



SARASIN

# Sustainable fulfilment of sovereign obligations

Sustainability and performance  
of sovereign bonds

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# Summary

**When researching countries, the main focus of our sustainability analysis is the availability of resources and their efficient usage. Our analysis seeks to identify countries capable of maintaining long-term or actually sustainable economic development, which is in turn a basic prerequisite for being able to service sovereign debt. Research conducted in recent years already shows the positive impact that sustainability can have on the performance of sovereign bonds. This relationship is likely to continue in the future.**

## **Availability and efficient use of resources becoming increasingly important**

There is increasingly intensive use of natural, social and financial resources as the global population continues to soar and living standards steadily rise. However, these resources are not in unlimited supply and in many cases initial signs of shortages can already be observed today, as frequently reflected in rising prices for the resources in question. As a result, both the availability and efficient use of resources are becoming increasingly important factors not only for the global economy, but also for individual countries.

## **Sovereign bonds carry a promise of future payment**

By issuing sovereign bonds, governments undertake to accept an immediate payment from investors today, in return for making interest payments and a final capital repayment at some point in the future. The ability to honour the promised payments depends to a large extent on the level of future tax revenues, which in turn is closely linked to the long-term productive capacity of the national economy. Although "traditional" credit ratings are in fact designed to assess a country's future ability to perform and meet its payment liabilities, most recently they have in many cases tended to be more of a barometer of current performance than an indicator of future performance (as actually intended). Sustainability criteria provide a very useful supplementary analytical tool here, by serving as leading indicators.

## **Sustainability has paid off**

Augmenting traditional credit ratings (which tend to be based mainly on financial figures) with environmental and social criteria has already paid off in the past. The per-

formance of the sovereign bonds of sustainable countries has been better than average for both mature and emerging economies. While sustainable industrialised countries have been mostly immune to the current debt crisis, sustainable emerging countries have outperformed their non-sustainable counterparts for many years now – apart from a brief lapse which they quickly recovered from. Although this outperformance, which was quite significant in some cases, occasionally went hand in hand with greater volatility, sustainable sovereign bonds still managed to achieve considerably better risk-adjusted returns for the most part. In many cases a positive relationship can be seen in the correlation between sustainability and performance not only in local currency terms, but also in exchange rates. The most important drivers of performance have been ecology, education, health and public governance. All these are factors which have a positive impact on production capacities and the productivity of a national economy.

## **The trend is likely to continue**

We expect this trend to steadily continue in future. Basically the usual maxim applies here that past performance is no guarantee of future performance. It is important to remember, however, that the problem of dwindling resources is set to get worse, rather than better, in future. The efficient use of these increasingly scarce resources will therefore become more and more important. Because of this, only those countries with high resource availability and/or efficient use of resources will be successful and productive in the long run and will therefore be able to consistently meet their sovereign liabilities, which also include servicing their national debt.

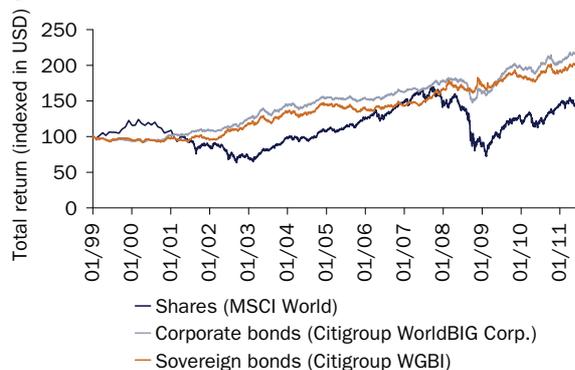
# Not all sovereign bonds are equal

**In the recent past, supposedly safe government bonds have turned out to be far more risky than assumed and as a result have suffered correspondingly steep falls in their prices. "Traditional" credit ratings have in many cases turned out to be more of a barometer of current performance than an indicator of future performance (as actually intended). Taking into account sustainability criteria could thus prove to be a useful enhancement here.**

## Bonds as secure investments

In most cases investors already know in advance the payout profile of a bond, which mainly comprises regular interest payments and a one-off capital repayment on maturity. As long as the debtor is able – and willing – to pay, the fixed interest payments are made at predefined intervals as agreed. By contrast, shareholders receive unspecified dividends whose level can fluctuate dramatically. In addition, their dividends are only paid out once the bondholders have received their money. Because of this, bonds are often considered to be safer than shares and are therefore less volatile in the long run but also offer less promising return potential as a rule.

**Fig. 1: Risk vs. return for equities and bonds**



Source: Bloomberg

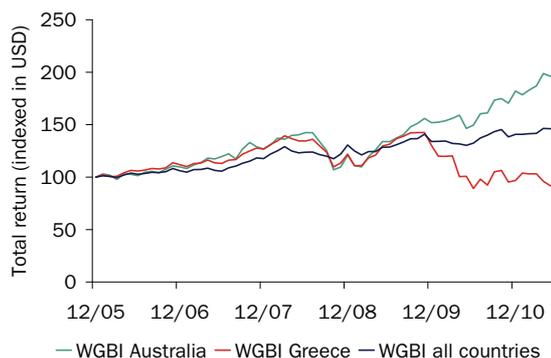
There is generally even a higher level of security in the case of sovereign bonds. Although companies have to pay the lion's share of tax after interest but before dividend payments, in the form of corporate tax levied on profits, the state also has other, in some cases far more substantial, sources of revenue, particularly income and sales tax. These basically come before the companies' debt service obligations. Another safety factor is that a country fundamentally has an entire economy supporting

it. For this reason sovereign bonds tend to be viewed as safer than corporate bonds, which means they are not only less volatile, but also offer lower returns (see Fig. 1).

## Not all sovereign bonds are equal

The above comments obviously apply to the asset class on a more general level rather than in relation to individual investments. There may be significant deviations from this rule especially during a crisis – irrespective of whether the crisis is "negative" or "positive". The current euro debt crisis is a prime example of this. What were assumed to be secure government bonds turned out to be much riskier than expected and therefore suffered far heavier losses as the yields expected in future were adjusted to reflect the actual risk profile.

**Fig. 2: The wheat is separated from the chaff**



Source: Datastream

To illustrate this, Figure 2 shows the performance of the Citigroup "World Government Bond Index" (WGBI), comprising around 25 industrialised countries, together with the strongest and weakest country in the index<sup>1</sup>. What is striking is the significant performance gap between Aus-

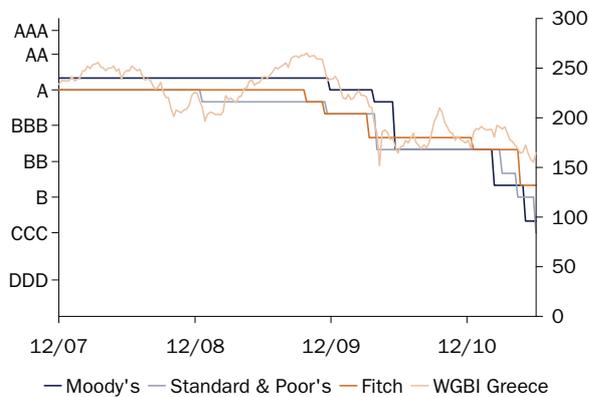
<sup>1</sup> Because of its repeated downgrading, Greece is no longer included in the "WGBI".

tralia and Greece, which has only recently widened after following more or less the same path for many years.

**Leading indicators**

The key question is whether there were in fact any leading indicators for the sort of negative surprises that cropped up with Greek sovereign bonds. One feasible and common approach is to be guided by the "traditional" ratings published by the leading rating agencies Moody's, Standard & Poor's and Fitch. It is in fact clear that Greece's rating was already weaker than Australia's prior to the crisis. But the difference in their ratings was certainly not big enough to suggest that the subsequent performance gap would be so substantial. In addition, the ratings were repeatedly cut virtually in parallel with the decline in the bonds' value (see Fig. 3). To this extent they were not really an indicator of the future but a barometer of the present. They can thus be considered as coincident rather than leading indicators, possibly because they focus too heavily on the observation of symptomatic trends in the form of contemporaneous financial figures.

**Fig. 3: Future indicator or current barometer?**



Source: Datastream, Moody's, Standard & Poor's, Fitch, Sarasin

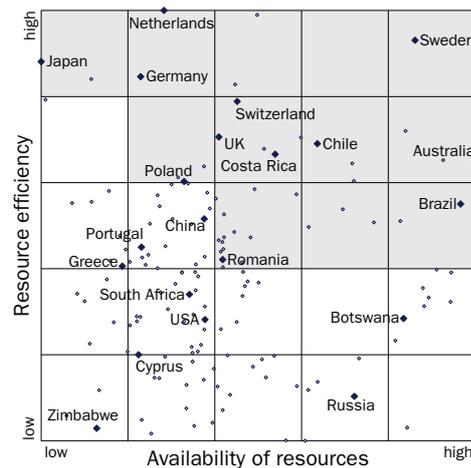
It follows from this that changes to ratings are at least equally important for performance as the absolute level of the ratings themselves. In some respects a rating change is merely confirmation – and in some cases amplification – of a trend that is already underway. It would

therefore be helpful to have leading indicators for future rating changes that could also flag up potential surprises as well – whether positive or negative. This is exactly the point where our sustainability analysis comes in, by attempting to identify risks and opportunities that are not yet factored into current prices but will most probably be monetised in the mid- to long-term.

**Resource availability and efficiency**

A country's long-term solvency depends to a large extent on its future tax receipts. This requires a sustainable tax base, which needs to be present mainly in the form of future goods and services. This in turn depends on a country's available natural, social and economic resources on the one hand and its efficiency in converting these resources into goods and services on the other. Our sustainability analysis of sovereign bonds therefore focuses on the central themes of the availability and efficient use of resources. We then position the individual countries on our sustainability matrix across these two dimensions (see Fig. 4). More details on the methodology used for this assessment can be found in our sustainability study published in March 2010 "The world in a dilemma between prosperity and resource protection – Sustainability rating of sovereign bonds".

**Fig. 4: Sustainability matrix of countries (as of 2010)**



Source: Sarasin

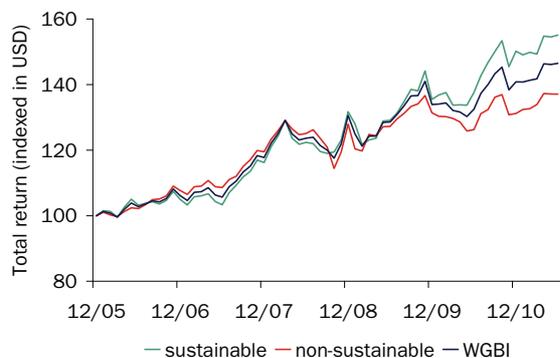
# Sustainable sovereign bonds yield higher returns

In recent years sustainability has had a positive impact on the performance of sovereign bonds both in industrialised and emerging countries. In most cases a positive relationship can be seen in the correlation between sustainability and performance not only in local currency terms, but also in exchange rates. The most important drivers of performance have been ecology, education, health and public governance.

## Performance comparison for industrialised nations

The significant differences in performance illustrated earlier with the example of Greece and Australia are not just limited to a few countries. In order to compare the performance of sovereign bonds from sustainable and non-sustainable industrialised nations, we have split the World Government Bond Index (WGBI) produced by Citigroup into two groups. 15 out of the total 25 countries represented in the index are classed as "sustainable" according to our rating system, while the rest are classed as "non-sustainable".

**Fig. 5: Market-weighted performance of bonds from sustainable and non-sustainable industrialised countries**



Source: Datastream, Sarasin

When weighting individual countries we initially used the relevant index weightings (Fig. 5). It should be remembered, however, that just two countries – the USA and Japan – together account for around 60% of the index and therefore have a dominant influence on index performance. We have therefore performed a second calculation using equal weightings and monthly rebalancing (Fig. 6). This allows us to establish the impact of smaller countries as well.

**Fig. 6: Equally weighted performance of bonds from sustainable and non-sustainable industrialised countries**



Source: Datastream, Sarasin

## While the non-sustainable industrialised countries are having problems...

One conspicuous feature in Figures 5 and 6 is the way that the two groups start to move apart from about the middle of 2009 onwards, and even more markedly in 2010. There are two key reasons for this. On the one hand the prices of sovereign bonds fell – in some cases very dramatically – particularly in the southern peripheral European states as the euro debt crisis started to bite. Those countries affected have much in common. For many years they have been living not only beyond their financial means, but also beyond their ecological resources. Another factor is the ageing population – a demographic shift that will become even more pronounced in future. In addition, less efficient use of resources undermines competitiveness. There are also shortcomings in the political and social framework which should not be underestimated, such as widespread corruption or huge income differences within the population.

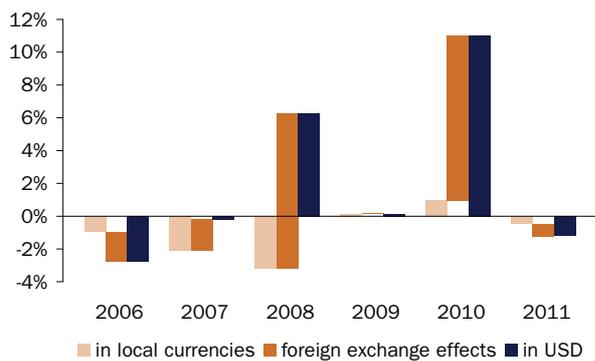
**...sustainable countries are doing well**

On the other hand, countries with high resource availability and/or efficient use of resources, such as Australia and Switzerland, are not only seeing their sovereign bonds perform well in local currency terms, but also registering a steady appreciation of their national currencies. In certain cases the favourable impact of currency exchange rates was actually the main reason behind the strong performance. Obviously this often had to do with the export power of the country and/or its reputation as a safe haven. But these attributes are generally associated with countries that have a strong resource base and/or a high level of ecological, economic, political and social efficiency.

**Components in the performance gap**

These differences can also be clearly seen in Figures 7 and 8. Here the annual performance differences are shown for the market-weighted and the equally weighted indexes (blue columns). These are also broken down into out-/underperformance in local currency terms and out-/underperformance of the respective national currencies (incl. residual values) (light brown and dark brown columns).

**Fig. 7: Annual out-/underperformance of sustainable industrialised country indexes with market-weighting**

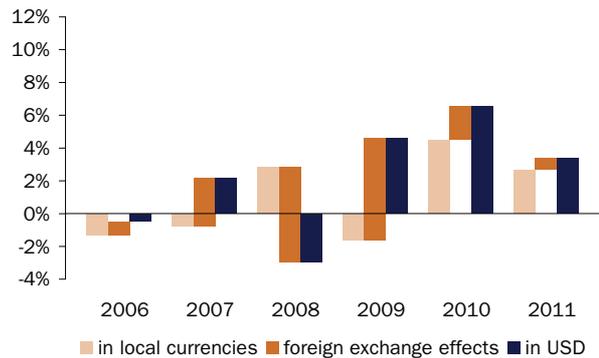


Source: Datastream, Sarasin

At first glance, one of the biggest surprises is the fact that the source of the performance differences varies strongly. However, this is not quite as surprising if one bears in mind that the USA, for example, has a weighting of around 25% in the first instance, but only 4% in the second. As a result, the steady depreciation of the US dollar has a far greater impact in the market-value-weighted calculation (Fig. 7). By the same token, the

equally weighted indexes (Fig. 8) are more heavily influenced by the "frail" economies of southern Europe. So although the performance differences are attributable to different factors depending on the country weighting, sustainable countries still manage to outperform in both cases.

**Fig. 8: Annual out-/underperformance of sustainable industrialised country indexes with equal weighting**

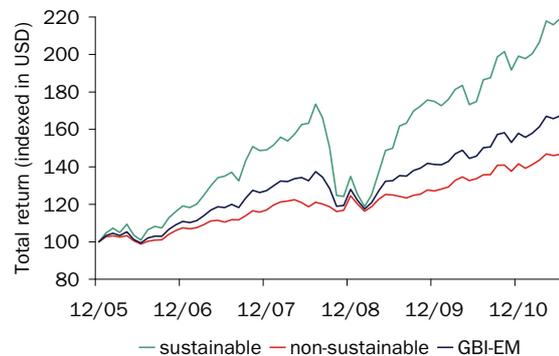


Source: Datastream, Sarasin

**Performance comparison of emerging countries**

We carried out a similar comparison using the Government Bond Index - Emerging Markets (GBI-EM) produced by JPMorgan. Here too, 9 out of a total of 20 emerging economies represented in the index are classed as "sustainable" and the rest as "non-sustainable". Initially we used the same weightings as in the index (Fig. 9).

**Fig. 9: Market-weighted performance of bonds from sustainable and non-sustainable emerging countries**



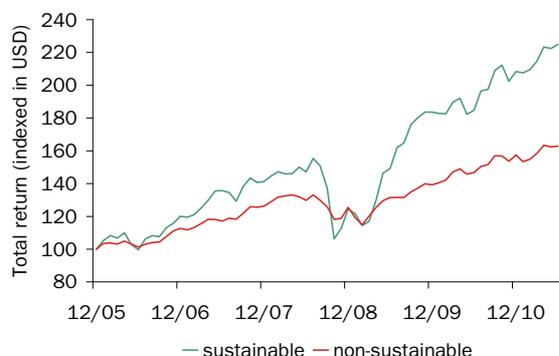
Source: Datastream, Sarasin

As with industrialised countries, we have also performed a calculation for emerging economies using equal weightings and monthly rebalancing (Fig. 10). Compared with

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the WGBI, however, the GBI-EM is slightly more diversified. About two thirds of the index is made up not of just two, but still four countries (China, India, Brazil and Poland). Nevertheless the results vary slightly with different weightings, which is mainly attributable to the fact that emerging countries are slightly more heterogeneous than mature economies. Even so, the qualitative statements still apply – it is merely their magnitude that differs a little.

**Fig. 10: Equally weighted performance of bonds from sustainable and non-sustainable emerging countries**



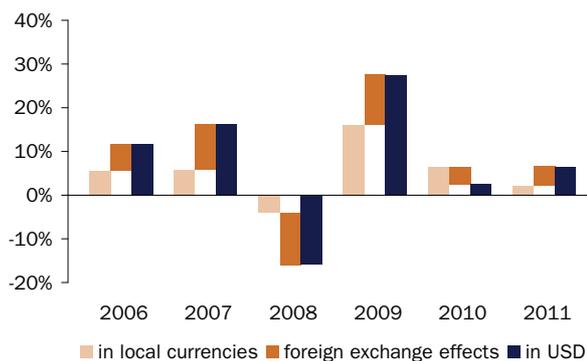
Source: Datastream, Sarasin

### Sustainable emerging countries also fare better

The difference in performance is even more obvious in the case of emerging economies. Apart from a brief – but fairly painful – period at the height of the global financial crisis in the second half of 2008, the sovereign bonds of sustainable emerging countries have clearly outperformed their non-sustainable counterparts. But the associated volatility was also considerably higher, primarily because of this global slump. Using market weights, roughly two thirds of the outperformance can be attributed to the superior showing of sovereign bonds in local currency terms and one third to the tendency for the respective national currency to appreciate (see Fig. 11). Only the collapse in 2008 already mentioned was almost exclusively the result of a sharp correction on currency markets. But this correction was both preceded and followed by equally strong movements in the opposite direction. With the equally weighted calculation, the differences in local returns become more important and the foreign exchange effects become less relevant for the performance differences (see Fig. 12). There are two key reasons for this. On the one hand the influence of the "uniquely non-volatile" Chinese currency is less pronounced when all

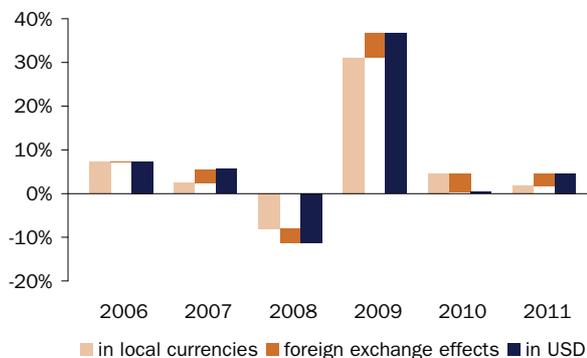
countries are given equal weightings. On the other hand the fluctuations observed in the local currency returns of smaller emerging countries, which were particularly volatile during the sub-prime crisis, play a more prominent role.

**Fig. 11: Annual out-/underperformance of sustainable emerging country indexes with market value weighting**



Source: Datastream, Sarasin

**Fig. 12: Annual out-/underperformance of sustainable emerging country indexes with equal weighting**



Source: Datastream, Sarasin

### South America vs. Southern Europe

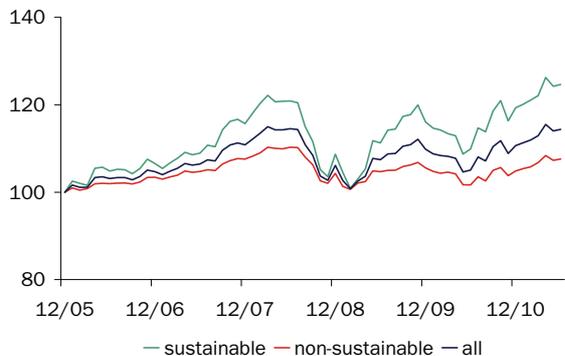
South American nations account for the bulk of sustainable emerging countries. In many respects these are exactly the opposite not only of the non-sustainable emerging countries such as China and Russia, but also the Southern European economies that are currently in crisis. The South Americans, for example, live within their ecological means for the most part and in many cases actually have some reserves to draw on. They will also be relatively unaffected by the ageing demographic, without veering towards the other extreme of a population boom. Their efficiency in translating resources into material

wealth, education and health stands up very well in a global comparison. Even though they have not reached the level of Scandinavian countries when it comes to competitiveness, governance and social conditions, they can still hold their heads high. Obviously there are the occasional shortcomings, but these are generally being reduced rather than being allowed to increase.

**Influence of sustainability on currency exchange rates**

Aside from bond yields in local currencies, exchange rate trends have also tended to play a pivotal role in the diverging performance of sustainable and non-sustainable sovereign bonds. Although exchange rate forecasts are extremely difficult – particularly in the short term – the following factors are often highlighted to explain medium and long-term currency trends: interest rate levels, inflation, production, employment, capital and trade flows, political situation and public debt. In fact all these factors – in the right value – are indicators of economic strength. Our sustainability analysis of countries basically attempts to answer the same question: which countries are capable of maintaining economic success in the long run?

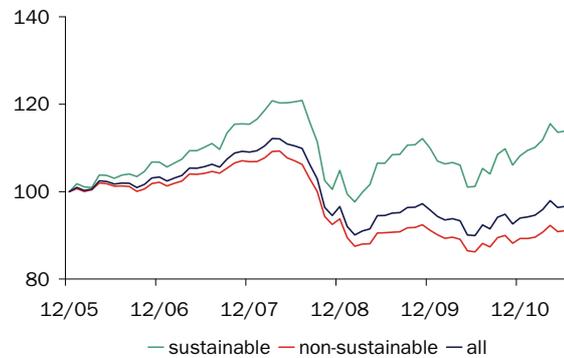
**Fig. 13: Global, GDP-weighted currency movements vs. the US dollar**



Source: Bloomberg, Datastream, Sarasin

This suggests that the currencies of sustainable countries could potentially outperform those of non-sustainable countries. To test this thesis, we took all 153 countries that we have rated and divided them into a sustainable and a non-sustainable currency basket. In the first instance we weighted the countries by their respective GDP (Fig. 13), and then gave all countries an equal weighting (Fig. 14).

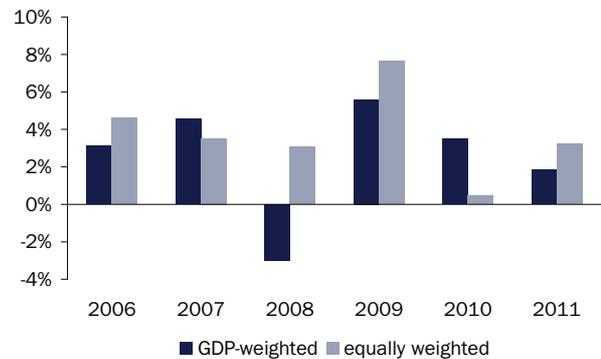
**Fig. 14: Global, equally weighted currency movements vs. the US dollar**



Source: Bloomberg, Datastream, Sarasin

In both cases the sustainable currency baskets clearly outperformed the non-sustainable ones. Even the yearly analysis of both weighting variants shows that sustainable currencies almost always outperform (Fig. 15). The only exception can be explained by the temporary recovery of the US dollar in 2008 when GDP weightings are applied.

**Fig. 15: Annual out-/underperformance of sustainable currencies**



Source: Bloomberg, Datastream, Sarasin

**Risk-adjusted returns**

The obvious question is whether this superior performance has to be paid for with a higher level of risk, primarily in the form of higher volatility. For this reason we have augmented the above performance comparisons by calculating and comparing the fluctuations in the sustainable and non-sustainable sub-indexes.<sup>2</sup> We then calculated the

<sup>2</sup> For the sake of simplicity, we have taken the discrete monthly returns and used them to calculate the annualised volatility.

## Sustainable sovereign bonds yield higher returns

risk-adjusted return in the form of the Sharpe ratios for the different strategies (see Fig. 16).<sup>3</sup>

**Fig. 16: Annual performance and volatility of sustainable and non-sustainable sovereign bonds in USD**

		Perfor- mance	Volatility	Sharpe ratio
<b>WGBI market-weighted</b>	sustainable	8.3%	8.6%	0.50
	non-sustainable	5.9%	7.6%	0.25
<b>WGBI equally weighted</b>	sustainable	8.5%	10.8%	0.41
	non-sustainable	6.1%	9.8%	0.21
<b>GBI-EM market-weighted</b>	sustainable	15.3%	15.5%	0.73
	non-sustainable	7.2%	6.1%	0.53
<b>GBI-EM equally weighted</b>	sustainable	15.9%	17.2%	0.69
	non-sustainable	9.3%	7.7%	0.68

Source: Datastream, Sarasin

The price of outperformance was kept within limits in the case of industrialised countries. An increase in volatility of one percentage point was compensated by an improvement of more than two percentage points in annual performance. This was also reflected in a Sharpe ratio that was twice as high. Although the price of outperformance was significantly more in emerging countries, the returns were correspondingly higher as well. In return for an increase in volatility of 9-10 percentage points, sustainable sovereign bonds achieved an improvement in annual performance of around 7-8 percentage points, depending on the calculation method used. Once again sustainable sovereign bonds delivered a higher risk-adjusted return – especially with market value weightings – whereby the Sharpe ratios of emerging countries were generally higher than those of industrialised nations. Taking sustainability ratings into account therefore resulted in more or less higher risk-adjusted returns in all cases.

One point worth mentioning in passing is that with both country groups the differences in volatility were mainly attributable to currency movements. In the case of industrialised countries, the local returns of sustainable sovereign bonds were in fact less volatile than those of non-sustainable sovereign bonds, despite or perhaps actually due to their superior performance in some cases, so that

<sup>3</sup> The Sharpe ratio measures the excess return provided by an investment in relation to risk. Here the excess return is defined as the return over and above the risk-free rate of return. We assumed a risk-free rate of 4%, which is roughly equivalent to the yield on German government bonds over our observation period.

these lower "local return volatilities" were overcompensated by higher currency volatilities. It should be remembered, however, that for "traditional reasons", index providers usually take the US dollar as the reference currency. Because of this, the volatility of the US currency is of course implicitly set to zero, which significantly reduces the volatility of the currencies in the group of non-sustainable industrialised countries, in which the USA has a heavy weighting. While the choice of reference currency is not as crucial for performance comparisons, comparisons of volatility – especially for currencies – can produce very different results depending on the reference currency in question. In short, the differences in volatility would shift in favour of sustainable countries if a different reference currency is selected.

### Impact of individual sustainability criteria

We have already shown that giving consideration to sustainability criteria when investing in sovereign bonds can result in a potentially better performance, coupled with a comparatively modest increase in volatility. The question is how to explain this positive correlation between sustainability and financial performance. In the previous analysis, sustainability has generally been limited to an aggregate measure defined as either sustainable or non-sustainable. When assessing the sustainability rating of countries, however, we employ around 50 indicators, many of which in turn include a number of sub-indicators. Although all these indicators determine the sustainability credentials of countries, we are aware that the financial relevance is not absolutely identical for every single indicator. We have therefore performed an analysis of the correlation between the individual sub-ratings<sup>4</sup> and the respective performance (see Fig. 17).<sup>5</sup>

<sup>4</sup> More details on the methodology used for this assessment can be found in the sustainability study published in March 2010 "The world in a dilemma between prosperity and resource protection - Sustainability rating of sovereign bonds".

<sup>5</sup> Even though the statistical significance and robustness are not always guaranteed due to the occasionally small random samples and short time series, there are still some interesting clues. It should also always be remembered that the correlation does not always necessarily signify causality as well, i.e. the observed relationship must also "make sense" in some way.

**Fig. 17: Correlation coefficients between sub-ratings and performance (31.12.2005 - 30.06.2011)**

	WGBI in USD (25 countries)	GBI-EM in USD (13 countries)	Currencies (153 countries)
<b>Ecological resources</b>	0.322	0.659	0.051
<b>Social and economic resources</b>	0.250	0.144	0.216
<b>Transformation efficiency</b>	0.336	0.362	0.139
<b>Process efficiency</b>	0.230	-0.052	0.539

Source: Bloomberg, Datastream, Sarasin

#### **Key factors for industrialised countries: level of debt, education and ecology**

The correlations attained are all positive, with one small exception, and in some cases they are relatively explicit. As far as industrialised countries are concerned (measured by the WGBI) both ecological resources and transformation efficiency (i.e. the eco-efficiency in converting resources into quality of life) seem to have been rather more important on average than the social and economic resources or the social, economic and political conditions (process efficiency). Taken individually, the following indicators have had a comparatively major impact on the performance of sovereign bonds issued by industrialised countries:

- Level of debt (correlation coefficient of 0.440) including external debt (0.415) and public debt (0.248),
- Education efficiency (0.378), esp. patent density (0.341),
- Ecological capital (0.349), esp. nature conservation areas (0.416), ecological surplus<sup>6</sup> (0.354) and biocapacity<sup>6</sup> (0.329),
- Governance (0.291), esp. government effectiveness (0.419) and control of corruption (0.379),
- Eco-efficiency in the production of goods and services (0.257).

<sup>6</sup> The ecological surplus or deficit is the difference between total biocapacity and the Ecological Footprint. The Ecological Footprint measures how much land and water area a human population requires to produce the resources it consumes and to absorb the carbon emissions resulting from energy production, using prevailing technology, in order to maintain current production/consumption levels. This contrasts with biocapacity, which is a measure of nature's ability to renew resources and absorb the wastes produced by energy generation. Both these benchmarks are calculated by the Global Footprint Network.

The causal relationship basically exists for all the indicators mentioned. As the level of debt rises, it becomes increasingly difficult for countries to meet their repayment obligations with respect to sovereign bonds. Excessive debt can also act as a curb on productivity once it reaches a certain level. Often debt actually mounts up as a result of poor productivity. By contrast, the country with a strong spirit of innovation and a highly qualified workforce is more productive and therefore in a better position to meet its financial obligations. Production capacities are also enhanced as a result of the availability and prudent use of ecological resources. Last but not least, good public governance ensures the efficient allocation of resources and smoothly functioning commercial activities.

#### **Key factors for emerging countries: ecology, health, education and demographics**

In the case of emerging countries (measured by the GBI-EM) ecological factors also seem to show a stronger correlation than social and economic factors. In particular there is a close correlation between the availability of ecological resources and the performance of sovereign bonds. At the same time the efficiency of economic, political and social processes seems to have had practically no impact on performance. In both cases, however, the rather small random sample of just 13 countries<sup>7</sup> should be remembered. Nevertheless, the most important criteria affecting performance were as follows:

- Ecological capital (correlation coefficient of 0.693), esp. ecological surplus (0.703), water scarcity (0.528), biocapacity (0.491) and nature conservation areas (0.403),
- Health efficiency (0.411), esp. suicide rate (0.366),
- Social and economic capital (0.396), esp. demographics (0.276),
- Education efficiency (0.363).

Here too, the causal relationship can be established relatively easily. One of the big starter bonuses for economic growth in many – but not all – emerging countries is the abundance of readily available ecological resources. Furthermore the marginal productivity of health and education in this group of countries is comparatively high, i.e. even small improvements tend to result in a relatively sharp rise in productivity. One critical point here, how-

<sup>7</sup> The full performance time series were unfortunately not available for the other seven countries represented in the index.

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ever, could be the paradoxical health trends in some emerging countries: as living standards improve, there is already a noticeable increase in the incidence of "diseases of civilisation". In addition, the comparatively high proportion of younger people ensures a dynamic economic development, although a glut of children and young adults can in turn be restrictive due to a number of challenges such as education, employment and last but not least pressure on natural resources.

### Currency markets adore stability

If currency exchange rates are examined separately, the main focal points shift slightly. Ecological factors do not seem to be of much interest to global currency markets (using the average of 153 countries), which instead tend to pay more attention to efficient social, economic and political processes. The most important criteria for currency trends were as follows:

- Inflation (correlation coefficient of 0.682) and competitiveness (0.407),
- Regulatory quality (0.519), rule of law (0.467), government effectiveness (0.465), control of corruption (0.437), voice and accountability (0.427),

- Tangible and intangible capital (0.421),
- Civil liberties (0.410) and peace and security (0.390).

Here too, the causality is relatively apparent. There is in fact one factor that currency markets do not appreciate: instability – be it economic, monetary, political or foreign affairs related. By contrast, currency markets adore stability – especially in times of crisis – and often even seem to exaggerate this temporarily. Another factor that currency markets appear to pay tribute to is the existence of a certain "reserve cushion" in the form of tangible and intangible assets. These can be considered as a type of total capital stock, starting with natural resources (some of which are not renewable), and extending to capital equipment such as buildings, machinery and physical infrastructure, and different forms of human capital (know-how, labour, institutions, etc.). However, ultimately these also contribute to stability to some extent.

# Sustainability analysis as a complement to country credit ratings

**Sustainability analysis provides leading indicators for changes in the creditworthiness of countries. The forecast we made in last year's study that the credit ratings of sustainable countries would improve while the ratings of non-sustainable countries would deteriorate has since been confirmed. We expect this trend to steadily continue in future.**

## Sustainability as an indicator of future credit rating changes

In last year's study we highlighted those countries whose credit ratings deviated significantly from their sustainability ratings (i.e. good sustainability but poor credit rating, or vice-versa). Due to the correlation already described between sustainability and the performance of sovereign bonds, there is a tendency for the credit ratings of more sustainable issuers to be upgraded, while the ratings of less sustainable issuers are downgraded once the relatively long-term sustainability themes start to gradually materialise. As a mid-term update on this long-term thesis, Figure 18 shows the changes in the credit ratings<sup>8</sup> of 118 countries in total over the last 18 months compared with their sustainability ratings.<sup>9</sup>

While the average credit rating of sustainable countries improved by 0.1 notches, the rating of non-sustainable countries dropped by 0.5 on average. This may not seem very much at first glance, but it does mean that on average the rating of every tenth sustainable country improved by one notch, while the rating of every second non-sustainable country was cut by one notch. The biggest losers here were countries with minimal resources and rather low efficiency (such as Greece and Portugal), while the biggest winners were countries with abundant resources (such as Chile). In addition, defending their AAA rating can be considered as a success for many

countries with a high level of resource efficiency, as they have no further room for improvement when it comes to their credit rating. As a result, our previous year's forecast has already been confirmed to a certain extent.

**Fig. 18: Sustainability matrix with changes to credit ratings over the period 31.12.2009 - 30.06.2011**

Resource efficiency	high	AA- » A+	AAA	AAA	—	AAA
		AAA	A-	AA- » A+	BBB » BBB	AAA
		A- » BBB	BBB » BBB-	BB- » BB-	BBB- » BBB	BB-
		A » A	BB+ » BB+	BBB-	—	BB » BB+
	low	—	BB- » B+	B » B	BBB	B » B+
		Availability of resources				
		low				high

Overall changes:

sustainable countries: BBB+ » BBB+

non-sustainable countries: BBB- » BB+

Source: Moody's, Standard & Poor's, Fitch, Sarasin

## Trend expected to continue

We expect this trend to steadily continue in future. Basically the usual maxim applies here that past performance is no guarantee of future performance. It is important to remember, however, that the problem of dwindling resources is set to get worse, rather than better, in future. The efficient use of these increasingly scarce resources will inevitably become more and more important. Because

<sup>8</sup> The ratings used apply to long-term bonds denominated in foreign currencies and reflect the lowest assessment of the rating agencies Moody's, Standard & Poor's and Fitch at the end of 2009 and the middle of 2011.

<sup>9</sup> The red and green fields indicate an average downgrade or upgrade of the credit ratings. If the same rating appears twice in the same field, it means that the rating changes have not achieved a whole notch on average.

## **Sustainability analysis as a complement to country credit ratings**

of this, only those countries with high resource availability and/or efficient use of resources will be successful and productive in the long run. And successful, productive countries will be better placed to meet their sovereign obligations in the long run, which also include making regu-

lar interest payments and capital repayments on their sovereign bonds. One frequent by-product of this economic success is a generally stronger currency in the long term. Both these arguments should be particularly interesting to bond investors.

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