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FUTURE FOR
BANKERS:
PROFESSIONAL
DEVELOPMENT

MANAGING TALENT AND
RISK: WHERE THOU
SHALL PROSPER

BOLSTERING RISK MANAGEMENT

DOES BETTER
GOVERNANCE
MEAN
SAFER BANKS?



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RIDING THE
SILVER TSUNAMI

**BANKING
IN THE
SHADOWS**





*A Best Practice
Approach to Modelling*
**Sovereign
Defaults**

RATHER THAN RELYING ON LEGACY CREDIT RATINGS TO ASSESS SOVEREIGN CREDIT RISK, WISE RISK MANAGERS MAY WANT TO MIGRATE TOWARDS MODERN REDUCED FORM DEFAULT PROBABILITIES, WHICH ARE JUST AS IMPORTANT IN ASSESSING SOVEREIGN RISK AS THEY ARE FOR PUBLIC FIRMS, SMALL BUSINESSES, AND RETAIL BORROWERS.



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any investors who in 2006 would have said they had no exposure to sovereign risk now find themselves in a much different position. With the Euro crisis, effective nationalisation of large financial institutions in the US and the UK, and the invasion of the Ukraine by Russia, sovereign default risk is now a critical issue. This article explains the best practice differences between modelling sovereign default and the default risk of more traditional retail and corporate counterparties.

Sovereign default risk is a key risk for many other reasons than recent government rescues of financial institutions and country bailouts in the Eurozone:

- Government bond markets represent some of the biggest counterparty exposures worldwide, particularly after the extensive deficit financing of the last six years
- Much of the financing of sovereign government debt is now being done by private sector lenders and other sovereigns, rather than multinational development institutions
- Cross-border financing is now the norm, not an exception, in today's capital markets

With the Euro crisis, effective nationalisation of large financial institutions in the US and the UK, and the invasion of the Ukraine by Russia, sovereign default risk is now **A CRITICAL ISSUE.**

For all of these reasons, more institutions, both private and public, have sovereign default risk exposure than ever before.

The Problem with Ratings

Like corporate ratings, the ratings for sovereigns suffer from many problems when one is interested in very precise, quantitative risk assessment:

- Ratings lack an explicit maturity
- Ratings lack an explicit default probability
- Ratings change only infrequently, not in real time like bond spreads and credit default swaps
- Ratings are potentially subject to external political pressure, since governments have the power to regulate the raters. A case in point is the US government lawsuit against Standard & Poor's (S&P). Is it a coincidence that S&P was the only US rating agency to downgrade the US government's credit rating?
- Rating agency credit assessments of sovereigns are heavily weighted towards recent years and are almost exclusively focused on bonds, even though there are a wide range of borrowing tools used by sovereigns
- Ratings agencies are currently the victims of a crisis of confidence because of well-documented ratings inflation of structured products

An explicit default probability at key maturities is essential for the measurement of sovereign risk.

in the credit crisis and the obvious conflict of interest from the 'issuer pays' ratings model.

For these reasons, an explicit default probability at key maturities is essential for the measurement of sovereign risk.

Best practice in sovereign default modelling is very similar to best practice for modelling corporate defaults:

- The default database should be monthly to maximise the ability to measure the impact of macro factors on default risk.
- Defaults should include defaults on all borrowing instruments, not just bonds.
- There should be a full-term structure of default probabilities derived from the modelling exercise.
- There should be strict adherence to Basel II, III, and corporate default definitions. For many, being in arrears is 'OK' if the borrower is a sovereign government. Best practice calls 90 days past due a 'fail' whether the borrower is a sovereign or not.
- Macroeconomic drivers of default should be extensively examined for statistical significance.
- An extensive test regime to measure the accuracy of the prediction should be employed.

The database employed for the Kamakura Risk Information Services sovereign default service is a monthly database which goes back to 1980, 10 years further back into history than one can normally go with corporate default databases. The reason corporate default databases are limited to 1990 onward is the lack of daily stock price data that commercial users are legally allowed to use for modelling.

There are substantial differences between sovereign default analysis and corporate default analysis:

- Much less sovereign debt is rated, compared to corporate debt, so there is much less data to work with in modelling.
- 'Cross default' clauses in lending to sovereigns have historically been

much less common than in the corporate lending world. In fact, sovereigns have much more in common with retail borrowers, who might be in default on a credit card but not on their mortgage. Rating agencies, for example, have often ignored defaults on sovereign bank debt as long as bond holders were being paid as scheduled.

- Much sovereign default has a 'social welfare' purpose and this has in some cases affected whether or not an analyst would judge the borrowing to be in default.

Because of these considerations, many studies of sovereign default have dramatically under-counted the number of default events or erred dramatically in identifying the date of default. From an analytical point of view, there has historically been a strong feeling that one should treat sovereign defaulters kindly because analysts are rooting for the sovereign to succeed, hoping that the sovereign can lift its citizens from poverty. Unfortunately, inaccurately assessing the risk of sovereign lending has the opposite effect in the long run.

The definition and timing of defaults in the Kamakura Risk Information Services sovereign default database is the earliest of the following events:

- Being in arrears on interest by the

World Bank definitions.

- Being in arrears on principal by the World Bank definitions.
- Being in arrears on borrowings from the International Monetary Fund (IMF) by the IMF's definition.
- Declaration of the intent to default or actual default on any form of borrowing, regardless of the amount.
- Being rated D (default) or SD (selective default) by any major rating agency.
- Being 'rescued' by a multinational lender when, without the rescue, default was very highly likely.

A strict adherence to this definition of default results in much greater accuracy in the number and timing of defaults. One has to be careful to adjust for 'arrears' events that are clearly temporary, operational errors in funds transfers. Both South Africa and China, for example, were in arrears by the World Bank definitions in recent years but these represented failed wire



transfers or other operational issues, not true defaults.

For a database beginning in 1980, one has to remember that a country that was in default prior to 1980 will have no entry in the database until the original default was cured and the country becomes current on its borrowings, exactly as one would do for a corporate defaulter. Note that it is much more common for sovereigns than corporate for a given entity to be a 'serial defaulter' so it is necessary to track exits and entrances to the database by the same country very carefully.

Case Studies in Sovereign Defaults

In this section, it is demonstrated that the application of a 'cross-default' methodology to sovereign risk has a dramatic impact on the perceived timing of sovereign defaults. As Kamakura Senior Research Fellow Jens Hilscher says, "Corporations default because they have to. Sovereigns default because they want to." The implications of that 'desire to default' are explained in this section, and the role of macroeconomic factors as determinants of sovereign risk as analysed by Hilscher and Yves Nosbusch, authors of 'Determinants of Sovereign Risk: Macroeconomic Fundamentals and the Pricing of Sovereign Debt', is emphasised.

In what follows, for each example rescheduled debt (the blue bar) and interest and principal in arrears (the green bar) are plotted. The data graphed was provided by the World Bank. The 'failure' definition from the previous section is applied, so the failure date is the earliest of an arrears event, a declaration of default, a rescue, or a D or SD rating from a major rating agency.

Argentina is every economist's favourite serial defaulter, with sovereign defaults dating back more than 100 years. The fact that Argentina, in 2014, is in the throes of another potential default is a surprise to no one. Argentina is currently the fourth riskiest sovereign in the world when ranked by one-year default probability, as summarised in

Ticker	Company	Country	S&P Rating	KDP (%)	1 Day Change	1 Month Change
VEN	Venezuela	SOV	B-	69.18	-0.02	-0.42
BLZ	Belize	SOV	B-	55.65	-0.02	-0.87
TJK	Tajikistan	SOV		33.59	-0.02	0.72
ARG	Argentina	SOV	CCC+	33.41	-0.02	-0.34
HTI	Haiti	SOV		28.32	-0.02	-0.38
ZWE	Zimbabwe	SOV		25.38	-0.01	0.28
GEO	Georgia	SOV	BB-	20.65	-0.01	-0.42
MWI	Malawi	SOV	A	18.84	-0.01	-0.20
CPV	Cape Verde	SOV	B	18.32	-0.01	0.39
BIH	Bosnia and Herzegovina	SOV	B	16.81	-0.01	-0.37

Chart 1

ARGENTINA

Model	1 Month (%)	3 Months (%)	6 Months (%)	1 Year (%)	2 Years (%)	3 Years (%)	4 Years (%)
KDP-SD5	42.74	36.08	33.10	33.41	28.44	24.07	-

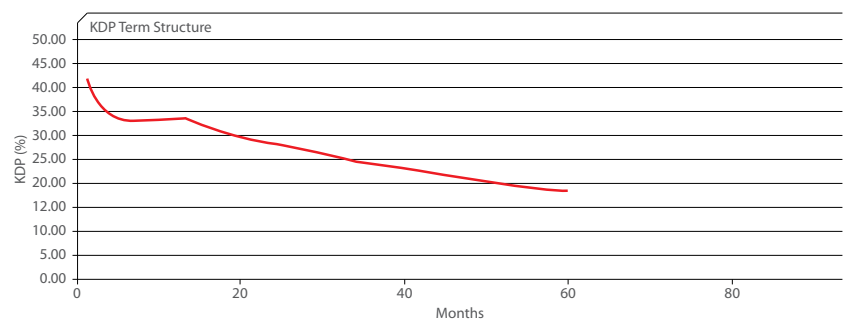


Chart 2

KAMAKURA CORPORATION, DEBT PAYMENTS IN ARREARS AND RESCHEDULED DEBT, ARGENTINA 1989 - 2004

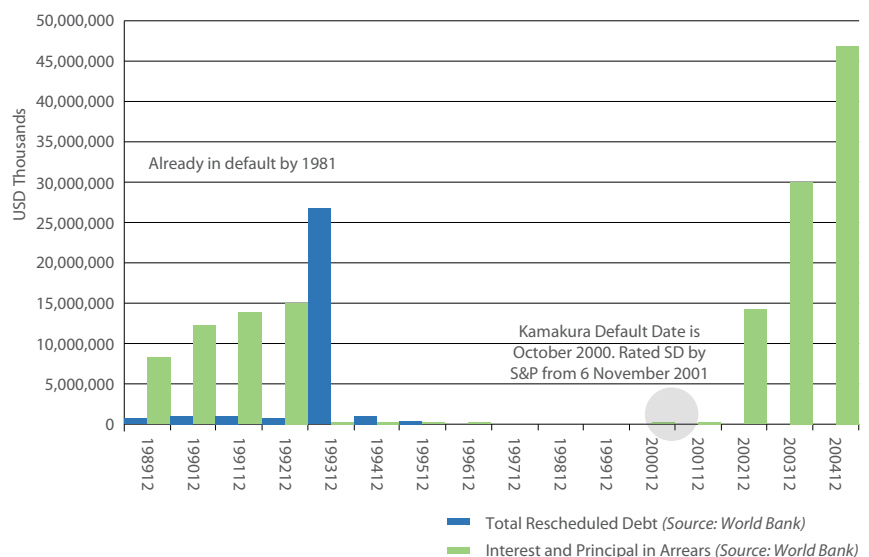


Chart 3

KDP = Kamakura Default Probability

KAMAKURA CORPORATION, DEBT PAYMENTS IN ARREARS AND RESCHEDULED DEBT, MEXICO 1980 - 2004

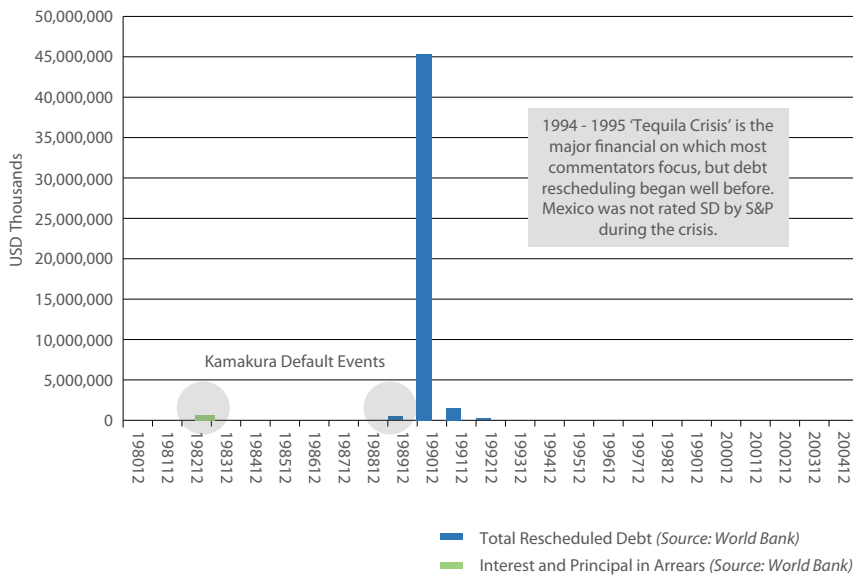


Chart 4

never rated D or SD during this period.

These examples show that the date of failure for sovereigns is strongly dependent on the definition of default. Indeed, the data makes it clear that “sovereigns default because they want to.” The data also shows that sovereigns tend to default on bank loans or loans from multinational lending organisations before they default on bonds. In the same vein, the traditional view of retail borrowers has been that they would selectively fail to pay on credit cards while they continued to pay on their mortgage.

In a world where the cross-default clauses are rapidly being added to sovereign loan agreements, recognising these earlier dates as ‘fails’ is essential in predicting future sovereign defaults. To ignore them would lower estimated default probabilities and cause a long delay in the prediction of a potential sovereign failure.

Is Domestic Currency Default a Possibility? Why Don't Sovereigns Just Print Money?

Unlike corporate default, where cross-default clauses make a default on yen borrowings the same as a default on dollar borrowings, the currency matters with sovereigns. It matters for two reasons. First, cross-default provisions are not as all pervasive. Secondly, the sovereign in theory has a right to just print money, as this Zimbabwean bill indicates.

This bill, presented to one of this article’s authors by Pieter Strydom at Ernst & Young in Johannesburg in 2008, was about 75% less valuable a week after receipt. Not long after, a third redenomination of the Zimbabwe dollar converted one trillion old dollars into one new Zimbabwe dollar. Since the government’s pledge to pay was no better than before, redenomination was abandoned in April 2009 and the US dollar became the main medium of exchange. Clearly, there are practical limits as to how much money can be printed before the government effectively ceases to function.

Chart 1.

Depending on the maturity, the term structure of default probabilities (annualised) for Argentina shows short-term default probabilities of more than 42% (**Chart 2**).

Chart 3 shows the key dates in an earlier era for Argentina, the 1980-2004 time period.

Because Argentina was already in default at the start of the period, it does not appear as a non-defaulter until 1995.

While the scale of the graph makes it hard to see, Argentina went into arrears by the World Bank definition in 2000, but it was not rated SD by S&P until November 6, 2001. Kamakura uses the earlier date as the default date.

Another interesting case is that of Mexico (**Chart 4**).

The country has had two arrears ‘failure events’, but neither date coincides with the much-publicised tequila crisis of 1994-1995. Mexico was





Vietnam's one-year default probability fell below 1% in 2009, a time when the US and much of Europe was engulfed in the credit crisis. After hitting that low point, the one-year default probability for Vietnam has risen again to reach 3.69%.

Conclusion

Modern reduced form default probabilities are just as important in assessing sovereign risk as they are for public firms, small businesses, and retail borrowers. Legacy credit ratings represent a credit assessment tool that was state-of-the-art more than a hundred years ago, but ratings are well past their prime. Ratings have no stated maturity, no associated default probability, and they suffer from the conflict of interest from the issuer pays model. As shown by Hilscher and Mungo Wilson, authors

For that reason, 'failure' is treated as if cross-default clauses were the norm and differences in the currency of the borrowing are ignored for this reason.

Case Studies in Sovereign Default Risk in Southeast Asia

Now take a 20 year view of one year default probabilities for a number of countries in Southeast Asia, spanning the Asia crisis which was triggered by the July 2, 1997 abandonment of the currency basket supporting the Thai baht. First look: Cambodia.

A 20-year view of default risk for this complex country shows a one-year default probability that is currently 11.99%, varying in a range from 5% to 25% over the period

Indonesia, along with Thailand and Korea, was dramatically impacted by the Asia crisis.

By 1999, the country's one-year default probability had risen as high as 23%. The one-year default probability now is 3.93%.

Malaysia fared much better in the wake of the Asia crisis than most of its neighbours. The one-year default probability peaked near 4.25% in 1999.

The one-year default probability is now 0.67%.

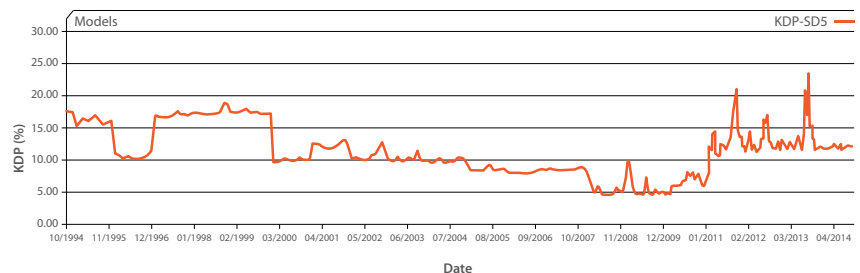
Thailand's one-year default probability jumped to more than 9% in 1999, but over the last 15 years the

default probability has declined in fits and starts to its current level, 0.74%.

Vietnam, like Cambodia, is another emerging economy in the region. After reaching a peak of more than 7%,

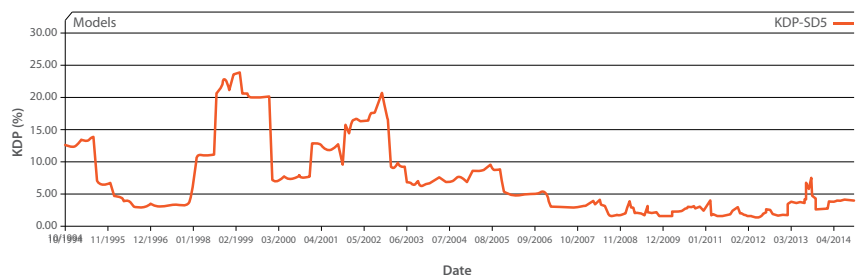
CAMBODIA

Model	KDP (%)	1-Day Change	1-Month Change	3-Month Change	6-Month Change	1-Year Change
KDP-SD5	11.99	-0.01	-0.27	-0.26	-0.06	-2.20



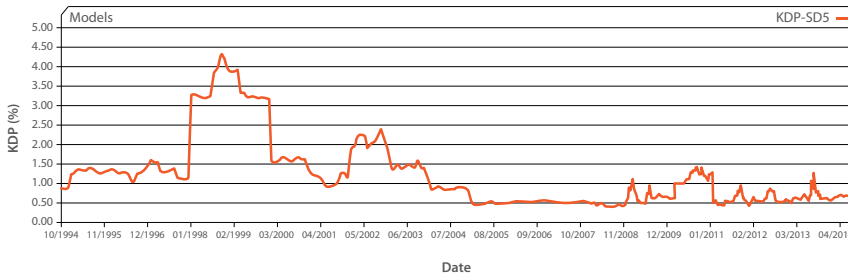
INDONESIA

Model	KDP (%)	1-Day Change	1-Month Change	3-Month Change	6-Month Change	1-Year Change
KDP-SD5	3.93	0.00	-0.05	-0.04	+0.04	-0.41



MALAYSIA

Model	KDP (%)	1-Day Change	1-Month Change	3-Month Change	6-Month Change	1-Year Change
KDP-SD5	0.67	0.00	-0.01	-0.01	+0.01	-0.04



Modern reduced form default probabilities are just as important in **ASSESSING SOVEREIGN RISK** as they are for public firms, small businesses, and retail borrowers.

of ‘Credit Ratings and Credit Risk: Is One Measure Enough?’, ratings are much less accurate than reduced form default probabilities in the corporate context. A wise risk manager would be well-served to move to reduced form sovereign default probabilities as soon as possible. *

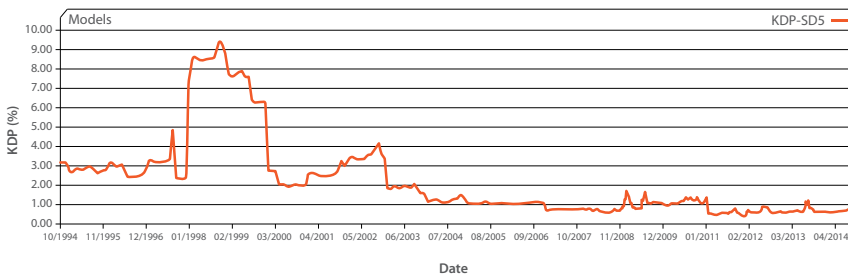
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THAILAND

Model	KDP (%)	1-Day Change	1-Month Change	3-Month Change	6-Month Change	1-Year Change
KDP-SD5	0.74	0.00	-0.01	+0.06	+0.13	-0.02



VIETNAM

Model	KDP (%)	1-Day Change	1-Month Change	3-Month Change	6-Month Change	1-Year Change
KDP-SD5	3.69	0.00	-0.06	-0.05	+0.05	+0.03

