

# Costs of Sovereign Debt Defaults

by Beth Vanney, CFA

With the prospect of default increasing for Greek debt, this paper looks at the costs associated with sovereign debt defaults, including:

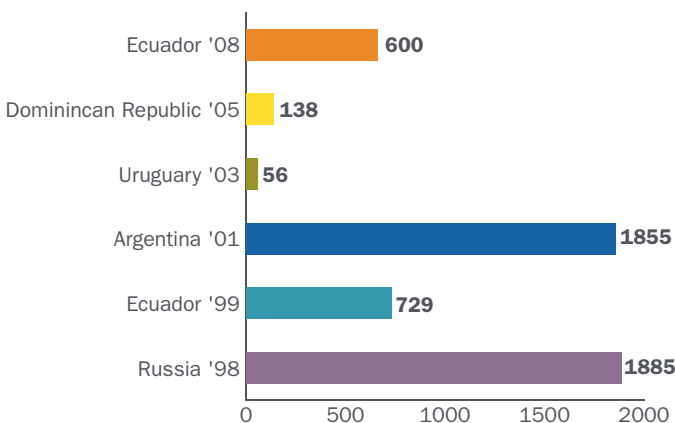
- > Higher spreads/lower bond ratings
- > Limited access to future credit markets
- > Depressed economic conditions

## Higher spreads and lower ratings

Research by Borensztein and Ugo (2009) found that default episodes are associated with an immediate drop in credit rating and a jump in sovereign spreads of approximately 400 basis points, but this drops to 250 basis points (bp) in year two. However, this effect tends to be short lived and disappears between three and five years after the default episode.

### Exhibit 1: Post-default spread over Emerging Market (EM) Sovereign USD Index

After spreads have come down from crisis levels\*



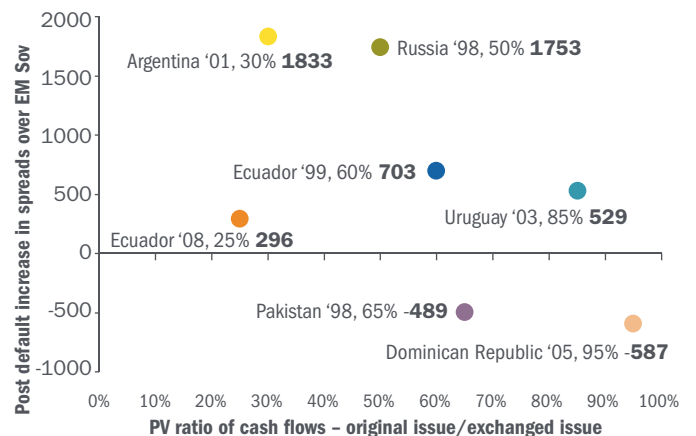
\*The post-default spread over EM Sovereign USD Index is the country's average spread for the 12 months after spreads come down from crisis levels less the average for the Emerging Market Sovereign Index over the same 12 months.

Source: Barclays Capital

In Exhibit 1, the countries with very small spread increases — the Dominican Republic and Uruguay — initiated restructuring ahead of default

The post-default increase is related to the exchanged value\*\* of the restructured bonds — although the data set is limited to recent defaults and covers only eight of 15 cases and many took years for an effective exchange. The three countries that initiated restructuring prior to their default — Pakistan, Uruguay and the Dominican Republic — had high exchanged values.

Figure 2: Exchanged value versus post-default spread increase over EM Sovereign USD Index\*\*\*



\*\* Exchanged Value (EV) or Present Value (PV) ratio is the PV of cash flows received as a result of the distressed exchange versus those originally promised, discounted using yield-to-maturity immediately prior to default.

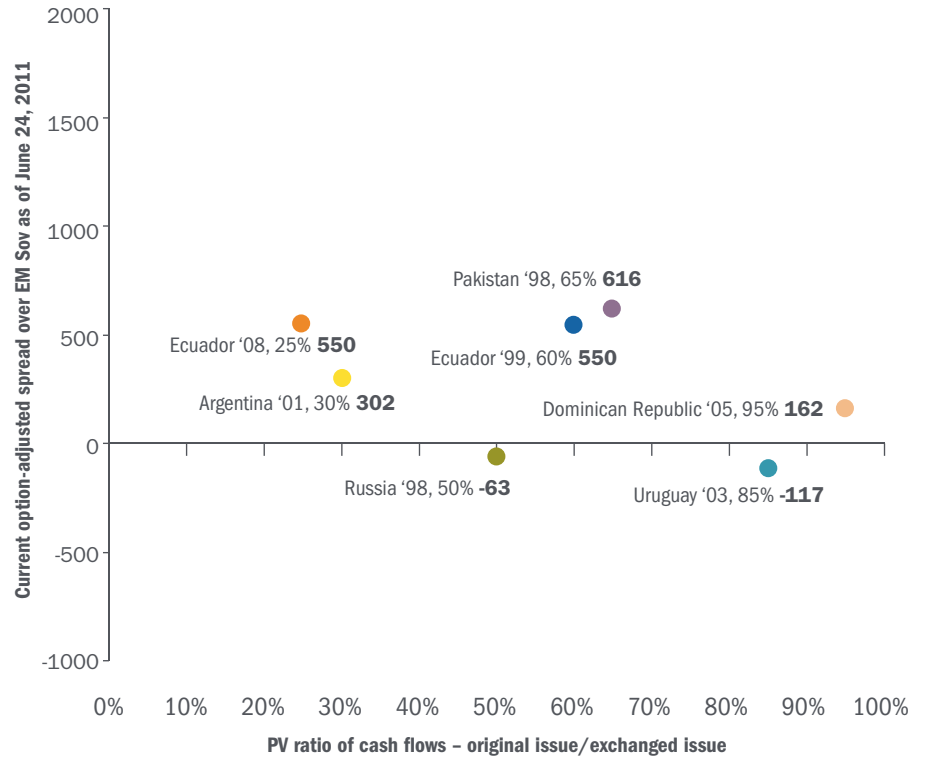
Source: De Paoli et al. 2006

\*\*\* Post-default spread increase over EM Sovereign USD Index is calculated in two parts: the post-default spread over EM Sovereign USD Index equals a country's average spread over 12 months once spreads come down from crisis levels less the average EM Sovereign USD Index spread over the same period. The pre-default spread over EM Sovereign USD Index equals the average spread 12 months before draw-down starts less the average EM Sovereign USD Index spread over the same period. For Pakistan, the increase is the spread of the next issue after default less the average of other issuers with the same rating.

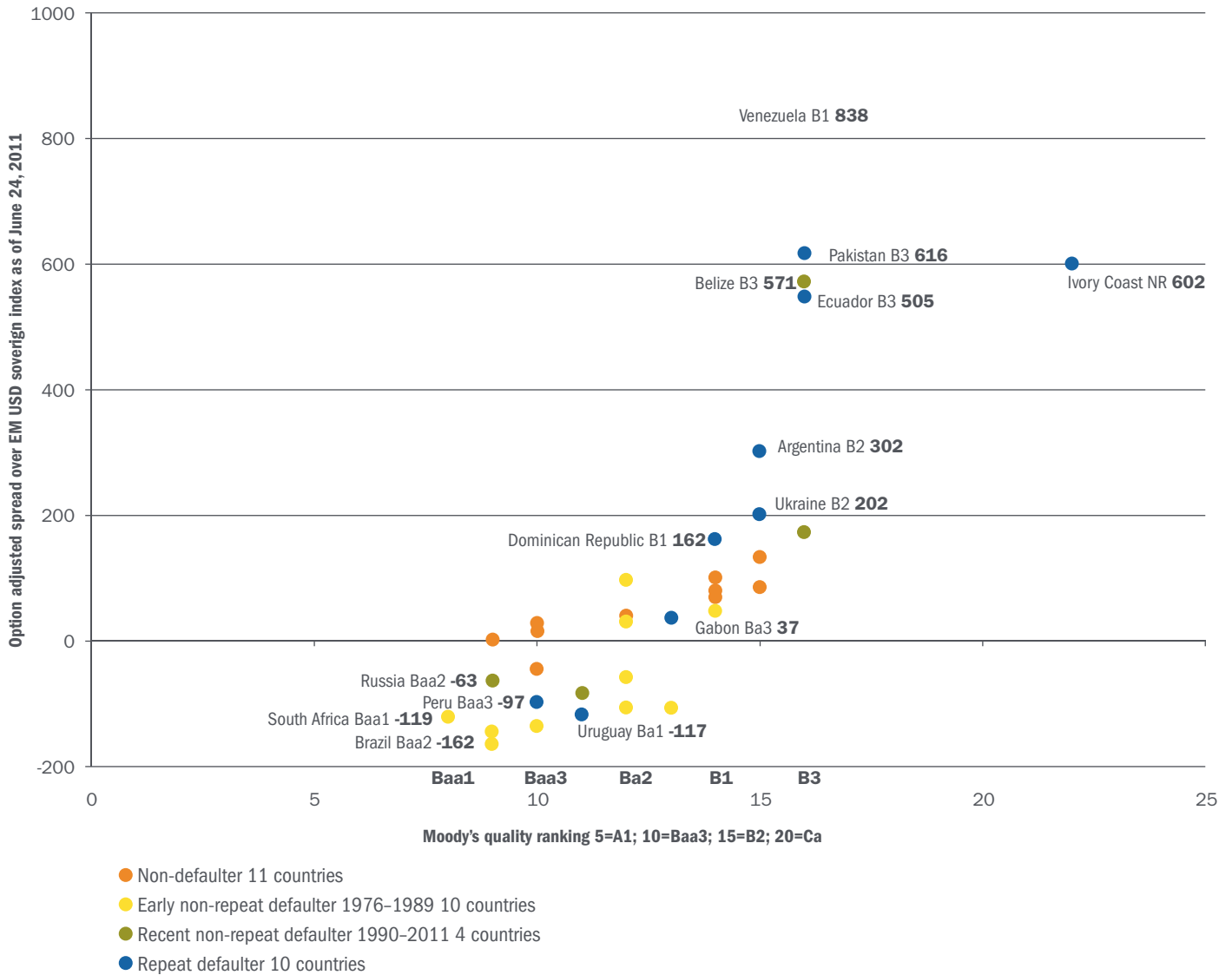
Source: Barclays Capital

As you can see in Exhibit 3 showing current spread increases, the relationship between exchanged value and spread increase breaks down over time. This supports the finding that spread increases are short lived.

**Exhibit 3: Exchanged value versus current spread increase over EM Sovereign USD Index**

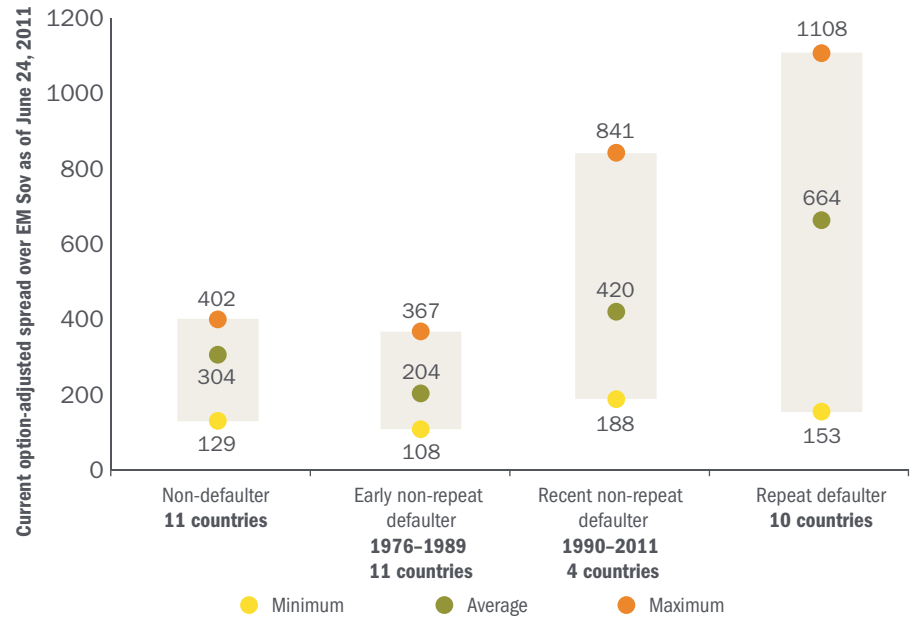


**Exhibit 4: Current spread over EM USD Sovereign Index versus quality**



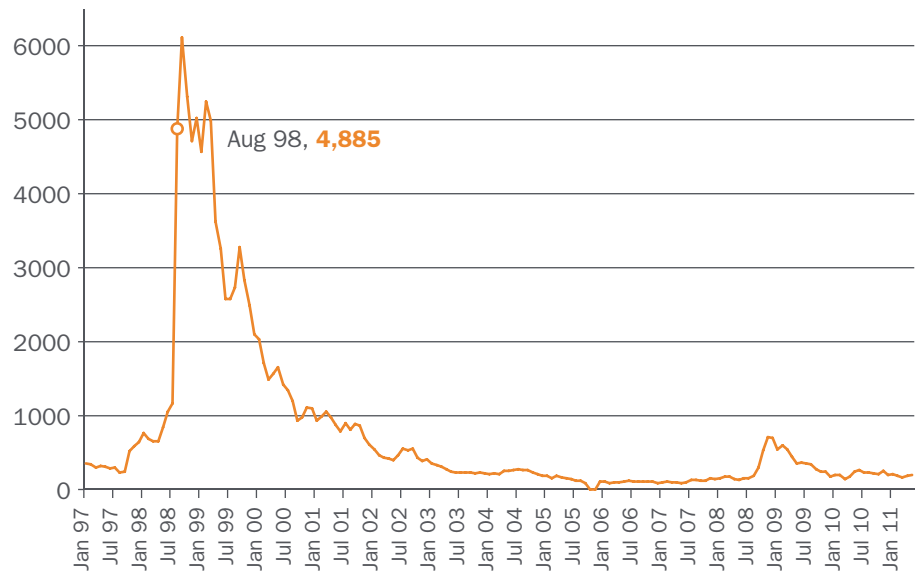
As a group, a defaulter's quality ratings tend to be lower and their spreads higher. However, there is a wide range of quality ratings, with some repeat and recent defaulters having relatively high ratings and low current spreads — specifically Russia, Uruguay and Peru. Also, the minimum current spreads for each group are fairly close, indicating that even repeat defaulters can have relatively low spreads. Interestingly, the current spreads for the early defaulter group (1976–1989) are lower than for non-defaulters. This may be due to the fulfillment of economic-restructuring conditions imposed by the International Monetary Fund (IMF) and other authorities during debt-restructuring negotiations leading to a better lending profile. Interestingly, research by Cantor and Packer (1996) shows that 80% of the variance in credit rating is explained by GDP per capita. Russia's 2010 GDP per capita is estimated at \$15,900 and the fourth highest country in Exhibit 4. This may help to explain Russia's relatively high rating and low spread.

**Exhibit 5: Current Treasury Spread Ranges by Default Status**



While defaults are associated with higher spreads, the spread increase occurs ahead of the actual default — anywhere from 2–19 months before. A good example is Russia (see Exhibit 6), where the spread increase begins 11 months ahead of default in October 1997. By early 2003 Russia was back down to pre-crisis levels. Charts showing spreads over time for others are included in the Appendix.

**Exhibit 6: Russia Sovereign Bond- Blended Treasury Spread Default period shown in orange**

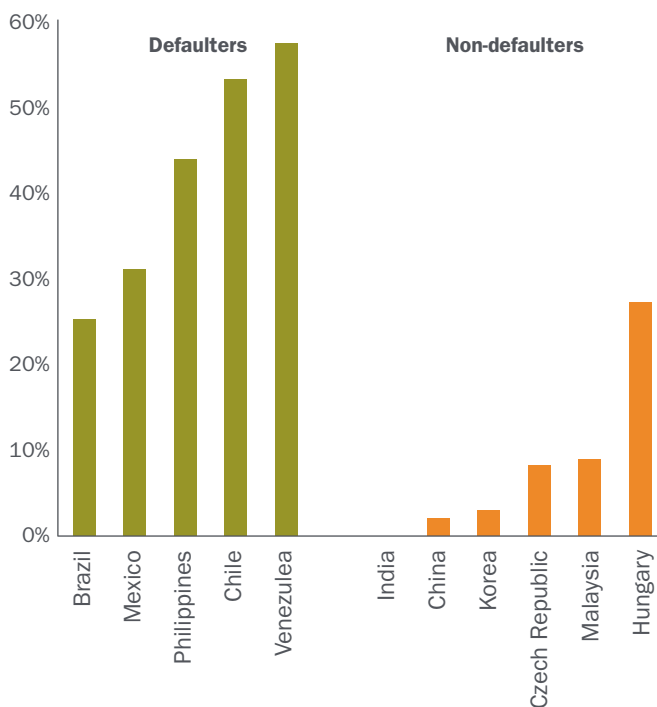


## Market access

Defaulters are able to access the bond market after default. Gelos et al. (2004) found that countries defaulting in the 1980s regained access in about four years. Argentina and Ecuador have not issued new bonds, although Argentina did refinance some of its defaulted debt in 2010, nine years later.

As shown in Exhibit 7, there is evidence that defaulters are less able to issue debt in their local currency, thereby increasing their vulnerability to currency risk with new issues in U.S. dollars or other major currencies (DePaloi, Hoggarth, Saporta, 2006).

**Exhibit 7: Share of sovereign debt denominated in foreign currency — percent of total marketable sovereign debt end-2004**



Source: DePaloi, Hoggarth, Saporta, 2006

## Economic costs of the default

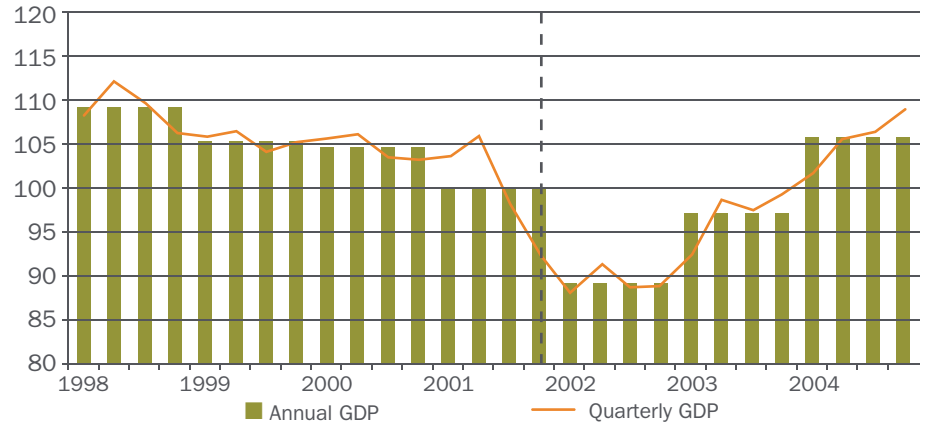
Debt defaults are usually a result of economic shocks, currency crisis, etc., that negatively impact economic growth and the ability to service debt. And defaults themselves are associated with adverse economic impacts; however, that association (i.e., correlation and lower growth) may not be a consequence of default, but of the factors that lead to default. Research by Borensztein and Ugo (2009) look at this issue directly and find that real GDP per capita growth declines by 1.4% due to factors associated with the determinants of defaults and by 0.9% from the default itself — they refer to these two components as the predicted impact to growth from default and the additional unpredicted effect. They also look at effects in the years after the default and find that default has no significant impact to growth after the default year. A Bank of England (2009) study found similar effects of default on growth rates, with a decline of 1.7% in the four-year growth average, but with a longer impact. (However, their study ends the crisis only after debt is restructured or nearly cured, which extends the crisis into other economic events.) Both of these studies used annual data, so declining growth ahead of default is more difficult to determine.

To correct for this, Yeyati and Panizza (2006) use quarterly data to find that GDP contractions tend to precede defaults and that output starts growing the quarter after default. Specifically, at the time of default, quarterly growth is 2.8% lower than normal and 1.2% above the quarter after; then 1% above two quarters after, with no negative effect over the long run. Their study also finds that recessions ending in default are twice as deep for defaulters than recessions that did not end in default. Finally, they show that increased unemployment appears before default. The highest increase leads default by three quarters and reverts in the quarter of default.

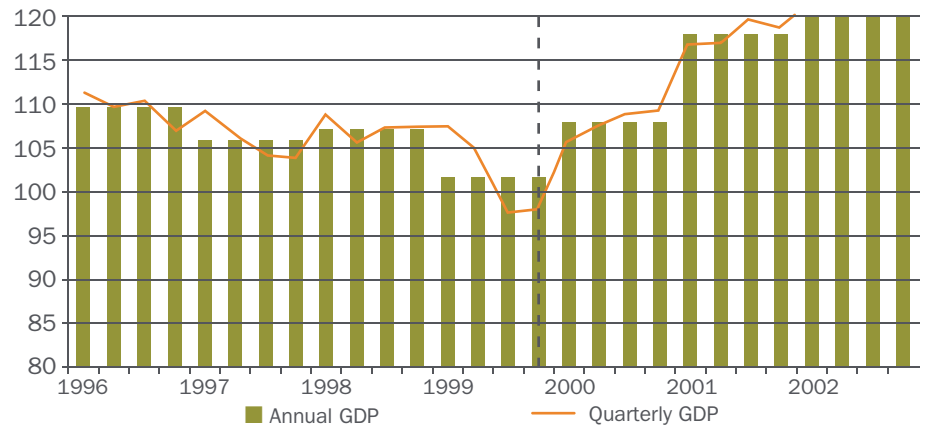
It should be emphasized that the costs and impacts for default described above are not the total cost of the crisis, but the cost of the default itself.

Exhibits 8–10 are pre- and post-default GDP growth for Argentina, Russia and Ecuador from Yeyati and Panizza (2006).

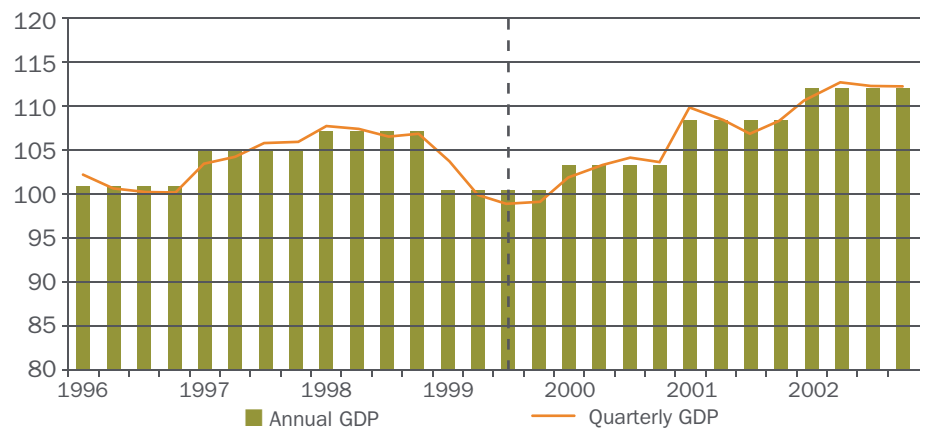
**Exhibit 8: Default and GDP growth: Argentina**  
(GDP seasonally adjusted)



**Exhibit 9: Default and GDP growth: Russia**  
(GDP seasonally adjusted)



**Exhibit 10: Default and GDP growth: Ecuador**  
(GDP seasonally adjusted)



### Concurrent banking and currency crisis

Debt crisis can significantly impair the domestic financial sector and therefore the domestic economy in the following ways:

- > To the extent that domestic banks own defaulted/restructured securities, bank balance sheets are affected directly.
- > Increase in the overall risk of lending and lack of liquid assets due to high withdrawals cause a consumer and/or interbank credit crunch.
- > Unhedged exchange rate risk causes bank collapse.
- > Government-imposed deposit freezes paralyze the day-to-day banking activity.
- > Interest rate hikes increase the cost of banks' funding and undermine their income position.

According to Borensztein and Ugo (2009), the probability of a banking crisis is 2.9%, while the probability of having a banking crisis when there is a default in the current or prior year rises to 14.1%. Conversely, the probability of a sovereign default is 2.2%, while the probability of having a default when there is a banking crisis is 4.5%. This suggests that default increases the probability of a banking crisis much more than the other way around.

De Paoli et al (2009) find a 46% probability of a banking crisis occurring in the same year or after the default. They also find a 66% probability of a currency crisis and a 41% of both a currency and banking crisis. (Note that their probabilities cover a much longer period after default and often merge into other economic events.)

Borensztein and Ugo (2009) test to see if defaults lead to a credit crunch in the banking sector by looking at industries that depend more on external finance but find that defaults do not seem to have any special effect.

A consistent finding in the studies is that while currency devaluation exacerbates debt servicing ahead of default, post-default a depreciated currency aides the economic recovery through import substitution and an increase in exports.

### Political costs

The political costs of default for the incumbent government appear to be very high:

- > Ruling governments face a 16% decrease in electoral support.
- > 50% have a change in the chief executive in the default or following year.
- > 90% of finance ministers are replaced within 18 months of a bond default.

Source: Borensztein and Ugo, 2009

These high political costs may help explain the relatively few pre-default restructurings despite some research suggesting that the economic costs are lower with that approach.

Appendix

Moody's Rated Sovereign Bond Defaults since 1983

Default Month	Comments	Total Defaulted Debt (\$ millions)	Index Draw Down Start	Index Draw Down	Months to Trough	Months Draw Down to Index Recovery	Spread increase after default*	Avg Trading Price % of Par**	PV Ratio of Cash Flows - Original Issue / Exchanged Issue***	Option-Adjusted Treasury Spread as of June 24, 2011
none	Indonesia: No Asian country defaulted on sovereign bonds during Asian crisis. Indonesia came close and restructured a bank loan. (Total defaulted debt number in the first column is therefore shown for informational purposes only.)	\$270	Apr-98 3 months before	-51%	Aug-98 5 months	Apr-98–Jun-00 27 months	474	N/A	cured	1,108
Jul-98	Venezuela: Defaulted on domestic currency bonds in 1998, although the default was cured within a short period of time.	\$270	Apr-98 3 months before	-51%	Aug-98 5 months	Apr-98–Jun-00 27 months	474	N/A	cured	1,108
Aug-98	Russia: Large budget deficits, weak oil prices and speculative attacks on Ruble after the Asian crisis trigger the default. From late 1987 through the summer 1988, government defends currency with reserves and lending rates at 150%. Aug 17, 1998, currency is devalued, defaults on local currency Treasury obligations and a debt service moratorium is extended to foreign currency obligations issued in Russia but mostly held by foreign investors. Subsequently, the country failed to pay principal on foreign currency bonds. Ruble is floated in Sept. 1998. Debts were restructured in Aug 1999 and Feb 2000.	\$72,709 Ruble debt was 10.8% of GDP (7.8% of GDP was held by domestic banks & the rest by non-residents); foreign currency debt was 5.3% of GDP. <sup>2</sup>	May-98 3 months before	-83%	Sep-98 5 months	May-98–Jun-00 26 months	2,072	18	50%	207
Sep-98	Ukraine: Moratorium on debt service for bearer bonds owned by anonymous entities. Only those entities willing to identify themselves and convert to local currency accounts were eligible for debt repayments, which amounted to a distressed exchange.	\$1,271	no data	no data	no data	no data	no data	N/A	N/A	472
Nov-98	Pakistan: External debt service payments in the 1990s increased at a faster pace than export receipts: debt service as a share of export receipts rose from 26% in 1992 to 34% in 1998. <sup>3</sup> Economy suffered from sanctions imposed for nuclear testing. In May 1998, authorities imposed a deposit freeze on all foreign currency deposits and started negotiations on a voluntary restructuring of their Eurobonds. In October 1999, a new government assumed office and an official exchange was offered in November 1999. Provisions to further tighten capital controls were also introduced in June and October 1999. They switched to a more flexible exchange rate regime in mid-2000.	\$1,627 equals 2.7% of GDP	May-98 6 months before	-49%	Oct-98 6 months	No recovery for index since issues restructured out of index in May-99	-117	52	65%	886
Aug-99	Ecuador: The public sector debt service increased sharply from 8% of GDP in 1998 to 18% of GDP in the first quarter of 2000, reflecting the real depreciation of the Sucre and the interest costs of government bonds in connection with the ongoing banking crisis. <sup>4</sup> In early 1998, the ongoing banking crisis deepened and ultimately evolved into a bank run in March 1999. In response, the government declared a bank holiday and deposit freeze. Some deposits were unfrozen from August 1999–January 2000 (US\$460 million, about 1/6 of total frozen). A general unfreezing scheme began in March 2000 and lasted through the year. In tandem with the events in March 1999, the exchange rate was floated as pressures on the Sucre mounted. No capital controls were imposed. In September 1999, the government finally decided to default on its Brady and Eurobonds and to restructure its domestic debt. In March 2000 the U.S. dollar replaced the Sucre as Ecuador's currency. After being in default for almost one year, an external debt exchange offer was made in July/August 2000.	\$6,604 The total debt restructured was equal to 50% of GDP, of which 1/10 was held by residents. After restricting overall debt service declined by 30% of GDP. <sup>5</sup>	Aug-98 2 months before	-70%	Oct-99 15 months	Aug-98–Jan-01 30 months	950	44	60%	820

<sup>2</sup> International Monetary Fund. 2002. "Sovereign Debt Restructuring and the Domestic Economy: Experience in Four Recent Cases." Page 8.

<sup>3</sup> International Monetary Fund. 2002. "Sovereign Debt Restructuring and the Domestic Economy: Experience in Four Recent Cases." Page 5.

<sup>4</sup> Ibid

<sup>5</sup> Ibid. Page 7.

\* Spread increase after default equals average spread for the 12 months after spreads come down from crisis levels, less average spread for the twelve months before draw-down starts. For Pakistan, the increase is the spread of the next issue after default less the average of other issuers with the same rating.

Source: Barclays Capital

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Source: Bank of England (2005), except Ecuador 2008, which is estimated.

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Jan-00	Ukraine The external debt position did not appear unsustainable relative to the overall debt burden, but the country faced mounting pressures from the bunching of debt service payments due to high nominal coupons (payable in foreign currency) and the short maturity of external debt. Moreover, the country's diminished access to new financing and its low level of reserves made the servicing of external debt challenging. Offered to exchange bonds with longer term and lower coupon. The conversion was accepted by a majority of bondholders.	\$1,064 equals 9% of GDP. About 1.3% of GDP was held by domestic banks. <sup>6</sup>	no data	no data	no data	no data	no data	69	60%	472
Sep-00	Peru: Missed payment on its Brady Bonds, but subsequently paid approximately \$80 million in interest payments to cure the default, within a 30-day period.	\$4,870	no data	no data	no data	no data	no data	N/A	cured	173
Sep-00	Ivory Coast March, 1998: Ivory Coast issued \$2.4 billion under the Brady scheme in a restructuring of outstanding external commercial debt. Its finances were already strained by debts accumulated in the boom years of the 1970s. Sept, 2000: defaulted following a coup in 1999.	\$2,400	no data	no data	no data	no data	no data	18	N/A	872
Dec-01	Argentina 2001 was the third consecutive year of serious recession. Foreign direct investment had virtually stopped and inflation, interest rates and the budget deficit all were soaring. The IMF had provided hard currency loans to keep the peso stable, on the condition that the government restores a measure of fiscal and monetary discipline. Economic problems became a serious crisis in Dec. 2001, when the IMF denounced the government's inability to put its financial house in order and suspended its loans. This was followed almost immediately by a banking crisis and violent public protests that produced a rapid succession of six presidents in two weeks. When this crisis hit, the government's strategic planning for default was already well advanced. To insulate itself from efforts by foreign creditors to attach assets abroad, they quietly had shifted its reserve and other financial assets from the Deutsche Bank in New York to the Bank of International Settlements in Switzerland or to banks in Argentina. It had set up special trusts and other arrangements to carry out its offshore payments and arranged to pay government employees abroad through direct deposits in Argentine banks or payments sent in diplomatic pouches. <sup>7</sup> Once these steps were taken and the crisis arrived in Dec 2001, a moratorium on servicing external debt to private creditors was announced, and, on Jan. 3, 2002, Argentina formally defaulted. Public debt was 53% of GDP. <sup>8</sup> Coupon payments were suspended until July 2005. In 2005, 76% of the debt was restructured through a distressed exchange offering where the bondholders received haircuts of approximately 70%. In Jan 2010, Argentina still owed \$20B in defaulted debt, \$10B in past-due interest, and \$6.2 to Paris Club countries. In June 2010, the debt exchange was reopened and \$12.86B was exchanged bringing the total debt restructured to 92.6%.	\$82,268	Feb-01 10 months before	-83%	Jun-02 17 months	not recovered	1,668	27	30%	572
Jun-02	Moldova: Missed payment on the bond in June 2001, but cured default shortly thereafter. Afterwards, it began gradually buying back its bonds, but in June 2002, after having bought back about 50% of its bonds, it defaulted again on remaining \$70 million of its outstanding issue.	\$70	no data	no data	no data	no data	no data	60	95%	no data
May-03	Uruguay: Contagion from Argentina debt crisis in 2001 led to a currency crisis in Uruguay. Many bonds were maturing in 2003 and 2004. To restore debt sustainability, Uruguay launched debt exchange in April 2003, and at the end of May completed the distressed exchange with bondholders that led to extension of maturity by five years. Market decline starts well ahead of default. Rapid decline starts in Nov. 2001 when Argentina does second exchange. Index is on the upswing by July 2002 — before default.	\$5,744	Nov-01 19 months before	-59%	Jul-02 9 months	Nov-01–Oct-04 35 months	126	66	85%	153

<sup>6</sup> International Monetary Fund. 2002. "Sovereign Debt Restructuring and the Domestic Economy: Experience in Four Recent Cases." Page 8.

<sup>7</sup> Shapiro, Robert and Nam Pham. 2006. "Discredited: The Impact of Argentina's Sovereign Debt Default and Debt Restructuring on U.S. Taxpayers and Investors." American Task Force for Argentina. Page 8.

<sup>8</sup> ibid. Page 9.

\* Spread increase after default equals average spread for the 12 months after spreads come down from crisis levels, less average spread for the twelve months before draw-down starts. For Pakistan, the increase is the spread of the next issue after default less the average of other issuers with the same rating.

Source: Barclays Capital

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Apr-05	Dominican Republic: Starting in January 2004, several grace period defaults occurred (missed payments cured within the grace period). The country executed an exchange offer in April 2005 for new bonds with a five-year maturity extension, but the same coupon and principal.	\$1,622	May-04 1 months before	-14%	Jul-04 3 months	May-04–Sep-04 5 months	-120	95	95%	432
Dec-06	Belize: Announced a distressed exchange of its external bonds for new bonds due in 2029 with a face value of \$546M. The new bonds are denominated in U.S. dollars and provide for step-up coupons that have been set at 4.25% per annum for the first three years after issuance. When the collective action clause in one of Belize's existing bonds is taken into account, the total amount covered by this financial restructuring represents 98.1% of the eligible claims.	\$242	no data		no data	no data	no data	76	no data	841
Dec-08	Ecuador: In November 2008, Ecuador missed an interest payment of \$30.6 million on its \$510 million of 12% global bonds due in 2012. The authorities announced that the 2012 and 2030 securities were "illegal" and "illegitimate." In May/June 2009, the government negotiated a buy-back for 35 cents on the dollar. From Dec 2008 through June 2009 they also purchased the bonds on the open market when month-end prices were \$28-\$34. Additionally, a \$135 million interest payment on the 2030 global bonds (\$2.7 billion) was missed in February 2009.	\$3,210	Jun-08 6 months before	-70% Lost 60% in Oct alone	Dec-08 7 months	Not recovered	379	26	25%	820
Feb-11	Ivory Coast: The country failed to pay a \$29 million interest payment by February 1 on \$2.3 billion of Eurobonds issued in April 2010. The payment was originally due on December 31, 2010, with a 30-day grace period expiring at the end of January 2011.	\$2,300	Nov-10 13 months before	-39%	Jan-11 3 months	Not recovered 4% away	180	no data	no data	872

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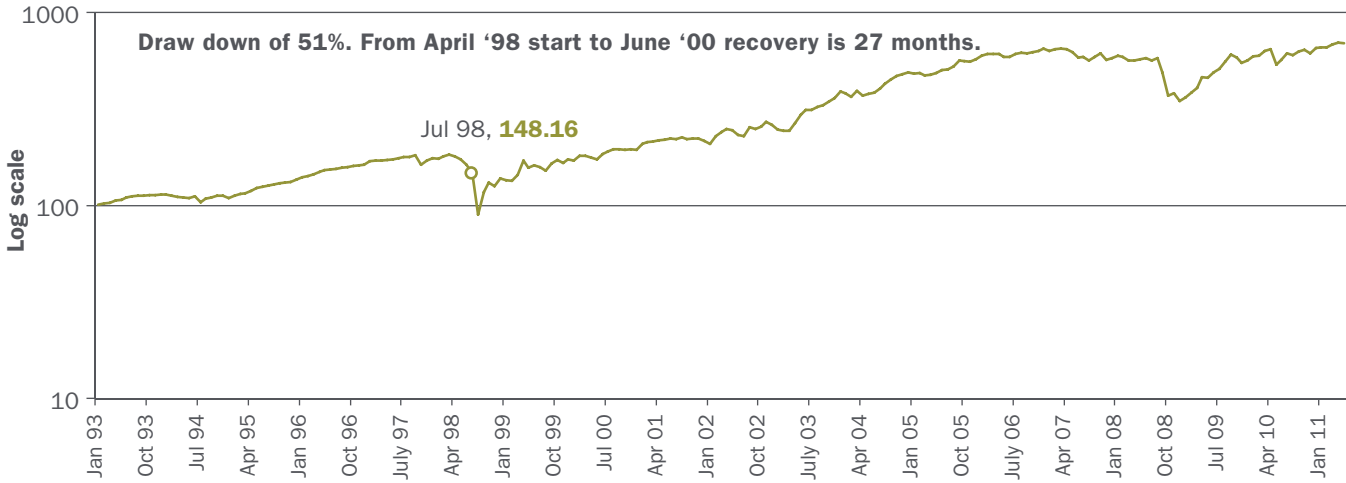
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Source: Bank of England (2005), except Ecuador 2008, which is estimated.

**Index values and option-adjusted Treasury spreads over time**

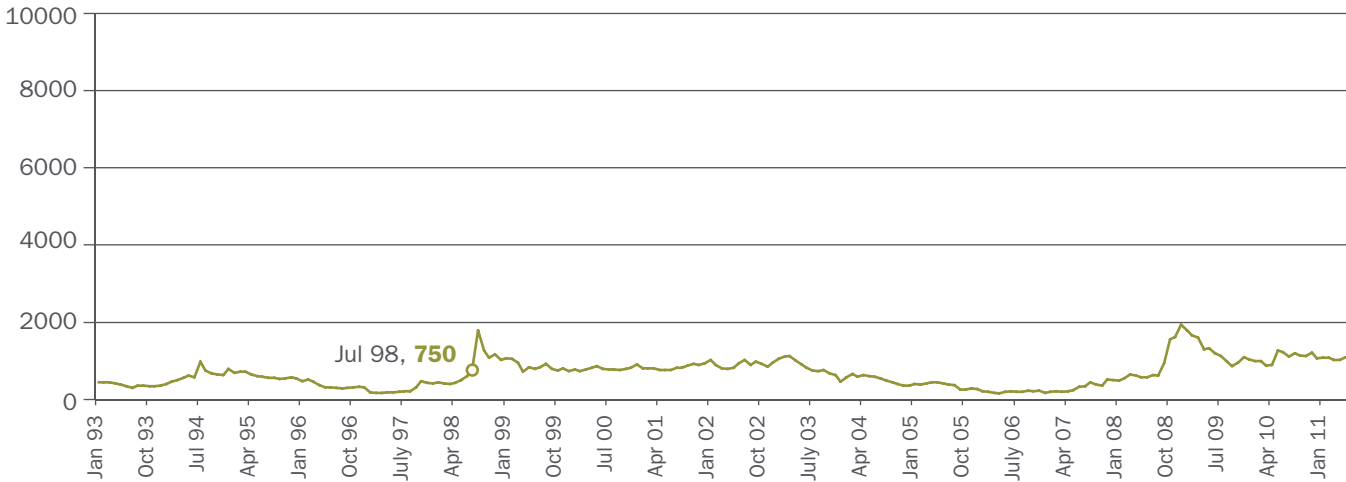
(default period is shown as a dot along with index value/spread)

**Venezuela Sovereign Bond – Index Value**



Source: Barclays Capital

**Venezuela Sovereign Bond – Blended Treasury Spread**

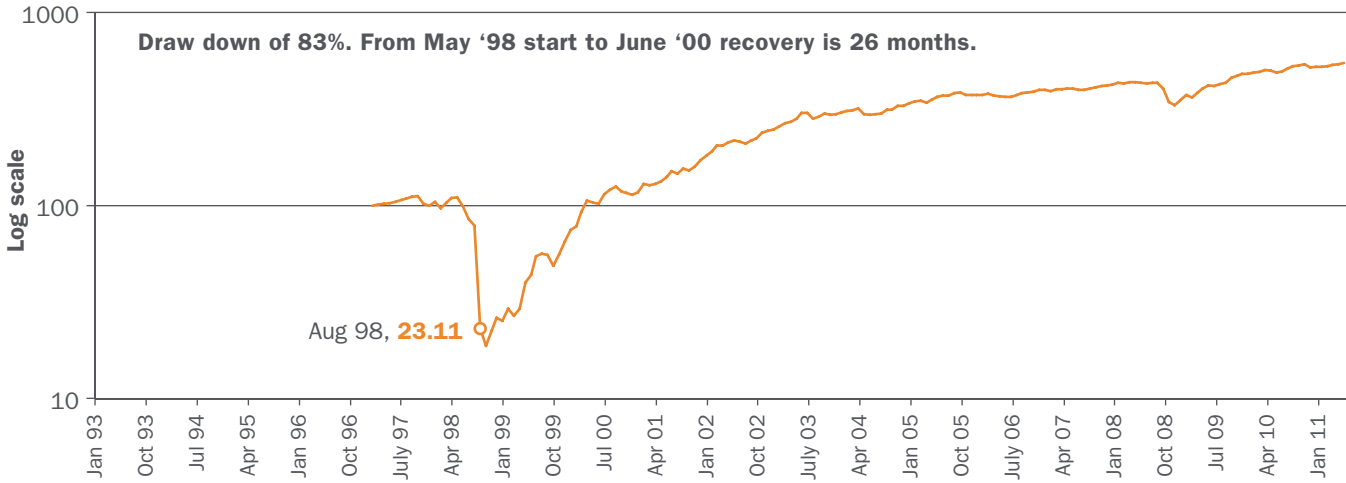


Source: Barclays Capital

**Past performance does not guarantee future results.**

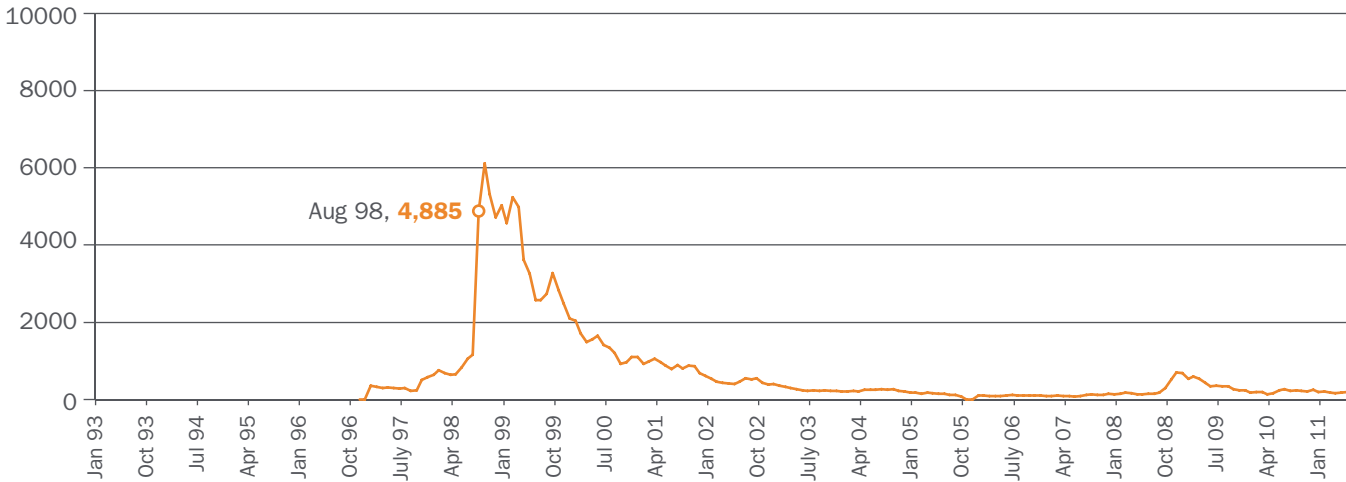
It is not possible to invest directly in an index.

**Russia Sovereign Bond – Index Value**



Source: Barclays Capital

**Russia Sovereign Bond – Blended Treasury Spread**

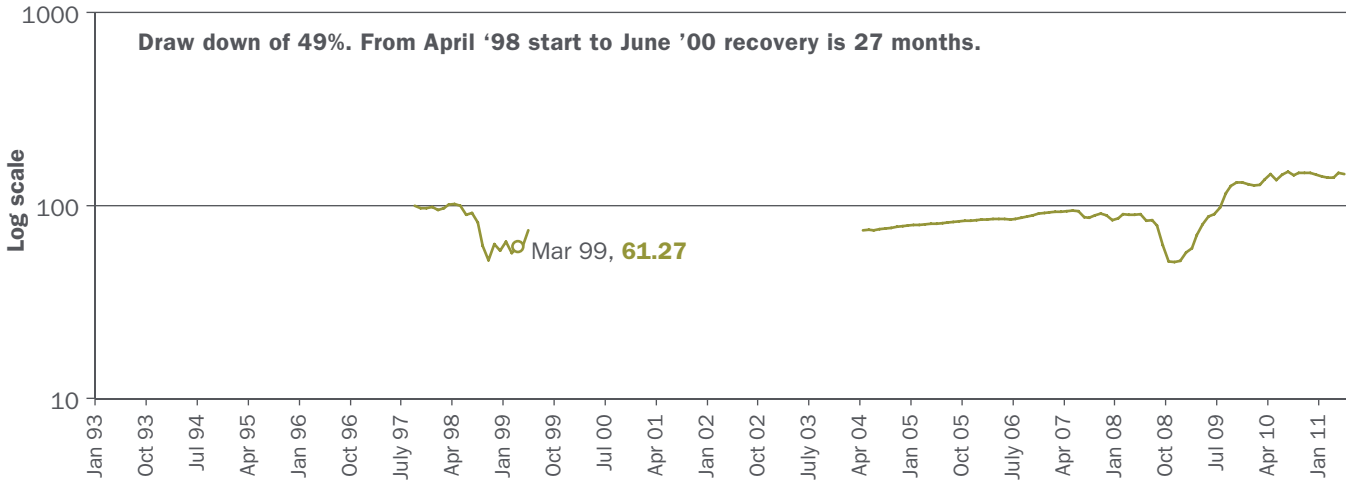


Source: Barclays Capital

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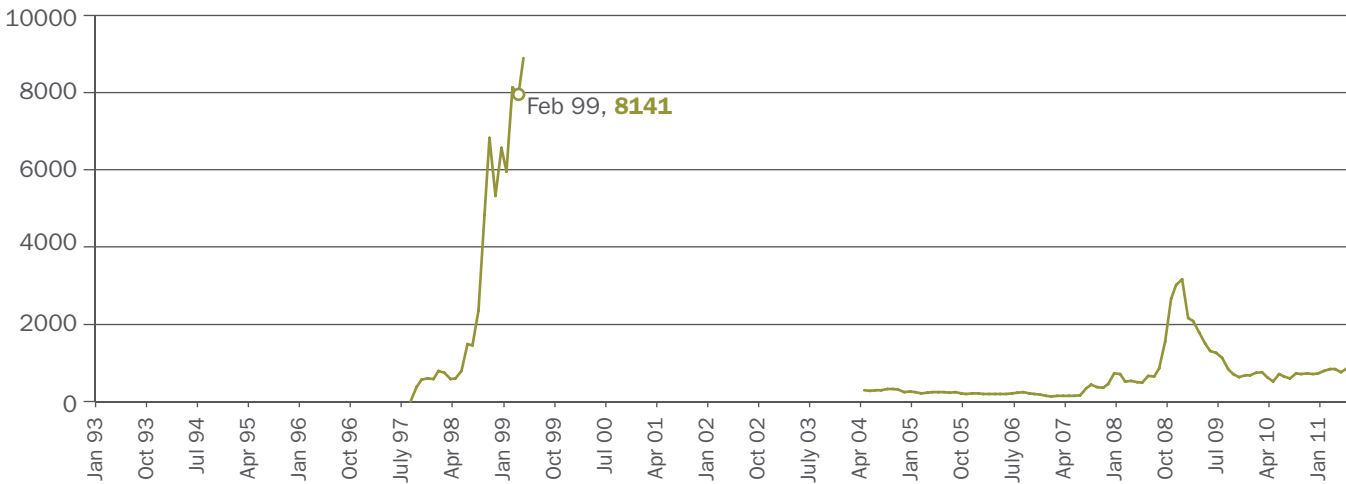
It is not possible to invest directly in an index.

**Pakistan Sovereign Bond – Index Value** (No data June '99 – April '04)



Source: Barclays Capital

**Pakistan Sovereign Bond – Blended Treasury Spread** (No data June '99 – April '04)

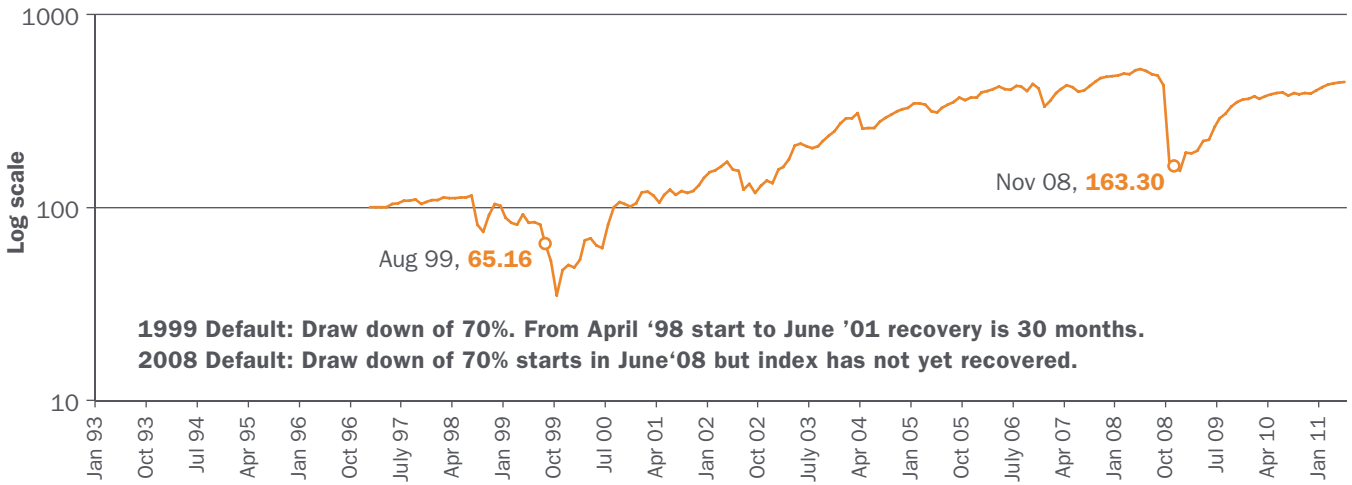


Source: Barclays Capital

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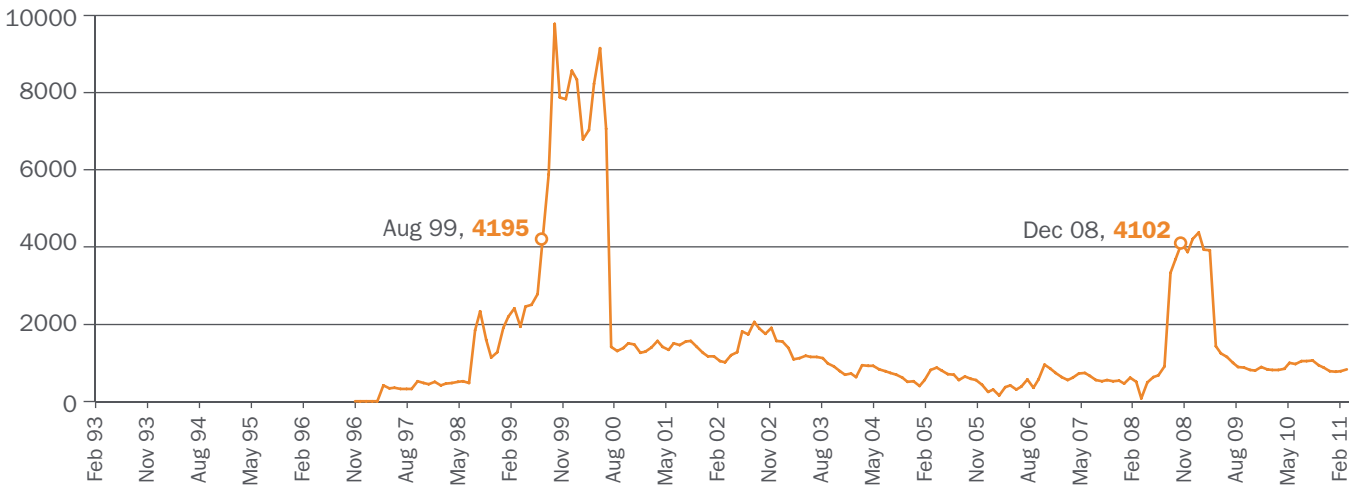
It is not possible to invest directly in an index.

**Ecuador Sovereign Bond – Index Value**



Source: Barclays Capital

**Ecuador Sovereign Bond – Blended Treasury Spread**



Source: Barclays Capital

**Past performance does not guarantee future results.**

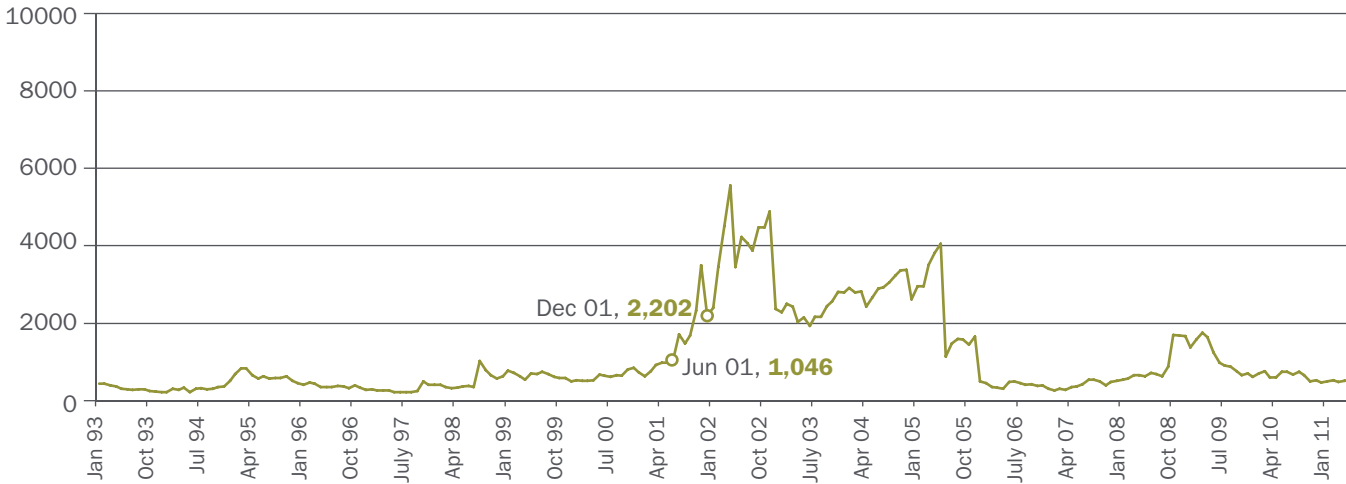
It is not possible to invest directly in an index.

**Argentina Sovereign Bond – Index Value**



Source: Barclays Capital

**Argentina Sovereign Bond – Blended Treasury Spread**

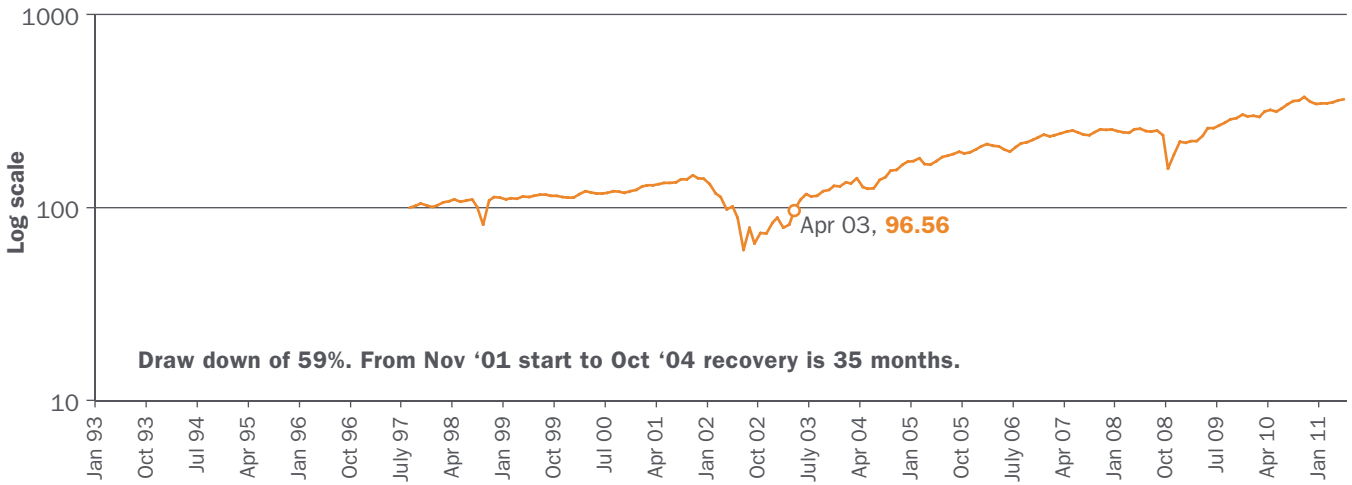


Source: Barclays Capital

**Past performance does not guarantee future results.**

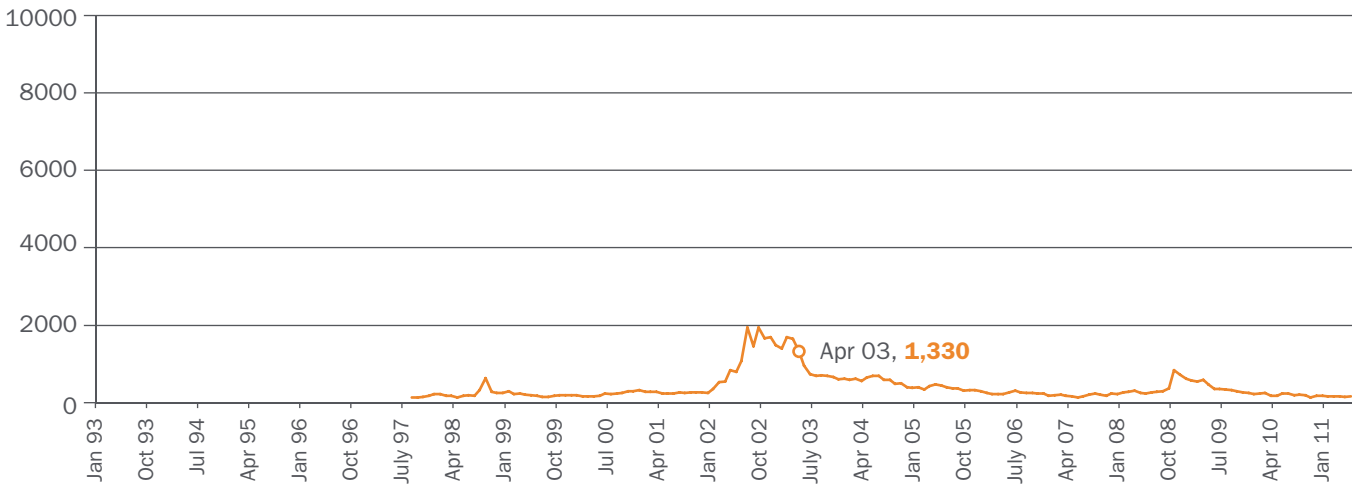
It is not possible to invest directly in an index.

**Uruguay Sovereign Bond – Index Value**



Source: Barclays Capital

**Uruguay Sovereign Bond – Blended Treasury Spread**

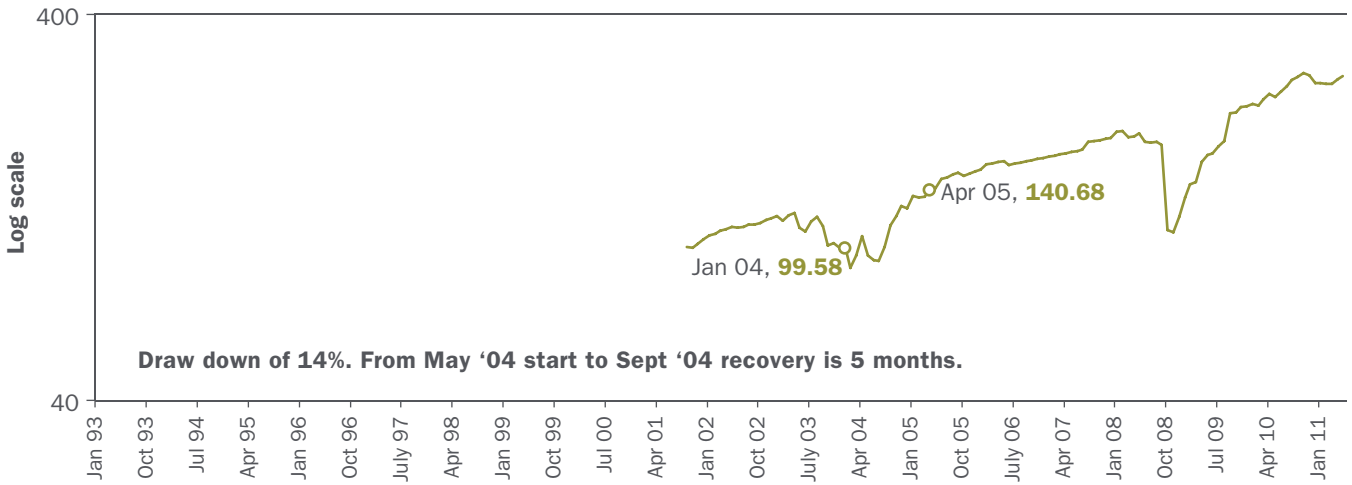


Source: Barclays Capital

**Past performance does not guarantee future results.**

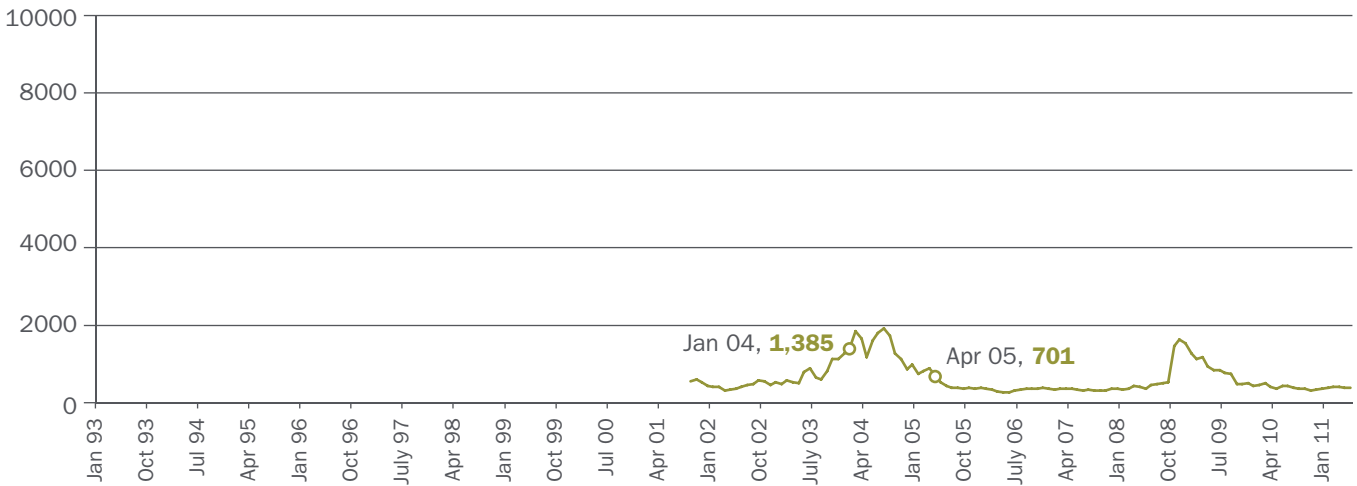
It is not possible to invest directly in an index.

**Dominican Republic Sovereign Bond – Index Value**



Source: Barclays Capital

**Dominican Republic Sovereign Bond – Blended Treasury Spread**



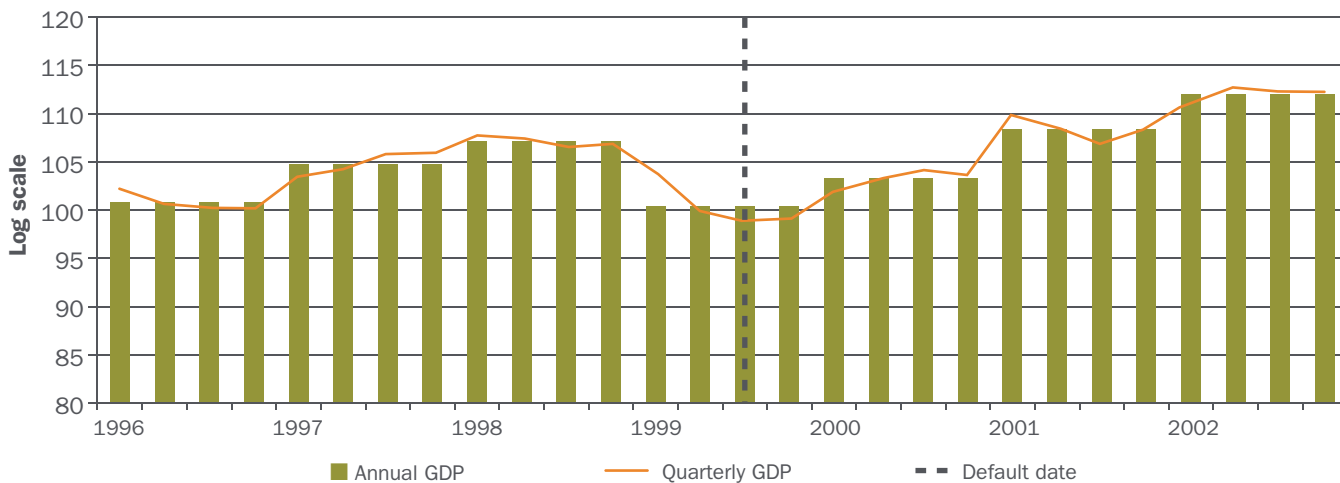
Source: Barclays Capital

**Past performance does not guarantee future results.**

It is not possible to invest directly in an index.

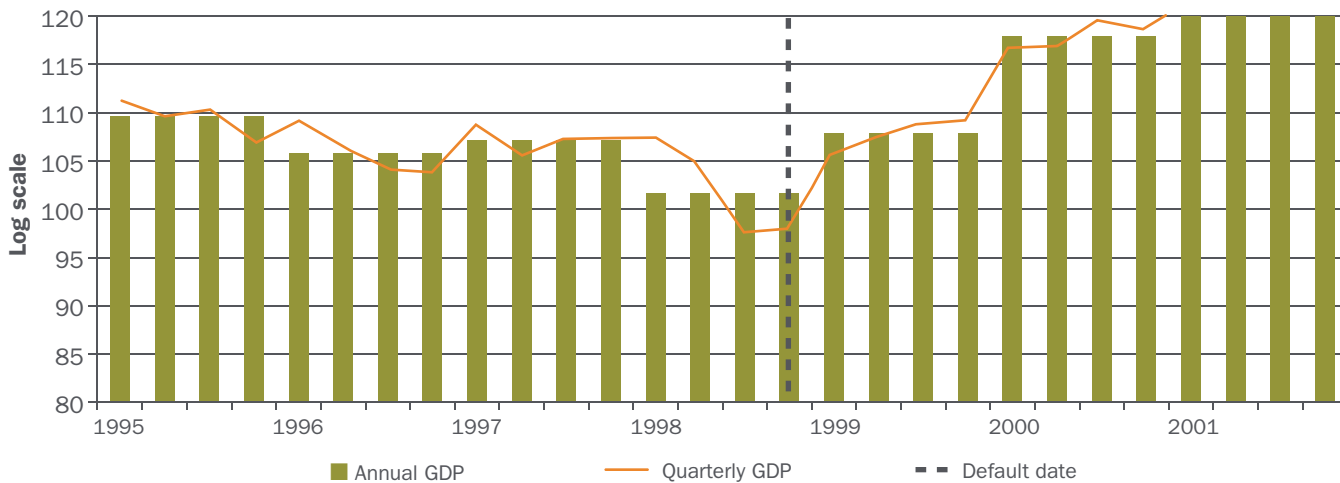
## Pre- and post-default GDP growth

Default and GDP growth, Ecuador (GDP seasonally adjusted)



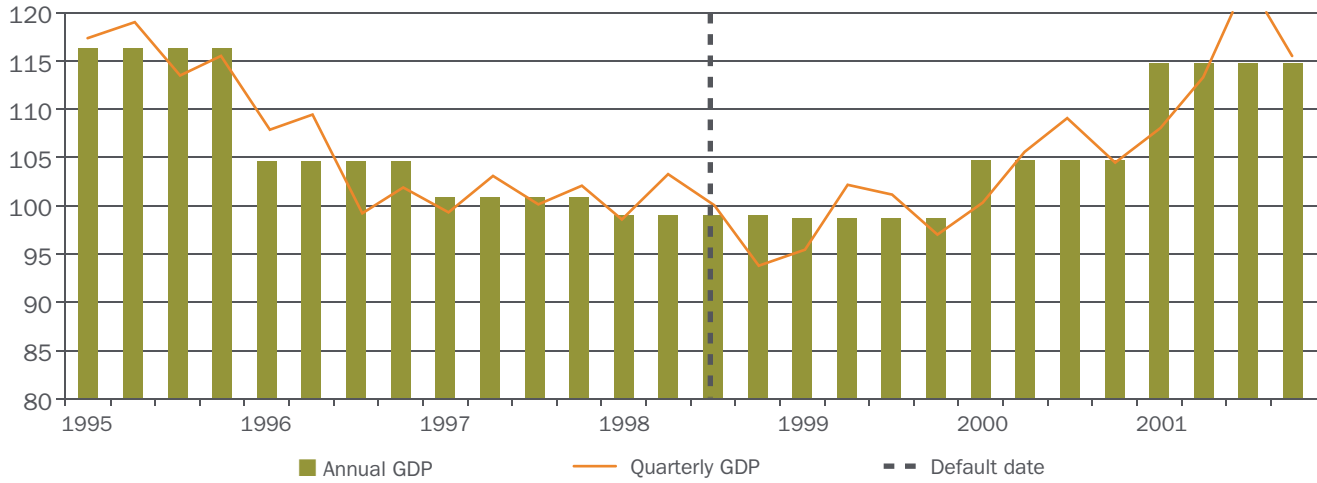
Source: Yeyati and Panizza (2006)

Default and GDP growth, Russia (GDP seasonally adjusted)



Source: Yeyati and Panizza (2006)

Default and GDP growth, Ukraine (GDP seasonally adjusted)



Source: Yeyati and Panizza (2006)

Default and GDP growth, Uruguay (GDP seasonally adjusted)



Source: Yeyati and Panizza (2006)



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In general, bond prices rise when interest rates fall and vice versa. This effect is more pronounced for longer term securities. Non-investment-grade securities, commonly called “high-yield” or “junk” bonds, have more volatile prices and carry more risk to principal and income than investment-grade securities.

Investments in emerging markets present greater risk of loss than a typical foreign security investment. Because of the less developed markets and economics and less mature governments and governmental institutions, the risks of investing in foreign securities can be intensified in the case of investments in issuers organized, domiciled or doing business in emerging markets.

Investments in foreign securities involve certain risks not associated with investments in U.S. companies due to political, regulatory, economic, social and other conditions or events occurring in the country, as well as fluctuations in currency and the risks associated with less developed custody and settlement practices. Risks are particularly significant in emerging markets.

International investing involves increased risk and volatility due to potential political and economic instability, currency fluctuations, and differences in financial reporting and accounting standards and oversight. Risks are particularly significant in emerging markets.

Moody's evaluates the bond-paying ability of each country. That country's debt is considered investment grade if its credit rating is Baa3 or higher. Ratings of Ba1 and below are considered to be speculative grade, sometimes also referred to as “junk” bonds.

The **Barclays Capital Emerging Market (EM) Sovereign USD Index** is a diversified basket of dollar-denominated sovereign debt that is designed to be broad-based in its coverage of EM sovereign issuers and tradable by including a single liquid bond from each eligible EM issuer. The basket also is differentiated in its use of Gross Domestic Product (GDP) with country and region caps and floors to determine security weights within the basket.

Country-specific Barclays Capital Emerging Market Sovereign indices are derived through the same methodology as the broader index.



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