

Sovereign Bonds and Socially Responsible Investment

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Sovereign Bonds and Socially Responsible Investment

- **Crisis resulted in huge stimulus packages**
- **Very high level of public debt (in the USA: from 65% of GDP in 2007 to 90% in 2009) on the capital markets**
- **How to construct a responsible sovereign bond portfolio?**

Sovereign Bonds and Socially Responsible Investment

- **Portfolio construction in the SRI framework**
- **Data and methodology**
- **Is there a cost to be SRI in the government bonds market?**

Portfolio construction in the SRI framework

- **SRI empirical literature is mainly focused on:**
 - Performances of ethical or “SRI” funds: do SRI funds underperform or outperform? Renneboog et al. (2008)
 - Performances of “SRI” stocks portfolios: do well-rated companies perform better? Derwall et al. (2005)

- **Very few papers on the links between sovereign bond returns and extrafinancial features**
 - Erb, Harvey & Viskanta (1996): bonds of countries with decreasing political risk performs better than bonds of countries with increasing risk
 - Connolly (2007): SP credit ratings strongly correlated with corruption indexes

- **Little literature on the construction of govt bonds portfolios with SRI “constraint”...**

Portfolio construction in the SRI framework

- **According to the efficient markets theory, imposing a constraint on the portfolio implies a diversification cost**

- **So, we want to answer to the questions:**
 - **When does the increase of the SRI value of a sovereign bond portfolio imply a significant cost of diversification?**

 - **In other words, is the efficient frontier significantly modified when we increase the SRI value of a portfolio?**

Data and methodology

- **Sample: 20 developed countries**
- **Sovereign bonds returns: Citigroup World Government Bonds Indices (WGBI) all maturities in US dollars hedged for FX variations**
- **Socially responsible index: VIGEO Sustainability Country Ratings**
 - **For 162 countries, Vigeo rates from 0 to 100 the countries on 3 SRI dimensions:**
 - The Environmental rating
 - The Governance rating
 - The Social and Solidarity rating

Data and methodology

Country	Vigeo	E	S	G
	Sustainability Country Rating			
Sweden	86.89	71.05	91.18	98.45
Norway	86.27	68.30	92.89	97.64
Finland	82.51	65.18	84.68	97.67
Switzerland	81.77	74.24	79.48	91.58
Denmark	81.20	60.94	84.86	97.80
Austria	80.71	67.14	77.60	97.40
United Kingdom	80.63	64.94	81.98	94.98
Netherlands	80.56	56.80	87.71	97.18
Germany	77.64	61.71	76.65	94.56
France	77.38	60.29	80.27	91.58
Belgium	75.79	52.44	85.54	89.39
Ireland	75.66	51.25	82.84	92.89
Spain	74.57	52.84	77.91	92.95
Australia	74.11	57.74	72.93	91.67
New Zealand	73.55	54.20	80.46	86.00
Italy	72.33	54.14	77.09	85.76
Portugal	71.27	51.67	68.54	93.60
Canada	70.60	48.91	78.95	83.92
Japan	67.41	52.69	72.20	77.34
United States	59.46	47.75	67.89	62.83

Data and methodology

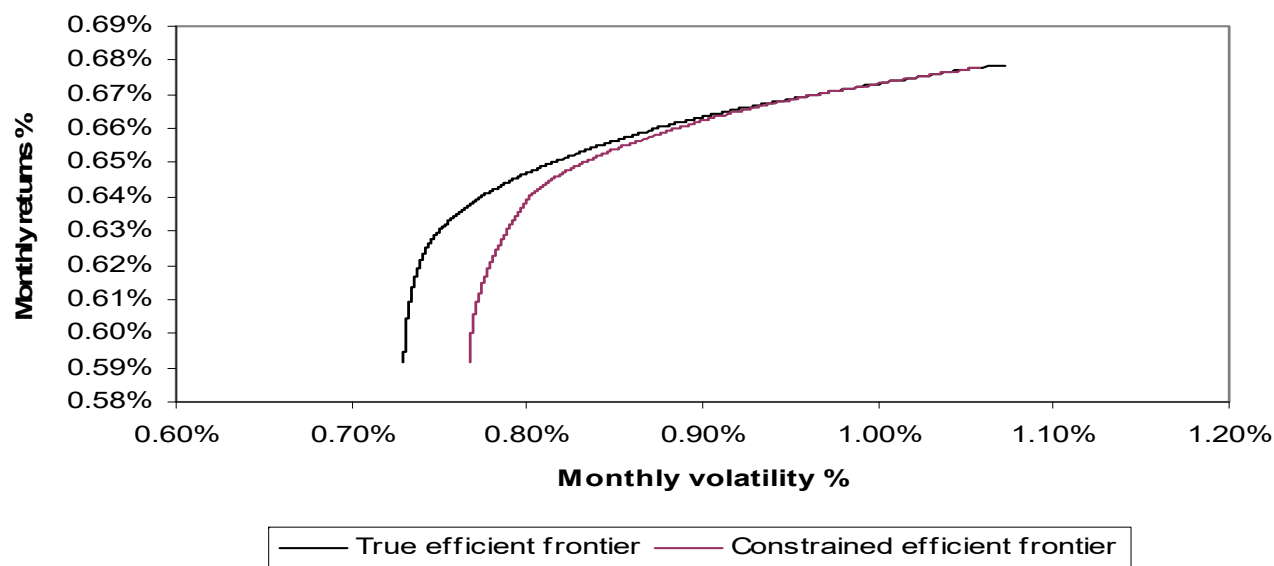
- **As measure of portfolio responsibility, we introduce the SRI portfolio rating:**

$$SRI \text{ Portfolio rating} = \sum_i weight_i \text{ country SRI rating}_i$$

- **High SRI portfolio rating means that we invest more on well-rated countries**
- **The idea is to measure the effect on the efficient frontier of imposing a constraint on the SRI portfolio rating**

Data and methodology

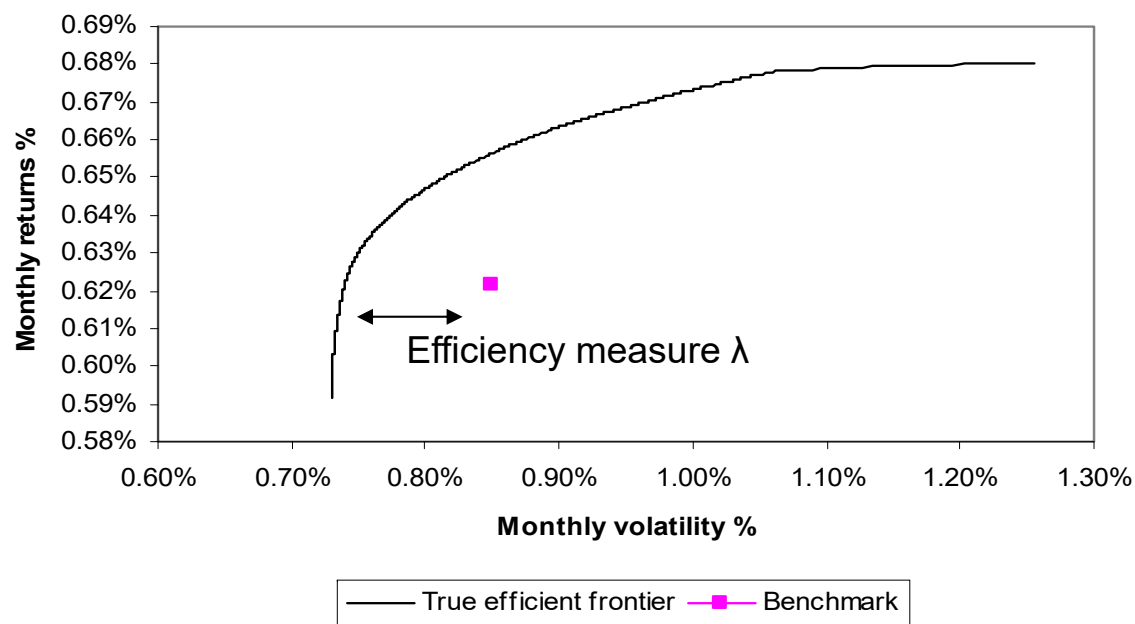
- Computation of the “true” efficient frontier (*without constraint*)
- Computation of a set of constrained efficient frontiers “Portfolio rating > threshold” *with increasing thresholds*
- For each efficient frontier, we measure whether the diversification cost is significant or not



Sources: Datastream, VIGEO, CAAM Strategy

Data and methodology

- The Basak, Jagannathan and Sun (2002) test allows to measure the mean-variance efficiency of a given benchmark to a given efficient frontier:



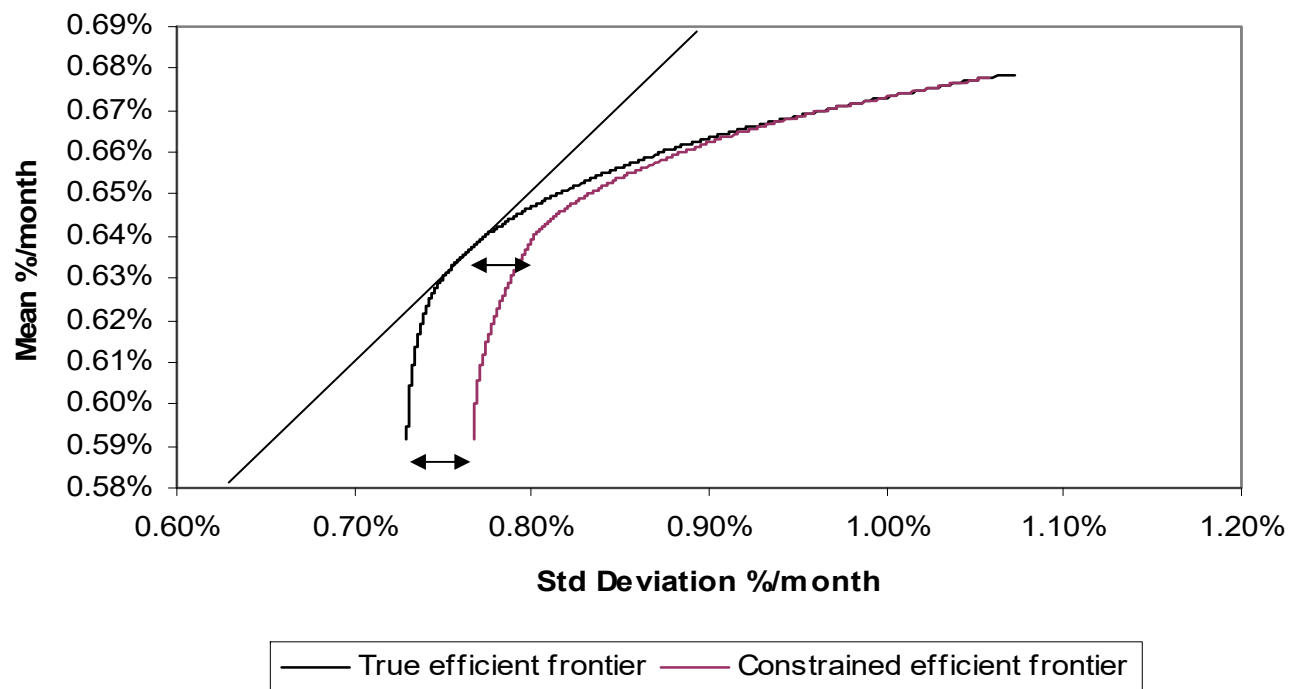
Sources: Datastream, VIGEO, CAAM Strategy

- BJS (2002) derives the asymptotic distribution of λ :

$$\sqrt{T} (\lambda_T - \lambda) \rightarrow N(0, \sigma^2)$$

Data and methodology

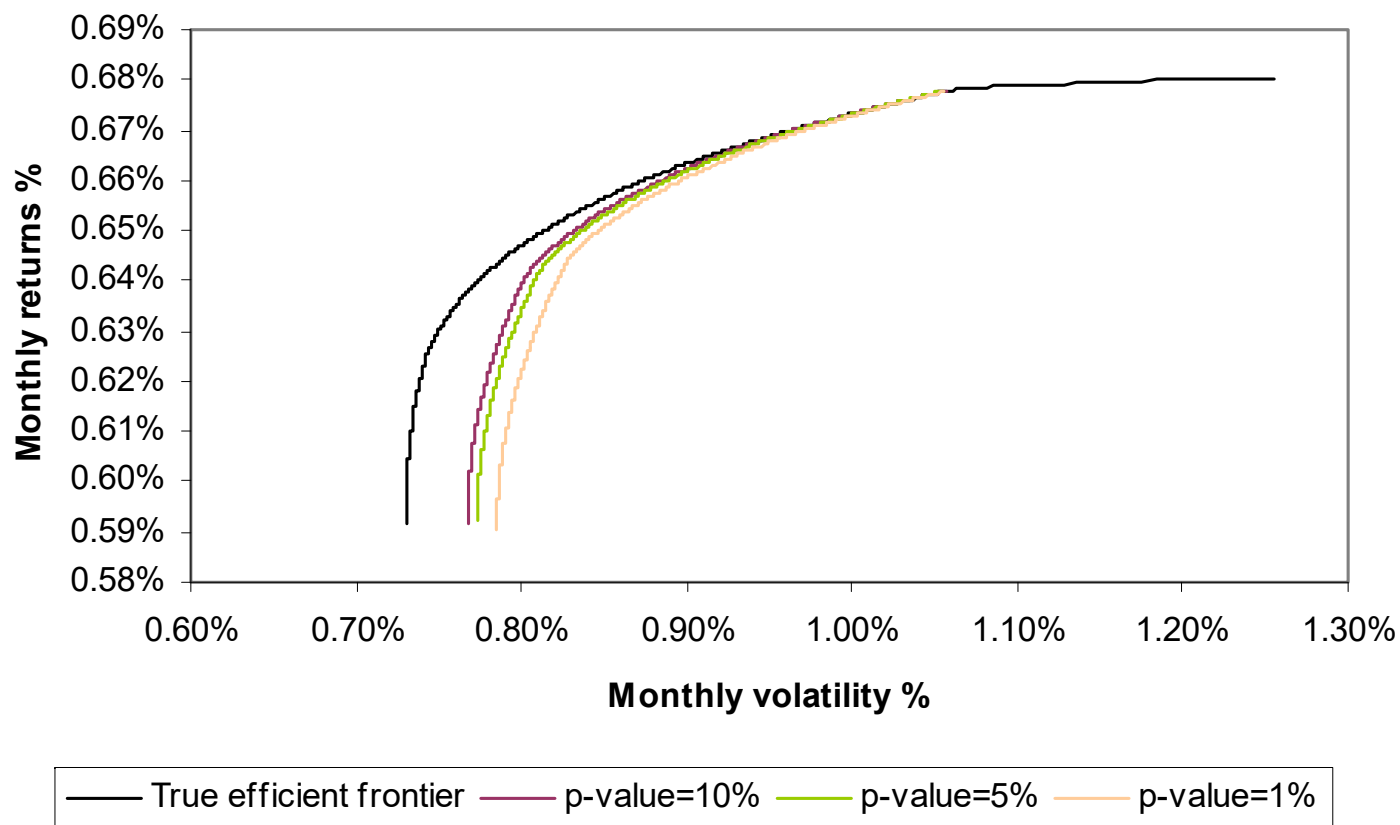
- Ehling & Ramos (2006) procedure
- For each threshold on the SRI portfolio rating, we process:
 - BJS test for the minimum variance portfolio
 - BJS test for the tangency portfolio



Sources: Datastream, VIGEO, CAAM Strategy

Is there a cost to be SRI in the government bonds market?

- We can reject mean-variance efficiency with different levels of confidence



Sources: Datastream, VIGEO, CAAM Strategy

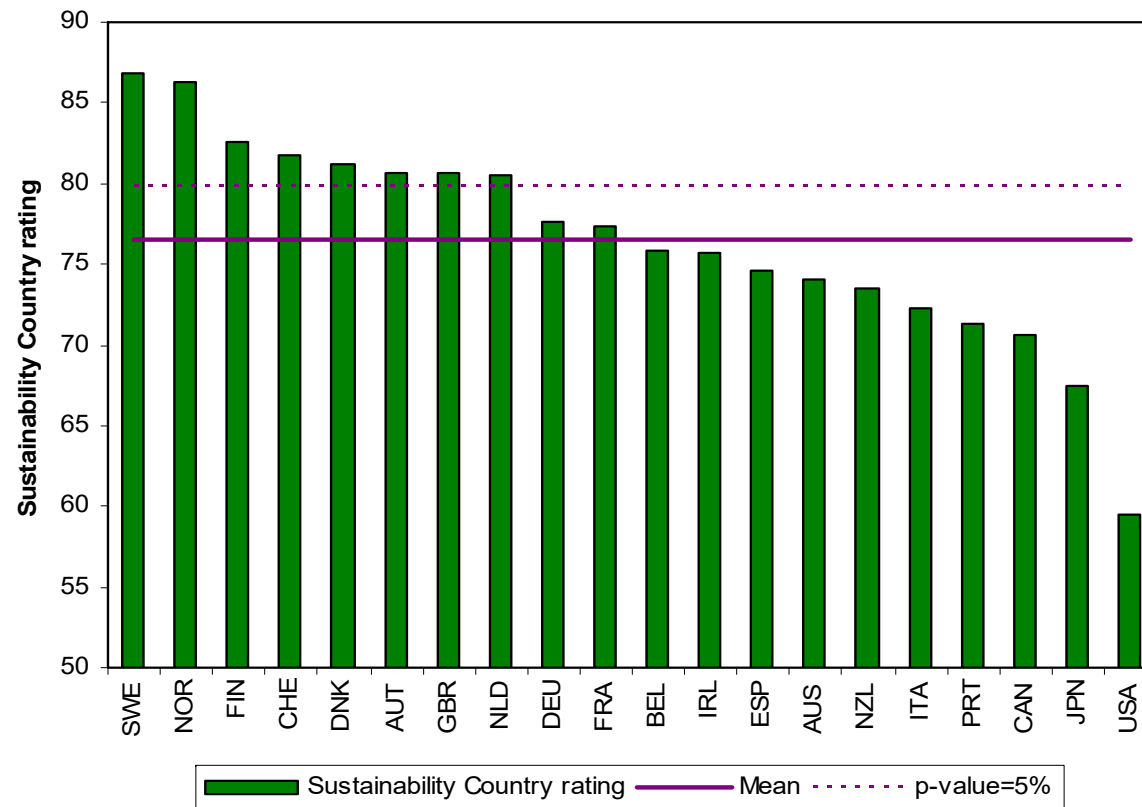
Is there a cost to be SRI in the government bonds market?

The SRI constraint reduces the weight of badly-rated countries and increases the weight of well-rated countries

	Minimum variance portfolio				Tangency portfolio			
	True Frontier	Null hypothesis rejection probability			True Frontier	Null hypothesis rejection probability		
		10%	5%	1%		10%	5%	1%
AUS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AUT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BEL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CAN	0.00%	0.00%	0.00%	0.00%	5.62%	0.00%	0.00%	0.00%
CHE	15.28%	25.14%	25.46%	25.72%	18.21%	25.49%	25.63%	25.88%
DEU	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DNK	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ESP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
FIN	0.00%	5.96%	5.09%	3.82%	0.00%	12.91%	12.23%	11.02%
FRA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GBR	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IRL	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ITA	1.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
JPN	39.36%	28.29%	26.50%	22.98%	41.04%	28.24%	26.33%	22.95%
NLD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NOR	12.03%	29.03%	30.75%	32.17%	0.00%	7.84%	8.61%	9.97%
NZL	6.89%	0.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PRT	25.30%	0.00%	0.00%	0.00%	27.66%	0.00%	0.00%	0.00%
SWE	0.00%	10.90%	12.20%	15.31%	7.47%	25.52%	27.20%	30.18%
USA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Is there a cost to be SRI in the government bonds market?

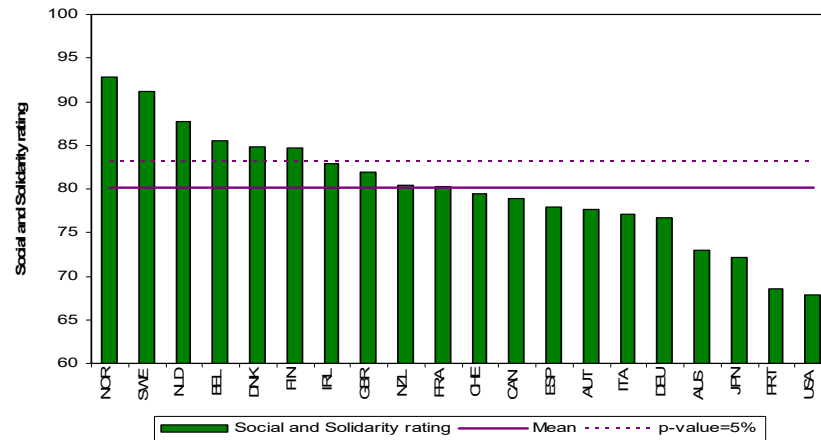
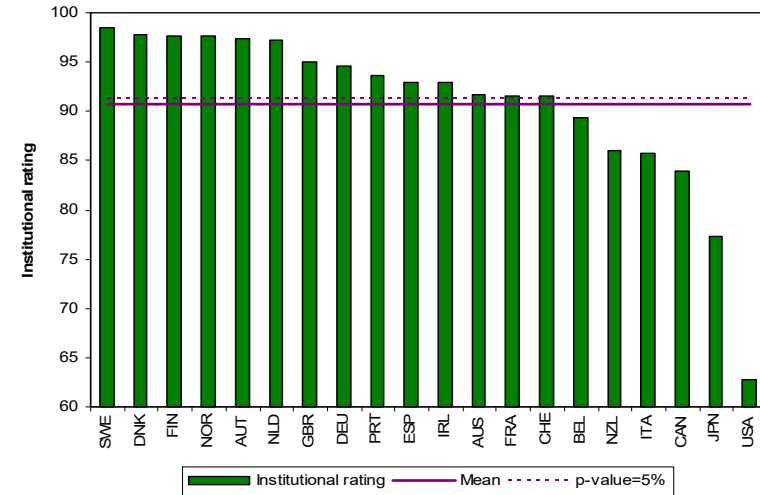
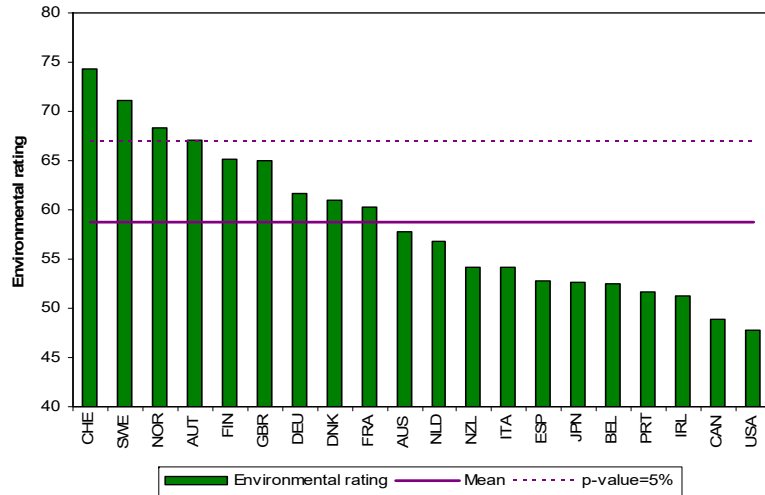
- We can clearly increase the portfolio rating without a significant cost of diversification



Sources: Datastream, VIGEO, CAAM Strategy

Is there a cost to be SRI in the government bonds market?

However, the result depends on the ESG rating chosen:



Sources: Datastream, VIGEO, CAAM Strategy

Conclusion

- **Our contributions:**
 - **First paper to use the Vigeo Sustainability Country Ratings**
 - **Extension of the SRI research to sovereign bonds asset class**

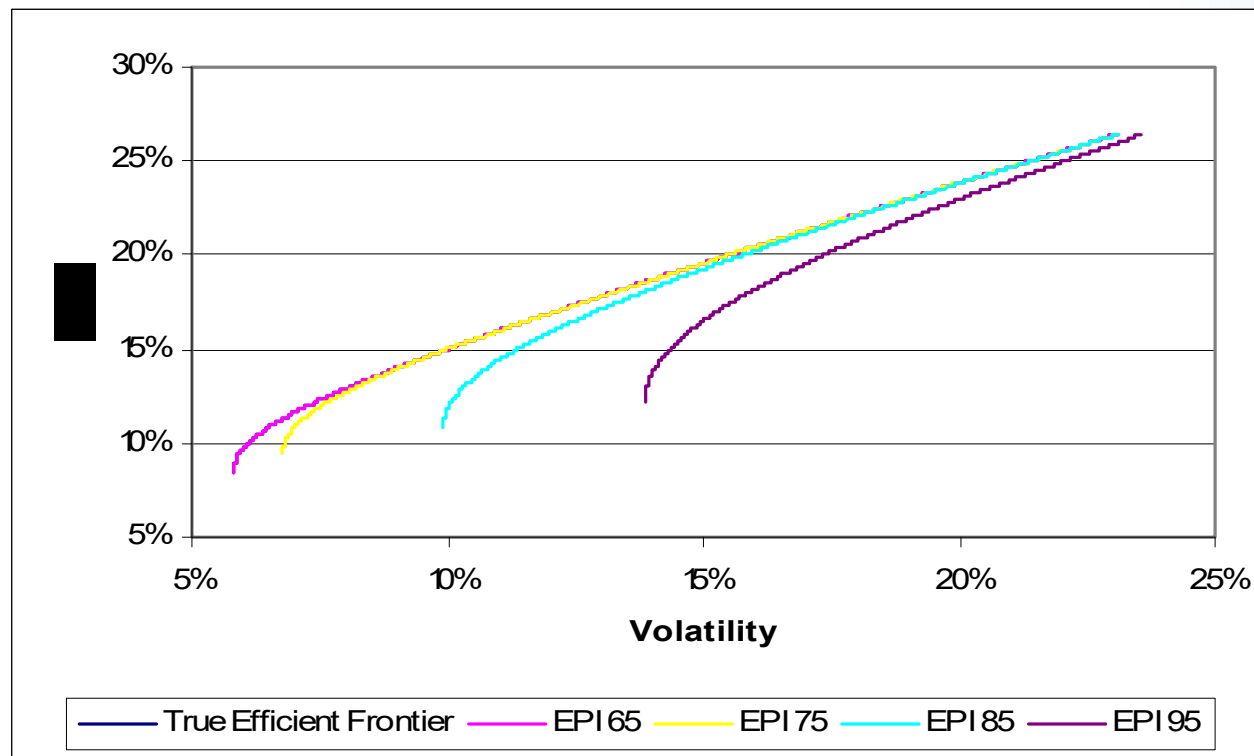
- **It is possible to build a socially responsible sovereign bond portfolio without a significant diversification cost**
 - **Investors should not be worried about SRI in sovereign bonds**

- **Limits: study focused on developed countries**
 - **Further developments: emerging countries**

Further developments

■ Constraint on the Environmental Performance Index (EPI)

■ Emerging countries

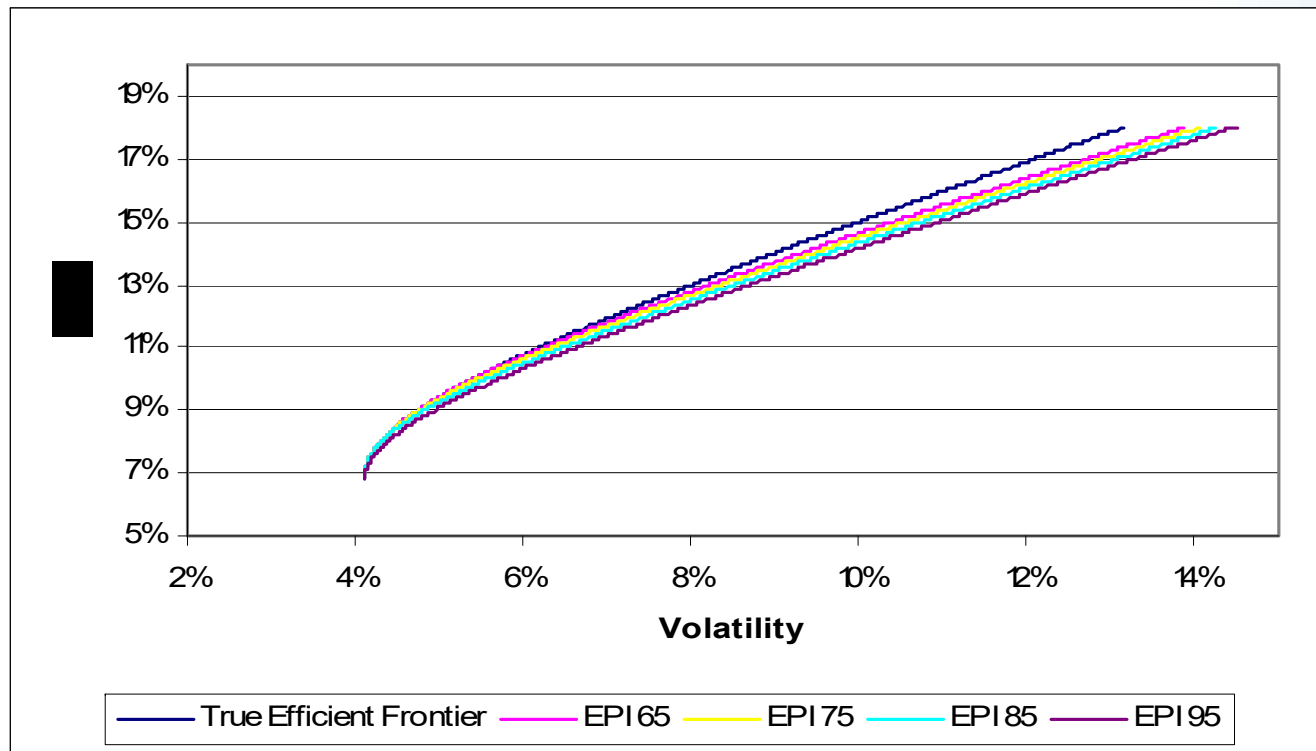


Sources: Datastream, VIGEO, CAAM Strategy

Further developments

■ Constraint on the Environmental Performance Index (EPI)

■ Developed countries



Sources: Datastream, VIGEO, CAAM Strategy

Further developments

■ **ULB Working Papers available at:**

- **“Sovereign bonds and socially responsible investment”**

<http://www.solvay.edu/EN/Research/Bernheim/documents/wp09014.pdf>

- **“Nice guys with cold feet”**

<http://www.solvay.edu/EN/Research/Bernheim/documents/wp09034.pdf>

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