Stock/Bond Dynamics and the Cross-section of Country Stock Returns

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International Portfolio Allocation Decision

- International equity investments popular with advancements of ETF trading
- Understanding the influence of local/global risk factors on the cross-section of country equity risk premium is important
  - Mainstream literature focuses on global factor and global exposure (e.g., International CAPM; Adler and Dumas 1983)
  - Existing evidence suggests *dividend yields* or *momentum* is a predictor of the cross-sectional returns (e.g., Cenedese et. al. 2016)
  - More to study about the relative performance of the country stock index.
- This paper studies the cross-section of country stock returns
  - Focus on the dynamics of country stock index and sovereign bond returns

Evidence from Russia-Ukraine War 2022

2/14-3/1, with countries credit rating A and above

The US on Feb 12 (Sat): "We're in a window when (Russian) invasion could begin at any time"

Europe	Δ 10Y Yield	Equity	Asia-Pacific	Δ 10Y Yield	Equity
Austria	-17.70bp	-33.79%	Australia	-3.00bp	-1.99%
Belgium	-22.70bp	-4.81%	Canada	-12.40bp	-1.80%
Finland	-12.30bp	-9.80%	China	6.80bp	-8.53%
France	-26.50bp	-8.37%	Japan	-9.10bp	-5.71%
Germany	-25.70bp	-11.02%	Korea	-7.00bp	-3.62%
Netherlands	-17.20bp	-7.45%	Malaysia	-1.70bp	1.15%
Norway	-21.20bp	2.87%	New Zealand	0.50bp	-2.49%
Spain	-17.30bp	-6.28%	Singapore	-7.67bp	-11.01%
Sweden	-27.20bp	-9.43%	United States	-15.30bp	-2.55%
Switzerland	-17.90bp	-3.20%			
United Kingdom	-26.50bp	-2.36%			
Average	**-21.11 bp**	**-8.51 %**	**Average**	**-5.43 bp**	**-4.06 %**

X 3.89

X 2.09

Asymmetric exposure of stocks and bonds to global risk

- ▷ Stock prices and bond yields both react negatively to positive uncertainty shocks.
  - Increased risk premium (stocks)
  - Precautionary savings channel (bonds)
- ▷ Stocks may be exposed to global risk more than bonds

  → Bond yields will be more volatile when most uncertainty shocks are local
- ▷ Source of the asymmetric exposure?
  - Bond yields are primarily determined by the local discount factor, which is a function of local consumption
  - Firms export directly/indirectly, so dividends depend on foreign consumption

Country-specific variance risk and SB relationship

Stock and bond prices move in opposite directions ($\beta_i < 0$) upon "uncertainty" shocks.

- Bond yield beta

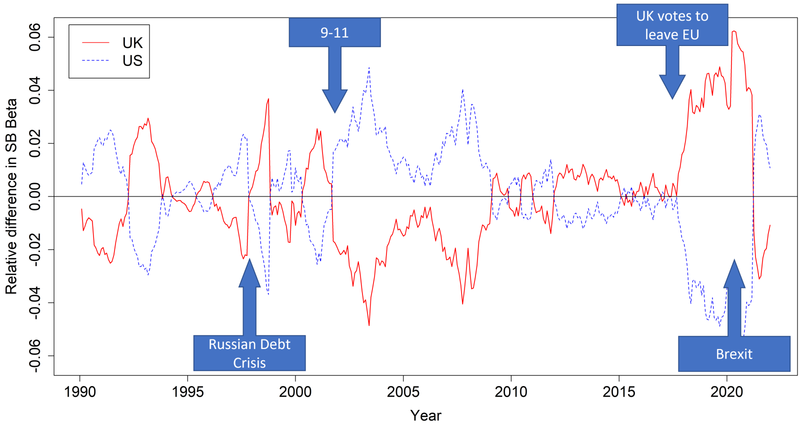
$$R_{i,s} = \alpha_i + \beta_i(-\Delta y_{i,t}) + \epsilon_{i,t}$$

  When $\Delta y_{i,t}$ varies more, β_i is flatter (more positive)

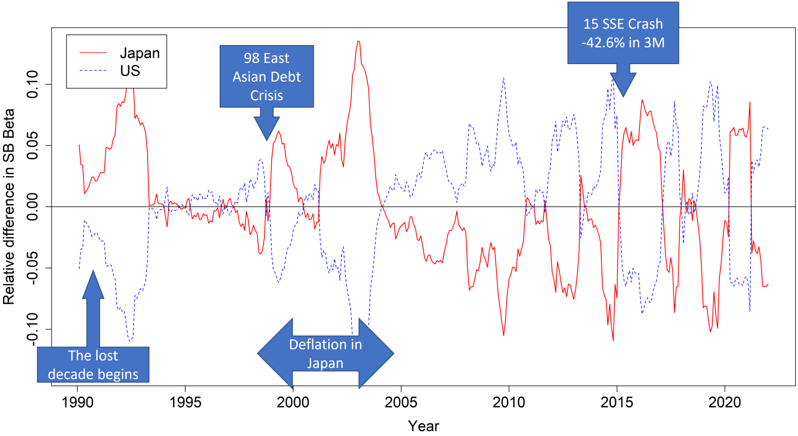
- Correlation
  When local variance risk is large, bonds and stocks move independently, increasing the correlation.
  The model in the paper shows that local shocks affect the discount rate of stocks more, which may even change the sign of the beta.

- Positive stock-bond comovement should imply higher country-specific variance risk and, thus, a higher risk premium

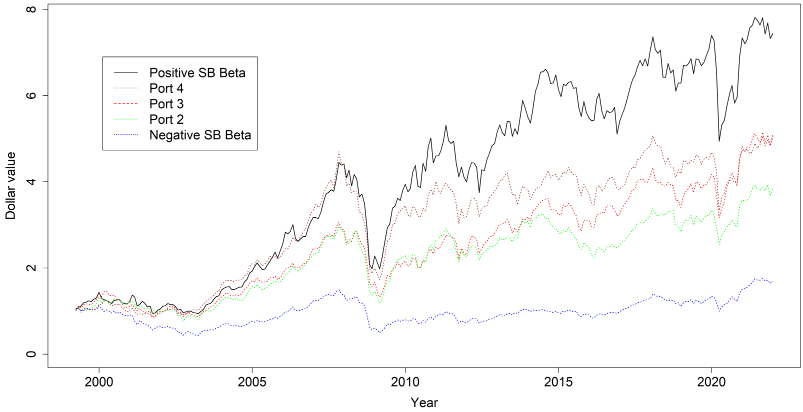
The SB beta of the UK and the US



The SB beta of Japan and the US



Preview of the results: Performance of SB beta portfolio



Why can't global investors diversify this type of risk?

Generally, bonds provide hedge against variance risk. However:

▷ For international investors:

Higher country-specific variance reduces stock prices as well as currency value. Hence, country-specific risk is difficult to diversify.
Empirically supported by the positive correlation between currency and stock returns (Hau and Rey 2006)

▷ For domestic investors:

Stocks are exposed to global variance risk. Due to country-specific risk, bonds will not completely hedge global risk, making stocks more costly to hold.

Related Literature (1)

Variance risk as a return predictor of stock returns

- The variance risk premium as a stock market return predictor

  e.g., Bollerslev, Tauchen, and Zhou (2009), Drechsler and Yaron (2011), Pyun (2019)

- Cross-section of stock returns

  e.g., Ang, Hodrick, Xing and Zhang (2006), Chang, Christoffersen, Jacobs (2013)

- Macroeconomic volatility risk

  e.g., Boguth and Kuehn (2012), Kilic and Wachter (2018)

- Currency market

  e.g., Lustig, Roussanov, and Verdelhan (2011), Londono and Zhou (2017)

Related Literature (2)

Global vs Local risk factors as determinants of equity returns

- ▷ Extensions of International CAPM:

  Dumas and Solnik (1995), Brusa, Ramadorai, and Verdelhan (2016), etc.

- ▷ Global risk generates comovement in international equity prices:

  Ferson and Harvey (1993), Bekaert and Harvey (1995), Bekaert, Ehrmann, Fratzcher, and Mehl (2014) etc.

- ▷ There is time-series predictability generated by global variance risk

  Bollerslev, Marrone, Xu and Zhou (2017), Bekaert, Hodrick, and Kiguel (2019), Londono and Xu (2021), etc.

- ▷ Equity returns and trade linkages

  Forbes and Rigobon (2002), Forbes (2004), Pyun and Sulaeman (2022) etc.

Data

- Total of 30: 14 in Europe (Austria, Belgium, Finland, France, Germany, Italy, Netherlands, Norway, Russia, Spain, Sweden, Switzerland, Turkey, UK), 9 in Asia (China, India, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Thailand), 3 in NA (Canada, Mexico, US), 2 in Oceania (Australia and New Zealand), 1 from SA (Brazil) and Africa (South Africa)
- Stock returns & Bond yields- from Bloomberg
  - Stocks: MSCI Price index (1990 – 2020)/ total return index (1999 – 2020)
  - Bonds: Ten-year Treasury yields (1990 – 2020)
- Intraday variance (Oxford-Man), macro variables (Worldbank, OECD, and IMF), and CDS data (intercontinental exchange)

Main Result - Total Returns/daily beta

Countries are sorted by their SB beta, portfolios are formed, and the returns of the next month are evaluated:

	Port 1	Port 2	Port 3	Port 4	Port 5	H–L
Returns	0.46	0.67	0.79	0.87	0.99	0.53**
in USD	(1.24)	(1.93)	(2.28)	(2.54)	(2.56)	(2.46)
ICAPM	0.03	0.23	0.57	0.72	0.80	0.77***
	(0.28)	(2.25)	(3.32)	(3.42)	(4.91)	(4.37)
Returns	0.37	0.56	0.81	0.86	1.05	0.68***
in local $	(1.14)	(1.95)	(2.96)	(3.14)	(3.47)	(3.24)
Currency	0.07	0.09	−0.05	−0.02	−0.12	−0.19*
returns	(0.51)	(0.66)	(−0.35)	(−0.14)	(−1.03)	(−1.72)

Main Result - Price Returns/daily beta

Countries are sorted by their SB beta, portfolios are formed, and the returns of the next month are evaluated:

	Port 1	Port 2	Port 3	Port 4	Port 5	H–L
Returns	0.18	0.63	0.64	0.85	0.86	0.68***
in USD	(0.59)	(2.26)	(2.27)	(2.91)	(2.45)	(2.86)
ICAPM	−0.40	0.15	0.18	0.43	0.46	0.86***
	(−3.55)	(1.56)	(1.44)	(3.13)	(2.80)	(4.62)
Returns	0.12	0.53	0.63	0.82	0.92	0.81***
in local $	(0.44)	(2.25)	(2.70)	(3.39)	(3.05)	(3.56)
Currency	0.05	0.08	−0.02	0.01	−0.11	−0.16
returns	(0.42)	(0.80)	(−0.16)	(0.07)	(−0.94)	(−1.27)

The results are robust when betas are estimated using weekly, monthly returns, and also when price returns are used for a longer sample Results

Cross-sectional Regressions

Country-specific characteristic (e.g., geography, emerging market) vs. time-varying risk premium?

	$\hat{\beta}^i_{d,t}$	$\bar{\hat{\beta}}^i_d$	GDP/cap	Total GDP	$\frac{\text{\% Export}}{\text{GDP}}$	GDP growth	Inf. (π)	R^2
Model 1	3.687∗∗							0.073
	(3.14)							
Model 2	5.034∗∗	−1.940						0.140
	(3.31)	(−1.06)						
Model 3	2.997∗∗		−0.003	0.055	0.000	1.651	−0.041	0.348
	(2.68)		(−0.45)	(0.73)	(1.27)	(1.02)	(−0.84)	

Cross-sectional Regressions

Other possible channels that may drive the return predictability:

Nominal-real covariance	$\hat{\beta}^i_{d,t}$	π	ΔGDP	$\Delta GDP \times \pi$	Δc	$\Delta c \times \pi$	$\rho_{\pi,\text{GDP}}$	$\rho_{\pi,\Delta c}$	R^2
Model 4	2.131**	0.018	6.838	−1.814					0.266
	(2.02)	(0.16)	(1.32)	(−1.02)					
Model 5	3.379**	−0.033	2.524				−0.290*		0.286
	(2.69)	(−0.71)	(0.84)				(−1.92)		
Model 6	2.287**	−0.023			−1.821	1.005			0.250
	(2.13)	(−0.34)			(−0.32)	(0.59)			
Model 7	3.165**	−0.017			−1.218			−0.121	0.256
	(2.64)	(−0.37)			(−0.34)			(−0.89)	

Other common return predictors	$\hat{\beta}^i_{d,t}$	Div. yield	Term spread	Momentum	R^2
Model 8	2.441**	0.520			0.115
	(2.30)	(0.07)			
Model 9	2.255**		0.018		0.119
	(2.11)		(0.51)		
Model 10	2.308**			1.331*	0.157
	(2.30)			(1.83)	
Model 11	1.819*	−0.476	0.009	1.191	0.249
	(1.77)	(−0.07)	(0.24)	(1.60)	

CDS beta and risk-free yield beta

$$R^i_{S,t+1} = a^i + b^i(-\Delta y^i_{t+1} + \Delta CDS^i_{t+1}) + b^i_g(-\Delta CDS^i_{t+1}) + \epsilon^i_{t+1}$$

Portfolios formed after sorting by CDS beta

	Port 1	Port 2	Port 3	Port 4	Port 5	H –L
Returns	0.66	0.56	0.46	0.59	0.41	−0.25
in USD	(1.57)	(1.25)	(1.25)	(1.31)	(1.02)	(−1.45)
ICAPM	0.63	0.67	0.52	0.68	0.52	−0.11
	(1.92)	(1.92)	(1.80)	(1.91)	(1.64)	(−0.67)
Returns	0.32	0.34	0.47	0.37	0.06	−0.26*
in local $	(2.66)	(1.99)	(3.52)	(2.75)	(0.50)	(−1.78)
Currency	0.42	0.37	0.48	0.51	0.30	−0.12
returns	(2.40)	(1.71)	(2.58)	(2.21)	(1.77)	(−1.05)

Portfolios formed after sorting by risk-free yield beta

	Port 1	Port 2	Port 3	Port 4	Port 5	H –L
Returns	0.33	0.70	0.31	0.46	0.79	0.47**
in USD	(0.89)	(1.97)	(0.86)	(1.22)	(2.08)	(2.34)
ICAPM	0.28	0.56	0.50	0.57	0.91	0.63***
	(0.90)	(1.82)	(1.76)	(1.88)	(3.09)	(3.20)
Returns	0.22	0.39	0.40	0.39	0.61	0.39**
in local $	(1.63)	(3.07)	(2.74)	(2.17)	(4.07)	(2.05)
Currency	0.44	0.67	0.28	0.33	0.46	0.02
returns	(2.67)	(4.02)	(1.48)	(1.85)	(2.92)	(0.19)

Summary of the predictability result

- Stock markets that have a positive SB beta (stock markets that respond most negatively to yield increases) have better future performance
- The strategy does not consists of investing in a *fixed* subset of the world.
- The returns remain statistically significant, controlling for global yields (in the paper), macroeconomic variables, sovereign credit risk, and standard return predictors.
- Excess returns earned are partially offset by currency returns, but the difference remains significant for the global investor
- What else could drive the predictability ?

Cross-region correlations of stocks and bonds

Stock correlations

	Asia	Africa	Europe	Lat Am	Aus & NZ	US & Can
Asia	0.493	0.450	0.437	0.485	0.385	0.457
Europe	0.437	0.521	0.627	0.538	0.428	0.608
Lat Am	0.485	0.590	0.538	0.623	0.414	0.630
Aus & NZ	0.385	0.428	0.428	0.414	0.463	0.461
US & Can	0.457	0.576	0.608	0.630	0.461	0.747

Bond correlations

	Asia	Africa	Europe	Lat Am	Aus & NZ	US & Can
Asia	0.127	0.121	0.139	0.117	0.186	0.179
Europe	0.139	0.127	0.482	0.138	0.360	0.469
Lat Am	0.117	0.248	0.138	0.336	0.086	0.119
Aus & NZ	0.186	0.143	0.360	0.086	0.625	0.492
US & Can	0.179	0.102	0.469	0.119	0.492	0.752

Test of	Same Continent	Different Continent	Paired t-test
the difference:	0.292	0.126	-0.151
	(11.54)	(1.93)	(-2.12)
	0.000	0.063	0.051

Country-level

SB Correlation and Stock or Bond Variance

Bond yields are more subject to *local* risk, stock returns are more exposed to *global* risk.

$$\text{Dep}_{i,t} = \underbrace{b}_{>0}\sigma_t(\Delta y^i) + \underbrace{c}_{<0}\sigma_t(R^i_s) + \text{FE}_{i,t} + e_{i,t}$$

	Dep. variable : $\hat{\beta}^i_d$				Dependent variable : $\hat{\rho}^i_d$			
SD(Δy^i)	1.002		2.385	1.676	0.077		0.096	0.084
	(2.70)		(3.92)	(3.12)	(2.89)		(3.27)	(3.01)
SD(R^i_m)		−1.309	−1.353	−1.220		−0.017	−0.019	−0.005
		(−4.86)	(−5.07)	(−4.65)		(−3.09)	(−3.53)	(−1.28)
FE Country	Y	Y	Y	Y	Y	Y	Y	Y
FE Time	N	N	N	Y	N	N	N	Y
R^2	0.129	0.236	0.238	0.352	0.141	0.251	0.256	0.447
# of Obs	8232	8232	8232	8232	8232	8232	8232	8232

SB Correlation and Local/global variance relationship

A more direct test is to estimate the volatility of variance directly from country stock returns. Two methodologies are employed:

1) Use variance estimated from intraday data to estimate the volatility of variance shocks
   - Estimate the realized variance using intraday data, fit a variance forecast model using HAR-RV model

$$RV_{t+1,t+5} = b_0 + b_1 RV_{t-5,t} + b_2 RV_{t-22,t} + \epsilon_{t+1,t+5}$$

   - Take the standard deviation of HAR-RV forecasts.

2) A stochastic volatility (SV) model

   In a SV model, it follows from the Ito's lemma that if the volatility of log volatility is constant, the volatility of the variance is the variance.

Volatility of variance estimated from Intraday (N=3671)

Estimate the HAR-RV model, calculate the standard deviation of the first difference over three months.

Estimate the global volatility of variance as the standard deviation of the cross-sectional average of the first-order difference.

	Dep = $\hat{\beta}^i_d$				Dep = $\hat{\rho}^i_d$			
Local VOV	6.182	4.724			0.159	0.180		
	(2.50)	(2.24)			(3.60)	(3.21)		
Global VOV	−8.059	−8.720			−0.293	−0.193		
	(−1.63)	(−2.45)			(−2.66)	(−2.11)		
Var corr			−2.401	−6.172			−0.046	−0.115
			(−1.87)	(−6.22)			(−1.74)	(−4.09)
FE Country	Y	Y	Y	Y	Y	Y	Y	Y
FE Time	Y	N	Y	N	Y	N	Y	N
R^2	0.421	0.287	0.420	0.289	0.497	0.356	0.495	0.355

SB relationship and volatility of variance using SV (N=6981)

$$R^i_{m,t} = \beta^i_0 + \beta^i_m R^*_{m,t} + \beta^i_q \Delta q^i_t + \exp(h^i_t/2)\epsilon^i_t$$
$$h^i_{t+1} = \mu^i_h + \varphi^i_h(h^i_t - \mu^i_h) + \sigma^i_h \eta^i_t,$$

	Dep = $\hat{\beta}^i_d$				Dep = $\hat{\rho}^i_d$			
$\exp(h^i_t)$	1.055	−0.09	1.056	1.998	0.055	0.029	0.055	0.080
	(2.99)	(−0.80)	(2.99)	(3.47)	(3.21)	(2.95)	(3.21)	(3.09)
$\exp(h^*_t)$			13.990	−67.450			−0.043	−1.208
			(0.16)	(−3.46)			(−0.03)	(−2.64)
FE Country	Y	Y	Y	Y	Y	Y	Y	Y
FE Time	Y	N	Y	N	Y	N	Y	N
R^2	0.400	0.282	0.400	0.226	0.491	0.269	0.491	0.282

Does high country-specific volatility of variance predict higher stock returns?

Estimate the country-specific volatility of variance as the RMSE from the regression of local variance shocks regressed on global variance shocks.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Country-specific VOV	0.052^{**}	0.047^{**}				
	(2.22)	(2.04)				
Variance correlation			-0.011^{**}	-0.013^{***}		
			(-2.41)	(-3.01)		
Local RV					0.003	0.002
					(1.27)	(1.13)
ICAPM Beta	-0.006		-0.002		-0.006	
	(-1.50)		(-0.56)		(-1.34)	

Global/local exposure of dividend growth

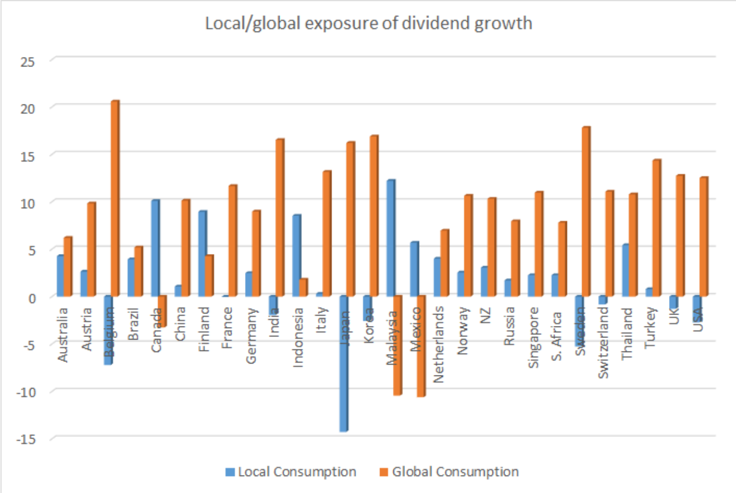
For USD-denominated dividend and consumption growth:

$$\Delta d_t^i = b\Delta c_t^i + c\Delta c_t^* + FE_{i,t} + \epsilon_{i,t},$$

	Δd_t^i				
Δc_t^i	4.950	0.731		1.514	0.731
	(5.32)	(0.99)		(1.78)	(0.99)
Δc_t^*			11.690	9.799	6.537
			(7.72)	(5.04)	(7.33)
Country FE	Y	Y	Y	Y	Y
Time FE	N	Y	N	N	Y
	0.234	0.462	0.330	0.339	0.462

$\rightarrow$ dividend growth is highly exposed to global consumption growth than local consumption growth.

Global/local exposure of dividend growth



Model set-up

Epstein-Zin (1991) preference for country i and world (*):

$$m_{t+1}^{i/*} = \theta \log \beta - \frac{\theta}{\psi} \Delta c_{t+1}^{i/*} + (\theta - 1) R_{TW,t+1}^{i/*},$$

Country i:

$$\Delta c_{t+1}^{i} = \mu + \sqrt{v_t^i} \epsilon_{c,t+1}^{i} + \sqrt{v_t^*} \epsilon_{c,t+1}^{*}$$

$$v_{t+1}^{i} = \nu_0 + \nu_1 v_t^i + \sigma_I \sqrt{v_t^i} \epsilon_{v,t+1}^{i},$$

World:

$$\Delta c_{t+1}^{*} = \mu + \sqrt{v_t^*} \epsilon_{c,t+1}^{*}$$

$$v_{t+1}^{*} = v_0 + v_1 v_t^* + \sigma_g \sqrt{v_t^*} \epsilon_{v,t+1}^{*},$$

All four shocks are independent to each other.

Bond yields and currency returns

$$y_{t+1}^{i} = -E_t[m_{t+1}^{i}] - Var_t[m_{t+1}^{i}].$$

- Bond yields are determined by the country i's consumption variance.
- In this model, bond yields equally exposed to country-specific and global component of variance

$$y_t^i = Y_0 + Y_1(v_t^i + v_t^*)$$

- Currency returns are defined as

$$\Delta q_{t+1}^{i} = m_{t+1}^{i} - m_{t+1}^{*}.$$

Under these dynamics, the UIRP relationship holds. $\rightarrow$ The goal is not to explain the UIRP puzzle.

Dividend dynamics

$$\Delta d^i_{t+1} = \mu_d + \phi_d \sqrt{v^i_t} \epsilon^i_{d,t+1} + \phi_f \sqrt{v^*_t} \epsilon^*_{d,t+1},$$

where $\rho(\epsilon^i_{d,t+1}, \epsilon^i_{c,t+1}) = \rho(\epsilon^*_{d,t+1}, \epsilon^*_{c,t+1}) = \rho_c$.

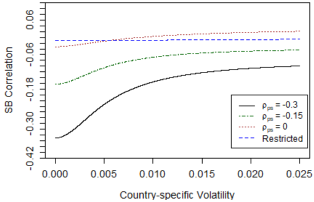
- Firms produce goods that are being exported. The exposure of firm's dividends to global shocks are assumed to be higher than the exposure of consumption. ($\phi_d < \phi_f$)
- The stock market and stock market variance are sensitive to global variance shocks than bond yields.

Model Calibration

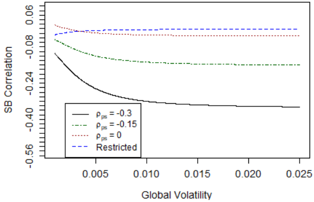
Parameters		Parameters	
Preference parameters		Consumption/dividend	
γ	10	μ	0.002
ψ	1.5	μ_d	0.0025
β	0.9986	ϕ_d	2.5
Variance Parameters		ϕ_f	6.0
v_1	0.992	ρ_c	0.5
v_0	2.88×10^{-7}		
σ_v	0.00125		

	Model	U.S. Data	World Average Data
μ	2.40%	2.55%	3.40%
σ	2.94%	1.57%	3.51%
Real yields (y)	2.37%	1.86%	2.54%
Yield volatility	0.41%	0.87%	0.69%
Real stock returns	6.75%	7.07%	5.74%
Stock market volatility	13.97%	14.83%	19.09%
Cor($\Delta y, R_m$)	0.196	0.234	0.224
Cor($\Delta y, \Delta y^*$)	0.766	0.848	0.579
Cor(R_m, R_m^*)	0.927	0.895	0.576

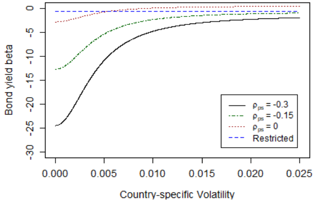
Model Implications: SB Correlation



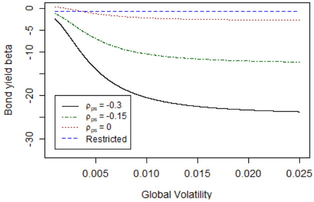
(a) Country-specific volatility/SB Correlation



(b) Global volatility/SB Correlation

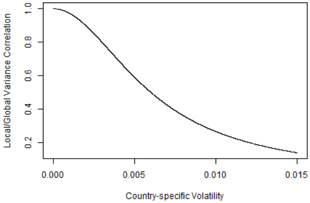


(c) Country-specific volatility/SB Beta

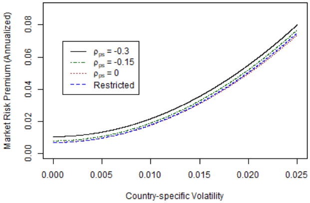


(d) Global volatility/SB Beta

Model Implications: SB Correlation



(a) County-specific volatility and local/global variance correlation



(b) Stock market risk premium

Conclusion

- ▷ Countries with a positive relationship between returns on stocks and bonds have higher future stock returns
- ▷ The correlation is associated with the time-varying component of stock market risk premium
- ▷ Stock and bond returns are positively related to
  - Bond yield volatility of the country
  - Country-specific variance shocks

Main Result - Alternative Specifications

A. Weekly Estimation

Total returns	Port 1	Port 2	Port 3	Port 4	Port 5	H–L	Price returns: Port 1	Port 2	Port 3	Port 4	Port 5	H–L
Returns	0.28	0.32	0.53	0.52	0.93	0.65***	0.02	0.23	0.50	0.67	0.66	0.66**
in USD	(0.74)	(0.86)	(1.45)	(1.38)	(2.27)	(2.73)	(0.05)	(0.77)	(1.71)	(2.08)	(1.76)	(2.57)
ICAPM	−0.18	0.10	0.32	0.30	0.92	1.11***	−0.35	−0.02	0.22	0.28	0.44	0.81***
	(−1.77)	(0.60)	(2.47)	(2.03)	(4.32)	(5.16)	(−2.45)	(−0.15)	(1.60)	(1.60)	(2.01)	(3.83)
Returns	0.22	0.26	0.35	0.62	1.05	0.83***	0.00	0.25	0.49	0.67	0.81	−0.81***
in local $	(0.68)	(0.85)	(2.11)	(2.06)	(3.14)	(3.60)	(0.01)	(1.05)	(2.04)	(2.51)	(2.45)	(3.40)
Currency	0.06	0.06	−0.07	−0.09	−0.11	−0.17	0.01	−0.03	0.02	0.00	−0.14	−0.15
returns	(0.40)	(0.41)	(−0.47)	(−0.68)	(−0.97)	(−1.59)	(0.09)	(−0.24)	(0.16)	(0.01)	(−1.06)	(−1.09)

B. Monthly Estimation

Total returns	Port 1	Port 2	Port 3	Port 4	Port 5	H–L	Price returns: Port 1	Port 2	Port 3	Port 4	Port 5	H–L
Returns	0.15	0.26	0.32	0.72	0.71	0.57**	0.55	0.52	0.46	0.87	0.96	0.42**
in USD	(0.47)	(0.87)	(1.13)	(2.27)	(1.95)	(2.34)	(1.72)	(1.81)	(1.57)	(2.67)	(2.68)	(2.06)
ICAPM	−0.18	−0.01	−0.07	0.42	0.46	0.66***	−0.11	0.08	0.28	0.41	0.85	0.96***
	(−1.17)	(−0.11)	(−0.43)	(2.80)	(2.31)	(3.27)	(−0.85)	(0.71)	(2.07)	(2.79)	(4.64)	(4.77)
Returns	0.13	0.30	0.31	0.71	0.80	0.68***	0.60	0.44	0.57	0.88	1.07	0.50***
in local $	(0.44)	(1.26)	(1.27)	(2.79)	(2.61)	(3.04)	(2.28)	(1.82)	(2.31)	(3.39)	(3.61)	(2.72)
Currency	0.02	−0.05	0.01	0.01	−0.09	−0.10	−0.05	0.07	−0.10	−0.01	−0.11	−0.07
returns	(0.20)	(−0.40)	(0.10)	(0.05)	(−0.80)	(−0.90)	(−0.40)	(0.69)	(−0.85)	(−0.07)	(−0.93)	(−0.64)

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Country-level cross-region correlations

	Continent				Continent		
	Different	Same	S-D		Diff Continent	Same	S-D
Australia	0.263	-0.161	-0.424	Mexico	0.417	0.287	-0.130
Austria	0.218	-0.025	-0.244	Netherlands	0.223	0.065	-0.158
Belgium	0.220	0.043	-0.177	Norway	0.230	0.118	-0.112
Brazil	0.363	0.287	-0.076	NZ	0.077	-0.161	-0.238
Canada	0.284	-0.004	-0.288	Philippines	0.364	0.391	0.027
China	0.413	0.474	0.061	Russia	0.360	0.459	0.099
Finland	0.155	-0.071	-0.225	Singapore	0.201	0.367	0.166
France	0.271	0.091	-0.180	S. Africa	0.365	.	.
Germany	0.247	0.096	-0.151	Spain	0.331	0.243	-0.088
India	0.345	0.389	0.044	Sweden	0.277	0.134	-0.143
Indonesia	0.318	0.410	0.092	Switzerland	0.226	0.163	-0.063
Italy	0.332	0.262	-0.070	Thailand	0.223	0.282	0.058
Japan	0.292	0.341	0.049	Turkey	0.254	0.290	0.036
Korea	0.297	0.346	0.050	UK	0.290	0.157	-0.133
Malaysia	0.200	0.293	0.094	USA	0.265	-0.004	-0.270
				Mean	0.277	0.192	-0.083
				T-stat	(22.07)	(5.71)	(-3.10)

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