

Special Comment

Moody's Global Credit Policy

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Rating Migration and Default Rates of Non-U.S. Sub-Sovereign Debt Issuers, 1983-2007

This study examines the rating histories and default experience of 168 non-U.S. regional and local government issuers which have had Moody's-rated local and/or foreign currency debt outstanding within the 1983-2007 period.¹ In addition, we analyze the circumstances behind a large number of both rated and unrated sub-sovereign defaults in order to gain a better insight into the credit risks of this sector. Broad conclusions include the following:

- Historically, non-U.S. sub-sovereign ratings have been concentrated in the investment-grade category: as of December 2007, 85% of regional and local government debt issuers were rated investment grade, while only 15% were rated speculative grade.
- Rating changes for investment-grade sub-sovereign issuers have been on average somewhat less frequent than for corporate issuers and somewhat more frequent than for sovereign issuers. In contrast, Ba and B sub-sovereign ratings have been less stable than both speculative-grade sovereign and corporate ratings, while once downgraded to the Caa-C categories, sub-sovereign issuers have tended to remain there slightly longer than sovereign issuers but slightly shorter than corporate issuers. Similar to sovereign ratings, sub-sovereign upgrades have on average outnumbered downgrades.
- The overall sub-sovereign default rate has been modestly lower than both the overall sovereign and corporate default rates. This has been due to the absence of recorded investment-grade sub-sovereign defaults, while the speculative-grade sub-sovereign default rate has been higher than speculative-grade sovereign and corporate default rates. However, as the overall size of the sub-sovereign sample is quite small and as sub-sovereign defaults have tended to be clustered around sovereign crises, this evidence is not likely conclusive.

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¹ Defaults of U.S. municipal bonds are discussed in Moody's report "The U.S. Municipal Bond Rating Scale" dated March 2007.



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- Within the period of study (since 1983), no sub-sovereign issuer that ever carried a Moody's investment-grade rating has subsequently defaulted. There have been twelve Moody's-rated issuers that defaulted during this period, all of which were rated speculative-grade throughout their rating history. All twelve rated defaults were related either to the Russian or Argentinean sovereign defaults of 1998 and 2001-2002 respectively, and were a part of a sector-wide wave of sub-sovereign defaults in both countries. Although not all sub-sovereigns defaulted during the sovereign debt crises (64% of rated issuers in the case of Russia), both the Russian and Argentinean regional default episodes point to a strong correlation between the national macroeconomic environment and sub-sovereign creditworthiness.
- Additionally, we discuss eight unrated defaults in five developed countries and multiple unrated defaults in six emerging market countries. Anecdotal evidence suggests that sub-sovereign *bond* defaults (as opposed to *bank loan* defaults) are more frequent in emerging market countries than in advanced countries.
- Historical recovery rates on defaulted Russian and Argentinean sub-sovereign bonds were fairly low. Anecdotal evidence suggests that recovery rates could be higher, but also suggests considerable variability in recovery rates across both advanced and emerging market economies. The recovery rates on rated Argentinean sub-sovereign defaults were about 21%; the recovery rates on Russian sub-sovereign defaults were in the 27-75% range. On the other hand, recovery rates on several other defaults, for example the defaults of the Region of Puglia, Italy and the Municipality of Benito Juarez, Mexico, were much higher.

Introduction

This report is Moody's first study of sub-sovereign issuer transition and default experience, and summarizes the historical performance of Moody's ratings as predictors of default for sub-sovereign issuers. As increasing number of emerging market countries are gaining access to international capital markets, the number of Moody's-rated sub-sovereign issuers has grown significantly over the last decade.

This study focuses on non-U.S. regional and local government debt issuers.² We report historical statistics on sub-sovereign defaults, ratings transitions, and rating performance metrics, and review the experience of rated and unrated default cases. We also present some comparisons of the experience of sub-sovereign issuers compared to sovereign and corporate issuers where appropriate, keeping in mind the relatively small sample size of speculative-grade sub-sovereign issuers. Finally, Appendix I compares the default experience of non-U.S. sub-sovereigns with U.S. municipal finance issuers.

Data and Methodology

This study examines the rating histories and default experience of 168 non-U.S. regional and local government issuers which have had Moody's-rated local and/or foreign currency debt outstanding within the 1983-2007 period.^{3,4} Exhibit 1 shows the number of regional and local government debt issuers included in the study by year, and clearly illustrates the continued concentration of issuers within the investment grade category. In addition, Exhibit 2 shows the country distribution of sub-sovereign issuers included in the study with current ratings (i.e. ratings not withdrawn) as of December 2007.

The rating history for sub-sovereign issuers is constructed similarly to the way Moody's constructs rating history for corporate issuers. Using a statistical algorithm, we estimate senior rating histories for issuers by deriving notional, issuer-level ratings from each issuer's outstanding rated bonds and loans. Only issuers that are truly debt obligors and can possibly default in the future are included.⁵ Specifically, rated issuers which do not have any debt obligations that are either issue or guarantee are excluded from the universe of study, and

² The terms "sub-sovereign" and "regional and local government" are used interchangeably in this study.

³ The default history of U.S. municipal bonds is summarized in Appendix I.

⁴ At end-2007, Moody's also had issuer ratings outstanding for another 86 non-U.S. regional and local government issuers which either did not have Moody's-rated debt at any time during the 1983-2007 period or had only national scale ratings. Many local governments have sought a rating even when they do not borrow, in order to build credibility, enhance name recognition, promote investors' confidence, and attract foreign direct investment.

⁵ For details, see Hamilton, D.T., "Moody's Senior Ratings Algorithm and Estimated Senior Ratings", Moody's Global Credit Research, July 2004.

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issuers rating histories are deemed to end when all of their debts are assumed by third parties.⁶ The report includes both sub-sovereign bank loan issuers and bond issuers.

Exhibit 1: Number of Regional and Local Government Debt Issuers Included in the Study (January 1983–January 2008)

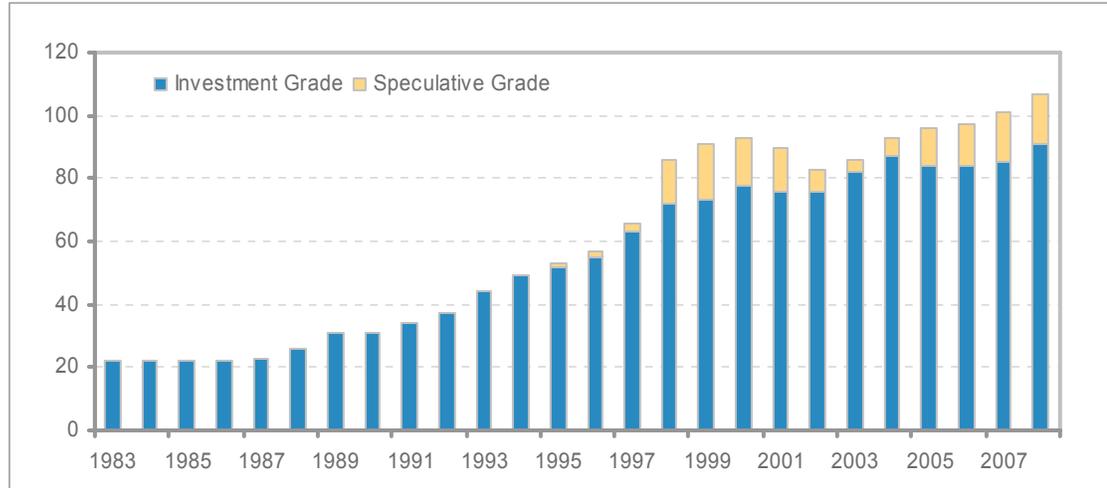


Exhibit 2: Distribution of Regional and Local Government Debt Issuers Included in the Study by Country as of December 2007

Country	Number of Issuers
Argentina	5
Australia	7
Austria	1
Belgium	3
Canada	22
Colombia	1
Czech Republic	1
France	3
Germany	4
Italy	25
Japan	8
Mexico	15
Norway	1
Russia	1
Spain	6
Sweden	3
Ukraine	1
Total	107

Moody's defines sub-sovereign, sovereign and corporate issuers as defaulting when one or more of the following conditions are met:

⁶ Moody's sovereign default study follows a slightly different methodology. For details, see Moody's Special Comment, "Sovereign Default and Recovery Rates, 1983-2007", March 2008.

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1. There is a missed or delayed disbursement of interest and/or principal.
2. There is bankruptcy, administration, legal receivership, or other legal blocks (perhaps by regulators) to the timely payment of interest and/or principal.
3. A distressed exchange occurs, where: (i) the issuer offers debt holders a new security or package of securities that amount to a diminished financial obligation, such as new debt instrument with lower coupon or par value, or longer maturity; or (ii) the exchange has the apparent purpose of helping the borrower avoid default (such as a missed interest or principal payment).

The definition of default is intended to capture events that change the relationship between debt holders and the debt issuer from the relationship that was originally contracted, and which subjects the bondholder to an economic loss. Technical defaults (covenant violations, etc.) are not included in Moody's definition of default. Secondary and tertiary defaults are reported only after the initial default event is believed to have been cured. This is to ensure that multiple defaults related to a single episode of credit distress are not over-counted. Additionally, cases where interest payments are missed on the original schedule dates but are cured within a contractual grace period are not considered to be defaults.⁷

Trends in Credit Quality: The Distribution of Sub-Sovereign Ratings

As shown in Exhibits 1 and 3, sub-sovereign issuers are overwhelmingly concentrated in the investment grade category. The first speculative grade sub-sovereign issuer was rated in 1995 and between 1995 and 2000 the share of speculative grade sub-sovereign issuers had grown dramatically. At end-2007, 15% of sub-sovereign issuers were rated speculative grade, while 85% were rated investment grade. Moreover, almost 70% of issuers were in the Aaa and Aa rating categories.⁸ This high concentration reflects the fact that about 70% of sub-sovereign issuers in the sample are located in advanced industrialized nations.

Exhibit 3: Rating Distribution of Sub-Sovereign Debt Issuers on Selected Dates

Rating	1983	1990	1995	2000	2005	2007
Aaa	41%	29%	11%	12%	19%	22%
Aa	23%	47%	56%	49%	48%	47%
A	32%	21%	28%	17%	14%	9%
Baa	5%	3%	2%	7%	5%	7%
Ba	0%	0%	4%	0%	7%	7%
B	0%	0%	0%	7%	3%	6%
Caa-C	0%	0%	0%	9%	3%	2%
Investment Grade	100%	100%	96%	84%	87%	85%
Speculative Grade	0%	0%	4%	16%	13%	15%

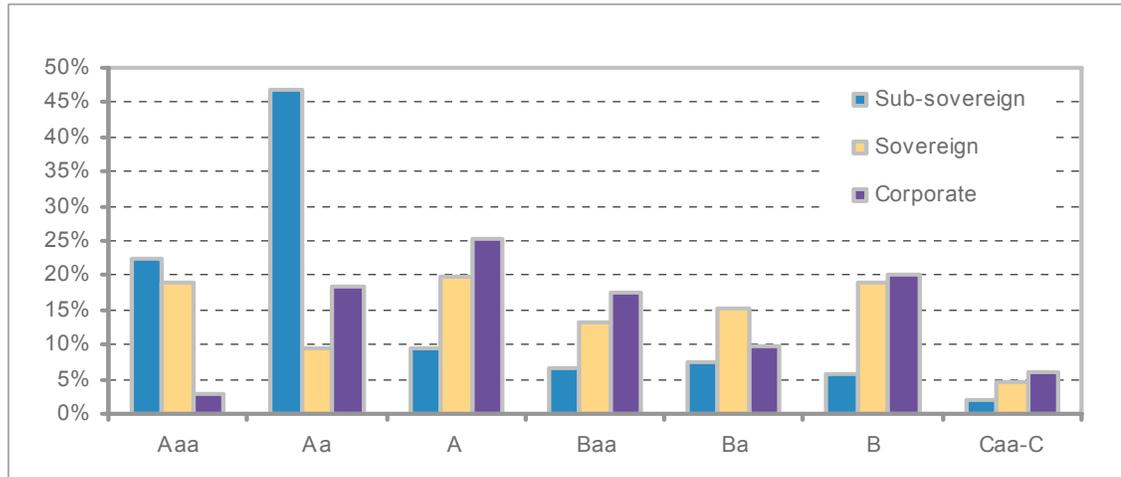
The rating distributions of sub-sovereign, sovereign, and corporate issuers as of December 2007 are compared in Exhibit 4. While the rating distributions for sovereign and corporate issuers are relatively similar, the rating distribution for sub-sovereign issuers is much more heavily skewed towards the Aaa and Aa categories, with fewer issuers in the lower rating categories.

⁷ Effective May 2007, Moody's has revised its definition of default to exclude grace period defaults. The reason for this change is that grace period defaults are often allowed by most bond indentures and generally not considered to be legal defaults. Historical data has been revised accordingly.

⁸ If the issuers that did not have any debt outstanding during 1983-2007 were included in the sample, the share of speculative-grade issuers would be in the high-20%, and the share of Aaa and Aa ratings would fall slightly.

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Exhibit 4: Rating Distribution of Sub-Sovereign, Sovereign, and Corporate Issuers in December 2007

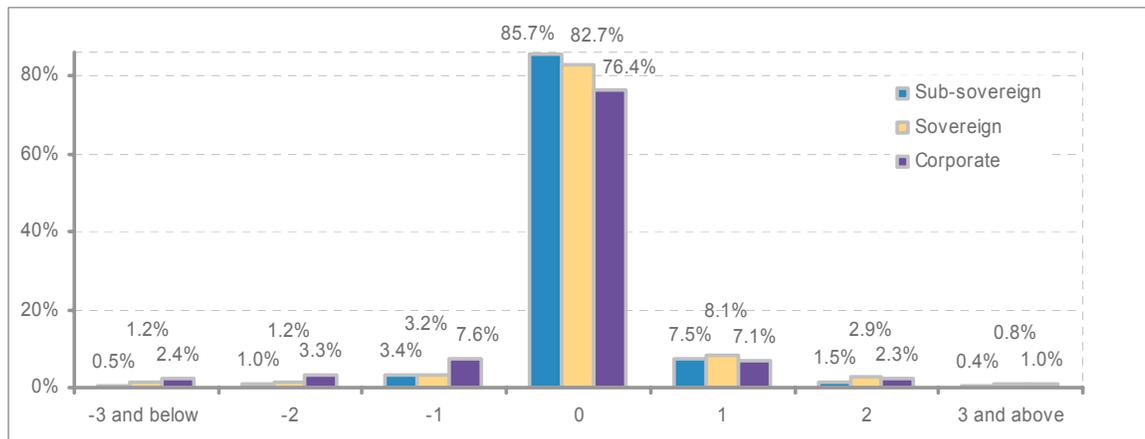


Trends in Credit Quality: Rating Actions and Migration Rates

Changes in the distribution of ratings over time occur because issuers with higher or lower-than-average ratings enter or leave the sample and/or because of shifts in the credit quality of individual issuers. This section focuses exclusively on rating changes.

Exhibit 5 displays the historical average frequency of alpha-numeric rating changes for sub-sovereign, sovereign, and corporate issuers for the period 1983-2007. For example, a category of "0" indicates no rating change over the twelve-month period. A category of "-1" indicates a single-notch alpha-numeric rating downgrade, while "+2" indicates a two-notch alpha-numeric rating upgrade. The vertical axis indicates the percentage of issuers in each category.

Exhibit 5: Annual Frequency of Alpha-Numeric Rating Changes (1983-2007)



Sub-sovereign ratings have been modestly more stable than both sovereign and corporate ratings, with 85.7% of sub-sovereigns experiencing no rating changes in a typical year versus 82.7% for sovereigns and 76.4% for corporates. On average, sub-sovereign issuers have experienced 11% probability (7.5% upgrade plus 3.4% downgrade) of a single alpha-numeric rating change over a one-year horizon. Changes in excess of a single alpha-numeric rating change, whether upgrades or downgrades, have been extremely infrequent over a one-year horizon. In addition, similar to sovereigns, sub-sovereign upgrades have generally been more frequent than sub-sovereign downgrades.

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Over 2007, in our sample, one issuer experienced a rating upgrade and no issuer experienced a rating downgrade. In addition, there were 15 new issuer ratings assigned during 2007, while eight issuers had their ratings withdrawn. Overall, if we include issuers who had a Moody's issuer rating assigned but no history of outstanding debt, there have been 14 upgrades of Moody's regional and local government ratings during 2007, including seven Mexican and five Japanese regional and local government issuers, versus four downgrades.

Rating migration matrices present a more complete picture of changes in credit quality over time. Exhibit 6 shows average annual whole-letter rating migration rates since 1983. Each cell in the matrix shows the weighted average fraction of issuers who held a given row's rating at the beginning of the measurement period and the column rating at the end of the period, including defaults and withdrawn ratings (WR).

Exhibit 6: Average One-Year Rating Migration Rates (1983-2007)

Sub-Sovereign Issuers									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	91.79%	5.47%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.74%
Aa	3.30%	91.24%	1.51%	0.00%	0.00%	0.00%	0.00%	0.00%	3.96%
A	0.03%	7.40%	88.98%	0.00%	0.34%	0.00%	0.00%	0.00%	3.25%
Baa	0.00%	0.00%	7.92%	83.77%	2.90%	0.00%	0.00%	0.00%	5.41%
Ba	0.00%	0.00%	0.00%	8.59%	58.23%	5.97%	3.58%	7.16%	16.47%
B	0.00%	0.00%	0.00%	0.00%	6.36%	65.04%	9.75%	7.84%	11.02%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	53.70%	22.59%	17.41%

Sovereign Issuers									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	97.23%	2.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%
Aa	5.87%	92.14%	0.98%	0.00%	0.00%	0.00%	0.00%	0.00%	1.02%
A	0.00%	4.08%	92.80%	2.28%	0.36%	0.00%	0.00%	0.00%	0.48%
Baa	0.00%	0.00%	10.06%	84.65%	2.76%	0.93%	0.00%	0.00%	1.60%
Ba	0.00%	0.00%	0.00%	7.91%	84.59%	5.75%	0.29%	0.96%	0.50%
B	0.00%	0.00%	0.00%	0.00%	5.63%	85.45%	4.15%	3.13%	1.65%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	26.37%	49.75%	23.88%	0.00%

Corporate Issuers									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	87.78%	7.78%	0.47%	0.00%	0.02%	0.00%	0.00%	0.00%	3.95%
Aa	0.99%	86.70%	7.01%	0.27%	0.05%	0.02%	0.00%	0.01%	4.96%
A	0.07%	2.77%	86.72%	5.12%	0.54%	0.11%	0.02%	0.02%	4.63%
Baa	0.04%	0.20%	5.07%	83.42%	4.33%	0.92%	0.29%	0.19%	5.54%
Ba	0.01%	0.05%	0.40%	5.75%	73.67%	8.57%	0.67%	1.13%	9.75%
B	0.01%	0.04%	0.16%	0.36%	5.53%	73.11%	5.74%	4.48%	10.57%
Caa-C	0.00%	0.03%	0.03%	0.17%	0.60%	9.83%	59.03%	16.40%	13.91%

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The largest values in the transition matrix are along the diagonal, as the most likely rating for an issuer at the end of a given year during the period 1983-2007 was the rating with which the issuer began the year. By contrast, those elements that are off the diagonal reflect transitions to higher (the triangle below the diagonal) or lower (the triangle above the diagonal) rating categories within one year. The further one moves away from the diagonal, the smaller the migration rates, reflecting a relatively low historical frequency of issuers moving across more than one rating category during the course of a year.

As shown in Exhibit 6, rating changes for *investment-grade* sub-sovereign issuers have been on average somewhat less frequent than for corporate issuers and somewhat more frequent than for sovereign issuers. For example, on average, 8.2% of Aaa-rated sub-sovereign issuers have been downgraded per year (or have had their ratings withdrawn), compared to 12.2% of Aaa-rated corporate issuers and 2.8% of Aaa-rated sovereign issuers. Sub-sovereign ratings appear more stable than corporate ratings in the other investment-grade rating categories as well, with the difference narrowing towards the Baa category. This stability derives from a lower historical probability of being downgraded within a 12-month period relative to corporate issuers.

Speculative-grade Ba and B sub-sovereign ratings have been less stable than both speculative-grade sovereign and corporate ratings, while Caa-C sub-sovereign issuers have tended to remain in the Caa-C category slightly longer than sovereign issuers but slightly shorter than corporate issuers. The upgrade rate for the lowest-rated sub-sovereigns is smaller than the upgrade rates for both Caa-C category sovereigns and corporates. We must note, however, that the sample size for speculative-grade sub-sovereign issuers is rather small compared to sovereigns and corporates (as previously illustrated in Exhibit 4).

The three-year and five-year average rating migration rates for sub-sovereign, sovereign, and corporate issuers are presented in Appendix II.

Appendix II also presents the 1-year, 3-year, and 5-year sub-sovereign migration rates adjusted for the methodology change that occurred in November-December 2006. At the end of 2006, Moody's incorporated Joint Default Analysis (JDA) in the rating process of regional and local governments, which formalized the analysis of the likelihood of extraordinary support from a higher-tier government to prevent default. The JDA framework was phased in on 14 November 2006 for the Americas, on 15 December 2006 for Europe, Middle-East and Africa, and on 20 December for Asia, and resulted globally in 70 rating upgrades and 2 rating downgrades, plus 11 upgrades and 1 downgrade of National Scale Ratings. The JDA introduction has impacted 37 of the issuers in our sample, resulting in 36 upgrades and 1 downgrade. We re-calculate the sub-sovereign transition rates without the JDA methodology-induced changes and present the tables in Appendix II. We find that adjusting for the JDA methodology-induced changes does not change the sub-sovereign transition rates significantly.

Historical Regional and Local Government Defaults

There have been twelve defaults of Moody's-rated non-U.S. sub-sovereign issuers. Although our sample begins in 1983, there were no rated defaults until 1998. However, even though we record twelve sub-sovereign defaults, they represent experience with only two sovereign crisis events. The 1998 defaults of the Republic of Sakha, the Oblast of Sverdlovsk, the Oblast of Nizhniy Novgorod, the Republic of Tatarstan, the Oblast of Moscow, the Republic of Komi, and the Autonomous Okrug of Yamal-Nenets were related to the 1998 Russian sovereign default. Similarly, the 2001 and 2002 defaults of the Province of Tucuman, the Province of Buenos Aires, the Province of Mendoza, and the City of Buenos Aires, and the 2001-2005 default of the Province of Formosa⁹ were related to the 2001 Argentinean sovereign default.

The Russian sub-sovereign defaults were part of a sector-wide default of Russian regions ultimately involving more than 50 Russian regions (out of total of 89 regions), RUB 1-2 billion of domestic agro-bonds, and more than RUB 22 billion of total debt. The economic and financial crisis at the national level was coupled with poor budget revenues, increases in tax arrears in the regions, and restricted revenue base or revenues

⁹ The Province of Formosa was first rated by Moody's in 2004. The 2005 Formosa's event of default refers to a bond that was issued in 1999 and was supposed to pay its first installment in 2005. The missed payment on the bond was a result of the general crisis in 2001-2002, but was recorded as a default event in 2005.

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concentrated in volatile sectors. Responsibilities associated with repaying the debt were not respected by certain regions and they did not adequately provision or plan in advance. Moreover, the low payment discipline on the sovereign level was followed by some regions. In addition, many regions refused to assume responsibility for some of the debt obligations "offloaded" to them by the Central Government.

Both the Russian experience and the 2001-2002 Argentinean regional defaults demonstrated the overwhelming impact adverse national economic and political developments could have on local government finances. At end-2001, Argentina's national administration was unable to achieve the political consensus needed to address effectively the growing fiscal deficit or to reactivate an economy already in its fourth year of recession. As tax revenues were shrunk by the deepening recession, the public sector borrowed more and more to cover deficits - crowding out private sector borrowing. Ultimately, as business activity came to be virtually paralyzed as a result of the freezes on bank deposits and the civil unrest, many provincial and municipal governments defaulted on their debt payments.

Exhibit 7 provides a chronological summary of the historical sub-sovereign defaults, the recorded-debt default volume associated with these defaults, and the circumstances surrounding the defaults. Where data is available, Exhibit 7 also presents the recovery rates associated with these defaults.

Exhibit 7: Moody's-Rated Sub-Sovereign Defaults since 1983

Default Date	Regional and Local Government Issuer	Country	Type of Debt Affected	Recorded Default Amount (\$MM)*	Average Recovery Price*	Default Circumstances
July 1998	Sakha (Yakutia), Republic of	Russia	Bonds and bank loans	...	...	Recurring payment delays on domestic currency bonds and loans since July 1998.
Sept. 1998	Sverdlovsk, Oblast of	Russia	Bonds	...	...	Part of a sector-wide default of Russian regions in 1998, involving domestic bonds valued between RUB 1-2 billion. The devaluation of the ruble and the general deterioration in the Russian economy put regional revenues and expenditures under pressure. Additionally, the regions refused to assume some of the debt obligations offloaded to them by the Central Government. Default on domestic currency bonds.
Oct. 1998	Nizhniy Novgorod, Oblast	Russia	Bonds and bank loans	RUB72 MM Agrobonds, DM50 MM syndicated loan, \$100MM Eurobond	27.50 on Eurobond	Same default triggers as above. Default on Agrobonds in October 1998. The RUB72 MM Agrobonds were subsequently restructured and repaid. The loan maturity and the terms of repayment of the DM50 MM syndicated loan with a 6 months maturity, taken up in July 1998, were modified following agreement with the lender in November 1999. Maturity was extended by several years. Missed payment on the Eurobond on 3 October 1999. The maturity of the US\$100 MM five-year bullet Eurobond, issued in October 1997, with a coupon of 8.75% paid semi-annually, was extended by 3 years and coupon payments were deferred following the agreement reached with bondholders on 13 December 1999.
Oct. 1998	Tatarstan, Republic of	Russia	Bank loans	100.00	...	Same default triggers as above. The Republic of Tatarstan rescheduled its short-term domestic debt in 1998, effectively defaulting on its obligations.
Oct. 1998	Moscow, Oblast of	Russia	Bonds and bank loans	...	...	Same default triggers as above. Defaulted debt restructured in 2000-2001.
Oct. 1998	Komi, Republic of	Russia	Bank loans	...	...	Same default triggers as above. Renegotiation of foreign currency bank loans. No default on Argobonds.
Feb. 2000	Yamal-Nenets, Autonomous Okrug of	Russia	Bank loans	100.00	...	Same default triggers as above. Restructuring of \$100 MM credit, arranged with Lehman Brothers in 1998, was completed in 2000. The loan was repaid in full in December 2002. The loan was current before the restructuring. The restructuring involved principal haircut of \$7.1MM, a reduction of interest from 12.25% to 9.5%, and a redenomination of the loan from JPY to USD.
Dec. 2001	Tucuman, Province of	Argentina	Bonds	344.50	20.00	Macroeconomic shocks lead to the implosion of the revenue base and a liquidity crisis. The Province of Tucuman issued an economic emergency decree in December 2001 suspending payment on many of its obligations, except payments on its tax revenue-secured medium-term notes due in 2004. However, the flow of peso payments to note accounts was halted in January 2003 and as a result a missed payment due on February 1, 2003 was made on May 16, 2003. The notes stopped making payments after May 2003.

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Default Date	Regional and Local Government Issuer	Country	Type of Debt Affected	Recorded Default Amount (\$MM)*	Average Recovery Price*	Default Circumstances
Jan. 2002	Buenos Aires, Province of	Argentina	Bonds	3181.61	22.99	Same default triggers as above. The default involved foreign and domestic currency bonds. In January 2002, the Province of Buenos Aires missed an interest payment due that month on a Eurobond issue maturing in January 2003. Subsequent debt service payments due on various other obligations have also been missed.
Mar. 2002	Mendoza, Province of	Argentina	Bonds	250.00	20.00	Same default triggers as above. The default involved foreign currency bonds. In March 2002, the Province of Mendoza missed an interest payment due that month on its senior unsecured bonds maturing in 2007, reporting that it would seek to restructure its debt. In April, the province covered the missed payment when it obtained an advance on oil royalty payments and a bank loan. Another interest payment was missed in September, covered later with another oil royalties advance.
Apr. 2002	Buenos Aires, City of	Argentina	Bonds	469.24	22.50	Same default triggers as above. In April 2002, the City of Buenos Aires missed an interest payment due that month on its foreign currency medium-term notes maturing in 2007. A debt restructuring agreement was later reached with holders of some of the city's foreign currency notes. Domestic currency note payments have not been interrupted.
July 2005	Formosa, Province of	Argentina	Bonds	5.00	...	Same default triggers as above. First rated by Moody's in 2004. Previous defaults in August 2001 on foreign and domestic currency-denominated bonds and in September and December 2002 on dollar-denominated bonds. Subsequent default on dollar-denominated bonds in July 2005. Also, since February 2003 default on notes which were included in the conversion of provincial debt to Guaranteed National Bonds, enacted in 2002. Formosa's bondholders rejected the conversion and sought to accelerate payment, relying on deductions from federal coparticipation tax revenue transfers. The province filed a lawsuit and won a court ruling to suspend deductions from its coparticipation revenues for debt payment, effective February 2003. The trustee, on behalf of bondholders, appealed the suspension and the lawsuit is awaiting final resolution by the Supreme Court. In 2008 the province has launched a restructuring debt program in order to issue new bonds in exchange for the defaulted secured notes, still on-going.

* Amount and 30-day post-default price or pre-distressed exchange trading price are based on the data in Appendix III.

"..." indicates that data is not available.

We measure the recovery rate as the average, issuer-weighted, trading price on a sub-sovereign bond thirty days after its initial missed interest payment. In cases in which the initial default event is the distressed exchange itself, we report the average price shortly before the distressed exchange. Appendix III provides more details on the sub-sovereign bonds used to estimate the recovery rates. However, as the Argentinean and Russian sovereign defaults garnered one of the lowest recovery rates in history¹⁰, we do not believe the Argentinean and Russian sub-sovereign recovery rates to be representative of average expected sub-sovereign recovery rates. The recovery rates on rated Argentinean sub-sovereign defaults were on average about 21%. In the case of Russia, non-cash repayment schemes and the lack or unreliability of data, often due to extremely low liquidity of overdue issues, complicate the assessment of recovery values. The recovery rates on Russian sub-sovereign bonds were in the range 27-75%. Recoveries on international bonds and loans were similar to recoveries on ruble-denominated instruments. The recovery rate on the Oblast of Nizhniy Novgorod's Eurobond was 27.5%.

In addition, unrated sub-sovereign defaults have been surveyed in more detail in Appendix IV. We have uncovered eight defaults in five advanced countries and multiple defaults in six emerging market countries. In emerging market countries, exogenous factors, such as sovereign crises and defaults and other macroeconomic shocks, have been comparatively more likely to contribute to defaults. In advanced economies, sub-sovereigns have tended to be more vulnerable to endogenous factors, often linked to mismanagement of financial resources. Inappropriate institutional frameworks and unwillingness to pay by sub-sovereigns have played a role in defaults in both emerging countries and in advanced economies. However, in the developed countries, strong preventative and supportive legal and financial frameworks have reduced the risk of financial crisis at the sub-sovereign level.

¹⁰ See Moody's Special Comment, "Sovereign Default and Recovery Rates, 1983-2007", March 2008.

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Defaults *on bonds* (as opposed to defaults *on bank loans*) have tended to be more frequent in emerging market countries than in advanced countries. Recovery rates have varied significantly – from extraordinarily high recovery rates in many instances to extremely low recovery rates in other situations. It appears that more recently recovery rates have been, on average, higher in advanced economies than in emerging markets: apart from two default cases in the United Kingdom in 1989-1991, all other subsequent defaults in advanced countries have garnered high or very high recovery rates, while recovery rates in the emerging markets have been more variable. However, the empirical evidence up to date is too limited to allow the drawing of general conclusions.

Sub-Sovereign Cumulative Default Rates

Exhibit 8 presents one-year through ten-year issuer-weighted average cumulative default rates for sub-sovereign, sovereign, and corporate rated issuers. Appendix I briefly compares the default experience of non-U.S. sub-sovereign issuers with U.S. municipal finance issuers.

As in our other default studies, cumulative default rates are calculated by averaging the experiences of issuer cohorts formed at monthly frequencies.¹¹ By forming and tracking such cohorts of all Moody's-rated issuers at the beginning of every month, we replicate the experience of a portfolio of both seasoned and new-issue bonds purchased in any given month. The dynamic nature of the cohorts allows the estimation of cumulative default risk over multi-year horizons. It also allows for the comparison and averaging of default rates over different periods.

A comparison between sub-sovereign, sovereign, and corporate default rates shows that, on average, overall sub-sovereign default rates have been modestly lower than both sovereign and corporate default rates. This has been due to the fact that there have been no recorded *investment-grade* defaults for sub-sovereign issuers. The *speculative-grade* default rate for sub-sovereign issuers has been higher than the speculative-grade default rates for both sovereign and corporate issuers. Within the one year default rate, Ba and B-categories default rates have been higher for sub-sovereign issuers, while the Caa-C category default rate has been similar across sub-sovereign, sovereign and corporate issuers. However, we must note the relative infrequency of sub-sovereign defaults as well as the limited size of the sample of speculative-grade sub-sovereign issuers. As shown in Exhibits 1 and 3 above, the first sub-sovereign issuer rated speculative grade enters the sample in 1995, and the number of sub-sovereign issuers rated in the Caa-C category remains extremely limited throughout the sample period, with only two sub-sovereign issuers rated in the Caa-C category at the end of 2007.

The unusual pattern of average cumulative sub-sovereign default rates for the B and Caa-C categories is due to the fact that all rated sub-sovereign defaults have occurred in only two countries – Russia and Argentina, as they have been related to the Russian and Argentinean sovereign defaults and as such have been clustered in time around 1998 and 2002 respectively. Therefore, even though there have been twelve sub-sovereign defaults overall, there are really only two cases in which we have experienced a test of how rated sub-sovereign issuers would perform in the wake of a sovereign default.

The B and Caa-C categories default rate pattern we observe in Exhibit 8 is due to the unusual rating histories of B and Caa-C rated sub-sovereigns, which we discuss in greater detail in Appendix V. The typical rating history for sub-sovereign defaulters is the following: issuers spent some time in the B category, then spent some time in the Caa-C category, and then subsequently defaulted. Since all Caa-C rated issuers defaulted within a one or two-year horizon, the marginal default rate for the Caa-C category in year three and beyond is zero, and thus the cumulative default rate in years three and beyond remains equal to the default rate in year two. On the other hand, as almost all defaulters have had a rating in the B category at some point in the past, the B category cumulative default rate rises very fast with the lengthening of the time horizon. Finally, as the Caa-C defaults are clustered around two years – 1998 and 2001-2002, the years of the Russian and

¹¹ Monthly cohorts have the advantage of capturing rating changes that occur within a calendar year. The default rates are calculated based on cohorts of all issuers holding a given rating at the start of a given month. The cohorts are dynamic in that they change based on whether these issuers leave the cohort due to default or non credit-related reasons (e.g. maturing of debt). While the cohort frequency is monthly, the accumulation periodicity remains 12 months, so that we track default rates over horizons of one year, two years, three years, etc. For details on the calculation, see Moody's Special Comment, "Corporate Default and Recovery Rates, 1920-2007", February 2008.

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Argentinean sovereign defaults – the average Caa-C default rate would be an average of the extremely high default rates in the cohorts capturing 1998 and 2001-2002, and the zero default rates in all other cohorts.

Exhibit 8: Issuer-Weighted Cumulative Default Rates (1983-2007)

Sub-Sovereign										
	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
	1	2	3	4	5	6	7	8	9	10
Aaa	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Aa	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
A	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Baa	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Ba	6.515%	8.636%	12.055%	15.471%	15.471%	15.471%	15.471%	...	...	...
B	7.129%	17.749%	29.763%	47.322%	68.809%	82.895%	100.000%	100.000%	100.000%	100.000%
Caa-C	23.150%	27.434%	27.434%	27.434%	27.434%	...	...	...	...	...
Investment Grade	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Speculative Grade	10.298%	16.604%	23.512%	33.336%	44.598%	53.122%	69.667%	...	...	...
All Sub-sovereign	0.740%	1.135%	1.464%	1.789%	2.059%	2.197%	2.331%	2.331%	2.331%	2.331%

Sovereign										
	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
	1	2	3	4	5	6	7	8	9	10
Aaa	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Aa	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
A	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Baa	0.000%	0.517%	1.087%	1.725%	2.444%	3.198%	3.198%	3.198%	3.198%	3.198%
Ba	0.892%	1.951%	3.780%	5.864%	8.134%	9.799%	12.014%	14.494%	16.490%	18.420%
B	2.801%	5.769%	6.900%	8.720%	10.514%	12.681%	14.496%	16.072%	18.079%	20.832%
Caa-C	22.535%	26.786%	32.418%	32.418%	32.418%	32.418%	32.418%	32.418%	32.418%	32.418%
Investment Grade	0.000%	0.106%	0.220%	0.344%	0.479%	0.616%	0.616%	0.616%	0.616%	0.616%
Speculative Grade	2.650%	4.637%	6.363%	8.247%	10.231%	12.005%	13.989%	16.055%	17.965%	20.051%
All Sovereign	0.775%	1.429%	2.006%	2.629%	3.279%	3.862%	4.390%	4.914%	5.368%	5.817%

Corporate										
	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
	1	2	3	4	5	6	7	8	9	10
Aaa	0.000%	0.000%	0.000%	0.035%	0.078%	0.129%	0.186%	0.191%	0.191%	0.191%
Aa	0.009%	0.021%	0.048%	0.115%	0.183%	0.229%	0.263%	0.291%	0.315%	0.366%
A	0.020%	0.101%	0.241%	0.372%	0.499%	0.637%	0.766%	0.899%	1.015%	1.095%
Baa	0.192%	0.529%	0.943%	1.436%	1.939%	2.428%	2.885%	3.292%	3.674%	4.070%
Ba	1.166%	3.238%	5.835%	8.453%	10.688%	12.713%	14.479%	16.045%	17.471%	18.889%
B	4.663%	10.286%	15.752%	20.574%	25.022%	29.192%	33.068%	36.342%	39.083%	41.238%
Caa-C	17.534%	27.634%	35.913%	42.597%	47.854%	51.384%	53.967%	56.768%	60.881%	66.441%
Investment Grade	0.069%	0.208%	0.397%	0.616%	0.834%	1.045%	1.237%	1.409%	1.564%	1.710%
Speculative Grade	4.478%	9.005%	13.407%	17.285%	20.622%	23.565%	26.146%	28.317%	30.181%	31.826%
All Corporate	1.594%	3.184%	4.689%	5.979%	7.042%	7.939%	8.690%	9.300%	9.803%	10.234%

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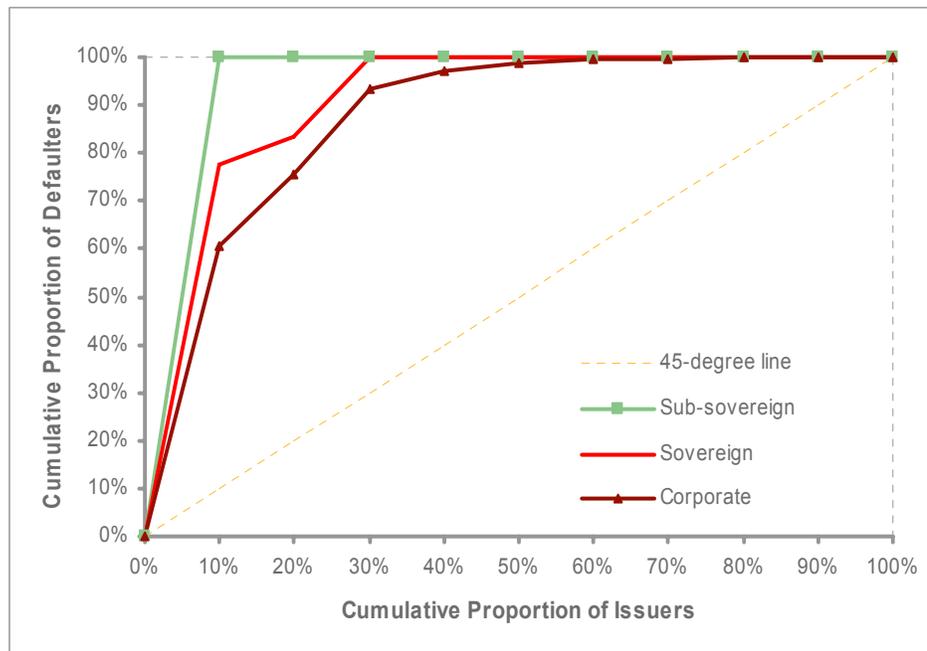
Rating Performance Measures

One of the desirable properties of an effective rating system is its ability to separate low risk from high credit risk issuers. A key metric used by Moody's to measure the relative accuracy of a rating system is the cumulative accuracy profile (CAP). The CAP curve is constructed by plotting, for each rating category, the proportion of defaults accounted for by issuers with the same or lower rating against the proportion of all issuers with the same or lower rating.

Exhibit 9 presents the one-year-ahead horizon CAP curves for sub-sovereign, sovereign, and corporate ratings observed between 1983 and 2007. The CAP curve is useful for making visual assessment of the information content embedded in the relative ranking of credit risk provided by a set of ratings. A rating system that conveyed no information about default risk would lie on the 45-degree line. The further the CAP curve bows toward the top left corner, the greater the fraction of all defaults that can be accounted for by the lowest rating categories.

The CAP plots reveal that historically sub-sovereign ratings have done a good job rank-ordering one-year default risk. For example, all sub-sovereign defaulters had ratings of Ba2 or lower within one year of default. More generally, the 6.3% of the lowest-rated sub-sovereign issuers have accounted for 100% of the defaults. The CAP plots also indicate that sub-sovereign ratings have modestly outperformed sovereign and corporate ratings in rank-ordering default risk.

Exhibit 9: One-Year Cumulative Accuracy Profiles (1983-2007)



A summary measure of rating accuracy that compresses the information depicted in the CAP curve into a single summary statistic is the accuracy ratio (AR). The AR is the ratio of the area between the CAP curve and the 45-degree line to the total area above the 45-degree line. The AR lies between minus one and plus one (or -100% and +100%), similar to a correlation statistic. As can be inferred by the CAP curves in Exhibit 9, Moody's sub-sovereign ratings have had modestly higher accuracy ratios than their sovereign and corporate counterparts. The historical average one-year accuracy ratio for the sub-sovereign ratings is 97.5% for the 1983-2007 period, compared to 94.3% for sovereign ratings and 90.5% for corporate ratings during the same period.

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Appendix I: Default History of U.S. Municipal Bonds

This study does not cover debt issued by state and local governments in the United States. U.S. municipal bonds have historically been rated on a different rating scale than the global rating scale used to rate non-U.S. sub-sovereigns (and sovereigns, corporates, and structured finance securities). As a result, default rates by rating level for U.S. and non-U.S. sub-sovereign governments are not directly comparable. If the two samples were to be combined, the results would be dominated by the performance of the U.S. municipal sector because it is comprised of approximately 18,000 rated issuers.

The credit performance of regional and local governments may differ within and outside the United States because U.S. state and local governments commonly issue debt with a "general obligation pledge," which is stronger than the senior unsecured pledge of most non-U.S. regional and local governments. The general obligation pledge effectively compels an issuer not only to pay debt service from its current resources, but if necessary, to levy new taxes sufficient to pay the debt.

Defaults of Moody's-rated U.S. municipal bonds have been extremely rare, with only 41 defaults occurring between 1970 and 2006. The cumulative 10-year default rate for Moody's-rated U.S. municipals is 0.1032%, as compared to 2.331% for non-U.S. sub-sovereigns. However, it is important to note that all but one of the U.S. defaults were by limited-purpose issuers such as hospitals or government-affiliated housing agencies, or for bonds with a narrow revenue pledge, which are not directly comparable to sub-sovereign governments. Only one Moody's-rated governmental issuer, Baldwin County, Alabama, has defaulted on a long-term general obligation bond since 1970, and it provided investors with a full recovery of missed interest just 15 days later.

A significant number of municipal bond transactions issued do not obtain ratings. In 2007, nearly 38% of the transactions that came to market were not rated.¹² An issuer may elect not to obtain a rating for its debt for a number of reasons. In particular, if the transaction is small or the municipality is an infrequent issuer, the cost of public disclosure and other requirements to obtain a rating and access the public markets may make these options unattractive. Furthermore, access to public markets may not be necessary, since issuers in some circumstances may be able to place small deals directly with banks (i.e. bank-qualified deals) or with other private investors.

There is evidence to suggest that, in general, issuers in the unrated municipal bond market may have higher levels of credit risk than rated issuers. While Moody's has not verified this data, *Income Securities Advisor*, an independent investment advisory and research firm, reported 1,311 defaults on unrated, tax-exempt bonds¹³ during the period from 1980 through October 2004 – a significantly higher number of defaults than the 41 defaults that occurred for Moody's-rated issuers from 1970-2006.

Looking further back in history, U.S. municipal bond defaults were much more common during the Great Depression era of the 1930s, when approximately 16% of outstanding municipal debt defaulted. Most of these issuers resumed payment when their finances improved later in the decade, and final loss to investors (excluding interest on interest) was a mere 0.5%. Since the Depression, there have been many improvements in municipal finance that make a repeat of such an experience unlikely, including often multi-year financial planning and adherence to standardized financial reporting by most municipalities.

For more information on U.S. municipal defaults, please refer to Moody's report "The U.S. Municipal Bond Rating Scale," dated March 2007 (report number 102249).

¹² Interactive Data Corporation and Bloomberg.

¹³ The reported number of defaults of unrated bonds includes "technical defaults" (i.e. violations of covenants) as well as payment defaults, whereas Moody's studies capture defaults of rated securities only in the event of actual payment defaults. As noted, the data has not been verified by Moody's and we cannot assess its accuracy or validity.

Rating Migration and Default Rates of Non-U.S. Sub-Sovereign Debt Issuers, 1983-2007

Appendix II: Sub-Sovereign Migration Rates

Average Three-Year Migration Rates (1983-2007)

Sub-Sovereign Issuers									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	71.08%	21.25%	2.70%	0.03%	0.00%	2.20%	0.00%	0.00%	2.74%
Aa	10.99%	75.47%	8.11%	0.39%	0.51%	0.21%	0.35%	0.00%	3.97%
A	1.31%	24.05%	66.55%	2.45%	0.74%	0.23%	1.42%	0.00%	3.25%
Baa	0.79%	13.06%	21.11%	52.64%	5.94%	1.06%	0.00%	0.00%	5.41%
Ba	0.00%	5.73%	1.91%	21.00%	28.88%	8.59%	10.26%	7.16%	16.47%
B	2.54%	12.08%	2.12%	5.30%	11.02%	42.37%	5.72%	7.84%	11.02%
Caa-C	0.00%	6.67%	0.00%	5.56%	14.44%	10.74%	22.59%	22.59%	17.41%

Sovereign Issuers									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	82.85%	7.30%	0.62%	3.11%	4.70%	1.34%	0.00%	0.00%	0.08%
Aa	18.58%	71.64%	3.50%	1.10%	3.67%	0.49%	0.00%	0.00%	1.02%
A	3.44%	9.52%	68.48%	8.84%	5.44%	3.36%	0.44%	0.00%	0.48%
Baa	2.45%	1.42%	28.04%	51.80%	11.21%	3.29%	0.18%	0.00%	1.60%
Ba	0.62%	1.71%	4.83%	20.66%	54.89%	12.49%	3.33%	0.96%	0.50%
B	2.70%	4.36%	0.80%	6.83%	15.15%	61.96%	3.38%	3.16%	1.66%
Caa-C	0.00%	9.95%	0.00%	0.00%	5.97%	48.26%	11.94%	23.88%	0.00%

Corporate Issuers									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	69.17%	17.12%	1.91%	0.01%	0.10%	0.00%	0.00%	0.00%	11.68%
Aa	1.79%	67.80%	14.73%	1.32%	0.30%	0.11%	0.00%	0.04%	13.91%
A	0.13%	5.23%	68.67%	10.11%	1.65%	0.52%	0.09%	0.21%	13.40%
Baa	0.13%	0.58%	9.53%	63.59%	6.64%	2.20%	0.71%	0.83%	15.79%
Ba	0.01%	0.09%	1.11%	9.98%	43.68%	12.34%	1.55%	4.77%	26.46%
B	0.02%	0.07%	0.27%	1.06%	7.54%	43.17%	6.07%	12.73%	29.07%
Caa-C	0.00%	0.01%	0.05%	0.38%	1.53%	8.84%	27.57%	28.71%	32.90%

Rating Migration and Default Rates of Non-U.S. Sub-Sovereign Debt Issuers, 1983-2007

Average Five-Year Migration Rates (1983-2007)

Sub-Sovereign Issuers									
Rating from:	Rating to:							Default	WR
	Aaa	Aa	A	Baa	Ba	B	Caa-C		
Aaa	53.14%	33.09%	6.40%	0.37%	0.13%	4.14%	0.00%	0.00%	2.74%
Aa	16.37%	64.18%	12.18%	1.23%	0.95%	0.51%	0.60%	0.00%	3.98%
A	3.79%	34.33%	50.84%	4.13%	1.37%	0.46%	1.85%	0.00%	3.25%
Baa	0.79%	28.76%	24.54%	33.25%	5.67%	1.58%	0.00%	0.00%	5.41%
Ba	1.67%	2.86%	5.73%	26.73%	27.68%	5.49%	6.21%	7.16%	16.47%
B	5.72%	21.19%	3.60%	5.93%	7.84%	34.53%	2.33%	7.84%	11.02%
Caa-C	0.00%	13.70%	3.33%	8.15%	3.33%	17.04%	14.44%	22.59%	17.41%

Sovereign Issuers									
Rating from:	Rating to:							Default	WR
	Aaa	Aa	A	Baa	Ba	B	Caa-C		
Aaa	70.06%	9.99%	2.99%	5.43%	8.25%	3.19%	0.00%	0.00%	0.08%
Aa	29.54%	55.75%	3.87%	2.28%	7.05%	0.49%	0.00%	0.00%	1.02%
A	7.28%	12.76%	50.00%	13.96%	7.68%	7.40%	0.44%	0.00%	0.48%
Baa	4.23%	4.01%	34.58%	33.64%	14.95%	5.74%	1.25%	0.00%	1.60%
Ba	1.79%	4.41%	9.33%	25.78%	37.11%	16.87%	3.25%	0.96%	0.50%
B	3.87%	8.90%	2.43%	13.40%	17.68%	47.08%	1.79%	3.18%	1.68%
Caa-C	0.00%	9.95%	0.00%	1.00%	25.87%	33.33%	5.97%	23.88%	0.00%

Corporate Issuers									
Rating from:	Rating to:							Default	WR
	Aaa	Aa	A	Baa	Ba	B	Caa-C		
Aaa	57.32%	19.62%	4.23%	0.17%	0.01%	0.05%	0.02%	0.06%	18.54%
Aa	2.11%	57.51%	16.22%	2.48%	0.36%	0.12%	0.04%	0.13%	21.03%
A	0.13%	5.42%	59.52%	11.14%	2.17%	0.70%	0.16%	0.38%	20.38%
Baa	0.19%	0.77%	8.87%	56.00%	5.96%	2.38%	0.54%	1.47%	23.82%
Ba	0.01%	0.15%	1.47%	8.68%	31.95%	9.83%	1.52%	7.51%	38.86%
B	0.04%	0.05%	0.22%	0.99%	4.88%	31.79%	3.90%	17.01%	41.11%
Caa-C	0.00%	0.00%	0.00%	0.27%	1.08%	4.01%	20.89%	32.44%	41.31%

Rating Migration and Default Rates of Non-U.S. Sub-Sovereign Debt Issuers, 1983-2007

Average One-Year, Three-Year, and Five-Year Sub-Sovereign Migration Rates Adjusted for the End-2006 Joint Default Analysis (JDA) Methodology-Induced Changes (1983-2007)

Sub-Sovereign Issuers (1-year, adjusted for JDA methodology changes)									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	92.21%	5.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.74%
Aa	3.17%	91.30%	1.55%	0.00%	0.00%	0.00%	0.00%	0.00%	3.98%
A	0.03%	7.47%	88.89%	0.00%	0.34%	0.00%	0.00%	0.00%	3.27%
Baa	0.00%	0.00%	7.89%	83.82%	2.89%	0.00%	0.00%	0.00%	5.39%
Ba	0.00%	0.00%	0.00%	8.15%	58.51%	6.00%	3.60%	7.19%	16.55%
B	0.00%	0.00%	0.00%	0.00%	6.36%	65.04%	9.75%	7.84%	11.02%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	6.30%	53.70%	22.59%	17.41%

Sub-Sovereign Issuers (3-year, adjusted for JDA methodology changes)									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	69.88%	21.43%	2.82%	0.31%	0.74%	2.05%	0.00%	0.00%	2.76%
Aa	12.29%	74.22%	8.19%	0.54%	0.22%	0.22%	0.36%	0.00%	3.98%
A	1.32%	24.84%	66.26%	1.90%	0.75%	0.23%	1.44%	0.00%	3.27%
Baa	0.79%	13.03%	21.05%	52.76%	5.92%	1.05%	0.00%	0.00%	5.39%
Ba	0.00%	5.76%	1.92%	21.10%	28.54%	8.63%	10.31%	7.19%	16.55%
B	2.54%	12.08%	2.12%	5.30%	11.02%	42.37%	5.72%	7.84%	11.02%
Caa-C	1.48%	5.19%	0.00%	5.56%	14.44%	10.74%	22.59%	22.59%	17.41%

Sub-Sovereign Issuers (5-year, adjusted for JDA methodology changes)									
Rating from:	Rating to:								
	Aaa	Aa	A	Baa	Ba	B	Caa-C	Default	WR
Aaa	51.40%	33.17%	6.65%	0.62%	1.55%	3.85%	0.00%	0.00%	2.76%
Aa	18.40%	62.60%	12.09%	1.40%	0.38%	0.53%	0.62%	0.00%	3.99%
A	3.82%	34.49%	51.12%	3.59%	1.38%	0.46%	1.87%	0.00%	3.27%
Baa	0.79%	29.34%	23.82%	33.42%	5.66%	1.58%	0.00%	0.00%	5.39%
Ba	1.68%	2.88%	5.76%	26.86%	27.34%	5.52%	6.24%	7.19%	16.55%
B	5.72%	21.19%	3.60%	5.93%	7.84%	34.53%	2.33%	7.84%	11.02%
Caa-C	10.37%	3.33%	3.33%	8.15%	3.33%	17.04%	14.44%	22.59%	17.41%

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Appendix III: Defaulted Sub-Sovereign Debt

Defaulting issuer	Debt type	Issue date	Maturity date	Coupon	Initial rating	Issue default date	Default rating	Default amount (\$MM)	Recovery price	Currency
Nizhniy Novgorod, Oblast	Bond	10/3/1997	4/3/2005	8.75	NR	10/15/1998	NR	\$100.00	\$27.50	USD
Tucuman, Province of	Bond	11/15/1993	11/15/2003	3	NR	12/27/2001	NR	\$7.00		USD
Tucuman, Province of	Bond	8/14/1997	8/1/2004	9.45	B1	12/27/2001	Ca	\$200.00	\$20.00	USD
Tucuman, Province of	Bond	8/20/1997	8/22/2007	FLT	NR	12/27/2001	NR	\$137.50		USD
Buenos Aires, Province of	Bond	9/18/1996	10/23/2003	7.75	B1	1/30/2002	Ca	\$117.06	\$22.50	CHF
Buenos Aires, Province of	Bond	7/6/1998	7/12/2002	7.875	Ba3	1/30/2002	Ca	\$86.20		EUR
Buenos Aires, Province of	Bond	11/25/1998	10/23/2003	7.75	Ba3	1/30/2002	Ca	\$43.90		CHF
Buenos Aires, Province of	Bond	3/10/1999	3/15/2002	12.5	Ba3	1/30/2002	Ca	\$150.00	\$20.00	USD
Buenos Aires, Province of	Bond	4/14/1999	5/6/2004	9.75	Ba3	1/30/2002	Ca	\$150.86	\$21.50	EUR
Buenos Aires, Province of	Bond	6/24/1999	7/14/2006	10.625	Ba3	1/30/2002	Ca	\$129.31	\$27.90	EUR
Buenos Aires, Province of	Bond	2/17/2000	3/3/2005	10.75	B1	1/30/2002	Ca	\$301.71	\$25.00	EUR
Buenos Aires, Province of	Bond	3/15/2000	3/29/2010	13.25	B1	1/30/2002	Ca	\$350.00		USD
Buenos Aires, Province of	Bond	5/24/2000	5/27/2003	4.25	B1	1/30/2002	Ca	\$22.56		JPY
Buenos Aires, Province of	Bond	6/19/2000	6/30/2004	10	B1	1/30/2002	Ca	\$86.20	\$22.50	EUR
Buenos Aires, Province of	Bond	7/5/2000	7/5/2004	10	B1	1/30/2002	Ca	\$86.20	\$22.50	EUR
Buenos Aires, Province of	Bond	7/13/2000	8/1/2003	12.75	B1	1/30/2002	Ca	\$100.00	\$20.00	USD
Buenos Aires, Province of	Bond	8/14/2000	9/5/2007	13.75	B1	1/30/2002	Ca	\$160.00	\$15.00	USD
Buenos Aires, Province of	Bond	8/17/2000	9/6/2002	9	B1	1/30/2002	Ca	\$86.20		EUR
Buenos Aires, Province of	Bond	12/20/2000	12/27/2007	FLT	B2	1/30/2002	Ca	\$463.40		USD
Buenos Aires, Province of	Bond	1/9/2001	1/30/2003	10.25	B1	1/30/2002	Ca	\$258.61		EUR
Buenos Aires, Province of	Bond	2/1/2001	2/23/2004	10.375	B1	1/30/2002	Ca	\$258.61	\$33.00	EUR
Buenos Aires, Province of	Bond	2/27/2001	3/11/2002	0	NR	1/30/2002	NR	\$100.00		USD
Buenos Aires, Province of	Bond	9/21/2001	9/28/2006	FLT	Caa3	1/30/2002	Ca	\$74.00		USD
Buenos Aires, Province of	Private Placement				B1	1/30/2002	Ca	\$128.11		USD
Buenos Aires, Province of	Private Placement				B1	1/30/2002	Ca	\$28.68		USD
Mendoza, Province of	Bond	8/22/1997	9/4/2007	10	B1	3/4/2002	Ca	\$250.00	\$20.00	USD
Buenos Aires, City of	Bond	4/3/1997	4/11/2007	11.25	B1	4/11/2002	Ca	\$250.00	\$15.00	USD
Buenos Aires, City of	Bond	5/12/1997	5/28/2004	10.5	B1	4/11/2002	Ca	\$53.76		ARS
Buenos Aires, City of	Bond	5/23/1997	5/23/2004	10	B1	4/11/2002	Ca	\$45.63		ITL
Buenos Aires, City of	Bond	6/10/1997	6/10/2005	9.5	B1	4/11/2002	Ca	\$31.49		ITL
Buenos Aires, City of	Bond	6/14/2000	7/7/2003	9.5	B1	4/11/2002	Ca	\$88.36	\$30.00	EUR
Formosa, Province of	Bond	4/1/1999	4/1/2015	Libor	NR	7/13/2005	NR	\$5.00		USD

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Appendix IV: Unrated Sub-Sovereign Defaults

A survey of unrated regional and local government defaults reveals eight defaults in five developed countries and multiple defaults in another six emerging market countries. The details surrounding these defaults are described in the table below.

When they do occur, defaults have been triggered by one or a combination of five main factors: 1) exogenous shocks of a macroeconomic nature; 2) endogenous conditions, often linked to mismanagement of financial resources and sensitivity to the local economic environment; 3) unwillingness to pay and political risks; 4) moral hazard; and 5) a weak institutional framework. In emerging countries, exogenous factors have been comparatively more likely to contribute to defaults, while in advanced economies sub-sovereigns have tended to be more vulnerable to endogenous factors. Inappropriate institutional frameworks and ultimately unwillingness to pay by sub-sovereigns have played a major role in defaults in both emerging countries and in advanced economies. In the developed countries, strong preventative and supportive legal and financial frameworks have reduced the risk of financial crisis at the sub-sovereign level.

Only one of the advanced economies default cases have involved bond defaults, while defaults in emerging markets have included bond defaults more often. The recovery rate in the event of default has varied significantly. Cases of this study suggest extraordinarily high recovery rates in many instances, but also extremely low recovery rates in other situations. Given the limited amount of empirical evidence, it is difficult to draw any hard conclusions, but it appears that more recently recovery rates have been, on average, higher in advanced economies than in emerging markets: apart from the two default cases in the United Kingdom in 1989 and 1991, all other subsequent defaults in advanced countries have garnered high or very high recovery rates, while recovery rates in the emerging markets have been more variable.

Default Date	Regional and Local Government Issuer 1/	Country	Type of Debt Affected and Amount	Default Circumstances	Outcome	Estimated Recovery Rate 2/
Feb-89	West London Council: Hammersmith and Fulham	United Kingdom	Interest rate swaps	* 'Ultra vires': entering into swap agreements and swap options that were a posteriori qualified illegal and that put the council finance under pressure following interest rates rise	Counterparties never recovered amounts due under the swap agreements.	Very low
1991	Allderdale / Waltham Forest	United Kingdom	Bank loans	* 'Ultra vires': exceeding statutory borrowing limits and providing illegal guarantees * Mismanagement: inadequate investment planning	Court rulings prevented the bank from recovering its £6 million loan to Allderdale and £11 million loan to Waltham Forest.	Very low
1990-1991	City of Angouleme	France	Bank loans	* Unwillingness to pay by new administration following municipal elections * Mismanagement: excessive current expenditures, excessive investment spending * Unchecked off-balance sheet liabilities	Default lasted less than one year; FRF 319 million of interest payment were rescheduled under the first agreement with its major creditors; extended maturity of loans and reduced interest payments under subsequent refinancing agreements.	High
1992	City of Briançon	France	Bank loans; FRF 85.5 million of unpaid long-term debt interest and principal payments and FRF 50 million of unpaid short-term debt	* Unwillingness to pay by new administration following municipal elections * Mismanagement: excessive current expenditures, excessive investment spending	Default lasted less than one year; debt restructuring included extension of loan maturity up to 25 years, a three-year postponement of interest payment, as well as a reduction of the average interest rate on the refinanced amount.	High

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Default Date	Regional and Local Government Issuer 1/	Country	Type of Debt Affected and Amount	Default Circumstances	Outcome	Estimated Recovery Rate 2/
1992	Region of Puglia	Italy	Bank loans totaling €1.1 billion	* Inadequate supervision * Mismanagement and dysfunctional accounting framework (unaccounted off balance-sheet liabilities)	Default lasted three years; series of debt restructurings from 1995 to 1999 significantly reduced interest owed. Full recovery of principal is expected.	High
29-Sep-93	City of Malaga	Spain	Syndicated loan with various Spanish institutions	* Unwillingness to pay: the city's executives intended to put the Spanish/regional governments under pressure in order to speed up transfers to the city	Debt moratorium lasted only 10 days; banks experienced no loss.	Very high
1996-2001	18 Hungarian municipalities (mostly villages) have filed under the Municipal Insolvency Law adopted in 1996: Bakonszeg (08.1996, 06.2000), Batorliget (08.1996), Csany (08.1996), Egerszolat (08.1996), Paty (08.1996), Nagocs (09.1996, 08.2000), Kacs (12.1996), Domahaza (09.1997), Somogyudvarhely (01.1998), Sostofalva (11.1998), Sata (02.1999), Sorokpolany (02.1999), Csepreg (03.1999), Somogyfajsz (07.1999), Gilvanfa (08.2000), Atkar (09.2001)	Hungary	Loans and bonds; defaulted debts were in the range of HUF 6-400 million per issuer	* Mismanagement and excessive borrowing to finance while elephant projects after the municipalities were granted fiscal autonomy in 1990 * Inadequate supervision	There was no bailout by the government. The debt adjustment process lasted between 7 months and 3.5 years from the date of filing. Ten cases resulted in work-out agreements, seven in liquidation, and one case was in progress. Three of the work-out agreement cases resulted in 100% of creditor claims satisfied (Batorliget, Csany, and Egerszolat), one agreement case in 24% (Nagocs 1996), and another one in 2% of claims satisfied (Atkar). Two liquidations resulted in 0% recovery (Bakonszeg 2000 and Nagocs 2000), one in 1% recovery (Bakonszeg 1996), and one in 57% of claims satisfied (Paty).	Medium on average, but extremely high variance
1998	Municipality of Leukerbad	Switzerland	Series of loans from banks, insurance companies and other institutions; the bulk of the municipality's SFR 344 million debt at the time.	* Mismanagement: excessive investment spending in several tourism joint public-private investment projects which never generated the expected returns * Inadequate supervision: controlling authorities (municipal and cantonal) bypassed or failed to stop the local authorities from mismanaging the municipality's finances; lack of transparency; unhealthy link between political and business interests	The municipality defaulted on debt obligations linked to the financing of the projects and was subsequently placed under "forced administration" by the canton on 10 September 1999. Dispute in court for several years. The federal court ruled that a canton (Valais) did not have the obligation to bail out a delinquent commune (Leukerbad).	...
1-May-98	City of Odessa	Ukraine	One-year domestic bond with principal UAH 61 million and UAH 30.5 million associated interest, issued on 1 May 1997, to be paid out 1 May-15 June 1998	* Mismanagement: mismatch between the short-term maturity of the bond issued and the long-term revenue potential anticipated from the investments. * Unwillingness to pay by the new administration following the municipal elections: The new administration defaulted on its debt obligations to large investors and redeemed less than UAH 1.0 million of its debts that were held by individuals	There was no bailout by the government. The new administration transferred UAH 250,000 to repay city residents, but not investors outside of Odessa. On 1 November 1998 a principal payment of UAH 456,000 and interest payments of UAH 228,000 were made. A minority of creditors sued the City Council until they were paid in 2004. The majority of creditors agreed on a restructuring in 2000, which took the form of two bank loans to repay principal, interest, and fines on the defaulted bond. Debt maturity was extended to 8 years and the city resumed payments. By December 2005, all debts previously defaulted on were almost fully repaid (UAH 1.98 million were still outstanding).	Very high

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Default Date	Regional and Local Government Issuer 1/	Country	Type of Debt Affected and Amount	Default Circumstances	Outcome	Estimated Recovery Rate 2/
1998	Sector wide: more than 50 Russian regions' defaults on domestic argobonds, plus many defaults on other domestic bonds and on bank loans, including the Oblasts of Irkutsk, Kaliningrad, Leningrad, Lipetsk, Novgorod, Novosibirsk, Omsk, Orenburg, and Yaroslavl, the Krai of Khabarovsk, and the Krai of Primorsk.	Russian Federation	Domestic agrobonds valued between RUB 1-2 billion; other domestic bonds; and international bank loans; more than RUB 22 billion total debt, about two-thirds in foreign currency	* Macro-economic shock: the devaluation of the ruble plus general deterioration in the Russian economy put regional revenues and expenditures under pressure * Unwillingness to pay: the regions refused to assume some of the debt obligations "offloaded" to them by the Central Government	According to market data, only about half of the regions that defaulted on their agrobonds had made partial or full repayment by 2002. Most other debts were restructured in 1999-2002. Recovery rates were in the 33-75% range. Generally, external debt obligations, such as eurobonds and bank loans, were restructured more quickly. The restructuring of agro-bonds, often overdue because of unwillingness to pay, went on for years.	Medium
Jan-99	State of Chihuahua	Mexico	Debt guaranteed by the state for its housing institute (IVIECH); principal amount of the loan was Pesos\$121 million	* Dispute between state and Banobras over interpretation of the terms of a loan to IVIECH	The credit dispute was resolved in May 2002 and the outstanding loans were restructured for Pesos \$378 million, a sum net of a partial write-off of the disputed interest amount. Banobras wrote off Pesos \$123 million of interest payments from their originally calculated amount of Pesos \$501 million.	High
Jan-99	Minas Gerais	Brazil	R\$18.6 B; 95% owed to the Federal government financial institutions; 3.2% multilateral loans; and 1.2% Eurobonds	* Macro-economic shock: general deterioration in the Brazilian economy causing severe fiscal stress * Unwillingness to pay following state elections	Debt service moratorium declared by Minas lasted 13 months but did not lead to nonpayments on the Eurobonds and multilateral loans because the federal government intervened and paid the amounts due. Nonpayment occurred on loans due to the federal government, but the amounts due were subsequently recovered by withholding fiscal transfers due to Minas. Debt owed to the federal government however was restructured to ease the state's burden.	Very high
2001-2002	Sector wide: including the provinces of Chaco, Rio Negro, San Juan, Misiones, and Santiago del Estero.	Argentina	Foreign and domestic currency-denominated bonds	* Macro-economic shock: leading to implosion of the revenue base and liquidity crisis	Most debts restructured over 2002-2005. Recovery rates were generally low.	Low
2003	Municipality of Benito Juarez (Cancun)	Mexico	Bank loans	* Political crisis * Mismanagement and excessive spending	Missed 2 payments on bank loans in 2003, which were fully cured within the grace period. When federal transfers were ceased as a consequence of the political crisis, another bank loan payment was missed on 30 July 2004, which was later paid in full in August 2004, with interest penalty. Additionally, the city had a small Ps. 6 million housing agency loan that was in default since mid-2003, which was repaid in full with penalties in the first half of 2008.	Very high

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Default Date	Regional and Local Government Issuer 1/	Country	Type of Debt Affected and Amount	Default Circumstances	Outcome	Estimated Recovery Rate 2/
Dec-06	City of Taranto	Italy	Loan and domestic bonds in the amount of Euro 330 million	* Mismanagement and poor performance created a liquidity problem which led to missed payments on both loan and domestic bond obligations: short-falls in tax collection have resulted in revenue-expenditure mismatches	Taranto declared financial distress in October 2006, and missed Euro 12 million debt payments (principal and interest) due in December 2006. There was no bailout by the government. After the resumption of 'normal' operations in Spring 2007, Taranto has continued to repay its Euro 65 million outstanding loan installments with Cassa Depositi e Prestiti on a timely basis. A distressed exchange with Banca OPI - now incorporated in Banca Innovazione, Infrastrutture e Sviluppo (BIIS) - was ongoing in May 2008, of outstanding debt of about Euro 240 million. Under the distressed exchange, BIIS's principal is being repaid according to the bond amortization plan, while interest due during 2007-2009 has been frozen and is to be repaid afterwards.	Expected very high, in progress

1/ Yubari City in Japan experienced a period of extreme financial stress in 2006 and 2007 which led it to apply for status as a rehabilitation entity under the Japanese system (the city's debt included Yen 35.3 billion loans and Yen 27.7 billion outstanding local government bonds). The financial distress was a result of mismanagement and excessive investment. The designation of rehabilitation entity was assigned in March 2007 and required Yubari to submit a fiscal reform plan which detailed how it would meet all of its financial obligations. Furthermore, Yubari is now under central government control and, in effect, loses its fiscal autonomy. Prior to the designation, media reports indicated that Yubari has approached its banks to reduce the interest rate charged on existing loans. As Yubari is not a Moody's rated local government, we do not possess complete information as to the conditions surrounding this reported request. As such, we cannot confirm that an event of default, as defined by Moody's, took place. In any event, following the designation as a rehabilitation entity, Yubari continues to repay all debt due in full and debt forgiveness for the city is not envisaged.

2/ Recovery rates are estimates and correspond roughly to the following ranges: very low (0-20%), low (20-40%), medium (40-60%), high (60-80%), and very high (80-100%). "..." indicates that data is not available.

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Appendix V: Rating Histories of B and Caa-C Rated Sub-Sovereigns

The rating history of regional and local government issuers rated in the B and Caa-C categories is unusual compared to corporate and sovereign issuers, and this unusual rating history accounts for the unusual pattern that we observe in the cumulative default rate table in Exhibit 8. What we observe is ultimately due to the fact that rated defaults in our sample have happened in only two countries, Russia and Argentina. The regional and local government defaults have been related to the Russian and Argentinean sovereign defaults and have been clustered in time around 1998 and 2001-2002 respectively.

There are 24 issuers in our sample that have been rated in the B category at some point during the 1983-2007 period. Fifteen of these B-rated issuers have been downgraded into the Caa-C category, and 10 of them have defaulted after being in the Caa-C category (6 Russian and 4 Argentinean issuers). This pattern holds for 10 out of the 12 defaults that we have observed – issuers spent some time in the B category, then spent some time in the Caa-C category, and then ultimately defaulted (this typical rating history is illustrated in the table below). The other 9 B-rated issuers have the following history: 4 of them had their ratings eventually withdrawn, 3 of them remained as B-rated, one issuer was upgraded, and there was one default directly from a B rating.

On the other hand, there are 20 issuers that have been rated in the Caa-C category at some point in time during the 1983-2007 period – 11 Russian and 9 Argentinean issuers. Fifteen of them (all Russian and 4 of the Argentinean issuers) have previously spent some time in the B category, before being downgraded into the Caa-C category (as described in the previous paragraph), while the other 5 Argentinean issuers have originally been rated in the Caa-C category in 2004, two years after the Argentinean sovereign default (only one issuer has defaulted subsequently). Of the 15 issuers, 11 ultimately defaulted, 2 were upgraded, and the other 2 had their ratings ultimately withdrawn.

Typical Rating Histories of Caa-C Rated Sub-Sovereign Issuers

Issuer 1			Issuer 2		
Rating Date	Rating	Default Date	Rating Date	Rating	Default Date
1/15/1998	Ba2		8/6/1997	B1	
3/11/1998	Ba3		3/28/2001	B2	
5/29/1998	B1		7/13/2001	B3	
8/13/1998	B2		7/26/2001	Caa1	
8/21/1998	Caa1		10/15/2001	Caa3	
9/2/1998	Caa3	10/22/1998	12/20/2001	Ca	3/4/2002
12/4/2001	WR		8/20/2003	Caa1	

How does this rating history explain the pattern of the default rates we observe in Exhibit 8?

First, all Caa-C rated issuers that have defaulted, have defaulted within a one or two-year horizon. Therefore, the marginal default rate for the Caa-C rating category in Year 3 and after is zero, and the cumulative default rate in Year 3 and beyond remains equal to the Year 2 default rate.

Second, even though there is only one B-rated issuer that has defaulted directly while being rated in the B category, there are issuers for which the downgrade into the Caa-C category and the subsequent default have happened quickly and within a one-year horizon (Issuer 1 in the table above is an example), therefore the measured Year 1 default rate for the B category is relatively high.

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Third, as all but two of the defaulters have previously been rated in the B category, the default rate for the B category rises very fast as the time horizon increases, thus overtaking the Caa-C category default rate in longer time horizons.

Finally, as the Caa-C defaults are clustered around two years – 1998 and 2001-2002, the years of the Russian and Argentinean sovereign defaults – the average Caa-C default rate is an average of the extremely high default rates in the cohorts capturing 1998 and 2001-2002, and the zero default rates in all other cohorts.

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Rating Migration and Default Rates of Non-U.S. Sub-Sovereign Debt Issuers, 1983-2007

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