Article

Crises and Contagion in Equity Portfolios

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Abstract: We examine the international impact of recent financial crises on contagion dynamics within international equity portfolios. First, we highlight the importance of macroeconomics for portfolio weighting for each region, and then we examine contagion via a structural regime-switching model and a contagion test. We also examine sources of contagion using regime variables, crisis events, and macroeconomic variables. In particular, we study the Argentine debt crisis, the US financial crisis, and the EU sovereign debt crisis. The macroeconomic variables include changes in market capitalization, trade integration, GDP growth, inflation rate, and interest rate. We also employ two classifications, one relating to the portfolio weighting scheme and another one that considers implied global and regional betas. The empirical findings reveal the existence of financial contagion for all the crises that we investigate. Both methods produce similar results. Stronger contagion is evident for global rather than regional betas. Europe is the region with the highest level of contagion and the one mostly affected by the crises. As far as macroeconomic variables are concerned, they are very important in two ways. They statistically significantly explain contagion, while they also reveal contagion under various portfolio weighting schemes. Both methods suggest that the Argentinian crisis mainly contributes to contagion. The research implications suggest that asset allocation and portfolio management should consider both the global and the regional aspects of contagion as differences can occur.

Keywords: contagion; financial crises; portfolios; equity; macroeconomics

1. Introduction

The international impact of the recent financial crises raises issues concerning the contagion (integration and comovements). Financial integration offers welfare gains; it may also carry substantial risks. This becomes more evident in crises (Devereux and Yu 2020). There is a transmission of crisis effects from one market to another (see, among others, Baele and Inghelbrecht 2010). Each crisis has different causes and consequences to financial markets. (Ehrmann et al. 2011) and (Gunay and Can 2022) researched the existence of contagion and spillovers in the global financial crisis.

The global financial crisis refers to the 2008 subprime crisis starting in the United States and having global consequences for a few years (Raddant and Kenett 2021). The 2010 EU sovereign debt crisis had similar international consequences (Shen et al. 2015). Contagion in the European Union during the global financial crisis and the European debt crisis were examined via ADCC-GJR-GARCH and Markov-switching models citepALEXAKIS2018222. The role of national governments (via the evolution of macroeconomics and policy making) in the EU debt crisis was also researched (Kosmidou et al. 2019).

In line with Corbet and Goodell (2022), we also opine that both financial contagion and systemic risk pose major considerations when it comes to financial market operations, while the investigation of interconnectedness dynamics has become one of major importance. Globalization dynamics and technological advancements have resulted in increased interconnectedness across financial markets and affect investments all over the world. In this paper, we consider cross-border investments and international portfolio contagion

by looking into international equity markets (i.e., 4 regions/containments, 67 countries) and by further applying weights based on a set of macroeconomic variables that affect contagion dynamics.

The present paper makes a number of contributions to the literature. It extends the empirical findings provided by Cho et al. (2015) to the international stock markets. The augmented structural factor model of Cho et al. (2015) is employed to model shifts in integration and incorporate crisis dummies. It examines sixty international stock indices from sixty respective national stock exchanges instead of firm level data. The second contribution is whether certain portfolios based on national macroeconomic variables provide different contagion evidence than others. Moreover, the paper determines the value of the stock indices, either emerging or developed, and with different values of country characteristics (macroeconomic variables), on a regional and global level.

As far as the theoretical contributions of the paper are concerned, we add to the existing literature by considering various crises periods across the globe and by adopting different portfolio frameworks. For instance, we employ different weights for portfolio construction depending on the underlying macroeconomic variable. Moreover, we show that portfolio contagion is stronger in the global rather than the regional framework. In turn we find that market capitalization is the most appropriate macroeconomic variable to use in order to reveal contagion, compared to all other macroeconomic variables. We also show that Europe is the region mostly affected by crises and that the Argentinian crisis had a very pronounced effect across global economies. In this respect, we offer fresh insights regarding contagion in international equity portfolios, and we further provide fertile ground for future research on the relevant topic.

The remainder of the paper is organized as follows. Section 2 presents the literature review. Section 3 describes the dataset. In turn, Section 4 outlines methodology. Section 5 presents the empirical findings and the discussion, and Section 6 concludes.

2. Literature Review

Many scholars have recently been involved in research relating to the dynamics of contagion and financial interdependence. For instance, Corbet and Goodell (2022) stress the importance of investigating interconnectedness dynamics across firms, industries, and markets and provide evidence by considering reputational contagion. Furthermore, Corbet et al. (2022) offer valuable insights with regard to contagion dynamics by looking into the implications of the COVID-19 pandemic for stock market performance. In turn, Bouzzine and Lueg (2020) look into the impact of contagion dynamics stemming from environmental violations on the stock market performance.

Different methods have been employed to study contagion in financial crises. A part of the literature employed the DCC-GARCH methodology to quantify the impact of a global financial crisis in the interdependence of the markets (Nguyen et al. 2022). The literature has also employed a Markov-switching Bayesian vector autoregression (MSBVAR) model to research contagion for the global financial crisis (Troug and Murray 2021). It is expected that a trade-off emerges between the probability of crises and the severity of crises (Devereux and Yu 2020). The importance of national or regional exposures to contagion was evident and increased due to the global financial crisis, however. These effects have not been researched a lot in the literature. There was evidence for the banking sector, however (Park and Shin 2020), as well as in equity markets (Trihadmini and Falinaty 2020).

Another stream of the literature examined the role of macroeconomics in the international impact of the recent financial crises in contagion (Jiang et al. 2022). The Mexican and Asian crises, originating in emerging markets, were considered to have mostly a regional impact, whereas the recent US and EU debt crises had a global impact. The global impact of global financial crisis and the European sovereign debt crisis were examined in BenSaïda and Litimi (2021). They found an increased degree of dependence for each crisis, suggesting strong evidence of contagion for both the global financial crisis and EU sovereign debt crisis. The strong impacts depend on the role of macroeconomics. This is because controlling the

impact of macro variables that capture real or financial linkages on stock correlations is crucial for determining market overreactions to shocks (Pineda et al. 2022).

The internationalization of the impact of the financial crises was expressed in both trading as well as asset allocation. The literature examined such impact for the recent global and EU financial crises in an asset allocation framework. Such regional and global impacts affect portfolio diversification and asset allocation. Financial crises create international portfolio diversification opportunities as the extent of the contagion increases (Akhtaruzzaman et al. 2014). Cho et al. (2015) examined whether crises have different effects on style portfolios. Others researched international contagion (the transmission of financial shocks internationally) for US downturns and the global financial crisis (Akhtaruzzaman and Shamsuddin 2016). The literature attempted to conceptualize this impact in a portfolio framework (e.g., Shen and Li 2020).

The methodology employed is a regime-switching GARCH model in accordance with a world–regional–local CAPM, similar to Cho et al. (2015) and Baele and Inghelbrecht (2010). More of the recent studies include Shruthi and Shijin (2020), Dua and Tuteja (2021), and Bouker and Mansouri (2022), among others. This is a joint hypothesis problem of an appropriate factor specification of comovements. Moreover, Baele and Inghelbrecht (2010) and Ehrmann et al. (2011) contagion tests are employed to discover whether international equity portfolios experienced contagion effects through increased comovements during periods of financial crises. Ehrmann et al. (2011) examined the additional impact on comovement represented by a multi-factor model with global, regional, and country factors. The US and EU financial crises are expected to have a high global impact in international equity portfolios. Cho et al. (2015) found signs of contagion with a global impact for the US crisis (also evident in Bekiros 2014; Dungey and Gajurel 2014). Cho et al. (2015) also found a regional impact for the Mexican and Asian crises (also evident in Ehrmann et al. 2011), and a limited impact for the EU debt crisis. Similar evidence is expected for the international equity portfolios in the present paper.

3. Dataset

The dataset begins on 3 January 2000 and ends on 31 December 2016, for a total of 4264 trading days. All of the data have been extracted from Datastream. We have employed data only up to 2016, because we targeted only the examination of financial crises. A wider dataset should have included data within the COVID-19 pandemic. This would have affected our results, as the literature provided evidence that COVID-19 affected contagion (Akhtaruzzaman et al. 2021). After cleaning the dataset for common trading days in an international setting; the trading days were reduced to 3906. All of the stock market data are in US dollars. Table 1 reveals the countries (split in regions/continents) and their respective stock exchanges and indices. The symbols, as well as the regional and global weights based on trade integration, GDP, and stock market capitalization, are also provided. In terms of trade integration, the Americas and Europe have the highest and lowest weightings, respectively. In terms of GDP, USA and Africa have the highest and lowest weightings, respectively. In terms of stock market capitalization, Europe and Africa have the highest and lowest weightings, respectively. We may conclude that USA and Europe are the regions with the highest portfolio weightings. The region with the lowest portfolio weightings is Africa. Sixty-seven countries are researched across four regions.[1]

The countries selected are the countries with the most significant economies and stock markets in their regions/continents. The three financial crisis periods, following Cho et al. (2015), are: the Argentine debt crisis (1 December 2001–29 November 2002), the US financial crisis (18 July 2007–27 August 2009), and the EU debt crisis (8 December 2010–31 December 2011). Table 1 also reveals the regional (local) and the international significance of each country's trade integration, gross domestic product (GDP), inflation rate, interest rate, and stock market capitalization of each country. A quarterly or monthly macro data series is retrieved by the Economic Outlook Database of the International Monetary Fund. For quarterly data, a linear interpolation based on the monthly ones is implemented.[2]

Table 1. Description of the dataset.

Country	Stock Exchange	Index	Symbol	Trade Integration Regional	Trade Integration International	GDP Regional	GDP International	Stock Market Capitalization Regional	Stock Market Capitalization International
AFRICA			AFR		9.70%		0.92%		7.19%
Botswana	Botswana stock exchange	Botswana Gaborone Index (BGSMDC)	BWA	35.56%	3.45%	2.26%	0.02%	29.32%	2.11%
Egypt	Egyptian exchange	Egypt Stock Market (EGX30)	EGY	−7.88%	−0.76%	33.67%	0.31%	16.32%	1.17%
Kenya	Nairobi stock exchange	Nairobi Securities Exchange 20 share index (N20I)	KEN	51.28%	4.97%	6.81%	0.06%	15.70%	1.13%
Mauritius	Mauritius stock exchange	Mauritius Stock Exchange Semdex Index (SEMDEX)	MUS	−44.42%	−4.31%	1.73%	0.02%	21.85%	1.57%
South Africa	Johannesburg stock exchange	FTSE/JSE Africa All Shares Index (JALSH)	ZAF	65.45%	6.35%	55.52%	0.51%	16.80%	1.21%
AMERICAS			AME		66.54%		36.05%		15.47%
Argentina	Argentina stock exchange	Argentina Merval Index (MERVAL)	ARG	17.53%	11.66%	1.96%	0.71%	7.46%	1.15%
Brazil	Brazil Stock Market (BOVESPA)	Ibovespa Brasil Sao Paulo Stock Exchange Index (IBOV)	BRA	5.70%	3.80%	7.50%	2.70%	7.51%	1.16%
Canada	Toronto stock exchange (TMX)	S&P/Toronto Stock Exchange Composite Index (SPTSX)	CAN	6.42%	4.27%	7.11%	2.56%	9.50%	1.47%
Chile	Santiago stock exchange	Santiago Stock Exchange Ipsa Index (IPSA)	CHL	13.12%	8.73%	0.89%	0.32%	9.40%	1.45%
Colombia	Bolsa de Valores de Colombia (BVC)	IGBC index	COL	11.64%	7.75%	1.18%	0.42%	8.90%	1.38%
Jamaica	Jamaica stock exchange	Jamaica Stock Exchange Market Index (JMSMX)	JAM	1.65%	1.10%	0.06%	0.02%	10.04%	1.55%
Mexico	Mexico Stock Market (IPC)	Mexican Stock Exchange Mexican Bolsa Ipc Index (MEXBOL)	MEX	0.84%	0.56%	5.19%	1.87%	9.40%	1.45%
Panama	Panama Stock Market (BVPSI)	Bolsa de Valores de Panama General Index (BVPSBVPS)	PAN	0.02%	0.02%	0.12%	0.04%	9.85%	1.52%
Peru	Bolsa de Valores de Lima (BVL)	Bolsa de Valores de Lima General Sector Index (IGBVL)	PER	12.04%	8.01%	0.61%	0.22%	9.20%	1.42%
United States	NASDAQ Stock Market	Nasdaq Composite Index (CCMP)	USA	−1.57%	−1.04%	74.32%	26.80%	8.80%	1.36%
Venezuela	Venezuela Stock Market (IBVC)	Caracas Stock Exchange Stock Market Index (IBVC)	VEN	32.61%	21.70%	1.04%	0.38%	9.95%	1.54%
ASIA			ASI		22.63%		30.19%		32.90%
Australia	Australian Securities Exchange (ASE)	Australian Stock Exchange All Ordinaries Index (AS30)	AUS	27.89%	6.31%	6.09%	1.84%	5.37%	1.77%
Bangladesh	Dhaka stock exchange (DSE)	Dhaka Stock Exchange Index (DHAKA)	BGD	−25.81%	−5.84%	0.63%	0.19%	5.12%	1.68%
China	Shanghai stock exchange (SSE)	Shanghai Stock Exchange Composite Index (SHCOMP)	CHN	−4.17%	−0.94%	28.84%	8.71%	8.55%	2.81%
Hong Kong SAR	Hong Kong Stock Exchange (HKEx)	Hang Seng CSI Shanghai-Hong Kong AH Smart Index (HSI)	HKG	−1.57%	−0.36%	1.36%	0.41%	4.61%	1.52%
India	National Stock Exchange of India Limited (NSE)	S&P Bse Sensex Index (SENSEX)	IND	−20.30%	−4.59%	7.64%	2.31%	6.36%	2.09%
Indonesia	Indonesia Stock Exchange (IDX)	Jakarta composite index (JCI)	IDN	48.93%	11.07%	3.13%	0.95%	5.50%	1.81%
Israel	Tel Aviv Stock Exchange (TASE)	Tel Aviv 25 Index (TA-25)	ISR	−4.67%	−1.06%	1.23%	0.37%	3.90%	1.28%
Japan	Japan Exchange Group (JPX)	Nikkei 225 (NKY)	JPN	−8.16%	−1.85%	30.86%	9.32%	4.37%	1.44%
Jordan	Amman Stock Exchange (ASE)	Amman Stock Exchange General Index (JOSMGNFF)	JOR	−25.79%	−5.84%	0.13%	0.04%	4.87%	1.60%
Malaysia	Bursa Malaysia (KLSE)	Ftse Bursa Malaysia Klci Index Kuala Lumpur Composite Index (FBMKLCI)	MYS	10.19%	2.30%	1.26%	0.38%	4.68%	1.54%
New Zealand	New Zealand Stock Market (NZX)	New Zealand Exchange 50 Gross Index (NZSE50FG)	NZL	14.27%	3.23%	0.78%	0.23%	4.31%	1.42%
Oman	Muscat Securities Market (MSM)	Muscat Securities Msm 30 Index (MSM30)	OMN	54.00%	12.22%	0.29%	0.09%	5.08%	1.67%
Pakistan	Islamabad Stock Exchange (ISE)	Karachi Stock Exchange Kse100 Index (KSE100)	PAK	−4.17%	−0.94%	0.98%	0.30%	3.14%	1.03%
Philippines	Philippine Stock Exchange (PSE)	Philippines Stock Exchange Ps Ei Index (PCOMP)	PHL	−26.35%	−5.96%	1.01%	0.31%	3.96%	1.30%
Saudi Arabia	Saudi Stock Exchange (Tadawul)	Tadawul All Share Index (TASI)	SAU	67.28%	15.23%	2.82%	0.85%	4.93%	1.62%
Singapore	Singapore Exchange (SGX)	Singapore exchange market index (SGX)	SGP	−1.47%	−0.33%	1.17%	0.35%	5.24%	1.72%

Table 1. *Cont.*

Country	Stock Exchange	Index	Symbol	Trade Integration		GDP		Stock Market Capitalization	
				Regional	International	Regional	International	Regional	International
South Korea	Korea stock exchange (KRX)	Korea Stock Exchange Kospi Index (KOSPI)	KOR	−4.61%	−1.04%	6.15%	1.86%	6.23%	2.05%
Taiwan Province of China	Taiwan Stock Exchange (TWSE)	Taiwan Stock Exchange Weighted Index (TWSE)	TWN	−27.74%	−6.28%	2.51%	0.76%	4.19%	1.38%
Thailand	Thailand Stock Market (SET)	Stock Exchange Of Thailand Set Index (SET)	THA	5.87%	1.33%	1.56%	0.47%	5.24%	1.72%
United Arab Emirates	United Arab Emirates Stock Market (ADX)	Dubai Financial Market General Index (DFMGI)	ARE	26.39%	5.97%	1.56%	0.47%	4.37%	1.44%
EUROPE			EUR		1.13%		32.84%		44.43%
Austria	Austria Stock Market (WBI)	Vienna Stock Exchange130245 Austrian Traded Index (ATX)	AUT	−148.60%	−1.68%	1.97%	0.65%	3.29%	1.46%
Belgium	Brussels Stock Exchange (BSE)	Bel 20 Index (BEL20)	BeΛ	−39.74%	−0.45%	2.41%	0.79%	3.11%	1.38%
Bulgaria	Bulgaria Stock Market (SOFIX)	Bulgaria Stock Exchange Sofix Index (SOFIX)	BGR	−228.25%	−2.58%	0.22%	0.07%	3.65%	1.62%
Croatia	Zagreb Stock Exchange (ZSE)	Croatia Zagreb Stock Exchange Crobex Index (CRO)	CRO	−124.08%	−1.40%	0.29%	0.09%	3.64%	1.62%
Cyprus	Cyprus Stock Exchange (CSE)	Cyprus Stock Exchange General Index (CYSMMAPA)	CYP	30.67%	0.35%	0.11%	0.04%	2.60%	1.15%
Czech Republic	Prague Stock Exchange (PSE)	Prague Stock Exchange Index (PX)	CZE	−188.59%	−2.13%	0.91%	0.30%	3.87%	1.72%
Denmark	Copenhagen Stock Exchange (CSE)	OMX Copenhagen 20 index (KFX)	DNK	166.65%	1.88%	1.61%	0.53%	2.88%	1.28%
Estonia	Tallinn Stock Exchange (TSE)	Omx Tallinn Index (TALSE)	EST	200.38%	2.27%	0.10%	0.03%	4.49%	2.00%
Finland	OMX Helsinki (OMXH)	Omx Helsinki Index (HEX)	FIN	141.38%	1.60%	1.30%	0.43%	3.36%	1.49%
France	Euronext Paris	Cac 40 Index (CAC)	FRA	114.39%	1.29%	13.79%	4.53%	3.28%	1.46%
Germany	Frankfurt Stock Exchange (FWB)	Deutsche Boerse Ag German Stock Index Dax (DAX)	DEU	-188.26%	−2.13%	17.63%	5.79%	2.68%	1.19%
Greece	Greece Stock Market (ASE)	Athens Stock Exchange General Index (ASE)	GRE	−466.40%	−5.28%	1.43%	0.47%	2.98%	1.32%
Hungary	Budapest Stock Exchange (BUX)	Budapest Stock Exchange Budapest Stock Index (BUX)	HUN	−214.57%	−2.43%	0.65%	0.21%	3.24%	1.44%
Ireland	Irish Stock Exchange (ISE)	Irish Stock Exchange Overall Index (ISEQ)	IRL	−158.80%	−1.80%	1.21%	0.40%	3.26%	1.45%
Italy	Italian stock exchange (MIB)	Ftse Mib Index (FTSEMIB)	ITA	−141.16%	−1.60%	10.81%	3.55%	2.95%	1.31%
Latvia	Riga Stock Exchange (RSE)	OMX Riga (OMXR)	LVA	−62.84%	−0.71%	0.13%	0.04%	4.05%	1.80%
Lithuania	Vilnius Stock Exchange (VSE)	OMX Vilnius (OMXV)	LTU	−100.11%	−1.13%	0.19%	0.06%	3.08%	1.37%
Luxembourg	Luxembourg Stock Exchange (LUX)	Luxembourg Stock Exchange Lux X Index (LUXXX)	LUX	38.58%	0.44%	0.26%	0.08%	3.07%	1.37%
Malta	Malta Stock Exchange (MALTEX)	Malta Stock Exchange (MALTEX)	MLT	−66.73%	-0.75%	0.04%	0.01%	2.80%	1.24%
Netherlands	Amsterdam Stock Exchange (AMX)	Amsterdam Stock Exchange Amsterdam Midkap Index (AMX)	NLD	−82.38%	−0.93%	4.27%	1.40%	3.05%	1.36%
Norway	Norway Stock Market (OBX)	Oslo Stock Exchange All Share Index (OSEAX)	NOR	629.64%	7.12%	2.10%	0.69%	3.31%	1.47%
Portugal	Lisbon Stock Exchange (LSE)	Portugal PSI 20 Index (PSI20)	PRT	−636.74%	−7.20%	1.17%	0.38%	3.21%	1.42%
Romania	Bucharest Stock Exchange (BSE)	Bucharest Stock Exchange Trading Index (BET)	ROU	380.70%	4.31%	0.76%	0.25%	3.62%	1.61%
Russia	Moscow Interbank Currency Exchange (MICEX)	Micex Index (INDEXCF)	RUS	1372.99%	15.53%	6.88%	2.26%	3.13%	1.39%
Slovak Republic	Bratislava Stock Exchange (BSE)	Slovak Share Index (SKSM)	SVK	−266.50%	−3.01%	0.38%	0.13%	3.61%	1.61%
Spain	Madrid Stock Exchange (MSE)	Madrid Stock Exchange IBEX 35 Index (IBEX)	ESP	−151.99%	−1.72%	6.94%	2.28%	3.70%	1.65%
Sweden	Stockholm Stock Exchange (SSE)	OMX Stockholm 30 Index (OMX)	SWE	−57.17%	−0.65%	2.43%	0.80%	2.70%	1.20%
Switzerland	Swiss Exchange (SIX)	Swiss Exchange (SIX)	CHE	−115.91%	−1.31%	2.74%	0.90%	3.15%	1.40%
Turkey	Istanbul Stock Exchange (ISE)	Borsa Istanbul 100 Index (XU100)	TUR	−161.64%	−1.83%	3.28%	1.08%	2.87%	1.27%
Ukraine	Ukrainian Stock Exchange (PFTS)	Ukrainian Equities Index (UX)	UKR	658.62%	7.45%	0.65%	0.21%	3.00%	1.33%
United Kingdom	London stock exchange (LSE)	FTSE 100 Index (UKX)	GBR	−33.55%	−0.38%	13.36%	4.39%	2.40%	1.07%
ALL			ALL	100.00%		100.00%		100.00%	

Notes: Table 1 describes the dataset. It includes the countries examined, their respective stock exchanges, main stock indices, and symbols. It also includes the average values of the international and regional significance of each country and region (for international significance) for different weighting schemes (e.g., trade integration, GDP, and stock market capitalization).

Table 2 presents the portfolio descriptive statistics. In terms of average portfolio values, the Americas and Europe have the highest values. In terms of portfolio standard deviations, Africa and Europe have the lowest values. In terms of portfolio Sharpe ratios, Europe and Asia have the highest values. In terms of cumulative return, the Americas with Europe second have the highest values, across all portfolio types. Regarding the overall portfolio performance by considering all portfolio descriptive estimates; Europe first and the Americas second are the best performers, with Africa last. By comparing portfolio types, the market capitalization seems to provide the best portfolio weighting scheme in terms of portfolio performance.

Table 2. Portfolio performance.

| | Average | | | | Standard Deviation | | | | Sharpe Ratio | | | | Cumulative Return | | | |
	Africa	Americas	Asia	Europe	Africa	Americas	Asia	Europe	Africa	Americas	Asia	Europe	Africa	Americas	Asia	Europe
Market Capitalization	0.0039	0.0460	0.0055	3.8×10^{-4}	0.0221	0.3747	0.0441	0.0038	0.9745	1.31	1.20	1.49	0.1967	5.06	1.09	0.1166
Trade Integration	3.7×10^{-4}	0.0249	0.0073	0.0109	0.0021	0.2030	0.0588	0.1104	0.8965	0.1242	0.2281	0.2823	0.0187	2.74	1.46	3.39
GDP	0.0029	0.0107	0.0079	0.0148	0.0164	0.0871	0.0641	0.1494	0.9522	0.9709	1.78	2.21	0.1458	1.18	1.59	4.58
Inflation Rate	2.9×10^{-4}	0.0024	0.0182	0.0068	0.0017	0.0199	0.1470	0.0683	0.8948	0.0977	0.1794	0.2220	0.0147	0.2681	3.64	2.10
Interest Rate	0.0014	0.0066	0.0097	0.0156	0.0079	0.0537	0.0779	0.1580	0.9192	0.4696	0.8620	1.07	0.0705	0.7248	1.93	4.85

Notes: Table 2 presents the portfolio performance measures (average, standard deviation, Sharpe ratio, and cumulative return) of the different types of international equity portfolios.

4. Methods

4.1. Structural Regime-Switching Factor Model

The present paper employs the Cho et al. (2015) structural regime-switching factor model in an asset (non-portfolio) CAPM model. The present paper's model, as employed in Cho et al. (2015), concerns regional and international results and targets to capture key stylized facts like time varying betas, volatility clustering, volatility regimes, financial crises, and structural economic variables.

$$r_{i,t} = \mu_{i,t-1} + \beta_{i,t}^w e_{w,t} + \beta_{i,t}^{reg} e_{reg,t} + e_{j,t} \tag{1}$$

where $r_{i,t}$ is the excess return on country i with $\mu_{i,t}$ its time-varying mean (expected return); $r_{reg,t}$ is the regional market return; $e_{w,t}$ is the global market shock ($r_{w,t} = \mu_{w,t-1} + e_{w,t}$); $e_{i,t}$ is the country specific idiosyncratic shock; $e_{reg,t}$ is the regional market shock (obtained from the regression $r_{reg,t} = \mu_{reg,t-1} + \beta_{reg,t}^w e_{w,t} + e_{reg,t}$);

Time varying betas are explained from both structural economics variables, a regime variable, and crisis dummies.

$$\beta_{i,t}^w = \beta_{0,i}^w(S_{i,t}) + \beta_{1,t}^w X_{reg,t-1}^w + \sum_{j=1}^{5} \gamma_{j,i}^w D_{j,t} \tag{2}$$

$$\beta_{i,t}^{reg} = \beta_{0,i}^{reg}(S_{i,t}) + \sum_{j=1}^{5} \gamma_{j,i}^{reg} D_{j,t} \tag{3}$$

where $\beta_{i,t}^w$ and $\beta_{i,t}^{reg}$ are the time-varying exposures of country i to the world and regional shocks; $S_{i,t}$ is a latent regime variable different for each country; $X_{reg,t-1}^w$ are structural variables like trade integration (TI), gross domestic product (GDP), and stock market capitalization (MC) that are regionally or internationally aggregated; $D_{j,t}$ is a crisis dummy variable.

Following the specifications of Cho et al. (2015), the regional shocks $(e_{reg,t})$ are estimated by an asymmetric GARCH(1,1) t-student model, and the world (global) shocks $(e_{w,t})$ by a regime-switching asymmetric GARCH(1,1) Normal model, respectively.

The model is estimated in three steps: First, the world shock is estimated; second, the regional shock is computed using the first step's world shock, and finally, the full model is estimated for each country.

4.2. Contagion Test

[Ehrmann et al. (2011)](#) consider contagion as the excess comovement beyond fundamental linkages and suggest the following test for contagion:

$$\hat{e}_{i,t} = v_0 + \sum_{j=1}^{3} v_j D_{j,t} + u_{i,t} \tag{4}$$

where $\hat{e}_{i,t}$ is the estimated idiosyncratic return shocks of portfolio i, $D_{j,t}$ is a crisis dummy variable, and v_j captures the contagion crisis effect.

5. Empirical Findings and Discussion

Empirical findings concern (i) the portfolio performance (different measures); (ii) the stylized facts of volatility regimes, financial crises, and structural economics variables (in a structural regime-switching model); and (iii) the contagion test (following [Ehrmann et al. 2011](#)) results.

5.1. Portfolio Performance

In the present subsection, the results concern the portfolio time-varying betas. These are indicated by the implied global and implied regional betas (see Table 3). They are also reported for various portfolio weighting schemes (market capitalization, trade integration, GDP, inflation, and interest rates). In terms of implied global betas, the highest and lowest concern Botswana and the United Arab Emirates. An interesting result is that the countries in the Americas have low average values of implied global betas. It is also noticeable that most of the countries, even in Africa or Asia, that should have been expected to have exceptionally high global betas did not. All regions had average implied global betas compatible with most of the countries of other regions; with the single exception of Africa. Moreover, there is a lot of dispersion among countries of the same region. This is why we provided the average implied regional betas.

Table 3. Average implied global and regional betas.

| | Implied Global Betas | | | | | Implied Regional Betas | | | | |
	MC	TI	GDP	INF	INT	MC	TI	GDP	INF	INT
AFRICA										
Botswana	1.29	2.12	0.0123	0.1170	0.1999	17.99	21.82	1.39	16.16	5.75
Egypt	0.3687	0.2395	0.0977	0.0544	0.1295	5.14	2.48	10.61	7.52	3.72
Kenya	0.0223	0.0982	0.0012	0.0016	0.0090	0.3101	1.01	0.1345	0.2163	0.2600
Mauritius	0.1739	0.4773	0.0022	0.0025	0.2052	2.42	4.92	0.1916	0.3414	5.90
South Africa	0.0836	0.4389	0.0352	0.0179	0.0297	1.16	4.52	3.84	2.47	0.8541
AMERICAS										
Argentina	0.3807	3.86	0.2350	0.0087	0.1082	2.47	5.80	0.6488	0.2473	1.13
Brazil	0.1662	0.5444	0.3868	0.0328	0.0402	1.08	0.8167	1.07	0.9294	0.4221
Canada	0.3869	1.12	0.6738	0.2054	0.4628	2.50	1.69	1.87	5.83	4.86
Chile	0.0177	0.1065	0.0039	0.0057	0.0118	0.1147	0.1601	0.0109	0.1618	0.1238
Colombia	0.0169	0.0950	0.0051	0.0039	0.0077	0.1090	0.1426	0.0145	0.1095	0.0806
Jamaica	0.0034	0.0024	4.4×10^{-5}	2.5×10^{-5}	7.7×10^{-4}	0.0220	0.0036	1.3×10^{-4}	7.1×10^{-4}	0.0080
Mexico	0.1138	0.0440	0.1468	0.0268	0.0499	0.7380	0.0660	0.4075	0.7598	0.5240
Panama	0.0069	9.1×10^{-5}	1.8×10^{-4}	2.2×10^{-4}	0.0077	0.0447	9.1×10^{-5}	5.4×10^{-4}	0.0062	0.0810
Peru	0.0780	0.4400	0.0121	0.0310	0.0605	0.5054	0.6614	0.0335	0.8784	0.6352
United States	0.0074	0.0057	0.1464	0.0036	0.0087	0.0481	0.0086	0.4059	0.1016	0.0913
Venezuela	0.1423	2.01	0.0351	0.0081	0.0178	0.9195	3.01	0.0961	0.2284	0.1864
ASIA										
Australia	0.3238	1.15	0.3366	0.0048	0.1542	0.9824	5.10	1.11	0.0064	0.3856
Bangladesh	0.5042	1.75	0.0570	0.0564	0.1624	1.54	7.75	0.1891	0.0747	0.4062
China	0.1986	0.0664	0.6155	0.0426	0.0469	0.6042	0.2947	2.04	0.0565	0.1173
Hong Kong SAR	0.0022	5.2×10^{-4}	5.9×10^{-4}	0.0011	0.0019	0.0066	0.0023	0.0020	0.0015	0.0048
India	0.0148	0.0325	0.0164	9.4×10^{-4}	0.0043	0.0450	0.1437	0.0541	0.0012	0.0108
Indonesia	0.0032	0.0196	0.0017	2.8×10^{-4}	8.6×10^{-4}	0.0097	0.0866	0.0055	3.7×10^{-4}	0.0022
Israel	0.0780	0.0646	0.0225	0.0432	0.0653	0.2376	0.2846	0.0749	0.0573	0.1634
Japan	0.0312	0.0401	0.2021	1.46	0.3133	0.0948	0.1769	0.6691	1.94	0.7837
Jordan	0.0033	0.0121	8.3×10^{-5}	5.9×10^{-5}	0.0016	0.0101	0.0532	2.7×10^{-4}	7.8×10^{-5}	0.0040

Table 3. *Cont.*

| | | Implied Global Betas | | | | Implied Regional Betas | | | |
	MC	TI	GDP	INF	INT	MC	TI	GDP	INF	INT
Malaysia	0.0920	0.1374	0.0227	0.0382	0.0796	0.2797	0.6089	0.0753	0.0507	0.1992
New Zealand	0.0307	0.0697	0.0050	0.0046	0.0173	0.0931	0.3081	0.0168	0.0061	0.0432
Oman	0.0197	0.1442	0.0011	4.7×10^{-4}	0.0256	0.0600	0.6373	0.0034	6.2×10^{-4}	0.0642
Pakistan	0.0469	0.0428	0.0136	0.0080	0.0172	0.1429	0.1897	0.0446	0.0105	0.0429
Philippines	0.0216	0.0988	0.0051	0.0059	0.0112	0.0657	0.4369	0.0167	0.0078	0.0281
Saudi Arabia	0.0054	0.0503	0.0028	0.0015	0.0039	0.0163	0.2223	0.0093	0.0020	0.0099
Singapore	0.1223	0.0235	0.0249	0.0513	0.3539	0.3726	0.1045	0.0832	0.0681	0.8853
South Korea	0.0143	0.0073	0.0130	0.0036	0.0078	0.0435	0.0322	0.0429	0.0048	0.0196
Taiwan Province of China	0.0676	0.3075	0.0372	0.0695	0.0904	0.2051	1.36	0.1229	0.0922	0.2261
Thailand	0.1119	0.0865	0.0306	0.0359	0.1081	0.3409	0.3819	0.1015	0.0476	0.2705
United Arab Emirates	9.9×10^{-4}	0.0041	3.3×10^{-4}	2.3×10^{-4}	0.0021	0.0030	0.0183	0.0011	3.0×10^{-4}	0.0053
EUROPE										
Austria	0.1004	0.1156	0.0447	0.0513	0.1224	0.2263	10.22	0.1355	0.2525	0.2604
Belgium	0.0930	0.0303	0.0532	0.0500	0.1226	0.2096	2.68	0.1624	0.2460	0.2608
Bulgaria	0.1385	0.2206	0.0060	0.0290	0.1527	0.3121	19.51	0.0189	0.1427	0.32470
Croatia	0.0155	0.0134	8.6×10^{-4}	0.0059	0.0045	0.0349	1.19	0.0028	0.0289	0.0096
Cyprus	0.0238	0.0072	8.3×10^{-4}	0.0012	0.0374	0.0537	0.6340	0.0023	0.0057	0.0796
Czech Republic	0.0036	0.0044	6.2×10^{-4}	0.0014	0.0041	0.0080	0.3921	0.0019	0.0067	0.0088
Denmark	0.0072	0.0106	0.0030	0.0045	0.0105	0.0163	0.9437	0.0091	0.0219	0.0223
Estonia	0.0444	0.0505	6.7×10^{-4}	0.0092	0.0412	0.0998	4.45	0.0022	0.0451	0.0876
Finland	0.0331	0.0355	0.0095	0.0087	0.0411	0.0745	3.14	0.0288	0.0428	0.0874
France	0.0321	0.0284	0.0997	0.0205	0.0408	0.0722	2.52	0.3035	0.1007	0.0868
Germany	0.0262	0.0469	0.1275	0.0223	0.0462	0.0590	4.14	0.3881	0.1099	0.0868
Greece	0.0291	0.1162	0.0103	0.0138	0.0207	0.0656	10.27	0.0315	0.0679	0.0868
Hungary	0.0070	0.0118	0.0010	0.0031	0.0025	0.0157	1.04	0.0031	0.0150	0.0054
Ireland	0.0292	0.0362	0.0080	0.0155	0.0373	0.0655	3.19	0.0243	0.0763	0.0792
Italy	0.0263	0.0322	0.0714	0.0155	0.0431	0.0593	2.84	0.2173	0.0761	0.0793
Latvia	0.0302	0.0119	6.7×10^{-4}	0.0058	0.0311	0.0680	1.05	0.0022	0.0285	0.0661
Lithuania	0.0099	0.0082	4.4×10^{-4}	0.0039	0.0084	0.0223	0.7255	0.0014	0.0192	0.0179
Luxembourg	0.0296	0.0095	0.0017	0.0148	0.0401	0.0664	0.8339	0.0056	0.0729	0.0852
Malta	0.0268	0.0163	2.2×10^{-4}	0.0154	0.0150	0.0606	1.44	8.7×10^{-4}	0.0758	0.0319
Netherlands	0.0273	0.0187	0.0281	0.0150	0.0373	0.0613	1.66	0.0858	0.0739	0.0792
Norway	0.0194	0.0939	0.0091	0.0105	0.0161	0.0437	8.31	0.0277	0.0519	0.0343
Portugal	0.0240	0.1219	0.0064	0.0119	0.0314	0.0544	10.78	0.0198	0.0585	0.0667
Romania	0.4531	1.21	0.0704	0.0500	0.1465	1.02	107.15	0.2139	0.2460	0.3115
Russia	0.0332	0.3715	0.0541	0.0034	0.0138	0.0749	32.84	0.1646	0.0166	0.0294
Slovak Republic	0.0230	0.0430	0.0019	0.0059	0.0265	0.0516	3.81	0.0054	0.0289	0.0564
Spain	0.0242	0.0252	0.0334	0.0091	0.0272	0.0543	2.23	0.1018	0.0446	0.0578
Sweden	0.0409	0.0221	0.0272	0.0377	0.0518	0.0919	1.95	0.0827	0.1855	0.1103
Switzerland	0.0411	0.0384	0.0264	0.0845	0.1019	0.0925	3.40	0.0804	0.4160	0.2168
Turkey	0.0340	0.0490	0.0289	0.0047	0.0053	0.0769	4.33	0.0878	0.0230	0.0112
Ukraine	0.0265	0.1485	0.0042	0.0031	0.0081	0.0598	13.13	0.0130	0.0153	0.0173
United Kingdom	0.0245	0.0087	0.1005	0.0147	0.0255	0.0549	0.7681	0.3059	0.0725	0.0543

Notes: Table 3 presents the average values of implied global (internationally aggregated) and regional (regionally aggregated) betas of all countries. MC, IT, GDP, INF, and INT refer to the respective portfolio weighting schemes: changes in market capitalization, trade integration , GDP growth, inflation rate, and interest rate, from which the betas are estimated.

Next, the average implied regional betas indicate the relative market risk of national stock indices within the region they belong to, and these are reported for various portfolio types (i.e., portfolio weighting schemes). Africa first with the Americas second are the regions where most of their regional countries have high implied regional betas. Europe has the lowest. The results are robust across most of the portfolio weighting schemes. A single exception is trade integration, for which the implied regional betas change a lot, with most of the countries having average implied regional betas higher than 1.

5.2. Stylized Facts

Tables 4–7, as well as, Table 8, report the estimated coefficients for all types of international equity portfolios. The results from such a model are retrieved regionally and internationally and concern the stylized facts of volatility regimes, financial crises, and

structural macroeconomic variables. The differences between the portfolio types are signified via their differences in the magnitude and statistical significance of the coefficients in the structural regime-switching factor models. The magnitude and statistical significance results are not contradictory. This is why we mostly concentrate on statistical significance.

The statistical significance in the structural regime-switching factor model is high for both global and regional betas. This result concerns all regions and most of the portfolio weighting schemes.

The single exception was market capitalization, for which the results for most of regions were statistically significant only for regional betas. This exception concerns the statistical significance of all coefficients (regime variables, crises, and macroeconomic variables) and the overall model significance (adjusted R-squared and F-test).

The following results concern most portfolio weighting schemes. By considering the majority of the countries within a region with statistically significant latent regime variables. Regarding crisis-coefficients (ARG, US, and EU), Europe was affected by all crises, Africa was affected only by the US crisis, the Americas region was affected by the Argentinian and US crises, and Asia was affected mostly by the Argentinian and US crises (and in some weighting schemes, from the EU crisis as well). The macroeconomic variables indicated a significantly greater affect (where most of the countries had statistically significant macro-coefficients (MC, TI, GDP, INF, INT)) for all regions, as well as for all portfolio weighting schemes (the single exception is the market capitalization scheme for global betas). The overall significance (F-stat) was impressively high and was mostly concentrated on the Americas and Europe. The adjusted R-squared values are not impressively high, however.

5.3. Contagion Test

Tables 9–12, as well as Table 13, report the Ehrmann et al. (2011) contagion test results of all international equity portfolios while splitting them between the implied global and implied regional betas. The differences between the portfolio types are signified via their differences in the magnitude and statistical significance of the coefficients in the structural regime switching factor models. The magnitude and statistical significance results are not contradictory. This is why we mostly concentrate on statistical significance. The contagion effect is assessed by the v_0 coefficient, whereas the contagion from each crisis is indicated by the (Arg cr., US cr., and EU cr.) coefficients. They are all reported in Table 5A–E.

The most important result of the Ehrmann et al. (2011) contagion test was the indication of strong contagion. There were 3–4 regions with most of their countries having statistically significant contagion. This result holds for all portfolio weighting schemes. Specifically, across the portfolio weighting schemes, the presence of contagion was evident in all regions (in descending order): Europe (7 cases), Asia (5 cases), the Americas (3 cases), and Africa (2 cases). Furthermore, across all regions, the presence of contagion was evident in all portfolio weighting schemes (in a descending order): MC, GDP, and INT first with 4 cases per each scheme and TI and INF with 3 cases per each scheme. Moreover, across all regions and portfolio weighting schemes, the implied global betas had stronger indications of contagion compared to the implied regional betas (11 compared to 7 cases).

Table 4. Structural regime-switching factor model on market-capitalization-based portfolios.

	Global Betas												Regional Betas											
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$
AFRICA																								
Botswana	−27.634	−34.292	−34.292	23.372	−47.175**	−14.236	−0.878	1.476**	−1.266	−0.550	0.068	1.135	−0.499**	−0.389**	0.671	1.067*	0.129**	−0.256**	−0.065**	−0.055	0.087**	0.019**	0.112	1.961**
Egypt	0.4865**	−0.374**	1.027**	0.973	−0.740	−2.632	−0.375**	0.027**	0.960*	0.040	0.055	0.915	0.031	1.184	1.379	−1.854**	−1.959	0.608	−0.338*	0.094**	0.094**	0.242**	0.058	0.957
Kenya	18.900	15.396	35.040**	−16.909	−27.446	−5.818	93.566**	2.253*	−26.874**	12.245*	0.180		0.179**	0.809**	1.069**	−0.094	1.077	−0.026	0.772*	−0.867	−0.011	0.320**	0.098	1.700*
Mauritius	3.413	0.949	−9.760*	−3.297	5.806	−4.812	4.311	−1.299*	−0.435	2.676	0.065	1.084	−0.184*	0.133	−0.028	−0.228**	−0.669**	−0.105	−0.329	0.065**	0.016**	0.028**	0.050	0.815
South Africa	−1.706*	−2.130	0.129	2.807**	−1.196	−3.528	5.402	0.094**	−1.200	0.070	0.049	0.820	1.474**	1.932**	1.136**	−0.976**	−0.562	3.306**	−1.488	−0.023**	−0.675	−0.320**	0.137	2.478**
AMERICAS																								
Argentina	0.820	2.516	−2.504	−2.165	−1.723	−6.689	0.022	10.878	−1.341*	1.629**	0.039	0.632	−0.655	−1.588**	−2.046**	−1.537**	1.097	0.657	−0.035	−2.340	−0.132	−0.058*	0.067	1.125
Brazil	−0.977**	−0.977**	1.075**	0.748**	0.769*	−0.546	−0.117	0.080**	−0.157*	0.028**	0.115	2.028**	−0.280	−0.713**	−1.012	−0.905**	0.644	−0.381	−0.026	−0.104	−0.367**	−0.050	0.063	1.049
Canada	7.615	2.131	−1.123	−1.123*	3.765	2.214	2.482	−1.355	3.669*	−0.911	0.039	0.039	−0.501**	−0.667**	−0.848**	−1.248**	0.091	0.054	0.173**	−0.113**	0.311**	0.154**	0.072	1.201
Chile	−3.104	−10.182	3.070	−16.019	−7.192	−15.022	13.432	0.186	−18.776*	6.780	0.024	0.392	−0.024**	−0.092**	−0.086**	−0.153**	0.171**	0.116**	−0.076**	−0.019**	0.375**	−0.046	0.050	0.824
Colombia	−5.982**	−3.139*	0.298	0.298	−6.174*	−4.005	−0.865**	0.475	−0.056*	0.421	0.065	1.090	−0.236**	−0.204**	−0.199**	−0.297**	0.085	−0.019**	0.020**	−0.011**	−0.714**	0.025**	0.060	0.989
Jamaica	46.184	4.877	−19.652	20.257	−6.063	4.735	19.386	19.386	−0.108	30.973	0.025	0.395	−0.059**	0.201**	−0.406**	−0.028	1.641**	−0.759**	0.016**	0.008*	0.081	−0.090**	0.249	5.162**
Mexico	−1.423	−1.423	−0.909	−2.069	1.019	−4.791	−0.251	0.077**	−4.809**	1.121**	0.062	1.037	−0.186	−0.332**	−0.762**	−1.542**	0.223	0.299	−0.063**	−0.080	1.263**	0.188**	0.161	2.985**
Panama	−9.605	0.772	−13.944	−11.056	−13.053	0.311	4.225	3.650	0.645	2.752	0.024	0.379	0.443**	0.173**	−0.711**	−0.142**	0.152	−0.263	0.202	−0.104**	0.302**	0.094**	0.092	1.582
Peru	−0.083	−0.778	0.712	−1.540	−0.332	−4.935**	0.695	3.763**	−0.045	0.362**	0.106	1.886**	−0.333**	−0.220**	−0.191**	−0.296**	−0.123**	0.084**	0.062**	−0.020**	0.076**	−0.017*	0.065	1.093
United States	−3.083	−1.261*	2.010	0.145	−0.920	0.166	3.043*	0.109**	−0.661**	0.015	0.075	1.268	0.510**	−0.117	−1.420	−0.779	0.234	0.780	−1.419	−0.075**	−0.244**	0.165**	0.125	2.227**
Venezuela	−0.425**	−0.093	−0.185	−0.185*	0.242	0.713**	−0.111	−0.044**	−0.278**	−0.035**	0.039	0.039	−0.087**	−0.309**	−0.144**	−0.571**	−0.134**	0.030	−0.498**	0.006**	0.454**	0.090**	0.067	1.126
ASIA																								
Australia	−1.452	−4.301	−1.233	−6.066	−13.007**	12.287*	−2.383	0.749**	0.749	−0.391	0.065	1.086	0.024	−0.087*	−0.131**	−0.180**	0.129**	−0.455**	0.110**	−0.071**	−0.075**	0.088**	0.095	1.630*
Bangladesh	0.817	1.284	1.007	−1.734	−1.708	1.811	−1.704	−1.228	1.479	−0.777*	0.020	0.313	1.780**	1.796**	−0.122**	−0.389**	−0.168**	−0.036**	−0.101**	0.049**	−0.454**	0.002	0.159	2.952**
China	−4.142	−3.168	−0.758	1.726	−1.992	1.290	−5.952*	0.158	−4.896**	−1.786**	0.106	0.106**	3.656**	3.406**	−0.789**	−0.996*	−0.090	0.356	−0.192	−0.014*	0.051	0.267**	0.130	2.339**
Hong Kong SAR	1.903	1.401	−1.846**	1.397**	0.948	4.703**	−2.633	−0.029**	−2.084**	−0.441**	0.062	1.023	6.972*	6.922*	−0.195	−1.961	−0.619	−1.574	1.771	0.014**	0.078	0.542**	0.154	2.834**
India	−43.779	−52.495	−2.343	−20.970	−12.942	−56.845*	50.272	0.255	−5.771	2.768	0.040	0.649	1.282**	0.813**	−0.390*	−1.608	−0.903	−1.611	−0.385	0.068**	−0.054	0.531	0.077	1.308
Indonesia	1.435	2.740	4.379	−1.167	−6.984*	−4.394	−3.319	0.372**	0.135*	0.522	0.042	0.676	1.912**	1.525**	−0.100*	−0.586**	0.004	0.814**	−0.057	−0.012**	0.095**	−0.157**	0.124	2.215**
Israel	−3.248	−1.490	−3.394*	−0.325	0.210	−0.117	−7.674	−0.088	−1.096*	−0.307	0.037	0.599	2.561**	2.310**	0.033	−0.844**	0.089*	−0.372	2.950	0.066**	−0.014**	0.175**	0.180	3.416**
Japan	5.177	2.906	4.802	2.611	−5.324**	−5.088	−8.796	0.556**	4.395*	0.810**	0.073	1.227	8.437**	8.055**	−0.092	−0.745**	−0.281**	0.764*	−1.817	−0.035	−0.218**	−0.104**	0.240	4.919**
Jordan	28.346	18.577	−4.986	−34.331**	0.718	37.840**	9.022*	−0.333**	8.443**	3.022	0.153	2.813**	−0.032	−0.043	0.065**	−0.067**	−0.206**	−0.156**	0.076**	0.023**	−0.058**	0.031**	0.120	2.127**
Malaysia	−2.037	−3.726	−7.148	−3.180	−5.377	−19.308*	−2.289	0.300*	0.288	0.915	0.032	0.514	0.666**	0.541**	0.066*	−0.327**	−0.052**	−0.602**	0.018**	0.015**	−0.055**	0.120**	0.080	1.364
New Zealand	13.148	11.159	1.283	−1.466	−14.293*	12.527**	−33.315**	0.577	−13.415**	−2.451	0.205	2.708**	4.024**	0.943**	0.763**	−0.054	0.127**	0.549**	0.583**	0.575**	−0.047	0.042**	0.148	2.708**
Oman	38.748**	38.937**	−5.425	1.257	−2.595	5.243	2.038	−0.311	3.139	−0.763	0.084	1.427	3.956**	3.812**	−0.080**	−0.155**	−0.031**	0.341**	−0.038**	−0.017**	0.035**	−0.034**	0.315	7.164**
Pakistan	−2.453	−3.324	−3.074	−1.877	−0.421	1.712	2.763	−0.081	−5.863	−0.137	0.021	0.339	1.783**	1.637**	0.344**	−0.319**	−0.162**	0.064	−0.174**	−0.002	0.1834**	0.030	0.151	2.782**
Philippines	−0.399	−0.400	−29.569**	−29.569	−9.525	−6.610	19.407**	15.843	−0.423	3.019	0.074	0.074	1.111**	0.769**	1.033**	−0.516**	−0.469**	0.345**	0.380**	−0.431	0.019**	−0.032**	0.126	2.254**
Saudi Arabia	13.927	15.432	−7.392*	1.027	3.800	−0.465	−2.696*	0.016**	0.777	3.746	0.033	0.528	−0.352**	−0.313**	0.092**	−0.106**	0.126**	0.091**	0.012**	−0.004**	−0.032**	−0.035**	0.082	1.402

Table 4. *Cont.*

					Global Betas												Regional Betas						
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$
Singapore	−3.920	−3.719	−2.273	−3.019 *	2.508	−4.741 *	1.973	0.463	−0.087	1.518 **	0.050	0.819	3.538 **	3.324 **	−0.398 **	−0.984 **	−0.402 **	1.061 **	−0.196	−0.160	−0.017	0.087 **	0.159	2.948 **
South Korea	−6.866	−7.869	−1.929	−1.545	−6.082 *	−3.300	0.012	1.426 *	−0.194	−0.455 *	0.045	0.727	9.806 *	9.462 *	−0.375	−0.965 **	0.237	0.941 *	−0.312 **	−0.273 **	0.051 **	0.044 **	0.186	3.574 **
Taiwan Province of China	−0.279	0.223	1.704 *	5.135 **	−2.464	0.803 *	1.815 **	−0.083	1.855 **	−1.163 **	0.107	1.894 **	4.926 **	4.700 **	−0.011	−1.426 **	−0.196	0.102	−0.195	0.198 *	−0.183 **	0.254 **	0.151	2.764 **
Thailand	−3.796	1.115	−6.950	−2.116	4.590	28.333 **	−7.722 *	−9.261 **	−4.396	−4.935 **	0.090	1.547	1.662 **	1.356 **	−0.352 **	−0.848 **	−0.466 **	−0.308	0.176 *	0.226 **	−0.058	0.199 *	0.117	2.059 **
United Arab Emirates	−13.047	−12.159	1.278	10.542 **	−4.110	−8.980 *	17.659 *	0.355	0.507	−2.382 *	0.123	2.190 **	0.222 **	0.168 **	0.082 **	−0.088 **	−0.058 **	0.076 **	−0.123 **	0.038 **	0.033 **	−0.019 **	0.102	1.766 *
EUROPE																								
Austria	−7.253	−8.223	0.298	5.069 *	−3.733	1.992	−2.165	0.201	1.319	2.765	0.040	0.643	0.479 **	0.532 **	−0.239 **	−0.413 **	−0.390 **	−0.652 **	−0.123 **	0.034 **	−0.048 **	0.512 **	0.137	2.485 **
Belgium	−1.429	−1.052	−0.709 *	0.303	−1.018	−0.320	−0.741	0.701	−0.291 **	−0.188 **	0.018	0.282	0.479 **	0.234 **	−0.146 *	−0.542 **	−0.690 **	0.514 **	0.751 **	0.829	−0.028	0.273 **	0.127	2.272 **
Bulgaria	−1.873	−3.518	−0.402	−0.389	−5.728 **	1.410	2.245	4.516	0.328 *	−0.144	0.030	0.474	−0.146	0.287	−0.533	−1.795 **	−1.169	5.325	2.024	−2.409	−0.050	−0.370	0.072	1.216
Croatia	−4.797	3.990	53.029 **	0.990	1.673	−5.405	3.361	0.034 **	−7.348	0.539	0.082	1.402	−0.353 **	−0.656 **	−0.704 **	−0.825 **	−0.825	0.971	1.585	−0.082 **	−0.027	0.071 **	0.114	2.006 **
Cyprus	−3.995	−2.229	0.447	−7.248 **	−6.017 *	−12.041 **	−1.114	0.255	−0.823	2.950 **	0.036	0.578	0.417 **	0.536 **	−1.080 **	−1.080 **	−1.241 **	−1.295	−0.091	0.027 **	−0.255 **	0.350 **	0.102	1.779 *
Czech Republic	−3.475 **	−1.823 **	4.626 **	−1.022	−1.050 **	0.790	−1.018 *	0.133 **	1.323	0.229	0.075	1.263	−1.137 **	−1.36 *	−0.311 **	−1.479 **	−0.906 **	−0.699 **	−0.024	0.134 **	0.208 **	0.261 **	0.151	2.775 **
Denmark	−1.530	−2.123 **	0.715	0.655	3.088	5.956	−0.355	−0.316	−3.072 *	−0.562	0.025	0.401	0.067 *	−0.110 **	−0.086 **	−0.212 **	0.119	1.204 **	0.458 **	−0.047 **	−0.066 **	−0.164 **	0.185	3.536 **
Estonia	−4.232 **	−3.756 **	1.026	−3.357	−4.431	−2.136	0.663 *	0.119	0.314 **	0.504	0.033	0.536	−0.277 **	−0.346 **	−0.211 **	−0.845 **	0.415 **	0.692 **	−0.168 **	−0.154 **	0.048 **	−0.582 **	0.213	4.216 **
Finland	−2.062 *	−3.560 *	0.606	4.440 *	−2.142 *	−4.815	0.729	0.101 **	−1.103 **	0.407 **	0.086	0.086	2.839 **	3.109 **	−0.323	−1.804 **	0.469	1.301	1.982	−0.049 **	−0.258 **	−0.173 **	0.239	4.890 **
France	−0.298	−0.729 *	0.017	−0.382 *	−0.503 *	1.437	−0.193 **	−0.649	0.165 **	0.199 **	0.077	1.296	0.117	−0.259 **	−1.179 **	−0.592 **	−0.273 *	−0.389	−0.089	−0.089	−0.076	0.084 **	0.075	1.257
Germany	−0.957 **	−0.643 **	0.137 **	0.230 **	0.051	0.059	−0.011	−0.063 **	−0.197 **	0.045 **	0.041	0.666	1.601 **	1.226 **	−1.035 **	−1.280 **	−1.116 **	−0.790 **	0.044 *	0.017 **	0.645 **	0.204 **	0.093	1.618 *
Greece	−1.115	−0.883	−2.295	2.191 *	1.835	2.026	0.564	−0.081	−2.346 **	0.019	0.044	0.718	−0.869 **	−1.142 **	−0.319 **	−0.910 **	−0.735 **	−0.835	−0.215 *	0.039 *	0.126 *	0.046 **	0.140	2.536 **
Hungary	11.534	8.376	0.948	−6.221	−15.865 *	0.994	−7.753	0.994	−1.307	−0.695	0.043	0.695	−0.808 **	−0.547 **	−0.632 **	−1.585 **	−0.275	−0.476	0.970 *	0.056 **	0.157 **	0.267 **	0.084	1.436
Ireland	0.168	−1.349 **	0.390	2.529 **	−0.043	1.573	−0.618	−0.282 **	−0.847 **	−0.024	0.075	1.257	−1.639 **	−1.775 *	1.139 **	−0.446 **	−1.172 **	−6.659	1.545 **	0.440 **	0.130 **	0.571 **	0.075	0.188 **
Italy	−4.031 **	−3.436 **	−0.010	0.074	0.337 **	−1.093	0.4620 **	−0.018 **	0.355 **	0.419 **	0.058	0.965	−1.009 **	−1.160 **	−0.653 **	−0.649 **	−0.107 **	−1.365 **	0.325 **	−0.001	−0.194	0.222 **	0.076	1.284
Latvia	−6.288	−1.859	−5.190	−1.209	3.804	2.356	−1.497	−0.293 *	2.758	−2.124 *	0.081	1.371	8.323 **	7.399 **	0.377	−0.412 *	−2.463	2.185	0.023	0.036 **	−0.995 **	−0.575 **	0.255	5.350 **
Lithuania	−3.449 **	−2.264 **	0.224	3.004	−1.682	−1.988 **	−1.420	0.193 **	0.293	1.972 **	0.137	2.483 **	0.785 **	0.732 **	−0.050	−0.177 **	−0.053	−0.095	0.141 **	0.083 **	0.032 **	0.150 **	0.169	3.182 **
Luxembourg	−6.387	−6.587	−1.542	−3.787	−1.672	−5.655 *	2.400	0.498	−0.123	2.494 *	0.024	0.388	0.844 **	0.687 **	−0.475 **	−0.142 **	−0.405 **	0.563 **	0.161 **	−0.040 **	−0.058	−0.232 **	0.200	3.791 **
Malta	−15.354	−11.309	−5.249	−3.260	−16.529 **	14.302	7.076	0.293	−0.017	0.137	0.059	0.985	0.332 **	0.354 **	−0.212 **	−0.369 **	−0.026	0.230	−0.061 **	−0.031 **	0.077 **	−0.026 **	0.088	1.496
Netherlands	0.746	−0.815	9.499 **	−0.257	−2.482	6.038	−5.730 *	0.029 **	−0.633	0.085	0.046	0.746	0.877 **	0.552 **	−0.820 **	−0.761 **	−0.761 **	1.240	0.594	0.062 **	−0.337	0.089	0.082	1.395
Norway	−0.556	−0.901	−0.265	0.069	1.772	−0.547	1.991	0.030	−1.633 **	−0.154	0.076	1.275	0.806 **	0.585 **	−0.430 **	−0.052 *	0.024	0.467 **	0.703 **	−0.019 **	0.123 **	−0.233 **	0.159	2.956 **
Portugal	−1.627 **	−1.176 **	1.384 **	0.287 **	0.774 **	0.774 *	0.682	−0.058 **	−0.140	−0.235	0.059	0.975	−0.376 **	−0.342 **	−0.582 **	−0.919 **	−0.785 **	0.603 **	1.715 **	−0.020 **	0.093 **	−0.165 **	0.135	2.424 **
Romania	−1.217	2.849 **	−0.019	2.716	2.838	1.952	3.885	−0.059	−2.101	−1.728	0.029	0.469	−0.721 **	−0.708 **	−1.033 **	−0.445 **	−0.486 **	0.872 *	−1.382 *	−0.026	−0.298	−0.364 **	0.153	2.817 **
Russia	0.034	−0.452 **	2.303	0.815 **	0.758 **	0.564 *	1.119 **	−0.026 **	0.349 **	−0.036	0.064	1.068	2.289 **	2.082 **	−1.439 **	−1.336 **	−1.432 **	0.734 **	−1.735 **	−0.009	0.014	−0.711 **	0.148	2.699 **
Slovak Republic	−1.963 *	−2.830 **	4.654 **	−1.976 *	−1.778	0.067	−0.288	0.055 **	0.770	0.672 **	0.101	1.747 *	−0.042	−0.068 **	−0.685 **	−0.803 **	−0.272 **	0.283 **	−0.359 **	−0.014	0.025 *	0.155 **	0.137	2.484 **
Spain	−2.991 **	−3.004 **	−1.857	1.078	−2.417 *	0.603	0.133	0.090 **	0.868 *	0.146 **	0.107	1.960 **	−0.152	−0.234	0.280	−0.397 **	−0.212 **	2.162 **	−0.399 **	−0.057 **	−0.067	−0.059 **	0.183	3.497 **

Table 4. *Cont.*

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Regional Betas MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$
Sweden	−2.227 **	−2.227 **	1.135 *	0.446	0.336	0.118	0.175 **	0.161 **	0.715 **	0.043 **	0.060	1.001	0.924 *	0.719 *	−0.645 **	−1.358 **	−1.869 **	−0.407	0.813 **	−0.016	0.531 **	−0.049	0.158	2.931 **
Switzerland	−0.584	−0.292	0.872	−1.549 *	−2.121 **	−0.782	−1.729 **	−0.031 **	−0.892 *	3.753 *	0.189	3.657 **	0.735 **	0.659 **	−0.634 **	−0.560 **	−0.245 **	−0.218 **	0.212 **	0.011 **	0.631 **	−0.306 **	0.134	2.418 **
Turkey	−0.075 **	−0.075 **	0.076 **	0.031 *	0.396 **	−0.462 **	−0.098	0.034 **	−0.128 **	0.012 **	0.148	2.706 **	−1.697	−1.932	−0.408 **	−2.397 **	−0.129	−4.365 **	−0.277	0.019 **	0.012	0.226	0.119	2.097 **
Ukraine	0.906	0.986 **	3.860 *	2.617	0.410 **	2.542 *	−2.351	−0.030 **	1.193	−0.302 **	0.062	1.032	0.271 **	0.136 *	−0.647 **	−0.477 **	−0.116 *	1.152	−0.771	−0.013 **	0.111 *	−0.218 **	0.147	2.68
United Kingdom	−0.123	−0.489 *	−2.423 *	−2.410 **	−2.142 *	−1.295	0.542 **	0.195 **	0.106	0.439 **	0.262	5.545 **	−0.038 **	0.407 **	−0.120 **	−0.521 **	−0.351 **	0.025	0.224 **	−0.018 **	0.074 **	−0.038 **	0.118	0.118

Notes: Table 4 reports the estimated coefficients for all types of international equity market-capitalization-based portfolios from the structural regime-switching factor model. Coefficients are retrieved regionally and internationally and concern the stylized facts of volatility regimes, financial crises, and structural economic variables. β_0^w and β_1^w are the estimates of the latent regime variables. The three crises concern the coefficients of the three respective dummy variables. MC, IT, GDP, INF, and INT concern the coefficients of the respective structural macroeconomic variables (i.e., changes in market capitalization, trade integration , GDP growth, inflation rate, and interest rate). Then, the adjusted R^2 (adj. R^2) and the joint significance hypothesis F test ($F-stat$) are reported. ** and * indicate statistical significance in 5% and 10%, respectively.

Table 5. Structural regime-switching factor model on trade-integration-based portfolios.

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Regional Betas MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$
AFRICA																								
Botswana	−0.352 **	−0.241 **	−0.093	0.176 **	0.028	−0.230 **	−0.011 **	−0.008 **	0.006 **	0.015 **	0.081	1.370	−0.415 **	−0.556 **	0.775	0.560 **	0.152 *	−0.226 **	−0.064	0.002 **	0.027 **	0.010 **	0.069	1.169
Egypt	1.783	3.275	0.371	−2.402 **	−2.844	−0.088	−0.326	0.016 **	0.267 **	−0.343 **	0.088	1.513	0.950	1.049	−0.523	−2.641 **	−1.961	0.678	−0.737 *	0.014 **	0.230	−0.070	0.039	0.650
Kenya	1.219 **	1.377 **	−0.222	0.874	−0.147	0.654	−0.773	−0.015 **	0.312 **	−0.260 **	0.048	0.781	1.071 **	1.246 **	−0.873	1.559	0.259	1.605	−2.011	−0.040 **	0.336 *	−0.344 **	0.067	1.123
Mauritius	−0.559	0.103	−0.491 **	−0.707 **	−1.338 **	0.074	−0.541	0.102 **	0.016 **	0.051 **	0.033	0.538	−0.016	0.295	−0.183 **	−0.321 **	−0.702 **	0.220	−0.515 **	0.051 **	0.024 **	0.013 *	0.047	0.766
South Africa	1.632 **	2.483 **	0.560	−1.587 *	−1.518	3.463	1.741	−0.079 **	−1.345	−0.462 **	0.152	2.803 **	2.317	2.176 *	0.507	−1.872	−1.477	7.246	5.454	−0.079	−0.308	−0.990 **	0.125	2.226 **
AMERICAS																								
Argentina	−0.933	−2.147 **	−3.430	−1.550	0.337	0.166	−0.223	−4.410	0.186	−0.281 **	0.071	1.193	−2.032 *	−2.404 **	−2.363 **	−1.410 *	1.153	0.269	−0.226 **	−1.472	0.295	−0.117 **	0.061	1.020
Brazil	−0.272	−0.434	−1.716 *	−1.168 **	0.485	−1.986	0.077	−0.099 **	−0.492 **	0.088	0.101	1.748 *	−1.081 **	−1.180 **	−0.931 *	−0.909 **	−0.064	−0.604	0.073	−0.011 **	−0.414 **	0.062 **	0.052	0.849
Canada	−0.462 *	−0.690 **	−1.734 *	−2.907 **	−0.291	−0.291	−0.158	−0.182 *	0.580 **	0.476 *	0.059	0.975	−0.649	−0.763	−0.729	−1.015 **	0.143	0.428	0.159	−0.191 **	0.179	−0.021	0.079	1.331
Chile	0.201 **	0.138 **	−0.201 **	−0.298 **	0.125 **	0.347 **	−0.075 **	−0.046 **	0.075 **	−0.032 **	0.064	1.062	−0.133 **	−0.221 **	−0.018 *	−0.127 **	0.107 **	−0.036 *	0.088	0.005 **	0.088 **	−0.016 **	0.044	0.715
Colombia	−0.076 **	−0.050 **	−0.365 **	−0.411 **	−0.411 **	0.148 **	0.021 **	−0.013 **	−0.125 **	−0.011 **	0.089	1.527	−0.345 **	−0.298 **	−0.115 **	−0.260 **	−0.071	−0.071	0.038 **	0.061 **	−0.045	0.026 **	0.051	0.834
Jamaica	0.804 **	0.923 **	−0.463 **	−0.190 **	0.998 **	−0.507 **	−0.013	0.003 **	0.112 **	−0.091 **	0.200	3.905 **	0.089	0.059 *	−0.241 **	−0.070 *	1.231 **	−0.397 *	0.013 **	0.004 **	0.130 **	−0.074 **	0.290	6.374 **
Mexico	−0.015	0.174	−1.432 **	−2.221 **	−0.215	0.248	−0.119 **	−0.019 **	1.505	0.215 **	0.155	2.869 **	−0.351 **	−0.561 **	−0.559 **	−1.239 **	0.475 **	0.472	−0.069	−0.020	0.648	0.117 **	0.099	1.723 *
Panama	0.933 **	0.583 **	−0.881 *	−0.444 **	0.065	−0.111	0.105	−0.094 **	0.427 **	0.149 **	0.084	1.438	0.148 **	−0.094	−0.523 *	−0.213 **	0.130	−0.149	0.192 *	−0.082 **	0.181 **	0.054 **	0.070	1.181
Peru	−0.388 **	−0.206 **	−0.369 **	−0.377 **	−0.039	0.330 **	0.069 **	−0.225 **	0.011 **	−0.090 **	0.087	1.485	−0.445 **	−0.326 **	−0.202 **	−0.331 **	−0.235 **	0.079 **	0.062 **	0.049 **	−0.015 **	−0.025	0.051	0.843
United States	1.232 **	0.280 **	−1.937 *	−0.632	0.269	1.587	−3.713	−0.207 **	−0.212	−0.044	0.120	2.132 **	0.011	−0.523 **	−0.986 **	−0.687 **	−0.282 **	0.431 *	−0.801	−0.031 **	−0.140 **	0.117	0.115	2.017 **
Venezuela	0.195 **	−0.058 **	−0.316 **	−0.772 **	−0.346 **	−0.037 **	−0.203	0.002 **	0.040 *	0.104 **	0.098	1.691 *	−0.371 **	−0.662 **	0.265	−0.319	−0.204 **	0.069	−0.700 *	0.015 **	−0.035	0.072 **	0.027	0.439
ASIA																								
Australia	2.939 **	2.843 **	−0.455 **	−0.236 **	0.271 **	−1.003 **	0.429 **	−0.043 **	−0.110 **	0.033 **	0.210	4.154 **	0.121 **	0.037	0.439 **	−0.089 **	0.312 **	−0.630 **	0.030	0.037 **	0.037 **	0.116 **	0.124	2.217 **

Table 5. *Cont.*

	Global Betas												Regional Betas											
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$
Bangladesh	2.707 **	2.853 **	−0.423 **	−0.216 **	−0.402 **	−0.037	0.056	−0.022	−0.047 **	−0.166 **	0.156	2.878 **	0.654 **	0.731 **	2.217 **	−0.257 **	0.196 **	0.159 **	−0.189 **	−0.111 **	−0.043	−0.061	0.103	1.798 *
China	6.008 **	5.502 **	−1.450 **	−0.506	0.175	2.447	−0.248	−0.150 **	0.361	−0.286 **	0.109	1.902 **	1.698 **	1.615 **	−0.387 **	−0.534 **	0.130 *	0.903 **	0.343 **	−0.052 **	0.096 **	0.021	0.135	2.438 **
Hong Kong SAR	9.573 *	9.596 *	−0.594 **	−2.000 **	−0.953 **	−1.380	−1.379	0.012 **	0.249	0.207 **	0.222	4.459 **	3.100 **	3.084 **	−0.059	−0.749 **	0.490 *	0.846	0.895	−0.041 **	0.516 **	0.016	0.120	2.127 **
India	6.987 **	6.595 **	−1.511 **	−1.456	−0.779	−1.082	−0.985	0.040 **	−0.552	0.331	0.122	2.165 **	1.135 **	0.925 **	−0.126	−0.546 **	0.132	0.766	−0.219	−0.027 **	−0.090 *	−0.025	0.075	1.261
Indonesia	3.142 **	2.546 **	−0.837 **	−0.965 **	−0.271	1.404 *	0.105	−0.066 **	0.182 **	−0.429 **	0.091	1.568	1.283 **	0.764 **	0.421 **	−0.236	0.436 *	1.999 **	−0.171 *	−0.051 **	0.151 **	−0.556 **	0.144	2.614 **
Israel	9.546 **	9.385 **	−0.842 **	−1.352 **	−0.200 **	−1.569	−8.612	0.205 **	−0.032	0.258 **	0.249	5.165 **	1.870 **	1.638 **	0.435 **	0.474 **	0.574 **	0.440 **	−3.069	0.010	0.027 **	0.048 **	0.171	3.218 **
Japan	25.886 **	25.265 **	−0.242	−1.663 **	−1.232 *	2.811	−6.639	−0.087 **	−0.334 **	−0.489 **	0.300	6.688 **	4.941 **	4.677 **	−0.163 **	−0.393 **	0.546 **	1.000 **	−0.856	−0.070 **	−0.042	−0.138	0.213	4.221 **
Jordan	−0.049 **	−0.022	−0.055	−0.059	−0.300 **	−0.168	0.111 **	0.030 **	−0.030	0.049 **	0.118	2.082 **	−0.108 **	−0.154 **	0.043 **	−0.046 **	−0.090 **	−0.150	0.051 **	0.020 **	0.030 **	0.012 **	0.114	2.002 **
Malaysia	1.179 **	1.030 **	−0.808 **	−0.524 **	−0.617 **	−1.638	−0.012 *	0.038 **	−0.083 **	0.142 **	0.058	0.962	−0.126	−0.218 *	0.101	−0.330 **	0.201	−0.934 **	−0.040	0.022 **	0.036 **	0.089 **	0.088	1.502
New Zealand	2.911 **	2.686 **	−0.128 **	0.419 **	1.370 **	0.898 **	2.181 **	−0.062 **	−0.099 **	−0.300 **	0.240	4.929 **	0.543 **	0.377 **	0.360 **	0.069 *	0.561 **	0.585 **	0.331 **	−0.047 **	0.111 **	−0.131 **	0.182	3.464 **
Oman	5.289 **	5.109 **	−0.325 **	−0.375 **	−0.163 **	0.301 **	−0.239 **	−0.013 **	0.153 **	−0.026 **	0.252	5.259 **	1.420 **	1.304 **	0.140 **	−0.196 **	0.275 **	0.154 **	−0.057 **	−0.015	0.034	−0.025	0.108	1.881 *
Pakistan	3.645 **	3.590 **	−0.196	−0.022	−0.500 **	0.809	−1.126 **	−0.072 **	0.222	−0.210 **	0.165	3.071 **	0.980 **	0.817 **	0.522 **	−0.114 **	0.361 **	0.668 **	−0.200 **	−0.042	0.043	−0.092 **	0.130	2.338 **
Philippines	2.589 **	2.253 **	−0.280 **	−0.928 **	−0.790 **	0.888 *	0.297 **	−0.765	0.082 **	−0.136 **	0.103	1.792 *	0.807 *	0.020	5.062	−0.273	−0.046	0.294	0.155 **	−1.001	0.083 **	−0.045 **	0.108	1.895 *
Saudi Arabia	−0.423 **	−0.360 **	−0.101 *	−0.161 *	0.094 *	0.167 *	0.034 *	−0.006	0.016	−0.450 **	0.130	2.320 **	−0.161 **	−0.167 **	0.333 **	−0.130 **	0.175 **	0.038 **	0.051 **	−0.002	0.085 **	0.037 **	0.159	2.939 **
Singapore	10.203 **	9.830 **	−0.011	−1.364 **	−0.526 *	2.168 **	0.269 **	−0.146 **	0.058 **	−0.111 **	0.332	7.767 **	1.835 **	1.818 **	−0.286 *	−0.554 **	−0.076	0.360 **	−0.096 **	−0.173 **	−0.015	−0.017 *	0.120	2.123 **
South Korea	15.759 **	15.411 **	−1.030	−1.715 *	−0.274	1.573	−0.030	−0.296 **	0.166 **	−0.036	0.243	4.997 **	4.283 **	3.951 **	0.679	−0.464 **	0.701 **	0.766 **	−0.455 **	−0.280 **	−0.069 **	0.019 **	0.152	2.788 **
Taiwan Province of China	15.636 **	15.509 **	−0.632 **	−1.515 **	0.172	0.953 **	−0.558 *	−0.098	−0.092 *	−0.252 **	0.353	8.517 **	3.161 **	2.906 **	0.947 **	−1.378 **	−0.292	0.039	0.027	0.378 **	−0.139 **	0.228 **	0.113	1.981 *
Thailand	4.871 **	4.430 **	−0.514 **	−1.088 **	−0.706 **	2.081 *	−0.538	−0.479 **	−0.125	−0.326 **	0.154	2.828 **	0.679 **	0.679 **	−0.026	−0.742 **	−0.526 **	−0.837 **	0.448 **	0.352 **	−0.028	−0.028	0.142	2.582 **
United Arab Emirates	0.384 **	0.307 **	−0.076 **	−0.071 **	−0.117 **	0.071 **	−0.047	−0.019 **	0.034 **	−0.048 **	0.033	0.526	0.169 **	0.103 **	0.076 **	−0.063 **	−0.053 **	0.127 **	−0.124 **	−0.067 **	0.045 **	−0.021 **	0.091	1.568
EUROPE																								
Austria	0.871 **	1.009 **	−0.254 **	−0.524 **	−0.524 **	−1.080 **	−0.065 **	−0.039 **	−0.027 **	0.698 **	0.190	3.668 **	0.087	−0.051	−0.321 **	−0.544 **	−0.511 **	−0.561	−0.068 *	0.075 **	0.075	0.374 **	0.101	1.747 *
Belgium	0.829 **	0.441 **	−0.277	−0.613 **	−0.692 **	0.760 **	0.973 **	0.363	0.093 *	0.390 **	0.111	1.953 **	0.622 **	0.194 *	−0.490 **	−1.026 **	−0.482 **	−0.482 **	1.132 *	−0.051	−0.033	−0.054	0.134	2.411 **
Bulgaria	0.884	1.283	−0.183	−3.038	−0.647	8.143	4.287	−2.919	−0.115	−0.013	0.067	1.112	−1.418	−1.122	−2.073	−1.868 **	−2.046	1.446	0.033	−2.399	0.411 **	−1.067	0.073	1.227
Croatia	−0.219	−0.542	−1.060 **	−1.002 **	0.412	1.470	2.857	−0.027 **	−0.379 **	0.148 **	0.127	2.278 **	−0.985 **	−1.516 **	−0.833 **	−1.242 **	−0.285	2.693	2.660	−0.020	−0.292	−0.010	0.101	1.746 *
Cyprus	1.098 **	1.395 **	−1.551 **	−1.832 **	−1.168 **	−0.481	0.522	0.014 **	−0.496 **	0.280 **	0.107	1.859 *	0.232	−0.082	−0.983 **	−2.157 *	−1.706 **	−2.634	−1.196	0.054 **	0.250	0.774 **	0.091	1.556
Czech Republic	−0.964 **	−1.110 **	−0.656 **	−1.740 **	−0.751 **	−0.415	−0.055	0.093 **	0.220 *	0.298 **	0.153	2.824 **	−1.708 **	−2.403 **	−0.181 **	−1.989 **	−1.579 **	−1.184	0.085	0.228 **	0.228	0.358 **	0.130	2.330 **
Denmark	0.438 **	0.149 **	−0.136 **	−0.186 **	0.492 **	1.754 **	0.686 **	−0.078 **	0.086 **	−0.217 **	0.201	3.913 **	−0.245 **	−0.679 **	−0.064 **	−0.324 **	−0.144	1.159 **	0.365 **	−0.047 **	0.140 **	−0.223 **	0.127	2.262 **
Estonia	−0.150 **	−0.192 **	−0.281 **	−1.105 **	0.907 **	1.058 **	−0.241 **	−0.263 **	0.046 **	−0.685 **	0.203	3.973 **	−0.529 **	−0.795 **	−0.248 **	−1.019 **	0.152	0.702 **	−0.253 **	−0.111 **	0.058 **	−0.693 **	0.157	2.909 **
Finland	3.700 **	4.177 **	0.735	−1.929 **	1.589 **	−1.973	4.399 **	−0.150 **	−0.344	−0.059 **	0.289	6.330 **	2.737	2.325 **	−1.989	−3.093	0.079	5.962	0.236	−0.023	0.181	−0.439 **	0.111	1.940 *
France	0.523 **	0.166 *	−1.463 **	−0.745 **	0.263	−0.219	−0.285 **	0.022	−0.132 **	0.104 **	0.083	1.407	−0.449 *	−1.051 **	−1.553 **	−0.824 **	−1.122 **	−0.910 **	0.145 **	0.604 **	−0.015	0.120 **	0.066	1.098
Germany	2.589 **	2.175 **	−1.486 **	−1.491 **	−0.944	−1.174	−0.059	−0.048	0.704 **	0.269 **	0.095	1.646 *	0.123	−0.654 **	−1.143 **	−1.839 **	−1.839 **	−0.731 *	0.211 **	0.043 **	0.398 **	0.261 **	0.080	1.353
Greece	−0.623 **	−0.855 **	−0.619 **	−1.246 **	−0.751 **	−1.112	−0.264 **	0.017 **	0.370 **	0.084 **	0.103	1.781 *	−1.197 **	−1.886 **	−0.684 **	−1.536 **	−1.173 **	−0.864	0.031	0.018 **	0.145	−0.062 **	0.094	1.615 *

Table 5. *Cont.*

						Global Betas												Regional Betas						
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	adj. R^2	$F-Stat$
Hungary	−0.706 **	−0.478 **	−1.01 **	−1.550 **	0.065	0.368	1.160	0.0107 **	0.109 *	0.064 **	0.084	1.430	−0.750 **	−0.853 **	−0.547 **	−2.426 *	−0.943 **	−1.591	1.050 *	0.137 **	0.556 **	0.656 **	0.110	1.936 **
Ireland	−2.148 *	−2.299	1.694 *	−0.692 *	−1.559 *	−10.049	2.212 **	0.664 **	0.300 **	0.902 **	0.162	3.007 **	−1.064 **	−1.093 **	0.718 **	−1.110 **	−1.223 **	−3.471	1.069 **	0.310 **	0.039	0.404 **	0.226	4.562 **
Italy	−0.611	−0.906	−0.992 **	−0.751 **	−0.068	−1.134	0.328 **	−0.037 **	−0.320 **	0.216 **	0.060	0.987	−1.436 **	−1.671 **	−0.593 **	−0.823 **	−0.279 **	−2.319 **	0.496 **	0.039 **	−0.118 **	0.290 **	0.133	2.382 **
Latvia	13.930 *	13.244 *	0.040	−0.533 **	−1.655 *	1.608	0.194 **	0.022 **	−0.758 **	−0.394 **	0.372	9.231 **	0.873	−0.818	0.962	−0.484	−4.302	3.635	−0.177	0.065 **	−1.542	−0.958 **	0.144	2.627 **
Lithuania	1.155 **	1.112 **	−0.117 **	−0.244 **	−0.093 **	−0.077 **	0.185 **	0.042 **	−0.021 **	0.164 **	0.184	3.513 **	0.336 **	0.147 **	−0.080	−0.196 **	−0.124 **	−0.148 **	−0.036	0.017 **	0.051 **	0.257 **	0.099	1.719 *
Luxembourg	1.174 **	0.988 **	−0.689 **	0.069	−0.220 **	0.955 **	0.171 **	−0.113 **	−0.030 **	−0.385 **	0.241	4.956 **	1.150 **	0.752 **	−0.567 **	−0.359 **	−0.771 **	0.849 **	0.259 **	−0.081 *	−0.146	−0.307 **	0.167	3.132 **
Malta	0.543 **	0.622 **	−0.218 **	−0.323 **	0.093 **	0.110 **	−0.083	−0.051 **	0.024 **	−0.026 **	0.086	1.458	−0.065	−0.151 **	−0.255 **	−0.671 **	−0.064	0.671	−0.268	−0.010	−0.022	−0.046	0.067	1.118
Netherlands	1.444 **	1.106 **	−1.252 **	−0.892 **	−1.290 **	2.409	0.913	−0.044 **	−0.746 *	−0.065	0.072	1.209	−0.220	−0.696 **	−1.139 **	−0.984 **	−1.406 **	−0.657	1.035 **	0.019 **	−0.281	0.433 **	0.095	1.630 *
Norway	1.476 **	1.166 **	−0.599 **	0.012	0.258 *	0.958 *	0.893 **	−0.061 **	0.225 **	−0.346 **	0.185	3.546 **	0.445 **	−0.119	−0.537 **	0.029	0.014	0.793	0.999 **	−0.033 **	0.321 **	−0.419 **	0.146	2.674 **
Portugal	−0.086	−0.063	−0.798 **	−0.993 **	−0.569 **	1.239 **	1.702 **	−0.041 **	0.035	−0.224 **	0.083	1.412	−0.895 **	−1.024 **	−0.741 **	−1.454 **	−1.193 **	0.504	3.132 **	−0.012 **	0.309 **	−0.118 **	0.183	3.487 **
Romania	−0.531 **	−0.515 **	−1.329 **	−0.488	−0.070	1.516 **	−1.590	−0.045 **	−0.146 **	−0.489 **	0.161	2.994 **	−1.366 **	−1.565 **	−0.979 **	−0.703 **	−1.177 **	0.142	−1.806 **	−0.066 **	−0.469 **	−0.288 **	0.138	2.487 **
Russia	3.671 **	3.505 **	−1.948 **	−1.685 **	−1.270	1.348 **	−2.329 **	−0.052 **	0.065 **	−0.893 **	0.215	4.272 **	1.299 **	0.467	−2.531 **	−2.203 **	−2.573 **	0.951	−3.319	−0.014 **	0.071	−1.508 **	0.467	1.979 **
Slovak Republic	0.134	0.227 **	−0.825 **	−0.873 **	0.054	0.637 **	−0.584 **	−0.030 **	0.042 **	0.116 **	0.176	3.338 **	−0.370 **	−0.629 **	−0.835 **	−1.061 **	−0.545 **	0.303	−0.393 **	−0.013 **	0.073 **	0.271 **	0.111	1.946 **
Spain	−0.090	−0.077	0.443 *	−0.419 **	−0.057	3.243 **	−0.587 **	−0.088 **	−0.185 **	−0.085 **	0.207	4.070 **	−0.377 **	−0.625 **	0.030	−0.610 **	−0.675 **	2.099 **	−0.260 **	−0.041 **	−0.026	−0.046 **	0.157	2.908 **
Sweden	1.873	1.731 **	−0.974 **	−1.935	−1.999 **	0.198	0.922 **	−0.055 **	0.656 **	−0.073 **	0.168	3.144 **	−0.101	−0.486	−0.586 **	−1.438 *	−2.520 **	−1.351	1.163 **	−0.076	0.706 **	−0.054	0.134	2.408 **
Switzerland	1.333 **	1.299 **	−0.774 **	−0.642 **	−0.178 **	−0.161 **	0.177 **	0.037 **	0.804 **	−0.357 **	0.107	1.875 *	−0.057	−0.338 **	−0.964 **	−0.833 **	−0.102	−0.231 **	0.451 **	0.011 **	0.695 **	−0.482 **	0.130	2.338 **
Turkey	−1.548 **	−1.460 **	−0.514 **	−0.514 **	−0.461	−2.615	−2.855	0.075 **	−0.424 **	0.120 **	0.140	2.543 **	−1.437 **	−2.805 **	−0.499	−3.909	0.925	−7.876	3.182	0.042 **	0.870	0.662 *	0.114	2.007 **
Ukraine	−0.411	−2.461	−1.584	−10.414 **	−3.307	5.363	−12.590 **	−0.087 *	0.753	−0.443	0.093	1.592	−3.511	−13.557	2.904	−33.024 **	−19.302 *	−5.018	−35.661 **	−0.028	5.625	−0.269	0.089	1.532
United Kingdom	1.098 **	0.872 **	0.028	−0.572 **	−0.152	0.178	0.302 **	−0.038 **	0.053 **	−0.013 **	0.152	2.799 **	0.419	−0.114	−0.108 *	−0.769 **	−0.987 **	−0.192	0.123 **	0.016 **	−0.007	−0.018 **	0.110	1.933 **

Notes: Table 5 reports the estimated coefficients for all types of international equity international-trade-based portfolios from the structural regime-switching factor model. Coefficients are retrieved regionally and internationally and concern the stylized facts of volatility regimes, financial crises, and structural economics variables. β_0^w and β_1^w are the estimates of the latent regime variables. The three crises concern the coefficients of the three respective dummy variables. MC, IT, GDP, INF, and INT concern the coefficients of the respective structural macroeconomic variables (i.e., changes in market capitalization, trade integration , GDP growth, inflation rate, and interest rate). Then, the adjusted R^2 (adj. R^2) and the joint significance hypothesis F test ($F-stat$) are reported. ** and * indicate statistical significance in 5% and 10%, respectively.

Table 6. Structural regime-switching factor model on GDP-based portfolios.

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	F–Stat	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	IT	GDP	INF	INT	Adj. R^2	F–Stat
						Global Betas												**Regional Betas**						
AFRICA																								
Botswana	−0.087 **	−0.102 **	0.074 **	−0.059 **	−0.165 **	−0.024 **	−0.081 **	0.046 **	−0.041 **	−0.029 **	0.058	0.962	−0.773 **	−0.741 **	−0.434 **	0.207 **	−0.233 **	−0.386 **	0.035 **	0.037 **	0.043 **	0.021 **	0.053	0.869
Egypt	0.092 **	−0.059 **	0.158 **	0.064 **	−0.070	−0.450 **	−0.084 **	0.050 **	0.148 **	−0.012	0.043	0.705	−1.892	−0.888	0.743	−2.333 **	−2.607	0.314	−0.282	0.017 **	0.277	−0.433	0.052	0.852
Kenya	0.628 **	0.533 **	1.043 *	−0.540 *	−0.777	−0.221	2.837 **	0.069 **	−0.861 **	0.381 **	0.174	3.293 **	0.478 **	0.613 **	−0.212	0.574	−0.044	0.527 **	−0.728	−0.011	−0.048	−0.125 **	0.063	1.046
Mauritius	0.027 **	0.073 **	−0.035 **	−0.024 **	0.035 **	−0.029 **	0.038 **	−0.067 **	−0.036 **	0.015 **	0.074	1.247	−0.318 **	−0.079	−0.103 **	−0.197 **	−0.572 **	−0.404 **	−0.248 **	0.080 **	−0.016 **	0.052 **	0.086	1.473
South Africa	−0.493 **	−0.568 **	−0.011	0.609 **	−0.097	−0.681 **	0.978	0.012 **	−0.191 **	−0.069 **	0.050	0.828	0.610	1.227 *	0.734	−1.156	−0.884	4.268	3.300	−0.044 **	−0.757	−0.592 **	0.109	1.905 **
AMERICAS																								
Argentina	0.926 *	−0.022	−0.674	−0.382	−0.657	−1.343	−0.017	2.908	−0.399 **	0.461 **	0.038	0.615	−6.474	−8.041 *	−5.249	−2.094	−0.990	−5.184	0.278	−3.519	0.852	−0.899	0.100	1.738 *
Brazil	−1.579 **	−0.852	1.285 **	1.117 **	1.176	−2.004	−0.216 **	0.018 **	−0.290	0.042 **	0.119	2.100 **	−1.350	−1.477	−3.480	−3.070	−1.900	−6.110	1.118 **	0.004	−1.778	0.321 **	0.127	2.278 **
Canada	6.820	2.180	−1.981	10.119	2.991	3.304	1.604	−1.983	3.051	−1.358	0.036	0.576	−0.287	−0.379 *	−3.786 **	−4.591 **	0.772	3.005 **	0.336 *	−1.244 **	0.255 *	−0.034	0.164	3.052 **
Chile	−0.376	−1.729	0.655	−3.288	−2.080	−4.692	2.601	0.054 **	−3.410	1.515	0.022	0.352	0.500 *	0.214	−0.745 **	−0.931 **	−0.381	0.235	0.016	−0.011 **	−0.058	0.101 **	0.074	1.254
Colombia	−1.268	−0.673 **	0.106 **	−0.618 **	−1.290 **	−0.877 **	−0.144 **	0.098 **	0.098	0.093	0.061	1.016	−0.240	−0.174	−1.036 **	−1.117 **	−0.879 **	−0.022	0.132 **	0.030 **	−0.308 **	0.049 **	0.086	1.477
Jamaica	0.342 **	0.083	−0.144 *	0.185	−0.060 **	0.022	0.149 **	−0.008 **	0.030	0.271 **	0.026	0.409	2.274 **	2.206 **	−1.200 **	−0.342 *	1.461 **	−1.127	−0.590 **	0.008 **	0.249 **	−0.375	0.148	2.708 **
Mexico	−1.175	1.355	−0.908	−3.214	0.230	−9.309 *	−0.316	0.205 **	−4.936 **	1.503 **	0.070	1.182	−0.296	−0.477	−4.128 **	−3.918 **	−1.175	4.290	0.252 **	−0.199	0.466	−0.045	0.107	1.864
Panama	−0.119 **	0.079 **	−0.298 **	−0.276 **	−0.256 **	0.062 **	0.110 **	0.064 **	0.025 **	0.025 **	0.026	0.415	1.389 **	1.001 **	−1.806 **	−1.792 **	−0.286	1.162	0.697	0.041	0.424	0.036	0.061	1.014
Peru	0.021	0.021	0.026 **	−0.112 **	−0.012	−0.346 **	0.030 **	0.196 **	0.036 **	0.072 **	0.077	1.296	−0.720 **	−0.343 **	−1.288 **	−1.361 **	−0.281	1.093 **	0.511 **	−0.253 **	−0.118	−0.175	0.109	1.910 **
United States	−39.942	−16.488	15.708	1.057	−9.594	−4.763	40.778	1.238	−9.155	0.443	0.068	1.145	2.242	−0.136	−2.375	−1.929	−2.358	3.941	−16.487	−0.416 **	−1.283	−0.466	0.160	2.970 **
Venezuela	−0.071 **	−0.071 **	−0.034 **	0.098 **	0.036 **	0.091 **	−0.077	−0.010 **	−0.036 **	−0.018 **	0.073	1.231	0.653 **	0.222 **	−1.440 **	−0.982 **	−0.831 **	0.338 **	1.926	0.005 **	−0.244 **	0.031 **	0.116	2.054 **
ASIA																								
Australia	−0.152	−2.010	−0.349	−3.991	−3.991 **	7.157	−1.746	0.508	1.151	−0.138	0.084	1.427	2.755 **	2.666 **	−0.493 **	−0.221 **	0.484 **	−0.884 **	0.300 **	−0.040 **	−0.116	0.058 **	0.177	3.346 **
Bangladesh	0.028	0.063 *	0.030 **	0.030 **	−0.111 **	0.092 **	−0.083 **	−0.086 **	0.079 **	−0.052 **	0.019	0.297	3.222 **	3.248 **	−0.344 **	−0.309 **	−0.089	−0.048	−0.117	−0.090	−0.011	−0.149 **	0.185	3.534 **
China	−5.429	−4.196	0.169	−0.037	−4.411	−5.510	−6.905	0.569 **	−5.915 **	−1.523 *	0.155	2.863 **	6.460 **	5.867 **	−1.624 **	−0.596	0.495	2.338	−0.911	−0.151 **	0.101	−0.157	0.101	1.750 *
Hong Kong SAR	0.149 **	0.148	0.032 **	0.212 **	0.205 **	0.712 **	−0.712 **	−0.059 **	−0.406 **	−0.035 **	0.060	0.997	11.196	11.221	−0.782 *	−2.694	−1.110	−2.195	2.319	0.017 **	0.103	0.531	0.212	4.204 **
India	−14.523	−19.831	−6.716	−3.499	−2.935	−10.792	5.074	0.049	10.808	−1.999	0.047	0.761	6.672 **	6.197 **	−1.585	−2.099	−0.882	−1.963	−1.134	0.073 **	0.129	−0.343	0.071	1.192
Indonesia	0.460	0.695 **	0.695 **	−0.350	−1.561	−1.049	−0.727 **	0.086 **	0.027 **	0.141 **	0.141	0.593	3.706 **	3.105 **	−0.621 **	−0.777 **	0.115	1.512 **	−0.253	−0.019 **	0.182 **	−0.343 *	0.102	1.767 *
Israel	−0.552 **	−0.293 **	−0.581 **	−0.096 **	−0.034	−0.016	−0.977	−0.016 **	−0.190 **	−0.056 **	0.037	0.595	9.586 **	9.567 **	−0.674 **	−1.423 **	0.253 **	−0.984 **	−6.239	0.153 **	0.074	0.310 **	0.328	7.615 **
Japan	26.129	15.435	19.415	22.298	−14.103	−32.515	−29.724	0.798	22.329 *	3.999	0.075	1.272	26.750 **	26.141 **	−0.770	−1.721 **	−0.639	1.191	−4.432	−0.069 **	−0.441 **	−0.214	0.355	8.577 **
Jordan	0.453 **	0.376 **	−0.015 **	−0.202 **	0.054 **	0.186 **	0.056 **	−0.018 **	0.049 **	0.010 **	0.122	2.172 **	0.006	0.064 **	−0.033 **	−0.074 **	−0.245 **	−0.116 **	0.095 **	0.026 **	−0.028 **	0.056 **	0.086	1.466
Malaysia	−0.075 **	−0.221 *	−0.588 **	−0.268 **	−0.558 **	−1.669	−0.185 **	0.027 **	0.015 **	0.072 **	0.031	0.506	1.391 **	1.305 **	−0.551 **	−0.473 **	−0.092	−1.062 *	0.013	0.029 **	−0.165 **	0.213 **	0.068	1.144
New Zealand	−0.054	−0.205	0.155 **	−0.046	−0.737 **	0.063	−0.756	0.040 **	−0.743 **	−0.076	0.082	1.391	2.999 **	2.756 **	−0.345 **	0.491 **	1.487 **	1.180 **	1.654 **	−0.086 **	−0.026	−0.350 **	0.204	3.992 **
Oman	1.220 **	1.227 **	−0.089 **	−0.019 **	−0.049 **	0.033 **	0.078 **	−0.018 **	0.036 **	−0.079 **	0.199	3.875 **	6.204 **	6.019 **	−0.325 **	−0.330 **	−0.096	0.370 **	−0.182 **	−0.021 **	0.152 **	−0.032	0.310	7.000 **
Pakistan	−0.644 **	−0.754 **	−0.583 **	−0.410 **	−0.086	0.195	0.567 **	−0.008 **	−1.268	−0.054 **	0.026	0.423	3.898 **	3.755 **	−0.144	0.028	−0.183 *	0.930	−0.979 **	−0.090	0.228	−0.208 **	0.151	2.777 **
Philippines	−0.179 **	−0.179 **	−0.272 **	0.531 **	0.178 **	0.671 **	−0.277 **	−0.446 **	−0.043 **	−0.056 **	0.076	1.282	2.662 **	2.373 **	0.361 *	−0.728 **	−0.492 **	0.685 **	0.246 **	−0.974 *	0.070 **	−0.122 **	0.114	2.013
Saudi Arabia	3.894 **	3.958 **	−1.438	−0.265	1.069	−0.219 *	−0.418	0.006 **	0.146	−0.019	0.039	0.628	−0.367 **	−0.277 **	−0.095 **	−0.160 **	0.249 **	0.126 **	−0.020 **	−0.006 **	−0.047 **	−0.335 **	0.113	1.996
Singapore	−0.389 **	−0.352 **	−0.186 **	−0.301 **	0.052	−0.325 **	0.136 **	0.061 **	−0.018 **	0.084 **	0.054	0.892	10.246 **	9.699 **	0.085	−1.244 **	−1.218	3.587	−0.317	−0.064	−0.014	−0.357	0.285	6.221 **

Table 6. *Cont.*

	Global Betas												Regional Betas											
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	IT	GDP	INF	INT	Adj. R^2	$F-Stat$
South Korea	−3.059	−3.453	−0.919	−0.761 **	−2.834	−1.662 **	−0.307	0.773 **	−0.124 **	−0.210 **	0.044	0.719	−0.103	17.276	−1.378	−1.613 **	0.356	2.885	−0.402	−0.432 **	0.108 **	−0.103 **	0.247	5.127 **
Taiwan Province of China	−0.057	0.022	0.590 **	1.407 **	−0.746 **	0.214 **	0.483 **	−0.023	0.499 **	−0.351 **	0.099	1.715 *	15.659 **	15.503 **	−0.536	−1.415 *	0.351	0.923 *	−0.375	−0.130	−0.146 **	−0.185	0.341	8.077 **
Thailand	−0.529	0.035	−0.589	−0.214	0.448	2.013 **	−0.460	−0.634 *	−0.340	−0.359 **	0.073	1.232	4.463 **	4.144 **	−0.671 **	−1.002 **	−0.425 **	1.176	0.179	−0.372 **	0.126 **	0.126 **	0.150	2.760 **
United Arab Emirates	−0.474	−0.587	0.277	0.852 **	−0.819 *	−1.048	3.500	0.148 **	0.075 **	−0.425 **	0.085	1.441	0.448 **	0.385 **	−0.078 **	−0.090 **	−0.067 **	0.093 **	−0.086 **	−0.016 **	0.050 **	−0.033 **	0.048	0.793
EUROPE																								
Austria	−1.209 **	−1.434 **	−0.101	1.728 **	−0.375	1.139	−0.275 *	0.013 **	0.165	0.447	0.077	1.303	−0.283 **	−0.017	−0.244 **	−0.771 **	−0.553 **	−2.059 **	−0.237 **	0.048 **	0.051	1.294 **	0.150	2.743 **
Belgium	−0.445	−0.232	−0.278 **	0.066	−0.316 *	−0.533 **	−0.068	−0.018	−0.091 **	−0.056 **	0.032	0.508	1.065 *	0.596 **	−0.652	−0.890 **	−0.615	1.388 *	1.031	−0.430	0.025 **	0.368 *	0.107	1.871 *
Bulgaria	−0.053 **	−0.087 **	−0.0128 **	−0.034 **	−0.115 **	0.032 **	0.021	0.064 *	0.049 **	−0.013 **	0.021	0.343	−3.270	−1.671	−1.018	−4.166	−0.189	7.098	5.972	−3.926	0.404	−0.388	0.063	1.043
Croatia	−0.077 **	0.137 **	1.337 **	0.025 **	0.078 **	−0.170 **	0.071 **	0.010 **	−0.194 **	0.095 **	0.080	1.357	−0.954 **	−1.494 **	−1.288 **	−1.381 *	0.923	2.710	2.710	−0.037	−0.252	0.140 **	0.132	2.380 **
Cyprus	−0.072	−0.042	0.016	−0.151 **	−0.122	−0.247 *	−0.047	0.053 **	−0.015	0.059 **	0.039	0.639	−1.367 **	−0.723	−2.339 **	−3.099 **	−1.460 **	−1.599	0.590	0.039 **	−0.760 *	0.763 **	0.080	1.356
Czech Republic	−0.235 **	−0.187 **	0.272 **	−0.038	−0.133 **	0.105 **	−0.038 **	0.011 **	0.172 **	−0.015	0.053	0.871	−1.277 **	−1.681 **	−0.928 **	−2.213 **	−0.880 **	−0.380	0.086	0.120 **	0.692 **	0.372 **	0.137	2.473 **
Denmark	−0.314	−0.480	0.254	0.254	0.868	1.479	−0.080	−0.090	−0.847	−0.227	0.023	0.373	−0.242 **	−0.638 **	−0.089 *	0.175	1.049 *	2.756 **	1.057 **	−0.139 **	−0.226	−0.430 **	0.144	2.632 **
Estonia	−0.028 **	−0.034 **	−0.046 **	−0.043 **	−0.057 **	−0.024 **	−0.003 **	0.051 **	0.054 **	0.082 **	0.036	0.036	−0.488 **	−0.435 **	−0.534 **	−1.038 **	1.395 **	1.336 **	−0.399 **	−0.350 **	0.021 **	−0.876 **	0.235	4.796 **
Finland	−0.238 **	−0.429 **	0.051 **	0.590 **	−0.248 **	−0.689 **	0.098 **	0.072 **	−0.133 **	0.053 **	0.112	1.975 **	−0.370	0.381	0.779	−2.982	3.561 **	0.338	6.002	−0.257 **	−0.736	−0.171 **	0.282	6.137 **
France	0.971	−0.084	−0.186	−1.271 *	−0.323	3.117	−0.390 **	−1.725	0.281 **	0.481 **	0.077	1.303	−0.611	−0.794 **	−2.508 **	−1.076 **	0.457	−0.469	−0.339 **	0.090	−0.184 **	0.218 **	0.085	1.444
Germany	−2.620 **	−1.844 **	0.290	1.469 **	0.153	−0.552	−0.036	0.018	−0.726	−0.123	0.028	0.447	−0.531	−0.896 **	−2.295 **	−2.155 **	−1.223 **	−2.086	0.105	−0.032	0.439	0.504 **	0.088	1.497
Greece	0.520 **	0.526 **	−0.512 **	0.405 **	0.590 **	0.514	0.095 **	−0.018 **	−0.495 **	−0.018 *	0.044	0.716	−0.624 **	−0.951 **	−0.973 **	−1.243 **	−0.280	−0.599	−0.385 **	−0.040	0.7769 **	0.061 **	0.104	1.808 *
Hungary	1.177	0.855 **	0.117	−0.579 *	−1.580	0.034	−0.800	0.100 **	−0.128 **	−0.072 **	0.041	0.672	−1.640 **	−1.276 **	−1.240	−2.605 **	0.597	0.042	2.592	0.040 **	0.370 *	0.237 **	0.097	1.668 *
Ireland	0.231 **	−0.087 **	−0.226 **	0.559 **	0.127 **	0.669 **	−0.337 **	−0.085 **	−0.252 **	−0.032 **	0.079	1.335	−3.078 **	−3.010	2.240 *	−1.475 **	−2.268 **	−13.351	3.053 **	0.951 **	0.568 **	1.313 **	0.185	3.545 **
Italy	−5.650	−4.737	−0.445	−0.515	0.210	0.459	0.158	−0.091 **	0.044	0.044 **	0.036	0.580	−1.022	−1.275	−1.421 *	−0.941 **	0.021	−2.136	0.509 **	−0.035 **	−0.231 **	0.306 **	0.068	1.134
Latvia	−0.042 **	−0.042 **	−0.004	−0.055 **	0.044 **	0.022	−0.019 **	−0.016 **	0.041 **	0.015 **	0.037	0.592	1.028	0.256	−0.015	−0.594 **	−2.336	2.206	0.246 **	0.030 **	−0.942 **	−0.600 **	0.175	3.305 **
Lithuania	−0.084 **	−0.083 **	−0.031 **	0.022 **	−0.060 **	−0.041 **	−0.022 **	0.042 **	0.018 **	0.022 **	0.053	0.867	0.166 **	0.021	−0.092 **	−0.245 **	−0.049 **	−0.173 **	0.153 **	0.015 **	−0.023	0.355 **	0.132	2.370 **
Luxembourg	−0.644 **	−0.682 **	−0.015 **	−0.185 **	−0.141 **	−0.542 **	0.105 **	0.031 **	0.020 **	0.134 **	0.134	0.467	0.884 **	0.713 **	−1.032 **	0.266 **	−0.343 **	1.604 **	0.340 **	−0.171 **	−0.031 *	−0.620 **	0.237	4.844 **
Malta	−0.098 **	−0.081 **	−0.025 **	−0.013 **	−0.106 **	0.132 **	0.051 **	0.014 **	−0.013 **	0.015 **	0.058	0.954	−0.214 **	−0.032	−0.655 **	−0.694 **	0.596 **	0.742 **	−0.121 **	−0.030 **	0.144 **	−0.062 **	0.070	1.167
Netherlands	0.752	−0.379	5.653 **	−0.225	−1.332	3.940	−4.010	0.012 **	−0.609	0.044	0.044	0.724	−0.106	−0.260	−2.159 **	−1.357 **	−1.726 **	2.263	1.371	0.003	−0.852	0.236 **	0.072	1.209
Norway	−0.356 **	−0.511 **	−0.134 **	0.119 *	0.696 **	−0.103	0.577 **	0.036 **	−0.361 **	−0.063 **	0.053	0.877	0.307 **	−0.166	−0.844 **	0.335 **	0.562 **	1.393	1.525 **	−0.098 **	0.334 **	−0.574 **	0.183	3.492 **
Portugal	−0.043 **	−0.034 **	0.146 **	0.013 **	0.169 **	0.154 **	0.143 **	−0.060 **	0.019 **	−0.038 **	0.025	0.397	−1.119 **	−1.103 **	−1.112 **	−1.328 **	−0.560 **	1.719 **	2.497 *	−0.055 **	−0.010	−0.265 **	0.101	1.749 *
Romania	0.358 **	0.608 **	−0.015	0.231 **	0.208 **	0.086	0.387	−0.027 **	−0.118 **	−0.112 **	0.033	0.525	−1.588 **	−1.153 **	−2.301 **	−0.945 **	−0.185	1.977	−3.461	−0.063 **	−0.848 **	−0.582 **	0.152	2.787 **
Russia	−0.375 **	−0.781 **	1.070 **	0.871 **	0.218	−0.014	0.886 **	0.018 **	0.295 **	−0.087 **	0.071	1.193	1.537 **	1.020 **	−2.838 **	−2.181 **	−1.428 **	2.090 **	−3.225 *	−0.086 **	0.075	−1.373 **	0.184	3.518 **
Slovak Republic	0.063	−0.052 **	0.081 **	−0.110 **	−0.199 **	−0.060 **	0.033 *	0.010 **	0.012 **	0.024 **	0.122	2.158 **	−0.656 *	−0.590 **	−1.331 **	−1.118 **	0.617 **	1.329 **	−1.316 **	−0.066 **	−0.004	0.061 **	0.137	2.475 **
Spain	−1.703 **	−1.719 **	−0.990	0.267	−1.311 **	−0.805	0.220	0.072 **	0.535 *	0.084 **	0.056	0.056	−0.360	−0.369 **	0.695	−0.588 **	−0.051 **	5.821 *	−1.007 **	−0.154 **	−0.193 **	−0.146 **	0.167	3.125 **
Sweden	0.930 **	−0.863 **	0.438 **	0.438	−0.207 **	0.276 *	0.026	0.061 **	0.309 **	0.011 **	0.057	0.935	0.575	0.532	−1.516	−1.967	−2.992 **	−0.555	1.801 *	−0.117 **	0.967 **	−0.076 **	0.116	2.052 **

Table 6. *Cont.*

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Regional Betas MC	IT	GDP	INF	INT	Adj. R^2	$F-Stat$
Switzerland	−0.220 **	−0.129 *	0.317 **	−0.339 **	−0.622 **	−0.056	−0.525 **	−0.015	−0.291 **	0.935 **	0.161	2.992 **	−0.252 **	−0.249 **	−1.147 **	−0.755 **	0.205 **	−0.211 **	0.273 **	−0.006	1.270 **	−0.573 **	0.118	2.082 **
Turkey	0.065 **	0.136 **	0.042 **	−0.069	0.084 **	−0.421 **	−0.018	0.023 **	−0.070 **	0.023 **	0.116	2.047 **	−3.213 **	−3.202 **	−0.451	−3.868 **	−0.176	−4.585	−5.749	0.013 **	−0.158	0.306	0.091	1.558
Ukraine	0.483 **	0.478 **	0.259 **	0.212 **	−0.047 **	0.061 **	−0.236 **	−0.001	0.098 **	−0.039 **	0.049	0.800	2.020	−3.877	0.182	−23.329 **	−7.704	9.997	−30.578 **	−0.017	6.953	−0.952	0.080	1.349
United Kingdom	0.085	−0.954	−6.716	−6.554 **	−6.560 *	−4.063	1.525 *	0.550 **	0.196	1.205 **	0.243	4.994 **	0.447	0.356	−0.036	−0.613 *	−0.076	0.189	0.480 **	−0.072 **	0.120 **	−0.020 **	0.112	1.960

Notes: Table 6 reports the estimated coefficients for all types of international equity GDP-based portfolios from the structural regime-switching factor model. Coefficients are retrieved regionally and internationally and concern the stylized facts of volatility regimes, financial crises, and structural economic variables. β_0^w and β_1^w are the estimates of the latent regime variables. The three crises concern the coefficients of the three respective dummy variables. MC, IT, GDP, INF, and INT concern the coefficients of the respective structural macroeconomic variables (i.e., changes in market capitalization, trade integration, GDP growth, inflation rate, and interest rate). Then, the adjusted R^2 (adj. R^2) and the joint significance hypothesis F test ($F-stat$) are reported. ** and * indicate statistical significance in 5% and 10%, respectively.

Table 7. Structural regime-switching factor model on inflation-rate-based portfolios.

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU CRISIS	Regional Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
AFRICA																								
Botswana	−0.460 **	−0.380 **	−0.071 **	0.061 *	0.658 **	0.004	−0.029 **	0.026 **	0.063 **	−0.079 **	0.066	1.094	−0.683 **	−0.552 **	0.229	0.978 **	−0.037	−0.300 **	−0.062 **	−0.011 **	0.025 **	0.014 **	0.099	1.710 *
Egypt	−0.965	−1.144 **	−0.389	−1.914 **	−0.376	−2.029	−0.166	0.027 **	0.178	0.507 **	0.082	1.401	−1.265	−0.258	0.987	−1.956 **	−1.82	0.834	−0.355	0.083 **	0.203	−0.339 **	0.048	0.786
Kenya	0.082	−0.186 **	−0.611 **	0.388 **	1.219 **	0.439	−0.715 **	−0.024 **	−0.020	−0.109 **	0.065	1.084	0.586 **	0.712 **	0.017	0.530 **	−0.196 *	0.498 **	−0.348	0.057 **	0.048	−0.071 **	0.090	1.543
Mauritius	−0.333 **	−0.302 **	−0.092 **	−0.032 **	0.146 **	−0.161 **	−0.379 **	0.059 **	−0.015 **	0.025 **	0.230	4.662 **	−0.144	0.087 **	−0.085	−0.099 **	−0.480 **	−0.218 **	−0.269 **	0.056 **	−0.041	0.028 **	0.075	1.262
South Africa	−0.823 **	−0.700 **	−0.781 **	−1.367 **	0.620	0.475	1.325	0.017 **	0.715 *	−0.059	0.074	0.270	0.977 *	1.454 **	0.918	−0.816	−0.369	4.236 *	0.465	−0.052 **	−0.680 *	−0.518 **	0.104	1.810 *
AMERICAS																								
Argentina	−2.056 *	−1.925 *	−0.903 *	0.012	−0.360	−1.102	−0.111	−1.307	0.095	−0.334 **	0.118	2.084 **	−1.729	−2.676	−2.245	−1.684 **	−0.429	−0.563	−0.0479	−2.023	−0.151	−0.168 **	0.068	1.132
Brazil	0.525	0.883 **	−1.018 **	−0.835 **	0.056	−0.042	0.047 **	−0.070 **	−0.226 **	−0.083	0.094	1.628 *	−0.327	−0.573 **	−1.292	−1.226 **	0.092	−2.728	0.197 **	−0.074 **	−0.433	0.042	0.103	1.798 *
Canada	0.138	0.575 **	−0.288 **	−1.141 **	−0.210 **	−0.141	−0.022	0.024	0.185 **	0.238 **	0.210	4.158 **	−0.542 **	−0.606 **	−1.440	−2.762	−0.396 *	0.075	−0.144	−0.255 **	0.702 **	0.389	0.075	1.260
Chile	0.618 **	0.637 **	−0.146 **	−0.133 **	−0.029	0.238 **	−0.158 **	−0.026 **	0.035 **	−0.012 **	0.083	1.418	0.142 **	0.053	−0.061	−0.308 **	−0.069	0.264 **	−0.223	−0.033	0.107 **	−0.025 **	0.074	1.255
Colombia	0.276 **	0.339 **	−0.083 **	−0.150 **	−0.040 **	0.122 **	−0.008	−0.087 **	0.010 **	−0.018 **	0.092	1.582	−0.047	−0.018	−0.294 **	−0.409 **	−0.095	0.138 **	0.051 **	−0.015	−0.144	−0.046 **	0.108	1.892 *
Jamaica	1.930 **	2.040 **	−0.148 **	−0.077 **	0.557 **	−0.129 **	−0.019 **	0.002 **	0.015 **	−0.047 **	0.332	7.767 **	0.900 **	0.964 **	−0.413 **	−0.168 **	0.717 **	−0.554 **	−0.024 **	0.004 **	0.137 **	−0.094 **	0.194	3.764 **
Mexico	0.890 **	1.180 **	−0.468 *	−0.505 *	−0.247 *	0.715 *	0.069 **	−0.043 **	0.460 **	−0.048 **	0.101	1.757 *	−0.123	0.101	−1.365 **	−2.296 **	−0.650 **	0.073	−0.131 **	−0.013	1.664 *	0.204 **	0.139	2.508 **
Panama	0.953 **	0.999 **	−0.250 **	−0.185 **	0.180 **	0.128 **	0.087 **	−0.046 **	0.028 **	0.013 **	0.077	1.293	0.885 **	0.630 **	−0.811 **	−0.353 **	−0.189	−0.115	0.102	−0.114	0.379 **	0.126 **	0.098	1.692 *
Peru	−0.103 **	0.120 **	−0.092 **	−0.176 **	0.017	0.310 **	0.134 **	−0.168 **	−0.078 **	−0.043 **	0.140	2.537 **	−0.514 **	−0.268 **	−0.296 **	−0.412 **	−0.019	0.337 **	0.132 **	−0.206 **	−0.079	−0.107 **	0.067	1.116
United States	1.260 **	1.219 **	−0.388 **	0.053	0.091	0.798 **	−2.073	−0.098 **	−0.038	−0.161 **	0.171	3.218 **	1.124 **	0.274 **	−1.777 *	−0.899	−0.107	1.210	−2.812	−0.160 **	−0.241 **	0.069	0.140	2.546 **
Venezuela	0.588 **	0.715 **	0.512 **	−0.094 **	−0.113 **	0.122 **	0.363 **	−0.003 **	−0.134 **	−0.095 **	0.142	2.576 **	0.179 **	−0.065 **	−0.115 **	−0.901 **	−0.560 **	0.092	−0.684 **	−0.007 **	0.012	0.099 **	0.127	2.272 **
ASIA																								
Australia	0.053	0.242	−0.734 **	−0.793 **	1.649 **	−1.937 **	0.841 **	−0.118 **	−0.158 **	0.117 **	0.102	1.767 *	18.683	18.657	−1.740 **	−0.601	1.441 **	−2.949	1.782 **	−0.219 **	−0.630 **	0.010	0.366	8.997 **

Table 7. *Cont.*

						Global Betas												Regional Betas					
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU CRISIS	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
Bangladesh	−3.208 **	−2.471 **	−1.380 **	−0.626	0.470	0.079	−0.248	−0.870 **	−0.069	−0.427 **	0.076	1.281	7.128 **	7.376 **	−0.914 **	−0.709	−0.104	0.655	−0.663	−0.541	0.121	−0.455 **	0.135	2.443 **
China	−0.818	−0.959	−2.592 *	−0.319	1.403	5.180	−1.984	−0.395 **	−0.122	−0.647	0.077	1.296	13.348 **	12.713 **	−4.324	−0.594	1.211	9.532	−0.893	−0.570 **	1.371	−1.311 *	0.075	1.273
Hong Kong SAR	−2.915 *	−2.831 **	−0.986	−4.156 **	−0.938	−2.263	7.867	0.011 **	0.792	0.395 **	0.108	1.895 **	14.101 **	14.183 **	−1.210 **	−4.161 **	−1.367	−0.996	8.565	0.015 **	0.616	0.097	0.157	2.914 **
India	−1.882	−2.415	−2.433	−2.692	−0.529	−0.286	−0.679	−0.078 **	−0.009	0.110	0.057	0.947	35.487	34.845	−5.524	−3.778	−1.814	−1.927	−3.099	0.030 **	−4.542	0.650	0.130	2.332 **
Indonesia	−2.161	−2.130 **	−2.437	−1.488	−0.339	3.537	0.5921	−0.155 **	0.317 **	−1.098 **	0.069	1.163	7.958 **	6.650 **	−2.649	−2.975	−0.876	4.507	1.060	0.030	0.239 **	−1.286 *	0.074	1.242
Israel	1.736 **	1.373 **	−0.725	−2.370 **	0.368	−0.385	−14.927	0.179 **	−0.016	0.346 **	0.197	3.832 **	45.088	44.339	−2.527	−3.280 *	−0.651	−5.627	−32.214	0.718 **	−0.380 **	0.737 **	0.289	6.354 **
Japan	2.267	2.805	−1.737	−1.494 **	0.020	3.631	−6.040	−0.390 **	−0.418	−0.588 **	0.122	2.168 **	110.164	108.847	1.308	−4.134	−3.272	19.732	−31.957	−0.403	−0.027	−2.420	0.345	8.211 **
Jordan	−1.503 **	−1.525 **	−0.073 **	−0.302 **	−0.933 **	−0.662 **	0.269 **	0.092 **	−0.043 **	0.127 **	0.113	1.977 **	0.212 *	0.338 **	−0.096 **	−0.106	−0.355 **	0.043	0.143 **	0.029 **	−0.018	0.059 **	0.046	0.757
Malaysia	−2.241 **	−2.508 **	−0.850	−1.190 **	0.999	−1.585	−0.341 **	0.050 **	−0.075	0.686 **	0.077	1.295	4.327 **	4.261 **	−2.745	−1.267 *	−0.996	−5.076	0.086	0.085 **	−0.134	0.168 **	0.052	0.855
New Zealand	−0.665	−1.096 *	−0.675	1.161	3.206 *	3.717 *	3.901	−0.275 **	−0.025	−1.077 **	0.162	3.018 **	13.520	13.059	0.046	1.657	4.758	3.068	7.481	−0.169 **	−0.334	−1.007 **	0.288	6.311 **
Oman	−0.402 **	−1.114 **	−0.751	−0.877 **	0.183	0.590	−0.673 **	−0.059 **	0.057	−0.056 **	0.082	1.402	6.016 **	5.4592 **	−0.844 **	−1.069 **	−0.417 *	1.197 *	−0.840 **	−0.063	0.341 **	−0.125	0.085	1.454
Pakistan	−2.097 *	−1.900 *	−1.018	−1.314 *	0.233	0.808	−0.195	−0.015 *	−0.160	−0.092	0.050	0.829	13.423 *	13.337 **	−1.737	−0.496	−1.142 **	3.800	−2.082 **	−0.023	−0.162	−0.482 **	0.115	2.024 **
Philippines	0.600	−0.300	2.640	−2.479 **	−1.027	1.496	0.790 **	−0.956	0.158 **	−0.074 **	0.141	2.562 **	11.960	10.535	−0.249	−3.430	−1.692	3.845	0.881	−1.303	0.333 **	−0.337 **	0.105	1.838 *
Saudi Arabia	−1.252 **	−1.269 **	−0.077	−0.660 **	−0.419	0.052 **	−0.067	−0.007	−0.488	−0.398	0.094	1.691 *	0.342	0.343	−0.275 **	−0.391 **	−0.350	0.356 **	−0.064	−0.003	−0.153	−1.715	0.145	2.648 **
Singapore	1.341	1.475	0.104	−2.624 **	−1.042	4.493	0.026	−0.740 *	0.093 **	−0.550	0.164	3.061 **	40.310	40.351	−0.849	−4.267 **	1.266	3.231	2.287 **	−1.525	0.307 **	0.307	0.321	7.362 **
South Korea	−0.158	−0.585	−2.173	−3.394 **	−0.783	4.976	−0.460	−1.093 **	0.162 **	−0.239 **	0.158	2.929 **	32.372 **	31.917 **	−2.169	−5.582	−1.071	4.194	1.536	−1.348 **	0.755 *	0.156 **	0.154	2.843 **
Taiwan Province of China	1.997	1.266	−1.138	−1.822	−1.229 *	1.087	−0.071	−0.972 **	−0.282 **	−0.126	0.113	1.986 **	67.188	67.085	−1.585	−3.453	1.809	3.446 *	−1.988	−0.754	−0.482	−0.723 **	0.457	13.100 **
Thailand	−1.163 *	−1.720 **	−1.206 **	−2.086 **	−1.568 **	0.874	0.158	−0.668 **	0.153	−0.112 **	0.148	2.717 **	20.523	19.356	−2.044 **	−2.565 **	−0.636	11.369	−4.282	−3.405	−0.647 *	−1.899 **	0.180	3.432 **
United Arab Emirates	−0.070 **	−0.190 **	−0.139 **	−0.244 **	−0.202 **	0.223 **	−0.444 **	−0.049 **	0.105 **	−0.053 **	0.091	1.570	1.816 **	1.655 **	−0.284 **	−0.149 **	−0.189 **	0.227 **	−0.149	−0.067 **	0.025 **	−0.105 **	0.058	0.954
EUROPE																								
Austria	0.151	−0.028	−0.197 **	−0.443 **	−0.395 **	−0.375	−0.104 **	0.017 **	−0.015 *	0.342 **	0.102	1.762 *	0.375 **	0.584 **	−0.200 **	−0.624 **	−0.449 **	−1.482 **	−0.109 **	0.035 **	0.036 **	0.921 **	0.189	3.642 **
Belgium	0.527 **	−0.049	−0.211 **	−0.875 **	−0.626 **	0.629 **	0.692 **	0.949	0.073 **	0.088 **	0.116	2.044 **	0.761 **	0.459 **	−0.430	−0.691 **	−0.600	0.951 **	0.917 **	−0.012	−0.057	0.346 **	0.135	2.439 **
Bulgaria	−0.142	−0.085	−0.546	−1.768 **	−0.433	3.090	1.244	−0.210	−0.023	−0.224	0.059	0.971	−0.654	0.757	−0.733	−3.133	−0.832	6.743	4.022	−2.664	0.122	−0.282	0.086	1.461
Croatia	−0.686 *	−1.284 *	−0.455 **	−1.516 **	−0.499	2.589	1.302	0.093 **	0.162	0.106 **	0.090	1.536	−0.477	−0.810 *	−1.102 **	−1.256 **	0.548	2.487	3.373	−0.033	−0.413 *	0.099 **	0.138	2.498 *
Cyprus	0.306	−0.041	−0.665 **	−1.989 **	−1.587 **	−2.549	−0.958	0.054 **	0.028	0.607 **	0.092	1.586	0.170	0.562 *	−1.812 **	−1.892 **	−1.212 **	−0.419	0.529	0.012 **	−0.592 **	0.279 **	0.104	1.809 *
Czech Republic	−2.163 **	−2.851 **	−0.049	−2.073 **	−1.791 **	−1.817	0.067	0.260 **	−0.618 **	0.455 **	0.145	2.655 **	−1.343	−1.553	−0.719 **	−1.970 **	−0.897	−0.550	−0.104	0.118 **	0.221	0.340 **	0.142	2.585 *
Denmark	−0.255 **	−0.660 **	−0.096 **	−0.422 **	−0.422 **	0.613 **	0.293 **	−0.016	0.034	−0.149 **	0.108	1.897 **	0.153 **	−0.139 **	−0.166 **	−0.095	0.620 **	2.091 **	0.841 **	−0.098 **	0.120	−0.293 **	0.171	3.218 **
Estonia	−0.580 **	−0.908 **	−0.217 **	−0.665 **	0.219	0.405 **	−0.068 **	−0.066	0.043 **	−0.679 **	0.132	2.374 **	−0.343 **	−0.339 **	−0.276 **	−1.101 **	1.004 **	1.110 **	−0.342 **	−0.267 **	0.046 **	−0.697 **	0.280	6.079 **
Finland	2.670 *	1.869 **	−2.109	−2.199	0.859 **	7.332	−1.050	0.052 **	−0.187 **	−0.634 **	0.124	2.210 **	1.268 **	2.214 **	1.155	−2.333 **	1.978 **	−1.822	5.186 **	−0.170	−0.232	−0.033	0.334	7.833 **
France	−0.685	−1.439 **	−1.191	−0.941	−1.177	−1.094	0.030	0.702 **	0.049 **	0.101 **	0.072	1.215	−0.220	−0.325 **	−1.627 **	−0.813 **	0.352 *	−0.339	−0.342	0.086	−0.133	0.120 **	0.108	1.892 **
Germany	0.652	−0.206	−0.721 **	−1.663 **	−1.701 **	−1.107	0.091 **	0.101 **	0.637 **	0.295 **	0.095	1.643 *	1.461 **	1.289 **	−1.607 **	−1.553 **	−1.038	−1.430 *	−0.028	0.099	0.499	0.320 **	0.112	1.968 **
Greece	−1.695 **	−2.389 **	−0.107	−1.442 **	−1.478 **	−1.404 **	−0.137	0.102 **	0.260	0.104 **	0.112	1.974 **	−0.782 **	−0.972 **	−0.829 **	−1.414 **	−0.822 **	−1.250 **	−0.334 **	0.013 **	0.468 **	0.087 **	0.097	1.669 *

Table 7. *Cont.*

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU CRISIS	Regional Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
Hungary	−0.476 **	−0.777 **	−0.374 **	−2.044 **	−0.833 **	−1.366	0.804 *	0.120 **	0.395 **	0.557 **	0.100	1.735 *	−1.189 **	−0.717 **	−1.134 **	−1.662 **	0.169	0.404	1.446	0.069 **	0.130 **	0.029	0.120	2.126 **
Ireland	−1.075 **	−1.320 **	0.918 **	−1.054 **	−1.149 **	−4.167	1.135 **	0.356 **	0.156 **	0.437 **	0.167	3.127 **	−2.250 **	−2.184	1.674 **	−0.995 **	−1.671 **	−10.004	2.249 **	0.692 **	0.339 **	0.957 **	0.225	4.536 **
Italy	−1.400	−1.820	−0.566 **	−0.871 **	−0.257 **	−1.902 **	0.411 **	0.044 **	0.153 **	0.242 **	0.098	1.704 *	−0.847	−1.022	−1.091 **	−0.804 **	−0.054	−1.322	0.363 **	−0.035 **	−0.298 **	−0.298 **	0.079	1.332
Latvia	3.493	1.723	1.080 *	−0.440	−4.750	2.317	−0.195 *	0.094 **	−1.624	−0.791 **	0.191	3.678 **	9.621 **	8.879 **	0.037	−0.569 **	−1.894 *	1.707	0.228 **	0.029 **	−1.004 **	−0.422 **	0.288	6.316 **
Lithuania	0.529 **	0.358 **	0.049 **	−0.080 **	−0.096 **	0.112 **	0.023 *	−0.009 **	−0.009	0.234 **	0.122	2.163 **	0.804 **	0.746 **	−0.111 **	−0.240 **	−0.014 **	−0.128 **	0.176 **	0.010 **	−0.044	0.244 **	0.151	2.769 **
Luxembourg	0.785 **	0.361 **	−0.343	−0.676 **	−0.707	0.255	0.081	0.076 **	−0.021 **	−0.045	0.128	2.284 **	0.680 **	0.553 **	−0.855 **	0.178 *	−0.215	1.163 **	0.279 **	−0.140	−0.067	−0.470	0.219	4.379 **
Malta	−0.046	−0.111 **	−0.173 **	−0.588 **	0.074	0.572	−0.164 **	0.021 **	0.061 **	−0.023 **	0.080	1.362	0.056	0.239 **	−0.426 **	−0.437 **	0.227 **	0.138 **	−0.024	−0.014	0.029	−0.048	0.065	1.078
Netherlands	−0.086	−0.695 **	−0.638 **	−1.050 **	−1.278 **	−0.567	0.290	0.022 **	0.010	0.372 **	0.095	1.646 *	0.695 *	0.580 **	−1.376 **	−0.906 **	−1.321	2.250	1.077	−0.026	−0.587	−0.037	0.091	1.558
Norway	0.585 **	0.240 **	−0.437 **	−0.408 **	−0.318 **	0.077	0.918 **	0.062 **	0.207 **	−0.097 **	0.125	2.221 **	0.957 **	0.691 **	−0.723 **	0.024	0.333 **	1.054 *	1.123 **	−0.063	0.209 **	−0.403	0.181	3.457 **
Portugal	−0.403 **	−0.684 **	−0.444 **	−1.050 **	−0.738 **	0.765 **	2.125 **	−0.017 **	0.053	−0.221 **	0.149	2.722 **	−0.617 **	−0.389 *	−0.958 **	−1.139 **	−0.602 **	1.382 **	1.966	−0.047	0.056	−0.256	0.112	1.962
Romania	−1.080 **	−1.433 **	−0.532 **	−0.521 **	−1.046 **	−0.149	−1.391 **	0.083 **	−0.422 **	−0.327 **	0.109	1.908 **	−0.776 **	−0.534 **	−1.646 **	−0.476	−0.031	1.824 *	−1.768	−0.053	−0.516	−0.576	0.175	3.314 **
Russia	1.149 **	0.467	−2.136 **	−1.811 **	−2.074 **	0.091	−2.717	0.081 **	0.045	−1.164 **	0.096	1.664 *	2.442 **	2.411 **	−2.225 **	−1.909 **	−1.272 **	1.579 **	−2.541 **	−0.064	0.179 **	−1.049 **	0.219	4.378 **
Slovak Republic	−0.150	−0.581 **	−0.754 **	−1.231 **	−0.402	−0.170	−0.336 *	−0.034 *	0.092 *	0.435 *	0.121	2.145 **	−0.141	−0.043	−1.008 **	−0.880 **	0.293 **	0.918 **	−0.747 **	−0.040	0.022	0.041 *	0.157	2.902 **
Spain	−0.270	−0.706 **	0.174	−0.601 **	−0.731 **	1.827 **	−0.270	−0.028	0.019	−0.036	0.144	2.627 **	−0.237	−0.216	0.5712 *	−0.506 **	−0.103	4.097 **	−0.749 **	−0.108	−0.168	−0.105	0.213	4.215 **
Sweden	−0.061	−0.712 **	−0.535	−1.645 **	−1.937 **	−0.545	0.708 **	0.021 **	0.672 **	−0.071 **	0.111	1.956 **	0.952	1.053	−1.263 *	−2.063	−2.063 **	−0.017	1.229 **	−0.070	0.755 **	−0.074	0.151	2.778 **
Switzerland	0.150	−0.247 **	−0.584 **	−0.720 **	0.138	−0.404 **	0.323 **	0.027 **	0.525 **	−0.304 **	0.141	2.555 **	0.460 **	0.705 **	−1.021 **	−0.757 **	−0.188 **	−0.187 **	0.161 **	0.021 **	1.077 **	−0.485 **	0.111	1.948
Turkey	−2.624 **	−3.740 **	−0.284 *	−2.612	−0.399	−3.712	0.540	0.028 **	0.679	−0.012	0.111	1.927 **	−2.612 **	−2.287 **	−0.382 **	−2.821 **	−1.579	−2.138	−5.745	0.025 **	−0.206	−0.010	0.125	2.237 **
Ukraine	−5.060	−15.256	3.534	−29.829 **	−29.829 *	−6.130	−34.934 **	−0.043	3.372	−1.214	0.107	1.862 *	−1.714	−4.037	−3.099	−9.142 *	−3.582	6.003	−10.750	−0.095 *	0.655	−0.825	0.069	1.163
United Kingdom	0.206	−0.372 *	0.150	−0.769 **	−0.829	0.004	0.083 **	0.025 **	0.012	−0.026 **	0.106	1.854 *	0.532 **	0.443 **	0.037	−0.679 **	−0.135	0.376	0.270 **	−0.046	0.029 *	−0.031	0.141	2.552 **

Notes: Table 7 reports the estimated coefficients for all types of international equity inflation-rate-based portfolios from the structural regime-switching factor model. Coefficients are retrieved regionally and internationally and concern the stylized facts of volatility regimes, financial crises, and structural economic variables. β_0^w and β_1^w are the estimates of the latent regime variables. The three crises concern the coefficients of the three respective dummy variables. MC, IT, GDP, INF, and INT concern the coefficients of the respective structural macroeconomic variables (i.e., changes in market capitalization, trade integration , GDP growth, inflation rate, and interest rate). Then, the adjusted R^2 (adj. R^2) and the joint significance hypothesis F test ($F-stat$) are reported. ** and * indicate statistical significance in 5% and 10%, respectively.

Table 8. Structural regime-switching factor model on interest-rate-based portfolios.

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Regional Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
AFRICA																								
Botswana	−0.146 **	−0.245 **	0.183 **	0.050 **	0.311 **	0.035 **	0.037 **	−0.031 **	0.056 **	0.056 **	0.037	0.603	−0.351 **	−0.241 **	−0.093	0.176 **	0.028	−0.230 **	−0.011 **	−0.080 **	0.064 **	0.015 **	0.081	1.370
Egypt	1.610 **	1.391 **	−1.268 **	−1.473 **	0.335	0.535	0.243 **	−0.062 **	−0.102 **	0.178 **	0.076 **	1.290	1.783	3.275	0.371	−2.402 **	−2.844	−0.088	−0.326	0.016 **	0.267 **	−0.343 **	0.088	1.513
Kenya	0.520 **	0.389 **	−0.672 **	0.847 **	0.861 **	0.932 **	−0.933	−0.046 **	0.057 **	−0.215 **	0.049	0.809	1.219 **	1.377 **	−0.222	0.874	−0.147	0.654	−0.773	−0.015 **	0.312 **	−0.260 **	0.048	0.781

Table 8. *Cont.*

	Global Betas												Regional Betas											
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
Mauritius	0.325 **	0.289 **	−0.089 **	−0.069 **	0.021	0.092 **	−0.302 **	0.097 **	0.022 **	0.011 **	0.127	2.274 **	−0.559	0.103	−0.491 **	−0.707 **	−1.338 **	0.074	−0.541	0.102 **	0.016 **	0.051 **	0.033	0.538
South Africa	0.287	−0.174	−0.467 **	−0.136	0.331	4.112	6.641	−0.112 **	0.515 *	−0.815 **	0.102	1.764 *	1.632 **	2.483 **	0.560	−1.587 *	−1.518	3.463	1.741	−0.080 **	−1.345	−0.462 **	0.152	2.803 **
AMERICAS																								
Argentina	−0.863	−0.959	−1.266 **	0.400	−0.016	−0.325	−0.489 **	−1.766	0.233	−0.211 **	0.109	1.926 **	−0.933	−2.147 **	−3.430	−1.550	0.337	0.166	−0.223	−4.410	0.186	−0.281 **	0.071	1.193
Brazil	−0.113	0.106 **	−0.274 **	−0.642 **	−0.082	−0.210	0.185 **	−0.050 **	−0.097	0.029 **	0.143	2.599 **	−0.272	−0.434	−1.716	−1.168 **	0.485	−1.986	0.077	−0.099 **	−0.492 **	0.088	0.101	1.748 *
Canada	−0.397 **	−0.043 **	−0.148 **	−0.842 **	−0.012	0.324 **	0.014 **	−0.167 **	0.075 **	0.057 **	0.201	3.929 **	−0.462 *	−0.690 **	−1.734 *	−2.907	−0.291	−0.090	−0.158	−0.182 *	0.580 **	0.476 *	0.059	0.975
Chile	0.023 **	0.087 **	0.033	−0.099 **	0.081	0.170 **	0.042 **	−0.022 **	−0.073 **	−0.065 **	0.072	1.208	0.201 **	0.138 **	−0.201 **	−0.298 **	0.125 **	0.347 **	−0.075 **	−0.046 **	0.075 **	−0.032 **	0.064	1.062
Colombia	−0.036 **	0.015 **	−0.034 **	−0.149 **	−0.098 **	0.072 **	0.028 **	−0.063 **	−0.017 **	−0.091 **	0.083	1.404	−0.076 **	−0.050 **	−0.365 **	−0.411 **	−0.056 **	0.148 **	0.021 **	−0.013 **	−0.125 **	−0.011 **	0.089	1.527
Jamaica	0.358 **	0.474 **	−0.150 **	−0.052 **	0.632 **	−0.165 **	−0.059 **	0.007 **	0.064 **	−0.063 **	0.267	5.678 **	0.804 **	0.923 **	−0.463 **	−0.190 **	0.998 **	−0.507 **	−0.013	0.003 **	0.112 **	−0.091 **	0.200	3.905 **
Mexico	0.012	0.082 **	−0.247 **	−0.599 **	0.030	1.446 **	0.111 **	−0.066 **	0.051	−0.031 **	0.150	2.743 **	−0.015	0.174	−1.432 **	−2.221 **	−0.215	0.248	−0.119 **	−0.019 **	1.505	0.215 **	0.155	2.869 **
Panama	0.251 **	0.216 **	−0.338 **	−0.215 **	0.108 **	0.169 **	0.140 **	−0.037 **	−0.024	0.061 **	0.033	0.532	0.933 **	0.583 **	−0.881 **	−0.444 **	0.065	−0.111	0.105	−0.094 **	0.427 **	0.149 **	0.084	1.438
Peru	−0.212 **	−0.087 **	−0.087 **	−0.131 **	0.048 **	0.430 **	0.042 **	−0.284 **	−0.052 **	−0.048 **	0.140	2.531 **	−0.388 **	−0.206 **	−0.369 **	−0.377	−0.039	0.330 **	0.069 **	−0.225 **	0.011 **	−0.090 **	0.087	1.485
United States	0.482 **	0.508 **	−0.274 **	0.195	−0.019	0.710	−2.347 **	−0.110 **	0.073 **	−0.181 **	0.177	3.346 **	1.232 **	0.280 **	−1.937 *	−0.632	0.269	1.587	−3.713	−0.207 **	−0.212	−0.044	0.120	2.132 **
Venezuela	0.014	0.120 **	0.247 **	−0.143 **	−0.079	−0.112 **	0.670 **	−0.008 **	−0.204 **	0.060 **	0.102	1.767 *	0.195 **	−0.058 **	−0.316 **	−0.772 **	−0.346 **	−0.037 **	−0.203	0.002 **	0.040 *	0.104 **	0.098	1.691 *
ASIA																								
Australia	−0.193 **	−0.141 **	−0.202 **	−0.327 **	0.383 **	−0.953 **	0.523 **	−0.063 **	−0.067 **	−0.059	0.199	3.875 **	2.939 **	2.843 **	−0.455 **	−0.236 **	0.271 **	−1.026 **	0.430 **	−0.043 **	−0.110 **	0.033 **	0.210	4.154 **
Bangladesh	−0.745 **	−0.628 **	−0.499 **	−0.335 **	−0.154 *	0.116 *	−0.117	−0.258 **	−0.065 **	−0.162 **	0.070	1.165	2.707 **	2.853 **	−0.423 **	−0.216 **	−0.402 **	−0.037	0.056	−0.022 **	−0.047 **	−0.166 **	0.156	2.878 **
China	0.395 **	0.204	−1.015 **	−0.142	0.287	2.460	−0.423	−0.169 **	−0.083	−0.292 **	0.114	2.006 **	6.008 **	5.502 **	−1.450 **	−0.506	0.175	2.447	−0.248	−0.150 **	0.361	−0.286 **	0.109	1.902 **
Hong Kong SAR	−0.021	−0.122	−0.942 **	−1.805 **	−0.419	0.057	5.163	−0.011 **	0.018	0.081	0.088	1.513	9.573 *	9.596 *	−0.594 **	−2.000 **	−0.953 **	−1.379	2.331	0.012 **	0.249	0.207 **	0.222	4.459 **
India	−0.930 **	−0.806	−1.164 *	−1.611 *	−0.942 **	−0.821	−0.477	0.018 **	−0.295	0.264 *	0.066	1.101	6.987 **	6.595 **	−1.511 **	−1.456	−0.779	−1.082	−0.985	0.040 **	−0.552	0.331	0.122	2.165 **
Indonesia	0.123	−0.281	−1.309 **	−0.838 **	−0.496 **	1.803 *	0.311 **	−0.045 **	0.280 **	−0.532 **	0.108	1.887 **	3.142 **	2.546 **	−0.837 **	−0.965 **	−0.271	1.404 *	0.105	−0.066 **	0.182 **	−0.429 **	0.091	1.568
Israel	0.323 **	0.088	−0.572 **	−1.255 **	−0.390 **	−1.287	−10.663	0.180 **	0.073 **	0.267 **	0.237	4.857 **	9.546 **	9.385 **	−0.842 **	−1.352	−0.200	−1.569	−1.569	0.205 **	−0.032	0.258 **	0.249	5.165 **
Japan	1.224 **	1.116 **	−0.347 **	−0.657 **	−0.461 **	2.420 **	−4.089 *	−0.164 **	−0.031	−0.383 **	0.242	4.991 **	25.886 **	25.265 **	−0.242	−1.663 **	−1.232 *	2.811	−6.639	−0.087 **	−0.334 **	−0.489 **	0.300	6.688 **
Jordan	−0.674 **	−0.672 **	−0.065	−0.226 **	−0.484 **	−0.250	−0.250	0.036 **	−0.011	0.074 **	0.125	2.238 **	−0.049 **	−0.022	−0.055	−0.059 **	−0.300 **	−0.168	0.111 **	0.030 **	−0.030	0.049 **	0.118	2.082 **
Malaysia	−0.652 **	−0.917 **	−0.468 *	−0.650 **	−0.032	−0.566	−0.127 **	0.017 **	−0.259 **	0.375 **	0.118	2.090 **	1.179 **	1.030 **	−0.808 **	−0.524 **	−0.617 **	−1.638	−0.012 *	0.038 **	−0.083 **	0.142 **	0.058	0.9623
New Zealand	−0.053	−0.197 **	−0.121	0.496 **	1.555 **	1.426 **	2.554 *	−0.084 **	−0.253 **	−0.330 **	0.183	3.493 **	2.911 **	2.686 **	−0.128 **	0.419 **	1.370 **	0.898 **	2.181 **	−0.062 **	−0.099 **	−0.300 **	0.240	4.929 **
Oman	0.344 **	0.052 **	−0.217 **	−0.312 **	0.163	0.700	−0.291 **	−0.050 **	−0.120 **	−0.099 **	0.057	0.944	5.289 **	5.109 **	−0.325 **	−0.375 **	−0.163 **	0.301 **	−0.239 **	−0.013 **	0.153 **	−0.026 **	0.252	5.259 **
Pakistan	−0.325 **	−0.331 **	−0.369 **	−0.344 **	−0.189 **	0.621	−0.249 **	−0.058 **	0.088	−0.107 **	0.075	1.266	3.645 **	3.590 **	−0.196	−0.022	−0.500 **	0.809	−1.126 **	−0.072 **	0.222	−0.210 **	0.165	3.071 **
Philippines	0.283 *	−0.090	0.944	−1.091 **	−0.740 **	1.166 **	0.276 **	0.102	0.064 **	−0.045 **	0.120	2.133 **	2.589 **	2.253 **	−0.280 **	−0.928 **	−0.790 **	0.888 *	0.297 **	−0.765 **	0.082 **	−0.136 **	0.103	1.792 *
Saudi Arabia	−0.493 **	−0.504 **	0.049	−0.279 **	−0.321 **	0.099 **	−0.015 **	−0.007 **	−0.188 **	−0.349 **	0.095	1.643 *	−0.423	−0.360	−0.101 **	−0.161 **	0.094 **	0.167 **	0.034 *	−0.006 **	0.016 **	−0.450 **	0.130	2.320 **
Singapore	0.968 **	0.865 **	0.358	−1.212 **	−0.337	1.825 *	0.262 **	−0.331 **	0.056 **	0.056 *	0.291	6.415 **	10.203 **	9.830 **	−0.011	−1.364 **	−0.526 *	2.168 **	0.269 **	−0.146 **	0.058 **	−0.111 **	0.332	7.767 **
South Korea	0.772 **	0.805 **	−0.970 **	−1.591 **	−0.601 **	1.581	−0.141	−0.141 **	0.119 **	−0.036 **	0.174	3.289 **	15.759 **	15.411 **	−1.030	−1.715 **	−0.274	1.573	−0.030	−0.296 **	0.166 **	−0.036	0.243	4.997 **
Taiwan Province of China	1.795 **	1.417 **	−0.350	−1.338 **	0.131	1.422 **	−0.691 **	−0.624 **	−0.132 **	−0.258 **	0.133	2.395 **	15.636 **	15.509 **	−0.632 **	−1.515 **	0.172	0.953 **	−0.558 *	−0.098	−0.092 *	−0.252 **	0.353	8.517 **

Table 8. *Cont.*

	Global Betas												Regional Betas											
	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
Thailand	−0.268 **	−0.468 **	−0.409 **	−1.036 **	−0.609 **	1.387 **	−0.603 **	−0.574 **	0.108 **	−0.228 **	0.156	2.890 **	4.871 **	4.430 **	−0.514 **	−1.088 **	−0.706 **	2.081 **	−0.538	−0.479 **	−0.125	−0.326 **	0.154	2.828 **
United Arab Emirates	−0.016 **	−0.068 **	−0.050 **	−0.135 **	−0.149 **	0.100 **	0.100 **	−0.002	0.013 **	−0.023 **	0.086	1.460	0.384 **	0.307 **	−0.076 **	−0.071 **	−0.117 **	0.071 **	−0.047	−0.019 **	0.034 **	−0.048 **	0.033	0.526
EUROPE																								
Austria	0.826 **	0.678 **	−0.282 **	−0.429 **	−0.351 **	−0.260	−0.109 *	0.072 **	0.078	0.279 **	0.137	2.474 **	0.871 **	1.009 **	−0.254 **	−0.524 **	−0.330 **	−1.080 **	−0.065	−0.039 **	−0.027 **	0.698 **	0.190	3.668 **
Belgium	0.544 **	0.086	−0.161 **	−0.747 **	−0.696 **	0.537 **	0.667 **	1.030	0.049 **	0.171 **	0.128	2.296 **	0.829 **	0.441 **	−0.277	−0.613 **	−0.692	0.760 **	0.973 **	0.363	0.093 *	0.390 **	0.111	1.953 **
Bulgaria	1.094	1.312	−0.608	−1.565 **	−1.581	4.188	1.181	−1.727	−0.054	−0.473	0.080	1.358	0.884	1.283	−0.183	−3.038	−0.647	8.143	4.287	−2.920	−0.115	−0.013	0.067	1.112
Croatia	−0.286	−0.664 **	−0.649 **	−1.253 **	−0.160	−0.160	1.710	−0.019 **	−0.153	0.115 **	0.099	1.730 *	−0.219	−0.542	−1.060 **	−1.002 **	0.412	1.470	2.857	−0.027 **	−0.379	0.105 **	0.127	2.278 *
Cyprus	1.162 **	0.961 **	−0.847 **	−1.417 **	−1.417 **	−1.515	−1.042	0.028 **	−0.059	0.314 **	0.095	1.639 *	1.098 **	1.395 **	−1.551 **	−1.832 **	−1.168 **	−0.481	0.522	0.014 **	−0.496	0.280 **	0.107	1.859 *
Czech Republic	0.257 **	−1.954 **	−0.276 **	−1.515 **	−1.312 **	−0.639	0.171 **	0.168 **	−0.310 **	0.257 **	0.165	3.075 **	−0.964 **	−1.110 **	−0.656 **	−1.740 **	−0.751 **	−0.415	−0.055	0.093 **	0.220	0.298 **	0.153	2.824 **
Denmark	0.251 **	−0.107	−0.079 **	−0.317 **	−0.197	0.824 **	0.342 **	−0.029 **	0.014	−0.160 **	0.174	3.291 **	0.438 **	0.149 **	−0.136 **	−0.186 **	0.492 **	1.754 **	0.686 **	−0.078 **	0.086 **	−0.217 **	0.201	3.913 **
Estonia	−0.255 **	−0.435 **	−0.233 **	−0.695 **	0.290 **	0.514 **	−0.135 **	−0.095 **	0.037 **	−0.612 **	0.182	3.461 **	−0.151 **	−0.192 **	−0.281 **	−1.105 **	0.907 **	1.058 **	−0.241 **	−0.263 **	0.046 **	−0.685 **	0.203 **	3.973 **
Finland	5.119 **	4.990 **	−0.899	−1.738 **	0.252	1.558	1.180	−0.072 **	−0.161 **	−0.285 **	0.199	3.889 **	3.700 **	4.177 **	0.735	−1.929 **	1.589 **	−1.973	4.400 **	−0.150 **	−0.344	−0.059	0.289	6.33
France	0.280	−0.316	−1.157 **	−0.676 **	−0.801 **	−0.801	−0.021	0.594 **	−0.013	0.071 **	0.082	1.401	0.523 *	0.166 *	−1.463 **	−0.745 **	0.263	−0.219	−0.285 **	0.022	−0.132 *	0.104 *	0.083	1.407
Germany	2.265 **	1.609 **	−0.787 **	−1.387 **	−1.399 **	−0.977 **	−0.014	0.078 **	0.655 **	0.219 **	0.120	2.128 **	2.589 **	2.175 **	−1.486 **	−1.491 **	−0.944 **	−0.944	−0.060	−0.048	0.704 **	0.269 **	0.095	1.656
Greece	−1.106 *	−1.642 **	−0.419 **	−1.310 **	−1.239 **	−0.680	−0.076	0.042 **	0.365 **	−0.058	0.120	2.123 **	−0.623 **	−0.855 **	−0.619 **	−1.246 **	−0.751 **	−1.112	−0.264 **	0.017 **	0.370 **	0.084 **	0.103	1.781 *
Hungary	−0.482 **	−0.535 **	−0.488 **	−1.349 **	−0.492 **	−0.555	0.630 **	0.056 **	0.195 **	0.246 **	0.097	1.679 *	−0.706 **	−0.478 **	−1.095 **	−1.550 **	0.065	0.368	1.160	0.011 **	0.109 *	0.064 **	0.084	1.430
Ireland	−1.252 **	−1.465 **	0.933 **	−0.686 **	−1.108 **	−5.164	1.187 **	0.372 **	0.127 **	0.464 **	0.171	3.228 **	−2.148 *	−2.299	1.694 **	−0.692 **	−1.559 **	−10.049	2.212 **	0.664 **	0.300 **	0.902 **	0.162	3.007 **
Italy	0.227 **	−1.575 **	−0.600 **	−0.804 **	−0.200	−1.545 **	0.322 **	0.024 **	−0.020	0.227 **	0.094	1.681 *	−0.611	−0.906	−0.992 **	−0.751 **	−0.068	−1.134	0.328 **	−0.037	−0.320 **	0.216 **	0.060	0.987
Latvia	11.103	9.623	0.910 **	−0.492 **	−4.142	2.331	−0.146 *	0.075 **	−1.170 *	−0.759 **	0.261	5.498 **	13.930 *	13.244 **	0.040	−0.533 **	−1.655 *	1.608	0.194 **	0.022 **	−0.758	−0.394	0.372	9.231
Lithuania	1.101 **	1.009 **	−0.056 **	−0.121 **	−0.043	−0.086	0.110 **	0.085 **	−0.040	0.122 **	0.169	3.163 **	1.155 **	1.112 **	−0.117 **	−0.244 **	−0.093 **	−0.077	0.185 **	0.042 **	−0.021	0.164 **	0.184	3.513 **
Luxembourg	1.470 **	1.139 **	−0.432 **	−0.328 **	−0.546 **	0.569 **	0.270 **	0.078 **	−0.038	−0.235 **	0.150	2.754 **	1.174 **	0.988 **	−0.689 **	0.068	−0.220 **	0.955 **	0.171 **	−0.113 **	−0.030	−0.385 **	0.241	4.956 **
Malta	0.598 **	0.575 **	−0.136 **	−0.421 **	−0.020	0.223	−0.117 **	0.069 **	0.041 **	−0.011	0.098	1.693 *	0.543 **	0.622 **	−0.218 **	−0.323 **	0.093 **	0.109 **	−0.083	−0.051 **	0.024 **	−0.026 **	0.086	1.459
Netherlands	1.175 **	0.705 **	−0.587 **	−0.855 **	−1.239 **	0.497	0.342	0.014 **	−0.127	0.116	0.094	1.691 *	1.444 **	1.106 **	−1.252 **	−0.892 **	−1.290 **	2.409	0.913	−0.044 **	−0.746 *	−0.065	0.072	1.209
Norway	1.373 **	1.009 **	−0.463 **	−0.286 **	−0.150	0.337 *	0.748 **	0.748 **	0.164 **	−0.169 **	0.170	3.187 **	1.476 **	1.166 **	−0.599 **	0.012	0.258 *	0.958 *	0.893 **	−0.061 **	0.225 **	−0.346 **	0.185	3.546 **
Portugal	−0.081	−0.198 *	−0.469 **	−0.955 **	−0.829 **	0.485 **	1.650 **	−0.013 **	0.065 **	−0.173 **	0.145	2.652 **	−0.086	−0.063	−0.798 **	−0.993 **	−0.569 **	1.239 **	1.702 **	−0.041 **	0.035	−0.224 **	0.083	1.412
Romania	−0.655 **	−0.931 **	−0.641 **	−0.391 **	−0.850 **	0.425	−0.700	−0.076 **	−0.076 **	−0.401 **	0.148	2.710 **	−0.531 **	−0.515 **	−1.329 **	−0.488	−0.070	1.516 **	−1.590	−0.045 **	−0.146 **	−0.489 **	0.161	2.994 **
Russia	3.384 **	2.987 **	−1.683 **	−1.362 **	−1.442 **	0.353	−1.657 **	−0.008	0.016	−0.855 **	0.134	2.422 **	3.671 **	3.505 **	−1.948 **	−1.685 **	−1.269 **	1.348 **	−2.329 **	−0.052 **	0.065 **	−0.893 **	0.215	4.272 **
Slovak Republic	0.178 **	−0.045	−0.726 **	−0.977 **	−0.314 **	−0.128	−0.157 **	−0.045 **	0.042 **	0.291 **	0.121	2.143 **	0.134	0.227 **	−0.825 **	−0.873 **	−0.873	0.637 **	−0.583 **	−0.030 **	0.042 **	0.116 **	0.176	3.337 **
Spain	−0.041	−0.352	0.185 **	−0.458 **	−0.434 **	1.611 **	−0.266 **	−0.035 **	−0.085 **	−0.040 **	0.189	3.645 **	−0.090	−0.077 **	0.443 *	−0.419 **	−0.057	3.243 **	−0.587 **	−0.088 **	−0.185 **	−0.085 **	0.207	4.070 **
Sweden	1.405 **	0.863 **	−0.560 *	−1.399 **	−1.791 **	−0.704	0.731 **	0.061 *	0.543 **	−0.043	0.150	2.751 **	1.873	1.731 **	−0.974 **	−1.935 **	−1.999 **	0.198	0.922 **	−0.055 **	0.656 **	−0.073	0.168	3.144
Switzerland	1.136 **	0.899 **	−0.671 **	−0.753 **	−0.252 **	−0.183 **	0.313 **	0.020 **	0.404 **	−0.335 **	0.147	2.697 **	1.333 **	1.299 **	−0.774 **	−0.774 **	−0.178 **	−0.161	0.177 **	0.037 **	0.804 **	−0.357 **	0.107	1.875 *

Table 8. *Cont.*

	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Global Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$	β_0^w	β_1^w	ARG Crisis	US Crisis	EU Crisis	Regional Betas MC	TI	GDP	INF	INT	Adj. R^2	$F-Stat$
Turkey	−1.933 **	−2.568 **	−0.352 **	−2.145 **	−0.836	−2.654	−0.992	0.016 **	0.285	0.285	0.133	2.398 **	−1.548 **	−1.460 **	−0.514 **	−2.426 **	−0.461	−2.615	−2.855	0.075 **	−0.424 **	0.120 **	0.140	2.543
Ukraine	−3.925	−10.226	0.442	−16.358	−11.479 *	−4.015	−17.389 *	−0.011	2.384	−0.757	0.098	1.697 *	−0.411	−2.461	−1.584	−10.414 **	−3.307	5.363	−12.590 **	−0.087 *	0.753	−0.443	0.093	1.592
United Kingdom	0.847 **	0.384 **	0.086	−0.623 **	−0.469 **	0.045	0.126 **	−0.037 **	0.080 **	−0.020 **	0.144	2.628 **	1.098 **	0.872 **	0.028	−0.572 **	−0.152	0.178	0.302 **	−0.039 **	0.053 **	−0.013 **	0.152	2.799 **

Notes: Table 8 reports the estimated coefficients for all types of international equity interest-rate-based portfolios from the structural regime-switching factor model. Coefficients are retrieved regionally and internationally and concern the stylized facts of volatility regimes, financial crises, and structural economic variables. β_0^w and β_1^w are the estimates of the latent regime variables. The three crises concern the coefficients of the three respective dummy variables. MC, IT, GDP, INF, and INT concern the coefficients of the respective structural macroeconomic variables (i.e., changes in market capitalization, trade integration , GDP growth, inflation rate, and interest rate). Then, the adjusted R^2 (adj. R^2) and the joint significance hypothesis F test ($F-stat$) are reported. ** and * indicate statistical significance in 5% and 10%, respectively.

Table 9. Ehrmann et al. (2011) contagion test on market-capitalization-based portfolios.

| | Implied Global Betas | | | | Implied Regional Betas | | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
AFRICA								
Botswana	−1.387 *	−1.390	0.517	1.524	0.054	−0.706 **	0.312 *	−0.083
Egypt	−0.011	0.253	−0.022	0.050	−0.076	0.997	0.220	0.047
Kenya	−0.010	−0.481 **	−0.003	0.404 **	−0.063 *	0.156	0.043	0.055
Mauritius	−0.205	−0.465	−0.099	0.687	0.009	0.099	0.018	0.012
South Africa	0.120 *	0.172	−0.463 **	−0.351 *	−0.019	0.372 **	−0.055	0.023
AMERICAS								
Argentina	0.541 *	−0.508	−0.533	−2.091 *	0.042	0.175	0.074	−0.623
Brazil	−0.089	−0.019	0.066	−0.015	0.178	0.025	−0.048	−0.307
Canada	1.592 *	−1.330	−0.912	−1.311	−0.092	0.260	0.153	0.029
Chile	3.287 **	−3.507	−3.482	−3.980	−0.014	0.121 **	0.038	−0.054 *
Colombia	0.244 **	−0.069	−0.087	0.097	−0.043 **	0.098 *	0.067 *	0.020
Jamaica	2.928 **	−5.013	−3.803 *	−2.384	−0.009	0.030	0.020	0.282 **
Mexico	0.539 **	−0.754	−0.839 *	−0.234	0.178	0.068	−0.098	−0.334
Panama	0.110 *	−0.010	0.002	0.356 *	0.085	−0.095	−0.085	−0.193
Peru	−0.040	−0.262 *	−0.056	−0.111	−0.001	0.071	0.035	−0.026
United States	0.009	−0.002	0.032	0.125	0.020	0.044	0.055	−0.002
Venezuela	0.709 **	−1.208	−0.933	−0.449	0.005	0.061	0.070	−0.012
ASIA								
Australia	1.109 **	−1.045	−1.507 **	−1.066	0.004	0.035	0.004	−0.007
Bangladesh	0.210 *	−0.944 *	0.024	0.131	−0.027 *	0.027	0.024	0.025
China	0.046	−0.183	−0.749 *	0.562	0.035	0.038	−0.020	0.011
Hong Kong SAR	−0.221 **	0.475 **	0.323 **	0.280	0.094	0.075	−0.079	−0.032
India	−2.228 **	2.442	1.658	5.270 *	−0.021	0.181	0.054	0.003
Indonesia	−0.414 *	0.238	0.174	0.746	−0.054 *	0.176 *	0.063	0.092
Israel	0.182	−0.471	−0.239	0.229	−0.054	0.222 *	0.075	0.072
Japan	0.169	−0.619 *	0.003	−0.245	−0.099	0.123	0.109	0.053
Jordan	−0.662	0.650	0.555	0.884	0.002	0.035 **	0.004	0.019
Malaysia	−0.816 *	1.001	0.677	1.381	0.011	0.144 *	0.003	0.036
New Zealand	0.004	0.262	−0.039	0.052	−0.050 *	0.160	0.064	0.058
Oman	−0.324 *	0.079	−0.159	0.806	−0.047 **	0.048	0.052	0.053
Pakistan	0.441 **	−0.583	−0.542	−0.683	−0.013	0.098 *	0.010	0.049
Philippines	0.280	0.069	−0.353	−0.341	0.004	0.476 **	0.004	−0.014
Saudi Arabia	0.665 **	−0.846	−1.318 **	0.869 *	0.001	0.045	0.004	0.028
Singapore	−0.192 **	0.228	−0.022	0.623 **	0.044	0.008	−0.030	0.012
South Korea	0.743 **	−0.929 *	−0.632 *	−1.083 **	−1.083 *	0.039	−0.141	−0.237
Taiwan Province of China	−0.225 *	−0.027	0.248	−0.975 **	0.002	0.200	−0.001	−0.094
Thailand	−0.094	0.154	−0.305	−0.872	0.052	0.039	−0.049	−0.041
United Arab Emirates	0.719 **	−0.810	−1.700 **	−0.173	2.21×10^{-4}	0.020	1.29×10^{-4}	−0.001
EUROPE								
Austria	0.741 **	−0.802	−0.849 *	−0.717	−0.057 **	0.065	0.061	0.067
Belgium	0.114 **	−0.119	−0.316 **	0.124	−0.111	0.113	0.136	0.097
Bulgaria	−0.087	0.183	−0.448	1.949 **	−1.174 **	1.169	1.156	1.085
Croatia	0.394	−1.477 **	−0.480	−0.480	0.213 **	0.166	0.198	0.157
Cyprus	−0.481 **	−0.152	0.238	−0.339	−0.104 *	0.103	0.159	0.051
Czech Republic	−0.120 *	−0.806 **	−0.027	−0.066	−0.194 **	0.205	0.224	0.130
Denmark	0.410 *	−0.318	−0.356	−0.506	−0.084 *	0.106	0.097	0.017
Estonia	0.122	−0.671 *	0.083	0.380	−0.150 **	0.159	0.176 *	0.151
Finland	−0.285 **	−0.303	0.316	−0.384	−0.498 **	0.499	0.638 **	0.393
France	−0.171 **	0.201	0.090	0.054	−0.159	0.166	0.209	0.099
Germany	−0.085 *	0.198	−0.007	0.088	−0.125	0.131	0.155	0.082
Greece	−0.063	0.208	−0.611 **	0.152	−0.129 **	0.153	0.157	0.004
Hungary	0.127	−0.157	−0.190	−0.247	−0.198 **	0.208	0.231	0.179
Ireland	0.103 *	−0.339 *	0.145	−0.046	−0.187	0.199	0.221	0.191
Italy	0.123 **	−0.137	−0.295 **	0.075	−0.111	0.113	0.136	0.097
Latvia	0.951 **	−2.051 **	−1.143 *	−0.500	−0.314 **	0.323	0.340	0.299
Lithuania	0.250 **	−0.046	−0.948 **	−0.276	−0.031 *	0.037	0.035	0.034
Luxembourg	−0.157 *	0.009	0.001	0.328	−0.088 **	0.095	0.098 *	0.089
Malta	1.015 **	−1.187	−2.382 **	−0.886	−0.044	0.049	0.050	0.022
Netherlands	−0.225 **	−0.498 *	0.211	0.365	−0.168	0.184	0.223	0.142
Norway	0.149 **	−0.088	−0.175	0.473 **	−0.191 **	0.208	0.220 *	0.143

Table 9. *Cont.*

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
Portugal	−0.071	−0.014	−0.161	−0.276 *	−0.242 **	0.251	0.270 *	0.222
Romania	0.503 **	0.503 *	−0.497	−0.717	−0.149 *	0.162	0.178	0.136
Russia	−0.033	−0.111	0.437 **	0.168	−0.275 **	0.299	0.337 *	0.276
Slovak Republic	0.145 **	−0.769 **	−0.098	0.350	−0.030	0.028	0.038	0.008
Spain	−0.083	−0.093	−0.533 **	0.352	−0.162 **	0.171	0.185	0.157
Sweden	−0.178 **	0.294	0.071	0.416 *	−0.462 **	0.502	0.506	0.440
Switzerland	−0.249 **	0.082	0.227	0.134	−0.201 **	0.214	0.226	0.156
Turkey	0.114 **	0.160	−0.056	−0.239	−0.181 *	0.201	0.227	−0.015
Ukraine	0.085	−0.362	−0.487	0.114	−0.296	0.299	0.340	0.274
United Kingdom	0.015	−0.275 *	−0.096	−0.079	−0.221 **	0.240	0.230 *	0.133

Notes: Table 9 presents the results of the Ehrmann et al. (2011) contagion test depending on market-capitalization-based portfolios. The v_0 and v_j coefficients (j concerns the crises) are reported with an indication of statistical significance as well. ** and * indicate statistical significance in 5% and 10%, respectively. Results came from either internationally or regionally constructed portfolios. Portfolios are market capitalization weighted portfolios; specifically, the weighting scheme is based upon changes in stock market capitalization.

Table 10. Ehrmann et al. (2011) contagion test on trade-integration-based portfolios.

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
AFRICA								
Botswana	−0.007 *	0.073 **	−0.013	0.016	0.281	7.368 **	−3.039 **	0.003
Egypt	−0.054	0.213 **	0.049	0.059	−1.239	4.652	1.845	−0.100
Kenya	−0.041 **	0.056 *	0.007	0.043	−0.504	1.096	−2.088	0.384
Mauritius	0.052	−0.044	−0.083	−0.045	0.684 *	0.166	−0.920	−0.378
South Africa	0.003	0.084	−0.020	0.003	2.705 *	2.687	−2.601	−3.716
AMERICAS								
Argentina	−0.459 *	0.653	0.486	0.221	3.136 *	−2.236	0.434	−2.743 **
Brazil	0.127	0.137	−0.077	−0.267	1.406	−0.655	0.447	−6.297 *
Canada	−0.662 **	1.043	0.693	0.591	0.238	1.164	0.395	−3.785 *
Chile	−0.077 **	0.213 **	0.084 *	0.005	0.252	0.833	0.597 *	−2.907 **
Colombia	−0.089 **	0.169 *	0.102 *	0.043	−0.186	0.571	0.890 *	−1.743 **
Jamaica	−0.056 **	0.087	0.061	0.104	−0.034	−0.012	0.383	−5.654 **
Mexico	0.119	0.149	−0.080	−0.221	2.447 **	−0.895	−0.382	−9.325 **
Panama	0.007	0.005	−0.011	−0.126	0.780 *	−1.782	−0.728	−3.093 *
Peru	−0.057 **	0.166 **	0.084 *	−0.020	0.449 *	0.103	0.126	−1.410 *
United States	−0.326 *	0.412	0.362	0.238	0.250	−0.356	1.465	−1.177
Venezuela	−0.081 *	0.175	0.104	0.067	0.542	0.737	4.110 **	−3.565 *
ASIA								
Australia	0.071	−0.315	−0.145	−0.544	0.031	2.160 **	−0.044	0.447
Bangladesh	0.357	−0.649	−0.237	−0.906	−0.456 **	0.669 *	0.423 *	1.174 **
China	−0.036	−0.076	0.059	0.441	−0.155	1.039 *	0.167	0.983
Hong Kong SAR	−0.106	−0.373	0.215	0.152	−0.112	3.633 **	0.082	0.952
India	1.136 *	−1.495	−0.455	−2.212	−0.901 **	3.110 **	0.872	1.897 *
Indonesia	0.101	−0.427	−0.115	0.160	−0.137	4.898 **	0.122	0.594
Israel	0.629	−1.060	−0.921	−1.569	−0.558 *	6.389 **	0.646	0.774
Japan	1.446	−2.327	−1.167	−1.995	−0.591 *	2.741 **	0.558	0.467
Jordan	−0.021	0.021	0.282 *	0.203	0.063 *	0.249 **	−0.085	0.180 *
Malaysia	0.488	−0.504	0.312	−0.480	−0.002	1.653 **	−0.069	1.246 *
New Zealand	−0.465	0.192	0.338	0.708	−0.330 *	4.207 **	0.359	0.281
Oman	−0.490 *	0.273	0.480	0.559	−0.363 **	1.792 **	0.340	1.066 **
Pakistan	−0.051	−0.811	−0.287	3.08×10^{-4}	−0.062	4.412 **	0.134	1.327
Philippines	0.550	−0.983	−0.588	−1.005	−0.456	3.896 **	0.537	0.232
Saudi Arabia	0.225 *	−0.267	−0.320	−0.305	−0.075	1.050 **	0.090	0.101

Table 10. *Cont.*

		Implied Global Betas				**Implied Regional Betas**		
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
Singapore	0.156	−0.428	−0.208	0.192	−0.202	0.900	0.220	1.309 *
South Korea	−0.059	−1.730	0.757	−1.182	0.623	1.423	−0.738	−1.023
Taiwan Province of China	−0.577	0.132	0.873	−0.122	0.731 *	0.731 **	−0.729	−2.194 **
Thailand	0.017	−0.308	−0.183	−0.084	0.091	−0.589	−0.046	0.294
United Arab Emirates	−0.161 **	0.102	0.147	0.199	−0.006	0.592 **	0.009	0.026
EUROPE								
Austria	−0.282 *	0.333	0.299	0.365	−1.297 *	1.408	1.134	1.596
Belgium	−1.125 *	1.151	1.228	1.077	1.667	−1.556	−1.210	−1.461
Bulgaria	−8.876 **	8.906	8.819	9.369	−7.178 **	7.310	7.820	8.565
Croatia	−1.106 **	1.130	1.245	1.273	−4.463 **	4.638	4.674	4.719
Cyprus	−1.092 **	1.075	1.312	0.764	1.494	−1.462	0.617	−1.311
Czech Republic	−1.121 **	1.218	1.262 *	0.821	−3.182	3.674	4.394	4.044
Denmark	−0.155	0.330	0.211	−0.026	−3.380 **	3.833	3.842	2.883
Estonia	−0.913 **	0.976	1.038 *	0.963	−2.450 **	2.735	2.823	2.822
Finland	−3.312 **	3.387	3.954 *	3.162	−9.881 **	10.430	12.602	8.594
France	−1.560 *	1.655	1.781	1.325	1.179	−1.002	−0.236	−0.370
Germany	−1.695 *	1.745	1.824	1.535	5.040 *	−4.811	−4.550	−5.195
Greece	−0.753 **	0.948	0.875	0.262	−5.067 **	5.489	5.715	4.572
Hungary	−1.566 **	1.664	1.707	1.412	−0.124	0.566	0.536	0.629
Ireland	−1.629 *	1.745	1.788	1.655	0.165	0.061	0.379	0.581
Italy	−1.125 *	1.151	1.228	1.077	1.667	−1.556	−1.210	−1.461
Latvia	−1.461 **	1.196	1.253	1.161	−1.119 *	1.137	1.198	1.132
Lithuania	−0.076	0.118	0.079	0.064	−1.858 **	2.146	1.897	2.264
Luxembourg	−0.515 **	0.577 *	0.568 *	0.550	−1.473 *	1.791	0.960	1.562
Malta	−0.264 **	0.287	0.291 *	0.220	−0.943	1.448	1.196	0.909
Netherlands	−1.722 *	1.853	1.959	1.580	2.111	−1.790	−1.183	−1.421
Norway	−1.015 **	1.165	1.147 *	0.785	−3.867 **	4.310	4.500 *	3.959
Portugal	−1.741 **	1.826	1.848 *	1.758	−3.449 **	3.509	4.442	3.615
Romania	−0.739 *	0.861	0.830	0.689	−5.267 **	6.071	5.613	5.094
Russia	−1.331 **	1.507	1.586 *	1.404	−7.758 **	8.919	10.817	8.351
Slovak Republic	8.351	0.044	0.094	−0.079	0.067	−0.041	−0.282	−0.487
Spain	−0.665 *	0.724	0.775	0.641	−3.855 **	3.999	4.718 *	3.984
Sweden	−1.794 **	2.106	1.986	1.758	−12.048 **	13.583	13.679 *	11.744
Switzerland	−1.466 **	1.561	1.580	1.362	−2.058	2.220	2.664	2.262
Turkey	−0.690 *	0.869	0.845	−0.462	−4.884	5.399	5.391	9.146
Ukraine	−1.832	1.815	1.941	1.728	−3.595	4.368	0.232	3.221
United Kingdom	−0.957 **	1.106	0.986	0.647	−4.388 **	4.757	4.745 *	3.507

Notes: Table 10 presents the results of the Ehrmann et al. (2011) contagion test depending on trade-integration-based portfolios. The v_0 and v_j coefficients (*j* concerns the crises) are reported with an indication of statistical significance as well. ** and * indicate statistical significance in 5% and 10%, respectively. Results came from either internationally or regionally constructed portfolios. Portfolios are trade integration weighted portfolios; specifically, the weighting scheme is based upon changes in trade integration.

Table 11. Ehrmann et al. (2011) contagion test on GDP-based portfolios.

		Implied Global Betas				**Implied Regional Betas**		
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
AFRICA								
Botswana	0.074 **	0.188 *	0.087	−0.092	0.115 **	0.324 *	−0.009	−0.138
Egypt	−0.123 **	0.421 **	0.153	0.171	0.124	2.009 *	0.243	−0.487
Kenya	−0.072 **	0.075	−0.152 **	0.255 **	0.255 *	0.213	0.134	−0.041
Mauritius	−0.016	0.004	−0.056 *	0.003	0.030	0.063	0.086	−0.023
South Africa	0.045	0.302 **	−0.030	−0.256 *	0.286	0.939	−0.004	−0.509
AMERICAS								
Argentina	0.099	−0.012	−0.069	−1.658 **	−2.148 **	2.363	2.337	1.853
Brazil	−0.072	−0.069	−0.034	−0.010	−0.556	1.048	0.938	0.201
Canada	1.652 *	−1.403	−1.203	−1.489	−1.228 **	1.553	1.493	1.069

Table 11. *Cont.*

	Implied Global Betas				Implied Regional Betas			
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
Chile	0.673 **	−0.564	−0.529	−0.771	−0.412 **	0.466	0.403	0.230
Colombia	0.188 **	0.057	0.058 *	0.088 *	−0.268 *	−0.268	0.318	0.170
Jamaica	0.084 **	−0.100	−0.128 **	0.359 **	−0.364 **	0.352	0.375	0.563
Mexico	−0.056	0.519 **	0.308 *	0.044	0.092	0.088	0.090	−0.228
Panama	−0.029	−0.017	−0.037	−0.065	−0.150	0.091	0.116	−0.224
Peru	0.023	0.117	0.171 **	−0.076	−0.416 **	0.467	0.497	0.180
United States	0.534	−4.258 **	−2.681 **	0.624	−2.222 *	2.360	2.435	1.983
Venezuela	−0.027	0.134	0.179 *	0.033	−0.424 **	0.379	0.553	0.399
ASIA								
Australia	0.515 **	−0.376	−0.645 *	−0.515	−0.077	0.035	0.072	−0.107
Bangladesh	−0.076 **	−0.039	0.454 **	0.247 **	−0.025	−0.028	0.015	−0.214
China	−0.100	0.060	−0.435	0.662	−0.294 *	0.324	0.318	0.362
Hong Kong SAR	−0.214 **	0.488 **	0.360 **	0.200	−0.157	0.058	0.193	0.728
India	−1.145 **	1.428	0.924	2.444 *	−0.246	0.254	0.421	−0.259
Indonesia	−0.133 *	0.222	0.217	0.323	−0.224 *	0.130	0.224	0.289
Israel	−0.054	−0.263 *	0.049	0.333 *	−0.178	0.127	0.148	−0.106
Japan	0.311	−1.424 *	1.394 *	0.078	−0.414	0.212	0.457	0.100
Jordan	0.128 **	−0.127 **	−0.099 **	−0.017	−0.036 **	0.048	0.094 **	0.084 *
Malaysia	−0.117 *	0.474 **	0.025	0.555 **	0.031	0.012	0.140	−0.076
New Zealand	0.026	0.213 *	−0.076	−0.032	−0.318 **	0.253	0.317 *	0.325
Oman	−0.110 **	−0.067	−0.054	0.368 **	−0.164 **	0.110	0.188	0.179
Pakistan	0.028	−0.036	−0.034	−0.308 *	−0.162 *	0.014	0.064	0.140
Philippines	−0.071	0.464 **	0.070	−0.181	−0.044	−0.119	0.056	−0.144
Saudi Arabia	0.169 **	−0.203	−0.280 **	0.390 **	−0.012	0.012	0.001	0.005
Singapore	−0.108 **	0.118	0.056	0.012	−0.284	0.274	0.290	0.346
South Korea	0.326 **	0.326 *	−0.157	−0.658 **	−0.324	−0.025	0.478	−0.080
Taiwan Province of China	−0.208 *	−0.029	0.552 *	−0.998 **	−0.353 *	0.315	0.363	0.084
Thailand	0.042	0.092	−0.124	−0.776 **	−0.268 *	0.238	0.218	0.209
United Arab Emirates	0.244 **	−0.149	−0.293 *	−0.079	−0.044 **	0.035	0.041	0.044
EUROPE								
Austria	0.200 **	−0.237 *	−0.200 *	−0.294 *	−0.090	0.102	0.126	0.094
Belgium	0.027	0.004	−0.070	0.092	−0.238	0.241	0.318	0.246
Bulgaria	−0.190	0.373	−0.148	2.033 **	−1.542 *	1.479	1.625	0.603
Croatia	0.118 **	−0.382 **	−0.216 *	−0.151	−0.276 *	0.284	0.362	0.221
Cyprus	−0.150 **	−0.368 *	0.116	−0.708 **	0.083	−0.086	−0.024	0.024
Czech Republic	−0.114 **	0.019	0.085	−0.119	−0.291 *	0.323	0.371	0.142
Denmark	0.060	0.223	0.034	−0.039	−0.074	0.105	0.100	−0.060
Estonia	−0.119 **	0.133	0.457 **	0.196 *	−0.346 **	0.363	0.393 *	0.329
Finland	−0.327 **	−0.185	0.398 *	−0.241	−0.464	0.483	0.720	0.114
France	−0.302 *	0.236	0.143	0.208	−0.093	−0.093	0.234	0.018
Germany	−0.032	0.032	−0.272 *	0.109	−0.124	0.141	0.242	0.173
Greece	−0.078	0.239	−0.131	−0.119	−0.188 *	0.186	0.259	−0.009
Hungary	−0.107 **	0.118	0.139	0.111	−0.699 **	0.713	0.777 *	0.636
Ireland	−0.031	0.211 *	0.306 **	0.015	−0.101	0.106	0.225	0.086
Italy	0.277 **	−0.317	−0.580 **	0.035	−0.238	0.241	0.318	0.246
Latvia	0.151 *	−0.061	−0.056	−0.058	−0.177	0.191	0.251	0.096
Lithuania	−0.078 **	0.265 **	0.053	0.014	0.064	−0.048	−0.080	−0.087
Luxembourg	−0.097 **	0.161 *	0.221 **	−0.028	−0.028	0.079	0.102	0.072
Malta	−0.043	−0.079	0.035	0.097	−0.100	0.114	0.127	0.103
Netherlands	−0.170 **	−0.254	0.184	0.264 *	−0.136	0.160	0.331	0.184
Norway	−0.025	0.138	0.137 *	0.153	−0.363 **	0.386	0.396	0.287
Portugal	−0.126 **	0.278 **	−0.032	−0.119	−0.539 **	0.567	0.615 *	0.453
Romania	0.220 **	−0.633 **	−0.040	−0.275 *	−0.161	0.154	0.266	0.158
Russia	−0.059	0.101	0.458 **	0.187	−0.509 **	0.565	0.653 *	0.444
Slovak Republic	0.043	−0.141	0.170	0.178 *	0.146	−0.156	−0.120	−0.150
Spain	−0.073	−0.036	−0.322 **	0.320 *	0.007	0.005	0.080	−0.045
Sweden	−0.197 **	0.319	0.235	0.403 *	−0.467	0.538	0.593	0.383
Switzerland	−0.154 **	0.113	0.200 *	0.010	−0.405 **	0.422	0.459	0.263
Turkey	0.103 *	0.192	−0.022	−0.229	−0.166	0.170	0.581	−0.490

Table 11. *Cont.*

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
Ukraine	−0.010	0.172	−0.148	0.140	−1.761	1.760	1.971	1.766
United Kingdom	0.216 *	−1.145 **	−0.508 *	−0.215	−0.254	0.290	0.326	0.075

Notes: Table 11 presents the results of the Ehrmann et al. (2011) contagion test depending on GDP-based portfolios. The v_0 and v_j coefficients (*j* concerns the crises) are reported with an indication of statistical significance as well. ** and * indicate statistical significance in 5% and 10%, respectively. Results came from either internationally or regionally constructed portfolios. Portfolios are GDP weighted portfolios; specifically, the weighting scheme is based upon changes in GDP growth rate.

Table 12. Ehrmann et al. (2011) contagion test on inflation-rate-based portfolios.

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
AFRICA								
Botswana	−0.013 *	0.011	0.024	0.027	0.680	0.778 **	−0.259	−0.726
Egypt	−0.012	0.024	0.052	−0.323 **	0.259	1.515 *	3.180	−2.082
Kenya	0.008	−0.008	0.027 *	−0.158 **	−0.563	1.775 *	1.889 *	−0.038
Mauritius	$5.14 \times 10{-4}$	$−3.81 \times 10{-4}$	0.012	0.012	0.154	1.034	0.873 *	−0.004
South Africa	−0.022	0.018	0.039	−0.140 *	0.237	0.778 *	−0.696	−0.336
AMERICAS								
Argentina	0.044 *	−0.056	−0.027	−0.113	−0.293	0.668	0.358	0.179
Brazil	0.010	−0.048	−0.005	−0.010	0.909	0.460	−0.061	−0.225
Canada	0.008	−0.070 *	0.004	0.003	−0.665 **	1.336	0.715	0.628
Chile	0.006 *	−0.019	−0.001	−0.006	−0.713 **	0.309 **	0.874 *	0.020
Colombia	0.009 *	−0.009	−0.003	−0.009	−0.758 **	0.222 **	0.971 *	0.365
Jamaica	0.008 *	−0.007	−0.008	−0.042 **	−0.570 **	1.108	0.720	0.316
Mexico	0.036 **	−0.086 *	−0.013	−0.048	0.494	0.454	0.268	−1.221
Panama	0.004	−0.016	−0.004	0.008	0.585	−0.322	−0.573	−0.735
Peru	0.001	−0.001	0.004	−0.001	−0.436 *	0.219	0.874	−0.903
United States	0.032 *	−0.045	−0.021	−0.032	−2.261	4.124	2.883	1.557
Venezuela	0.006	−0.006	0.011	−0.006	−0.407	0.239 *	0.811	0.350
ASIA								
Australia	−0.365 **	0.570 *	0.399 *	1.031 **	1.463 **	−1.686	−1.633	−2.222
Bangladesh	−0.287 **	0.269	0.373	0.808 **	1.419 **	−1.642	−1.248	−2.374
China	−0.676	−1.036	1.455	0.418	3.204 **	−3.389	−3.255	−2.808
Hong Kong SAR	−0.676 **	0.842	0.805 *	1.289 **	1.190	−1.726	−1.128	−1.333
India	−0.473	1.994	0.695	0.746	6.173 **	−6.636	−5.327 *	−7.874 *
Indonesia	−0.232	−0.131	0.330	0.340	2.757 *	−3.176	−2.943	−2.333
Israel	−0.416 **	0.367	0.484	1.067 **	4.212 **	−4.737	−4.763	−5.685
Japan	−0.453 *	0.678	0.686	0.699	1.142 **	−1.209	−1.130	−1.174
Jordan	−1.104 **	0.967	1.762 *	1.843 *	0.874	−1.287	2.449	0.903
Malaysia	−0.453 **	0.496	0.686 *	1.458 **	2.028 *	−2.198	−0.959	−2.257
New Zealand	0.1315	−0.515	−0.842	−0.169	1.171 *	−1.507	−1.424	−0.709
Oman	−0.204 **	0.220	2.333	−0.223	2.034	−3.672	−2.231	−2.691
Pakistan	−0.797	0.484	1.229	2.735	1.621 **	−2.381	−2.223 *	−1.979
Philippines	−0.311 **	1.025 **	0.493	0.356	3.326 **	−3.761	−2.991	−3.495
Saudi Arabia	−0.219 **	0.284	0.239 *	0.212	0.802 **	−0.887	−1.009 *	−1.042
Singapore	−1.398	0.848	0.217	0.566	3.975 **	−4.248	−4.181	−3.792
South Korea	−0.297	1.043	0.488	0.240	2.874 *	−4.455	−1.987	−4.233
Taiwan Province of China	−0.646 **	0.918 *	0.853 *	0.502	1.664	−2.220	−1.233	−1.786
Thailand	−0.261	−0.776	1.011	0.896	2.174 *	−2.474	−2.549	−2.391
United Arab Emirates	−0.669 **	0.919	0.744	0.726	0.265	−0.928	−0.623	0.358
EUROPE								
Austria	−0.062	0.060	0.056	0.177	−0.292	0.417	0.356	0.292
Belgium	0.239 *	−0.214	−0.210	−0.135	−1.342 *	1.430	1.608	1.192
Bulgaria	−1.304 **	1.391	1.384	2.169 *	−0.938 **	0.948	0.945	0.588
Croatia	−0.402 *	0.415	0.425	0.818	−2.119 **	2.194	2.333	1.935
Cyprus	0.098	−0.048	−0.046	0.086	−1.007 *	1.095	1.134	0.500
Czech Republic	−0.278	0.328	0.342	0.393	−2.387 **	2.650	2.595 *	1.602
Denmark	−0.180	0.205	0.197	0.249	−0.438	0.863	0.467	−0.242
Estonia	−0.164	0.166	0.187	0.337	−1.631 **	1.756	1.850 *	1.538
Finland	−0.728 *	0.828	0.947	1.190	−4.677 **	4.940	5.912 *	3.315
France	0.106	−0.044	−0.054	0.102	−1.379	1.604	1.909	0.802

Table 12. *Cont.*

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
Germany	0.587 *	−0.550	−0.570	−0.449	−1.664 *	1.777	2.051	1.330
Greece	−0.454 *	0.541	0.569	0.581	−1.266 *	1.778	1.572	−0.130
Hungary	−0.156	0.231	0.234	0.249	−2.694 **	2.931	3.028 *	2.197
Ireland	−0.092	0.129	0.161	0.253	−0.978	1.228	1.382	0.897
Italy	0.239 *	−0.214	−0.210	−0.135	−1.342 *	1.430	1.608	1.192
Latvia	−0.471	0.483	0.494	0.528	−1.805 **	1.955	1.961	1.621
Lithuania	−0.165 *	0.165	0.194	0.223	−0.089	0.202	0.020	−0.003
Luxembourg	−0.058	0.083	0.029	0.185	−1.195 **	1.370	1.247 *	1.183
Malta	−0.078	0.103	0.083	0.297	−1.147 **	1.260	1.216 *	0.893
Netherlands	0.134	−0.097	−0.059	−0.008	−1.389	1.676	2.029	1.135
Norway	−0.273 *	0.298	0.371	0.342	−2.030 **	2.393	2.348 *	1.511
Portugal	−0.444 **	0.481	0.542	0.605	−3.422 **	3.609 *	3.595 **	2.983
Romania	−0.329 *	0.416	0.404	0.559	−0.972	1.260	1.094	0.557
Russia	−0.723 *	0.773	0.983	0.977	−2.670 **	3.145 *	3.057 *	2.739
Slovak Republic	0.067	−0.042	−0.085	0.210	0.128	−0.091	−0.105	−0.486
Spain	−0.283 *	0.296	0.324	0.341	−0.396	0.533	0.540	0.211
Sweden	−1.222 **	1.310	1.257	1.430	−2.988 *	3.639	3.144	2.597
Switzerland	−0.400 *	0.412	0.446	0.642	−3.203 **	3.441	3.486 *	2.638
Turkey	−0.206	0.256	0.281	1.290	−2.109 *	2.559	2.819	−2.057
Ukraine	0.362	−0.337	0.042	−0.247	−1.318 *	1.316	1.352	1.291
United Kingdom	−0.345 *	0.370	0.461	0.518	−1.217 *	1.542	1.425	0.305

Notes: Table 12 presents the results of the Ehrmann et al. (2011) contagion test depending on inflation-rate-based portfolios. The v_0 and v_j coefficients (*j* concerns the crises) are reported with an indication of statistical significance as well. ** and * indicate statistical significance in 5% and 10%, respectively. Results came from either internationally or regionally constructed portfolios. Portfolios are inflation rate weighted portfolios; specifically, the weighting scheme is based upon changes in inflation rates.

Table 13. Ehrmann et al. (2011) contagion test on Interest Rate-based portfolios.

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
AFRICA								
Botswana	−0.040 **	0.115 **	0.034	0.098 **	−0.198*	2.085 **	−0.373	0.429
Egypt	−0.132 **	0.094	0.178 *	−0.260 *	−1.574	0.616	1.406	1.678
Kenya	−0.028 *	0.025	0.103 **	−0.110 **	−1.185 **	1.535	0.204	1.208
Mauritius	−0.005	0.018	0.022	0.017	1.482	−1.207	−2.353	−1.297
South Africa	−0.188 **	0.200	0.239 *	0.095	0.106	2.382	−0.568	0.148
AMERICAS								
Argentina	0.215 *	−0.190	−0.047	−0.561 *	−0.481 *	0.686	0.509	0.232
Brazil	−0.021	−0.079	0.107	−0.025	1.328	1.434	−0.820	−2.793
Canada	−0.013	−0.037	0.071	0.001	−0.694 *	1.093	0.727	0.620
Chile	0.014	0.036	0.038 *	−0.060 *	−0.807 **	2.244 **	0.888 *	0.068
Colombia	0.001	0.024	0.051 *	−0.013	−0.935 **	1.785 *	1.068 *	0.462
Jamaica	0.008	0.005	−0.002	−0.100 **	−0.586 **	0.923	0.638	1.082
Mexico	0.041	−0.016	0.045	−0.134	1.240	1.572	−0.825	−2.313
Panama	0.030	−0.030	−0.018	−0.064	0.072	0.053	−0.119	−1.319
Peru	−0.005	0.043	0.063	−0.006	−0.595 **	1.720 **	0.872 *	−0.224
United States	0.111 *	−0.086	0.033	−0.146	−3.402 *	4.328	3.800	2.502
Venezuela	1.24×10^{-5}	0.113	0.150 **	−0.012	−0.854 *	1.829	1.102	0.704
ASIA								
Australia	−0.551 **	1.226 **	0.568 *	1.035 **	0.179	−0.779	−0.357	−1.355
Bangladesh	−0.583 **	0.583	0.629 *	0.941 *	0.892	−1.617	−0.604	−2.265
China	−0.790 **	1.265 *	0.773	1.055	−0.089	−0.211	0.141	1.082
Hong Kong SAR	1.082 **	1.813	1.574	1.481	−0.261	−0.939	0.532	0.365
India	−1.210 **	1.260	1.378 *	1.280	0.285	−0.373	−1.137	−0.552
Indonesia	−1.644 **	1.781	1.851 *	1.701	0.247	−1.059	−0.282	0.388
Israel	−1.018 **	1.518	1.023	1.502	1.575	−0.263	−0.233	−0.391
Japan	−1.028 **	1.466 *	1.080 *	1.097	0.362	−0.580	−0.293	−0.498

Table 13. *Cont.*

| | **Implied Global Betas** | | | | **Implied Regional Betas** | | | |
	v_0	Arg cr.	US cr.	EU cr.	v_0	Arg cr.	US cr.	EU cr.
Jordan	−0.189 **	0.076	0.195	0.235 *	−0.049	0.053	0.713 *	0.511
Malaysia	−0.693 *	1.006	0.699	1.409 *	1.219	−1.257	0.777	−1.196
New Zealand	−0.515 *	1.240	0.838	0.492	−1.161 *	0.461	0.844	1.761
Oman	−0.793 **	0.793	0.804 *	0.412	−1.227 *	0.702	1.204	1.400
Pakistan	−0.242 *	0.454	0.311	0.242	−0.123	−2.027	−0.719	0.007
Philippines	−0.467 *	0.413 **	0.675	0.478	1.372	−2.460	−1.464	−2.491
Saudi Arabia	−0.383 **	0.758 **	0.360 *	0.383	0.572 *	−0.684	−0.808	−0.779
Singapore	−0.806 **	1.668 *	0.829	1.094	0.397	−1.059	−0.536	0.457
South Korea	−0.647 *	2.247 *	0.802	0.554	−0.141	−4.322	1.901	−2.987
Taiwan Province of China	−1.340 **	2.415*	1.570*	1.143	−1.444	0.332	2.189	−0.309
Thailand	−0.540 **	0.816	0.558	0.552	0.041	−0.779	−0.457	−0.203
United Arab Emirates	−0.164 **	0.314 **	0.182 *	0.164	−0.410 *	0.260	0.370	0.525
EUROPE								
Austria	−0.080	0.130	0.103	0.323	−0.600 *	0.713	0.629	0.773
Belgium	0.091	−0.041	0.031	0.071	−2.393 *	2.442	2.612	2.289
Bulgaria	−0.337 **	0.352	0.355	0.360	−1.887 **	1.891	1.875	1.994
Croatia	−0.506 *	0.568	0.777	1.406	−2.349 **	2.399	2.637	2.694
Cyprus	−0.230	0.330	0.623	0.473	−2.324 **	2.298	2.798 *	1.632
Czech Republic	−0.387	0.487	0.606	0.560	−2.383 **	2.583	2.683 *	1.749
Denmark	−0.087	0.124	0.162	0.214	−0.326	0.701	0.459	−0.066
Estonia	−0.191	0.229	0.353	0.457	−1.936 **	2.061	2.190 *	2.040
Finland	−0.697	0.960	1.799 *	1.308	−0.704 **	0.719	0.843 *	0.673
France	0.056	0.119	0.279	0.406	−3.324*	3.536	3.785	2.828
Germany	0.270	−0.133	−0.138	−0.155	−3.606 *	3.719	3.890	3.261
Greece	−0.224	0.374	0.489	0.328	−1.604*	2.016	1.857	0.565
Hungary	−0.349	0.574	0.661	0.453	−3.329 **	3.542	3.629 *	3.017
Ireland	−0.409	0.609	0.657	0.651	−3.468 *	3.705	3.803	3.537
Italy	0.091	−0.041	0.031	0.071	−2.393 *	2.442	2.612	2.289
Latvia	−0.084	0.122	0.297	0.211	−2.415 **	2.541	2.658 *	2.474
Lithuania	−0.080	0.155	0.155	0.184	−0.156	0.255	0.154	0.144
Luxembourg	−0.102	0.152	0.206	0.402	−1.103 **	1.228*	1.230 *	1.184 *
Malta	−0.050	0.113	0.079	0.397	−0.568 **	0.618	0.625 **	0.464
Netherlands	−0.047	0.184	0.370	0.312	−3.665 *	3.939	3.167	3.365
Norway	−0.385 *	0.473	0.668 *	0.605	−2.165 **	2.477	2.442	1.657
Portugal	−0.683 **	0.883	0.908 *	0.775	−3.705 **	3.917	3.930 *	3.728
Romania	−0.072	0.360	0.372	0.234	−1.571*	1.821	1.756	1.467
Russia	−0.763 *	0.863	1.398 *	1.536	−2.836 **	3.198 *	3.378*	2.997 *
Slovak Republic	2.997	0.077	0.107	0.522	−0.105	0.105	0.209	−0.149
Spain	−0.335 *	0.397	0.525	0.450	−1.417 *	1.542	1.648	1.360
Sweden	−1.351 **	1.614	1.634	1.640	−3.812 **	3.487	3.226	3.741
Switzerland	−0.614 **	0.677	0.810	1.041	−3.116 **	3.315	3.357	2.907
Turkey	0.158	−0.070	0.033	1.054	−1.473 *	1.873	1.796	−0.973
Ukraine	3.329	−3.317	−2.301	−3.156	−3.894	3.843	4.125	3.686
United Kingdom	−0.345 *	0.420	0.553	0.691	−2.025 **	−2.025	2.088	1.356

Notes: Table 13 presents the results of the Ehrmann et al. (2011) contagion test. The v_0 and v_j coefficients (*j* concerns the crises) are reported with an indication of statistical significance as well. ** and * indicate statistical significance in 5% and 10%, respectively. Results came from either internationally or regionally constructed portfolios. Portfolios are interest rate weighted portfolios; specifically, the weighting scheme is based upon changes in interest rates.

Overall, there was no strong evidence in favor of crises causing contagion on a regional level with either global or regional implied betas. There were many countries from all regions with statistically significant crisis-coefficients, however, on a country level. The Argentinian crisis was the crisis that affected mostly contagion, with EU second and US third. The Argentinian crisis caused contagion in three cases: in Africa (on trade-integration- and GDP-based portfolios for implied global betas) and Asia (on trade-integration-based portfolios for implied regional betas). The EU crisis was responsible for contagion in a few cases only: in Africa (on inflation-rate- and interest-rate-based portfolios for the implied global betas) and the Americas (on trade-integration-based portfolios for implied regional betas). The US crisis was responsible for contagion in a single case only: in the Americas on GDP-based portfolios for implied global betas.

6. Concluding Remarks

The Americas and Europe had the highest portfolio weights across the weighting schemes. Furthermore, they were the regions with the best portfolio performance across the portfolio weighting schemes. The market capitalization was the best portfolio weighting scheme in terms of portfolio performance. It revealed the inter-relation of market capitalization (via liquidity) that drives portfolio performance. For the average values of the implied global betas, Europe and Africa were the regions with the lowest and highest dispersion in either implied global or implied regional betas across regional countries. The results in average implied global or regional betas are robust across most of the portfolio weighting schemes. The single exception is the trade integration portfolio weighting scheme, for which both the implied global and regional betas increased across all regions and all countries.

The structural regime-switching factor model revealed strong evidence of contagion across all regions, portfolio types, and for both global and regional betas. Regime variables, crises variables, and macroeconomic variables revealed contagion (were statistically significant). Europe was the region that was mostly affected by the crises. The macroeconomic variables statistically significantly explained betas. Moreover, the overall model significance was high. The Argentinian crisis first and the US crisis second mostly affected contagion across all regions and portfolio types, as well as both global and regional implied betas.

The Ehrmann et al. (2011) contagion test revealed strong contagion across all regions and portfolio types (weighting schemes) and for both global and regional betas. Europe was the region with the strongest evidence of contagion. Stronger contagion was evident for the implied global rather than regional betas. There was no strong evidence of crisis contagion on a regional level. There was on a country level, however. The Argentinian crisis was the most contagion influential crisis, however.

The research implications suggest that asset allocation and portfolio management should consider both the global and the regional aspect of contagion, as differences can occur. In addition, portfolio construction should involve a careful consideration of the underlying impact of the macroeconomic variables considered in this study, as some macroeconomic variables appear to reveal contagion better than others. Finally, it is also important to consider which macroeconomic variable is mainly affected by a given crisis event in order to better understand the impact of contagion on portfolio performance. It is also evident that market capitalization is a very important macroeconomic variable to consider in both the Americas and Europe as it leads to both stronger contagion and portfolio performance. Finally, trade integration is a more important variable to consider in emerging economies.

Turning to the limitations and the future work related to the study, indeed, important events that happened in the years following 2016 cannot be captured; this is due to the data availability at present. Nonetheless, we intend to investigate more recent events in the near future in order to further include events such as the COVID-19 pandemic and the Russia–Ukrainian war.

These results should be considered by investors and risk managers. The use of macroeconomic variables as the main driver of a portfolio weighting scheme reveals their importance in asset allocation. This is true on both the international and regional levels. Higher importance comes for the regional portfolios as the dispersion of results is higher on a regional than international level.

Author Contributions: C.F.: project administration, supervision, formal analysis, writing—original draft, D.V.: conceptualization, methods, data curation, formal analysis, writing—original draft, I.C.: supervision, validation, formal analysis, writing—original draft. All authors have read and agreed to the published version of the manuscript.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data can be available upon request.

Conflicts of Interest: The authors declare no conflicts of interest.

Notes

[1] **(i)** Americas: Argentina (ARG), Brazil (BRA), Canada (CAN), Chile (CHL), Colombia (COL), Jamaica (JAM), Mexico (MEX), Panama (PAN), Peru (PER), United States of America (USA) and Venezuela (VEN); **(ii)** Asia: Australia (AUS), Bangladesh (BGD), China (CHN), Hong Kong SA (HKG), India (IND), Indonesia (IDN), Israel (ISR), Japan (JPN), Jordan (JOR), Malaysia (MYS), New Zealand (NZL), Oman (OMN), Pakistan (PAK), Philippines (PHL), Saudi Arabia (SAU), Singapore (SGP), South Korea (KOR), Taiwan Province of China (TWN), Thailand (THA), and United Arab Emirates (ARE); **(iii)** Europe: Austria (AUT), Belgium (BEL), Bulgaria (BGR), Croatia (CRO), Cyprus (CYP), Czech Republic (CZE), Denmark (DEN), Estonia (EST), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Hungary (HUN), Ireland (IRL), Italy (ITA), Latvia (LVA), Lithuania (LTU), Luxembourg (LUX), Malta (MLT), Netherlands (NLD), Norway (NOR), Portugal (PRT), Romania (ROU), Russia (RUS), Slovak Republic (SVK), Spain (ESP), Sweden (SWE), Switzerland (CHE), Turkey (TUR), Ukraine (UKR), and United Kingdom (GBR); and **(iv)** Africa: Botswana (BWA), Egypt (EGY), Kenya (KEN), Mauritius (MUS), and South Africa (ZAF).

[2] Trade integration is measured as the ratio of international trade (import plus exports) of a country over the country's GDP.

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