.750	14.383	0.009	1.084	0.188	1.708	87.8%	0.500
IBF51	-0.101	-4.154	***	0.644	15.524	88.0%	0.806	-0.104	-4.398	***	0.643	14.700	0.003	0.921	0.098	1.013	87.2%	0.217
IBF52	-0.228	-3.730	***	0.764	10.934	75.0%	0.166	-0.226	-3.736	***	0.653	9.636	0.039	4.872	-0.152	-1.261	79.9%	0.274
IBF53	-0.277	-5.157	***	0.597	12.719	83.1%	0.133	-0.270	-5.488	***	0.597	11.276	-0.006	-0.846	0.060	0.764	84.0%	0.000
IBF54	-0.216	-3.377	***	0.752	12.536	75.3%	0.000	-0.225	-3.679	***	0.682	9.425	0.023	2.723	0.285	2.458	79.1%	0.000
IBF55	-0.235	-2.463	**	0.536	6.759	55.1%	0.866	-0.232	-2.386	**	0.570	6.741	-0.017	-1.230	-0.024	-0.148	52.5%	0.985
IBF56	-0.275	-4.146	***	0.693	11.329	80.0%	0.981	-0.276	-4.313	***	0.682	10.238	0.002	0.271	0.073	0.646	79.6%	0.349
IBF57	-0.183	-2.542	**	0.707	13.492	69.2%	0.297	-0.201	-4.875	***	0.589	12.440	0.055	5.886	0.250	3.236	84.7%	0.000
IBF58	-0.083	-0.377		-0.337	-1.505	10.1%	0.055	-0.058	-0.269		-0.234	-1.099	-0.048	-1.720	-0.437	-1.076	11.4%	0.036
Portugal																		
PBF1	-0.110	-11.194	***	0.003	0.422	0.9%	0.281	-0.113	-13.292	***	0.005	0.724	-0.001	-0.947	0.006	0.396	8.0%	0.079
PBF2	-0.155	-8.499	***	0.092	4.132	32.8%	0.007	-0.152	-7.668	***	0.090	3.557	0.001	0.396	0.015	0.673	27.2%	0.155
PBF3	-0.153	-6.579	***	0.030	2.986	9.3%	0.000	-0.155	-6.335	***	0.034	2.952	-0.002	-0.999	0.027	1.146	7.1%	0.001
PBF4	-0.165	-11.293	***	0.068	3.153	34.6%	0.000	-0.159	-9.218	***	0.072	3.427	0.001	0.472	-0.058	-2.731	32.8%	0.000
PBF5	-0.147	-10.785	***	0.007	0.727	-1.8%	0.079	-0.149	-11.630	***	0.007	0.735	-0.001	-0.478	0.027	1.409	5.7%	0.166
PBF6	-0.120	-7.618	***	0.013	1.231	8.9%	0.004	-0.117	-7.633	***	0.018	1.609	-0.002	-1.032	0.020	0.924	10.7%	0.000
PBF7	-0.126	-10.772	***	-0.002	-0.299	2.8%	0.000	-0.127	-11.410	***	0.000	0.006	-0.001	-0.590	0.004	0.281	0.5%	0.000
PBF8	-0.130	-11.369	***	0.009	1.453	3.2%	0.103	-0.131	-11.537	***	0.010	1.472	0.000	-0.267	0.022	1.444	-2.0%	0.077
PBF9	-0.237	-5.772	***	0.601	10.015	70.2%	0.011	-0.229	-4.721	***	0.602	9.644	0.006	0.662	-0.077	-0.712	67.4%	0.008
PBF10	-0.164	-6.584	***	-0.004	-0.278	6.5%	0.000	-0.163	-5.903	***	0.009	0.534	0.000	0.010	-0.051	-1.278	2.2%	0.000
PBF11	-0.103	-11.122	***	0.029	2.056	3.8%	0.624	-0.103	-10.901	***	0.027	1.935	-0.002	-1.143	0.013	0.408	-3.2%	0.011
PBF12	-0.199	-4.325	***	0.699	11.757	72.0%	0.203	-0.197	-4.363	***	0.696	11.534	0.014	1.544	-0.063	-0.658	70.3%	0.352
PBF13	-0.104	-9.463	***	0.003	0.275	3.7%	0.008	-0.110	-10.115	***	0.015	1.297	0.000	-0.074	-0.004	-0.201	33.1%	0.000
PBF14	-0.074	-5.221	***	0.001	0.050	-1.9%	0.216	-0.077	-5.442	***	0.001	0.083	-0.002	-1.344	0.029	1.817	5.6%	0.028
PBF15	-0.168	-6.470	***	0.916	16.166	88.6%	0.024	-0.157	-4.680	***	0.918	16.583	-0.006	-0.919	0.002	0.027	88.4%	0.000
PBF16	-0.143	-11.313	***	-0.002	-0.307	5.1%	0.071	-0.145	-11.525	***	0.000	-0.040	-0.001	-0.770	0.008	0.503	2.4%	0.122
PBF17	-0.113	-9.633	***	0.012	1.270	1.2%	0.199	-0.115	-10.256	***	0.011	1.065	-0.001	-0.271	0.014	0.735	1.1%	0.226
PBF18	-0.162	-12.924	***	0.106	8.629	51.5%	0.032	-0.167	-12.803	***	0.106	9.976	-0.001	-0.294	0.040	1.946	55.8%	0.000
PBF19	-0.091	-4.356	***	0.114	4.352	39.6%	0.305	-0.087	-4.061	***	0.117	4.158	-0.005	-2.213	0.016	0.387	39.7%	0.000
PBF20	-0.257	-7.001	***	0.649	11.217	77.4%	0.000	-0.254	-5.706	***	0.672	11.963	0.011	1.310	-0.161	-1.468	77.0%	0.000
PBF21	-0.117	-1.779	*	0.611	9.980	56.6%	0.015	-0.097	-1.336		0.629	8.151	0.022	3.005	0.044	0.396	58.7%	0.000
PBF22	-0.139	-10.275	***	0.025	2.568	14.9%	0.036	-0.142	-11.751	***	0.028	2.616	-0.002	-1.408	0.025	1.177	27.5%	0.000

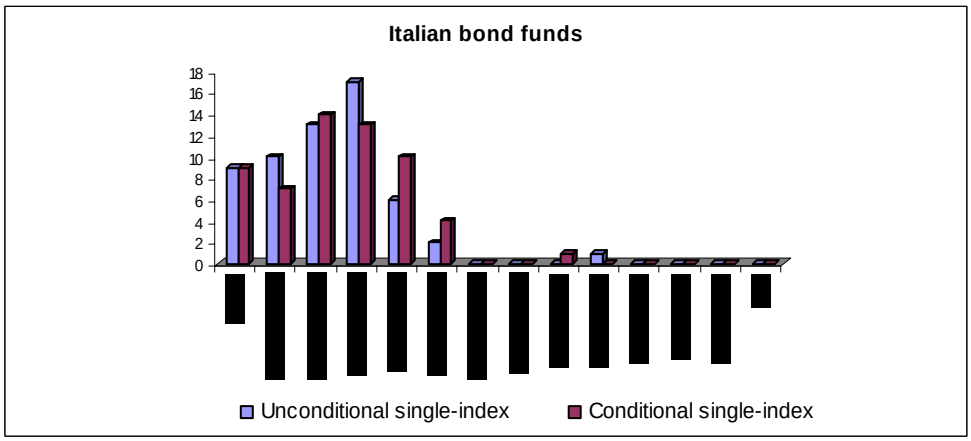
*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Appendix 5.7

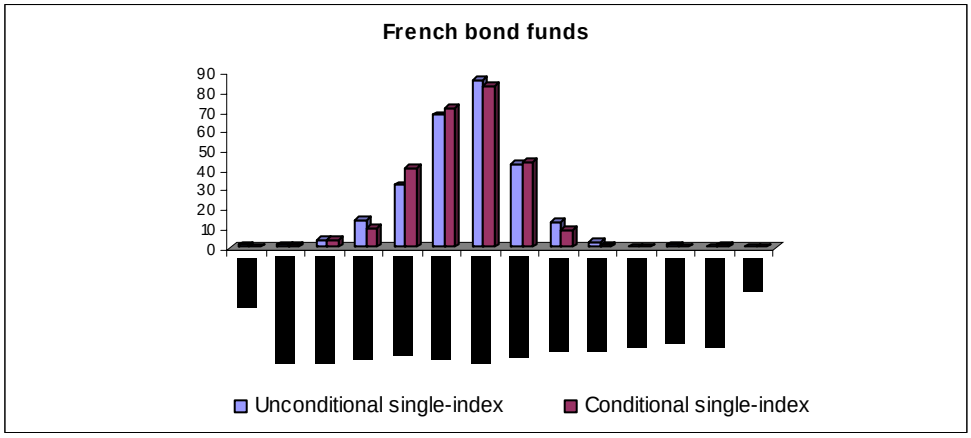
Bond funds alphas: unconditional versus conditional single-index model

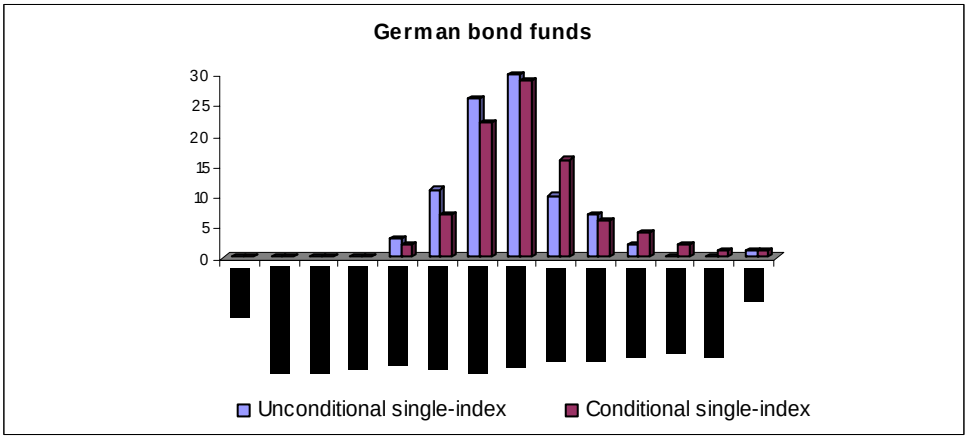


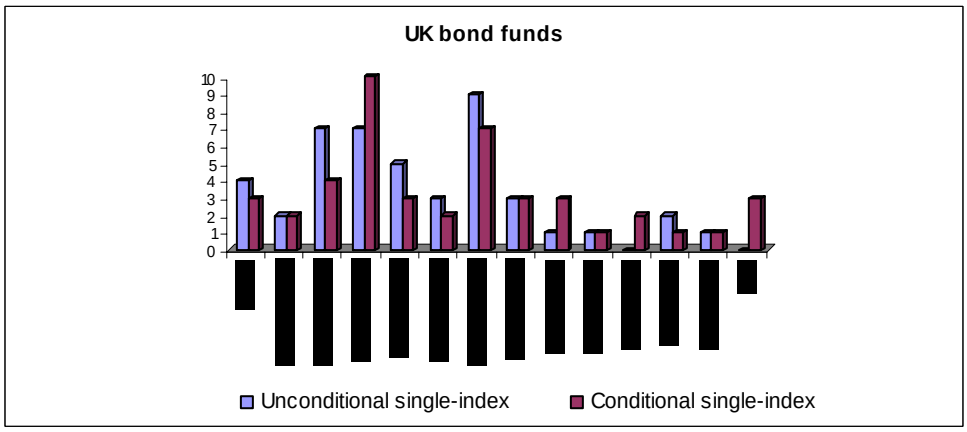




Appendix 5.7 (continued)

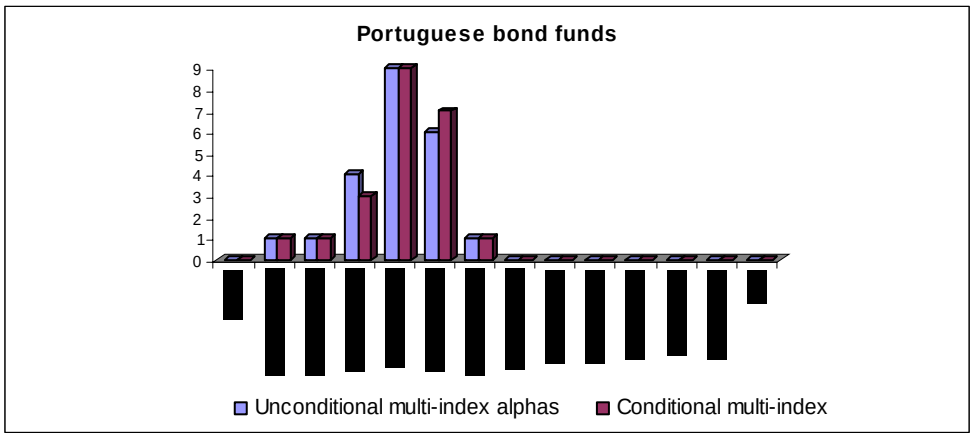


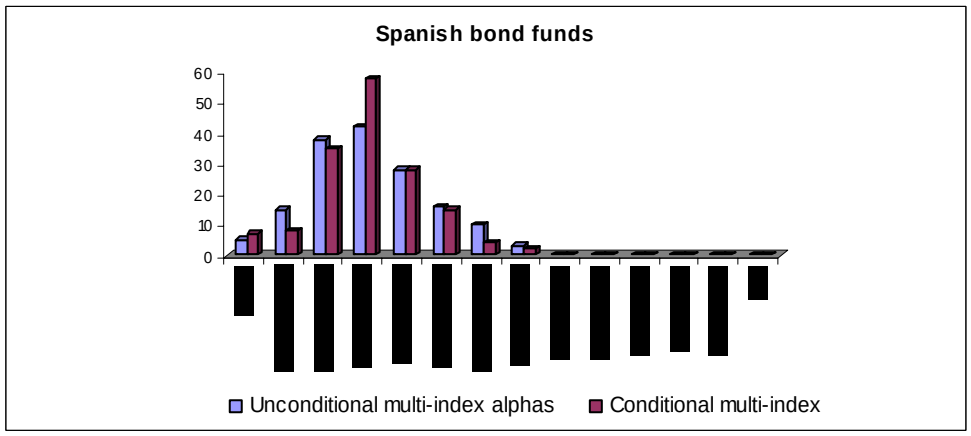


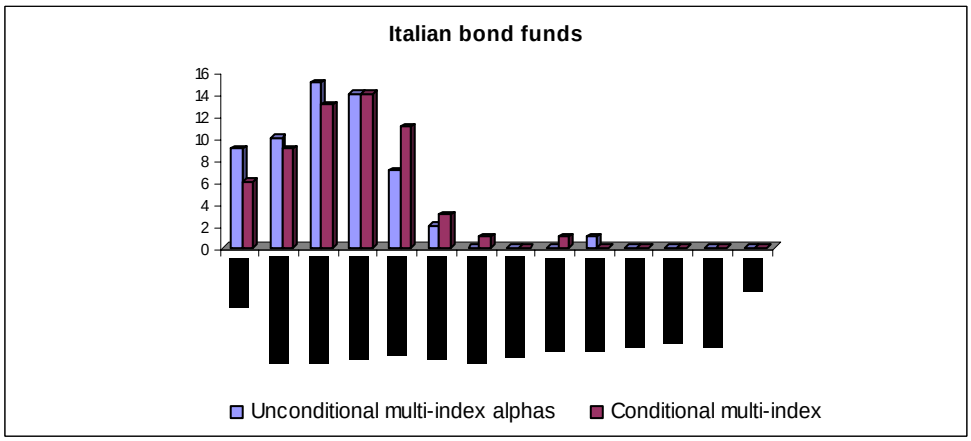


Appendix 5.8

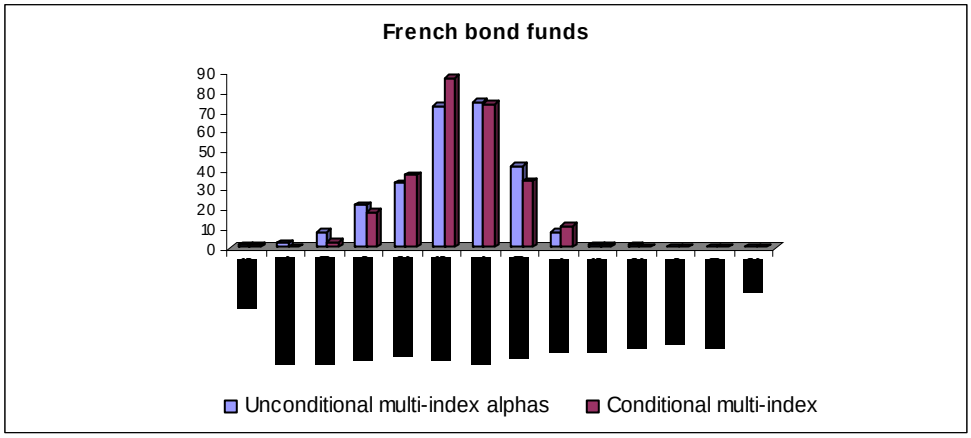
Bond funds alphas: unconditional versus conditional multiple index model

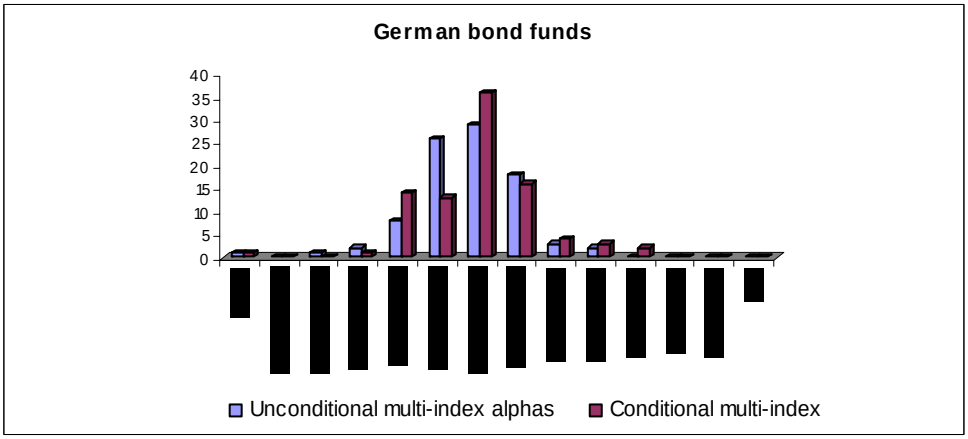


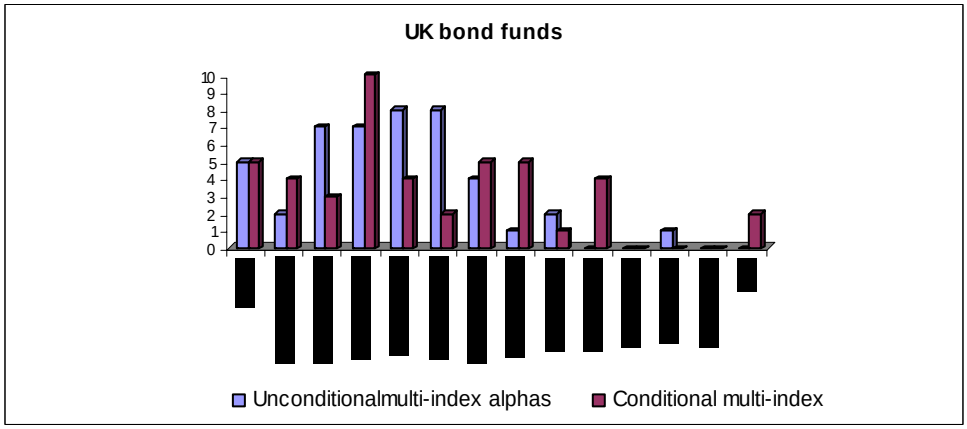




Appendix 5.8 (continued)







Appendix 5.9
Estimates of conditional betas: individual funds

This table presents the coefficients estimates for the conditional beta function for each individual fund and considering both the single index and multiple index models. The predetermined variables Term, IRW and Jd are as defined previously. The conditional beta for the Bindex is designated by b1, b2 identifies the conditional beta for Sindex and b3 the conditional beta for the Def. Bindex, Sindex and Def as defined previously. A shadowed area relatively to the t-statistic (based on heteroscedasticity and autocorrelation adjusted errors following Newey and West, 1987) indicates a statistically significant value at the 5% level.

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
Germany																								
GBF1	0.024	0.53	0.035	0.08	0.032	0.16	0.028	0.41	0.042	0.08	-0.101	-0.50	0.001	0.13	-0.033	-0.52	0.031	0.99	0.065	0.32	-0.137	-0.08	0.066	0.10
GBF2	0.080	1.27	-0.990	-1.84	-0.010	-0.05	0.080	0.80	-0.918	-1.39	-0.231	-1.44	-0.004	-0.28	-0.074	-1.12	0.025	0.89	0.128	0.47	0.289	0.11	0.423	0.86
GBF3	0.084	1.57	0.579	1.23	0.014	0.11	0.023	0.52	0.613	1.33	-0.105	-1.03	0.008	0.90	-0.047	-0.70	0.041	2.39	-0.254	-1.80	-2.230	-1.56	-0.109	-0.34
GBF4	-0.012	-0.24	0.737	1.38	0.061	0.31	0.002	0.04	0.751	1.44	-0.057	-0.27	-0.006	-0.60	-0.061	-0.81	0.018	0.56	0.097	0.74	-0.241	-0.17	0.136	0.21
GBF5	-0.090	-1.88	0.304	0.62	-0.021	-0.10	-0.070	-1.41	0.285	0.56	-0.095	-0.47	-0.002	-0.14	-0.013	-0.18	0.001	0.03	0.147	1.15	0.548	0.38	0.343	0.55
GBF6	0.063	1.53	0.896	2.22	-0.128	-0.74	0.062	1.20	0.915	2.62	-0.273	-1.68	-0.006	-0.81	-0.011	-0.17	0.037	1.40	0.019	0.12	-0.639	-0.43	-0.131	-0.24
GBF7	0.273	3.95	-0.547	-0.94	0.143	0.97	0.228	3.38	-0.347	-1.00	-0.011	-0.10	-0.009	-0.74	-0.040	-0.43	-0.009	-0.34	0.051	0.23	1.827	1.05	0.064	0.23
GBF8	0.076	1.19	0.821	1.62	0.043	0.28	0.038	0.68	0.801	1.77	-0.087	-0.57	-0.003	-0.27	0.009	0.13	0.029	1.01	-0.046	-0.27	-2.164	-1.27	-0.232	-0.57
GBF9	0.069	1.67	-0.271	-0.68	-0.060	-0.57	0.062	1.38	-0.300	-0.76	-0.167	-2.26	0.007	1.06	-0.009	-0.11	0.033	2.16	0.052	0.42	-1.094	-0.97	-0.085	-0.38
GBF10	0.032	0.45	-0.368	-0.64	-0.035	-0.15	0.040	0.53	-0.269	-0.46	-0.335	-2.77	0.011	1.05	-0.027	-0.34	0.090	3.27	0.211	0.92	-0.909	-0.38	-0.185	-0.50
GBF11	0.080	1.65	0.639	1.54	0.078	0.50	0.080	1.25	0.719	1.60	-0.019	-0.12	-0.005	-0.66	-0.007	-0.11	0.030	1.08	0.021	0.13	-0.371	-0.21	-0.230	-0.45
GBF12	0.071	1.05	0.488	1.05	0.096	0.59	0.048	0.85	0.465	1.14	-0.073	-0.52	-0.005	-0.46	0.001	0.01	0.035	1.28	0.009	0.05	-1.724	-1.14	-0.127	-0.34
GBF13	0.067	1.02	0.524	0.79	-0.038	-0.21	0.077	0.94	0.564	0.84	-0.151	-0.75	-0.003	-0.27	-0.062	-0.72	0.016	0.49	0.128	0.97	0.384	0.25	0.011	0.02
GBF14	-0.031	-0.41	-0.142	-0.23	0.078	0.43	-0.040	-0.50	-0.273	-0.45	0.093	0.59	0.004	0.43	-0.095	-1.56	-0.036	-1.03	0.049	0.48	-0.573	-0.64	0.494	0.93
GBF15	0.114	0.58	-3.843	-2.69	0.043	0.09	0.012	0.06	-3.066	-2.26	-0.389	-1.25	0.002	0.10	0.001	0.01	0.122	2.10	0.111	0.26	1.615	0.35	-1.789	-1.72
GBF16	0.069	1.58	0.657	1.71	-0.056	-0.37	0.061	1.21	0.621	1.60	-0.199	-1.62	0.002	0.24	-0.006	-0.11	0.033	1.61	0.011	0.07	-0.812	-0.52	0.122	0.34
GBF17	0.443	2.82	-0.146	-0.15	0.216	0.86	0.301	2.94	0.122	0.16	0.033	0.18	-0.003	-0.27	0.312	3.13	0.002	0.06	0.020	0.10	0.774	0.31	-0.878	-1.38
GBF18	0.118	2.14	0.000	0.00	0.079	0.43	0.099	1.74	-0.018	-0.04	-0.141	-1.11	0.005	0.62	-0.031	-0.50	0.066	2.99	-0.046	-0.37	-2.128	-1.25	0.022	0.05
GBF19	-0.005	-0.14	0.177	0.55	-0.104	-0.78	-0.008	-0.19	0.181	0.53	-0.205	-1.73	0.001	0.14	-0.010	-0.16	0.020	1.00	0.043	0.34	-0.258	-0.23	0.092	0.28
GBF20	0.035	0.53	0.564	1.20	0.095	0.66	0.003	0.05	0.543	1.17	-0.035	-0.27	-0.003	-0.37	0.019	0.30	0.021	0.90	-0.003	-0.02	-1.636	-1.19	-0.102	-0.28
GBF21	0.082	1.47	0.581	1.47	0.163	1.15	0.074	1.50	0.599	1.40	0.038	0.31	-0.001	-0.11	-0.039	-0.75	0.049	2.09	-0.028	-0.22	-1.537	-1.27	-0.401	-1.17
GBF22	0.112	2.78	1.103	3.22	0.059	0.30	0.105	2.02	1.110	3.03	-0.003	-0.02	-0.001	-0.16	-0.018	-0.29	0.002	0.05	0.041	0.37	0.038	0.03	0.121	0.18
GBF23	0.255	2.26	-0.446	-0.53	0.149	0.99	0.248	2.34	-0.502	-0.54	-0.001	-0.01	-0.014	-1.01	0.129	0.83	0.028	1.46	0.053	0.42	-1.752	-1.37	-0.053	-0.25
GBF24	0.004	0.05	-0.004	-0.01	0.005	0.03	-0.019	-0.23	-0.020	-0.03	-0.049	-0.32	-0.009	-0.88	0.005	0.05	-0.029	-0.93	0.079	0.58	0.063	0.04	0.254	0.69
GBF25	-0.125	-2.38	0.604	0.96	0.021	0.15	-0.145	-2.79	0.489	0.90	-0.076	-0.50	-0.003	-0.34	-0.026	-0.37	0.016	0.66	-0.031	-0.30	-1.848	-1.48	-0.024	-0.05
GBF26	0.274	3.27	-0.267	-0.31	0.074	0.37	0.323	3.48	-0.105	-0.13	-0.085	-0.39	-0.008	-0.87	-0.115	-1.65	0.082	2.27	0.165	0.95	-0.953	-0.48	-0.930	-1.23
GBF27	0.392	0.98	0.666	0.34	0.162	0.32	0.185	0.66	0.404	0.22	-0.418	-2.49	-0.018	-0.40	0.894	2.50	0.068	1.62	-0.066	-0.18	-2.936	-0.67	-0.308	-0.55
GBF28	-0.072	-1.51	0.129	0.30	-0.080	-0.65	-0.093	-1.89	0.103	0.26	-0.104	-0.74	-0.004	-0.44	0.013	0.17	-0.007	-0.28	-0.014	-0.14	0.026	0.02	-0.120	-0.30
GBF29	0.007	0.16	0.435	0.98	-0.019	-0.16	-0.004	-0.07	0.320	0.78	-0.098	-0.74	-0.001	-0.06	0.067	0.95	0.015	0.69	0.014	0.08	-1.110	-0.65	0.016	0.04
GBF30	0.384	2.45	-0.780	-0.67	0.418	1.28	0.330	2.42	-0.452	-0.43	-0.182	-1.26	-0.018	-1.21	0.093	0.84	0.103	3.36	0.012	0.05	2.151	0.87	0.381	0.74
GBF31	0.085	1.30	0.335	0.82	-0.034	-0.22	0.067	1.19	0.323	0.65	-0.160	-1.24	-0.002	-0.27	0.027	0.58	0.033	1.41	0.031	0.24	-1.446	-0.95	-0.303	-0.73
GBF32	0.092	1.56	0.732	1.21	-0.026	-0.29	0.090	1.83	0.608	1.30	-0.072	-0.74	0.003	0.43	0.007	0.10	0.029	1.52	0.032	0.24	-2.633	-1.90	-0.340	-1.16
GBF33	0.359	1.44	-1.213	-0.93	0.144	0.30	0.187	1.42	-0.390	-0.55	-0.260	-2.13	0.008	0.37	0.142	0.87	0.104	3.33	0.089	0.27	-2.707	-0.67	-1.742	-4.52
GBF34	0.172	0.91	-0.775	-0.62	0.210	0.71	0.002	0.03	-0.041	-0.08	-0.064	-0.56	0.011	0.81	-0.112	-0.76	-0.023	-1.04	0.204	1.11	-1.257	-0.59	0.125	0.40
GBF35	0.404	1.81	-2.324	-1.32	-0.092	-0.29	0.232	1.00	-2.042	-1.54	-0.377	-1.62	-0.010	-0.31	0.192	0.88	-0.064	-1.04	-0.003	-0.01	2.639	0.93	0.845	1.37
GBF36	-0.051	-0.75	0.602	0.70	-1.040	-2.24	-0.053	-0.59	0.918	1.34	-1.105	-1.99	-0.007	-0.56	-0.077	-0.71	0.028	0.30	0.069	0.38	2.003	0.77	-0.870	-0.48
GBF37	0.108	0.95	-1.894	-1.74	-0.085	-0.21	0.132	0.81	-1.584	-1.71	-0.544	-2.30	-0.005	-0.34	-0.068	-0.50	0.049	0.84	0.375	1.13	5.075	1.19	1.006	1.54
GBF38	0.027	0.40	0.547	0.91	-0.024	-0.16	0.044	0.54	0.649	1.04	-0.111	-0.75	0.002	0.28	-0.042	-0.75	0.033	1.28	0.098	0.99	0.057	0.06	-0.143	-0.30

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
GBF39	0.041	0.83	0.698	1.09	0.049	0.25	0.064	1.05	0.632	1.11	-0.051	-0.24	-0.003	-0.26	-0.026	-0.37	0.017	0.56	0.167	0.95	-0.529	-0.34	0.069	0.10
GBF40	0.061	0.94	0.499	1.04	0.066	0.42	0.035	0.61	0.488	1.06	-0.097	-0.75	-0.003	-0.38	0.030	0.44	0.039	1.73	-0.006	-0.04	-1.770	-1.18	-0.220	-0.61
GBF41	-0.039	-0.69	0.589	0.74	0.002	0.01	-0.036	-0.58	0.522	0.74	-0.173	-0.86	-0.012	-0.88	-0.009	-0.09	0.003	0.09	0.115	0.59	-0.081	-0.04	0.548	0.89
GBF42	-0.033	-0.29	0.415	0.28	-0.113	-0.31	-0.022	-0.16	0.389	0.30	-0.261	-0.69	0.002	0.13	0.049	0.34	-0.007	-0.12	0.351	1.22	0.254	0.08	0.608	0.50
GBF43	-0.064	-0.80	0.270	0.24	0.094	0.37	-0.076	-0.81	0.240	0.23	-0.045	-0.18	0.003	0.20	-0.064	-0.63	0.011	0.26	0.095	0.88	-1.258	-0.71	0.402	0.51
GBF44	0.000	-0.01	0.462	1.07	0.072	0.55	-0.003	-0.08	0.472	1.42	0.005	0.03	0.002	0.21	-0.040	-0.56	0.027	1.12	0.033	0.28	-1.049	-0.91	-0.309	-0.66
GBF45	0.044	0.55	0.438	0.88	0.089	0.44	-0.008	-0.11	0.459	0.97	-0.116	-0.82	-0.001	-0.13	0.085	1.04	0.055	1.94	-0.084	-0.44	-2.307	-1.26	-0.306	-0.81
GBF46	0.041	1.02	0.478	1.06	0.055	0.45	0.036	0.59	0.538	1.26	-0.004	-0.03	0.002	0.19	-0.077	-1.00	0.031	1.40	-0.003	-0.01	-0.890	-0.51	-0.433	-1.00
GBF47	0.000	-0.01	0.395	0.69	0.128	0.49	0.010	0.14	0.487	0.95	-0.014	-0.05	0.001	0.10	-0.063	-0.65	0.038	0.91	0.105	0.60	-0.126	-0.06	-0.035	-0.04
GBF48	0.121	2.40	0.583	1.23	0.077	0.33	0.127	2.16	0.611	1.21	-0.036	-0.16	0.006	0.65	-0.016	-0.25	0.017	0.47	0.159	1.03	0.451	0.28	0.202	0.28
GBF49	-0.015	-0.31	0.564	1.15	-0.121	-0.75	0.031	0.48	0.571	1.27	-0.229	-1.16	-0.001	-0.10	-0.008	-0.10	0.058	1.98	0.170	0.88	-0.466	-0.26	-0.504	-0.82
GBF50	0.053	1.02	0.272	0.52	0.082	0.48	0.059	0.84	0.333	0.53	-0.047	-0.28	-0.007	-0.77	-0.070	-1.05	0.014	0.50	0.073	0.56	0.333	0.23	0.175	0.35
GBF51	-0.100	-1.36	-0.483	-0.56	-0.020	-0.09	-0.150	-2.02	-0.460	-0.61	-0.133	-0.73	0.006	0.64	0.005	0.04	-0.007	-0.20	0.054	0.32	-0.723	-0.48	0.294	0.52
GBF52	-0.045	-1.38	0.544	1.45	-0.022	-0.14	-0.059	-1.62	0.500	1.48	-0.107	-0.67	0.003	0.55	0.013	0.20	0.020	0.82	-0.005	-0.05	-1.046	-1.14	0.042	0.08
GBF53	-0.037	-0.98	0.266	0.68	-0.123	-0.88	-0.049	-1.20	0.183	0.52	-0.160	-1.20	0.010	1.24	0.005	0.08	0.001	0.06	0.066	0.54	-1.043	-0.87	0.234	0.56
GBF54	-0.035	-0.40	-0.634	-0.95	0.237	0.85	-0.068	-0.59	-0.609	-0.76	0.014	0.06	-0.001	-0.05	0.097	0.86	0.024	0.57	0.108	0.48	-0.293	-0.12	0.296	0.45
GBF55	-0.028	-0.61	0.866	1.67	0.034	0.26	-0.027	-0.62	0.826	1.85	-0.114	-0.97	-0.004	-0.58	-0.053	-0.72	0.039	2.02	-0.001	0.00	-1.597	-1.27	-0.012	-0.03
GBF56	0.080	1.31	-0.096	-0.15	0.026	0.15	0.097	1.11	-0.019	-0.03	-0.145	-0.87	-0.008	-0.69	-0.130	-1.76	0.025	0.86	0.108	0.66	0.197	0.11	0.208	0.44
GBF57	0.064	1.07	0.711	1.27	0.002	0.01	0.079	1.47	0.650	1.48	-0.102	-0.68	0.002	0.27	-0.023	-0.37	0.051	2.04	0.061	0.41	-1.553	-1.22	-0.415	-0.91
GBF58	0.057	1.04	-0.186	-0.36	0.036	0.20	0.054	0.68	-0.056	-0.10	-0.183	-1.71	0.012	1.02	-0.043	-0.61	0.051	2.10	0.183	0.85	0.560	0.22	0.039	0.14
GBF59	0.094	1.72	0.611	0.85	0.023	0.10	0.071	0.82	0.763	1.08	-0.081	-0.28	-0.019	-1.55	-0.147	-1.79	0.024	0.56	-0.181	-0.85	-2.245	-1.09	-0.173	-0.17
GBF60	0.023	0.17	-2.201	-2.04	-0.274	-1.18	0.025	0.13	-2.202	-1.70	-0.678	-3.61	0.014	0.40	0.053	0.33	0.069	1.32	0.433	0.77	2.329	0.47	0.118	0.28
GBF61	0.111	0.97	-1.206	-1.26	-0.045	-0.15	0.065	0.49	-1.116	-1.36	-0.288	-1.35	-0.012	-0.68	0.029	0.34	-0.024	-0.54	0.206	0.65	1.533	0.39	0.660	1.00
GBF62	-0.009	-0.05	-3.433	-2.22	-0.239	-0.69	-0.061	-0.26	-3.316	-2.06	-0.769	-4.53	0.004	0.11	0.075	0.45	0.050	1.02	0.359	0.56	3.580	0.59	0.599	1.31
GBF63	0.115	1.07	-1.211	-1.22	-0.113	-0.42	0.078	0.47	-1.172	-1.16	-0.371	-2.75	-0.001	-0.06	0.000	0.00	-0.021	-0.53	0.251	0.69	1.258	0.35	1.075	2.68
GBF64	-0.031	-0.24	-2.359	-2.41	-0.030	-0.08	-0.102	-0.68	-2.391	-2.00	-0.463	-2.13	0.008	0.28	-0.100	-0.77	0.045	1.06	0.117	0.25	-1.539	-0.33	0.733	1.08
GBF65	0.065	0.34	-1.498	-0.96	0.215	0.60	-0.005	-0.02	-1.039	-0.84	-0.327	-1.89	-0.007	-0.39	-0.129	-0.72	0.102	2.28	0.075	0.18	-0.275	-0.05	-0.094	-0.22
GBF66	-0.047	-0.27	-2.969	-1.89	-0.299	-1.01	-0.097	-0.44	-2.860	-1.74	-0.696	-4.14	0.008	0.23	0.073	0.47	0.025	0.54	0.363	0.61	3.387	0.58	0.419	0.86
GBF67	-0.106	-0.60	-3.231	-2.17	-0.298	-0.96	-0.160	-0.71	-3.117	-1.94	-0.754	-4.29	0.008	0.24	0.061	0.36	0.044	0.87	0.320	0.50	3.024	0.50	0.459	1.04
GBF68	0.815	0.64	-2.123	-0.29	2.046	1.02	-0.284	-0.64	2.895	0.89	-0.353	-0.46	-0.101	-0.64	0.395	0.27	0.179	0.99	-0.745	-0.69	-2.590	-0.20	-1.640	-1.06
GBF69	0.031	0.46	-0.432	-0.57	-0.035	-0.15	0.056	0.74	-0.090	-0.13	-0.171	-0.73	-0.013	-0.97	-0.179	-1.22	0.036	0.92	0.196	0.97	0.237	0.12	-0.481	-0.62
GBF70	0.004	0.03	-0.782	-0.77	-0.372	-2.82	-0.030	-0.19	-0.508	-0.57	-0.464	-3.48	-0.002	-0.09	-0.228	-2.36	-0.038	-1.14	0.138	0.40	2.634	0.72	0.322	0.93
GBF71	0.110	0.73	-1.644	-1.27	-0.054	-0.14	0.077	0.44	-1.366	-1.19	-0.433	-1.66	0.003	0.11	-0.025	-0.23	0.025	0.45	0.395	0.94	3.676	0.76	0.333	0.37
GBF72	0.127	1.53	-2.017	-1.60	-0.076	-0.57	0.105	0.89	-1.684	-1.49	-0.212	-2.74	-0.004	-0.27	-0.099	-1.06	-0.016	-0.71	0.104	0.51	2.499	0.86	0.636	2.90
GBF73	0.193	1.30	-3.128	-2.72	0.162	0.46	0.112	0.63	-3.150	-2.80	-0.209	-1.11	0.012	0.47	0.066	0.57	-0.004	-0.10	0.245	0.52	2.075	0.39	1.041	1.75
GBF74	0.007	0.23	0.672	1.80	-0.013	-0.26	0.014	0.40	0.619	1.45	-0.076	-1.71	-0.004	-0.76	0.002	0.06	0.023	2.40	-0.033	-0.46	-1.109	-1.63	0.002	0.03
GBF75	-0.192	-1.18	-0.121	-0.17	-0.029	-0.24	-0.104	-0.87	0.067	0.11	-0.231	-1.69	-0.042	-1.25	-0.217	-1.18	0.020	1.08	0.168	0.69	3.256	1.36	0.196	0.68
GBF76	0.124	2.03	0.810	1.06	-0.532	-2.34	0.171	2.30	0.857	1.18	-0.418	-2.08	0.012	1.40	-0.094	-1.33	-0.014	-0.27	0.227	1.55	1.164	0.73	-0.163	-0.21
GBF77	0.080	2.19	0.267	0.52	-0.055	-0.83	0.067	1.59	0.220	0.35	-0.140	-2.77	0.001	0.21	0.026	0.51	0.027	2.57	-0.060	-0.66	-0.667	-0.63	-0.058	-0.59
GBF78	-0.014	-0.21	0.558	1.00	-0.051	-0.54	-0.024	-0.35	0.456	0.79	-0.056	-0.51	0.017	1.15	0.020	0.32	0.015	0.75	0.041	0.34	-1.387	-1.15	-0.024	-0.10
GBF79	-0.037	-1.15	1.120	1.96	0.101	1.68	-0.042	-0.91	1.106	1.68	0.118	1.29	0.014	1.27	0.026	0.42	-0.006	-0.29	0.111	1.16	0.890	0.99	-0.019	-0.11
GBF80	0.074	1.45	0.682	1.35	-0.034	-0.45	0.083	1.50	0.612	1.10	-0.107	-1.24	-0.008	-1.08	-0.014	-0.28	0.025	1.60	-0.009	-0.11	-1.100	-1.22	-0.188	-0.85

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
GBF81	-0.072	-1.07	-0.256	-0.31	-1.092	-5.56	-0.071	-0.95	-0.218	-0.26	-1.039	-4.83	0.002	0.15	-0.007	-0.08	0.017	0.50	0.026	0.23	-0.031	-0.02	-0.986	-1.34
GBF82	0.145	0.99	-1.411	-1.12	0.126	0.58	-0.024	-0.23	-1.267	-1.11	0.041	0.41	0.027	1.98	0.279	2.58	-0.026	-1.05	0.033	0.23	-0.766	-0.39	-0.335	-1.51
GBF83	0.050	1.61	0.346	0.84	0.026	0.53	0.057	1.68	0.306	0.64	-0.039	-0.83	-0.005	-0.74	-0.013	-0.32	0.015	1.22	0.008	0.14	-0.524	-0.78	0.044	0.40
GBF84	0.182	2.33	-0.698	-1.00	0.218	1.10	0.245	2.38	-0.820	-1.03	0.003	0.02	0.006	0.46	0.210	1.65	0.054	1.89	0.527	2.02	0.525	0.18	0.003	0.01
GBF85	0.070	1.74	0.580	1.50	-0.024	-0.51	0.087	1.93	0.571	1.33	-0.053	-0.97	-0.004	-0.70	-0.014	-0.32	0.019	1.48	0.057	0.91	-0.417	-0.68	-0.293	-2.36
GBF86	0.020	0.47	0.239	0.53	0.083	1.09	0.025	0.71	0.126	0.26	-0.043	-0.91	-0.005	-0.97	0.021	0.54	0.020	1.73	0.047	0.94	-0.459	-0.69	0.184	1.55
GBF87	0.110	2.22	1.508	2.84	-0.062	-0.41	0.119	2.25	1.454	2.53	-0.115	-0.84	0.000	0.00	-0.038	-0.56	0.004	0.22	-0.010	-0.08	0.364	0.29	0.361	0.80
GBF88	0.077	1.86	1.620	3.45	0.085	0.87	0.094	2.08	1.678	3.36	0.020	0.21	-0.005	-0.58	-0.039	-0.67	0.033	2.07	-0.024	-0.21	0.359	0.31	-0.263	-0.91
GBF89	0.350	5.63	-0.429	-0.40	-0.083	-0.67	0.367	4.31	-0.427	-0.35	-0.278	-2.23	-0.010	-1.00	-0.029	-0.41	0.054	2.42	0.011	0.08	-0.541	-0.30	-0.049	-0.20
GBF90	0.197	2.68	-0.508	-0.48	-0.064	-0.54	0.206	2.56	-0.616	-0.51	-0.273	-2.99	0.000	0.02	0.039	0.44	0.044	1.85	0.107	0.55	-0.574	-0.30	0.259	1.12
France																								
FBF1	-0.023	-0.76	-0.097	-0.27	0.185	1.63	-0.028	-0.97	-0.084	-0.29	0.119	0.96	-0.003	-0.46	-0.054	-1.37	0.001	0.05	-0.015	-0.34	-1.582	-1.86	0.247	1.10
FBF2	0.090	2.27	0.931	1.77	0.051	0.61	0.095	2.05	1.024	2.01	0.071	1.07	-0.001	-0.08	-0.223	-2.36	-0.037	-2.58	-0.040	-0.52	-0.239	-0.22	0.465	2.99
FBF3	0.039	2.32	0.088	0.30	0.101	1.72	0.029	1.56	0.060	0.19	0.191	3.47	0.000	-0.07	0.025	0.57	-0.039	-2.72	0.040	1.33	-0.300	-0.58	0.279	1.57
FBF4	0.056	2.92	-0.572	-1.57	0.124	2.97	0.058	3.42	-0.528	-1.30	0.165	4.18	-0.002	-0.53	-0.034	-0.68	-0.010	-0.95	0.003	0.09	0.069	0.06	-0.211	-1.40
FBF5	-0.007	-0.29	-0.667	-1.88	0.131	1.81	0.009	0.46	-0.630	-1.70	0.121	1.34	-0.004	-0.97	-0.058	-0.87	0.011	0.64	0.040	1.49	-0.703	-1.16	-0.348	-0.80
FBF6	0.004	0.14	-0.514	-1.07	0.069	1.27	0.009	0.34	-0.502	-0.87	0.027	0.40	-0.003	-0.59	-0.023	-0.27	0.012	0.89	0.018	0.47	-0.888	-0.96	-0.116	-0.61
FBF7	0.000	0.00	-0.165	-0.73	0.054	1.70	0.004	0.34	-0.151	-0.62	0.102	3.46	-0.002	-0.52	-0.025	-0.68	-0.016	-3.28	0.024	1.21	0.013	0.03	-0.041	-0.36
FBF8	0.006	0.36	-0.083	-0.35	0.044	1.09	0.009	0.67	-0.081	-0.35	0.097	2.43	-0.002	-0.75	-0.014	-0.37	-0.018	-2.53	0.034	1.74	-0.298	-0.88	0.015	0.10
FBF9	-0.058	-2.45	0.135	0.32	0.196	2.61	-0.090	-3.13	-0.042	-0.12	0.279	2.81	0.006	0.57	0.140	2.18	-0.028	-1.20	0.062	1.63	-1.356	-1.41	0.167	1.25
FBF10	0.023	1.01	0.011	0.03	0.065	0.98	0.012	0.71	-0.146	-0.35	0.189	2.56	0.001	0.27	0.021	0.32	-0.041	-2.30	0.008	0.19	-1.108	-1.36	0.194	0.69
FBF11	-0.045	-1.91	-0.618	-2.19	0.095	1.46	-0.037	-1.51	-0.527	-1.58	-0.009	-0.13	0.001	0.36	-0.070	-1.85	0.013	1.03	0.069	2.69	0.231	0.42	0.178	1.01
FBF12	0.062	2.15	-0.740	-2.75	0.355	3.44	0.063	2.55	-0.123	-0.43	0.282	3.33	-0.024	-2.63	-0.070	-0.74	0.019	1.06	-0.034	-0.93	-1.150	-1.36	-0.715	-2.54
FBF13	-0.049	-1.63	0.074	0.19	0.064	0.92	-0.046	-1.44	-0.100	-0.23	0.103	1.67	0.002	0.56	0.035	0.42	-0.017	-1.30	0.008	0.21	0.180	0.18	0.367	1.46
FBF14	-0.010	-0.72	0.006	0.04	0.008	0.47	-0.006	-0.47	0.043	0.27	-0.049	-2.45	-0.002	-0.96	-0.030	-0.97	0.015	3.10	-0.022	-1.58	-0.337	-0.95	-0.021	-0.30
FBF15	0.029	1.19	-1.091	-3.16	-0.095	-1.85	0.040	1.43	-0.792	-1.96	-0.283	-6.96	-0.009	-1.68	-0.075	-1.38	0.040	3.84	0.006	0.13	-0.277	-0.43	-0.027	-0.19
FBF16	0.036	1.32	-0.460	-0.86	0.101	1.61	0.065	2.76	-0.344	-0.60	0.018	0.34	-0.008	-1.16	-0.141	-1.52	0.009	0.61	-0.050	-0.91	0.441	0.39	0.253	1.38
FBF17	-0.003	-0.13	-0.873	-3.04	0.140	1.74	-0.010	-0.43	-0.839	-2.50	0.156	1.92	-0.002	-0.29	-0.027	-0.59	-0.024	-1.48	0.031	1.12	-0.585	-0.98	0.254	1.33
FBF18	0.060	2.96	-1.221	-2.52	0.035	0.70	0.068	2.64	-1.172	-2.31	0.017	0.21	-0.003	-0.73	-0.049	-0.73	0.003	0.17	-0.021	-0.51	0.040	0.04	-0.053	-0.19
FBF19	-0.012	-0.48	0.006	0.01	0.107	1.98	-0.027	-1.52	-0.144	-0.32	0.178	3.65	0.004	1.03	0.085	1.33	-0.023	-2.39	0.096	2.77	-1.226	-1.71	0.082	0.63
FBF20	0.106	1.89	0.704	1.15	-0.060	-0.80	0.037	0.70	0.471	0.79	0.100	1.13	0.018	2.79	0.139	1.63	-0.064	-2.67	-0.009	-0.15	-0.308	-0.23	0.442	2.16
FBF21	-0.031	-1.05	-0.169	-0.43	0.150	3.04	-0.033	-1.10	-0.204	-0.54	0.178	2.94	0.000	-0.01	0.029	0.56	-0.011	-0.82	0.065	2.05	-0.508	-0.62	0.009	0.09
FBF22	-0.017	-0.62	-0.690	-1.67	0.131	1.77	-0.016	-0.58	-0.562	-1.18	0.086	1.19	-0.008	-1.41	-0.033	-0.39	0.000	0.02	0.022	0.57	-1.404	-1.78	0.069	0.28
FBF23	-0.004	-0.18	-0.174	-0.49	0.001	0.03	-0.019	-0.70	-0.295	-0.66	0.081	1.37	0.004	1.31	0.013	0.27	-0.018	-1.54	0.001	0.03	-1.028	-1.76	-0.124	-0.49
FBF24	0.013	0.73	-0.272	-0.92	0.119	2.27	0.006	0.38	-0.334	-1.10	0.166	2.72	-0.001	-0.22	0.075	1.56	-0.013	-1.34	0.046	1.11	-0.461	-0.78	-0.005	-0.03
FBF25	0.001	0.05	-0.012	-0.02	0.173	2.15	-0.016	-0.74	-0.295	-0.53	0.420	9.30	0.005	1.26	0.067	1.07	-0.073	-7.93	0.020	0.34	-0.646	-0.71	0.212	1.26
FBF26	-0.051	-2.91	-0.622	-3.03	0.108	1.63	-0.047	-2.20	-0.448	-2.03	0.080	1.47	-0.006	-1.29	-0.064	-1.66	0.004	0.34	0.000	-0.01	-0.330	-0.74	-0.156	-0.62
FBF27	0.066	3.00	-0.629	-1.22	0.066	1.03	0.061	2.49	-0.673	-1.19	0.136	2.07	-0.004	-0.79	0.077	0.94	-0.028	-2.08	0.016	0.35	-0.323	-0.28	0.239	1.44
FBF28	-0.023	-1.32	-0.083	-0.27	0.070	1.16	-0.015	-0.77	0.045	0.13	0.076	1.14	-0.007	-1.71	-0.038	-0.90	-0.008	-0.77	-0.013	-0.58	0.316	0.50	0.005	0.02
FBF29	-0.030	-1.73	-0.560	-2.16	0.083	2.91	-0.014	-1.26	-0.524	-2.53	0.098	3.02	-0.001	-0.26	-0.080	-1.71	-0.004	-0.59	0.046	2.72	0.265	0.70	-0.136	-2.39
FBF30	0.015	0.49	-0.385	-0.74	0.126	1.87	0.008	0.23	-0.459	-0.86	0.178	1.55	0.000	0.14	0.018	0.26	-0.005	-0.17	0.017	0.36	-1.218	-1.29	-0.260	-0.77
FBF31	0.052	2.41	-0.453	-0.77	0.077	1.34	0.046	1.82	-0.452	-0.70	0.163	2.91	0.001	0.12	-0.036	-0.60	-0.043	-2.31	0.004	0.09	0.489	0.45	0.348	3.42
FBF32	0.012	0.70	-0.066	-0.19	0.136	2.42	0.008	0.66	-0.181	-0.50	0.244	5.77	0.000	-0.06	0.061	1.06	-0.032	-5.40	0.050	1.34	-0.283	-0.43	0.060	0.46

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
FBF33	-0.013	-0.48	-0.235	-0.80	0.114	2.06	-0.011	-0.42	-0.320	-1.25	0.175	2.31	0.000	-0.03	0.009	0.25	-0.013	-0.82	0.056	1.79	-0.657	-1.03	-0.147	-1.16
FBF34	0.009	0.68	-0.328	-1.15	0.093	2.98	0.006	0.50	-0.408	-1.25	0.175	5.76	0.001	0.28	0.005	0.13	-0.022	-3.94	-0.014	-0.45	0.012	0.02	-0.013	-0.15
FBF35	0.055	1.72	-0.736	-1.37	0.088	1.21	0.055	2.46	-0.914	-1.50	0.185	2.45	-0.003	-0.40	-0.030	-0.29	-0.035	-2.26	-0.108	-1.14	-0.727	-0.44	0.278	1.67
FBF36	0.001	0.06	0.070	0.27	0.033	0.63	-0.003	-0.17	0.081	0.29	-0.091	-2.07	0.003	0.69	0.014	0.38	0.043	3.88	0.026	0.52	-0.485	-1.01	-0.333	-2.15
FBF37	-0.031	-1.09	-0.618	-1.72	0.086	2.18	-0.031	-1.01	-0.545	-1.19	0.032	0.47	-0.007	-1.75	-0.008	-0.16	0.011	0.64	-0.018	-0.51	-1.163	-1.71	-0.069	-0.74
FBF38	0.041	1.55	-0.076	-0.17	0.028	0.48	0.039	2.10	-0.173	-0.36	0.077	1.40	-0.001	-0.23	-0.013	-0.17	-0.020	-1.56	-0.025	-0.49	-0.884	-0.91	0.165	0.65
FBF39	0.059	1.98	0.560	0.92	0.026	0.63	0.028	0.88	0.418	0.69	0.089	1.76	0.002	0.27	0.235	2.76	-0.019	-1.59	0.034	0.72	-0.149	-0.12	0.151	1.55
FBF40	0.065	2.72	-0.825	-1.48	0.078	1.04	0.074	2.67	-0.778	-1.28	0.099	1.82	-0.005	-0.82	-0.039	-0.50	-0.022	-1.68	-0.012	-0.31	0.691	0.58	0.290	1.48
FBF41	0.024	1.08	-0.146	-0.42	0.090	1.74	0.013	0.58	-0.264	-0.62	0.096	1.40	0.006	1.49	0.007	0.12	0.011	0.67	-0.011	-0.33	-0.483	-0.55	-0.351	-1.13
FBF42	-0.023	-1.69	-0.205	-0.77	0.088	3.37	-0.012	-0.85	-0.169	-0.61	0.121	3.41	-0.004	-1.52	-0.040	-1.03	-0.004	-0.56	0.015	0.60	-0.143	-0.34	-0.198	-1.34
FBF43	0.014	0.79	-0.707	-1.89	0.098	1.87	0.013	0.72	-0.759	-1.75	0.124	2.21	0.000	-0.08	0.037	0.62	-0.009	-0.84	0.052	1.66	-0.450	-0.60	-0.002	-0.02
FBF44	0.010	2.40	-0.088	-1.22	0.021	2.61	0.006	1.20	-0.128	-1.51	0.021	1.89	0.002	1.20	0.015	1.28	0.002	0.63	-0.018	-1.65	0.067	0.27	-0.036	-0.81
FBF45	-0.029	-1.43	-0.273	-0.77	0.156	2.02	-0.049	-2.84	-0.479	-1.33	0.195	2.51	0.005	1.69	0.092	2.34	-0.007	-0.57	0.032	0.88	-1.496	-3.15	-0.042	-0.20
FBF46	-0.024	-1.21	-0.111	-0.30	0.004	0.10	-0.029	-1.30	-0.215	-0.53	0.087	2.05	0.002	0.71	0.001	0.03	-0.021	-2.62	0.033	1.06	-0.775	-1.05	-0.057	-0.48
FBF47	-0.037	-1.73	-0.706	-1.88	0.090	1.53	-0.052	-1.97	-0.804	-1.74	0.108	1.53	0.005	1.23	0.020	0.42	-0.008	-0.61	0.007	0.17	-0.570	-0.67	0.045	0.34
FBF48	-0.050	-2.42	-0.307	-0.90	0.118	1.41	-0.065	-4.46	-0.392	-1.30	0.137	1.65	0.000	0.02	0.066	2.45	-0.011	-0.79	0.052	1.56	-1.680	-3.96	0.114	0.50
FBF49	-0.011	-0.92	-0.235	-0.87	0.077	1.41	-0.013	-0.96	-0.315	-1.00	0.102	1.88	0.002	0.54	-0.010	-0.17	-0.010	-0.99	0.002	0.11	-0.257	-0.73	0.073	0.39
FBF50	-0.074	-2.15	-0.583	-0.94	0.209	1.66	-0.057	-1.25	-0.510	-0.71	0.271	1.53	-0.008	-0.87	-0.088	-0.83	-0.013	-0.31	-0.006	-0.07	-0.322	-0.13	-0.359	-0.59
FBF51	-0.019	-1.04	-0.516	-1.76	0.080	1.76	-0.022	-1.42	-0.531	-1.83	0.085	1.26	-0.003	-0.72	0.052	1.21	-0.003	-0.23	0.051	1.47	-0.712	-1.06	-0.047	-0.42
FBF52	-0.009	-0.45	-0.517	-1.62	0.095	1.47	-0.012	-0.78	-0.553	-1.67	0.099	1.16	-0.001	-0.34	0.038	0.73	-0.004	-0.22	0.031	0.85	-0.532	-0.85	0.018	0.10
FBF53	-0.014	-0.97	-0.312	-1.02	0.065	1.24	-0.015	-1.02	-0.342	-1.01	0.081	1.08	-0.002	-0.57	0.006	0.11	-0.006	-0.34	-0.020	-0.81	-0.548	-1.12	0.024	0.13
FBF54	-0.019	-1.29	-0.234	-0.70	0.105	2.42	-0.023	-1.49	-0.247	-0.63	0.079	1.28	-0.001	-0.39	0.043	0.97	0.001	0.06	0.019	0.56	-0.463	-0.73	0.162	1.47
FBF55	-0.027	-1.10	-0.478	-1.56	0.068	1.59	-0.032	-1.24	-0.502	-1.60	0.089	1.43	0.006	1.20	-0.029	-0.56	-0.005	-0.43	0.025	1.44	0.510	1.24	-0.112	-0.43
FBF56	-0.003	-0.95	-0.070	-1.56	0.030	1.93	-0.005	-1.23	-0.082	-1.67	0.036	2.50	0.001	0.58	0.013	1.65	-0.003	-1.43	0.010	1.08	0.137	0.62	0.020	0.55
FBF57	0.019	0.59	0.620	1.13	0.048	0.87	-0.001	-0.03	0.541	1.10	0.124	1.22	0.001	0.12	0.191	2.94	-0.019	-0.88	0.077	2.38	0.065	0.11	-0.029	-0.09
FBF58	0.010	0.29	-0.916	-1.72	0.157	2.24	0.002	0.06	-0.944	-1.69	0.109	1.14	0.002	0.41	0.048	0.77	0.004	0.16	-0.019	-0.39	0.680	0.57	0.236	1.08
FBF59	-0.027	-1.94	-0.208	-1.09	0.139	4.48	-0.032	-2.39	-0.078	-0.46	0.176	7.51	-0.005	-1.40	-0.016	-0.39	-0.021	-3.85	0.025	0.86	-0.452	-0.89	0.040	0.37
FBF60	0.050	0.68	-0.453	-0.89	0.187	2.32	0.038	0.45	-0.596	-1.20	0.299	3.69	-0.001	-0.16	-0.037	-0.56	-0.047	-2.36	-0.009	-0.15	-2.470	-1.51	0.401	2.15
FBF61	0.001	0.01	-0.360	-0.46	0.160	3.29	-0.072	-1.16	-0.931	-1.32	0.300	2.46	0.020	1.33	0.166	1.13	-0.027	-1.09	-0.131	-1.12	-3.836	-1.40	0.166	0.74
FBF62	-0.026	-0.76	-1.203	-1.79	0.075	1.06	0.011	0.51	-0.928	-1.67	-0.008	-0.11	-0.016	-1.75	-0.207	-1.82	0.003	0.15	-0.031	-0.76	-0.273	-0.27	0.180	0.92
FBF63	0.111	2.08	-0.891	-0.78	0.032	0.39	0.070	1.26	-1.197	-0.91	0.256	2.79	0.016	0.80	0.001	0.01	-0.066	-1.95	-0.010	-0.12	-1.009	-0.52	0.135	0.92
FBF64	0.047	1.62	-0.613	-1.08	0.070	0.94	0.051	1.65	-0.634	-1.00	0.105	1.04	-0.006	-0.76	0.037	0.32	-0.009	-0.49	0.018	0.37	-0.786	-0.69	-0.061	-0.20
FBF65	-0.060	-2.27	-0.509	-0.99	0.058	0.80	-0.036	-1.44	-0.401	-0.76	0.101	1.20	-0.012	-1.86	-0.083	-0.90	-0.019	-0.90	0.014	0.31	-0.514	-0.69	0.029	0.09
FBF66	-0.044	-1.68	0.714	1.25	-0.028	-0.39	-0.017	-0.59	0.679	1.13	-0.054	-0.91	-0.010	-1.10	-0.012	-0.09	0.000	-0.01	-0.014	-0.32	-0.407	-0.41	0.378	1.18
FBF67	-0.091	-2.69	-0.673	-1.11	0.181	1.97	-0.086	-2.10	-0.698	-1.07	0.223	2.34	-0.001	-0.30	-0.051	-0.58	-0.028	-1.32	-0.002	-0.05	0.088	0.08	0.390	1.45
FBF68	0.132	3.67	-0.402	-0.53	0.089	1.00	0.122	3.10	-0.435	-0.54	0.151	2.22	0.004	0.41	-0.067	-0.65	-0.043	-1.81	0.005	0.09	0.172	0.12	0.529	2.94
FBF69	0.003	0.10	0.460	0.83	-0.028	-0.32	-0.036	-1.28	0.400	0.85	-0.060	-0.31	0.006	0.79	0.154	1.70	0.019	0.44	-0.010	-0.15	-0.824	-0.91	-0.301	-0.69
FBF70	0.069	1.50	0.306	0.47	0.071	0.67	0.032	0.75	0.349	0.57	0.091	0.57	0.003	0.29	0.173	1.66	-0.023	-0.63	0.058	0.92	0.302	0.19	0.286	0.64
FBF71	-0.083	-2.56	-1.068	-1.46	0.022	0.29	-0.062	-1.67	-0.951	-1.29	-0.029	-0.29	-0.009	-1.12	-0.117	-0.99	0.014	0.67	-0.099	-1.23	0.170	0.09	-0.167	-0.55
FBF72	-0.017	-0.49	-1.179	-2.51	0.115	1.90	0.003	0.10	-1.047	-2.05	0.101	1.30	-0.010	-1.39	-0.068	-0.76	0.012	0.78	0.024	0.84	-0.809	-1.16	-0.421	-1.46
FBF73	0.026	0.77	-0.723	-1.21	0.098	0.94	0.031	0.87	-0.693	-1.00	0.001	0.01	-0.007	-1.00	-0.036	-0.32	0.023	0.96	-0.016	-0.33	-1.993	-1.88	-0.027	-0.08
FBF74	0.078	1.66	-0.635	-0.86	-0.053	-0.74	0.119	2.22	-0.327	-0.45	-0.078	-1.18	-0.021	-1.61	-0.189	-1.17	-0.016	-0.95	-0.049	-0.70	-0.004	0.00	0.306	2.25
FBF75	0.023	0.83	-1.029	-2.13	0.095	1.63	0.053	2.24	-0.738	-1.66	0.107	1.80	-0.011	-1.28	-0.196	-1.89	-0.006	-0.53	0.007	0.24	0.721	1.19	-0.399	-1.45
FBF76	-0.011	-0.44	-0.696	-1.47	0.180	2.45	-0.005	-0.20	-0.556	-1.01	0.060	0.63	-0.005	-0.72	-0.039	-0.38	0.027	1.35	0.018	0.41	-0.536	-0.67	-0.061	-0.29

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
FBF77	0.005	0.21	-0.744	-1.64	0.158	2.68	0.009	0.39	-0.616	-1.12	0.026	0.39	-0.002	-0.30	-0.058	-0.66	0.030	1.96	0.021	0.62	-0.321	-0.44	-0.098	-0.58
FBF78	-0.015	-0.66	-0.677	-1.48	0.173	2.21	-0.012	-0.49	-0.540	-1.00	0.035	0.36	-0.004	-0.53	-0.040	-0.43	0.032	1.54	0.013	0.28	-0.552	-0.67	-0.053	-0.25
FBF79	-0.083	-2.43	-0.607	-1.10	0.099	1.09	-0.057	-2.20	-0.509	-0.85	0.006	0.06	-0.007	-1.03	-0.042	-0.52	0.040	2.50	0.054	1.21	-0.374	-0.42	-0.484	-1.53
FBF80	0.130	2.78	-0.361	-0.74	0.072	0.91	0.100	2.03	-0.473	-0.82	0.091	0.86	0.012	1.16	-0.028	-0.23	-0.018	-0.74	0.021	0.23	-0.925	-0.63	0.160	0.81
FBF81	-0.012	-0.22	-0.354	-0.56	0.126	1.55	0.015	0.37	-0.395	-0.67	0.040	0.56	-0.001	-0.18	-0.145	-1.31	0.018	0.95	-0.022	-0.34	-0.398	-0.30	0.169	0.45
FBF82	-0.013	-0.23	-0.059	-0.09	0.062	0.66	0.010	0.21	-0.096	-0.16	-0.034	-0.37	-0.001	-0.15	-0.164	-1.51	0.025	0.96	-0.077	-0.99	-0.547	-0.41	0.082	0.16
FBF83	0.145	3.07	-0.403	-0.54	0.447	2.85	0.107	2.41	-0.451	-0.75	0.306	1.49	0.005	0.45	0.246	2.59	0.089	1.89	0.115	1.36	-3.080	-1.90	-1.385	-2.04
FBF84	-0.021	-0.51	-1.571	-1.90	0.108	1.26	0.010	0.24	-1.442	-1.66	0.134	1.21	-0.008	-0.83	-0.149	-0.98	-0.027	-1.13	0.025	0.47	0.729	0.64	0.318	1.73
FBF85	-0.021	-0.64	-1.174	-1.86	0.045	0.82	0.010	0.30	-1.041	-1.61	0.042	0.58	-0.007	-0.93	-0.178	-1.57	-0.017	-0.95	-0.011	-0.26	0.542	0.53	0.270	2.61
FBF86	0.063	1.47	-1.405	-1.99	0.041	0.97	0.092	2.17	-1.224	-1.75	0.040	0.57	-0.002	-0.15	-0.180	-1.15	-0.014	-0.92	0.093	1.80	1.340	1.23	0.033	0.19
FBF87	-0.007	-0.20	-0.957	-1.54	0.026	0.34	0.043	1.43	-0.753	-1.24	0.027	0.42	-0.013	-1.18	-0.177	-1.15	0.011	0.85	0.011	0.26	0.638	0.63	-0.440	-2.08
FBF88	-0.038	-1.13	-0.354	-0.84	0.117	1.76	-0.047	-1.58	-0.402	-0.86	0.031	0.41	0.005	0.54	0.002	0.02	0.037	1.79	-0.023	-0.52	-0.747	-0.83	-0.373	-1.39
FBF89	-0.074	-1.76	-1.211	-2.46	0.144	1.80	-0.050	-1.52	-1.101	-2.07	0.073	1.11	-0.006	-0.75	-0.120	-1.16	0.021	1.51	-0.012	-0.20	0.034	0.03	-0.197	-0.60
FBF90	0.014	0.54	-0.612	-1.61	0.161	2.24	-0.003	-0.11	-0.589	-1.41	0.189	1.90	0.002	0.28	-0.031	-0.53	-0.007	-0.29	0.017	0.32	-1.247	-1.45	-0.323	-0.88
FBF91	-0.025	-0.86	-0.990	-1.72	0.093	1.65	0.006	0.20	-0.980	-1.59	0.098	1.01	-0.006	-0.74	-0.075	-0.74	0.004	0.18	0.041	1.09	-0.028	-0.03	-0.118	-0.83
FBF92	0.017	0.55	0.278	0.37	0.065	0.52	-0.022	-0.51	0.368	0.48	0.146	1.01	0.018	1.53	-0.197	-1.35	-0.070	-2.07	0.138	2.19	0.136	0.07	0.487	2.59
FBF93	0.007	0.17	-0.974	-1.27	0.128	1.74	-0.027	-0.62	-1.335	-1.63	0.313	3.71	0.013	1.73	0.054	0.54	-0.043	-2.67	-0.067	-1.21	-1.213	-0.79	0.010	0.05
FBF94	-0.014	-0.69	-1.591	-3.56	0.067	1.38	-0.008	-0.32	-1.528	-2.81	0.041	0.60	-0.008	-1.16	-0.040	-0.56	0.008	0.56	-0.045	-1.16	-1.005	-0.98	-0.133	-1.07
FBF95	-0.017	-0.58	-1.267	-2.29	0.103	2.38	0.002	0.08	-1.154	-1.73	0.062	1.48	-0.006	-0.80	-0.067	-0.74	0.014	1.16	0.057	1.31	-0.582	-0.57	-0.251	-1.72
FBF96	0.022	0.61	-1.045	-1.60	0.089	0.89	0.008	0.22	-0.836	-1.01	-0.133	-1.11	-0.006	-0.67	0.056	0.61	0.063	2.60	-0.031	-0.68	-0.869	-0.80	-0.374	-1.28
FBF97	-0.035	-1.27	-0.424	-0.80	0.102	1.30	-0.044	-1.69	-0.539	-0.87	0.134	1.92	0.001	0.25	0.010	0.13	-0.013	-1.17	0.022	0.50	-1.455	-1.51	0.090	0.42
FBF98	-0.004	-0.11	-0.946	-1.58	0.072	0.68	-0.005	-0.14	-0.835	-1.21	-0.018	-0.14	-0.009	-1.12	-0.016	-0.17	0.011	0.42	-0.032	-0.47	-1.447	-1.23	0.160	0.60
FBF99	0.046	1.21	-0.178	-0.26	0.137	1.46	0.017	0.38	-0.204	-0.27	0.076	0.56	0.004	0.36	0.151	1.35	0.022	0.90	0.059	1.15	-0.632	-0.44	-0.260	-0.54
FBF100	0.016	0.50	-0.364	-0.54	0.176	2.11	0.003	0.10	-0.598	-0.77	0.371	3.75	0.003	0.42	0.085	0.71	-0.046	-2.33	0.093	1.72	-1.530	-1.21	-0.149	-0.34
FBF101	-0.050	-1.59	-0.846	-1.57	0.152	2.32	-0.045	-1.32	-0.951	-1.55	0.230	2.88	0.001	0.14	-0.080	-1.14	-0.012	-0.62	-0.054	-1.43	-0.699	-0.74	-0.211	-0.59
FBF102	-0.034	-0.93	-0.278	-0.45	0.085	0.75	-0.017	-0.36	-0.130	-0.20	0.151	1.19	-0.006	-0.96	-0.161	-2.23	-0.030	-1.12	-0.022	-0.31	0.299	0.30	0.095	0.24
FBF103	-0.037	-1.49	0.248	0.52	0.076	1.17	-0.044	-1.53	0.276	0.51	0.053	0.55	-0.003	-0.33	0.111	1.29	0.019	0.99	0.037	0.77	-0.119	-0.13	-0.387	-1.00
FBF104	-0.017	-0.66	-0.689	-1.83	0.253	3.89	-0.036	-1.21	-0.623	-1.26	0.213	2.42	-0.001	-0.16	0.006	0.11	0.002	0.16	0.051	1.27	-1.931	-1.68	-0.093	-0.28
FBF105	0.017	0.45	-1.661	-2.90	0.160	2.25	0.029	0.63	-1.402	-2.42	0.119	1.86	-0.004	-0.49	-0.117	-0.84	-0.005	-0.45	0.024	0.44	1.735	1.49	-0.082	-0.38
FBF106	-0.030	-1.05	-1.163	-2.31	0.131	4.02	-0.005	-0.25	-1.031	-2.29	0.164	4.01	-0.007	-0.80	-0.126	-1.13	-0.014	-1.45	0.043	1.13	0.151	0.18	-0.097	-1.11
FBF107	-0.054	-1.45	-1.417	-2.71	0.223	2.01	-0.042	-0.98	-0.802	-1.78	0.061	1.09	-0.013	-1.79	-0.193	-1.65	0.050	4.75	-0.019	-0.51	0.592	0.48	-0.991	-9.09
FBF108	-0.030	-1.43	-0.615	-1.82	0.136	2.06	-0.021	-0.98	-0.437	-1.19	0.074	0.92	-0.010	-1.82	-0.051	-0.92	0.006	0.40	-0.002	-0.06	-0.693	-1.01	0.044	0.20
FBF109	-0.002	-0.08	-0.725	-1.64	-0.008	-0.12	0.023	0.73	-0.610	-1.24	-0.070	-1.25	0.000	0.01	-0.089	-0.77	0.001	0.11	0.085	1.68	2.119	2.02	0.231	1.13
FBF110	-0.052	-1.35	0.665	1.41	0.174	1.47	-0.078	-1.52	0.973	1.49	0.017	0.13	0.006	0.47	-0.147	-0.83	0.009	0.38	0.028	0.42	0.363	0.18	0.193	0.53
FBF111	-0.072	-2.44	0.489	0.99	0.144	1.50	-0.079	-2.51	0.494	0.95	0.014	0.13	0.002	0.29	0.104	1.18	0.044	1.66	0.081	1.99	-0.333	-0.35	-0.290	-0.52
FBF112	-0.008	-0.26	-1.217	-2.65	0.233	3.69	0.006	0.22	-0.757	-1.80	0.197	2.84	-0.018	-1.94	-0.170	-1.37	-0.004	-0.27	-0.042	-1.11	0.043	0.04	-0.327	-1.22
FBF113	0.002	0.06	-1.202	-2.55	0.236	3.92	0.019	0.70	-0.748	-1.79	0.193	2.83	-0.018	-2.00	-0.172	-1.46	-0.002	-0.14	-0.047	-1.28	0.200	0.19	-0.297	-1.22
FBF114	0.004	0.12	-1.236	-2.63	0.236	3.83	0.020	0.75	-0.755	-1.80	0.186	2.76	-0.019	-1.99	-0.173	-1.41	0.000	-0.02	-0.036	-0.96	-0.019	-0.02	-0.351	-1.37
FBF115	-0.044	-1.54	-1.489	-3.32	0.131	1.87	-0.011	-0.48	-1.410	-3.09	0.062	0.73	-0.006	-1.02	-0.174	-2.62	0.033	1.92	-0.021	-0.58	-0.539	-0.61	-0.507	-1.33
FBF116	0.019	0.47	-1.495	-2.16	0.077	1.24	0.072	1.95	-1.069	-1.80	0.027	0.43	-0.027	-2.49	-0.165	-1.17	0.004	0.24	-0.025	-0.63	0.347	0.28	-0.132	-0.57
FBF117	0.025	0.77	0.821	1.13	0.007	0.09	0.002	0.06	0.691	0.98	0.102	0.71	0.006	0.75	0.198	1.64	-0.013	-0.43	0.066	0.96	0.783	0.51	-0.237	-0.43
FBF118	0.005	0.13	0.979	1.55	-0.069	-0.60	-0.008	-0.22	1.071	1.67	-0.100	-0.56	-0.002	-0.21	0.005	0.04	0.020	0.48	-0.006	-0.11	-1.174	-1.17	-0.533	-0.66
FBF119	0.084	2.35	0.438	0.59	-0.139	-2.80	0.048	1.34	0.353	0.54	-0.194	-2.18	0.012	1.09	0.124	1.08	0.019	0.99	0.027	0.35	-0.123	-0.09	-0.086	-0.47
FBF120	-0.036	-1.40	-0.321	-1.49	0.059	1.24	-0.043	-1.46	-0.352	-1.22	0.031	0.68	0.005	1.11	0.007	0.15	0.005	0.49	0.008	0.27	0.719	0.85	0.009	0.05

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
FBF121	0.097	0.78	-0.121	-0.10	0.457	1.91	0.097	0.69	-0.101	-0.09	0.793	2.37	-0.011	-0.73	-0.152	-0.97	-0.121	-1.53	0.037	0.23	-2.148	-0.84	0.274	0.29
FBF122	0.059	1.56	0.535	0.95	0.020	0.25	0.036	0.83	0.437	0.73	0.076	1.15	0.005	0.54	0.121	1.29	-0.028	-2.00	0.067	1.22	0.057	0.04	0.273	1.11
FBF123	-0.083	-3.05	-0.934	-1.81	0.102	1.40	-0.061	-2.36	-0.686	-1.39	0.099	1.06	-0.012	-1.49	-0.197	-1.76	-0.004	-0.17	-0.068	-1.95	-0.476	-0.49	-0.249	-0.65
FBF124	-0.011	-0.40	-0.072	-0.11	0.069	0.75	-0.036	-1.04	-0.158	-0.24	0.042	0.30	0.007	0.74	0.162	1.50	0.017	0.54	0.012	0.23	0.719	0.52	-0.201	-0.36
FBF125	-0.022	-0.64	-1.444	-2.88	0.211	2.46	-0.023	-0.57	-1.372	-2.44	0.216	1.94	-0.005	-0.74	-0.043	-0.53	-0.010	-0.33	0.012	0.18	-1.099	-0.94	0.009	0.03
FBF126	-0.011	-0.25	0.234	0.28	0.107	1.04	0.000	-0.01	0.111	0.12	-0.053	-0.56	0.001	0.08	-0.010	-0.06	0.043	1.79	-0.048	-0.85	-0.845	-0.71	0.281	0.57
FBF127	-0.002	-0.09	-0.604	-1.51	0.080	2.25	0.015	0.75	-0.419	-1.04	0.044	0.78	-0.008	-1.33	-0.116	-1.60	0.002	0.12	-0.012	-0.46	0.002	0.00	-0.061	-0.55
FBF128	-0.048	-1.26	-0.783	-1.33	0.139	1.51	-0.026	-0.76	-0.419	-0.66	0.016	0.18	-0.012	-1.18	-0.189	-1.46	0.025	1.10	-0.034	-0.69	0.294	0.28	-0.302	-0.74
FBF129	0.005	0.23	-0.102	-0.28	0.214	2.40	0.000	0.02	0.209	0.56	0.064	0.61	-0.010	-1.03	-0.086	-1.02	0.035	1.19	-0.082	-1.72	-0.787	-0.83	-0.290	-0.76
FBF130	0.117	2.00	-1.118	-1.62	0.058	0.73	0.093	1.40	-1.279	-1.38	0.084	1.00	0.013	0.92	0.053	0.54	-0.024	-1.03	0.134	0.76	-0.152	-0.08	0.307	1.10
FBF131	-0.035	-1.05	-0.905	-1.87	0.236	2.64	-0.034	-1.16	-0.972	-1.83	0.189	2.27	0.000	-0.03	-0.061	-0.75	0.008	0.53	0.011	0.33	-1.599	-2.26	0.010	0.05
FBF132	0.001	0.03	-1.218	-2.27	0.156	2.62	0.011	0.38	-1.081	-1.66	0.034	0.45	-0.002	-0.17	-0.158	-1.47	0.026	1.45	-0.032	-0.69	-0.463	-0.60	-0.078	-0.56
FBF133	-0.005	-0.13	-1.557	-2.06	0.129	2.46	0.028	0.77	-1.318	-1.64	-0.004	-0.05	-0.009	-0.78	-0.184	-1.17	0.030	1.74	0.028	0.30	-0.240	-0.17	-0.170	-0.94
FBF134	0.038	0.73	-0.701	-0.94	0.129	1.56	0.038	0.61	-0.625	-0.77	0.080	0.71	-0.005	-0.44	-0.043	-0.26	-0.004	-0.15	-0.005	-0.08	-1.056	-0.71	0.289	1.42
FBF135	-0.010	-0.43	0.742	1.98	0.088	1.48	-0.024	-0.88	0.826	1.95	0.074	0.97	0.002	0.25	0.001	0.02	-0.002	-0.12	0.006	0.13	0.480	0.58	-0.113	-0.76
FBF136	-0.121	-1.70	-0.199	-0.36	0.051	0.69	-0.117	-1.42	-0.037	-0.05	-0.103	-1.18	-0.001	-0.14	0.000	0.00	0.033	1.85	-0.008	-0.14	1.459	1.46	0.124	0.57
FBF137	-0.020	-0.88	-0.999	-2.88	0.118	1.58	-0.013	-0.52	-0.620	-1.80	-0.099	-1.22	-0.009	-1.45	-0.169	-3.20	0.040	2.54	-0.013	-0.48	-0.846	-1.38	-0.049	-0.35
FBF138	0.000	-0.01	-0.727	-1.72	0.169	3.76	-0.003	-0.11	-0.269	-0.64	0.084	0.97	-0.010	-1.33	-0.182	-1.94	0.000	0.02	-0.022	-0.70	-0.250	-0.31	-0.101	-0.65
FBF139	0.010	0.39	-0.428	-0.75	0.076	1.44	0.042	2.18	-0.200	-0.35	0.052	0.64	-0.015	-1.79	-0.090	-0.93	0.004	0.23	-0.026	-0.64	0.860	0.78	-0.170	-0.73
FBF140	0.122	2.78	-0.921	-1.33	0.120	0.98	0.112	2.31	-0.990	-1.44	0.132	0.75	0.014	1.29	-0.050	-0.46	-0.037	-0.87	0.088	1.15	2.095	1.18	0.742	1.22
FBF141	0.019	0.66	-0.930	-3.41	0.028	0.32	0.019	0.55	-0.763	-2.55	-0.008	-0.08	-0.005	-0.87	-0.090	-1.56	-0.002	-0.16	-0.050	-0.95	-0.044	-0.06	0.026	0.06
FBF142	-0.007	-0.29	-1.129	-2.20	0.163	2.60	-0.018	-0.66	-1.279	-2.24	0.216	2.74	0.004	0.57	0.031	0.38	-0.024	-1.33	0.081	1.89	-1.260	-1.37	0.237	1.58
FBF143	0.085	1.11	0.113	0.12	0.430	1.32	0.013	0.24	1.355	1.81	0.076	0.25	-0.038	-2.03	0.068	0.36	0.049	0.92	-0.200	-2.48	-2.495	-1.27	-0.153	-0.12
FBF144	-0.022	-1.11	0.028	0.13	-0.019	-0.22	-0.044	-1.93	-0.100	-0.36	0.017	0.26	0.002	0.41	0.072	1.36	-0.025	-2.84	-0.006	-0.09	-1.119	-1.05	0.448	2.40
FBF145	0.034	0.49	-0.499	-0.53	0.077	0.28	0.051	0.93	-0.933	-1.19	0.676	2.43	-0.005	-0.59	-0.305	-3.03	-0.167	-2.79	-0.254	-1.82	-2.047	-1.11	0.272	0.44
FBF146	0.005	0.10	-0.560	-0.42	0.242	1.34	0.053	1.09	-0.376	-0.30	0.153	1.05	-0.003	-0.28	-0.359	-3.15	-0.010	-0.43	-0.059	-0.53	2.137	0.79	0.627	0.93
FBF147	0.060	2.45	-0.912	-2.31	0.152	3.41	0.067	2.57	-0.672	-1.89	0.119	3.68	-0.008	-1.47	-0.141	-2.20	-0.010	-1.06	-0.032	-0.64	-0.314	-0.43	0.172	1.02
FBF148	-0.087	-1.35	-0.916	-1.81	0.083	0.93	-0.060	-1.17	-0.992	-1.86	0.014	0.16	-0.001	-0.11	-0.132	-1.21	0.024	1.00	-0.004	-0.05	-0.799	-0.62	-0.119	-0.26
FBF149	0.026	0.64	-1.053	-1.83	0.106	2.19	0.040	0.81	-0.762	-1.25	0.030	0.36	-0.006	-0.54	-0.104	-0.77	0.006	0.30	0.045	0.98	1.206	1.22	-0.058	-0.28
FBF150	-0.104	-2.22	-1.661	-2.54	0.058	0.78	-0.035	-1.01	-1.335	-3.02	0.013	0.12	-0.021	-1.75	-0.255	-2.00	0.017	0.64	0.035	0.53	-0.138	-0.13	-0.367	-1.14
FBF151	-0.033	-0.91	-1.267	-2.51	0.092	1.75	-0.014	-0.52	-1.040	-2.45	0.020	0.27	-0.012	-1.26	-0.139	-1.70	0.015	0.85	0.029	0.43	-1.819	-2.19	-0.224	-1.01
FBF152	0.001	0.01	-1.228	-1.49	0.104	1.66	0.009	0.19	-1.136	-1.48	0.179	1.98	-0.008	-0.77	-0.067	-0.55	-0.028	-1.44	0.030	0.67	-1.306	-1.28	0.012	0.07
FBF153	-0.031	-0.67	-1.952	-2.64	0.029	0.55	0.003	0.08	-1.691	-2.74	0.055	0.45	-0.017	-1.65	-0.173	-1.39	-0.022	-0.78	0.008	0.20	-0.797	-1.04	0.116	0.49
FBF154	-0.123	-1.78	-0.668	-1.08	0.101	0.99	-0.106	-1.54	-0.729	-1.26	-0.009	-0.08	-0.002	-0.23	-0.042	-0.50	0.061	2.36	0.040	1.11	-2.125	-2.46	-0.837	-2.42
FBF155	0.058	0.66	-0.566	-0.42	-0.064	-0.59	-0.065	-0.81	-0.862	-0.76	-0.227	-1.11	0.030	2.01	0.387	2.74	0.049	1.14	-0.096	-0.87	-0.929	-0.47	-0.178	-0.47
FBF156	-0.178	-4.10	-1.629	-2.11	0.194	1.61	-0.137	-3.15	-1.638	-2.55	0.284	2.13	-0.002	-0.22	-0.219	-1.59	-0.056	-1.67	0.036	0.56	1.706	1.24	0.718	2.54
FBF157	-0.027	-0.97	-1.876	-4.44	-0.047	-0.46	-0.005	-0.18	-1.768	-4.00	-0.157	-1.56	-0.007	-0.85	-0.124	-1.24	0.022	1.13	-0.026	-0.68	-0.392	-0.44	0.004	0.01
FBF158	-0.020	-0.54	0.045	0.06	-0.160	-1.23	-0.054	-1.40	0.069	0.10	-0.268	-1.18	0.008	0.64	0.176	1.49	0.049	1.02	0.026	0.36	0.274	0.21	-0.568	-0.84
FBF159	0.015	0.52	-1.401	-3.20	0.163	2.66	0.036	1.35	-1.047	-2.35	0.015	0.32	-0.012	-1.44	-0.203	-2.25	0.044	3.56	-0.022	-0.48	-0.993	-1.42	-0.621	-5.51
FBF160	-0.008	-0.26	-1.555	-3.66	0.099	1.84	0.009	0.38	-1.313	-2.85	0.025	0.44	-0.011	-1.53	-0.072	-0.78	0.025	1.93	0.019	0.51	-0.618	-0.87	-0.467	-2.13
FBF161	0.017	0.28	-0.396	-0.35	-0.094	-0.55	-0.046	-0.73	-0.126	-0.11	-0.169	-0.53	0.004	0.21	0.184	0.74	-0.009	-0.14	0.159	0.99	-1.126	-0.53	0.284	0.35
FBF162	-0.010	-0.25	-0.643	-1.09	0.110	1.67	0.031	0.99	-0.406	-0.81	0.090	1.30	-0.016	-1.93	-0.173	-1.69	0.012	0.80	0.034	1.08	-1.064	-1.85	-0.478	-1.41
FBF163	0.025	0.66	0.222	0.37	-0.002	-0.02	-0.009	-0.25	0.305	0.55	0.017	0.07	0.010	0.79	0.097	0.72	-0.012	-0.24	0.070	1.10	2.084	1.18	-0.189	-0.28
FBF164	-0.036	-0.65	-1.357	-2.01	0.144	1.18	0.007	0.13	-1.278	-1.90	-0.005	-0.03	0.000	0.01	-0.157	-1.56	0.071	2.07	0.016	0.14	1.065	0.71	-0.829	-1.40

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
FBF165	-0.150	-2.77	-2.549	-2.54	0.121	0.67	-0.110	-3.06	-1.892	-2.36	0.106	0.38	-0.014	-1.07	-0.451	-3.54	-0.041	-0.57	-0.130	-0.60	3.218	0.76	0.505	0.97
FBF166	-0.035	-0.54	-1.256	-2.78	0.062	1.17	-0.038	-0.54	-1.423	-3.78	0.053	0.65	0.010	1.05	-0.043	-0.45	0.001	0.05	0.019	0.22	-0.240	-0.27	0.079	0.45
FBF167	-0.028	-0.36	-1.859	-2.59	0.108	0.93	-0.012	-0.13	-1.671	-2.41	-0.124	-0.90	-0.003	-0.33	-0.119	-1.01	0.070	1.82	0.045	0.70	-1.301	-0.86	-0.477	-0.91
FBF168	0.004	0.08	-0.559	-0.93	0.220	1.76	0.003	0.06	0.064	0.09	-0.077	-0.46	-0.025	-2.62	-0.098	-0.97	0.067	1.77	-0.042	-0.84	-3.327	-2.36	-0.350	-0.66
FBF169	0.061	1.35	-1.597	-2.71	0.066	0.65	0.023	0.55	-1.078	-1.80	-0.163	-1.69	0.001	0.10	-0.282	-2.18	0.015	0.64	-0.050	-0.83	-1.635	-1.49	0.216	1.39
FBF170	-0.155	-4.68	-1.678	-2.99	0.153	1.06	-0.112	-2.81	-1.311	-1.94	-0.129	-0.67	-0.009	-0.83	-0.137	-1.15	0.072	1.74	0.127	2.07	0.942	0.94	-0.288	-0.85
FBF171	0.058	0.70	1.171	0.95	0.083	0.65	0.001	0.01	1.097	1.07	0.036	0.12	0.000	0.02	0.432	2.19	0.038	0.61	0.003	0.03	-1.378	-0.68	-0.425	-0.47
FBF172	-0.066	-1.52	0.846	1.10	-0.048	-0.35	-0.041	-0.94	1.085	1.48	-0.085	-0.40	-0.014	-1.52	0.070	0.61	0.048	1.07	0.091	1.55	-0.039	-0.03	-1.108	-1.23
FBF173	-0.110	-2.26	-1.306	-1.87	0.089	1.44	-0.072	-1.98	-1.186	-1.99	0.183	1.75	-0.003	-0.33	-0.270	-2.79	-0.037	-1.42	0.049	0.68	1.039	0.95	-0.022	-0.11
FBF174	0.004	0.09	-0.774	-0.91	-0.007	-0.05	0.024	0.52	-0.475	-0.51	-0.412	-2.54	-0.006	-0.32	-0.192	-0.93	0.110	2.47	-0.058	-0.38	-1.476	-0.95	-0.295	-0.79
FBF175	0.058	2.13	-1.518	-3.27	0.131	2.26	0.079	2.73	-1.399	-2.64	0.118	1.46	-0.007	-1.07	-0.090	-1.00	0.007	0.37	-0.018	-0.51	-0.112	-0.17	-0.116	-0.51
FBF176	0.045	1.02	-0.724	-1.40	0.280	2.21	0.078	1.89	-0.253	-0.54	-0.028	-0.27	-0.010	-1.02	-0.229	-3.03	0.089	3.89	0.029	0.48	-0.442	-0.48	-0.619	-1.37
FBF177	-0.105	-2.44	-1.701	-2.62	0.091	1.22	-0.036	-1.05	-1.258	-3.11	0.001	0.02	-0.022	-1.73	-0.303	-2.11	0.032	1.23	0.022	0.40	-0.184	-0.16	-0.600	-1.98
FBF178	0.144	2.10	1.608	1.36	-0.166	-1.43	0.090	1.38	1.346	1.25	-0.058	-0.29	0.016	1.12	0.309	1.59	-0.014	-0.34	0.099	0.88	0.130	0.06	-0.283	-0.36
FBF179	-0.068	-1.48	-1.155	-1.75	0.182	1.35	-0.012	-0.35	-0.680	-1.21	0.056	0.65	-0.025	-1.99	-0.243	-1.89	0.044	2.18	-0.015	-0.20	-1.071	-0.92	-0.657	-1.35
FBF180	0.054	1.18	-1.111	-1.28	0.296	2.43	0.075	1.93	-0.561	-0.82	0.073	0.69	-0.013	-1.64	-0.516	-6.40	0.010	0.36	-0.146	-2.39	-1.668	-1.42	0.378	0.91
FBF181	-0.068	-0.63	-0.734	-0.73	0.372	2.08	-0.037	-0.33	0.352	0.40	-0.053	-0.32	-0.051	-3.22	-0.410	-2.32	0.053	1.14	-0.236	-1.91	-4.529	-1.80	0.507	0.67
FBF182	0.033	1.03	-1.313	-2.86	-0.091	-0.82	0.033	0.82	-1.135	-1.88	-0.303	-2.67	0.000	0.02	-0.089	-0.77	0.072	3.16	0.041	0.32	-2.187	-1.07	-0.593	-1.36
FBF183	-0.027	-0.58	-1.036	-1.37	-0.125	-1.34	0.047	1.08	-0.452	-0.77	-0.140	-1.37	-0.035	-3.29	-0.329	-3.01	-0.018	-0.68	0.012	0.21	-0.870	-0.98	0.049	0.12
FBF184	0.166	2.29	-1.014	-0.75	-0.280	-1.45	0.242	3.25	-0.554	-0.45	-0.320	-1.67	-0.028	-1.30	-0.456	-1.88	-0.015	-0.46	-0.125	-0.96	-0.298	-0.13	0.213	0.31
FBF185	-0.076	-2.64	-1.850	-4.25	0.068	1.06	-0.061	-2.15	-1.804	-3.57	0.072	0.74	-0.008	-1.32	-0.019	-0.24	0.012	0.49	0.005	0.09	-0.940	-0.92	-0.419	-1.64
FBF186	-0.077	-2.27	-1.489	-2.58	0.064	0.87	-0.062	-1.77	-1.322	-2.19	0.046	0.46	-0.011	-1.08	-0.098	-0.74	0.016	0.73	-0.014	-0.25	-1.523	-1.19	-0.576	-1.65
FBF187	-0.117	-1.07	-0.874	-0.97	0.004	0.02	-0.075	-0.61	-0.181	-0.20	-0.482	-2.14	-0.009	-0.57	-0.342	-2.62	0.144	3.85	0.031	0.26	-0.234	-0.10	-1.007	-1.46
FBF188	-0.006	-0.17	-1.825	-3.20	0.115	1.67	0.042	1.55	-1.472	-3.18	-0.173	-3.38	-0.014	-1.56	-0.235	-2.26	0.072	6.68	0.022	0.31	-0.627	-0.59	-0.177	-1.97
FBF189	-0.024	-0.63	-1.057	-1.63	0.064	0.94	0.014	0.44	-0.756	-1.15	-0.019	-0.27	-0.018	-1.92	-0.064	-0.40	0.033	1.88	0.056	1.27	-0.503	-0.51	-0.483	-1.39
FBF190	-0.023	-0.45	-0.523	-0.58	0.200	1.81	0.006	0.11	0.071	0.07	-0.033	-0.19	-0.018	-1.56	-0.232	-1.97	0.048	1.11	0.013	0.16	-0.288	-0.13	-0.324	-0.81
FBF191	-0.046	-1.13	-0.414	-0.54	0.109	0.96	-0.030	-0.69	0.275	0.35	-0.148	-1.25	-0.014	-1.26	-0.152	-1.41	0.076	2.83	-0.008	-0.09	1.602	0.69	-0.909	-1.89
FBF192	-0.102	-2.33	-0.103	-0.13	0.122	1.68	-0.055	-1.48	0.160	0.26	0.053	0.78	-0.017	-1.66	-0.164	-1.26	0.016	0.99	0.067	1.09	-0.888	-0.68	-0.215	-0.59
FBF193	0.010	0.62	-0.551	-1.95	0.051	0.75	0.032	1.57	-0.363	-1.39	-0.100	-1.40	-0.006	-1.23	-0.138	-2.27	0.046	3.20	-0.040	-1.26	-0.396	-0.59	-0.217	-1.41
FBF194	-0.045	-1.44	-1.290	-2.77	0.099	1.02	-0.026	-0.95	-0.801	-1.71	-0.199	-1.96	-0.016	-1.75	-0.129	-1.16	0.066	2.53	-0.020	-0.26	-0.697	-0.60	-0.070	-0.21
FBF195	0.008	0.18	-0.161	-0.19	0.080	0.60	-0.030	-0.67	-0.342	-0.53	0.138	1.02	0.022	1.36	0.107	0.60	0.024	0.82	0.119	0.86	-0.029	-0.02	-1.039	-1.80
FBF196	0.043	0.97	-0.269	-0.34	0.313	2.57	0.009	0.18	-0.425	-0.61	0.127	0.52	0.019	1.21	0.088	0.55	0.048	0.83	0.090	1.15	-0.088	-0.05	0.004	0.01
FBF197	0.205	4.41	-0.379	-0.54	0.133	0.97	0.085	1.87	-0.194	-0.35	0.233	1.21	0.037	1.99	-0.088	-0.51	-0.071	-1.41	-0.035	-0.36	2.939	1.45	-0.116	-0.17
FBF198	-0.006	-0.21	-0.663	-1.87	0.049	0.40	0.003	0.06	-0.450	-1.04	-0.235	-1.54	-0.004	-0.26	0.009	0.09	0.081	2.35	0.137	1.06	-1.390	-0.89	-0.368	-1.52
FBF199	-0.055	-1.57	-0.976	-1.51	0.096	1.61	-0.022	-0.80	-0.897	-1.29	0.087	1.33	-0.010	-1.18	-0.108	-0.80	0.005	0.38	0.034	0.79	-0.938	-0.93	-0.150	-0.53
FBF200	-0.127	-1.64	-2.822	-2.15	0.132	0.95	0.001	0.02	-1.468	-1.53	-0.236	-2.05	-0.054	-2.79	-0.668	-3.25	0.061	2.21	-0.045	-0.33	1.462	0.82	-0.223	-1.10
FBF201	-0.046	-1.14	-1.442	-1.98	0.139	2.20	-0.001	-0.04	-1.352	-1.76	0.123	1.80	-0.010	-1.00	-0.151	-1.14	0.006	0.46	0.059	1.21	-0.254	-0.21	-0.147	-0.58
FBF202	-0.066	-1.60	-2.107	-3.55	0.107	1.21	0.003	0.10	-1.795	-3.94	0.048	0.74	-0.015	-1.35	-0.300	-2.44	0.036	2.07	0.064	0.92	0.130	0.11	-0.885	-2.68
FBF203	-0.040	-0.50	-0.228	-0.30	0.037	0.30	0.002	0.02	-0.292	-0.44	-0.060	-0.43	-0.003	-0.28	-0.210	-1.49	0.028	0.68	-0.060	-0.63	-0.512	-0.33	0.078	0.11
FBF204	-0.070	-1.27	-1.677	-2.36	0.129	1.21	0.006	0.14	-1.209	-2.22	-0.050	-0.46	-0.020	-1.66	-0.358	-2.32	0.048	2.08	-0.025	-0.27	0.991	0.75	-0.391	-0.73
FBF205	-0.076	-2.58	-1.289	-2.92	0.138	2.25	-0.048	-2.25	-1.082	-2.31	0.058	0.69	-0.012	-1.69	-0.085	-1.16	0.030	1.58	0.028	0.64	-0.615	-0.74	-0.454	-2.21
FBF206	0.028	0.33	-1.083	-0.93	-0.022	-0.25	0.060	0.87	-1.058	-1.23	-0.022	-0.16	-0.004	-0.32	-0.425	-2.62	-0.016	-0.52	-0.275	-2.24	-0.816	-0.45	0.380	0.79
FBF207	0.090	2.29	0.153	0.22	0.131	2.10	0.123	3.84	0.774	1.43	-0.058	-0.74	-0.022	-1.93	-0.325	-2.47	0.025	1.20	-0.060	-1.09	-0.645	-0.57	-0.128	-0.39
FBF208	0.011	0.40	-0.392	-0.71	-0.072	-0.55	-0.023	-0.75	-0.261	-0.54	-0.263	-1.78	0.007	0.61	0.149	1.18	0.045	1.64	0.054	0.74	0.930	0.66	-0.069	-0.11

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index															
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
FBF209	-0.061	-1.21	-1.919	-3.22	0.162	2.12	-0.033	-0.77	-1.639	-3.28	-0.027	-0.34	-0.003	-0.29	-0.217	-2.14	0.056	2.72	0.028	0.53	0.331	0.34	-0.538	-2.33
FBF210	-0.019	-0.30	-1.932	-2.08	-0.010	-0.08	0.102	1.67	-1.261	-1.65	-0.202	-1.67	-0.034	-2.22	-0.309	-1.64	0.023	0.74	0.172	2.03	3.752	2.17	0.215	0.86
FBF211	-0.043	-1.27	1.204	1.84	0.015	0.14	-0.039	-1.15	1.227	2.00	-0.026	-0.15	-0.001	-0.11	0.178	1.45	0.022	0.60	0.144	1.77	1.017	0.73	-0.233	-0.35
FBF212	-0.061	-1.48	-0.638	-0.91	0.076	0.71	-0.081	-1.68	-0.657	-0.97	0.020	0.13	0.001	0.14	0.238	2.38	0.019	0.56	0.165	2.78	-0.386	-0.31	-0.136	-0.21
FBF213	-0.099	-2.00	-1.576	-2.18	0.103	1.49	-0.028	-0.87	-1.136	-2.42	0.024	0.29	-0.024	-1.89	-0.266	-1.90	0.025	1.11	0.037	0.54	0.178	0.15	-0.471	-1.90
FBF214	0.028	0.59	-1.523	-1.90	0.011	0.09	0.104	2.67	-1.182	-1.62	-0.021	-0.27	-0.023	-1.72	-0.240	-1.28	0.021	1.39	-0.020	-0.30	1.294	1.00	-0.541	-1.88
FBF215	-0.018	-0.49	-1.292	-1.94	0.024	0.44	0.032	1.31	-0.957	-1.61	-0.021	-0.42	-0.024	-2.22	-0.182	-1.29	0.006	0.42	-0.021	-0.49	-0.491	-0.44	-0.132	-0.63
FBF216	-0.073	-2.19	0.186	0.30	0.093	0.88	-0.091	-2.29	0.140	0.23	0.084	0.58	0.000	0.00	0.185	1.85	0.010	0.31	0.063	1.43	-0.425	-0.39	-0.140	-0.20
FBF217	0.084	1.07	-1.376	-2.16	0.102	0.82	0.099	1.13	-0.922	-1.24	-0.032	-0.27	-0.023	-1.79	-0.159	-1.04	0.022	0.57	0.010	0.11	-2.970	-2.06	-0.252	-0.50
FBF218	0.022	0.43	-0.691	-0.96	0.003	0.04	0.061	1.72	-0.664	-1.03	-0.055	-0.92	-0.003	-0.28	-0.222	-1.79	0.012	0.81	-0.040	-0.48	0.214	0.15	0.067	0.21
FBF219	-0.003	-0.06	-0.885	-1.27	-0.020	-0.23	0.009	0.17	-0.634	-0.90	-0.269	-3.20	-0.016	-1.51	0.030	0.22	0.070	4.28	-0.036	-0.49	-1.516	-0.99	-0.223	-0.80
FBF220	-0.057	-2.22	-1.670	-3.96	0.137	2.47	-0.013	-0.50	-1.405	-2.86	0.011	0.19	-0.010	-1.34	-0.208	-2.29	0.034	2.68	0.044	0.75	0.235	0.20	-0.311	-1.32
FBF221	-0.011	-0.42	-1.304	-3.32	0.095	0.97	0.005	0.24	-1.168	-2.91	0.030	0.32	-0.009	-1.37	-0.122	-1.46	0.004	0.18	0.019	0.42	-1.478	-1.29	0.094	0.20
FBF222	-0.072	-1.49	-1.594	-2.48	0.126	1.23	-0.002	-0.05	-1.147	-2.42	0.003	0.03	-0.020	-1.63	-0.311	-2.25	0.050	1.97	0.058	0.62	-0.357	-0.28	-0.864	-1.80
FBF223	0.040	0.81	-1.365	-1.57	0.165	3.03	0.120	2.50	-0.874	-1.37	0.105	0.87	-0.026	-1.60	-0.333	-1.68	-0.005	-0.16	-0.029	-0.48	1.758	1.79	0.147	0.95
FBF224	0.006	0.22	0.251	0.34	-0.027	-0.32	-0.032	-0.96	0.085	0.12	-0.011	-0.07	0.009	0.76	0.217	1.70	0.016	0.51	-0.011	-0.19	0.080	0.06	-0.412	-0.65
FBF225	-0.012	-0.43	-0.651	-1.48	0.255	4.51	-0.006	-0.23	-0.243	-0.55	0.184	3.13	-0.010	-1.35	-0.214	-3.11	0.009	0.59	-0.042	-1.12	-0.752	-0.80	-0.371	-2.23
FBF226	-0.010	-0.23	-1.185	-2.24	0.042	0.85	0.024	0.66	-0.907	-1.96	-0.112	-1.43	-0.009	-0.97	-0.277	-3.17	0.038	1.63	-0.004	-0.07	-0.992	-1.03	-0.357	-2.35
FBF227	0.045	1.15	-0.839	-1.28	0.128	1.19	0.069	1.96	-0.584	-1.01	0.086	0.83	-0.015	-1.27	-0.035	-0.22	-0.006	-0.26	0.089	1.79	-0.346	-0.42	0.236	0.56
FBF228	0.019	0.45	0.462	0.57	-0.257	-2.20	-0.050	-1.35	0.305	0.45	-0.474	-5.56	0.036	2.49	0.107	0.84	0.058	2.82	0.026	0.23	1.950	0.94	-0.084	-0.30
FBF229	0.079	1.51	-1.717	-1.52	0.142	0.77	0.110	2.23	-0.743	-0.67	-0.015	-0.08	-0.012	-0.71	-0.711	-3.71	0.006	0.13	-0.217	-2.44	3.184	1.62	-0.570	-0.71
FBF230	-0.131	-1.36	-0.657	-0.90	0.129	0.66	-0.111	-1.00	-0.347	-0.44	-0.125	-0.48	-0.004	-0.17	-0.049	-0.27	0.083	1.45	-0.008	-0.05	2.235	1.12	-0.619	-0.59
FBF231	0.140	2.49	-0.840	-1.32	-0.121	-1.69	0.125	2.32	-0.923	-1.46	-0.085	-0.78	0.002	0.20	-0.072	-0.57	-0.023	-0.94	-0.155	-1.31	-0.799	-0.64	0.456	1.44
FBF232	0.050	1.00	-1.217	-2.24	0.223	1.56	0.032	0.91	-0.325	-0.68	0.027	0.16	-0.026	-2.40	-0.335	-2.66	-0.023	-0.54	-0.122	-2.00	-2.180	-1.81	0.646	1.26
FBF233	-0.118	-2.17	-0.531	-0.61	0.150	2.43	-0.080	-1.60	-0.380	-0.41	0.145	1.53	-0.008	-0.90	-0.144	-1.31	-0.001	-0.05	0.083	1.68	0.231	0.20	-0.161	-0.79
FBF234	-0.072	-2.03	-1.653	-3.70	0.192	5.34	-0.053	-1.64	-1.529	-3.84	0.210	4.17	-0.012	-1.53	-0.089	-0.88	-0.010	-0.73	0.027	0.57	-1.779	-1.82	-0.036	-0.20
FBF235	0.002	0.08	-1.014	-1.86	0.026	0.66	0.033	1.45	-0.901	-1.77	0.038	0.79	-0.015	-1.92	-0.052	-0.50	-0.011	-1.06	0.073	1.91	-1.310	-1.47	0.105	1.37
FBF236	0.092	1.61	-1.540	-1.61	0.348	1.67	0.116	2.23	-0.936	-0.94	0.027	0.20	-0.023	-2.02	-0.469	-3.80	0.023	0.55	-0.154	-2.34	-3.097	-1.55	0.744	1.07
FBF237	0.003	0.06	-0.824	-1.53	-0.049	-0.49	0.075	0.86	-0.438	-0.78	-0.233	-2.04	-0.022	-1.64	-0.288	-1.81	0.042	1.51	-0.070	-0.86	0.782	0.38	-0.001	0.00
FBF238	-0.222	-3.08	-2.061	-1.83	0.030	0.17	-0.177	-2.86	-2.001	-1.87	0.070	0.41	-0.002	-0.19	-0.261	-2.05	-0.022	-0.91	0.011	0.15	1.769	0.96	0.035	0.06
FBF239	0.011	0.25	0.057	0.10	0.358	2.82	0.026	0.56	0.471	1.03	-0.058	-0.40	-0.012	-0.96	-0.211	-2.03	0.105	2.64	0.027	0.40	-3.538	-1.85	-0.333	-1.03
FBF240	-0.067	-1.72	-0.966	-1.40	0.256	2.49	-0.021	-0.70	-1.011	-1.37	0.350	3.19	-0.003	-0.36	-0.158	-1.22	-0.008	-0.41	0.046	0.79	0.563	0.44	-0.419	-0.93
FBF241	-0.050	-1.29	-0.951	-1.46	0.136	2.18	-0.004	-0.09	-0.520	-0.94	0.029	0.26	-0.024	-1.81	-0.137	-0.92	0.017	0.61	0.056	1.03	-0.242	-0.19	-0.070	-0.29
FBF242	0.099	0.69	2.227	1.00	-0.042	-0.14	0.094	0.63	2.509	1.23	-0.147	-0.29	-0.026	-1.13	0.194	0.93	0.079	0.66	0.139	0.83	-6.849	-1.69	-1.537	-0.90
FBF243	-0.004	-0.11	-1.046	-1.69	-0.034	-0.20	0.043	1.39	-0.625	-0.93	-0.277	-2.31	-0.014	-1.40	-0.211	-1.86	0.081	5.74	0.030	0.29	-0.439	-0.28	-0.758	-1.50
FBF244	0.021	0.38	0.019	0.02	0.187	1.85	-0.031	-0.71	0.273	0.37	0.156	1.33	-0.008	-0.51	0.187	1.02	0.007	0.20	-0.090	-0.96	-0.855	-0.49	-0.269	-0.55
FBF245	0.048	2.01	-0.865	-1.96	0.069	0.56	0.008	0.22	-0.663	-1.70	-0.178	-1.98	0.004	0.33	0.022	0.23	0.032	1.42	0.011	0.16	-1.023	-0.85	0.513	2.51
FBF246	-0.040	-0.86	-1.014	-2.55	0.075	1.15	-0.046	-0.99	-1.025	-2.63	0.029	0.37	0.004	0.50	-0.072	-1.18	0.017	0.75	-0.007	-0.09	-1.067	-1.11	-0.255	-0.87
FBF247	0.055	1.23	-2.223	-2.98	0.272	1.96	0.033	0.47	-1.943	-2.72	-0.076	-0.53	0.002	0.13	-0.038	-0.28	0.076	2.61	0.028	0.21	-1.575	-0.77	0.110	0.48
FBF248	-0.018	-0.78	-1.423	-3.60	0.263	2.86	-0.030	-1.33	-1.146	-2.87	0.061	1.00	0.006	0.76	-0.138	-2.24	0.033	2.42	0.102	1.64	-0.147	-0.22	-0.019	-0.08
FBF249	-0.021	-0.80	-1.300	-2.81	0.140	2.17	0.012	0.50	-1.031	-2.70	0.023	0.32	-0.008	-1.05	-0.183	-1.85	0.015	0.80	0.059	1.48	0.407	0.47	0.093	0.57
FBF250	-0.074	-2.25	-1.663	-2.94	0.096	1.59	-0.020	-0.59	-1.475	-3.19	0.099	1.25	-0.012	-0.92	-0.253	-1.76	0.004	0.20	0.029	0.46	-0.139	-0.13	-0.333	-1.33
FBF251	-0.054	-0.53	-0.871	-0.80	0.223	1.63	-0.048	-0.45	-0.879	-0.79	0.109	0.56	0.011	1.06	-0.149	-1.10	0.022	0.67	-0.087	-1.16	2.223	1.63	0.252	0.31
FBF252	-0.017	-0.20	-1.329	-1.14	0.112	0.75	-0.068	-0.60	-0.962	-0.83	0.150	0.78	0.005	0.40	-0.163	-0.99	-0.080	-1.75	-0.137	-1.68	2.190	0.87	1.100	1.38

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
FBF253	-0.063	-1.45	-1.791	-2.55	0.107	1.07	0.009	0.29	-1.355	-2.82	0.056	0.77	-0.021	-1.60	-0.326	-2.00	0.025	1.31	0.011	0.21	0.427	0.42	-0.700	-1.78
FBF254	0.148	2.05	-1.444	-1.58	0.128	1.50	0.186	2.51	-1.225	-1.23	0.005	0.06	0.001	0.14	-0.135	-1.45	0.017	0.79	0.126	0.74	3.442	1.88	0.171	0.67
FBF255	-0.058	-1.35	-0.951	-1.59	0.183	4.17	-0.003	-0.12	-0.621	-1.70	-0.001	-0.01	-0.011	-1.49	-0.300	-3.74	0.036	3.24	0.038	0.50	0.331	0.34	-0.039	-0.20
FBF256	-0.049	-0.92	-1.288	-1.96	0.104	1.24	0.013	0.32	-1.058	-1.92	0.054	0.64	-0.010	-1.16	-0.254	-2.77	0.022	1.05	0.051	0.63	1.276	0.86	-0.478	-1.22
FBF257	-0.035	-1.14	-2.310	-5.11	0.274	2.17	-0.031	-0.87	-1.671	-3.47	-0.065	-0.61	-0.012	-1.49	-0.195	-2.93	0.067	3.80	0.051	1.02	-1.378	-1.40	-0.158	-0.58
FBF258	-0.032	-0.50	-1.223	-0.92	-0.195	-1.12	0.012	0.18	-0.385	-0.34	-0.567	-3.62	-0.012	-1.19	-0.494	-3.38	0.040	1.35	0.054	0.38	2.128	0.76	0.406	0.57
FBF259	-0.071	-0.80	-0.434	-0.30	-0.148	-0.54	-0.071	-0.59	0.997	0.53	-0.937	-3.70	-0.043	-1.50	0.114	0.42	0.191	3.52	-0.384	-1.36	8.191	1.25	-0.764	-1.66
FBF260	0.125	1.37	-1.346	-1.04	-0.149	-0.67	0.113	1.37	-1.132	-0.89	0.031	0.12	0.001	0.08	-0.254	-1.10	-0.102	-2.08	-0.114	-0.50	2.121	0.52	0.860	1.50
FBF261	0.145	2.10	-3.072	-2.87	-0.072	-0.35	0.170	2.58	-2.073	-1.93	-0.300	-0.85	-0.006	-0.26	-0.354	-1.72	-0.015	-0.17	0.196	0.73	5.279	0.99	0.848	0.74
FBF262	-0.126	-1.07	-3.434	-2.21	0.237	0.61	-0.126	-1.39	-2.444	-1.86	-0.331	-0.72	-0.004	-0.11	-0.611	-2.16	0.023	0.19	-0.250	-0.56	4.612	0.46	2.010	2.16
FBF263	0.006	0.10	-1.372	-1.32	-0.215	-1.40	0.073	1.17	-1.037	-0.96	-0.151	-1.05	-0.022	-1.29	-0.404	-2.21	-0.025	-0.98	-0.111	-0.56	-0.523	-0.15	-0.021	-0.05
FBF264	0.264	5.99	-1.098	-1.09	-0.218	-1.52	0.285	5.04	-0.783	-0.80	-0.667	-3.48	-0.013	-1.39	-0.138	-1.08	0.116	2.54	-0.232	-1.83	-0.620	-0.27	0.147	0.40
FBF265	0.002	0.01	-3.241	-3.10	-0.041	-0.11	-0.113	-0.82	-2.272	-2.34	-0.338	-1.02	-0.001	-0.03	-0.189	-0.93	-0.056	-0.59	-0.005	-0.02	-1.259	-0.27	1.606	2.37
FBF266	-0.017	-0.23	-2.167	-3.53	0.044	0.38	0.043	0.48	-1.241	-1.97	-0.105	-0.62	-0.027	-1.38	-0.312	-1.55	-0.001	-0.02	0.085	0.68	3.252	1.04	0.146	0.30
UK																								
UKBF1	-0.033	-0.95	-1.448	-2.41	0.041	0.15	0.016	0.32	-1.098	-1.85	-0.250	-1.24	-0.019	-1.21	-0.050	-0.13	0.074	1.40	0.271	1.74	-1.944	-0.56	-0.177	-0.28
UKBF2	0.050	0.89	-0.269	-0.29	0.579	2.32	0.119	2.44	-0.201	-0.20	0.294	1.21	-0.013	-0.96	-0.251	-0.79	0.078	1.97	0.292	1.99	-1.869	-0.80	-0.327	-0.68
UKBF3	-0.020	-0.31	-1.373	-2.48	-0.020	-0.30	-0.021	-0.28	-0.682	-0.80	-0.018	-0.17	-0.008	-0.46	-0.132	-0.42	-0.035	-0.90	0.317	1.48	-5.678	-1.79	0.333	1.17
UKBF4	-0.080	-1.49	-1.198	-2.49	-0.065	-0.39	-0.086	-1.08	-1.113	-1.71	-0.104	-0.84	0.033	1.58	-0.521	-1.99	-0.015	-0.45	0.210	1.03	-1.177	-0.33	-0.203	-0.40
UKBF5	0.065	0.47	0.083	0.04	-0.008	-0.02	-0.054	-0.31	0.017	0.01	-0.577	-1.20	0.138	3.16	-1.305	-2.30	0.102	1.15	0.323	0.76	-4.276	-0.81	-1.529	-1.32
UKBF6	0.079	0.52	-0.193	-0.08	-0.051	-0.09	-0.004	-0.02	0.055	0.03	-0.642	-1.36	0.128	3.03	-1.432	-2.42	0.093	1.05	0.586	1.21	-6.450	-1.08	-1.699	-1.47
UKBF7	-0.123	-2.79	-0.863	-2.01	0.221	0.98	-0.117	-2.14	-0.970	-2.43	-0.043	-0.41	0.024	2.32	-0.489	-2.95	0.061	2.28	0.022	0.16	1.732	0.73	0.013	0.04
UKBF8	-0.127	-2.97	-0.769	-1.89	0.221	0.93	-0.138	-2.42	-0.585	-1.12	-0.033	-0.27	0.017	1.51	-0.480	-1.91	0.045	1.31	0.093	0.59	-2.456	-0.61	-0.046	-0.12
UKBF9	-0.027	-0.33	-1.584	-1.43	-0.047	-0.24	-0.028	-0.30	-1.282	-1.20	-0.076	-0.35	0.027	1.47	-0.203	-0.62	-0.012	-0.26	0.268	1.16	2.163	0.52	0.856	2.01
UKBF10	-0.011	-0.13	-2.088	-1.83	-0.083	-0.41	-0.039	-0.43	-1.932	-1.70	-0.119	-0.57	0.047	2.43	-0.032	-0.09	0.001	0.01	0.241	0.89	3.906	0.99	0.687	1.52
UKBF11	0.002	0.03	-2.082	-3.46	0.052	0.29	-0.043	-0.55	-2.105	-2.60	-0.001	0.00	0.039	2.43	-0.413	-1.13	-0.009	-0.22	-0.080	-0.31	1.485	0.38	-0.348	-0.74
UKBF12	-0.016	-0.12	-4.707	-2.71	-0.070	-0.11	-0.268	-1.72	-4.614	-2.72	-0.406	-0.74	0.070	1.82	1.397	2.25	0.133	1.18	-0.482	-1.12	0.904	0.16	0.000	0.00
UKBF13	-0.030	-0.51	-1.471	-1.39	-0.018	-0.09	0.009	0.14	-1.348	-1.13	-0.212	-1.20	0.005	0.21	-0.106	-0.31	0.053	1.14	0.347	1.52	-1.816	-0.36	-0.409	-0.89
UKBF14	-0.033	-0.82	-2.905	-6.20	-0.111	-0.61	-0.086	-1.85	-2.228	-2.87	-0.046	-0.22	0.043	2.04	-0.117	-0.35	-0.058	-1.11	0.431	1.79	-3.111	-1.19	0.253	0.77
UKBF15	-0.037	-0.92	-3.195	-5.73	-0.107	-0.62	0.012	0.21	-3.247	-4.94	-0.068	-0.48	0.016	0.86	-0.821	-2.33	-0.043	-1.25	0.185	1.20	0.381	0.12	-0.517	-0.97
UKBF16	-0.028	-0.81	-3.245	-5.84	-0.069	-0.47	0.019	0.34	-3.292	-5.33	0.000	0.00	0.014	0.73	-0.785	-2.37	-0.051	-1.67	0.129	0.80	1.400	0.47	-0.383	-0.75
UKBF17	-0.007	-0.17	-1.966	-3.00	0.109	1.23	0.061	1.09	-1.858	-2.88	-0.016	-0.08	-0.008	-0.44	-0.562	-1.85	0.013	0.32	0.167	1.29	1.824	0.79	0.364	0.77
UKBF18	0.004	0.08	-1.957	-2.67	0.052	0.52	0.088	1.24	-1.726	-2.12	-0.104	-0.54	-0.020	-0.95	-0.621	-1.74	0.016	0.39	0.229	1.49	-0.036	-0.01	0.289	0.70
UKBF19	-0.082	-1.07	-1.257	-1.44	-0.080	-0.21	-0.012	-0.13	-1.545	-1.29	-0.468	-2.04	0.017	0.58	-0.703	-1.18	0.094	1.53	-0.094	-0.30	9.942	2.01	-1.063	-1.14
UKBF20	-0.105	-2.61	-1.662	-3.58	-0.025	-0.17	-0.118	-2.09	-1.442	-2.46	-0.046	-0.44	0.032	2.89	-0.374	-1.81	-0.024	-0.90	0.133	0.65	1.943	0.75	-0.250	-0.86
UKBF21	-0.160	-3.26	-1.038	-1.62	-0.056	-0.32	-0.139	-2.05	-0.189	-0.31	-0.111	-0.99	0.027	1.75	-0.898	-2.60	-0.066	-1.50	0.280	1.04	3.810	1.17	-0.166	-0.48
UKBF22	-0.051	-0.96	-1.052	-1.70	0.381	2.66	-0.049	-0.80	-0.815	-1.05	0.209	1.86	0.005	0.50	-0.218	-1.05	0.031	1.20	0.072	0.44	0.507	0.17	0.518	2.88
UKBF23	-0.072	-0.61	-4.828	-2.90	-0.088	-0.14	-0.295	-2.21	-4.765	-2.95	-0.395	-0.73	0.059	1.58	1.436	2.41	0.130	1.21	-0.429	-1.18	1.320	0.25	0.024	0.03
UKBF24	0.006	0.07	-3.858	-5.29	-0.271	-1.67	0.034	0.26	-4.120	-4.51	-0.241	-0.96	0.012	0.32	0.012	0.02	0.007	0.11	0.148	0.55	1.978	0.51	-0.140	-0.32
UKBF25	-0.014	-0.24	-1.909	-3.13	-0.038	-0.25	0.039	0.46	-1.610	-2.02	0.009	0.03	-0.016	-0.81	-0.256	-0.82	-0.031	-0.53	0.291	1.59	-2.316	-0.84	0.378	0.91
UKBF26	0.032	0.53	-2.321	-3.30	-0.230	-1.49	0.043	0.56	-2.027	-2.73	-0.097	-0.30	-0.013	-0.78	0.250	0.87	-0.039	-0.61	0.227	0.90	-2.978	-1.17	-0.015	-0.03
UKBF27	0.025	0.52	-3.019	-3.60	0.156	1.27	0.014	0.16	-2.527	-2.64	0.163	1.42	0.003	0.10	0.035	0.08	-0.020	-0.52	0.279	1.18	-3.111	-0.70	0.849	2.47
UKBF28	-0.027	-0.45	-2.881	-3.15	0.151	0.64	-0.024	-0.33	-2.614	-2.40	-0.030	-0.19	0.008	0.58	-0.267	-0.93	0.027	0.65	0.064	0.35	0.186	0.05	-0.694	-1.71
UKBF29	-0.127	-2.02	-0.696	-0.42	0.260	0.84	-0.054	-0.49	-1.063	-0.59	-0.010	-0.04	-0.028	-0.72	-0.679	-1.20	0.069	1.09	-0.283	-1.07	2.702	0.59	-0.464	-0.90

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
UKBF30	0.017	0.36	-3.972	-2.65	-0.029	-0.14	0.030	0.42	-4.025	-2.54	-0.189	-1.42	0.018	0.69	-0.722	-1.70	0.013	0.34	-0.160	-0.74	4.907	0.94	-0.282	-0.63
UKBF31	0.115	1.20	-5.938	-3.42	0.591	1.70	0.040	0.29	-5.465	-2.57	0.156	0.62	0.023	0.58	-0.379	-0.52	0.089	1.37	0.224	0.65	-13.346	-2.47	-0.618	-1.26
UKBF32	0.222	1.18	-4.080	-2.11	-0.093	-0.12	-0.391	-2.86	1.073	0.54	-1.144	-1.24	0.166	1.98	0.686	0.70	0.046	0.26	-0.002	0.00	-6.394	-0.95	3.234	3.01
UKBF33	0.330	1.84	-6.082	-2.78	-0.239	-0.36	-0.045	-0.31	-0.455	-0.19	-1.434	-3.15	0.049	1.33	-0.044	-0.06	0.052	0.57	0.154	0.26	-4.440	-0.61	3.243	2.83
UKBF34	0.353	1.95	-6.110	-2.81	-0.233	-0.36	-0.005	-0.03	-0.611	-0.27	-1.409	-3.48	0.041	1.10	-0.151	-0.21	0.048	0.57	0.101	0.18	-4.515	-0.65	2.977	2.73
UKBF35	0.093	0.79	-3.124	-1.58	0.549	1.88	0.277	2.43	-2.906	-1.22	0.352	1.32	-0.092	-2.39	-0.937	-1.02	0.019	0.30	-0.167	-0.53	5.517	1.24	0.821	1.39
UKBF36	-0.106	-2.52	-2.780	-4.55	0.161	1.00	-0.128	-1.94	-2.663	-2.69	0.118	0.85	0.010	0.36	-0.271	-0.68	-0.009	-0.20	-0.106	-0.34	0.480	0.11	-0.114	-0.23
UKBF37	0.037	0.89	-4.471	-6.88	0.098	0.59	0.001	0.01	-4.158	-4.91	0.051	0.43	0.025	1.34	-0.505	-1.41	-0.030	-0.86	-0.105	-0.52	2.371	0.73	-0.031	-0.08
UKBF38	-0.018	-0.39	-3.649	-3.87	-0.028	-0.25	0.020	0.34	-3.288	-3.12	-0.144	-1.14	-0.021	-1.00	-0.028	-0.09	0.019	0.45	0.069	0.25	1.893	0.46	0.284	0.70
UKBF39	0.366	2.22	-7.198	-2.96	-0.016	-0.03	0.040	0.25	-3.682	-1.72	-0.866	-2.13	0.016	0.26	-0.047	-0.04	0.044	0.44	-0.853	-1.58	2.263	0.32	2.016	1.84
UKBF40	0.201	1.31	-8.286	-3.19	0.447	1.51	0.001	0.01	-5.695	-1.90	0.467	1.21	0.030	0.63	-0.289	-0.36	-0.157	-1.95	0.122	0.16	-7.817	-0.76	1.414	1.31
UKBF41	-0.079	-0.51	-7.254	-3.56	0.037	0.07	-0.171	-0.69	-8.034	-2.98	-0.442	-0.64	0.078	0.99	-0.434	-0.34	0.165	1.07	0.479	0.65	-19.723	-1.87	-0.841	-0.50
UKBF42	0.060	0.49	-7.065	-3.59	1.436	2.01	-0.032	-0.17	-7.894	-3.02	0.759	1.39	0.063	1.38	-1.395	-1.57	0.166	1.43	-0.546	-0.94	-4.703	-0.59	-1.234	-1.66
UKBF43	0.133	1.42	-5.918	-3.73	0.919	2.21	-0.062	-0.58	-4.777	-2.95	1.537	2.54	0.049	1.61	-0.097	-0.16	-0.262	-2.24	-0.346	-0.98	0.672	0.09	1.134	1.06
UKBF44	0.141	1.44	-2.911	-2.41	0.837	4.90	0.132	0.78	-3.148	-1.81	0.701	2.57	0.005	0.10	-0.990	-1.10	0.005	0.07	-0.331	-0.79	-1.703	-0.37	0.180	0.26
UKBF45	0.365	1.02	-10.644	-2.14	1.150	1.22	-0.110	-0.48	-2.014	-0.54	0.201	0.23	-0.154	-1.78	1.095	0.93	-0.168	-0.94	-2.684	-2.89	35.732	3.16	4.448	2.39
Spain																								
SBF1	-0.118	-1.48	-1.452	-1.39	0.001	0.01	-0.117	-2.04	-1.243	-1.17	0.147	0.27	-0.004	-0.21	-0.021	-0.29	-0.035	-0.40	0.020	0.17	3.259	1.75	0.136	0.22
SBF2	-0.083	-1.33	-1.276	-1.27	0.284	1.03	-0.139	-1.74	-1.168	-1.13	1.909	3.97	0.012	0.61	0.112	1.06	-0.239	-3.24	-0.067	-0.50	2.864	1.50	-1.787	-4.23
SBF3	-0.031	-1.19	0.186	0.40	0.027	0.32	-0.018	-0.60	0.097	0.31	-0.511	-2.74	-0.004	-0.60	0.057	1.48	0.079	2.75	0.074	1.41	-1.973	-1.91	0.570	3.38
SBF4	-0.038	-1.65	0.093	0.26	0.033	0.45	-0.045	-2.20	0.133	0.41	-0.118	-0.47	-0.003	-0.47	0.075	2.13	0.015	0.41	0.019	0.57	-0.560	-1.03	0.377	1.52
SBF5	0.020	0.71	-0.751	-1.54	0.172	1.95	0.051	1.54	-0.836	-1.90	-0.208	-0.86	-0.014	-1.61	0.054	1.13	0.066	1.60	0.086	1.27	-2.781	-2.65	0.033	0.13
SBF6	0.003	0.11	-0.090	-0.15	-0.012	-0.23	0.025	1.06	-0.245	-0.63	-0.422	-3.50	-0.003	-0.47	0.017	0.44	0.063	3.24	0.154	3.39	-2.747	-3.31	0.209	1.60
SBF7	-0.149	-2.23	-0.686	-0.74	-0.140	-0.96	-0.097	-1.92	-0.759	-1.12	-1.333	-5.78	-0.023	-1.84	0.106	1.54	0.177	5.12	0.456	3.60	-3.802	-1.72	0.977	3.38
SBF8	-0.133	-4.31	1.191	1.51	0.053	0.51	-0.126	-3.42	1.004	1.44	0.583	1.80	0.003	0.31	-0.009	-0.11	-0.076	-1.40	0.074	1.15	-1.934	-1.62	-0.794	-2.27
SBF9	-0.082	-2.31	-0.302	-0.55	-0.021	-0.22	-0.069	-1.66	-0.111	-0.20	-0.334	-0.85	-0.013	-1.04	0.043	0.87	0.042	0.70	0.095	1.27	0.557	0.46	0.276	0.69
SBF10	-0.007	-0.31	-0.757	-1.92	0.097	2.53	-0.005	-0.19	-0.836	-2.19	0.758	3.87	0.005	0.97	-0.072	-1.84	-0.106	-3.52	-0.027	-0.75	-0.059	-0.07	-0.558	-2.55
SBF11	0.001	0.05	-0.271	-0.60	0.040	0.32	-0.006	-0.25	-0.384	-0.99	-0.346	-0.94	0.007	1.04	0.060	1.49	0.065	1.14	0.053	1.17	-1.675	-1.46	0.104	0.25
SBF12	0.049	1.40	-0.009	-0.02	0.119	1.40	0.090	2.24	-0.075	-0.21	-0.529	-1.23	-0.017	-1.82	0.056	1.22	0.105	1.54	0.076	1.38	-1.564	-1.84	0.409	0.89
SBF13	0.058	1.82	0.263	0.42	0.048	0.62	0.049	1.30	0.211	0.54	-0.881	-4.21	0.004	0.42	0.072	1.67	0.144	4.48	0.091	1.21	-2.466	-1.96	0.794	5.66
SBF14	-0.009	-0.21	-0.558	-1.05	-0.102	-0.84	-0.049	-1.16	-0.468	-1.05	0.413	1.85	0.010	1.07	0.085	1.67	-0.098	-2.63	-0.099	-1.70	-0.898	-0.92	-0.120	-0.45
SBF15	-0.006	-0.39	0.026	0.08	0.023	0.66	-0.006	-0.38	-0.003	-0.02	-0.256	-1.89	0.000	0.06	0.034	1.75	0.039	1.80	0.110	1.87	-1.529	-1.65	0.235	1.54
SBF16	-0.091	-2.14	0.200	0.29	0.014	0.13	-0.050	-0.87	0.003	0.01	-1.157	-3.64	-0.005	-0.50	-0.028	-0.48	0.182	3.71	0.118	1.41	-2.357	-1.36	0.985	2.89
SBF17	-0.059	-2.08	-0.168	-0.38	0.121	1.80	-0.057	-1.92	-0.232	-0.71	-0.328	-1.33	-0.002	-0.24	0.096	1.76	0.064	1.68	0.046	0.76	-1.502	-1.78	0.538	2.27
SBF18	-0.069	-2.80	0.254	0.57	0.155	2.60	-0.074	-3.40	0.310	1.05	-0.250	-1.03	-0.002	-0.42	0.072	2.16	0.059	1.48	0.052	1.68	-1.085	-1.55	0.365	1.33
SBF19	-0.059	-2.13	0.114	0.22	0.054	0.76	-0.069	-1.98	0.242	0.60	-0.501	-1.17	-0.002	-0.27	0.073	1.87	0.077	1.15	0.056	1.00	-0.702	-0.62	0.641	1.49
SBF20	-0.051	-1.16	0.315	0.44	0.169	2.03	-0.112	-1.13	0.410	0.72	-0.115	-0.22	0.019	0.68	0.088	1.31	0.026	0.33	-0.046	-0.33	-2.200	-1.39	0.665	1.85
SBF21	-0.032	-1.08	0.063	0.14	0.021	0.19	-0.044	-1.17	0.203	0.69	-0.541	-1.14	-0.004	-0.40	0.106	3.33	0.071	0.99	0.026	0.45	-0.795	-0.94	0.885	1.88
SBF22	0.041	1.38	-0.531	-1.45	0.216	2.69	0.053	1.56	-0.616	-1.29	0.010	0.04	-0.006	-0.64	0.063	1.06	0.025	0.53	0.027	0.31	-1.937	-1.47	0.417	1.32
SBF23	-0.057	-2.28	0.285	0.93	0.116	1.48	-0.047	-1.69	0.327	1.06	-0.331	-1.52	-0.005	-0.71	0.031	1.07	0.055	1.61	0.080	1.83	-1.373	-2.17	0.625	2.85
SBF24	-0.074	-4.01	0.081	0.32	0.062	1.25	-0.074	-4.26	0.040	0.19	-0.493	-1.89	0.002	0.40	0.013	0.40	0.089	2.08	0.090	2.64	-0.985	-1.35	0.417	1.48
SBF25	0.040	1.40	0.361	0.88	0.043	0.38	0.032	1.31	0.404	1.35	-0.692	-2.28	-0.001	-0.13	0.089	3.10	0.117	2.44	0.022	0.64	-0.272	-0.40	0.590	1.78
SBF26	-0.070	-3.37	-0.023	-0.15	0.020	0.44	-0.074	-2.71	-0.095	-0.54	-0.055	-0.23	0.004	1.08	0.030	1.74	0.011	0.30	0.022	0.70	-0.117	-0.26	0.106	0.47
SBF27	-0.112	-2.36	0.025	0.02	-0.173	-0.96	-0.085	-2.15	-0.010	-0.01	-1.061	-3.79	-0.015	-1.53	0.094	1.30	0.137	3.31	0.327	3.62	-3.722	-1.87	0.527	2.02

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
SBF28	-0.024	-0.76	-0.272	-0.57	0.150	2.30	-0.019	-0.44	-0.335	-0.79	0.199	0.65	-0.003	-0.28	0.034	0.72	-0.007	-0.14	0.005	0.06	-0.982	-0.60	-0.059	-0.23
SBF29	-0.132	-5.17	0.450	1.51	0.164	1.58	-0.145	-3.74	0.469	2.05	-0.463	-1.70	0.006	0.53	0.026	0.55	0.086	1.95	0.014	0.21	-1.027	-1.41	0.866	3.66
SBF30	-0.104	-2.11	0.765	2.24	-0.006	-0.05	-0.096	-1.59	0.813	2.12	-0.343	-1.28	-0.008	-0.59	0.026	0.43	0.059	1.38	0.175	2.36	0.236	0.25	0.115	0.42
SBF31	-0.092	-1.60	-1.025	-1.10	0.124	0.43	-0.035	-0.57	-1.141	-1.51	0.000	0.00	-0.025	-1.36	0.120	1.55	0.037	0.25	0.113	0.89	-2.595	-1.30	-0.692	-0.64
SBF32	-0.046	-1.37	-0.505	-1.07	0.186	2.51	-0.076	-2.39	-0.360	-0.83	0.250	1.33	0.013	1.86	-0.057	-1.45	-0.027	-0.88	0.004	0.05	1.312	1.41	0.293	1.79
SBF33	0.028	0.85	-0.413	-1.20	0.196	2.24	0.018	0.47	-0.375	-1.08	-0.045	-0.15	0.001	0.13	0.017	0.44	0.037	0.84	0.059	1.34	-0.691	-0.98	0.213	0.75
SBF34	0.029	1.01	0.026	0.05	0.115	1.48	0.026	0.71	-0.040	-0.12	-0.367	-1.67	0.003	0.31	0.056	1.53	0.075	2.23	0.069	0.94	-1.443	-1.34	0.379	2.12
SBF35	0.057	1.22	-0.237	-0.32	0.076	0.71	0.049	0.94	-0.137	-0.29	-0.338	-1.38	-0.007	-0.54	0.105	2.99	0.067	1.82	0.071	0.92	-2.779	-2.37	0.099	0.53
SBF36	-0.017	-0.33	0.320	0.47	-0.149	-1.32	-0.052	-0.75	0.510	0.69	-0.428	-1.04	0.006	0.46	0.040	0.43	0.047	0.72	0.069	0.60	0.074	0.04	0.062	0.14
SBF37	-0.056	-0.95	-0.294	-0.85	-0.060	-0.90	-0.048	-1.16	-0.337	-0.99	-0.230	-0.83	-0.005	-0.37	0.056	1.70	0.029	0.70	0.111	1.62	-0.334	-0.37	0.101	0.40
SBF38	-0.048	-1.01	0.178	0.29	-0.144	-1.43	-0.045	-0.85	0.090	0.13	-1.325	-1.75	0.006	0.93	-0.035	-0.84	0.180	1.53	-0.033	-0.49	-0.713	-0.70	1.352	1.76
SBF39	0.022	0.77	0.037	0.10	-0.046	-0.33	0.002	0.05	0.033	0.09	-1.013	-4.14	0.008	0.97	0.080	2.13	0.135	3.88	0.016	0.24	-0.393	-0.35	1.393	6.24
SBF40	-0.001	-0.02	0.101	0.31	0.338	2.03	-0.005	-0.15	0.057	0.16	-0.096	-0.15	0.006	0.98	-0.002	-0.06	0.064	0.65	0.031	0.52	-0.016	-0.02	0.495	0.74
SBF41	0.041	0.80	0.742	1.53	0.195	1.55	0.052	0.86	0.871	1.76	-0.841	-2.39	-0.006	-0.44	-0.061	-0.87	0.156	2.95	0.130	1.56	0.779	0.65	1.128	3.20
SBF42	0.028	1.41	-0.086	-0.18	0.094	1.71	0.052	2.39	-0.103	-0.31	-0.218	-1.95	-0.010	-1.76	-0.004	-0.12	0.049	2.92	0.051	1.20	-1.906	-1.86	0.121	1.07
SBF43	-0.065	-1.10	0.529	0.50	-0.046	-0.26	-0.092	-2.47	0.565	1.26	0.181	0.47	-0.004	-0.40	0.249	5.42	-0.027	-0.55	0.096	1.30	-3.486	-2.94	-0.733	-2.19
SBF44	-0.129	-4.29	-0.146	-0.34	0.142	0.62	-0.123	-4.50	-0.167	-0.40	-0.990	-1.63	0.002	0.29	0.012	0.31	0.158	1.66	-0.051	-0.84	-0.205	-0.18	1.626	2.63
SBF45	0.004	0.15	-0.322	-0.79	0.173	2.86	0.005	0.13	-0.380	-1.06	0.101	0.32	0.001	0.07	0.020	0.53	0.011	0.22	0.012	0.12	-0.887	-0.46	0.061	0.20
SBF46	-0.027	-1.03	0.286	0.82	0.169	2.26	-0.026	-0.90	0.416	1.23	-0.823	-2.10	-0.003	-0.47	0.022	0.61	0.141	2.31	0.074	1.74	-0.683	-0.92	1.138	2.81
SBF47	-0.035	-0.57	0.072	0.07	0.151	1.06	-0.073	-1.82	0.669	1.31	0.461	1.58	-0.012	-0.97	0.201	3.32	-0.057	-1.33	0.041	0.55	-1.120	-1.33	-0.827	-2.77
SBF48	-0.011	-0.67	0.537	2.24	0.063	1.11	0.009	0.45	0.500	2.66	-0.681	-7.52	-0.004	-0.71	-0.014	-0.91	0.111	7.95	0.077	2.32	-1.124	-1.97	0.699	8.53
SBF49	0.088	3.34	-1.318	-2.82	0.059	1.14	0.109	3.47	-1.251	-2.60	-0.557	-3.50	-0.009	-1.61	-0.023	-0.55	0.093	3.74	0.032	0.62	0.379	0.32	0.625	4.07
SBF50	0.013	0.36	0.577	0.81	-0.100	-1.29	0.026	0.70	0.525	0.95	-0.774	-2.94	-0.008	-1.15	0.112	2.22	0.109	2.63	0.134	2.47	-1.312	-1.02	0.458	1.57
SBF51	-0.058	-1.11	-0.083	-0.17	-0.082	-1.08	-0.030	-0.75	-0.323	-0.96	-0.174	-0.79	-0.009	-0.75	0.124	2.81	0.015	0.45	0.150	2.61	-2.036	-2.47	0.059	0.27
SBF52	0.029	1.80	0.152	0.63	0.089	0.93	0.032	1.86	0.212	1.00	-0.637	-4.25	-0.004	-0.77	0.049	2.50	0.110	4.14	0.021	0.60	0.525	0.81	0.808	4.51
SBF53	0.012	0.26	-1.001	-1.67	-0.065	-0.61	-0.016	-0.33	-0.999	-1.28	0.218	0.63	0.012	0.98	0.036	0.62	-0.055	-1.00	-0.020	-0.19	-0.477	-0.36	-0.079	-0.20
SBF54	0.075	2.70	-0.996	-2.06	0.055	1.04	0.079	2.36	-1.036	-2.05	0.024	0.23	0.001	0.17	-0.023	-0.52	0.005	0.31	-0.057	-1.31	0.109	0.12	0.069	0.62
SBF55	0.060	1.75	-1.273	-2.31	0.032	0.55	0.085	3.04	-1.238	-2.19	-0.298	-1.41	-0.009	-0.91	-0.036	-0.73	0.046	1.38	-0.005	-0.12	0.696	0.77	0.453	2.28
SBF56	-0.017	-0.94	-0.092	-0.30	0.032	0.56	-0.003	-0.14	-0.105	-0.41	-0.232	-1.38	-0.007	-0.94	0.033	1.22	0.037	1.38	0.002	0.03	-1.416	-1.25	0.297	1.59
SBF57	-0.007	-0.26	-0.110	-0.32	-0.065	-0.81	0.001	0.02	-0.143	-0.55	-0.326	-2.99	-0.006	-1.34	0.090	4.32	0.035	2.53	0.022	0.73	-0.918	-1.72	0.386	3.63
SBF58	-0.006	-0.51	0.016	0.10	0.011	0.41	-0.002	-0.11	-0.003	-0.02	-0.250	-4.32	-0.001	-0.32	0.012	0.88	0.038	4.19	0.044	2.06	-0.614	-2.42	0.279	5.92
SBF59	0.016	0.63	-0.436	-1.22	0.021	0.33	0.013	0.47	-0.458	-1.17	-0.066	-0.41	0.001	0.23	0.049	1.36	0.011	0.44	0.024	0.49	-0.317	-0.45	0.126	0.65
SBF60	0.013	0.61	-0.048	-0.17	-0.017	-0.37	0.004	0.21	-0.041	-0.17	-0.657	-4.85	0.001	0.21	0.072	1.59	0.098	4.72	0.048	1.14	-0.561	-0.77	0.648	4.66
SBF61	0.003	0.11	-0.473	-1.22	-0.025	-0.19	-0.004	-0.11	-0.536	-1.08	-0.581	-2.28	0.005	0.81	0.050	1.16	0.094	2.59	0.071	1.46	-0.569	-0.53	0.270	0.97
SBF62	0.040	1.80	-1.084	-2.54	0.152	3.68	0.045	1.71	-1.125	-2.37	0.236	1.32	0.002	0.30	-0.044	-0.92	-0.015	-0.53	0.009	0.18	0.164	0.23	-0.018	-0.09
SBF63	0.037	1.87	-0.807	-2.47	0.159	3.14	0.041	1.72	-0.779	-2.00	0.081	0.45	0.000	-0.08	-0.040	-0.91	0.006	0.22	-0.020	-0.51	-0.163	-0.28	0.190	0.90
SBF64	0.024	0.45	-0.642	-0.82	-0.104	-1.19	0.037	0.80	-0.601	-1.01	-0.564	-2.39	-0.009	-0.84	0.126	2.46	0.070	1.97	-0.023	-0.25	-1.022	-0.81	0.243	0.79
SBF65	0.042	0.95	-0.319	-0.38	-0.041	-0.35	0.067	1.75	-0.272	-0.40	0.094	0.29	-0.015	-1.58	0.092	1.66	-0.026	-0.57	-0.030	-0.37	-1.010	-0.70	-0.239	-0.63
SBF66	-0.101	-3.06	0.120	0.29	-0.057	-0.52	-0.100	-2.49	0.073	0.32	-0.041	-0.17	-0.003	-0.30	0.056	1.42	-0.022	-0.61	0.124	2.47	-2.473	-3.41	0.412	1.99
SBF67	-0.108	-3.05	0.096	0.18	-0.011	-0.11	-0.086	-2.18	0.195	0.36	-0.685	-1.90	-0.016	-1.55	0.048	0.83	0.107	1.91	0.071	1.36	-0.079	-0.09	0.548	1.55
SBF68	0.269	1.89	-3.106	-1.95	0.034	0.21	0.274	1.66	-3.823	-1.73	0.632	0.68	0.037	1.21	-0.145	-1.06	-0.082	-0.62	0.037	0.16	-3.937	-0.65	-0.998	-0.91

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
SBF69	0.043	0.99	-1.213	-2.00	-0.103	-0.98	0.025	0.55	-1.331	-1.83	-0.286	-1.32	0.014	1.23	0.057	0.84	0.022	0.63	-0.082	-1.03	-0.277	-0.18	0.383	1.82
SBF70	-0.116	-2.55	0.570	0.71	-0.077	-0.62	-0.093	-2.10	0.289	0.39	-1.034	-2.33	0.003	0.18	0.001	0.02	0.155	2.28	0.090	1.07	-1.320	-0.72	0.820	2.10
SBF71	-0.105	-1.98	0.429	0.52	-0.101	-0.92	-0.097	-1.58	0.114	0.15	-0.676	-1.94	0.010	0.40	0.027	0.35	0.097	1.83	0.134	1.41	-1.074	-0.57	0.422	1.75
SBF72	-0.074	-3.06	0.279	0.56	0.035	0.97	-0.089	-3.50	0.321	0.73	-0.453	-4.11	0.004	0.65	0.066	1.49	0.073	4.63	0.107	2.09	-0.063	-0.06	0.465	3.84
SBF73	-0.040	-1.09	-1.088	-2.96	0.202	1.70	-0.018	-0.36	-1.196	-2.65	0.376	1.02	-0.005	-0.51	-0.018	-0.37	-0.032	-0.57	0.049	0.55	-1.075	-0.65	-0.094	-0.23
SBF74	0.008	0.49	-0.002	-0.01	0.140	1.67	0.002	0.14	-0.015	-0.09	-0.266	-1.19	0.002	0.49	0.061	4.06	0.061	1.82	-0.023	-0.61	-0.695	-1.73	0.432	1.74
SBF75	-0.029	-1.97	-0.019	-0.11	0.132	2.46	-0.025	-1.48	0.002	0.01	-0.162	-1.04	-0.001	-0.52	-0.007	-0.39	0.046	1.97	0.023	0.89	0.405	0.77	0.280	1.71
SBF76	-0.033	-2.31	0.094	0.54	0.162	2.71	-0.028	-1.57	0.098	0.50	-0.124	-0.72	-0.002	-0.68	0.007	0.39	0.044	1.74	0.022	0.84	0.401	0.76	0.313	1.69
SBF77	-0.027	-1.82	0.000	0.00	0.129	2.30	-0.023	-1.33	0.027	0.15	-0.171	-1.07	-0.001	-0.55	-0.011	-0.55	0.047	1.98	0.021	0.79	0.511	1.02	0.288	1.71
SBF78	-0.023	-1.46	0.028	0.14	0.160	2.72	-0.014	-0.71	0.022	0.11	-0.108	-0.55	-0.003	-0.74	-0.005	-0.28	0.042	1.45	0.022	0.81	0.414	0.79	0.281	1.38
SBF79	-0.034	-1.28	-0.033	-0.08	0.217	2.95	-0.030	-1.04	0.002	0.01	-0.031	-0.14	-0.002	-0.46	-0.023	-0.78	0.040	1.18	0.001	0.02	1.338	1.55	0.313	1.33
SBF80	0.031	0.89	-1.088	-1.29	0.154	2.39	0.023	0.94	-1.124	-1.60	0.158	0.56	0.009	1.20	-0.058	-1.21	-0.001	-0.02	0.006	0.11	2.038	1.74	0.143	0.50
SBF81	-0.027	-1.87	0.035	0.21	0.129	2.35	-0.024	-1.38	0.067	0.35	-0.153	-0.87	-0.001	-0.47	-0.010	-0.49	0.043	1.65	0.019	0.76	0.362	0.72	0.284	1.53
SBF82	-0.045	-2.25	0.347	1.35	0.205	2.73	-0.038	-1.65	0.340	1.32	-0.066	-0.28	-0.002	-0.66	-0.004	-0.17	0.045	1.28	0.017	0.49	0.644	0.93	0.249	1.01
SBF83	-0.026	-1.74	0.131	0.75	0.128	2.18	-0.021	-1.17	0.156	0.77	-0.197	-1.23	-0.003	-0.95	-0.001	-0.07	0.050	2.12	0.038	1.45	0.132	0.24	0.310	1.81
SBF84	-0.023	-1.60	-0.020	-0.12	0.124	2.14	-0.020	-1.22	-0.001	-0.01	-0.178	-0.97	-0.001	-0.24	-0.010	-0.55	0.047	1.72	0.028	1.14	0.417	0.85	0.290	1.51
SBF85	0.011	0.55	0.276	0.91	-0.019	-0.41	0.020	0.98	0.192	0.87	-0.442	-4.33	0.000	0.00	0.028	0.80	0.065	4.51	0.063	2.08	-1.344	-2.49	0.322	3.82
SBF86	0.115	3.88	-1.255	-2.50	0.149	1.45	0.131	3.42	-1.439	-2.64	-0.356	-1.54	0.007	0.88	-0.034	-0.94	0.078	2.51	0.095	1.01	1.197	1.12	0.521	2.21
SBF87	-0.078	-2.46	-0.544	-0.77	0.047	0.53	-0.067	-2.37	-0.478	-1.03	-1.587	-3.87	-0.004	-0.60	0.043	1.05	0.252	3.86	-0.010	-0.14	-2.078	-1.46	1.410	3.52
SBF88	-0.082	-1.94	1.319	1.87	0.292	1.59	-0.098	-2.60	1.371	2.63	0.363	1.31	0.000	-0.02	0.123	2.45	-0.028	-0.77	0.113	1.67	-0.850	-0.60	0.287	0.76
SBF89	0.010	0.23	-0.914	-1.58	0.142	1.24	0.025	0.56	-0.826	-1.46	-0.163	-0.68	-0.012	-1.67	-0.017	-0.39	0.050	1.48	0.074	1.16	0.706	0.74	0.292	1.13
SBF90	-0.013	-0.56	-0.133	-0.45	0.066	0.64	-0.039	-1.30	-0.149	-0.42	-0.811	-4.41	0.010	1.46	0.091	1.77	0.138	5.34	-0.029	-0.50	1.995	1.52	1.055	5.64
SBF91	0.051	1.39	-0.437	-1.63	0.051	0.83	0.057	1.79	-0.575	-2.02	-0.228	-1.05	0.005	0.92	-0.011	-0.50	0.043	1.29	-0.071	-1.41	-1.355	-2.03	0.237	1.08
SBF92	0.008	0.26	-0.248	-0.52	-0.030	-0.26	-0.004	-0.10	-0.436	-1.38	-0.997	-3.46	0.013	1.48	0.047	1.02	0.152	3.39	0.057	0.93	-2.359	-2.70	0.858	2.98
SBF93	0.014	0.57	-0.116	-0.32	0.040	0.62	0.018	0.84	-0.216	-0.78	-0.072	-0.34	-0.001	-0.15	0.058	2.13	0.017	0.51	0.078	2.13	-1.280	-2.12	0.106	0.46
SBF94	0.071	1.17	-0.569	-0.81	0.263	1.63	0.051	1.02	-0.500	-0.79	-0.426	-1.24	0.008	0.77	0.015	0.26	0.085	1.64	0.013	0.11	-2.253	-1.11	1.047	3.59
SBF95	0.005	0.15	-0.226	-0.53	-0.059	-0.62	-0.007	-0.20	-0.147	-0.31	-0.538	-3.08	0.002	0.36	0.050	1.28	0.067	2.71	0.028	0.41	-0.272	-0.28	0.563	2.47
SBF96	0.020	0.97	-1.341	-5.11	0.050	0.46	0.002	0.06	-1.141	-4.58	0.043	0.12	0.002	0.41	0.016	0.54	-0.017	-0.31	-0.061	-1.78	1.607	2.29	0.460	1.27
SBF97	0.070	2.56	-1.128	-2.20	0.080	1.24	0.070	3.01	-1.059	-2.20	-0.508	-4.04	0.001	0.17	-0.051	-1.34	0.092	5.22	0.019	0.34	0.444	0.47	0.534	4.07
SBF98	-0.004	-0.09	0.484	0.94	0.013	0.14	-0.011	-0.27	0.483	1.21	0.264	0.73	-0.001	-0.11	0.098	2.77	-0.040	-0.73	0.001	0.02	-0.776	-0.86	-0.329	-0.85
SBF99	0.028	1.10	0.075	0.34	-0.070	-0.86	0.008	0.25	0.155	0.51	-0.691	-2.71	0.006	0.77	0.043	1.00	0.087	2.19	0.013	0.18	0.455	0.36	0.877	3.18
SBF100	-0.013	-0.18	-1.151	-0.95	-0.008	-0.06	0.001	0.02	-1.299	-1.00	-0.043	-0.12	-0.001	-0.03	-0.020	-0.21	0.009	0.15	0.094	0.92	-0.067	-0.03	0.038	0.09
SBF101	-0.064	-4.04	0.583	2.72	0.003	0.03	-0.066	-3.43	0.546	2.66	-0.534	-1.98	0.002	0.58	0.044	2.19	0.078	1.87	0.035	1.69	-0.341	-0.90	0.697	2.40
SBF102	0.019	1.85	-0.232	-1.54	0.060	2.06	0.022	2.39	-0.178	-1.36	0.062	0.63	-0.002	-1.30	-0.024	-2.21	-0.003	-0.17	-0.026	-1.56	0.270	1.00	0.037	0.37
SBF103	0.032	1.20	-1.014	-1.91	0.000	-0.01	0.032	1.24	-0.973	-2.14	-0.208	-1.40	0.001	0.16	-0.044	-1.07	0.033	1.41	-0.019	-0.51	1.183	1.67	0.259	1.92
SBF104	-0.054	-3.39	-0.449	-2.03	0.021	0.66	-0.035	-1.50	-0.443	-1.65	-0.069	-0.58	-0.009	-2.08	0.003	0.11	0.013	0.72	-0.028	-0.71	-0.565	-0.83	0.106	0.85
SBF105	0.007	0.13	-1.202	-1.21	-0.002	-0.04	0.016	0.35	-1.084	-1.21	-0.251	-1.09	-0.005	-0.35	-0.056	-1.04	0.036	0.97	-0.075	-0.98	1.946	1.30	0.407	2.22
SBF106	0.131	2.09	0.681	0.83	0.093	0.58	0.097	1.90	0.563	0.92	-0.002	-0.01	0.014	1.32	0.133	2.72	0.006	0.12	-0.028	-0.31	-1.969	-1.34	0.361	1.15
SBF107	0.013	0.32	1.305	2.17	0.131	1.30	-0.012	-0.31	1.291	2.77	0.108	0.45	0.009	0.99	0.079	1.68	-0.009	-0.28	0.020	0.34	-1.752	-1.93	0.261	1.29
SBF108	0.010	0.29	0.202	0.48	0.079	1.11	0.001	0.03	0.350	0.98	-0.362	-1.72	0.000	0.00	0.022	0.65	0.053	1.64	0.034	0.66	-0.891	-1.25	0.597	4.32
SBF109	0.108	0.96	-4.532	-1.91	-0.068	-0.48	0.073	0.78	-4.812	-1.91	0.657	0.73	0.040	0.99	-0.246	-1.40	-0.114	-0.76	0.089	0.28	1.548	0.39	-0.540	-0.57
SBF110	0.024	1.66	0.078	0.63	0.025	0.61	0.044	3.09	0.159	1.09	-0.846	-2.27	-0.011	-2.10	0.003	0.15	0.134	2.30	0.018	0.78	-0.331	-0.77	0.819	2.13
SBF111	-0.034	-1.30	0.010	0.04	0.035	0.61	-0.014	-0.45	0.137	0.43	-0.483	-3.66	-0.014	-2.13	0.010	0.27	0.077	4.15	0.089	2.27	-0.018	-0.03	0.491	3.77
SBF112	0.068	2.51	-1.382	-2.00	-0.025	-0.42	0.065	2.64	-1.350	-2.33	-0.288	-1.51	0.006	1.08	-0.058	-1.33	0.042	1.26	-0.052	-1.43	1.673	1.59	0.298	1.50

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
SBF113	0.083	3.24	-1.159	-1.92	-0.008	-0.13	0.082	3.01	-1.126	-2.03	-0.409	-2.07	0.004	0.53	-0.054	-1.33	0.063	1.85	-0.044	-1.10	1.094	1.25	0.405	2.02
SBF114	0.089	3.14	-1.379	-1.85	-0.031	-0.67	0.083	3.94	-1.374	-2.29	-0.105	-0.54	0.008	1.31	-0.073	-1.72	0.012	0.36	-0.070	-1.85	1.731	1.61	0.162	0.83
SBF115	0.076	2.53	-1.341	-1.76	-0.008	-0.12	0.070	2.67	-1.262	-2.06	-0.292	-1.39	0.005	0.92	-0.069	-1.56	0.045	1.22	-0.064	-1.71	1.992	1.76	0.323	1.35
SBF116	-0.024	-4.24	-0.068	-0.78	0.016	0.96	-0.022	-3.34	-0.059	-0.61	-0.205	-2.13	0.000	-0.23	-0.002	-0.18	0.035	2.31	0.019	2.18	0.185	1.00	0.209	2.07
SBF117	-0.040	-0.32	-1.017	-0.85	0.292	1.16	0.065	0.43	0.208	0.12	0.152	0.17	-0.070	-2.23	-0.367	-1.58	-0.039	-0.31	0.125	0.41	-4.478	-1.08	-0.093	-0.11
SBF118	-0.030	-3.00	-0.135	-0.70	-0.070	-1.52	-0.018	-1.47	-0.177	-1.01	-0.224	-3.44	-0.004	-0.98	0.030	1.73	0.026	2.86	0.053	1.50	-0.398	-0.92	0.045	0.49
SBF119	0.037	1.73	-0.268	-1.09	0.160	1.93	0.032	1.39	-0.059	-0.24	-0.862	-5.06	-0.001	-0.28	-0.015	-0.45	0.152	6.01	-0.020	-0.70	1.259	2.54	1.089	6.33
SBF120	0.029	1.30	-0.185	-0.66	0.148	1.50	0.025	0.94	0.042	0.16	-0.778	-3.06	-0.003	-0.55	0.001	0.04	0.133	3.34	-0.047	-1.10	1.388	2.08	1.107	4.24
SBF121	0.032	1.16	0.000	0.00	0.122	1.36	0.019	0.66	0.053	0.17	-0.481	-2.48	0.000	0.02	0.098	3.04	0.103	3.48	0.038	0.70	-1.412	-1.54	0.198	1.06
SBF122	0.138	5.75	-0.748	-1.85	-0.016	-0.21	0.153	5.98	-0.831	-2.15	0.023	0.13	-0.001	-0.10	-0.020	-0.64	-0.006	-0.24	0.010	0.18	0.643	0.74	-0.005	-0.03
SBF123	0.020	0.51	0.525	0.54	0.130	1.40	0.043	1.64	0.403	0.68	-0.425	-1.38	-0.008	-1.24	0.068	1.53	0.075	1.48	0.168	2.76	-4.153	-2.91	0.565	1.81
SBF124	0.015	0.76	-0.521	-1.47	0.074	1.02	0.013	0.63	-0.464	-1.71	-0.084	-0.53	-0.003	-0.64	0.033	1.74	0.018	0.72	-0.034	-0.70	-1.210	-1.22	0.232	1.38
SBF125	0.018	0.56	-0.956	-1.46	0.020	0.45	0.030	1.13	-0.895	-1.65	-0.282	-2.04	-0.005	-0.80	-0.042	-1.04	0.047	2.12	-0.004	-0.11	1.641	1.66	0.359	2.68
SBF126	0.059	1.63	0.265	0.57	0.140	2.02	0.033	1.22	0.453	1.28	-0.409	-2.86	0.002	0.48	0.032	1.17	0.070	3.38	-0.123	-1.88	-1.412	-1.39	0.891	7.85
SBF127	0.004	0.22	-0.035	-0.17	0.023	0.27	0.018	1.00	-0.074	-0.33	-0.267	-1.88	0.000	-0.02	-0.051	-1.81	0.041	2.28	0.048	1.80	0.100	0.21	0.355	2.60
SBF128	-0.002	-0.09	-0.514	-1.03	-0.014	-0.33	0.003	0.12	-0.465	-1.04	-0.764	-3.08	0.000	-0.09	-0.038	-1.34	0.119	3.07	-0.019	-0.48	0.884	0.91	0.713	2.78
SBF129	0.032	1.26	-0.836	-1.56	0.017	0.46	0.038	1.68	-0.788	-1.66	-0.299	-1.99	-0.002	-0.28	-0.050	-1.30	0.048	2.07	0.008	0.20	1.003	1.33	0.363	2.48
SBF130	0.010	1.35	-0.150	-1.79	-0.020	-0.56	0.008	0.86	-0.118	-1.07	-0.166	-1.49	0.000	0.10	0.005	0.35	0.021	1.19	-0.022	-1.13	0.678	1.58	0.209	1.95
SBF131	0.056	2.14	-1.122	-1.81	0.004	0.11	0.065	3.10	-1.077	-2.09	-0.338	-2.24	-0.002	-0.34	-0.059	-1.38	0.054	2.21	-0.012	-0.34	1.438	1.62	0.395	2.67
SBF132	0.053	2.55	-0.652	-4.67	-0.046	-0.86	0.072	3.29	-0.593	-3.02	-0.711	-4.23	-0.008	-1.32	-0.023	-1.42	0.099	4.43	0.063	2.09	0.483	1.27	0.711	3.51
SBF133	-0.051	-3.10	-0.469	-2.59	-0.044	-1.01	-0.056	-3.16	-0.412	-2.39	-0.569	-2.67	0.000	0.03	0.039	2.09	0.083	2.54	0.025	0.84	0.627	0.85	0.471	2.31
SBF134	-0.033	-1.27	0.265	0.66	0.183	1.01	-0.031	-1.15	0.281	0.89	0.175	0.46	-0.004	-0.68	0.061	2.15	-0.012	-0.23	0.071	1.64	-0.698	-0.75	0.258	0.61
SBF135	0.065	4.09	-1.185	-3.78	0.034	0.61	0.071	2.95	-1.130	-3.47	-0.385	-2.86	-0.004	-0.59	0.010	0.37	0.063	3.16	-0.010	-0.25	0.661	0.90	0.471	4.20
SBF136	0.047	1.41	-0.559	-1.83	0.058	0.58	0.066	1.85	-0.396	-1.11	-0.711	-2.00	-0.012	-1.46	-0.046	-0.80	0.114	2.15	0.056	0.81	-0.229	-0.21	0.811	2.15
SBF137	0.150	5.05	-0.774	-1.09	0.011	0.10	0.159	6.83	-0.804	-1.29	-1.474	-1.66	0.004	0.59	-0.053	-1.24	0.239	1.72	-0.002	-0.03	1.570	1.64	1.353	1.53
SBF138	0.029	1.23	-0.695	-1.83	0.005	0.14	0.035	1.70	-0.689	-1.97	-0.256	-1.87	-0.001	-0.10	-0.035	-0.94	0.041	1.97	0.057	1.70	0.823	1.44	0.257	1.97
SBF139	-0.037	-1.52	-0.077	-0.18	0.068	0.87	-0.042	-1.56	-0.097	-0.26	-0.014	-0.09	0.001	0.19	0.041	1.48	0.006	0.26	-0.032	-0.80	-1.025	-1.18	0.249	1.88
SBF140	0.046	2.38	-1.173	-4.65	-0.021	-0.34	0.058	2.71	-1.133	-3.64	-0.470	-3.56	-0.005	-0.83	0.015	0.58	0.066	3.42	-0.022	-0.76	0.454	0.81	0.493	3.52
SBF141	0.074	3.13	-0.798	-3.21	0.071	0.91	0.070	3.14	-0.766	-2.34	-0.128	-1.02	0.002	0.34	0.011	0.44	0.022	1.22	-0.031	-1.10	-0.421	-0.73	0.358	3.28
SBF142	-0.036	-0.80	-0.574	-0.88	0.078	0.61	-0.053	-1.04	-0.835	-2.33	0.009	0.03	0.015	1.21	0.095	2.41	0.005	0.09	0.155	1.16	-3.205	-1.43	0.104	0.28
SBF143	0.041	1.93	-0.855	-1.80	0.017	0.50	0.050	2.65	-0.807	-1.93	-0.312	-2.23	-0.003	-0.46	-0.042	-1.21	0.050	2.27	0.013	0.30	0.959	1.41	0.395	3.07
SBF144	0.004	0.20	-0.097	-0.40	0.032	0.35	-0.017	-0.69	0.148	0.57	-0.148	-0.69	0.004	0.61	-0.047	-1.09	0.028	0.83	0.025	0.69	-0.311	-0.38	-0.169	-0.69
SBF145	-0.015	-0.60	0.037	0.14	0.153	2.65	-0.037	-1.07	0.229	0.81	-0.221	-1.58	0.003	0.46	0.021	0.74	0.054	2.87	0.032	0.76	0.342	0.52	0.300	3.22
SBF146	-0.034	-0.82	0.477	0.61	-0.109	-1.14	-0.018	-0.55	0.344	0.67	-0.624	-3.64	-0.003	-0.34	0.107	2.41	0.077	3.30	0.108	1.91	-2.214	-2.05	0.365	1.77
SBF147	0.033	1.66	-0.675	-1.96	0.014	0.41	0.039	1.89	-0.644	-2.00	-0.373	-2.23	-0.002	-0.26	-0.026	-0.81	0.058	2.25	0.009	0.20	0.683	1.36	0.462	3.06
SBF148	0.020	0.68	-0.083	-0.20	0.068	1.60	0.024	0.86	-0.069	-0.20	-0.571	-3.38	-0.001	-0.12	-0.010	-0.25	0.101	3.89	0.067	1.51	1.000	1.13	0.654	3.83
SBF149	0.008	1.31	-0.159	-2.23	0.059	1.38	0.002	0.27	-0.032	-0.36	-0.061	-0.75	-0.002	-1.29	0.030	2.92	0.012	1.17	-0.001	-0.06	0.323	1.30	0.189	2.50
SBF150	-0.008	-1.09	-0.082	-0.81	0.050	0.98	-0.002	-0.29	-0.141	-1.63	-0.045	-0.57	0.000	0.19	-0.001	-0.16	0.010	0.81	0.024	1.31	-0.887	-3.18	0.186	2.63
SBF151	0.346	3.41	-4.424	-1.49	-0.216	-1.23	0.266	3.80	-4.090	-1.97	-1.064	-1.42	0.039	1.64	-0.211	-1.46	0.141	1.17	-0.510	-2.83	9.856	1.93	1.242	1.75
SBF152	-0.001	-0.11	-0.076	-0.91	-0.001	-0.04	-0.003	-0.32	-0.089	-0.91	-0.393	-5.37	0.003	1.32	0.014	1.07	0.061	5.19	-0.016	-0.81	0.287	0.71	0.395	5.14
SBF153	0.096	6.25	-1.102	-4.67	0.031	0.61	0.100	4.37	-1.044	-3.54	-0.399	-3.31	-0.002	-0.38	0.004	0.14	0.062	3.42	-0.021	-0.59	0.146	0.28	0.490	4.77
SBF154	-0.008	-0.09	0.257	0.21	-0.216	-0.52	-0.026	-0.30	1.696	1.23	0.264	0.23	-0.035	-1.72	0.158	0.78	-0.137	-0.69	-0.413	-1.16	5.147	0.79	-0.202	-0.15
SBF155	0.184	2.42	-1.988	-2.65	0.543	1.75	-0.042	-0.52	-0.238	-0.28	-0.114	-0.15	0.038	1.14	0.297	2.26	0.044	0.34	-0.134	-0.78	3.228	1.34	0.561	0.64
SBF156	0.005	0.45	-0.563	-3.75	0.050	1.40	0.009	0.65	-0.510	-3.11	-0.177	-2.06	-0.003	-1.18	-0.008	-0.72	0.034	2.48	0.033	1.82	-0.226	-0.75	0.175	1.87

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
SBF157	0.059	1.10	0.202	0.49	0.039	0.82	0.039	0.98	0.201	0.58	-0.053	-0.23	0.007	0.68	-0.005	-0.10	0.006	0.15	-0.091	-0.73	-2.242	-1.51	0.309	1.55
Italy																								
IBF1	0.073	1.77	0.082	0.37	-0.012	-0.21	0.072	1.78	0.016	0.05	0.074	1.13	0.005	0.73	-0.022	-0.49	-0.027	-3.81	0.038	0.59	0.304	0.30	-0.013	-0.06
IBF2	0.048	1.00	-0.234	-1.25	-0.002	-0.03	0.064	1.30	-0.444	-1.73	0.177	2.04	-0.001	-0.28	0.008	0.35	-0.023	-3.35	0.104	1.54	1.020	1.19	-0.432	-1.68
IBF3	0.072	1.19	-0.722	-1.83	0.015	0.20	0.052	1.11	-0.804	-2.55	0.033	0.56	0.014	1.84	0.039	1.33	-0.027	-4.80	-0.055	-0.60	0.755	0.94	0.322	2.22
IBF4	0.042	0.39	-0.455	-0.58	-0.040	-0.53	0.001	0.02	-0.525	-0.85	-0.117	-1.06	0.023	1.68	0.105	2.34	-0.012	-1.41	-0.155	-0.99	1.575	1.05	0.585	1.87
IBF5	0.043	3.05	-0.412	-4.16	0.026	0.53	0.042	2.66	-0.370	-2.40	0.137	6.03	0.003	0.79	-0.032	-1.47	-0.031	####	0.050	1.41	0.070	0.16	-0.064	-1.18
IBF6	0.047	0.58	-0.213	-0.54	-0.002	-0.02	0.057	0.66	-0.574	-1.20	0.116	0.95	0.001	0.14	0.054	1.32	-0.020	-1.77	0.116	1.06	0.742	0.76	-0.198	-0.51
IBF7	0.034	0.40	-0.098	-0.20	-0.025	-0.24	0.030	0.35	-0.459	-0.83	0.054	0.37	0.009	1.34	0.052	1.17	-0.013	-1.09	0.166	1.45	1.147	1.05	-0.070	-0.18
IBF8	0.021	0.50	-0.343	-1.91	-0.001	-0.01	0.035	0.76	-0.601	-2.38	0.120	1.12	-0.001	-0.24	0.011	0.37	-0.033	-3.90	0.087	1.56	0.372	0.56	-0.121	-0.34
IBF9	-0.008	-0.23	-0.631	-2.32	-0.114	-3.20	-0.001	-0.02	-0.971	-2.80	-0.031	-0.43	0.004	0.68	0.040	0.96	-0.012	-1.83	0.159	2.50	1.237	1.35	-0.203	-0.91
IBF10	-0.090	-0.92	-0.150	-0.18	0.130	1.24	-0.066	-0.67	-0.516	-0.58	0.217	1.25	0.001	0.08	0.034	0.43	0.013	1.02	0.284	2.26	6.504	4.50	-0.356	-0.87
IBF11	0.046	0.69	-0.291	-0.90	-0.017	-0.38	0.057	0.83	-0.661	-1.72	0.066	0.94	0.001	0.17	0.054	1.68	-0.012	-2.34	0.147	1.80	1.224	1.34	-0.178	-1.06
IBF12	0.049	0.50	-0.800	-1.34	-0.084	-1.07	0.052	0.53	-1.174	-1.82	0.011	0.08	0.010	0.95	0.033	0.67	-0.013	-1.18	0.140	1.03	2.912	1.94	-0.160	-0.48
IBF13	0.030	0.87	0.073	0.41	0.002	0.04	0.038	0.97	-0.145	-0.57	0.094	1.35	0.001	0.12	0.024	0.70	-0.022	-2.90	0.105	2.06	0.501	0.89	-0.109	-0.42
IBF14	-0.096	-1.81	-0.583	-1.29	0.107	1.20	-0.088	-1.61	-0.823	-1.66	0.172	1.31	0.002	0.31	0.019	0.39	-0.020	-1.81	0.155	1.56	2.265	1.84	0.075	0.19
IBF15	0.040	0.65	-0.739	-1.38	-0.028	-0.36	0.030	0.52	-0.875	-1.71	0.007	0.06	0.009	1.26	0.051	1.35	-0.010	-1.38	0.062	0.65	1.971	1.82	0.107	0.42
IBF16	0.042	0.68	-0.326	-0.81	0.018	0.29	0.043	0.71	-0.552	-1.33	0.058	0.61	0.005	0.84	0.028	0.90	-0.013	-1.79	0.086	0.99	1.960	2.07	0.088	0.39
IBF17	0.041	0.87	-0.605	-1.71	0.003	0.05	0.033	0.85	-0.821	-2.57	0.030	0.48	0.010	1.78	0.042	1.58	-0.016	-2.47	0.017	0.22	1.398	2.09	0.169	0.98
IBF18	0.030	2.11	0.026	0.22	0.002	0.04	0.032	2.04	-0.067	-0.48	0.063	1.44	0.002	0.59	0.000	0.01	-0.021	-4.56	0.062	1.57	0.135	0.22	0.010	0.06
IBF19	0.061	0.92	-0.734	-1.64	-0.044	-0.75	0.060	1.01	-1.082	-1.76	-0.055	-0.64	0.006	0.97	0.051	0.96	0.000	0.01	0.180	1.43	1.788	1.71	0.158	0.77
IBF20	0.031	1.62	-0.131	-0.93	0.020	0.42	0.031	1.47	-0.098	-0.44	0.112	2.82	0.002	0.48	-0.023	-0.63	-0.026	-5.31	0.001	0.04	-0.329	-0.57	-0.081	-0.57
IBF21	0.014	0.34	-0.254	-1.32	0.023	0.33	0.014	0.32	-0.380	-1.62	0.098	1.15	0.004	0.79	0.011	0.42	-0.023	-3.18	0.070	1.13	0.568	0.72	0.007	0.02
IBF22	-0.091	-0.93	0.241	0.35	0.212	1.97	-0.034	-0.36	-0.130	-0.20	0.467	2.24	-0.023	-2.76	0.118	2.18	-0.011	-1.03	0.251	1.94	4.398	3.11	-0.890	-1.60
IBF23	0.026	0.52	0.215	1.12	-0.018	-0.39	0.045	0.78	-0.096	-0.34	0.079	0.91	-0.005	-0.87	0.038	1.01	-0.017	-1.99	0.157	2.13	0.577	0.97	-0.221	-0.71
IBF24	0.020	0.36	-0.699	-1.21	-0.069	-1.18	0.021	0.36	-0.778	-1.33	-0.031	-0.40	0.000	0.04	0.063	1.24	-0.019	-2.39	-0.038	-0.32	1.494	1.11	0.155	0.77
IBF25	-0.025	-0.17	-1.637	-1.18	0.357	1.56	-0.063	-0.51	-1.836	-1.09	-0.163	-0.58	0.016	0.71	0.062	0.32	0.087	2.23	-0.036	-0.12	2.546	0.92	1.370	1.60
IBF26	-0.130	-0.87	-0.886	-0.88	-0.281	-2.09	-0.169	-1.29	-0.932	-0.83	-0.256	-1.45	0.021	1.03	0.063	0.82	0.019	1.30	0.236	0.91	1.093	0.39	-0.106	-0.26
IBF27	0.107	2.70	-0.251	-0.69	0.025	0.45	0.109	2.73	-0.340	-0.73	0.048	0.57	0.002	0.30	-0.001	-0.04	-0.010	-1.81	0.071	0.93	0.884	0.60	0.053	0.24
IBF28	-0.044	-1.26	-0.008	-0.02	-0.079	-1.03	-0.043	-1.41	-0.193	-0.45	0.064	0.79	0.004	0.38	0.036	0.56	-0.013	-1.83	0.213	2.31	1.109	1.18	-0.342	-2.06
IBF29	-0.002	-0.02	-0.273	-0.38	-0.147	-1.53	-0.003	-0.04	-0.545	-0.66	0.032	0.23	0.008	0.84	0.076	1.09	-0.018	-1.65	0.169	1.24	2.006	1.39	-0.422	-1.65
IBF30	-0.062	-1.35	0.381	0.89	-0.027	-0.32	-0.057	-1.25	0.276	0.64	0.048	0.41	-0.001	-0.08	0.042	0.60	-0.021	-2.10	0.112	1.35	1.260	1.51	0.016	0.06
IBF31	0.091	1.26	-0.032	-0.04	0.084	0.83	0.080	1.13	-0.138	-0.20	0.146	1.17	0.016	1.34	-0.015	-0.33	-0.013	-1.01	-0.030	-0.18	2.992	1.48	-0.024	-0.06
IBF32	0.009	0.23	-0.853	-1.52	-0.135	-1.96	-0.012	-0.48	-0.733	-2.31	-0.018	-0.19	0.020	2.63	-0.039	-0.78	-0.027	-4.11	-0.003	-0.04	3.733	2.97	-0.041	-0.15
IBF33	0.042	1.09	-0.248	-0.57	0.115	1.60	0.018	0.40	-0.381	-0.87	0.259	3.42	0.019	2.29	0.038	0.87	-0.031	-3.79	-0.028	-0.36	0.296	0.36	-0.120	-0.72
IBF34	0.039	1.03	-0.228	-0.52	0.087	1.16	0.009	0.21	-0.313	-0.70	0.232	2.82	0.021	2.61	0.030	0.67	-0.030	-3.36	-0.005	-0.07	-0.011	-0.01	-0.134	-0.75
IBF35	0.071	1.91	-0.571	-1.62	0.047	0.42	0.082	2.64	-0.528	-1.54	0.116	1.19	-0.003	-0.62	-0.039	-0.92	-0.016	-2.60	0.167	2.23	1.503	2.05	-0.068	-0.26
IBF36	0.129	2.82	-0.575	-1.02	0.276	3.29	0.142	3.08	-0.297	-0.60	0.473	5.49	-0.005	-0.78	-0.096	-1.67	-0.041	-7.42	0.013	0.18	-0.993	-1.12	-0.429	-2.06
IBF37	0.067	1.16	-0.552	-1.28	-0.024	-0.35	0.067	1.26	-0.480	-1.00	0.110	1.12	0.002	0.26	-0.001	-0.02	-0.019	-2.32	0.010	0.11	0.523	0.53	-0.299	-1.25
IBF38	0.077	1.20	1.047	1.19	0.138	1.16	0.024	0.45	1.474	1.56	-0.129	-0.66	0.023	2.57	-0.038	-0.47	0.020	1.15	-0.053	-0.45	1.741	1.52	1.030	2.09
IBF39	-0.008	-0.23	-0.333	-0.79	-0.011	-0.23	-0.003	-0.10	-0.700	-1.28	0.099	1.51	0.004	0.76	0.050	1.10	-0.005	-0.48	0.095	1.03	0.630	0.61	-0.330	-2.27

Appendix 5.9 (continued)

	Conditional single-index						Conditional multi-index																	
	term	t-stat	irw	t-stat	jd	t-stat	b1term	t-stat	b1irw	t-stat	b1jd	t-stat	b2term	t-stat	b2irw	t-stat	b2jd	t-stat	b3term	t-stat	b3irw	t-stat	b3jd	t-stat
IBF40	0.044	1.09	-1.179	-2.26	0.016	0.15	0.016	0.36	-1.145	-2.18	0.069	0.50	0.015	1.54	0.008	0.12	0.001	0.06	0.049	0.59	-0.635	-0.59	-0.141	-0.64
IBF41	0.075	3.82	0.064	0.34	-0.006	-0.18	0.070	2.78	0.161	0.47	0.118	1.80	0.004	0.82	-0.033	-0.71	-0.017	-2.90	0.051	1.29	-0.162	-0.32	-0.261	-1.25
IBF42	-0.118	-1.28	-0.473	-0.49	0.000	0.00	-0.127	-1.42	-0.611	-0.58	0.042	0.21	0.009	0.80	0.002	0.02	0.007	0.45	0.164	1.22	0.057	0.04	-0.264	-0.57
IBF43	0.036	0.39	-0.942	-0.97	0.084	1.14	0.018	0.25	-1.239	-1.56	0.082	0.70	0.018	1.50	0.108	1.67	-0.009	-0.93	0.078	0.52	4.858	3.66	0.320	1.26
IBF44	0.060	0.88	-0.353	-0.58	0.056	0.83	0.030	0.51	-0.646	-1.28	0.183	2.57	0.025	1.70	0.084	1.18	-0.015	-1.49	-0.039	-0.31	2.131	1.52	-0.176	-0.90
IBF45	0.082	2.22	-0.047	-0.16	0.001	0.03	0.077	1.83	-0.098	-0.27	0.145	1.70	0.007	1.24	-0.010	-0.24	-0.019	-2.71	0.130	1.90	0.692	1.30	-0.261	-1.02
IBF46	0.018	0.62	-0.765	-2.76	0.032	0.84	0.017	0.42	-0.938	-2.14	0.066	1.08	0.002	0.13	0.091	1.28	-0.015	-2.17	-0.029	-0.57	0.564	0.82	0.033	0.20
IBF47	-0.030	-0.30	0.152	0.16	-0.186	-0.81	-0.044	-0.52	1.138	1.29	-0.106	-0.37	0.005	0.18	-0.111	-0.76	-0.003	-0.11	-0.181	-1.10	2.515	1.51	-0.590	-0.61
IBF48	-0.038	-0.50	-0.199	-0.26	0.118	1.23	-0.049	-0.68	-0.596	-0.83	0.133	1.02	0.015	2.06	0.087	1.76	-0.014	-1.10	0.169	1.42	3.517	2.28	0.316	0.96
IBF49	0.074	1.17	-1.360	-2.30	0.005	0.07	0.042	0.68	-1.438	-2.17	0.044	0.40	0.020	2.02	0.044	0.82	-0.010	-0.87	0.101	0.79	1.150	0.93	0.147	0.68
IBF50	-0.012	-0.27	0.443	1.10	-0.032	-0.38	-0.010	-0.15	0.113	0.16	-0.012	-0.08	0.007	0.75	0.024	0.25	-0.005	-0.47	0.096	1.08	0.839	0.81	-0.097	-0.38
IBF51	0.032	0.86	-0.311	-0.64	0.021	0.27	0.039	1.00	-0.415	-0.83	0.111	1.14	-0.001	-0.18	-0.002	-0.06	-0.012	-1.77	0.029	0.28	-0.558	-0.43	-0.280	-1.29
IBF52	0.054	0.88	-2.226	-2.10	0.163	1.19	0.051	0.88	-1.905	-1.95	0.187	1.32	0.001	0.05	0.038	0.51	0.007	0.61	-0.015	-0.16	3.333	1.81	-0.214	-0.51
IBF53	-0.116	-2.34	-0.408	-0.71	-0.129	-0.94	-0.117	-2.81	-0.770	-1.08	-0.188	-1.68	0.006	0.76	0.056	0.93	-0.001	-0.06	0.220	2.11	2.294	2.20	0.386	2.02
IBF54	-0.100	-1.62	-0.587	-0.57	0.349	2.01	-0.108	-1.91	-0.581	-0.49	0.212	1.57	0.016	1.67	-0.118	-1.40	0.025	2.02	0.168	1.41	2.787	1.86	0.072	0.30
IBF55	-0.015	-0.19	-0.852	-0.84	0.038	0.20	-0.008	-0.12	-1.124	-0.98	-0.033	-0.16	-0.005	-0.48	0.072	0.75	0.015	0.67	0.131	0.74	0.634	0.27	0.255	0.55
IBF56	0.008	0.10	0.148	0.21	0.026	0.34	0.009	0.11	-0.165	-0.20	-0.026	-0.28	0.003	0.22	0.076	1.32	0.011	0.99	0.241	1.81	1.688	1.30	0.158	0.91
IBF57	0.035	0.77	-1.227	-1.61	0.171	1.30	0.078	1.82	-0.802	-0.94	0.366	4.44	-0.022	-2.01	-0.094	-0.71	-0.003	-0.24	0.121	1.43	0.255	0.22	-1.189	-5.12
IBF58	0.414	1.91	-4.034	-1.39	0.098	0.14	0.445	2.16	-3.522	-1.22	0.214	0.26	-0.041	-0.93	0.056	0.19	0.075	1.63	0.532	1.12	0.270	0.04	-0.819	-0.61
Portugal																								
PBF1	0.017	1.69	-0.133	-1.57	0.030	1.26	0.012	1.16	-0.118	-1.25	-0.069	-1.22	-0.003	-1.41	0.010	0.96	0.010	1.89	0.036	2.23	0.130	0.57	0.056	0.83
PBF2	0.011	0.27	0.365	1.39	0.124	1.82	0.001	0.02	0.420	1.42	0.271	1.50	0.004	0.74	0.006	0.31	-0.011	-0.70	0.004	0.15	-0.008	-0.02	-0.274	-1.04
PBF3	-0.054	-1.91	0.001	0.01	0.045	2.26	-0.057	-2.01	0.033	0.17	-0.124	-1.16	-0.006	-0.99	0.003	0.14	0.018	1.53	-0.009	-0.31	0.486	1.34	-0.028	-0.37
PBF4	0.056	2.35	0.262	1.35	0.187	2.50	0.069	2.59	0.192	0.94	0.260	2.30	0.002	0.52	-0.005	-0.37	-0.009	-0.98	-0.073	-2.56	0.084	0.26	0.021	0.11
PBF5	-0.004	-0.35	-0.034	-0.49	0.027	2.16	-0.007	-0.59	-0.055	-0.68	-0.054	-1.15	0.000	-0.16	-0.007	-0.76	0.009	1.77	0.025	0.95	0.286	0.95	0.007	0.18
PBF6	-0.025	-1.22	-0.155	-1.11	0.077	2.40	-0.027	-1.27	-0.131	-0.67	-0.065	-1.14	-0.002	-0.81	0.013	0.68	0.016	3.29	-0.045	-1.96	0.463	1.38	-0.015	-0.12
PBF7	-0.003	-0.36	-0.112	-1.91	0.049	4.28	-0.004	-0.39	-0.151	-1.90	-0.018	-0.58	0.000	-0.23	-0.005	-0.54	0.008	2.53	0.019	0.80	0.342	1.27	-0.011	-0.30
PBF8	-0.012	-0.93	-0.038	-0.54	0.045	2.01	-0.016	-1.07	-0.050	-0.55	0.004	0.09	0.000	0.18	0.000	0.03	0.003	0.60	0.009	0.65	0.254	1.32	0.069	1.21
PBF9	-0.113	-1.85	1.678	3.30	0.044	0.26	-0.111	-1.64	1.683	3.00	0.224	0.53	0.009	0.74	0.015	0.40	-0.015	-0.45	-0.030	-0.34	-0.435	-0.31	-0.205	-0.47
PBF10	-0.056	-2.84	0.026	0.20	0.067	2.39	-0.051	-2.13	-0.117	-0.82	-0.036	-0.79	-0.001	-0.27	-0.003	-0.19	0.006	1.50	-0.020	-0.32	0.906	1.35	0.171	2.17
PBF11	0.015	0.92	-0.088	-0.67	-0.028	-0.83	0.017	1.04	-0.116	-0.83	-0.001	-0.01	0.000	0.02	-0.002	-0.12	-0.004	-1.17	0.004	0.11	-0.107	-0.29	0.144	2.41
PBF12	-0.105	-1.39	0.888	1.69	0.074	0.41	-0.103	-1.34	1.054	1.58	0.122	0.24	0.005	0.29	0.001	0.02	-0.005	-0.13	-0.043	-0.52	-1.004	-0.73	-0.341	-0.63
PBF13	0.014	1.32	-0.093	-1.34	0.099	2.32	0.009	0.50	-0.156	-1.49	0.107	1.57	-0.006	-2.13	-0.007	-0.88	-0.014	-3.02	-0.019	-0.75	0.975	2.22	0.232	1.62
PBF14	0.009	0.65	-0.167	-1.90	0.007	0.21	0.007	0.43	-0.145	-1.17	-0.076	-1.32	-0.006	-2.24	-0.012	-0.93	0.011	2.31	0.018	0.78	0.275	0.98	-0.126	-1.34
PBF15	-0.105	-1.37	2.020	2.89	-0.060	-0.70	-0.077	-1.16	1.695	2.55	-0.025	-0.25	0.003	0.63	-0.093	-2.59	0.008	0.77	-0.096	-1.89	1.411	1.26	-0.270	-1.58
PBF16	-0.015	-1.46	0.035	0.63	0.057	1.90	-0.017	-1.35	-0.004	-0.05	-0.002	-0.03	-0.001	-0.55	-0.006	-0.52	0.006	0.94	0.022	0.95	0.323	1.23	0.035	0.41
PBF17	0.016	1.08	-0.133	-1.89	0.038	1.09	0.020	1.34	-0.222	-2.18	-0.030	-0.56	0.000	-0.01	-0.022	-1.45	0.005	0.99	0.010	0.40	0.308	0.99	0.154	2.00
PBF18	-0.025	-2.10	0.069	0.58	0.050	1.61	-0.033	-2.42	0.236	2.17	-0.045	-1.02	-0.008	-3.21	0.021	1.65	0.005	1.29	-0.011	-0.55	-0.217	-0.55	0.026	0.36
PBF19	0.025	0.71	-0.527	-1.90	-0.005	-0.15	0.033	0.91	-0.670	-2.26	-0.123	-2.06	0.001	0.27	-0.018	-1.03	0.016	2.78	-0.027	-0.46	0.806	1.19	0.050	0.54
PBF20	-0.131	-1.96	1.707	3.20	0.314	2.55	-0.136	-1.77	1.651	2.65	0.547	1.96	-0.001	-0.10	-0.008	-0.18	-0.028	-1.19	-0.020	-0.19	0.927	0.70	-0.489	-1.86
PBF21	0.099	0.95	1.714	2.25	0.258	1.53	0.060	0.46	1.692	2.04	0.789	3.20	0.037	2.62	-0.006	-0.12	-0.063	-2.50	-0.239	-1.62	2.450	1.30	-0.658	-2.39
PBF22	-0.010	-0.75	0.091	0.90	0.063	2.55	-0.013	-1.02	0.080	0.70	-0.098	-2.84	-0.004	-2.29	0.000	0.01	0.016	4.34	0.017	0.68	0.480	1.53	0.067	1.73

Appendix 5.10
Estimates of time-varying alphas: individual funds

This table presents the coefficients estimates for the conditional alpha function for each individually fund and considering both the single and multiple index models. The predetermined variables Term, IRW and Jd are as defined previously. A shadowed area relatively to the t-statistic (based on heteroscedasticity and autocorrelation adjusted errors following Newey and West (1987)) indicates a statistically significant value at the 5% level. The W(p-val) is the probability value for the Chi-square statistic of the Wald test for the restriction that the coefficients on the lagged information variables are jointly equal to zero.

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
Germany																				
GBF1	-0.027	-0.66	-0.139	-2.72	0.213	0.57	-0.371	-2.11	80.0%	0.000	-0.055	-1.03	-0.152	-2.32	0.327	0.75	-0.695	-7.23	80.7%	0.000
GBF2	-0.027	-0.45	-0.188	-2.28	0.092	0.16	-0.136	-0.69	73.5%	0.023	-0.071	-0.99	-0.209	-2.02	0.235	0.33	-0.508	-3.06	76.3%	0.000
GBF3	-0.023	-0.65	-0.118	-2.26	0.618	1.82	-0.064	-0.48	85.6%	0.003	-0.045	-1.18	-0.111	-2.43	0.616	1.82	-0.264	-3.82	86.9%	0.000
GBF4	0.024	0.67	-0.088	-2.16	0.067	0.14	-0.408	-2.31	81.5%	0.001	0.001	0.02	-0.102	-2.11	0.182	0.40	-0.750	-8.38	82.7%	0.000
GBF5	-0.031	-0.95	-0.081	-2.42	-0.286	-0.72	-0.417	-2.63	81.0%	0.001	-0.049	-1.36	-0.094	-2.32	-0.291	-0.74	-0.777	-10.64	81.3%	0.000
GBF6	-0.036	-0.97	-0.097	-2.07	-0.045	-0.12	-0.344	-2.53	85.2%	0.002	-0.063	-1.36	-0.106	-1.78	0.035	0.09	-0.605	-5.72	86.0%	0.000
GBF7	0.007	0.12	-0.138	-1.80	0.508	0.84	0.011	0.09	69.7%	0.069	-0.043	-0.67	-0.160	-1.76	0.586	1.04	-0.085	-0.59	76.3%	0.002
GBF8	0.013	0.31	-0.129	-2.42	-0.021	-0.04	-0.228	-1.79	78.7%	0.000	-0.039	-0.79	-0.145	-2.41	0.049	0.10	-0.439	-4.20	81.9%	0.000
GBF9	-0.057	-1.55	-0.052	-1.39	0.066	0.17	-0.080	-0.74	88.1%	0.390	-0.090	-2.08	-0.061	-1.32	0.224	0.52	-0.198	-2.84	88.9%	0.000
GBF10	-0.060	-1.00	-0.140	-1.98	-0.300	-0.52	-0.110	-0.60	73.3%	0.219	-0.130	-2.03	-0.153	-1.73	-0.019	-0.03	-0.331	-1.79	79.5%	0.000
GBF11	-0.035	-0.93	-0.121	-2.74	0.249	0.61	-0.355	-3.54	86.0%	0.000	-0.057	-1.15	-0.127	-2.36	0.266	0.58	-0.555	-4.72	86.0%	0.000
GBF12	0.018	0.42	-0.113	-2.43	0.060	0.13	-0.155	-1.21	78.0%	0.003	-0.032	-0.62	-0.130	-2.28	0.199	0.46	-0.373	-3.89	81.6%	0.000
GBF13	0.054	1.19	-0.075	-1.60	0.199	0.29	-0.380	-1.56	82.5%	0.066	0.025	0.49	-0.093	-1.76	0.383	0.56	-0.638	-3.69	83.7%	0.000
GBF14	-0.130	-4.07	-0.060	-1.59	0.175	0.46	-0.124	-0.62	88.2%	0.230	-0.148	-4.54	-0.085	-2.41	0.354	0.93	-0.352	-2.18	88.9%	0.000
GBF15	0.117	1.11	-0.326	-2.38	1.385	1.33	-0.800	-2.45	58.4%	0.000	-0.031	-0.27	-0.340	-2.38	1.480	1.26	-0.932	-3.01	76.1%	0.000
GBF16	-0.046	-1.18	-0.136	-2.67	0.244	0.60	-0.102	-0.76	86.3%	0.001	-0.075	-1.51	-0.147	-2.27	0.351	0.85	-0.342	-4.64	86.8%	0.000
GBF17	0.146	2.47	-0.043	-0.46	0.789	0.91	-0.422	-1.58	43.3%	0.013	0.015	0.23	-0.063	-0.89	0.412	0.57	-0.531	-2.51	76.5%	0.000
GBF18	-0.041	-1.05	-0.135	-3.13	0.175	0.44	-0.087	-0.42	84.9%	0.013	-0.080	-2.17	-0.139	-3.23	0.317	0.76	-0.381	-3.94	87.6%	0.000
GBF19	-0.004	-0.15	-0.080	-1.99	-0.105	-0.31	-0.168	-1.70	89.3%	0.029	-0.027	-0.70	-0.088	-1.78	-0.062	-0.17	-0.370	-4.97	89.4%	0.000
GBF20	0.016	0.40	-0.101	-2.36	0.145	0.30	-0.170	-1.40	80.7%	0.001	-0.035	-0.82	-0.117	-2.44	0.214	0.49	-0.380	-4.29	84.2%	0.000
GBF21	-0.038	-0.97	-0.100	-2.49	0.613	1.60	-0.127	-1.65	82.7%	0.000	-0.066	-1.61	-0.108	-2.48	0.847	2.00	-0.203	-1.75	84.8%	0.000
GBF22	-0.032	-0.96	-0.087	-2.37	0.187	0.46	-0.430	-3.85	86.7%	0.000	-0.054	-1.49	-0.099	-2.37	0.186	0.44	-0.748	-7.54	87.4%	0.000
GBF23	0.103	2.79	-0.087	-1.93	1.324	2.27	0.189	1.61	71.3%	0.019	0.061	1.39	-0.100	-2.05	1.363	2.59	0.095	0.86	75.2%	0.007
GBF24	-0.088	-1.79	-0.131	-2.34	0.455	0.81	-0.086	-0.91	78.3%	0.001	-0.129	-2.52	-0.160	-2.50	0.504	0.92	-0.270	-2.43	80.2%	0.000
GBF25	-0.016	-0.40	-0.064	-1.61	0.127	0.26	-0.261	-1.67	80.9%	0.036	-0.050	-1.22	-0.082	-2.07	0.300	0.67	-0.514	-5.37	83.4%	0.000
GBF26	0.059	1.09	-0.117	-2.02	0.419	0.64	-0.600	-2.59	76.9%	0.000	0.029	0.48	-0.129	-1.86	0.834	1.35	-0.702	-4.33	79.5%	0.000
GBF27	-0.073	-0.57	-0.214	-1.20	4.047	1.79	0.969	2.62	8.5%	0.034	-0.291	-2.08	-0.256	-1.74	3.635	1.82	0.795	2.63	41.1%	0.011
GBF28	-0.056	-1.71	-0.091	-2.55	0.173	0.50	-0.284	-4.89	88.4%	0.000	-0.078	-2.05	-0.107	-2.77	0.214	0.65	-0.418	-6.29	88.4%	0.000
GBF29	-0.024	-0.58	-0.081	-1.45	-0.287	-0.60	-0.235	-1.96	82.6%	0.081	-0.055	-1.03	-0.094	-1.38	-0.288	-0.56	-0.460	-4.76	82.6%	0.000
GBF30	0.160	1.95	-0.157	-1.48	3.045	2.32	1.060	3.21	41.7%	0.002	0.090	1.09	-0.155	-1.47	3.233	2.52	0.977	3.96	59.7%	0.000
GBF31	-0.007	-0.18	-0.123	-2.55	0.322	0.83	-0.196	-2.13	84.4%	0.000	-0.055	-1.50	-0.140	-2.72	0.457	1.14	-0.341	-2.98	87.7%	0.000
GBF32	-0.013	-0.40	-0.069	-1.70	0.425	0.99	-0.156	-1.54	80.2%	0.000	-0.049	-1.14	-0.085	-1.76	0.657	1.61	-0.231	-2.90	82.4%	0.000
GBF33	0.149	1.42	-0.271	-1.96	0.166	0.13	-0.293	-0.82	29.3%	0.131	-0.064	-0.83	-0.277	-3.41	-0.213	-0.23	-0.287	-1.51	81.5%	0.000
GBF34	0.071	0.65	-0.172	-1.43	-0.040	-0.03	-0.005	-0.01	33.1%	0.545	-0.121	-2.30	-0.195	-2.72	-0.414	-0.61	-0.310	-2.30	86.7%	0.001
GBF35	0.009	0.08	-0.041	-0.28	-0.206	-0.19	-0.119	-0.40	53.4%	0.929	-0.118	-1.06	-0.064	-0.39	-0.838	-0.78	-0.678	-2.50	73.2%	0.004
GBF36	-0.049	-1.09	-0.194	-3.74	-0.270	-0.46	-1.661	-11.47	80.6%	0.000	-0.078	-1.41	-0.206	-3.24	-0.364	-0.60	-2.205	-11.24	82.6%	0.000
GBF37	0.027	0.38	-0.250	-3.11	-0.680	-0.89	-0.024	-0.10	65.6%	0.020	-0.031	-0.35	-0.271	-2.32	-0.593	-0.70	-0.558	-2.56	72.6%	0.001
GBF38	-0.088	-2.88	-0.119	-3.59	0.203	0.56	-0.311	-3.14	89.5%	0.000	-0.107	-3.20	-0.124	-3.37	0.279	0.78	-0.485	-6.22	89.6%	0.000

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
GBF39	-0.029	-0.77	-0.095	-2.13	-0.064	-0.14	-0.443	-2.36	79.4%	0.001	-0.062	-1.25	-0.117	-1.88	0.115	0.26	-0.766	-7.83	81.1%	0.000
GBF40	0.014	0.33	-0.126	-2.67	0.046	0.09	-0.172	-1.41	80.5%	0.001	-0.037	-0.82	-0.140	-2.63	0.130	0.28	-0.371	-3.95	83.9%	0.000
GBF41	-0.040	-0.89	-0.088	-1.58	-0.626	-1.02	-0.329	-1.55	75.7%	0.223	-0.076	-1.26	-0.110	-1.49	-0.607	-0.94	-0.803	-6.19	77.3%	0.000
GBF42	-0.045	-0.56	-0.175	-2.04	-1.599	-1.35	-0.952	-2.57	74.0%	0.009	-0.122	-1.19	-0.209	-1.68	-1.787	-1.47	-1.719	-8.35	76.4%	0.000
GBF43	-0.014	-0.29	-0.010	-0.24	-0.530	-0.68	-0.507	-1.65	73.6%	0.296	-0.060	-1.19	-0.024	-0.56	-0.502	-0.64	-1.024	-4.96	76.7%	0.000
GBF44	-0.019	-0.62	-0.086	-2.36	-0.103	-0.27	-0.375	-3.75	88.0%	0.000	-0.048	-1.30	-0.098	-2.32	0.040	0.10	-0.532	-6.99	88.7%	0.000
GBF45	-0.017	-0.41	-0.145	-2.45	0.106	0.23	-0.121	-1.02	77.9%	0.017	-0.078	-1.59	-0.152	-2.46	0.064	0.13	-0.336	-3.00	82.7%	0.000
GBF46	-0.069	-1.48	-0.179	-2.74	-0.005	-0.01	-0.351	-4.09	81.5%	0.000	-0.095	-1.57	-0.193	-2.36	0.176	0.31	-0.451	-3.41	81.4%	0.000
GBF47	0.016	0.34	-0.148	-2.73	-0.396	-0.67	-0.706	-2.86	77.7%	0.000	-0.016	-0.30	-0.158	-2.45	-0.367	-0.63	-1.155	-11.73	78.7%	0.000
GBF48	0.023	0.56	-0.127	-2.71	0.080	0.18	-0.455	-2.71	81.7%	0.000	-0.014	-0.28	-0.143	-2.48	0.131	0.30	-0.831	-9.68	83.8%	0.000
GBF49	-0.033	-0.86	-0.102	-2.28	-0.342	-0.75	-0.565	-3.84	83.4%	0.000	-0.056	-1.15	-0.113	-1.81	-0.131	-0.27	-0.748	-7.14	83.8%	0.000
GBF50	-0.023	-0.67	-0.095	-2.47	0.279	0.70	-0.255	-1.69	85.3%	0.001	-0.045	-1.14	-0.108	-2.38	0.394	1.03	-0.532	-6.82	86.3%	0.000
GBF51	-0.048	-0.97	-0.111	-2.06	-0.457	-0.77	-0.334	-2.40	83.8%	0.007	-0.113	-1.84	-0.130	-1.96	-0.551	-0.85	-0.718	-6.02	86.0%	0.000
GBF52	-0.034	-1.31	-0.067	-2.34	0.233	0.75	-0.311	-2.42	89.3%	0.001	-0.060	-2.06	-0.074	-2.22	0.244	0.72	-0.596	-10.49	90.2%	0.000
GBF53	-0.004	-0.15	-0.076	-2.34	-0.142	-0.38	-0.234	-2.15	88.5%	0.004	-0.037	-1.02	-0.089	-2.27	-0.131	-0.31	-0.493	-5.56	89.2%	0.000
GBF54	-0.056	-0.98	-0.157	-2.31	-0.175	-0.29	-0.329	-1.74	64.6%	0.018	-0.126	-1.96	-0.175	-2.36	-0.311	-0.43	-0.801	-5.51	72.2%	0.000
GBF55	-0.026	-0.72	-0.081	-2.00	0.269	0.61	-0.126	-0.88	83.1%	0.047	-0.051	-1.23	-0.090	-2.02	0.472	1.11	-0.343	-4.28	84.4%	0.000
GBF56	0.011	0.26	-0.084	-1.96	-0.459	-0.91	-0.272	-1.45	81.7%	0.117	-0.012	-0.28	-0.098	-1.94	-0.264	-0.58	-0.572	-5.71	83.1%	0.000
GBF57	0.013	0.33	-0.079	-1.86	0.180	0.36	-0.328	-2.75	83.2%	0.000	-0.015	-0.30	-0.092	-1.70	0.458	0.95	-0.465	-4.89	84.6%	0.000
GBF58	0.003	0.05	-0.201	-3.52	-0.033	-0.06	0.007	0.05	76.7%	0.003	-0.055	-0.99	-0.217	-2.83	0.180	0.31	-0.146	-0.91	81.6%	0.000
GBF59	-0.008	-0.13	-0.065	-0.83	-0.636	-0.88	-0.802	-3.47	75.2%	0.001	-0.018	-0.27	-0.060	-0.74	-0.783	-0.98	-1.292	-6.24	76.2%	0.000
GBF60	-0.014	-0.12	-0.268	-1.86	-1.371	-1.34	0.112	0.37	51.1%	0.244	-0.127	-1.01	-0.320	-1.81	-0.878	-0.71	-0.052	-0.19	58.5%	0.256
GBF61	0.028	0.36	-0.190	-2.04	0.091	0.12	-0.103	-0.55	61.6%	0.044	-0.060	-0.78	-0.231	-2.13	0.085	0.10	-0.533	-2.11	71.3%	0.003
GBF62	0.112	0.79	-0.233	-1.29	-1.568	-1.34	0.134	0.42	49.0%	0.338	-0.022	-0.15	-0.282	-1.33	-1.323	-0.89	-0.262	-0.76	58.5%	0.367
GBF63	0.011	0.13	-0.133	-1.38	-0.047	-0.06	0.147	0.62	53.9%	0.574	-0.073	-0.87	-0.169	-1.41	-0.021	-0.02	-0.303	-1.37	61.8%	0.001
GBF64	0.094	0.85	-0.230	-1.51	-0.952	-0.93	-0.088	-0.23	53.3%	0.489	-0.028	-0.26	-0.273	-1.68	-0.637	-0.53	-0.732	-2.70	65.3%	0.000
GBF65	-0.045	-0.51	-0.247	-2.29	0.444	0.45	0.521	2.05	44.5%	0.011	-0.160	-1.44	-0.262	-2.00	0.743	0.63	0.394	1.71	61.1%	0.021
GBF66	0.070	0.53	-0.200	-1.21	-1.600	-1.38	0.007	0.02	48.0%	0.385	-0.056	-0.41	-0.249	-1.26	-1.406	-0.96	-0.294	-0.84	56.5%	0.434
GBF67	0.076	0.55	-0.235	-1.30	-1.990	-1.66	-0.010	-0.03	49.4%	0.324	-0.052	-0.37	-0.281	-1.36	-1.811	-1.25	-0.386	-1.25	57.0%	0.295
GBF68	0.680	1.28	-0.706	-1.11	4.001	0.61	1.848	1.15	-2.5%	0.400	-0.169	-0.54	-0.613	-2.04	-0.218	-0.05	0.927	1.23	75.4%	0.046
GBF69	0.002	0.05	-0.056	-1.07	-0.329	-0.50	-0.699	-3.64	69.9%	0.000	-0.034	-0.51	-0.065	-0.95	-0.189	-0.30	-0.938	-6.24	73.9%	0.000
GBF70	-0.070	-0.83	-0.132	-1.23	-0.433	-0.62	0.189	1.08	57.3%	0.306	-0.114	-1.30	-0.161	-1.27	-0.170	-0.20	0.226	1.35	59.4%	0.213
GBF71	0.059	0.58	-0.244	-2.06	-0.052	-0.05	-0.366	-1.31	53.7%	0.002	-0.058	-0.55	-0.290	-1.89	0.161	0.15	-0.835	-2.52	69.1%	0.000
GBF72	-0.035	-0.65	-0.115	-2.04	0.673	0.87	0.207	1.00	76.8%	0.228	-0.059	-1.11	-0.117	-1.79	0.549	0.70	0.043	0.19	79.4%	0.225
GBF73	0.001	0.01	-0.239	-1.74	-0.674	-0.69	0.310	1.33	51.0%	0.070	-0.124	-1.11	-0.291	-1.74	-0.531	-0.43	-0.112	-0.35	62.3%	0.285
GBF74	-0.022	-0.88	0.009	0.36	0.615	2.53	0.113	1.89	64.4%	0.055	-0.022	-0.72	0.012	0.37	0.711	2.69	0.079	1.26	64.0%	0.057
GBF75	0.046	0.77	0.049	0.59	0.274	0.40	-0.045	-0.38	12.2%	0.866	0.083	1.07	0.041	0.48	0.688	0.90	-0.131	-0.92	15.7%	0.081
GBF76	0.093	1.60	-0.050	-0.94	0.978	1.47	-0.525	-2.10	52.8%	0.005	0.096	1.62	-0.064	-1.05	1.189	2.08	-0.607	-4.55	51.8%	0.000
GBF77	-0.010	-0.29	-0.042	-1.08	0.581	1.77	0.113	1.77	76.6%	0.049	-0.020	-0.53	-0.043	-1.01	0.678	1.81	0.084	1.10	75.6%	0.051
GBF78	-0.008	-0.16	-0.081	-0.99	0.120	0.21	-0.109	-0.93	56.7%	0.012	-0.035	-0.56	-0.090	-1.00	0.205	0.32	-0.209	-1.55	56.1%	0.000
GBF79	-0.115	-3.31	-0.023	-0.78	0.902	2.75	0.077	1.01	11.4%	0.030	-0.134	-2.93	-0.033	-0.86	1.044	2.52	0.148	1.47	8.5%	0.058
GBF80	-0.011	-0.29	0.020	0.52	0.570	1.57	-0.062	-0.65	61.2%	0.142	-0.018	-0.43	0.014	0.31	0.779	2.32	-0.116	-1.43	62.1%	0.000

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
GBF81	0.115	2.30	0.029	0.45	0.680	1.11	-0.726	-3.79	54.1%	0.000	0.102	1.68	0.020	0.27	0.882	1.39	-0.717	-4.37	51.5%	0.000
GBF82	-0.035	-0.43	0.140	1.60	1.460	1.44	0.155	0.61	20.3%	0.181	-0.174	-2.30	0.128	2.26	1.156	1.36	0.182	0.90	57.3%	0.103
GBF83	-0.033	-1.24	0.001	0.04	0.384	1.24	0.099	1.26	67.0%	0.535	-0.037	-1.26	-0.002	-0.07	0.514	1.73	0.070	1.10	65.9%	0.366
GBF84	-0.050	-0.76	-0.081	-1.07	-0.383	-0.52	0.200	1.69	28.7%	0.038	-0.125	-1.70	-0.112	-1.65	-0.128	-0.15	0.193	1.16	39.5%	0.162
GBF85	-0.091	-3.54	0.012	0.48	0.277	1.09	-0.052	-1.05	43.2%	0.150	-0.098	-4.60	0.007	0.32	0.457	1.92	0.001	0.02	43.0%	0.018
GBF86	-0.094	-3.91	0.037	1.32	0.368	1.52	0.122	1.19	43.2%	0.317	-0.110	-6.03	0.029	1.37	0.557	2.63	0.017	0.31	51.9%	0.003
GBF87	-0.031	-0.80	-0.048	-1.10	0.272	0.60	-0.209	-1.69	69.9%	0.024	-0.023	-0.51	-0.051	-1.07	0.304	0.60	-0.479	-3.67	69.2%	0.000
GBF88	-0.025	-0.68	-0.057	-1.41	0.194	0.46	-0.193	-2.04	70.4%	0.009	-0.016	-0.38	-0.055	-1.21	0.297	0.65	-0.243	-2.16	67.9%	0.002
GBF89	0.013	0.20	-0.020	-0.25	0.716	1.06	0.361	2.60	61.8%	0.074	0.004	0.06	-0.022	-0.22	1.009	1.28	0.399	2.04	60.7%	0.193
GBF90	-0.009	-0.16	-0.071	-1.01	1.047	1.73	0.373	1.86	74.4%	0.049	-0.042	-0.59	-0.086	-0.96	1.348	2.03	0.284	1.94	75.2%	0.049
France																				
FBF1	-0.014	-0.38	-0.006	-0.24	-0.331	-1.11	-0.064	-0.55	63.5%	0.714	-0.037	-0.98	-0.011	-0.46	0.002	0.01	-0.222	-1.35	67.3%	0.437
FBF2	-0.132	-3.45	-0.092	-2.88	0.016	0.04	0.155	1.71	79.4%	0.023	-0.129	-3.16	-0.120	-3.36	0.611	1.08	0.101	0.64	81.0%	0.004
FBF3	-0.050	-2.66	-0.009	-0.55	0.162	0.81	0.111	1.85	87.3%	0.255	-0.066	-3.62	-0.024	-1.38	0.250	1.14	-0.019	-0.22	89.0%	0.162
FBF4	-0.077	-3.17	-0.024	-1.33	0.023	0.08	-0.102	-1.78	67.0%	0.107	-0.083	-3.43	-0.039	-1.97	0.298	0.87	-0.127	-1.48	71.2%	0.000
FBF5	-0.068	-2.90	-0.021	-0.94	0.136	0.58	-0.334	-7.17	85.7%	0.000	-0.072	-3.28	-0.036	-1.84	0.437	2.17	-0.416	-9.98	88.2%	0.000
FBF6	-0.123	-3.86	-0.064	-2.25	0.084	0.21	-0.100	-1.29	65.8%	0.022	-0.132	-4.37	-0.080	-2.87	0.448	1.04	-0.145	-1.10	67.8%	0.001
FBF7	-0.054	-4.26	0.000	-0.03	0.003	0.02	-0.030	-0.82	82.5%	0.879	-0.057	-4.79	-0.012	-0.86	0.159	0.98	-0.075	-2.34	85.4%	0.001
FBF8	-0.043	-3.42	0.004	0.31	-0.033	-0.19	-0.026	-0.57	80.0%	0.926	-0.051	-5.11	-0.006	-0.54	0.092	0.64	-0.106	-2.61	84.0%	0.031
FBF9	-0.044	-1.41	0.035	1.38	0.019	0.05	0.031	0.25	36.0%	0.583	-0.084	-2.85	0.029	1.19	-0.011	-0.03	-0.115	-0.84	42.7%	0.493
FBF10	-0.038	-1.64	0.006	0.27	0.170	0.67	-0.013	-0.14	60.4%	0.913	-0.057	-2.83	-0.001	-0.06	0.283	1.05	-0.197	-2.50	64.9%	0.019
FBF11	-0.061	-2.44	0.028	1.34	-0.205	-0.71	0.075	1.28	71.2%	0.245	-0.062	-2.37	0.011	0.53	0.143	0.50	0.122	1.41	72.4%	0.485
FBF12	0.057	1.33	-0.024	-0.69	-0.669	-1.59	-0.041	-0.61	34.7%	0.380	0.017	0.53	-0.021	-0.77	-0.553	-1.71	0.113	1.23	63.6%	0.041
FBF13	-0.041	-1.37	0.008	0.30	0.038	0.11	-0.007	-0.09	23.3%	0.987	-0.034	-1.01	0.005	0.19	0.013	0.03	-0.208	-2.45	25.1%	0.083
FBF14	-0.087	-9.79	-0.024	-2.97	-0.139	-1.22	-0.047	-2.16	20.4%	0.001	-0.087	-9.67	-0.024	-2.58	-0.041	-0.29	-0.051	-1.51	17.0%	0.041
FBF15	-0.173	-6.47	-0.005	-0.17	-0.164	-0.46	0.031	0.32	73.0%	0.939	-0.178	-6.10	-0.008	-0.24	0.113	0.32	0.118	1.61	73.5%	0.451
FBF16	-0.165	-5.45	-0.060	-2.19	0.180	0.47	0.016	0.21	76.3%	0.187	-0.139	-4.49	-0.069	-2.49	0.572	1.34	-0.058	-0.55	77.1%	0.054
FBF17	-0.063	-1.97	-0.006	-0.24	-0.218	-0.83	0.085	0.87	69.4%	0.577	-0.084	-2.79	-0.024	-0.96	0.096	0.35	-0.025	-0.18	74.6%	0.747
FBF18	-0.061	-2.06	-0.031	-1.49	-0.109	-0.31	0.118	1.32	75.2%	0.249	-0.055	-1.84	-0.037	-1.62	0.141	0.32	0.197	1.18	73.9%	0.274
FBF19	-0.093	-3.08	-0.033	-1.19	0.071	0.18	0.006	0.08	71.3%	0.670	-0.123	-4.84	-0.056	-2.32	0.275	0.75	-0.121	-1.41	79.0%	0.000
FBF20	-0.165	-4.04	-0.099	-2.50	-0.399	-0.66	0.132	1.20	48.8%	0.010	-0.216	-5.85	-0.117	-3.34	-0.568	-1.06	-0.025	-0.15	57.5%	0.000
FBF21	-0.083	-3.05	0.024	1.00	0.233	0.66	0.008	0.12	61.0%	0.636	-0.096	-3.88	0.011	0.47	0.422	1.19	-0.037	-0.41	63.2%	0.488
FBF22	-0.106	-3.85	-0.028	-1.02	0.244	0.72	-0.029	-0.43	62.9%	0.383	-0.128	-5.10	-0.041	-1.57	0.579	1.62	-0.126	-1.05	65.1%	0.001
FBF23	0.003	0.13	-0.001	-0.05	-0.053	-0.18	-0.150	-2.57	78.7%	0.031	-0.018	-0.67	-0.007	-0.31	0.062	0.22	-0.237	-3.42	80.4%	0.000
FBF24	-0.034	-1.40	0.023	1.17	0.113	0.42	-0.071	-1.28	70.2%	0.362	-0.051	-2.25	0.017	0.83	0.151	0.67	-0.198	-3.41	73.6%	0.001
FBF25	-0.013	-0.40	-0.001	-0.05	0.396	1.29	0.141	1.28	59.7%	0.361	-0.031	-0.98	-0.018	-0.70	0.552	1.55	-0.026	-0.33	67.7%	0.115
FBF26	-0.071	-3.62	-0.003	-0.23	-0.009	-0.06	-0.074	-0.86	81.8%	0.831	-0.080	-4.17	-0.009	-0.62	0.173	0.97	-0.057	-0.64	83.1%	0.525
FBF27	-0.026	-0.76	-0.045	-1.65	0.406	0.98	0.179	1.58	73.1%	0.228	-0.036	-1.13	-0.057	-2.10	0.522	1.12	0.055	0.33	74.1%	0.131
FBF28	-0.013	-0.53	-0.031	-1.39	-0.208	-0.72	-0.096	-1.60	75.0%	0.120	-0.014	-0.58	-0.038	-1.66	-0.127	-0.40	-0.219	-2.44	76.6%	0.000
FBF29	-0.056	-4.12	-0.002	-0.08	-0.192	-0.92	-0.057	-1.62	91.7%	0.308	-0.050	-3.54	-0.018	-0.91	0.070	0.38	-0.036	-0.76	92.7%	0.193
FBF30	-0.071	-2.72	-0.049	-1.96	0.572	1.81	-0.191	-1.69	59.2%	0.026	-0.087	-3.38	-0.060	-2.53	0.782	2.09	-0.241	-1.37	59.2%	0.002
FBF31	-0.030	-1.43	-0.019	-0.91	0.279	0.68	0.186	1.95	81.4%	0.217	-0.033	-1.36	-0.036	-1.31	0.490	0.90	0.118	0.79	81.9%	0.621
FBF32	-0.028	-0.97	-0.005	-0.22	0.287	0.91	0.072	0.89	70.3%	0.716	-0.040	-1.57	-0.022	-1.11	0.484	1.80	-0.030	-0.35	77.0%	0.022

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
FBF33	-0.031	-1.14	0.025	1.22	-0.202	-0.85	-0.026	-0.28	68.1%	0.430	-0.043	-1.65	0.012	0.55	0.029	0.12	-0.058	-0.50	72.4%	0.904
FBF34	-0.027	-1.74	-0.004	-0.32	0.179	0.86	-0.003	-0.06	64.9%	0.845	-0.028	-2.10	-0.009	-0.76	0.284	1.17	-0.053	-0.84	67.4%	0.108
FBF35	-0.088	-2.26	-0.085	-2.13	-0.034	-0.09	0.196	1.91	65.0%	0.024	-0.086	-2.83	-0.092	-3.40	0.351	0.80	0.060	0.41	70.9%	0.009
FBF36	-0.058	-1.85	0.048	1.89	-0.122	-0.34	-0.235	-3.11	5.0%	0.000	-0.071	-2.45	0.048	2.04	0.123	0.34	-0.180	-2.22	11.5%	0.000
FBF37	-0.060	-2.36	0.000	0.00	0.024	0.08	-0.030	-0.43	64.9%	0.969	-0.077	-4.13	-0.002	-0.10	0.335	0.97	-0.076	-0.64	71.9%	0.515
FBF38	-0.034	-1.35	-0.007	-0.27	0.200	0.66	-0.040	-0.56	66.5%	0.706	-0.042	-1.85	-0.011	-0.44	0.398	1.19	-0.193	-2.96	69.1%	0.000
FBF39	-0.011	-0.35	-0.050	-1.52	0.223	0.49	0.132	1.50	67.4%	0.310	-0.041	-1.11	-0.058	-1.71	0.088	0.14	-0.006	-0.05	70.0%	0.267
FBF40	-0.059	-2.30	-0.064	-2.89	0.376	1.02	0.019	0.21	74.6%	0.023	-0.052	-2.03	-0.084	-3.14	0.664	1.38	-0.150	-1.03	77.0%	0.000
FBF41	-0.028	-1.06	-0.025	-1.02	0.301	1.16	-0.255	-6.12	63.1%	0.000	-0.038	-1.41	-0.034	-1.42	0.599	1.87	-0.246	-4.90	65.9%	0.000
FBF42	-0.089	-7.58	-0.013	-1.01	-0.051	-0.30	-0.126	-2.71	85.9%	0.033	-0.088	-6.61	-0.022	-1.71	0.083	0.42	-0.165	-3.40	87.0%	0.000
FBF43	-0.074	-2.77	-0.019	-0.92	0.192	0.66	-0.032	-0.44	78.7%	0.590	-0.085	-3.38	-0.034	-1.56	0.391	1.31	-0.112	-1.08	80.4%	0.006
FBF44	-0.062	-8.18	-0.001	-0.18	-0.080	-0.87	0.020	1.58	6.5%	0.036	-0.063	-10.05	0.000	-0.04	-0.030	-0.30	0.041	2.02	24.1%	0.058
FBF45	-0.063	-2.14	0.005	0.22	0.144	0.56	-0.021	-0.19	55.6%	0.922	-0.090	-3.94	-0.002	-0.13	0.363	1.59	-0.083	-0.66	66.0%	0.318
FBF46	-0.086	-3.90	-0.032	-1.71	0.088	0.38	-0.039	-0.62	85.3%	0.319	-0.098	-4.38	-0.046	-2.53	0.245	0.99	-0.089	-1.16	85.7%	0.000
FBF47	-0.049	-1.92	-0.009	-0.42	0.061	0.20	-0.056	-0.68	63.6%	0.792	-0.065	-2.67	-0.017	-0.73	0.249	0.67	-0.121	-0.91	64.8%	0.151
FBF48	-0.068	-2.48	0.018	0.81	0.114	0.48	-0.070	-0.80	68.2%	0.617	-0.100	-4.60	0.010	0.54	0.259	1.47	-0.235	-2.38	76.4%	0.013
FBF49	-0.085	-5.05	-0.025	-1.49	0.036	0.17	-0.096	-1.97	86.0%	0.061	-0.089	-5.13	-0.033	-1.82	0.166	0.82	-0.202	-3.18	86.9%	0.000
FBF50	-0.055	-1.08	0.047	1.31	-0.152	-0.23	-0.343	-1.92	33.9%	0.129	-0.062	-1.36	0.040	0.88	0.187	0.30	-0.498	-2.61	37.3%	0.063
FBF51	-0.055	-1.54	0.024	0.90	-0.232	-0.66	-0.016	-0.19	59.5%	0.796	-0.075	-2.25	0.016	0.69	-0.068	-0.24	-0.094	-0.95	64.2%	0.719
FBF52	-0.048	-1.50	0.015	0.62	-0.053	-0.17	-0.092	-0.96	63.3%	0.737	-0.064	-2.20	0.007	0.32	0.105	0.39	-0.220	-1.81	66.9%	0.220
FBF53	-0.076	-3.76	-0.033	-1.99	0.158	0.75	-0.092	-1.33	81.3%	0.041	-0.083	-3.79	-0.037	-2.15	0.265	1.17	-0.209	-2.11	81.5%	0.001
FBF54	-0.073	-3.64	-0.008	-0.47	0.129	0.55	0.080	1.04	75.5%	0.756	-0.082	-4.05	-0.012	-0.72	0.214	0.83	0.028	0.25	75.2%	0.762
FBF55	-0.046	-1.81	0.019	0.80	-0.017	-0.04	0.109	1.77	65.8%	0.116	-0.046	-1.75	0.009	0.32	0.198	0.46	0.265	3.52	64.7%	0.000
FBF56	-0.114	-16.28	0.005	0.90	-0.097	-1.17	-0.005	-0.35	7.4%	0.574	-0.117	-19.93	0.002	0.47	-0.080	-1.41	-0.030	-1.87	20.8%	0.177
FBF57	-0.051	-1.78	0.011	0.47	0.162	0.40	-0.061	-0.73	78.2%	0.660	-0.079	-3.04	0.000	0.02	0.048	0.16	-0.233	-1.79	82.9%	0.255
FBF58	-0.095	-4.19	-0.031	-1.56	0.311	0.85	-0.002	-0.02	61.6%	0.413	-0.094	-4.10	-0.038	-1.39	0.446	0.92	-0.105	-0.50	60.7%	0.222
FBF59	-0.081	-4.27	0.002	0.11	-0.216	-0.90	0.011	0.18	82.8%	0.536	-0.101	-5.31	-0.005	-0.29	-0.184	-1.00	-0.064	-1.21	85.4%	0.572
FBF60	-0.073	-1.44	0.075	2.42	0.771	1.53	0.103	1.35	9.2%	0.020	-0.098	-1.29	0.077	1.96	1.046	1.64	-0.056	-0.49	9.6%	0.004
FBF61	-0.082	-1.50	-0.107	-1.16	-0.310	-0.29	-0.048	-0.71	40.3%	0.462	-0.134	-1.59	-0.085	-1.02	-0.642	-0.46	-0.187	-1.23	40.6%	0.472
FBF62	-0.116	-3.21	-0.057	-1.64	0.375	0.86	-0.029	-0.38	90.6%	0.023	-0.099	-2.55	-0.073	-2.06	0.928	2.00	-0.121	-0.83	91.6%	0.000
FBF63	-0.055	-1.35	-0.133	-2.81	1.215	1.54	0.168	0.89	79.9%	0.032	-0.075	-1.60	-0.165	-2.42	1.605	1.48	0.214	0.64	79.9%	0.004
FBF64	-0.058	-1.45	-0.062	-1.94	0.122	0.25	-0.133	-1.27	84.7%	0.081	-0.071	-1.94	-0.077	-2.29	0.333	0.75	-0.319	-2.26	85.7%	0.000
FBF65	-0.079	-2.64	-0.029	-1.18	0.552	1.82	-0.102	-0.99	86.5%	0.048	-0.077	-2.60	-0.046	-1.86	0.923	3.20	-0.274	-2.31	89.1%	0.000
FBF66	-0.109	-3.36	-0.055	-1.61	0.677	1.49	0.040	0.38	72.6%	0.201	-0.089	-2.41	-0.059	-1.55	0.812	1.80	-0.162	-1.64	74.1%	0.005
FBF67	-0.163	-5.72	-0.055	-2.20	0.824	2.43	-0.021	-0.20	85.4%	0.017	-0.157	-5.30	-0.074	-2.20	1.100	2.53	-0.216	-1.33	85.9%	0.000
FBF68	-0.074	-2.28	-0.070	-2.15	0.463	0.83	0.226	1.64	91.5%	0.143	-0.075	-2.27	-0.094	-2.08	0.779	1.03	0.157	0.68	91.4%	0.083
FBF69	-0.113	-4.29	-0.029	-0.98	-0.166	-0.57	-0.209	-1.12	79.5%	0.480	-0.152	-6.26	-0.025	-1.10	-0.288	-0.89	-0.234	-0.86	80.0%	0.529
FBF70	-0.118	-3.83	-0.062	-2.20	-0.390	-0.76	-0.066	-0.43	85.7%	0.142	-0.161	-3.94	-0.079	-2.10	-0.617	-0.84	-0.335	-1.32	86.4%	0.109
FBF71	-0.085	-2.82	-0.061	-1.87	0.785	1.59	-0.176	-1.75	85.1%	0.000	-0.067	-2.45	-0.067	-2.06	1.311	2.03	-0.222	-0.98	86.3%	0.000
FBF72	-0.038	-1.19	-0.024	-0.73	0.035	0.09	-0.239	-4.40	90.5%	0.000	-0.044	-1.31	-0.037	-1.00	0.369	1.00	-0.272	-3.01	91.3%	0.000
FBF73	-0.128	-3.38	-0.109	-3.04	0.034	0.08	-0.181	-1.56	72.1%	0.003	-0.146	-3.90	-0.122	-3.47	0.465	1.10	-0.326	-1.71	74.3%	0.000
FBF74	-0.195	-4.84	-0.123	-2.76	-0.006	-0.01	0.140	1.10	78.8%	0.027	-0.175	-4.21	-0.140	-2.52	0.388	0.60	0.001	0.01	80.7%	0.001
FBF75	-0.045	-1.82	-0.006	-0.20	-0.122	-0.30	-0.235	-2.57	89.4%	0.047	-0.036	-1.45	-0.027	-0.80	0.320	0.86	-0.224	-3.42	91.1%	0.000
FBF76	-0.119	-3.93	-0.070	-2.54	-0.161	-0.42	-0.168	-2.28	86.3%	0.001	-0.129	-4.26	-0.085	-2.86	0.137	0.39	-0.238	-1.94	86.6%	0.001

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
FBF77	-0.111	-3.93	-0.056	-2.32	-0.060	-0.17	-0.154	-2.64	86.4%	0.000	-0.118	-4.15	-0.074	-2.76	0.338	0.92	-0.158	-1.60	87.0%	0.000
FBF78	-0.121	-4.13	-0.070	-2.62	-0.168	-0.45	-0.176	-2.25	86.6%	0.002	-0.131	-4.48	-0.083	-2.95	0.121	0.34	-0.232	-1.81	86.7%	0.002
FBF79	-0.122	-4.47	-0.045	-1.32	-0.171	-0.47	-0.293	-3.70	89.6%	0.000	-0.118	-4.17	-0.059	-1.60	0.103	0.29	-0.279	-2.72	89.8%	0.001
FBF80	-0.089	-1.66	-0.133	-2.78	-0.578	-1.12	0.020	0.18	82.8%	0.022	-0.117	-1.90	-0.162	-2.59	-0.295	-0.46	-0.004	-0.02	83.1%	0.036
FBF81	-0.066	-2.11	-0.035	-1.05	0.590	1.26	-0.174	-2.15	85.7%	0.015	-0.041	-1.26	-0.045	-1.29	1.052	2.25	-0.264	-2.45	86.6%	0.000
FBF82	-0.095	-2.56	-0.045	-1.24	0.514	1.06	-0.288	-2.76	82.2%	0.003	-0.071	-1.81	-0.046	-1.31	0.920	1.84	-0.392	-3.01	82.9%	0.000
FBF83	-0.089	-1.84	-0.092	-1.78	0.507	0.99	-0.531	-2.69	62.8%	0.000	-0.155	-2.69	-0.108	-1.81	0.798	1.14	-0.298	-1.18	64.8%	0.028
FBF84	-0.095	-2.64	-0.051	-1.36	0.800	1.53	0.082	0.76	89.0%	0.180	-0.072	-1.88	-0.079	-1.90	1.292	2.53	-0.015	-0.07	89.4%	0.010
FBF85	-0.118	-3.75	-0.046	-1.39	0.516	1.18	0.103	1.39	88.6%	0.252	-0.092	-2.64	-0.066	-1.81	0.976	2.12	0.073	0.49	89.2%	0.055
FBF86	-0.106	-2.19	-0.068	-1.12	0.044	0.07	0.116	1.28	88.0%	0.484	-0.085	-1.62	-0.111	-1.67	0.597	0.96	0.224	2.09	88.5%	0.114
FBF87	-0.134	-3.51	-0.065	-1.34	0.138	0.25	-0.111	-1.10	87.6%	0.063	-0.100	-2.52	-0.082	-1.66	0.480	0.96	-0.009	-0.10	88.2%	0.074
FBF88	-0.001	-0.05	-0.046	-1.38	0.385	1.00	-0.258	-3.67	91.1%	0.000	-0.009	-0.27	-0.050	-1.30	0.659	1.44	-0.189	-1.65	90.6%	0.001
FBF89	-0.014	-0.42	-0.020	-0.58	0.562	1.34	-0.125	-1.11	90.2%	0.105	0.003	0.07	-0.030	-0.77	1.005	2.25	-0.067	-0.68	90.0%	0.019
FBF90	-0.015	-0.35	-0.009	-0.30	-0.270	-0.70	0.100	0.86	75.6%	0.659	-0.043	-1.03	-0.023	-0.73	0.139	0.35	0.270	1.74	78.3%	0.340
FBF91	-0.075	-2.40	-0.037	-1.18	0.141	0.33	-0.020	-0.20	89.9%	0.386	-0.056	-1.54	-0.052	-1.41	0.423	0.94	-0.015	-0.08	89.9%	0.187
FBF92	0.021	0.36	0.038	0.98	-0.008	-0.01	-0.009	-0.07	68.9%	0.805	-0.023	-0.36	-0.017	-0.38	0.672	0.86	-0.054	-0.21	74.2%	0.623
FBF93	-0.077	-2.03	-0.070	-1.95	0.860	1.68	0.113	0.76	79.0%	0.137	-0.091	-2.43	-0.076	-1.96	1.036	1.60	0.142	0.66	77.9%	0.104
FBF94	-0.092	-2.77	-0.067	-2.11	-0.087	-0.19	-0.047	-0.65	88.4%	0.048	-0.097	-2.98	-0.070	-1.97	0.136	0.25	-0.079	-0.53	88.1%	0.043
FBF95	-0.086	-2.65	-0.064	-2.17	0.331	0.80	-0.062	-0.92	91.1%	0.009	-0.085	-2.50	-0.086	-2.49	0.745	1.53	-0.006	-0.06	91.3%	0.000
FBF96	-0.113	-2.29	-0.125	-2.93	0.510	0.92	-0.239	-1.75	68.5%	0.001	-0.140	-2.68	-0.138	-2.90	0.977	1.40	-0.217	-1.11	70.9%	0.000
FBF97	-0.062	-1.63	-0.050	-1.52	0.368	0.86	-0.008	-0.08	85.6%	0.156	-0.081	-2.11	-0.066	-2.08	0.705	1.57	-0.100	-0.78	86.6%	0.000
FBF98	-0.068	-1.77	-0.115	-2.77	0.440	1.03	0.068	0.45	78.4%	0.048	-0.084	-2.21	-0.130	-2.69	0.888	1.75	-0.017	-0.07	79.1%	0.021
FBF99	-0.049	-1.28	-0.002	-0.06	0.520	0.86	-0.270	-3.33	75.5%	0.000	-0.087	-1.98	-0.016	-0.37	0.729	1.03	-0.353	-2.51	77.3%	0.002
FBF100	-0.006	-0.16	-0.056	-1.65	0.501	1.10	-0.155	-1.34	81.8%	0.030	-0.036	-0.99	-0.085	-2.48	0.704	1.54	-0.345	-3.38	83.9%	0.000
FBF101	-0.112	-4.60	0.015	0.62	0.931	2.76	-0.216	-2.88	87.2%	0.000	-0.105	-4.02	0.016	0.62	1.184	2.88	-0.236	-2.97	86.8%	0.000
FBF102	-0.069	-1.95	-0.031	-1.04	-0.350	-1.00	-0.070	-0.32	79.7%	0.650	-0.060	-1.49	-0.041	-1.17	-0.264	-0.59	-0.167	-0.71	78.8%	0.520
FBF103	-0.075	-1.85	0.007	0.21	0.186	0.42	-0.299	-4.67	67.3%	0.000	-0.094	-2.21	0.003	0.10	0.190	0.48	-0.392	-6.13	67.3%	0.000
FBF104	-0.038	-0.99	-0.025	-0.71	-0.702	-1.29	0.179	2.52	64.9%	0.000	-0.080	-2.46	-0.040	-1.10	-0.359	-0.64	0.276	2.23	68.6%	0.000
FBF105	-0.010	-0.23	-0.036	-1.13	-0.270	-0.51	-0.118	-1.41	80.6%	0.125	-0.009	-0.20	-0.068	-2.04	0.238	0.43	-0.159	-1.23	82.2%	0.000
FBF106	-0.093	-3.63	-0.043	-1.24	-0.096	-0.22	-0.019	-0.28	93.0%	0.266	-0.084	-3.11	-0.066	-1.75	0.240	0.65	-0.028	-0.48	93.3%	0.009
FBF107	-0.057	-1.26	-0.024	-0.60	-0.772	-1.19	-0.271	-2.68	72.6%	0.044	-0.071	-1.56	-0.036	-0.95	-0.347	-0.64	0.052	0.53	77.1%	0.450
FBF108	-0.081	-2.34	-0.028	-0.96	-0.177	-0.53	0.090	1.11	80.5%	0.403	-0.090	-2.57	-0.036	-1.24	0.106	0.31	0.074	0.58	81.6%	0.631
FBF109	-0.130	-3.65	-0.021	-0.61	0.447	0.98	-0.023	-0.27	88.3%	0.662	-0.104	-3.01	-0.054	-1.40	0.851	1.93	-0.067	-0.92	89.0%	0.015
FBF110	-0.133	-2.09	0.074	1.69	-0.220	-0.33	0.072	0.29	24.6%	0.139	-0.161	-2.68	0.058	1.41	0.271	0.52	0.237	1.28	29.0%	0.160
FBF111	-0.093	-2.41	0.026	0.79	-0.075	-0.18	-0.440	-4.38	63.1%	0.000	-0.116	-3.09	0.018	0.66	0.002	0.00	-0.576	-7.22	64.9%	0.000
FBF112	-0.050	-1.24	-0.019	-0.52	-0.351	-0.73	-0.212	-1.89	80.4%	0.204	-0.066	-1.58	-0.033	-0.97	0.086	0.19	-0.275	-2.95	84.4%	0.000
FBF113	-0.052	-1.34	-0.014	-0.40	-0.310	-0.67	-0.192	-1.85	81.7%	0.238	-0.064	-1.59	-0.026	-0.82	0.131	0.30	-0.250	-2.73	85.4%	0.000
FBF114	-0.049	-1.23	-0.014	-0.39	-0.342	-0.71	-0.210	-1.96	80.7%	0.189	-0.066	-1.62	-0.028	-0.83	0.118	0.27	-0.259	-2.91	84.8%	0.000
FBF115	-0.106	-4.69	-0.034	-1.37	0.201	0.59	-0.377	-6.09	89.8%	0.000	-0.088	-3.70	-0.044	-1.55	0.705	1.73	-0.338	-3.65	91.5%	0.000
FBF116	-0.087	-2.37	-0.054	-1.33	-0.222	-0.42	-0.086	-0.73	89.2%	0.290	-0.069	-1.91	-0.065	-1.58	0.112	0.21	-0.221	-1.60	90.8%	0.000
FBF117	-0.071	-2.15	-0.046	-1.50	0.518	0.97	-0.278	-2.38	75.7%	0.000	-0.090	-2.37	-0.061	-1.93	0.327	0.57	-0.444	-3.00	75.2%	0.000
FBF118	-0.069	-2.41	-0.047	-1.45	0.541	1.21	-0.573	-4.44	76.5%	0.000	-0.099	-2.81	-0.056	-1.58	0.768	1.24	-0.708	-4.59	76.7%	0.000
FBF119	-0.087	-2.72	-0.051	-1.80	-0.319	-0.66	-0.145	-1.43	84.6%	0.119	-0.114	-2.39	-0.056	-1.54	-0.496	-0.68	-0.147	-0.84	83.9%	0.359
FBF120	-0.098	-4.39	0.000	0.01	-0.002	-0.01	-0.088	-1.68	71.3%	0.383	-0.099	-3.62	-0.008	-0.39	0.128	0.48	-0.107	-1.67	69.9%	0.297

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
FBF121	-0.124	-1.26	0.015	0.21	1.540	1.94	-0.011	-0.03	21.5%	0.275	-0.159	-1.25	-0.025	-0.26	2.327	1.84	-0.354	-0.85	25.1%	0.087
FBF122	-0.038	-1.31	-0.007	-0.28	-0.059	-0.14	0.061	0.77	72.1%	0.570	-0.065	-1.82	-0.025	-0.92	-0.020	-0.04	-0.107	-0.68	72.8%	0.428
FBF123	-0.117	-4.55	-0.048	-1.64	0.417	1.05	-0.282	-3.08	91.9%	0.000	-0.112	-4.55	-0.057	-1.88	0.850	1.92	-0.356	-2.89	93.0%	0.000
FBF124	-0.059	-1.86	-0.031	-1.03	0.357	0.71	-0.333	-2.67	80.6%	0.000	-0.077	-1.88	-0.037	-1.13	0.275	0.45	-0.468	-2.89	80.0%	0.001
FBF125	-0.083	-2.13	-0.001	-0.04	0.536	1.48	-0.170	-1.57	79.5%	0.048	-0.101	-2.76	-0.011	-0.34	0.827	1.90	-0.308	-1.79	79.3%	0.000
FBF126	-0.111	-3.00	-0.105	-2.56	0.430	0.69	-0.118	-0.77	50.7%	0.008	-0.095	-2.27	-0.104	-2.10	0.614	0.80	-0.235	-1.31	49.9%	0.016
FBF127	-0.063	-2.30	-0.057	-1.94	0.225	0.64	-0.044	-0.87	89.7%	0.018	-0.058	-1.96	-0.072	-2.23	0.596	1.68	-0.049	-0.46	90.5%	0.007
FBF128	-0.068	-1.86	0.006	0.14	-0.636	-1.25	-0.385	-2.99	74.7%	0.025	-0.071	-1.78	-0.002	-0.05	-0.244	-0.51	-0.465	-6.30	75.6%	0.000
FBF129	-0.055	-1.29	-0.071	-2.21	-0.602	-1.68	-0.320	-3.36	80.0%	0.000	-0.079	-1.87	-0.072	-2.32	-0.349	-0.85	-0.389	-3.40	81.4%	0.000
FBF130	-0.108	-1.99	-0.079	-1.47	0.342	0.61	0.218	1.68	53.1%	0.354	-0.130	-1.73	-0.124	-1.22	0.815	0.86	0.238	0.91	52.4%	0.478
FBF131	-0.058	-1.52	-0.018	-0.55	0.135	0.37	-0.064	-0.73	87.2%	0.710	-0.072	-2.04	-0.033	-1.04	0.699	1.97	-0.109	-0.75	89.7%	0.024
FBF132	-0.120	-4.44	-0.084	-2.96	0.108	0.27	-0.122	-2.18	91.4%	0.000	-0.117	-4.02	-0.101	-3.03	0.645	1.48	-0.065	-0.49	91.5%	0.001
FBF133	-0.139	-3.54	-0.133	-2.94	0.100	0.18	-0.084	-1.06	88.4%	0.000	-0.124	-3.15	-0.165	-2.94	0.763	1.32	-0.017	-0.12	89.0%	0.001
FBF134	-0.162	-3.43	-0.148	-2.72	-0.387	-0.61	0.063	0.63	84.2%	0.039	-0.175	-3.41	-0.168	-2.75	-0.152	-0.25	-0.072	-0.46	83.6%	0.015
FBF135	-0.070	-3.39	0.001	0.07	-0.006	-0.02	0.012	0.17	83.0%	0.998	-0.085	-3.01	-0.010	-0.36	0.221	0.43	0.076	0.81	83.2%	0.796
FBF136	-0.040	-1.06	0.051	1.46	0.158	0.29	-0.005	-0.04	65.0%	0.397	-0.029	-0.65	0.057	1.41	0.183	0.27	0.036	0.23	62.3%	0.475
FBF137	-0.055	-1.68	-0.019	-0.82	-0.407	-1.32	-0.112	-1.37	71.6%	0.353	-0.072	-2.58	-0.029	-1.40	0.104	0.39	-0.065	-0.61	79.6%	0.460
FBF138	0.000	-0.01	-0.076	-2.14	-0.005	-0.01	-0.024	-0.37	86.9%	0.114	-0.020	-0.71	-0.096	-2.72	0.424	1.17	0.058	0.40	91.4%	0.021
FBF139	-0.070	-2.43	-0.046	-1.55	0.087	0.21	0.055	0.55	83.7%	0.486	-0.051	-1.77	-0.058	-1.90	0.449	0.92	0.078	0.45	84.8%	0.298
FBF140	-0.071	-1.40	-0.079	-2.04	-0.130	-0.23	0.398	2.43	73.6%	0.014	-0.059	-1.10	-0.122	-2.49	0.213	0.30	0.416	1.42	73.1%	0.064
FBF141	-0.007	-0.21	-0.021	-0.98	0.124	0.56	-0.150	-1.93	92.1%	0.188	-0.014	-0.35	-0.025	-0.99	0.356	1.20	-0.238	-2.21	92.3%	0.011
FBF142	-0.066	-2.02	-0.051	-1.63	0.175	0.50	0.113	1.07	86.4%	0.284	-0.087	-2.93	-0.076	-2.48	0.471	1.33	0.029	0.20	87.4%	0.021
FBF143	0.149	1.83	-0.111	-1.50	-1.993	-1.80	0.460	1.58	42.4%	0.006	0.031	0.48	-0.073	-1.49	-2.394	-2.97	0.658	2.19	72.1%	0.000
FBF144	-0.056	-2.62	-0.027	-0.98	0.071	0.20	0.060	1.16	93.8%	0.419	-0.081	-2.97	-0.030	-0.78	0.068	0.17	-0.159	-1.96	93.7%	0.092
FBF145	-0.043	-0.68	-0.111	-1.66	0.446	0.58	0.244	0.52	77.5%	0.377	-0.016	-0.30	-0.113	-2.21	0.798	1.19	0.019	0.05	82.8%	0.166
FBF146	-0.181	-3.64	-0.100	-2.32	0.059	0.06	0.221	0.77	89.4%	0.030	-0.119	-2.33	-0.130	-2.64	0.753	0.66	0.263	0.77	90.1%	0.014
FBF147	-0.112	-4.90	-0.032	-1.56	-0.097	-0.39	0.086	1.33	97.0%	0.326	-0.115	-5.13	-0.038	-2.29	0.109	0.44	0.087	1.21	97.2%	0.099
FBF148	-0.036	-0.99	-0.043	-1.16	0.370	0.91	-0.292	-3.95	89.3%	0.000	-0.020	-0.49	-0.058	-1.39	0.916	1.98	-0.365	-3.96	90.1%	0.000
FBF149	-0.028	-0.69	-0.014	-0.39	-0.816	-1.46	0.011	0.15	83.8%	0.442	-0.028	-0.70	-0.034	-0.81	-0.569	-1.14	0.050	0.37	83.4%	0.489
FBF150	-0.073	-1.87	-0.028	-0.56	-0.135	-0.24	0.023	0.27	93.3%	0.940	-0.036	-0.85	-0.043	-0.78	0.313	0.52	0.170	1.06	93.7%	0.624
FBF151	-0.029	-0.93	-0.043	-1.12	-0.115	-0.25	0.069	1.30	93.6%	0.535	-0.041	-1.18	-0.058	-1.31	0.392	0.79	0.190	1.80	94.1%	0.158
FBF152	-0.028	-0.64	-0.012	-0.19	0.634	0.95	0.099	1.10	89.3%	0.484	-0.038	-0.78	-0.024	-0.34	0.908	1.31	0.088	0.68	88.7%	0.204
FBF153	-0.060	-1.62	-0.003	-0.06	0.313	0.58	0.177	2.03	91.8%	0.167	-0.050	-1.22	-0.011	-0.21	0.613	1.19	0.180	1.14	91.8%	0.408
FBF154	-0.061	-1.31	-0.049	-1.26	0.178	0.38	-0.196	-1.68	75.8%	0.156	-0.065	-1.35	-0.062	-1.65	0.813	1.44	0.059	0.28	78.6%	0.284
FBF155	-0.029	-0.39	-0.151	-1.92	-0.856	-0.98	-0.068	-0.35	58.3%	0.250	-0.117	-1.30	-0.150	-2.03	-0.918	-0.82	0.005	0.02	63.5%	0.241
FBF156	-0.182	-4.07	-0.040	-0.88	0.776	1.44	0.097	0.61	90.4%	0.440	-0.138	-2.73	-0.078	-1.55	1.315	1.93	-0.124	-0.56	91.1%	0.082
FBF157	0.002	0.05	-0.029	-0.82	0.168	0.40	-0.292	-5.28	91.8%	0.000	0.008	0.25	-0.041	-1.01	0.664	1.68	-0.452	-6.00	92.6%	0.000
FBF158	-0.089	-2.77	-0.026	-0.72	0.272	0.57	-0.465	-2.24	84.4%	0.055	-0.118	-2.85	-0.026	-0.70	0.131	0.22	-0.464	-1.75	83.8%	0.288
FBF159	-0.045	-1.42	-0.084	-2.71	-0.797	-2.08	-0.260	-4.20	92.9%	0.000	-0.053	-1.48	-0.098	-2.73	-0.276	-0.66	-0.120	-1.66	93.8%	0.000
FBF160	-0.047	-1.54	-0.037	-1.08	0.129	0.33	-0.209	-4.43	92.4%	0.000	-0.056	-1.78	-0.051	-1.39	0.555	1.44	-0.177	-2.46	93.5%	0.000
FBF161	-0.061	-0.93	0.022	0.39	-0.468	-0.59	-0.251	-0.73	84.2%	0.801	-0.149	-1.71	0.007	0.09	-0.894	-0.73	-0.529	-1.07	84.4%	0.718
FBF162	-0.049	-1.93	-0.005	-0.12	0.020	0.05	-0.269	-2.65	90.0%	0.041	-0.045	-1.83	-0.018	-0.47	0.457	1.15	-0.277	-3.68	91.6%	0.000
FBF163	-0.117	-3.27	-0.003	-0.10	-0.157	-0.27	-0.340	-1.38	83.9%	0.573	-0.147	-3.16	-0.031	-0.71	-0.092	-0.12	-0.475	-1.54	85.0%	0.395
FBF164	-0.103	-1.85	-0.004	-0.06	0.318	0.61	-0.678	-8.31	85.4%	0.000	-0.065	-1.01	-0.013	-0.22	0.717	1.13	-0.582	-5.12	84.7%	0.000

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
FBF165	-0.013	-0.15	-0.061	-0.70	-0.948	-0.80	-0.269	-1.05	63.9%	0.578	0.031	0.35	-0.066	-0.69	-1.139	-0.89	-0.487	-1.18	65.5%	0.537
FBF166	0.021	0.62	0.000	0.01	-0.124	-0.36	0.087	1.38	92.7%	0.306	0.025	0.55	-0.010	-0.25	0.165	0.33	0.178	1.50	92.2%	0.250
FBF167	0.021	0.41	-0.004	-0.09	-0.277	-0.51	-0.434	-3.41	75.1%	0.007	0.009	0.16	-0.015	-0.33	0.230	0.36	-0.377	-1.68	74.3%	0.282
FBF168	0.033	0.78	-0.100	-3.39	-1.018	-1.88	-0.176	-0.84	75.3%	0.000	-0.022	-0.48	-0.096	-3.13	-0.763	-1.16	-0.168	-0.69	79.6%	0.000
FBF169	-0.005	-0.10	-0.052	-1.23	-0.178	-0.30	-0.022	-0.16	79.6%	0.579	-0.058	-1.35	-0.074	-1.71	0.589	0.96	0.124	0.71	86.6%	0.349
FBF170	-0.122	-2.79	-0.014	-0.30	-0.553	-1.04	-0.272	-1.44	90.1%	0.402	-0.109	-2.71	-0.043	-0.93	-0.029	-0.06	-0.207	-0.68	90.7%	0.668
FBF171	-0.130	-2.18	-0.052	-0.83	-0.372	-0.45	-0.470	-2.37	72.3%	0.058	-0.196	-2.39	-0.027	-0.41	-1.237	-1.09	-0.764	-1.91	71.9%	0.273
FBF172	-0.060	-1.33	0.014	0.37	0.794	1.74	-0.707	-4.55	67.9%	0.000	-0.068	-1.50	0.008	0.21	0.789	1.66	-0.757	-3.80	68.3%	0.000
FBF173	-0.097	-2.63	-0.017	-0.45	0.434	0.76	-0.017	-0.15	91.1%	0.771	-0.066	-2.02	-0.052	-1.57	1.031	2.10	0.036	0.21	92.0%	0.045
FBF174	-0.192	-3.32	-0.191	-2.59	-0.138	-0.17	-0.348	-2.09	80.6%	0.000	-0.188	-2.55	-0.205	-2.14	0.557	0.61	-0.220	-0.83	80.0%	0.017
FBF175	-0.007	-0.31	-0.027	-1.32	0.235	0.71	-0.101	-0.82	97.4%	0.183	0.008	0.32	-0.026	-1.10	0.257	0.62	-0.097	-0.78	97.2%	0.371
FBF176	0.012	0.30	-0.040	-1.15	-0.428	-1.13	0.032	0.22	87.6%	0.583	0.024	0.48	-0.050	-1.33	0.163	0.36	0.512	5.76	88.9%	0.000
FBF177	-0.072	-1.67	-0.030	-0.60	-0.282	-0.48	-0.272	-2.73	92.5%	0.017	-0.041	-0.86	-0.044	-0.83	0.185	0.29	-0.171	-1.08	92.9%	0.281
FBF178	-0.113	-2.29	-0.117	-2.17	0.142	0.18	-0.440	-2.64	80.0%	0.000	-0.162	-2.37	-0.142	-2.16	-0.170	-0.16	-0.707	-3.03	80.0%	0.000
FBF179	-0.163	-4.24	-0.039	-0.92	-0.223	-0.43	-0.323	-1.90	91.1%	0.100	-0.149	-3.83	-0.041	-0.95	0.101	0.18	-0.248	-1.46	91.4%	0.140
FBF180	-0.144	-2.52	-0.059	-1.48	-0.530	-0.69	0.012	0.09	79.8%	0.192	-0.148	-2.41	-0.072	-2.12	0.477	0.70	0.083	0.48	84.8%	0.204
FBF181	-0.249	-1.84	-0.060	-0.97	-0.228	-0.26	0.102	0.45	56.6%	0.607	-0.287	-1.83	-0.031	-0.44	0.439	0.37	-0.037	-0.11	61.7%	0.959
FBF182	-0.066	-1.34	-0.074	-1.57	-0.229	-0.37	-0.434	-2.88	88.6%	0.004	-0.088	-1.41	-0.080	-1.19	-0.013	-0.02	-0.294	-1.92	87.8%	0.095
FBF183	-0.152	-3.53	-0.037	-0.75	-0.419	-0.72	0.387	3.45	86.4%	0.000	-0.127	-2.64	-0.050	-1.02	0.030	0.05	0.486	4.21	88.6%	0.000
FBF184	-0.220	-3.01	-0.175	-2.57	-0.002	0.00	0.426	1.52	75.9%	0.075	-0.165	-2.47	-0.195	-2.16	0.827	0.70	0.587	1.66	77.1%	0.110
FBF185	-0.044	-1.39	-0.035	-1.29	0.057	0.16	-0.207	-2.28	91.1%	0.006	-0.048	-1.59	-0.040	-1.36	0.255	0.58	-0.238	-1.56	90.9%	0.013
FBF186	-0.104	-2.37	-0.102	-2.16	-0.042	-0.08	-0.331	-4.56	89.8%	0.000	-0.117	-2.65	-0.117	-2.31	0.347	0.63	-0.360	-3.10	90.2%	0.000
FBF187	-0.047	-0.64	0.018	0.30	-1.780	-2.23	-0.286	-0.93	41.5%	0.162	-0.034	-0.37	0.022	0.30	-1.345	-1.43	0.321	0.91	42.6%	0.143
FBF188	-0.072	-1.86	-0.048	-1.10	0.353	0.64	-0.012	-0.10	94.1%	0.066	-0.047	-1.19	-0.064	-1.26	1.144	2.12	0.204	3.26	94.9%	0.001
FBF189	-0.087	-2.51	-0.084	-2.00	0.896	1.49	-0.226	-2.93	92.1%	0.000	-0.078	-2.35	-0.103	-2.26	1.252	2.43	-0.212	-2.85	92.7%	0.000
FBF190	-0.132	-3.09	-0.094	-2.38	-0.725	-1.01	-0.444	-3.38	71.5%	0.000	-0.143	-2.94	-0.116	-2.60	-0.301	-0.32	-0.515	-1.84	71.7%	0.002
FBF191	-0.110	-2.03	-0.047	-1.22	-1.662	-2.36	-0.732	-6.26	45.4%	0.000	-0.123	-1.90	-0.052	-1.36	-1.713	-2.15	-0.709	-4.55	46.2%	0.000
FBF192	-0.075	-2.03	0.017	0.40	-0.634	-1.13	-0.242	-1.73	88.6%	0.370	-0.070	-1.69	0.005	0.11	-0.333	-0.53	-0.359	-2.37	89.1%	0.026
FBF193	-0.054	-2.18	-0.040	-2.12	0.203	0.78	-0.094	-0.81	97.2%	0.065	-0.035	-1.21	-0.037	-1.39	0.429	1.02	0.058	0.52	97.2%	0.509
FBF194	-0.080	-2.10	-0.123	-3.20	0.279	0.58	-0.268	-2.58	84.5%	0.000	-0.087	-2.04	-0.137	-2.94	0.700	1.27	-0.316	-2.04	85.1%	0.000
FBF195	-0.063	-1.66	-0.027	-0.61	-0.192	-0.35	-0.606	-4.62	89.8%	0.000	-0.096	-1.64	-0.046	-0.88	-0.315	-0.37	-0.438	-2.20	89.4%	0.059
FBF196	-0.081	-1.94	0.011	0.20	-0.147	-0.23	-0.111	-0.52	82.8%	0.948	-0.107	-1.87	-0.008	-0.15	0.217	0.26	-0.013	-0.04	82.7%	0.987
FBF197	-0.087	-0.94	0.024	0.29	-1.273	-1.15	-0.020	-0.09	56.7%	0.523	-0.171	-2.10	-0.022	-0.29	-0.713	-0.80	0.234	0.81	69.4%	0.533
FBF198	-0.121	-3.18	-0.070	-2.01	-0.504	-1.29	-0.294	-1.97	81.2%	0.012	-0.147	-3.01	-0.095	-1.69	-0.119	-0.20	-0.252	-1.31	81.3%	0.105
FBF199	-0.081	-2.70	-0.051	-1.38	0.316	0.66	-0.120	-1.20	91.3%	0.077	-0.070	-2.36	-0.066	-1.64	0.645	1.34	-0.167	-1.84	91.6%	0.000
FBF200	-0.095	-0.98	0.000	0.00	-1.024	-1.02	-0.028	-0.10	86.2%	0.744	-0.033	-0.32	-0.009	-0.10	-0.287	-0.29	0.162	0.75	87.8%	0.672
FBF201	-0.019	-0.59	-0.041	-1.13	0.619	1.23	-0.112	-1.46	90.2%	0.032	0.005	0.15	-0.066	-1.61	1.144	2.31	-0.127	-1.35	90.8%	0.000
FBF202	-0.020	-0.56	-0.020	-0.43	-0.131	-0.23	-0.415	-3.97	93.4%	0.000	0.014	0.38	-0.046	-0.93	0.514	0.99	-0.248	-2.61	94.1%	0.000
FBF203	-0.079	-1.74	-0.059	-1.37	0.356	0.59	-0.413	-2.97	83.1%	0.003	-0.042	-0.83	-0.065	-1.48	0.784	1.30	-0.593	-2.83	84.2%	0.000
FBF204	-0.083	-1.78	-0.055	-1.09	-0.035	-0.06	-0.433	-2.44	92.2%	0.002	-0.034	-0.61	-0.071	-1.32	0.564	0.92	-0.431	-3.64	92.9%	0.000
FBF205	-0.026	-0.85	-0.011	-0.37	0.106	0.29	-0.230	-4.29	91.4%	0.000	-0.024	-0.80	-0.020	-0.66	0.467	1.27	-0.207	-1.79	91.8%	0.001
FBF206	-0.219	-3.60	-0.130	-1.86	-0.242	-0.31	0.198	1.18	89.2%	0.308	-0.167	-3.00	-0.116	-1.71	0.201	0.26	0.312	1.10	90.7%	0.298
FBF207	-0.129	-3.24	-0.089	-2.02	-0.489	-0.93	0.149	1.70	90.7%	0.181	-0.127	-3.58	-0.107	-2.22	0.281	0.49	0.341	2.37	93.2%	0.042
FBF208	-0.054	-2.18	-0.019	-0.70	-0.046	-0.11	-0.456	-4.57	84.5%	0.000	-0.090	-2.06	-0.032	-0.91	-0.045	-0.06	-0.644	-5.41	85.6%	0.000

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
FBF209	-0.091	-2.80	-0.035	-0.84	-0.850	-1.77	-0.198	-2.43	92.4%	0.034	-0.078	-2.03	-0.053	-1.13	-0.329	-0.67	0.059	0.49	92.3%	0.640
FBF210	-0.128	-2.00	-0.020	-0.28	0.245	0.33	0.371	1.73	87.5%	0.389	-0.046	-0.77	-0.074	-1.12	1.202	1.82	0.464	2.57	89.8%	0.049
FBF211	-0.137	-4.03	-0.029	-0.75	-0.102	-0.18	-0.372	-3.36	75.4%	0.002	-0.149	-3.19	-0.049	-1.10	-0.295	-0.42	-0.593	-3.02	75.7%	0.013
FBF212	-0.105	-2.32	0.017	0.44	0.241	0.40	-0.324	-2.28	72.7%	0.013	-0.149	-3.18	-0.003	-0.08	0.195	0.46	-0.562	-3.82	76.1%	0.000
FBF213	-0.050	-1.17	-0.035	-0.64	-0.077	-0.13	-0.121	-1.35	93.3%	0.279	-0.015	-0.34	-0.052	-0.91	0.384	0.65	-0.012	-0.08	93.8%	0.400
FBF214	-0.076	-1.90	-0.082	-1.92	-0.565	-0.95	-0.083	-0.51	91.1%	0.170	-0.023	-0.56	-0.096	-2.04	-0.206	-0.30	0.018	0.11	91.9%	0.171
FBF215	-0.053	-1.51	-0.062	-1.51	-0.177	-0.34	-0.059	-0.52	91.3%	0.251	-0.036	-1.06	-0.072	-1.74	0.194	0.35	-0.143	-1.13	92.2%	0.004
FBF216	-0.057	-1.81	0.016	0.56	0.397	0.91	-0.449	-4.93	76.5%	0.000	-0.089	-2.60	0.014	0.47	0.191	0.46	-0.752	-9.35	77.5%	0.000
FBF217	-0.071	-1.28	-0.119	-2.48	-1.003	-1.63	0.082	0.46	87.2%	0.077	-0.107	-1.58	-0.136	-2.43	-0.495	-0.67	0.139	0.54	88.3%	0.110
FBF218	-0.028	-0.75	-0.066	-1.57	0.344	0.56	-0.087	-0.68	86.7%	0.091	0.011	0.27	-0.080	-1.64	0.841	1.40	-0.070	-0.50	87.4%	0.012
FBF219	-0.059	-1.34	-0.055	-1.12	-0.204	-0.32	-0.150	-1.14	79.8%	0.256	-0.075	-1.67	-0.047	-0.87	0.023	0.04	-0.194	-1.58	80.0%	0.114
FBF220	-0.108	-4.39	-0.031	-1.05	-0.057	-0.14	-0.250	-3.87	91.3%	0.000	-0.087	-3.18	-0.053	-1.49	0.488	1.02	-0.207	-1.79	92.3%	0.000
FBF221	-0.076	-2.67	-0.039	-1.31	-0.024	-0.06	-0.274	-3.80	91.3%	0.000	-0.089	-2.87	-0.055	-1.69	0.364	0.78	-0.498	-5.10	92.3%	0.000
FBF222	-0.046	-1.06	-0.013	-0.27	0.121	0.21	-0.520	-4.77	93.5%	0.000	-0.018	-0.42	-0.032	-0.61	0.679	1.22	-0.400	-3.27	94.0%	0.000
FBF223	-0.106	-2.18	-0.065	-1.09	-0.004	-0.01	0.051	0.43	88.9%	0.570	-0.048	-1.02	-0.084	-1.40	0.465	0.75	-0.002	-0.01	90.2%	0.235
FBF224	-0.093	-2.70	-0.030	-0.92	0.416	0.83	-0.446	-5.09	75.5%	0.000	-0.122	-2.87	-0.028	-0.89	0.229	0.37	-0.593	-4.83	75.3%	0.000
FBF225	-0.016	-0.48	-0.087	-2.56	-0.111	-0.25	-0.090	-1.37	90.0%	0.002	-0.030	-0.97	-0.105	-2.80	0.398	0.93	0.059	0.54	92.4%	0.030
FBF226	-0.115	-3.23	-0.060	-1.47	-0.613	-1.17	-0.223	-3.98	91.1%	0.000	-0.108	-3.00	-0.079	-1.72	0.055	0.10	-0.111	-0.79	91.8%	0.084
FBF227	-0.034	-0.79	-0.081	-1.62	0.461	0.90	0.106	0.73	87.2%	0.182	-0.036	-0.85	-0.107	-2.13	0.714	1.64	-0.016	-0.10	87.3%	0.019
FBF228	-0.153	-3.02	-0.124	-2.35	-0.568	-0.99	-0.304	-1.90	76.7%	0.020	-0.178	-2.27	-0.150	-2.45	-0.480	-0.58	-0.142	-0.99	78.7%	0.041
FBF229	-0.025	-0.27	0.019	0.26	-3.088	-3.14	-0.097	-0.32	34.4%	0.000	-0.002	-0.03	0.010	0.19	-2.354	-3.39	0.366	1.92	48.5%	0.000
FBF230	-0.099	-1.41	-0.039	-0.85	-0.327	-0.61	-0.808	-3.04	75.1%	0.015	-0.085	-0.99	-0.046	-0.92	-0.241	-0.30	-0.920	-3.12	72.7%	0.009
FBF231	-0.117	-2.42	-0.109	-2.54	0.408	0.93	0.370	3.59	94.7%	0.004	-0.107	-2.15	-0.099	-2.54	0.453	0.74	0.444	3.64	94.6%	0.001
FBF232	-0.044	-0.82	-0.062	-1.47	-0.726	-1.23	0.314	2.11	75.2%	0.027	-0.105	-2.22	-0.073	-1.72	-0.085	-0.14	0.260	1.13	84.8%	0.263
FBF233	-0.084	-2.69	-0.043	-1.04	0.783	1.15	-0.100	-1.27	88.7%	0.260	-0.065	-1.92	-0.076	-1.87	1.364	1.86	-0.094	-0.63	89.3%	0.075
FBF234	-0.093	-2.82	-0.027	-0.83	0.396	1.17	0.014	0.21	92.1%	0.455	-0.101	-2.63	-0.038	-1.02	0.691	1.66	-0.031	-0.27	92.2%	0.049
FBF235	-0.023	-0.80	-0.032	-0.98	0.246	0.57	0.109	1.70	92.0%	0.301	-0.024	-0.81	-0.048	-1.37	0.508	1.34	0.017	0.19	92.7%	0.099
FBF236	-0.157	-2.49	-0.102	-2.52	-0.298	-0.42	-0.003	-0.01	72.8%	0.048	-0.175	-2.36	-0.115	-2.74	0.823	1.03	-0.179	-0.76	78.0%	0.033
FBF237	-0.090	-2.16	-0.103	-2.35	-0.216	-0.35	-0.190	-1.25	88.0%	0.015	-0.038	-0.78	-0.111	-1.76	0.182	0.24	-0.262	-1.38	88.1%	0.025
FBF238	-0.011	-0.17	0.057	1.12	-0.595	-0.63	-0.046	-0.23	63.0%	0.684	0.028	0.41	0.037	0.74	-0.047	-0.05	-0.052	-0.22	61.2%	0.901
FBF239	-0.061	-1.03	-0.085	-1.68	-1.051	-1.92	-0.372	-2.36	48.5%	0.028	-0.096	-1.75	-0.097	-1.89	-0.363	-0.61	-0.296	-1.40	52.6%	0.100
FBF240	-0.130	-4.05	-0.046	-1.31	0.258	0.50	-0.368	-3.03	91.2%	0.000	-0.095	-2.79	-0.069	-1.80	0.548	1.02	-0.427	-3.02	91.8%	0.000
FBF241	-0.111	-2.83	-0.034	-0.74	-0.439	-0.72	-0.171	-2.08	91.1%	0.078	-0.107	-2.63	-0.050	-0.99	-0.208	-0.39	-0.333	-2.34	91.7%	0.037
FBF242	0.045	0.38	0.011	0.11	-1.122	-0.82	-0.973	-1.72	57.3%	0.352	-0.059	-0.42	0.032	0.24	-1.521	-0.81	-1.196	-1.29	56.5%	0.620
FBF243	-0.054	-1.05	-0.123	-2.75	0.279	0.51	-0.085	-0.51	68.6%	0.006	-0.030	-0.52	-0.144	-2.77	0.930	1.66	0.307	1.78	68.1%	0.004
FBF244	-0.140	-3.52	0.023	0.53	-1.203	-2.05	-0.425	-3.70	46.5%	0.000	-0.209	-3.73	0.053	1.02	-1.870	-1.83	-0.721	-4.92	52.6%	0.000
FBF245	-0.102	-3.50	-0.072	-2.82	-0.079	-0.22	-0.054	-0.44	83.7%	0.035	-0.149	-3.81	-0.086	-2.52	0.184	0.35	-0.182	-1.68	85.7%	0.000
FBF246	-0.030	-0.79	-0.043	-1.20	-0.588	-1.65	-0.250	-3.50	90.4%	0.000	-0.045	-1.02	-0.050	-1.32	-0.388	-0.85	-0.247	-2.00	89.7%	0.009
FBF247	-0.074	-1.40	-0.135	-2.69	-0.045	-0.06	-0.174	-0.92	68.4%	0.006	-0.109	-1.78	-0.152	-2.48	0.318	0.37	-0.128	-0.62	67.0%	0.049
FBF248	-0.106	-3.56	-0.069	-2.36	-0.339	-0.91	-0.094	-0.87	93.9%	0.031	-0.131	-4.00	-0.109	-3.17	0.258	0.57	0.047	0.39	95.7%	0.010
FBF249	-0.081	-3.09	-0.020	-0.60	0.105	0.25	0.037	0.30	95.5%	0.788	-0.065	-2.69	-0.044	-1.21	0.616	1.58	0.096	0.77	95.9%	0.068
FBF250	-0.129	-3.59	-0.078	-1.61	-0.335	-0.58	-0.143	-1.40	93.8%	0.063	-0.098	-2.83	-0.101	-1.91	0.075	0.14	-0.088	-0.68	94.0%	0.073
FBF251	-0.090	-1.51	0.024	0.41	0.135	0.14	0.434	2.84	85.6%	0.001	-0.043	-0.68	0.030	0.47	0.417	0.47	0.841	4.08	86.0%	0.000
FBF252	0.010	0.12	0.061	1.02	0.133	0.14	0.602	3.34	72.5%	0.000	-0.009	-0.10	0.061	1.05	0.223	0.19	0.646	2.36	74.4%	0.008

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
FBF253	-0.062	-1.46	-0.042	-0.85	-0.446	-0.73	-0.365	-2.50	93.9%	0.014	-0.024	-0.57	-0.057	-1.16	-0.054	-0.10	-0.274	-2.10	94.5%	0.013
FBF254	-0.116	-2.53	0.009	0.20	0.014	0.02	-0.127	-1.11	83.6%	0.354	-0.076	-1.51	-0.027	-0.46	0.341	0.41	-0.136	-0.64	83.0%	0.333
FBF255	-0.099	-2.91	-0.047	-1.11	-0.539	-1.07	0.009	0.11	95.4%	0.677	-0.067	-1.82	-0.072	-1.61	0.141	0.29	0.145	1.98	96.1%	0.126
FBF256	-0.064	-1.61	0.081	1.86	0.546	1.13	-0.337	-3.30	88.7%	0.000	-0.020	-0.39	0.065	1.74	1.120	1.79	-0.253	-2.17	89.5%	0.000
FBF257	0.033	0.78	-0.024	-0.80	-0.846	-1.78	-0.233	-1.72	86.2%	0.082	-0.005	-0.11	-0.038	-1.27	-0.436	-1.01	-0.147	-1.45	89.4%	0.255
FBF258	0.028	0.37	-0.026	-0.32	-0.740	-0.76	0.002	0.01	65.5%	0.883	0.046	0.50	-0.075	-0.84	0.336	0.32	0.145	0.57	67.9%	0.716
FBF259	-0.123	-1.12	0.112	0.88	-1.885	-1.23	-0.030	-0.08	16.0%	0.673	-0.115	-1.13	0.164	1.62	-1.510	-0.98	0.237	0.76	37.1%	0.259
FBF260	-0.017	-0.22	-0.107	-1.33	1.196	0.96	0.175	0.68	35.7%	0.490	-0.004	-0.05	-0.139	-1.38	1.572	1.04	-0.018	-0.04	34.5%	0.391
FBF261	-0.095	-0.77	-0.049	-0.31	-0.533	-0.39	0.352	1.19	59.7%	0.551	-0.072	-0.66	-0.110	-0.87	-0.359	-0.25	0.532	1.01	64.2%	0.600
FBF262	-0.028	-0.17	-0.107	-0.69	-4.605	-1.59	-0.153	-0.40	37.5%	0.468	-0.020	-0.12	-0.119	-0.61	-4.368	-1.53	-0.678	-1.04	35.5%	0.372
FBF263	-0.145	-1.62	-0.114	-0.92	-0.889	-0.62	-0.003	-0.01	76.7%	0.831	-0.098	-0.98	-0.112	-1.01	-0.829	-0.50	-0.008	-0.03	76.7%	0.780
FBF264	-0.049	-1.03	-0.106	-1.73	0.198	0.24	-0.027	-0.11	75.5%	0.166	-0.019	-0.29	-0.071	-1.33	0.487	0.50	0.100	0.29	76.2%	0.466
FBF265	-0.045	-0.36	-0.175	-1.50	-3.283	-2.00	-0.186	-0.57	63.9%	0.141	-0.204	-1.35	-0.229	-1.94	-3.060	-1.80	-0.886	-2.02	73.3%	0.045
FBF266	-0.074	-0.92	-0.158	-1.94	-1.120	-1.08	0.048	0.28	70.5%	0.254	-0.047	-0.55	-0.206	-2.24	-0.917	-1.00	0.023	0.12	72.5%	0.167
UK																				
UKBF1	-0.030	-0.55	-0.079	-1.58	1.188	1.42	-0.429	-1.90	85.9%	0.095	-0.055	-0.77	-0.113	-2.16	1.543	1.38	-0.654	-3.05	85.2%	0.002
UKBF2	-0.187	-3.65	-0.118	-2.02	1.588	1.60	-0.034	-0.16	81.6%	0.159	-0.172	-3.17	-0.143	-2.08	2.318	2.08	0.502	2.18	82.3%	0.004
UKBF3	-0.225	-3.06	-0.122	-1.28	0.962	0.77	0.051	0.54	52.2%	0.634	-0.279	-3.73	-0.132	-1.23	0.748	0.57	0.001	0.01	50.4%	0.672
UKBF4	-0.143	-2.93	-0.071	-1.14	0.608	0.67	-0.256	-1.62	87.8%	0.259	-0.144	-2.01	-0.116	-1.64	0.762	0.71	-0.343	-1.69	87.6%	0.067
UKBF5	0.020	0.17	-0.072	-0.46	-2.460	-1.14	-1.069	-3.49	71.3%	0.002	-0.034	-0.23	-0.204	-1.12	-1.069	-0.49	-0.542	-1.12	75.5%	0.449
UKBF6	0.074	0.60	-0.065	-0.42	-2.822	-1.23	-1.103	-3.58	69.5%	0.002	-0.010	-0.06	-0.227	-1.22	-1.343	-0.56	-0.614	-1.31	74.4%	0.307
UKBF7	-0.159	-4.56	-0.043	-1.02	0.644	0.86	-0.305	-1.62	94.2%	0.319	-0.129	-2.65	-0.072	-1.81	1.179	1.46	-0.331	-2.64	94.4%	0.000
UKBF8	-0.151	-2.69	-0.038	-0.75	0.935	0.88	-0.314	-1.60	90.6%	0.392	-0.158	-2.15	-0.058	-1.11	2.032	1.40	-0.350	-2.73	90.8%	0.000
UKBF9	-0.360	-4.26	0.011	0.16	2.152	1.60	0.093	0.48	82.1%	0.356	-0.345	-3.72	-0.022	-0.31	1.644	0.94	-0.087	-0.39	81.2%	0.681
UKBF10	-0.295	-3.34	0.030	0.37	2.075	1.39	0.048	0.25	79.7%	0.514	-0.286	-3.12	-0.023	-0.28	1.464	0.76	-0.075	-0.32	78.7%	0.825
UKBF11	-0.180	-2.99	-0.006	-0.07	0.699	0.71	-0.276	-1.70	90.0%	0.352	-0.164	-2.10	-0.014	-0.16	0.963	0.85	-0.233	-1.11	89.6%	0.282
UKBF12	0.005	0.03	-0.078	-0.51	-0.054	-0.02	-0.994	-2.31	49.2%	0.122	-0.088	-0.53	-0.027	-0.18	-2.100	-0.70	-1.294	-2.54	53.5%	0.081
UKBF13	-0.139	-2.26	-0.157	-2.46	1.637	1.47	-0.331	-1.73	87.1%	0.009	-0.161	-2.23	-0.226	-3.65	2.053	1.57	-0.390	-1.72	86.8%	0.001
UKBF14	-0.180	-2.77	-0.041	-0.54	0.381	0.35	-0.087	-0.52	85.3%	0.877	-0.256	-2.90	-0.107	-1.26	-0.347	-0.25	-0.325	-1.47	86.0%	0.368
UKBF15	-0.063	-1.03	0.016	0.27	-0.149	-0.14	-0.210	-1.20	91.2%	0.624	-0.039	-0.53	-0.036	-0.59	0.569	0.40	-0.395	-1.83	91.6%	0.089
UKBF16	-0.162	-2.75	0.026	0.44	-0.004	0.00	-0.115	-0.68	92.2%	0.835	-0.130	-1.86	-0.018	-0.29	0.603	0.43	-0.285	-1.35	92.6%	0.279
UKBF17	-0.215	-4.92	-0.047	-0.80	1.063	1.29	0.165	0.79	90.5%	0.454	-0.179	-3.79	-0.083	-1.20	1.591	1.35	0.222	1.06	90.7%	0.388
UKBF18	-0.156	-2.50	-0.064	-0.93	1.048	0.93	0.110	0.53	82.1%	0.644	-0.132	-1.82	-0.100	-1.30	1.826	1.28	0.120	0.59	81.7%	0.477
UKBF19	-0.039	-0.37	0.031	0.31	-0.326	-0.23	-0.666	-2.09	85.6%	0.212	0.048	0.36	-0.002	-0.02	-0.651	-0.33	-0.448	-1.13	85.1%	0.722
UKBF20	-0.166	-3.10	0.001	0.01	0.334	0.38	-0.216	-2.08	93.4%	0.183	-0.168	-2.25	-0.036	-0.66	-0.033	-0.03	-0.263	-1.94	93.5%	0.157
UKBF21	-0.089	-1.31	-0.031	-0.41	0.810	0.61	-0.294	-2.75	86.3%	0.041	-0.086	-1.12	-0.072	-1.17	-0.393	-0.33	-0.399	-3.19	87.9%	0.005
UKBF22	-0.214	-5.27	-0.102	-1.99	0.576	0.78	-0.022	-0.13	87.8%	0.234	-0.227	-3.79	-0.141	-2.31	0.763	0.87	-0.216	-1.90	87.7%	0.033
UKBF23	-0.063	-0.46	-0.146	-1.22	0.268	0.11	-0.972	-2.57	53.8%	0.041	-0.160	-1.03	-0.120	-1.04	-1.740	-0.63	-1.455	-3.26	58.1%	0.013
UKBF24	-0.292	-4.11	-0.107	-1.38	1.359	1.19	-0.076	-0.46	83.9%	0.419	-0.277	-3.07	-0.164	-1.91	1.319	0.78	-0.231	-0.89	82.9%	0.230
UKBF25	-0.252	-3.87	-0.051	-0.93	0.776	0.77	0.156	0.87	79.2%	0.575	-0.265	-3.37	-0.087	-1.50	1.080	0.87	-0.079	-0.31	78.0%	0.502
UKBF26	-0.223	-4.03	-0.044	-0.70	0.323	0.25	0.150	0.99	57.8%	0.635	-0.270	-3.56	-0.067	-0.91	0.167	0.11	0.072	0.25	55.5%	0.805
UKBF27	-0.156	-1.80	0.010	0.13	-0.544	-0.38	0.155	1.06	65.0%	0.732	-0.208	-1.56	-0.019	-0.22	-0.984	-0.47	-0.146	-1.07	61.6%	0.730
UKBF28	-0.006	-0.11	0.026	0.39	-1.175	-0.90	-0.435	-3.18	85.3%	0.012	-0.033	-0.44	0.000	0.00	-1.106	-0.63	-0.466	-2.69	84.8%	0.050
UKBF29	0.000	0.00	-0.141	-1.26	-2.601	-1.33	-0.553	-3.18	75.2%	0.001	0.041	0.46	-0.156	-1.33	-2.334	-0.93	-0.955	-4.01	73.8%	0.000

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
UKBF30	-0.046	-0.56	-0.023	-0.26	0.542	0.29	-0.306	-1.87	82.5%	0.241	0.009	0.10	-0.032	-0.36	0.804	0.38	-0.330	-1.47	81.5%	0.319
UKBF31	-0.210	-1.85	-0.205	-1.72	-8.680	-3.88	-0.763	-4.67	68.1%	0.000	-0.384	-2.73	-0.272	-2.12	-9.207	-3.25	-0.836	-3.91	69.0%	0.000
UKBF32	0.067	0.42	-0.174	-0.83	-0.344	-0.09	-0.312	-0.37	31.8%	0.816	-0.337	-2.17	-0.052	-0.33	-6.840	-2.11	0.697	0.94	71.6%	0.016
UKBF33	0.112	0.51	0.125	0.48	-11.237	-2.45	-0.018	-0.02	15.7%	0.088	-0.342	-1.59	0.175	1.18	-17.852	-4.73	0.421	1.03	63.0%	0.000
UKBF34	0.174	0.79	0.102	0.40	-11.428	-2.57	-0.067	-0.07	16.9%	0.066	-0.272	-1.37	0.150	1.01	-17.719	-5.02	0.342	0.84	63.9%	0.000
UKBF35	-0.009	-0.06	-0.034	-0.19	-3.038	-1.16	0.042	0.16	35.8%	0.717	0.037	0.21	-0.064	-0.32	-2.697	-0.84	-0.897	-2.66	37.9%	0.036
UKBF36	-0.157	-1.88	-0.080	-0.90	-0.080	-0.05	-0.196	-1.27	83.2%	0.514	-0.167	-1.70	-0.091	-0.95	0.018	0.01	-0.381	-1.70	81.8%	0.398
UKBF37	-0.069	-0.91	-0.004	-0.06	-0.887	-0.72	-0.174	-1.11	84.4%	0.568	-0.076	-0.74	-0.016	-0.24	-1.231	-0.77	-0.296	-1.64	84.2%	0.399
UKBF38	-0.043	-0.71	0.023	0.32	-0.661	-0.46	-0.072	-0.58	77.8%	0.919	-0.053	-0.67	0.015	0.20	-1.292	-0.75	-0.295	-1.61	75.8%	0.458
UKBF39	0.017	0.08	0.057	0.24	-8.126	-2.20	0.105	0.14	24.4%	0.175	-0.240	-0.90	0.207	1.08	-12.082	-2.57	0.749	1.15	51.2%	0.001
UKBF40	0.253	1.42	-0.039	-0.22	-12.532	-4.02	0.505	1.65	35.0%	0.000	-0.058	-0.25	-0.086	-0.59	-16.637	-4.09	0.369	0.76	51.4%	0.000
UKBF41	0.084	0.58	-0.312	-1.86	-11.648	-3.92	-1.234	-2.93	38.6%	0.000	-0.111	-0.56	-0.499	-3.16	-11.062	-2.87	-1.870	-2.67	38.9%	0.000
UKBF42	0.186	0.88	-0.393	-1.96	-4.140	-0.90	-1.140	-2.21	31.2%	0.000	0.207	0.72	-0.405	-1.98	-2.567	-0.43	-0.766	-1.38	26.7%	0.121
UKBF43	0.054	0.46	0.004	0.03	-2.810	-1.23	0.356	0.92	28.9%	0.471	-0.053	-0.32	0.034	0.25	-5.499	-1.91	-0.439	-0.85	34.5%	0.230
UKBF44	0.217	1.77	-0.204	-1.55	-5.859	-2.51	0.072	0.33	41.3%	0.018	0.224	1.36	-0.204	-1.30	-6.229	-1.90	0.302	1.05	36.4%	0.009
UKBF45	0.295	0.81	-0.555	-1.42	-0.088	-0.01	1.390	1.43	8.4%	0.099	-0.106	-0.29	-0.180	-0.71	-10.779	-1.88	1.954	2.29	58.1%	0.001
Spain																				
SBF1	-0.239	-3.61	-0.077	-1.22	0.303	0.35	0.219	1.09	78.1%	0.525	-0.229	-3.55	-0.097	-1.20	0.205	0.19	0.142	0.58	77.3%	0.603
SBF2	-0.186	-3.28	0.048	0.49	1.103	1.68	0.268	1.29	49.5%	0.104	-0.196	-2.88	0.057	0.64	0.544	0.59	0.467	1.75	46.3%	0.119
SBF3	-0.145	-4.91	-0.066	-1.69	-0.314	-0.95	-0.021	-0.30	90.0%	0.073	-0.159	-5.35	-0.059	-1.44	-0.271	-1.07	-0.123	-1.35	89.9%	0.121
SBF4	-0.168	-6.77	-0.070	-2.77	0.379	1.63	0.125	1.77	91.4%	0.033	-0.178	-7.03	-0.063	-2.18	0.308	1.00	0.038	0.42	90.8%	0.179
SBF5	-0.172	-5.24	-0.092	-2.52	0.296	0.78	-0.156	-2.00	82.8%	0.001	-0.180	-5.07	-0.095	-2.41	0.502	0.93	-0.256	-2.72	82.7%	0.000
SBF6	-0.100	-3.43	-0.031	-0.94	-0.189	-0.54	-0.045	-0.83	80.1%	0.366	-0.116	-4.05	-0.035	-1.00	0.118	0.38	-0.032	-0.50	83.2%	0.399
SBF7	-0.161	-3.19	0.018	0.30	-0.587	-0.95	-0.062	-0.59	79.4%	0.807	-0.199	-3.31	0.014	0.20	-0.385	-0.50	-0.055	-0.55	82.5%	0.952
SBF8	-0.136	-3.63	-0.002	-0.07	-0.320	-0.61	-0.170	-1.37	69.0%	0.495	-0.148	-3.87	-0.010	-0.23	-0.252	-0.42	-0.354	-2.69	66.6%	0.000
SBF9	-0.159	-3.37	-0.067	-1.18	-0.680	-1.39	0.027	0.19	87.6%	0.098	-0.174	-3.37	-0.071	-1.28	-0.981	-2.09	-0.053	-0.34	87.7%	0.042
SBF10	-0.169	-5.55	-0.047	-1.25	0.209	0.82	0.182	1.90	89.2%	0.258	-0.158	-4.82	-0.062	-1.49	0.415	1.31	0.145	2.90	88.9%	0.024
SBF11	-0.157	-5.15	-0.089	-2.75	0.058	0.21	-0.022	-0.28	82.6%	0.028	-0.177	-5.16	-0.083	-2.22	0.163	0.48	0.090	0.65	83.1%	0.160
SBF12	-0.196	-6.14	-0.119	-3.33	0.287	1.00	0.033	0.32	85.2%	0.010	-0.195	-6.35	-0.125	-3.19	0.545	1.82	0.040	0.33	85.7%	0.005
SBF13	-0.175	-4.85	-0.128	-3.15	-0.139	-0.37	-0.089	-1.37	82.8%	0.000	-0.201	-4.82	-0.117	-2.90	-0.121	-0.36	-0.043	-0.51	83.6%	0.012
SBF14	-0.197	-4.57	-0.103	-2.49	-0.758	-1.77	0.299	3.03	70.2%	0.000	-0.232	-4.68	-0.081	-1.88	-1.221	-2.63	0.137	1.69	71.4%	0.000
SBF15	-0.153	-7.60	-0.010	-0.41	-0.203	-0.88	-0.059	-1.76	78.5%	0.145	-0.173	-7.61	-0.008	-0.28	-0.176	-0.81	-0.094	-2.77	81.4%	0.021
SBF16	-0.116	-2.24	-0.089	-1.61	-1.438	-2.76	-0.187	-2.14	68.3%	0.000	-0.122	-2.13	-0.094	-1.51	-1.236	-1.94	-0.278	-2.33	66.0%	0.001
SBF17	-0.152	-4.16	-0.073	-1.89	0.018	0.04	0.035	0.51	83.8%	0.140	-0.170	-4.74	-0.062	-1.67	0.026	0.07	-0.070	-0.95	84.1%	0.120
SBF18	-0.161	-6.25	-0.057	-1.96	-0.336	-1.06	-0.134	-2.90	89.2%	0.000	-0.185	-7.99	-0.049	-1.88	-0.517	-2.36	-0.281	-5.80	89.8%	0.000
SBF19	-0.140	-4.34	-0.049	-1.79	-0.684	-1.80	-0.044	-0.50	84.2%	0.002	-0.167	-5.67	-0.036	-1.22	-0.985	-3.02	-0.132	-1.20	84.8%	0.001
SBF20	-0.193	-4.33	-0.139	-2.19	-0.699	-1.54	0.111	1.30	69.0%	0.016	-0.238	-4.32	-0.109	-2.13	-1.165	-2.30	0.037	0.26	70.7%	0.025
SBF21	-0.210	-7.19	-0.070	-2.29	-0.442	-1.03	0.161	1.22	82.2%	0.000	-0.236	-9.14	-0.051	-1.98	-0.735	-2.59	0.097	0.70	83.3%	0.000
SBF22	-0.158	-3.66	-0.126	-2.63	0.530	1.66	0.100	1.46	74.1%	0.067	-0.161	-3.11	-0.124	-2.32	0.680	1.25	-0.101	-1.05	72.5%	0.000
SBF23	-0.188	-5.58	-0.085	-3.32	-0.098	-0.35	0.104	1.84	85.9%	0.002	-0.203	-5.29	-0.086	-3.00	0.005	0.02	0.016	0.25	86.0%	0.023
SBF24	-0.160	-6.82	-0.044	-1.14	-0.174	-0.72	-0.177	-3.31	88.6%	0.000	-0.170	-7.09	-0.044	-1.06	-0.171	-0.65	-0.195	-3.60	88.0%	0.000
SBF25	-0.131	-6.03	-0.022	-0.78	-0.036	-0.15	-0.267	-3.71	94.1%	0.000	-0.149	-7.84	-0.008	-0.30	-0.187	-0.76	-0.348	-2.99	94.4%	0.018
SBF26	-0.278	-13.29	-0.031	-1.79	-0.038	-0.25	0.049	0.87	93.1%	0.344	-0.284	-13.16	-0.029	-1.25	-0.040	-0.25	0.038	0.52	92.8%	0.613
SBF27	-0.185	-3.64	0.023	0.39	-0.586	-0.79	-0.246	-2.36	82.0%	0.075	-0.225	-4.02	0.027	0.42	-0.566	-0.84	-0.266	-1.55	83.4%	0.482

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
SBF28	-0.228	-5.24	-0.242	-3.73	0.081	0.21	0.167	1.30	86.7%	0.002	-0.228	-4.69	-0.250	-3.58	-0.009	-0.02	0.034	0.34	85.7%	0.004
SBF29	-0.146	-5.09	-0.052	-1.21	-0.177	-0.46	-0.060	-0.78	78.3%	0.123	-0.162	-5.31	-0.042	-1.00	-0.159	-0.47	-0.169	-2.54	77.9%	0.014
SBF30	-0.227	-6.63	-0.022	-0.57	0.063	0.14	0.037	0.42	21.2%	0.935	-0.229	-7.12	-0.030	-0.80	-0.057	-0.13	0.232	2.91	25.7%	0.019
SBF31	-0.163	-2.02	-0.012	-0.23	0.227	0.31	-0.711	-4.16	24.1%	0.000	-0.185	-2.49	-0.020	-0.30	0.407	0.47	-1.259	-9.09	26.2%	0.000
SBF32	-0.279	-6.05	-0.102	-2.17	0.322	0.73	0.181	2.29	86.7%	0.117	-0.281	-6.26	-0.115	-2.39	0.339	0.68	0.173	2.18	86.9%	0.000
SBF33	-0.175	-4.89	-0.095	-2.60	0.510	1.75	0.056	0.70	73.2%	0.068	-0.178	-4.63	-0.098	-2.52	0.521	1.42	0.146	1.56	71.1%	0.058
SBF34	-0.007	-0.21	-0.027	-0.63	-0.514	-1.68	-0.140	-2.58	82.7%	0.000	-0.028	-0.85	-0.017	-0.39	-0.581	-2.02	-0.205	-3.23	82.3%	0.000
SBF35	-0.176	-4.77	-0.101	-2.31	-0.529	-1.03	-0.048	-0.82	73.7%	0.000	-0.214	-5.49	-0.084	-2.12	-0.843	-2.17	0.019	0.18	75.1%	0.001
SBF36	-0.097	-2.44	0.024	0.62	-0.886	-1.89	-0.131	-1.72	65.7%	0.139	-0.127	-2.52	0.039	0.94	-1.456	-2.49	0.053	0.35	66.2%	0.040
SBF37	-0.200	-5.15	-0.069	-1.12	0.304	1.39	0.074	0.84	68.1%	0.348	-0.203	-5.17	-0.073	-0.96	0.279	0.92	0.089	1.13	66.2%	0.535
SBF38	-0.115	-3.09	-0.208	-3.16	0.887	1.16	0.020	0.11	80.2%	0.003	-0.095	-2.76	-0.216	-3.73	1.365	2.09	0.067	0.30	80.0%	0.002
SBF39	-0.159	-4.34	-0.071	-2.00	-0.246	-0.59	0.083	0.93	83.1%	0.069	-0.176	-4.23	-0.052	-1.18	-0.343	-0.68	0.038	0.42	82.8%	0.283
SBF40	-0.090	-2.51	-0.060	-1.06	-0.497	-1.66	-0.164	-1.37	81.7%	0.068	-0.096	-2.44	-0.061	-0.94	-0.569	-1.53	-0.336	-1.89	80.2%	0.084
SBF41	-0.258	-6.45	-0.042	-0.94	0.361	0.88	-0.042	-0.41	73.6%	0.564	-0.243	-5.50	-0.057	-1.23	0.534	1.24	0.111	0.89	73.8%	0.429
SBF42	-0.155	-6.17	-0.041	-1.53	-0.297	-0.96	-0.046	-0.99	66.7%	0.100	-0.162	-5.41	-0.044	-1.55	-0.141	-0.44	-0.049	-0.80	67.2%	0.185
SBF43	-0.066	-1.43	-0.071	-1.68	0.165	0.25	-0.120	-1.05	75.8%	0.106	-0.129	-3.05	-0.042	-1.02	-0.310	-0.55	-0.186	-1.32	84.0%	0.099
SBF44	-0.198	-6.30	0.007	0.28	-0.647	-1.96	-0.020	-0.10	78.2%	0.213	-0.200	-6.20	0.023	0.77	-0.501	-1.33	-0.159	-0.77	79.0%	0.584
SBF45	-0.210	-4.96	-0.200	-3.57	0.167	0.51	0.092	1.00	87.6%	0.001	-0.211	-4.37	-0.208	-3.31	0.160	0.31	-0.012	-0.17	86.4%	0.005
SBF46	-0.212	-6.49	-0.057	-2.06	-0.190	-0.68	-0.041	-0.34	78.2%	0.121	-0.227	-6.83	-0.053	-1.71	-0.155	-0.47	-0.041	-0.39	78.4%	0.228
SBF47	-0.097	-1.63	-0.011	-0.16	0.205	0.20	-0.242	-2.24	67.6%	0.090	-0.179	-4.80	0.010	0.26	-0.414	-0.86	-0.331	-3.04	84.9%	0.002
SBF48	-0.103	-4.10	-0.036	-1.62	-0.150	-1.00	-0.009	-0.13	95.7%	0.268	-0.106	-4.05	-0.041	-1.33	0.145	0.80	0.058	1.84	96.4%	0.245
SBF49	-0.161	-6.17	-0.053	-1.85	0.508	1.49	-0.021	-0.33	88.9%	0.162	-0.149	-4.90	-0.064	-1.94	0.772	1.95	0.001	0.02	88.8%	0.072
SBF50	-0.129	-3.32	-0.040	-0.85	-0.563	-1.30	-0.080	-1.20	84.2%	0.036	-0.152	-3.67	-0.029	-0.57	-0.757	-2.04	-0.084	-0.71	84.6%	0.110
SBF51	-0.169	-5.49	-0.108	-3.20	0.245	0.84	0.092	0.94	82.1%	0.014	-0.180	-5.97	-0.109	-2.78	0.343	1.14	-0.124	-1.31	84.5%	0.013
SBF52	-0.164	-8.69	-0.011	-0.51	0.089	0.52	-0.139	-2.47	90.5%	0.016	-0.167	-8.74	-0.005	-0.21	0.052	0.23	-0.221	-5.46	91.2%	0.000
SBF53	-0.167	-3.49	-0.160	-3.09	0.704	1.39	0.167	1.18	85.5%	0.017	-0.180	-3.36	-0.164	-2.60	0.756	0.99	0.044	0.30	84.7%	0.011
SBF54	-0.170	-6.56	-0.105	-3.28	0.777	2.13	0.064	1.40	90.9%	0.012	-0.155	-5.17	-0.115	-3.36	1.043	2.57	0.038	0.64	90.9%	0.002
SBF55	-0.187	-5.94	-0.094	-2.51	0.732	2.07	0.142	2.07	83.9%	0.033	-0.164	-5.13	-0.111	-2.36	1.071	2.59	0.144	1.47	84.1%	0.024
SBF56	-0.171	-5.11	-0.107	-2.58	0.402	2.01	0.086	1.53	90.5%	0.019	-0.172	-4.83	-0.108	-2.40	0.580	2.00	0.030	0.61	90.2%	0.081
SBF57	-0.146	-6.85	-0.081	-2.73	0.299	1.18	0.101	2.60	82.6%	0.046	-0.155	-7.26	-0.074	-2.23	0.314	1.38	-0.011	-0.33	84.4%	0.015
SBF58	-0.161	-12.46	-0.005	-0.40	0.062	0.47	-0.004	-0.11	64.3%	0.957	-0.165	-11.90	-0.004	-0.32	0.158	1.14	0.005	0.25	65.2%	0.656
SBF59	-0.140	-5.90	-0.082	-3.28	0.376	1.87	0.039	0.64	85.7%	0.009	-0.148	-5.49	-0.082	-2.63	0.410	1.39	-0.041	-0.58	85.1%	0.015
SBF60	-0.167	-7.21	-0.070	-2.41	0.311	0.88	0.016	0.27	88.2%	0.058	-0.178	-7.78	-0.062	-2.20	0.298	1.04	0.086	2.10	88.2%	0.070
SBF61	-0.084	-2.21	-0.070	-1.99	0.214	0.56	-0.010	-0.11	85.6%	0.098	-0.095	-2.30	-0.068	-1.48	0.289	0.56	0.200	2.04	85.3%	0.152
SBF62	-0.130	-4.79	-0.104	-3.75	0.550	1.47	0.120	1.50	90.2%	0.002	-0.116	-3.99	-0.120	-3.74	0.783	1.82	0.105	1.45	89.9%	0.002
SBF63	-0.096	-4.14	-0.082	-3.17	0.448	1.54	0.110	2.02	91.7%	0.015	-0.087	-3.53	-0.092	-3.21	0.670	1.96	0.118	1.82	91.2%	0.014
SBF64	-0.102	-2.05	-0.068	-1.25	-0.642	-1.08	0.002	0.02	62.3%	0.043	-0.131	-2.71	-0.052	-0.97	-0.767	-1.74	-0.060	-0.49	66.5%	0.043
SBF65	-0.020	-0.43	-0.033	-0.62	-0.856	-1.51	0.059	0.41	59.7%	0.071	-0.043	-0.90	-0.023	-0.46	-1.024	-2.20	-0.146	-0.95	63.7%	0.037
SBF66	-0.185	-6.72	-0.082	-2.62	0.150	0.50	0.293	4.75	81.1%	0.000	-0.203	-7.02	-0.079	-2.62	0.226	0.89	0.158	2.03	81.8%	0.020
SBF67	-0.226	-5.63	-0.055	-1.01	-0.425	-0.78	-0.052	-0.49	68.9%	0.163	-0.229	-5.60	-0.053	-0.97	-0.610	-1.13	-0.053	-0.30	68.5%	0.326
SBF68	-0.212	-3.54	-0.069	-0.82	-0.553	-0.65	0.025	0.30	5.3%	0.627	-0.214	-2.56	-0.091	-1.11	0.368	0.31	0.102	0.52	-1.0%	0.726
SBF69	-0.173	-4.02	-0.192	-3.78	0.942	2.01	0.159	1.80	87.0%	0.001	-0.176	-3.97	-0.192	-3.18	1.203	1.89	0.057	0.49	87.6%	0.000
SBF70	-0.203	-3.32	-0.118	-1.40	-0.942	-1.97	-0.065	-0.56	66.0%	0.024	-0.200	-2.88	-0.120	-1.19	-0.825	-1.26	-0.067	-0.48	63.2%	0.309
SBF71	-0.303	-3.93	-0.208	-1.85	-0.881	-1.64	0.085	0.56	60.5%	0.065	-0.308	-3.45	-0.215	-1.75	-0.924	-1.18	0.090	0.54	58.2%	0.213

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
SBF72	-0.135	-2.96	-0.021	-0.75	-0.545	-1.39	-0.053	-1.21	66.6%	0.079	-0.159	-3.45	-0.012	-0.54	-0.823	-2.20	-0.031	-0.53	69.6%	0.086
SBF73	-0.294	-6.60	-0.167	-2.89	0.269	0.86	0.190	1.64	54.3%	0.039	-0.286	-6.23	-0.185	-2.84	0.492	1.13	0.040	0.28	50.8%	0.038
SBF74	-0.115	-5.84	-0.060	-2.95	-0.003	-0.01	-0.029	-0.57	67.0%	0.003	-0.127	-6.30	-0.049	-2.42	-0.028	-0.15	-0.082	-1.58	69.8%	0.004
SBF75	-0.204	-14.84	0.013	0.81	0.016	0.08	0.000	0.00	60.4%	0.814	-0.201	-11.96	0.012	0.71	0.064	0.34	0.084	1.47	58.9%	0.224
SBF76	-0.149	-11.12	0.009	0.57	0.078	0.43	0.009	0.13	60.4%	0.809	-0.145	-8.82	0.009	0.54	0.122	0.67	0.056	0.87	59.2%	0.449
SBF77	-0.205	-14.64	0.015	0.93	0.016	0.08	-0.003	-0.05	58.3%	0.745	-0.201	-11.65	0.014	0.79	0.063	0.33	0.085	1.43	57.1%	0.207
SBF78	-0.171	-14.28	0.007	0.45	0.105	0.60	0.014	0.21	59.7%	0.792	-0.164	-10.27	0.004	0.25	0.187	0.98	0.070	0.98	58.7%	0.390
SBF79	-0.119	-6.00	0.006	0.26	0.302	1.25	0.053	0.65	51.1%	0.610	-0.103	-4.03	0.001	0.03	0.360	1.24	0.160	1.77	53.4%	0.250
SBF80	-0.195	-6.75	-0.037	-1.37	0.943	1.82	0.146	1.42	62.5%	0.324	-0.171	-5.67	-0.054	-1.67	1.205	2.24	0.276	1.83	67.6%	0.161
SBF81	-0.231	-17.64	0.010	0.58	0.005	0.03	-0.003	-0.04	56.7%	0.935	-0.228	-14.61	0.009	0.51	0.042	0.22	0.072	1.14	54.6%	0.502
SBF82	-0.093	-5.93	0.008	0.37	0.121	0.57	0.007	0.09	56.1%	0.835	-0.084	-3.94	0.005	0.23	0.176	0.70	0.088	1.04	54.7%	0.512
SBF83	-0.233	-16.27	0.012	0.69	-0.024	-0.12	-0.006	-0.09	49.5%	0.913	-0.232	-13.87	0.012	0.66	0.009	0.04	0.070	1.18	47.6%	0.422
SBF84	-0.230	-18.17	0.008	0.50	0.070	0.43	-0.003	-0.05	57.1%	0.867	-0.226	-14.60	0.006	0.35	0.130	0.75	0.084	1.28	56.2%	0.395
SBF85	-0.173	-8.72	-0.066	-2.99	-0.014	-0.07	-0.013	-0.35	89.6%	0.004	-0.182	-8.78	-0.067	-2.50	0.147	0.68	-0.006	-0.16	90.3%	0.000
SBF86	-0.126	-4.02	-0.074	-2.57	0.161	0.42	0.077	1.43	80.1%	0.054	-0.112	-3.37	-0.093	-2.91	0.520	1.29	0.125	1.14	82.9%	0.028
SBF87	-0.098	-2.69	-0.053	-1.02	-0.995	-2.27	-0.235	-1.39	78.9%	0.009	-0.122	-3.39	-0.033	-0.61	-0.928	-3.10	-0.125	-1.24	81.0%	0.010
SBF88	-0.047	-1.36	0.026	0.64	-0.770	-1.65	0.007	0.12	68.1%	0.338	-0.085	-2.88	0.044	1.24	-1.230	-3.74	-0.311	-2.74	71.6%	0.001
SBF89	-0.263	-8.29	-0.017	-0.44	0.810	1.90	0.090	1.01	71.0%	0.172	-0.244	-7.12	-0.029	-0.76	0.931	1.96	0.263	2.66	72.5%	0.044
SBF90	-0.196	-5.04	-0.132	-4.14	-0.295	-0.76	-0.080	-1.46	56.2%	0.000	-0.197	-5.37	-0.118	-4.01	-0.719	-2.20	-0.178	-2.28	60.9%	0.000
SBF91	-0.224	-6.79	-0.098	-3.02	-0.168	-0.69	0.029	0.59	87.4%	0.002	-0.224	-6.44	-0.097	-2.81	0.074	0.25	0.015	0.23	87.9%	0.021
SBF92	-0.239	-7.18	-0.152	-3.49	0.003	0.01	0.031	0.36	85.5%	0.001	-0.255	-6.64	-0.144	-2.96	0.218	0.63	0.199	1.70	86.5%	0.016
SBF93	-0.163	-8.65	-0.066	-2.73	0.233	1.11	-0.014	-0.17	88.4%	0.033	-0.173	-8.53	-0.066	-2.43	0.282	1.16	-0.137	-1.50	88.9%	0.014
SBF94	-0.162	-3.09	-0.188	-2.05	-0.644	-1.30	0.109	0.77	50.8%	0.046	-0.190	-3.49	-0.181	-1.79	-0.700	-1.32	-0.022	-0.14	47.7%	0.079
SBF95	-0.097	-3.36	-0.091	-2.78	0.095	0.42	-0.012	-0.24	85.6%	0.006	-0.112	-3.32	-0.087	-2.18	0.025	0.07	-0.065	-0.76	84.8%	0.019
SBF96	-0.161	-5.20	-0.057	-1.67	0.147	0.52	0.294	3.41	74.9%	0.001	-0.165	-4.87	-0.054	-1.49	0.014	0.04	0.288	2.71	75.5%	0.024
SBF97	-0.195	-6.10	-0.071	-2.46	0.575	1.67	-0.042	-0.62	55.9%	0.019	-0.183	-5.25	-0.082	-2.82	0.797	2.33	0.099	1.33	54.8%	0.015
SBF98	-0.181	-6.36	-0.098	-2.90	-0.194	-0.75	-0.022	-0.12	74.0%	0.001	-0.205	-6.50	-0.091	-2.61	-0.447	-1.47	-0.251	-1.55	75.3%	0.000
SBF99	-0.134	-3.84	-0.093	-2.70	0.116	0.26	0.172	2.24	78.6%	0.003	-0.142	-3.88	-0.086	-2.15	0.033	0.07	0.271	4.04	77.3%	0.000
SBF100	-0.260	-3.38	-0.092	-1.54	1.231	1.34	-0.132	-0.83	45.3%	0.086	-0.240	-2.86	-0.115	-1.80	1.589	1.47	-0.342	-1.67	41.8%	0.000
SBF101	-0.249	-15.52	-0.005	-0.30	-0.105	-0.47	0.001	0.01	62.4%	0.831	-0.255	-15.85	0.005	0.30	-0.099	-0.48	-0.020	-0.22	64.6%	0.967
SBF102	-0.125	-15.71	-0.022	-2.39	0.211	2.16	0.074	2.30	39.4%	0.018	-0.119	-15.87	-0.027	-2.99	0.298	3.07	0.116	2.82	44.3%	0.000
SBF103	-0.234	-10.28	-0.051	-2.06	0.678	2.14	0.042	0.78	72.9%	0.033	-0.215	-8.41	-0.063	-2.18	0.850	2.42	0.124	1.67	73.8%	0.041
SBF104	-0.117	-5.68	-0.025	-0.89	0.437	2.34	0.049	1.18	90.9%	0.073	-0.108	-5.26	-0.027	-1.03	0.638	2.48	0.026	0.50	91.1%	0.092
SBF105	-0.084	-1.79	0.007	0.10	1.023	1.58	0.064	0.48	21.0%	0.386	-0.055	-1.33	-0.004	-0.04	1.322	1.87	0.165	0.95	17.5%	0.237
SBF106	-0.173	-4.02	-0.114	-2.41	-0.457	-0.86	0.125	1.25	73.0%	0.005	-0.207	-4.85	-0.087	-1.83	-0.746	-1.46	-0.043	-0.29	73.6%	0.048
SBF107	-0.200	-5.98	-0.099	-2.80	-0.104	-0.24	0.116	1.36	78.6%	0.003	-0.230	-7.39	-0.086	-2.23	-0.221	-0.53	-0.022	-0.21	78.9%	0.046
SBF108	-0.203	-5.34	-0.055	-1.09	-0.366	-1.27	0.014	0.22	82.1%	0.231	-0.226	-5.80	-0.050	-0.89	-0.420	-1.35	-0.050	-0.84	82.4%	0.241
SBF109	-0.262	-2.01	-0.201	-1.21	3.622	1.70	0.489	1.58	47.7%	0.346	-0.207	-1.54	-0.267	-1.36	4.959	1.91	0.955	2.11	49.7%	0.201
SBF110	-0.185	-8.64	-0.055	-1.62	0.081	0.63	-0.074	-0.63	73.1%	0.176	-0.180	-8.64	-0.056	-1.42	0.215	1.47	-0.033	-0.34	74.0%	0.228
SBF111	-0.195	-7.66	0.010	0.33	0.004	0.01	-0.036	-0.70	58.1%	0.904	-0.195	-8.07	0.007	0.23	0.019	0.08	-0.004	-0.07	58.7%	0.996
SBF112	-0.174	-5.66	-0.071	-2.55	0.831	1.82	0.133	1.64	66.6%	0.072	-0.151	-4.93	-0.084	-2.92	1.116	2.77	0.335	3.58	70.6%	0.001
SBF113	-0.168	-5.44	-0.091	-2.86	0.739	1.72	0.120	1.41	65.2%	0.042	-0.149	-4.64	-0.103	-2.84	1.038	2.52	0.323	3.62	67.6%	0.001
SBF114	-0.168	-5.69	-0.072	-2.73	0.653	1.34	0.121	1.77	59.7%	0.025	-0.144	-5.03	-0.086	-2.96	0.886	1.94	0.250	2.28	65.6%	0.012
SBF115	-0.169	-5.62	-0.063	-2.25	0.891	1.81	0.133	1.61	60.9%	0.131	-0.144	-4.88	-0.076	-2.71	1.156	2.66	0.375	4.17	67.8%	0.000

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
SBF116	-0.148	-21.08	0.004	0.80	0.016	0.22	-0.023	-0.53	75.2%	0.779	-0.146	-23.04	0.004	0.66	0.035	0.63	0.019	0.52	74.9%	0.776
SBF117	-0.549	-5.12	0.020	0.16	1.408	1.26	0.154	0.60	0.3%	0.519	-0.564	-4.80	-0.057	-0.40	2.933	2.09	0.386	1.03	12.0%	0.205
SBF118	-0.179	-11.11	0.003	0.18	-0.109	-0.54	-0.012	-0.46	28.1%	0.943	-0.184	-11.91	0.003	0.28	-0.088	-0.53	0.000	0.02	29.6%	0.940
SBF119	-0.195	-6.25	-0.073	-1.78	0.002	0.01	-0.006	-0.07	74.2%	0.290	-0.193	-5.90	-0.073	-1.61	0.008	0.03	0.148	2.11	75.6%	0.105
SBF120	-0.217	-6.92	-0.099	-2.46	0.238	0.73	0.071	0.91	72.9%	0.107	-0.214	-6.58	-0.099	-2.23	0.264	0.96	0.167	1.72	75.0%	0.083
SBF121	-0.135	-3.65	-0.082	-2.77	-0.054	-0.16	-0.160	-2.39	70.5%	0.000	-0.161	-3.89	-0.068	-2.26	-0.241	-0.75	-0.043	-0.97	71.3%	0.027
SBF122	-0.171	-6.29	-0.069	-3.39	0.294	1.00	0.153	3.04	75.0%	0.000	-0.157	-5.32	-0.082	-3.30	0.500	1.70	0.160	2.07	75.3%	0.003
SBF123	-0.160	-3.97	-0.066	-1.28	-0.596	-1.01	-0.001	-0.01	80.7%	0.231	-0.192	-5.04	-0.060	-1.07	-0.418	-0.90	-0.157	-1.54	84.1%	0.076
SBF124	-0.178	-7.82	-0.072	-2.22	-0.086	-0.33	0.053	1.41	87.0%	0.078	-0.190	-7.51	-0.064	-2.09	-0.120	-0.48	-0.008	-0.18	87.2%	0.065
SBF125	-0.234	-9.57	-0.047	-2.23	0.749	1.93	0.068	1.04	68.4%	0.117	-0.209	-8.59	-0.062	-2.35	0.951	2.38	0.156	1.73	71.7%	0.066
SBF126	-0.137	-6.13	-0.063	-2.12	-0.171	-0.55	0.061	0.87	55.6%	0.065	-0.155	-6.52	-0.040	-1.68	-0.307	-1.11	0.052	0.63	65.7%	0.126
SBF127	-0.178	-8.98	0.024	1.13	-0.454	-1.63	-0.045	-1.47	63.6%	0.295	-0.174	-8.71	0.017	0.74	-0.317	-1.04	-0.076	-1.17	62.6%	0.636
SBF128	-0.157	-7.83	-0.074	-2.58	0.491	1.25	-0.058	-0.64	51.9%	0.042	-0.140	-6.53	-0.082	-2.65	0.704	1.77	0.055	0.62	55.2%	0.069
SBF129	-0.216	-9.75	-0.054	-2.02	0.616	1.84	0.047	0.78	70.4%	0.112	-0.197	-8.06	-0.067	-2.23	0.825	2.41	0.138	1.70	72.1%	0.037
SBF130	-0.058	-4.61	-0.019	-1.93	-0.005	-0.05	0.055	1.71	1.4%	0.013	-0.055	-3.78	-0.018	-1.84	-0.028	-0.26	0.085	2.55	-1.2%	0.004
SBF131	-0.204	-8.96	-0.052	-2.25	0.692	1.88	0.061	0.94	74.9%	0.097	-0.179	-7.05	-0.067	-2.43	0.938	2.53	0.173	1.99	77.8%	0.036
SBF132	-0.103	-7.05	0.004	0.21	-0.082	-0.40	0.034	0.54	58.7%	0.923	-0.095	-5.45	-0.002	-0.07	0.050	0.18	0.147	3.42	58.7%	0.000
SBF133	-0.183	-9.49	-0.044	-1.63	0.128	0.65	-0.010	-0.12	81.9%	0.295	-0.187	-9.29	-0.041	-1.27	0.055	0.26	0.087	1.47	82.1%	0.371
SBF134	-0.082	-3.04	-0.036	-1.22	-0.462	-1.52	0.064	1.10	76.2%	0.063	-0.102	-3.82	-0.032	-1.05	-0.628	-2.50	-0.179	-1.43	77.0%	0.033
SBF135	-0.164	-6.67	-0.057	-3.19	0.223	0.94	0.054	1.13	90.2%	0.014	-0.157	-5.83	-0.059	-2.64	0.271	1.09	0.094	1.52	89.5%	0.046
SBF136	-0.165	-5.24	-0.051	-1.10	0.403	1.28	0.062	0.73	67.4%	0.508	-0.154	-4.21	-0.061	-1.27	0.632	1.76	0.232	2.32	67.8%	0.056
SBF137	-0.177	-5.44	-0.102	-2.50	0.553	1.04	-0.057	-0.19	74.5%	0.097	-0.149	-4.45	-0.111	-2.38	0.924	1.85	0.277	0.91	77.7%	0.095
SBF138	-0.198	-10.17	-0.038	-1.41	0.463	1.85	0.027	0.58	65.6%	0.110	-0.184	-8.60	-0.052	-1.65	0.625	2.33	0.108	1.82	67.2%	0.048
SBF139	-0.190	-6.88	-0.120	-3.23	-0.163	-0.54	0.102	1.56	85.9%	0.004	-0.199	-6.63	-0.114	-2.96	-0.249	-0.80	-0.034	-0.53	85.3%	0.005
SBF140	-0.174	-6.08	-0.077	-2.95	0.279	1.21	0.099	1.72	88.3%	0.031	-0.168	-5.80	-0.080	-2.57	0.436	1.77	0.133	2.30	88.4%	0.030
SBF141	-0.166	-6.53	-0.087	-2.88	0.391	1.90	0.128	2.98	85.4%	0.009	-0.168	-6.11	-0.087	-2.55	0.551	2.09	0.116	2.20	85.0%	0.041
SBF142	-0.259	-4.17	-0.247	-3.27	0.074	0.18	0.358	3.60	64.2%	0.003	-0.290	-4.28	-0.246	-3.26	0.161	0.32	0.399	3.08	66.9%	0.001
SBF143	-0.215	-10.50	-0.044	-1.97	0.512	1.81	0.050	0.89	73.9%	0.111	-0.197	-8.56	-0.056	-2.09	0.692	2.26	0.127	1.77	75.2%	0.055
SBF144	-0.014	-0.37	-0.031	-1.19	-0.208	-0.58	-0.213	-5.43	-1.6%	0.000	-0.035	-0.90	-0.036	-1.44	-0.309	-0.86	-0.084	-1.42	4.9%	0.227
SBF145	-0.053	-2.10	0.028	0.72	-0.362	-0.84	-0.143	-3.04	36.9%	0.005	-0.075	-3.09	0.036	1.13	-0.599	-1.60	-0.078	-1.44	41.5%	0.364
SBF146	-0.174	-4.69	-0.051	-1.22	-0.851	-1.87	-0.043	-0.68	62.0%	0.003	-0.206	-6.06	-0.039	-0.92	-0.880	-2.55	-0.160	-1.89	69.1%	0.005
SBF147	-0.188	-9.37	-0.058	-1.99	0.423	1.88	0.055	0.89	70.9%	0.091	-0.175	-7.38	-0.066	-1.92	0.572	2.02	0.122	1.84	70.8%	0.092
SBF148	-0.197	-10.37	-0.028	-1.14	0.416	1.38	-0.059	-0.78	59.3%	0.250	-0.185	-7.56	-0.036	-1.30	0.505	1.63	0.020	0.32	61.9%	0.341
SBF149	-0.185	-17.28	-0.014	-1.07	0.007	0.03	0.013	0.69	-0.4%	0.264	-0.195	-22.51	-0.010	-1.40	-0.096	-0.77	-0.018	-0.60	38.3%	0.052
SBF150	-0.140	-14.20	-0.020	-2.29	-0.021	-0.24	0.080	3.14	37.1%	0.002	-0.142	-14.49	-0.020	-2.84	0.129	1.45	0.068	2.00	45.7%	0.008
SBF151	-0.208	-2.66	-0.060	-0.74	2.781	1.66	0.060	0.16	57.6%	0.373	-0.118	-1.43	-0.073	-0.98	3.141	2.41	0.701	1.56	69.2%	0.121
SBF152	-0.198	-16.88	-0.010	-0.96	-0.123	-0.74	-0.022	-0.50	30.4%	0.356	-0.199	-16.41	-0.005	-0.52	-0.111	-0.76	0.025	1.00	36.2%	0.316
SBF153	-0.152	-5.74	-0.063	-2.46	0.255	1.18	0.055	1.04	90.5%	0.073	-0.150	-5.24	-0.064	-2.16	0.380	1.60	0.094	1.90	89.8%	0.120
SBF154	-0.470	-2.31	0.354	1.38	-3.083	-1.46	0.741	2.50	5.0%	0.027	-0.573	-2.81	0.414	1.78	-4.118	-1.74	1.165	4.05	30.5%	0.000
SBF155	-0.051	-0.39	-0.037	-0.35	1.967	1.38	-0.850	-4.15	3.4%	0.000	-0.234	-2.50	0.013	0.18	0.778	0.94	-1.015	-4.19	61.9%	0.000
SBF156	-0.116	-9.27	0.003	0.25	-0.087	-0.53	0.017	0.42	54.0%	0.868	-0.118	-8.84	0.002	0.18	-0.054	-0.31	0.112	4.55	54.3%	0.000
SBF157	-0.204	-7.74	-0.113	-1.94	0.702	2.17	0.057	0.92	69.1%	0.077	-0.209	-5.91	-0.107	-2.24	0.916	2.32	0.004	0.05	71.0%	0.047

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
Italy																				
IBF1	-0.134	-5.00	0.011	0.30	0.213	0.70	-0.184	-1.47	69.6%	0.343	-0.133	-4.70	0.005	0.12	0.234	0.68	-0.111	-1.40	68.4%	0.289
IBF2	-0.163	-6.71	0.047	1.60	0.070	0.28	-0.169	-1.35	46.6%	0.106	-0.159	-6.82	0.031	0.92	0.137	0.48	-0.060	-0.47	46.0%	0.607
IBF3	-0.107	-3.61	-0.038	-0.80	0.652	1.75	-0.080	-0.45	58.5%	0.278	-0.109	-3.60	-0.024	-0.72	0.393	1.38	0.019	0.20	61.5%	0.585
IBF4	-0.337	-6.15	-0.083	-0.90	0.682	0.97	0.123	0.78	57.0%	0.747	-0.341	-6.14	-0.032	-0.50	-0.016	-0.03	0.191	1.54	59.8%	0.360
IBF5	-0.145	-9.25	0.028	1.26	-0.075	-0.49	-0.138	-1.15	65.5%	0.468	-0.144	-9.16	0.022	0.97	-0.068	-0.41	-0.011	-0.31	71.3%	0.770
IBF6	-0.136	-3.40	0.034	0.70	0.269	0.78	-0.144	-0.82	54.3%	0.499	-0.135	-3.29	0.010	0.20	0.381	0.88	-0.054	-0.29	52.0%	0.812
IBF7	-0.179	-3.75	0.004	0.09	0.106	0.31	-0.120	-0.71	57.7%	0.865	-0.176	-4.03	-0.017	-0.38	0.162	0.38	-0.083	-0.44	57.8%	0.919
IBF8	-0.125	-6.96	0.039	1.74	0.233	1.00	-0.164	-0.81	68.5%	0.064	-0.127	-7.03	0.015	0.55	0.374	1.42	-0.040	-0.24	71.1%	0.305
IBF9	-0.201	-5.04	0.052	1.06	-0.186	-0.64	0.004	0.05	79.3%	0.627	-0.202	-5.26	0.043	0.85	-0.223	-0.74	0.046	0.41	80.3%	0.594
IBF10	-0.264	-3.79	-0.007	-0.10	0.489	0.68	0.254	1.41	79.8%	0.547	-0.238	-4.06	-0.022	-0.31	0.282	0.41	0.197	0.95	82.7%	0.818
IBF11	-0.211	-6.14	0.040	1.02	-0.126	-0.55	-0.036	-0.44	54.4%	0.766	-0.211	-6.23	0.022	0.49	-0.102	-0.30	0.013	0.14	55.0%	0.949
IBF12	-0.193	-3.49	-0.025	-0.42	0.546	1.21	-0.213	-2.61	64.1%	0.018	-0.185	-3.46	-0.034	-0.58	0.455	0.82	-0.299	-3.14	65.0%	0.000
IBF13	-0.155	-8.18	0.040	1.71	0.127	0.64	-0.126	-1.07	73.6%	0.080	-0.155	-8.34	0.021	0.82	0.206	0.90	-0.064	-0.57	74.6%	0.504
IBF14	-0.183	-4.74	0.055	1.30	-0.050	-0.14	-0.166	-1.10	50.8%	0.276	-0.173	-5.14	0.041	0.90	-0.087	-0.22	-0.152	-0.99	51.6%	0.594
IBF15	-0.232	-5.78	0.011	0.24	0.402	1.05	-0.010	-0.08	38.8%	0.444	-0.227	-6.32	0.020	0.45	0.159	0.44	0.026	0.19	40.2%	0.826
IBF16	-0.231	-6.15	0.006	0.15	0.391	1.04	-0.064	-0.46	58.1%	0.517	-0.224	-6.36	-0.001	-0.03	0.324	0.83	-0.030	-0.21	57.7%	0.844
IBF17	-0.188	-5.92	-0.009	-0.24	0.544	1.62	-0.042	-0.28	67.7%	0.227	-0.186	-6.20	-0.005	-0.16	0.390	1.34	0.038	0.35	69.3%	0.548
IBF18	-0.168	-10.29	0.034	1.77	-0.100	-0.49	-0.126	-1.22	64.1%	0.230	-0.169	-10.68	0.025	1.17	-0.071	-0.33	-0.063	-1.00	65.6%	0.577
IBF19	-0.259	-4.14	0.014	0.33	0.416	1.14	0.021	0.17	45.5%	0.501	-0.252	-4.61	-0.011	-0.24	0.504	1.10	0.011	0.09	45.4%	0.667
IBF20	-0.143	-7.62	0.015	0.76	0.069	0.34	-0.129	-1.12	70.3%	0.480	-0.146	-7.90	0.014	0.55	0.072	0.31	-0.027	-0.40	71.1%	0.678
IBF21	-0.175	-7.85	0.034	1.28	0.207	0.91	-0.140	-0.99	62.5%	0.083	-0.174	-8.14	0.027	0.88	0.200	0.75	-0.078	-0.64	61.7%	0.360
IBF22	-0.305	-5.35	0.051	0.70	-0.684	-0.95	0.146	0.68	75.8%	0.614	-0.292	-5.72	0.013	0.19	-0.802	-1.24	0.222	0.97	79.8%	0.360
IBF23	-0.127	-5.94	0.064	2.42	-0.059	-0.28	-0.118	-1.28	50.1%	0.089	-0.127	-5.35	0.036	1.23	0.102	0.33	-0.097	-0.74	53.1%	0.562
IBF24	-0.208	-5.40	0.051	1.09	0.656	1.40	-0.034	-0.24	46.9%	0.179	-0.206	-5.13	0.066	1.24	0.385	0.88	0.057	0.56	45.3%	0.289
IBF25	-0.543	-3.14	-0.033	-0.23	1.831	1.37	0.667	2.04	-1.7%	0.160	-0.527	-3.06	-0.010	-0.06	1.727	1.04	0.480	1.11	-4.3%	0.418
IBF26	0.023	0.23	0.077	0.81	-0.131	-0.19	0.185	1.20	38.1%	0.580	0.027	0.26	0.101	0.93	-0.431	-0.50	0.168	1.33	34.6%	0.196
IBF27	-0.146	-5.33	0.005	0.13	-0.291	-0.83	-0.165	-3.37	86.7%	0.004	-0.142	-5.31	0.000	-0.01	-0.317	-0.84	-0.223	-3.34	85.7%	0.001
IBF28	-0.196	-5.12	0.012	0.29	0.015	0.05	-0.070	-0.60	83.0%	0.893	-0.191	-5.14	-0.016	-0.43	0.107	0.25	-0.028	-0.28	83.3%	0.939
IBF29	-0.198	-3.25	-0.023	-0.38	0.087	0.18	-0.066	-0.51	82.9%	0.919	-0.194	-3.25	-0.036	-0.56	-0.052	-0.09	-0.013	-0.09	83.2%	0.913
IBF30	-0.205	-7.26	0.068	1.75	-0.384	-0.95	-0.264	-2.61	89.5%	0.024	-0.200	-7.40	0.063	1.67	-0.504	-1.37	-0.313	-2.15	89.3%	0.097
IBF31	-0.246	-4.08	-0.126	-1.70	0.732	0.80	0.000	0.00	71.1%	0.203	-0.237	-4.14	-0.111	-1.38	0.431	0.52	0.040	0.25	69.4%	0.389
IBF32	-0.217	-6.95	-0.021	-0.39	0.290	0.55	-0.007	-0.05	87.5%	0.945	-0.206	-7.13	0.032	0.80	-0.378	-1.16	0.076	0.68	90.6%	0.525
IBF33	-0.268	-5.78	0.006	0.13	0.169	0.46	-0.260	-2.40	86.2%	0.077	-0.273	-6.09	0.035	0.62	-0.167	-0.39	-0.139	-1.29	86.1%	0.609
IBF34	-0.281	-5.98	0.004	0.08	0.065	0.17	-0.272	-2.82	85.9%	0.036	-0.286	-6.39	0.033	0.57	-0.254	-0.58	-0.167	-1.51	86.0%	0.480
IBF35	-0.159	-6.23	0.079	2.52	-0.068	-0.27	-0.067	-0.66	84.4%	0.086	-0.150	-5.11	0.068	2.18	-0.050	-0.18	-0.087	-0.79	84.2%	0.176
IBF36	-0.111	-3.03	0.039	1.00	0.062	0.17	-0.147	-0.91	62.4%	0.456	-0.115	-3.37	0.031	0.68	0.181	0.50	0.010	0.07	65.0%	0.462
IBF37	-0.202	-5.79	-0.020	-0.48	0.283	0.67	-0.062	-0.45	88.2%	0.816	-0.200	-5.40	-0.022	-0.47	0.209	0.45	0.028	0.17	87.4%	0.959
IBF38	-0.267	-3.95	-0.093	-1.71	0.491	0.69	-0.113	-0.54	78.4%	0.305	-0.254	-4.16	-0.049	-1.12	0.034	0.05	-0.493	-2.87	80.0%	0.001
IBF39	-0.269	-5.62	0.002	0.06	0.139	0.38	-0.147	-1.74	86.2%	0.088	-0.269	-5.94	-0.016	-0.40	0.249	0.51	-0.110	-1.21	85.5%	0.371
IBF40	-0.242	-5.48	-0.009	-0.13	-0.302	-0.67	-0.184	-1.59	88.8%	0.183	-0.245	-5.22	0.007	0.10	-0.424	-0.84	-0.246	-1.24	88.2%	0.418
IBF41	-0.135	-6.38	0.019	0.75	-0.007	-0.03	-0.202	-4.83	87.9%	0.000	-0.133	-6.18	0.017	0.60	0.018	0.07	-0.165	-4.21	87.0%	0.000
IBF42	-0.137	-2.13	0.111	1.73	-0.745	-0.97	-0.314	-1.52	66.6%	0.279	-0.138	-2.03	0.132	1.67	-0.858	-0.92	-0.565	-3.02	64.5%	0.018
IBF43	-0.328	-5.12	-0.012	-0.17	0.356	0.46	0.057	0.46	79.4%	0.961	-0.317	-5.78	0.023	0.43	-0.350	-0.58	0.022	0.15	83.8%	0.929
IBF44	-0.314	-5.19	-0.121	-1.38	0.443	0.68	-0.128	-0.97	83.6%	0.050	-0.313	-5.51	-0.093	-1.33	-0.026	-0.05	-0.047	-0.39	84.3%	0.126

Appendix 5.10 (continued)

	Conditional single-index										Conditional multi-index									
	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)	α_{0p}	t-stat	term	t-stat	irw	t-stat	jd	t-stat	R^2(adj.)	W(p-val)
IBF45	-0.219	-8.97	0.015	0.51	0.074	0.32	-0.246	-4.43	92.6%	0.000	-0.213	-8.63	0.001	0.04	0.132	0.43	-0.219	-4.55	92.4%	0.000
IBF46	-0.226	-6.43	0.026	0.49	-0.121	-0.40	-0.130	-2.16	84.1%	0.104	-0.232	-6.48	0.042	0.93	-0.416	-1.24	-0.157	-2.50	84.2%	0.055
IBF47	-0.210	-1.89	-0.161	-1.14	-0.439	-0.49	0.440	0.85	52.7%	0.525	-0.212	-2.50	-0.068	-0.61	-1.513	-2.07	0.226	0.61	71.5%	0.042
IBF48	-0.309	-5.12	-0.050	-0.74	0.060	0.10	-0.156	-1.03	80.4%	0.590	-0.296	-6.21	-0.062	-0.90	-0.173	-0.28	-0.211	-1.73	82.2%	0.125
IBF49	-0.184	-3.15	-0.012	-0.24	0.301	0.76	-0.107	-0.92	81.5%	0.393	-0.180	-3.36	-0.001	-0.03	0.072	0.16	-0.099	-0.95	81.6%	0.648
IBF50	-0.178	-5.01	0.018	0.37	-0.156	-0.39	-0.171	-1.82	87.2%	0.337	-0.182	-4.72	0.021	0.30	-0.226	-0.50	-0.319	-2.23	87.6%	0.125
IBF51	-0.096	-3.77	0.051	1.76	-0.261	-0.74	-0.191	-2.17	87.9%	0.121	-0.100	-4.10	0.052	1.42	-0.223	-0.57	-0.194	-1.58	87.0%	0.385
IBF52	-0.243	-4.15	-0.076	-0.98	0.177	0.22	0.381	1.58	74.8%	0.438	-0.237	-3.98	-0.037	-0.57	-0.499	-0.60	0.272	2.17	79.6%	0.049
IBF53	-0.278	-4.83	0.045	0.83	0.137	0.29	0.004	0.04	82.8%	0.593	-0.268	-5.22	0.021	0.38	0.173	0.32	-0.049	-0.43	83.4%	0.830
IBF54	-0.231	-3.57	0.036	0.62	-0.505	-0.65	0.201	0.67	74.7%	0.706	-0.227	-3.60	0.084	1.26	-0.884	-0.99	-0.173	-1.10	78.8%	0.561
IBF55	-0.241	-2.47	0.047	0.73	0.852	1.08	0.196	1.10	54.9%	0.359	-0.235	-2.45	0.008	0.10	1.155	1.05	0.267	1.25	52.3%	0.274
IBF56	-0.281	-4.14	0.073	1.12	-0.025	-0.04	0.062	0.62	79.8%	0.524	-0.276	-4.25	0.055	0.74	-0.017	-0.02	-0.071	-0.54	78.9%	0.866
IBF57	-0.201	-2.87	0.049	0.57	-0.202	-0.22	0.294	0.84	68.5%	0.662	-0.209	-5.09	0.051	0.68	-0.243	-0.30	0.130	1.47	84.2%	0.153
IBF58	-0.111	-0.48	0.187	0.89	1.406	0.64	0.600	0.83	9.5%	0.403	-0.072	-0.33	0.056	0.26	2.582	1.00	0.775	1.06	10.7%	0.383
Portugal																				
PBF1	-0.112	-15.24	-0.020	-1.15	0.208	3.85	0.084	2.12	11.0%	0.000	-0.114	-16.59	-0.016	-1.12	0.195	3.21	0.054	1.40	11.0%	0.008
PBF2	-0.137	-8.44	-0.037	-1.81	-0.019	-0.12	-0.242	-3.64	43.0%	0.000	-0.138	-7.82	-0.046	-1.78	-0.014	-0.06	-0.268	-5.33	37.4%	0.000
PBF3	-0.149	-8.38	-0.070	-1.79	0.230	1.79	0.066	1.82	18.3%	0.004	-0.148	-8.89	-0.072	-1.86	0.265	2.12	0.000	-0.01	16.3%	0.014
PBF4	-0.159	-11.41	0.015	0.78	0.073	0.61	-0.145	-3.83	35.4%	0.001	-0.154	-9.48	0.014	0.55	0.117	0.63	-0.181	-2.50	33.8%	0.083
PBF5	-0.145	-12.28	-0.018	-0.67	0.105	1.26	0.002	0.05	-2.1%	0.588	-0.147	-12.83	-0.020	-0.80	0.163	1.75	-0.018	-0.49	8.1%	0.210
PBF6	-0.117	-9.57	-0.027	-1.89	0.448	4.90	0.017	0.23	19.7%	0.000	-0.115	-9.02	-0.023	-1.55	0.493	4.66	-0.028	-0.60	23.0%	0.000
PBF7	-0.125	-12.46	-0.025	-1.47	0.145	1.49	0.026	0.85	5.7%	0.206	-0.126	-12.91	-0.028	-1.65	0.195	1.94	0.029	0.88	4.1%	0.162
PBF8	-0.128	-12.13	-0.009	-0.56	0.136	1.66	-0.008	-0.24	2.2%	0.361	-0.129	-12.01	-0.010	-0.65	0.158	1.60	-0.038	-1.29	-1.9%	0.247
PBF9	-0.210	-5.48	-0.126	-3.04	0.326	1.16	-0.233	-1.11	71.6%	0.001	-0.208	-4.74	-0.145	-2.45	0.510	1.15	-0.189	-1.01	68.4%	0.003
PBF10	-0.164	-7.58	-0.058	-1.55	0.423	3.39	0.118	2.52	14.1%	0.000	-0.162	-6.48	-0.064	-1.46	0.499	3.06	0.127	1.85	9.5%	0.004
PBF11	-0.103	-11.91	-0.027	-1.65	0.137	1.53	0.058	1.84	3.2%	0.207	-0.101	-12.07	-0.043	-2.11	0.219	1.73	0.055	1.14	-0.9%	0.193
PBF12	-0.168	-3.97	-0.090	-1.74	-0.276	-0.71	-0.373	-1.98	73.5%	0.002	-0.173	-4.14	-0.081	-1.42	-0.171	-0.35	-0.442	-2.18	71.2%	0.012
PBF13	-0.113	-9.62	-0.009	-0.57	0.066	0.75	0.176	1.53	14.1%	0.436	-0.113	-11.62	-0.017	-1.07	-0.029	-0.22	0.141	3.98	37.7%	0.000
PBF14	-0.073	-5.61	-0.013	-0.51	0.224	2.28	0.020	0.52	0.5%	0.150	-0.074	-6.04	-0.021	-0.85	0.325	2.62	-0.023	-0.52	14.8%	0.041
PBF15	-0.171	-5.97	0.057	1.27	-0.195	-0.64	-0.073	-0.88	88.3%	0.652	-0.162	-4.50	0.023	0.49	0.127	0.28	0.056	0.56	87.9%	0.607
PBF16	-0.141	-12.71	-0.020	-0.90	0.163	1.89	0.006	0.16	7.3%	0.244	-0.142	-12.90	-0.025	-1.14	0.216	2.04	-0.027	-0.55	8.5%	0.187
PBF17	-0.113	-10.29	-0.008	-0.44	0.104	0.93	0.022	0.50	-2.0%	0.782	-0.114	-10.45	-0.019	-1.07	0.234	1.86	-0.005	-0.10	1.8%	0.316
PBF18	-0.166	-13.83	0.007	0.29	0.281	1.77	0.054	1.58	54.9%	0.022	-0.167	-12.93	0.014	0.76	0.244	1.62	-0.061	-1.34	59.1%	0.089
PBF19	-0.089	-4.66	-0.038	-0.97	0.272	1.52	0.033	0.58	39.4%	0.473	-0.084	-4.21	-0.051	-1.36	0.420	2.58	0.042	0.69	41.1%	0.056
PBF20	-0.239	-6.15	-0.035	-0.71	0.266	0.59	-0.250	-1.30	77.2%	0.362	-0.242	-5.24	-0.035	-0.65	0.266	0.56	-0.240	-1.93	76.4%	0.049
PBF21	-0.095	-1.32	-0.035	-0.44	0.735	1.32	-0.318	-1.85	56.2%	0.003	-0.098	-1.25	-0.061	-0.62	0.929	1.25	0.156	0.65	57.4%	0.642
PBF22	-0.139	-12.09	-0.030	-1.18	0.220	2.83	0.069	1.66	20.8%	0.009	-0.140	-12.96	-0.028	-1.17	0.243	2.56	0.014	0.46	31.4%	0.060

Appendix 5.11
Contingency tables

In analysing contingency tables the question of interest is whether the qualitative variables are independent or not. Let $\mathbf{p_{i.}}$ represent the probability, in the population, of an observation belonging to the i^{th} category of the row variable and $\mathbf{p_{.j}}$ the corresponding probability for the j^{th} category of the column variable. From the multiplication law of probability, independence between the two variables, in the population, implies:

$p_{ij} = p_{i.}p_{.j}$ (the null hypothesis H_0).

In terms of the frequencies to be expected in the contingency table, independence implies that:

$$F_{ij} = Np_{i.}p_{.j}$$

As the population probability values are unknown, the maximum likelihood estimates of the marginal probabilities are:

$$\hat{p}_{i.} = \frac{n_{i.}}{N} \quad \text{and} \quad \hat{p}_{.j} = \frac{n_{.j}}{N}$$

The use of estimates of $p_{i.}$ and $p_{.j}$ allows estimation of the frequency to be expected in the ij^{th} cell of the table if the two variables are independent (when H_0 is true). This estimate, which is usually represented by $E_{ij,}$, is given by:

$$E_{ij} = N\hat{p}_{i.}\hat{p}_{.j} = N\frac{n_{i.}}{N}\frac{n_{.j}}{N} = \frac{n_{i.}n_{.j}}{N}$$

When the two variables are independent, the frequencies estimated using the above expression and the observed frequencies differ by amounts attributable to chance factors only. Consequently, it is reasonable to base the test of independence of two

variables, forming a contingency table, on the size of the differences between the two sets of frequencies n_{ij} and E_{ij}. Such a test uses the statistic χ^2, calculated as:

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(n_{ij} - E_{ij})^2}{E_{ij}}$$

The magnitude of this statistic depends on the values of the differences (n_{ij}-E_{ij}). If the two variables are independent (H_0 is true) these differences will be less than would otherwise be the case. Then, χ^2 will be smaller when H_0 is true than when it is false. By assuming that the observed frequencies have a particular distribution, namely a multinomial distribution, and by further assuming that the expected frequencies are not too small the statistic χ^2 may be shown to have approximately a Chi-square distribution. The test of the hypothesis of the independence may be performed by comparing the calculated value of χ^2 with the values of the Chi-square distribution with the degrees of freedom given by (r-1)(c-1).

The simplest form of a contingency table is the two-dimensional case here a sample of N observations is classified with respect to two qualitative variables as follows:

		Variable A		
		Category 1	Category 2	
Variable B	Category 1	a	b	a+b
	Category 2	c	d	c+d
		a+c	b+d	N=a+b+c+d

In this case the statistic χ^2 reduces to the simplified form:

$$\chi^2 = \frac{N(ad - bc)^2}{(a + b)(c + d)(a + c)(b + d)}$$

with its significance obtained by comparing it with the values of the Chi-square distribution with one degrees of freedom.

As mentioned before, it is assumed that the observed frequencies have a particular distribution, namely a multinomial distribution, which is a discrete probability distribution. Nevertheless, in deriving the distribution of the statistic χ^2, a continuous probability distribution, the Chi-square distribution, is used as an approximation to the discrete probability. To improve the approximation Yates (1934)[94] suggested a correction for continuity which involves subtracting 0.5 from the positive differences (between observed and expected frequencies) and adding 0.5 to the negative differences, before these differences being squared in the calculation of the statistic χ^2 as follows:

$$\chi^2 = \frac{N(|ad - bc| - 0.5N)^2}{(a+b)(c+d)(a+c)(b+d)}$$

In general, the evidence for applying the Yates correction seems convincing and its use is recommended in particular if sample size is small. Typically, the term "small" has been interpreted in the sense that a satisfactory approximation is achieved when the expected frequencies are five or more. When the sample size is reasonably large the correction will have little impact on the value of the Chi-square statistic.

[94] As referenced in Everitt (1992).

Appendix 5.12

Bond fund performance persistence: cross-sectional regression analysis considering appraisal ratios

The table below reports the statistics for the cross-section regression of the appraisal ratios for the subperiod January 1998 to December 2000 on the appraisal ratios for the subperiod January 1995 to December 1997, considering both unconditional and conditional single and multi-index models for each European country. Panel A presents the results for the unconditional models and Panel B presents the results for the conditional models.

PANEL A	**Unconditional Single-index**				**Unconditional multi-index**			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	-0.138	-7.208	0.438	3.880 ***	-0.133	-7.028	0.389	3.619 ***
France	-0.081	-3.440	0.749	11.703 ***	-0.094	-4.155	0.734	14.046 ***
UK	-0.156	-5.979	0.439	5.291 ***	-0.154	-4.863	0.427	4.252 ***
Spain	-0.088	-7.223	0.418	5.703 ***	-0.089	-6.504	0.435	5.417 ***
Italy	-0.331	-3.386	0.419	5.052 ***	-0.474	-4.864	0.345	4.483 ***
Portugal	-0.142	-0.841	0.723	7.417 ***	-0.145	-0.838	0.686	7.202 ***
PANEL B	**Conditional Single-index**				**Conditional multi-index**			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	-0.031	-1.211	0.472	4.653 ***	0.031	1.273	0.388	3.679 ***
France	-0.011	-0.457	0.811	13.094 ***	-0.106	-3.842	0.414	8.495 ***
UK	-0.120	-4.622	0.513	5.034 ***	-0.042	-1.023	0.295	2.368 **
Spain	-0.430	-5.043	0.685	8.819 ***	-0.562	-7.054	0.612	9.179 ***
Italy	-0.342	-3.532	0.386	4.884 ***	-0.601	-6.047	0.337	4.238 ***
Portugal	-0.491	-2.420	0.517	4.411 ***	-0.134	-0.679	0.642	6.565 ***

*** Statistically significant at 1%
** Statistically significant at 5%
* Statistically significant at 10%

Appendix 5.13

Bond fund performance persistence: contingency tables based on appraisal ratios

The table reports the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with appraisal ratios>median, repeated subsequent period; LL correspond to funds with appraisal ratios<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A and B present the results for the unconditional models and Panel C and Panel D present the results for the conditional models. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Unconditional SI Appraisal Ratio								
Germany	31	14	14	31	12.844 ***	0.000	11.378 ***	0.001
France	85	48	48	85	20.586 ***	0.000	19.489 ***	0.000
UK	16	6	6	17	9.789 ***	0.002	8.011 ***	0.005
Spain	60	18	18	61	46.016 ***	0.000	43.876 ***	0.000
Italy	21	8	8	21	11.655 ***	0.001	9.931 ***	0.002
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011
Panel B - Unconditional MI Appraisal Ratio								
Germany	27	18	18	27	3.600 *	0.058	2.844 *	0.092
France	91	42	42	91	36.105 ***	0.000	34.647 ***	0.000
UK	16	6	6	17	9.789 ***	0.002	8.011 ***	0.005
Spain	59	19	19	60	41.787 ***	0.000	39.748 ***	0.000
Italy	19	10	10	19	5.586 **	0.018	4.414 **	0.036
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011
Panel C - Conditional SI Appraisal Ratio								
Germany	34	11	11	34	23.511 ***	0.000	21.511 ***	0.000
France	89	44	44	89	30.451 ***	0.000	29.113 ***	0.000
UK	17	5	5	18	13.878 ***	0.000	11.744 ***	0.001
Spain	58	20	20	59	37.761 ***	0.000	35.825 ***	0.000
Italy	20	9	9	20	8.345 ***	0.004	6.897 ***	0.009
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011
Panel D - Conditional MI Appraisal Ratio								
Germany	29	16	16	29	7.511 ***	0.006	6.400 ***	0.011
France	84	49	49	84	18.421 ***	0.000	17.383 ***	0.000
UK	15	7	7	16	6.412 **	0.011	4.990 **	0.025
Spain	55	23	23	56	26.908 ***	0.000	25.277 ***	0.000
Italy	22	7	7	22	15.517 ***	0.000	13.517 ***	0.000
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011

*** Statistically significant at 1%
** Statistically significant at 5%
* Statistically significant at 10%

Appendix 5.14

Bond fund performance persistence: contingency tables considering only funds with negative appraisal ratios in the first period

The table reports the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with appraisal ratios>median, repeated subsequent period; LL correspond to funds with appraisal ratios<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A and B present the results for the unconditional models and Panel C and Panel D present the results for the conditional models. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Unconditional SI Appraisal Ratio								
Germany	8	5	5	9	1.801	0.180	0.915	0.339
France	70	48	48	71	8.543 ***	0.003	7.800 ***	0.005
UK	11	4	4	12	7.242 ***	0.007	5.436 **	0.020
Spain	60	17	17	60	48.026 ***	0.000	45.818 ***	0.000
Italy	20	8	8	21	10.956 ***	0.001	9.272 ***	0.002
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011
Panel B - Unconditional MI Appraisal Ratio								
Germany	17	14	14	17	0.581	0.446	0.258	0.611
France	80	42	42	80	23.672 ***	0.000	22.443 ***	0.000
UK	13	5	5	14	7.797 ***	0.005	6.068 **	0.014
Spain	58	19	19	59	40.261 ***	0.000	38.248 ***	0.000
Italy	18	10	10	19	5.063 **	0.024	3.941 **	0.047
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011
Panel C - Conditional SI Appraisal Ratio								
Germany	6	3	3	6	2.000	0.157	0.889	0.346
France	74	43	43	75	16.888 ***	0.000	15.832 ***	0.000
UK	10	4	4	11	5.811 **	0.016	4.156 **	0.041
Spain	58	20	20	58	37.026 ***	0.000	35.103 ***	0.000
Italy	19	9	9	20	7.729 ***	0.005	6.326 **	0.012
Portugal	8	2	2	8	7.200 ***	0.007	5.000 **	0.025
Panel D - Conditional MI Appraisal Ratio								
Germany	20	11	11	20	5.226 ***	0.022	4.129 **	0.042
France	76	42	42	76	19.593 ***	0.000	18.458 ***	0.000
UK	11	7	7	12	2.179	0.140	1.316	0.251
Spain	55	22	22	55	28.286 ***	0.000	26.597 ***	0.000
Italy	22	6	6	22	18.286 ***	0.000	16.071 ***	0.000
Portugal	9	2	2	9	8.909 ***	0.003	6.545 **	0.011

*** Statistically significant at 1%
** Statistically significant at 5%
* Statistically significant at 10%

CHAPTER 6

CONCLUSIONS AND

SUGGESTIONS FOR FUTURE RESEARCH

The development of the mutual fund industry has made the subject of performance evaluation one of the most highly debated issues in the finance literature. With the introduction of the Euro, the European market has become the second most important mutual fund market but, comparatively to the US market, it has been far less studied. Furthermore, although there has been some research on equity funds, we are not aware of any study on the performance of bond funds, which represent a significant percentage of the total European mutual fund market.

Furthermore, a recent approach called *Conditional Performance Evaluation* has been advocated for this matter, given the increasing empirical evidence that publicly available information, related with the state of economy, might represent useful information in predicting stock and bond returns. It assumes a more robust benchmark in the sense that a manager that acts accordingly to public information only, should present a performance measure equal to zero. This is unlikely to occur with the traditional measures as they confound the time variation introduced by return predictability with abnormal performance. Although the conditional approach is being increasingly accepted among academics, it has been applied almost exclusively to equity funds. These studies have shown that conditional models challenge previous literature on the overall fund performance and also on the persistence of performance.

This research has addressed these major issues on fund performance evaluation in the context of the European bond fund industry. In this concluding chapter, we emphasise the key contributions of this thesis. Also, we summarize our main empirical findings. Investment implications of the research findings are then discussed. Finally, limitations of the study and topics for future research are pointed out.

We contribute, first of all, by providing the first comprehensive study on a new important market, the European bond fund market. Secondly, in the context of

conditional models, instead of assuming a set of predetermined information variables, as in previous studies, we also innovate by investigating the predictive ability of several information variables. The argument is that, on the basis of economic reasoning, these variables should contain information about expected excess bond returns. Then, we tested if the selected variables have predictive ability for the European bond market. The statistical problem of spurious regression received detailed attention. The predictability is evaluated both in-sample and out-of-sample. Thirdly, we extended the application of the conditional performance evaluation, not only to evaluating the overall bond fund performance, but also to evaluate the degree of bond fund performance persistence. As far as we know, this is also the first study that analyses the impact of incorporating conditioning information on inferences of bond fund performance persistence. Fourthly, two different benchmarks were employed for performance evaluation: a single and a multi-index model. In this context, this research allows a multifaceted analysis of European bond fund performance: performance measures obtained from several alternative models (single versus multi-index and unconditional versus conditional) are compared.

After a brief characterisation of the European mutual fund industry, carried out in Chapter 2, we reviewed and discussed, in Chapter 3, relevant academic literature in the field. Particular attention was given to issues currently in debate, especially those related to conditional performance evaluation and to return predictability on the basis of publicly available information variables. The next step was to investigate, in Chapter 4, whether selected variables represent useful information in predicting excess bond returns in the specific case of the European bond market. We found that variables such as the term spread, the inverse relative wealth and a January dummy have shown to have predictive power in relation to excess bond returns in the European market in the

period between February 1994 and December 2000. Investors using simple trading strategies based on the information given by these variables could have obtained higher excess bond returns. This evidence supports the argument in favour of conditional models to evaluate bond fund performance.

Considering the variables investigated previously, in Chapter 5 we evaluated the performance of our sample of European bond funds on the basis of unconditional and conditional models. Furthermore, to evaluate bond fund performance, both a single and a multi-index model were considered. We found that the multi-index model (which along with a bond market index also includes a stock market and a default spread), seems to be a more appropriate model as it does a better job in capturing additional sources of bond risk. Comparing unconditional and conditional models, we found evidence supporting time-varying measures of risk. We also found evidence of a negative relation between conditional betas and the inverse relative wealth variable and, to some extent, also with the January dummy variable. The sign of this relationship is the opposite of what we found to be the relation between these variables and expected bond market returns. This apparent contradiction was also found by Ferson and Schadt (1996) for the case of stock funds. Possible explanations for this relation can be the impact of new cash flows into the funds and the fact that the betas of the underlying securities change through time. We think that the latter is probably the most reasonable explanation as we are dealing with bond funds, but this is a question deserving additional research. The results obtained through conditional models show a slight tendency towards better performance, particularly when we consider the conditional multi-index model, which is consistent with most of the previous findings. This is true for the studies regarding stock funds as well as the few studies regarding bond funds. Furthermore, we also found some evidence supportive of time-varying alphas,

consistent with the conventional wisdom that it is easier for a fund manager to look good in an up market.

Overall, our empirical results indicate that European bond funds do not add value. The results suggest distinct conclusions for two groups of countries. For the Latin countries (Spain, Italy and Portugal) we find strong evidence of negative performance, even when considering bond fund returns before management fees. For the other countries (Germany, France and UK) we also find some evidence of underperformance although it is almost totally removed when we consider before fees returns. This evidence can be considered robust to all the scenarios we analysed: unconditional versus conditional and single versus multiple index models.

Relatively to the persistence performance phenomenon, the impact of conditioning information is not so clear. While in the case of the single-index model it seems that conditional alphas lead to stronger evidence of performance persistence, in the case of the multi-index model, conditional alphas lead to a lower evidence of persistence. Furthermore, we observed that the persistence is reduced when using conditional multi-index alphas instead of conditional single-index alphas. This finding suggests that some of the evidence that there is a relationship between past and future performance is driven by additional factors considered in the multi-index model and also by time-varying betas related with those additional factors. Somewhat similar findings were observed by Basarrate and Rubio (1999) for the case of Spanish stock funds and Otten and Bams (2002) for the case of Italian stock funds. This contrasts, however, with most of the previous studies (on stock funds only and mainly for the US market) which found that performance persistence seems to be more significant when conditional measures are used.

A robust result is that, whatever the measure of performance employed, and considering both cross-sectional regression analysis and contingency tables methodologies, European bond funds present consistency in performance, particularly in the case of Spanish, French and German bond funds. This consistency is, however, mainly concentrated among the poor performers (as it has been generally found in relation to stock funds).

These empirical findings have important implications not only for investors but also for other financial market players. The results of this research suggest that European bond funds do not add value. On the contrary, they seem to underperform and this underperformance is, at least partially, due to management fees. Moreover, we even found evidence supporting that the persistence effect seems to be more concentrated in the poor performing funds. Overall, our findings are consistent with the hypothesis that markets are efficient, and come in support of passive management strategies. Thus, an important question arises: why select an actively managed bond fund? Index funds are available to span most of the investors' risk choices at low cost and with a high probability to outperform an active fund of similar risk, thus constituting an attractive alternative for mutual fund investors.

Of course, as in any other study, we recognise the limitations of this one. We can aggregate them in two different types: limitations resulting from the data and limitations related to the methodology used. Relatively to the former, a first problem relates to our sample period being a relatively short period, which raises some problems in terms of the reliability of the statistical estimation. The selection of the period was determined by the availability of the data. In the majority of the European countries, the bond market is still a relatively recent market and, consequently, the series on historical returns are not as long as most desirable. This, however, is a problem that can be easily overcome in

future research as longer time series become available. Another problem relates to the classification of bond funds, which is different across European countries and, consequently, makes some performance comparisons difficult. A related shortcoming results from the fact that the NAVs that are used to calculate the return series, in some countries, are already affected by taxation while in other countries this does not happen. Finally, another potential problem in the data is the well known survivorship bias resulting from using only surviving funds in performance evaluation tests. Although well recognised in the literature, the controversy around its impact on fund performance and also on the persistence of performance is still great. In the specific case of bond funds, previous studies seem to indicate that survivorship bias has a less impact compared to stock funds, due to the greater stability of their performance. So, despite the fact that we could not find detailed information on dead or merged bond funds along the sample period of February 1994 to December 2000, we think that it is not a serious problem in our research.

Regarding the methodological issues, the first problem arises when selecting which variables to use as conditioning information. As pointed out, and this is one of the contributions of this research, we have given particular attention to the selection of these variables. Notwithstanding, we have only considered domestic information variables. Given the increasing integration of international markets, an important alternative would be to use world variables as well. In a recent study, Barr and Priestley (2004) found evidence suggesting national bond markets are only partially integrated into world bond markets and thus both local and world instruments can predict local bond returns. Another problem, that we mentioned in the literature review, is the assumed linear functional form for the time-varying betas. Ghysels (1998) claims that conditional versions of several asset pricing models, that allow for time-varying betas,

might produce larger pricing errors than the models with fixed betas. On the other hand, Farnsworth, Ferson, Jackson and Todd (2002) found that conditional models allowing time variation in betas have smaller pricing errors when applied to dynamic strategy returns and control better the predictable components of primitive asset returns. Thus, the question of whether imposing linearity on time-varying betas is helpful or not is still an evolving issue and constitutes an interesting avenue for future research (e.g.: Simin, 2002).

No doubt this issue of conditional performance evaluation is still awaiting further important developments. Concerning the specific case of bond funds, an interesting alternative approach would be to evaluate their performance following the term structure theory. Very recently Ferson, Kisgen and Henry (2003a, 2003b) examined the performance of US bond funds using stochastic discount factors resulting from continuous-time term structure models. The argument is that "term structure models in particular suggest what to condition on, which removes some of the ambiguity in instrument selection that is typical of the conditional asset pricing literature" (Ferson, Kisgen and Henry, 2003b, p. 2).

On the other hand, further research on the European market, in order to try to overcome some of the above mentioned problems, could be an important contribution for the development of a Single market, with all its potential benefits for investors.

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