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Excess Returns on Emerging Market Bonds and the Framework for Sovereign Debt Restructuring

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In this chapter we examine the emerging market bonds from the early 1990s to mid 2000s to better understand how risk is shared between a debtor and its creditors under the current international process for sovereign bankruptcy. We ask two distinct, but related, questions: how much creditors have been able to recover on their investments in the case of restructurings, and, more broadly, whether the emerging bond market has paid investors an excess return over time.

Although many emerging market (EM) countries were able to reduce their government debt burdens during the economic boom of the mid 2000s, the recent global economic slowdown has put renewed pressures and many emerging market countries and we have already seen the probability of defaults rise as emerging market country fundamentals have weakened. We argue that the ad-hoc market-based solutions that developed in the mid-1990s and early-2000s to address distressed sovereign debt owed to private bondholders, such as market-based debt swaps or exchanges and collective action clauses in bond contracts, {1} have not led, and will not lead, to efficient resolutions of debt crises. True, market-based swaps of distressed debt have generally represented quick and somewhat orderly restructurings. But not all of the workouts under the current regime fall within what we call market-based resolutions, and some countries (such as Argentina and Russia) have defaulted unilaterally in extremely disorderly restructurings (typically referred to as ‘unilateral defaults’). {2}

An orderly workout without undue delay, while important, is not the only goal of a bankruptcy regime. Another equally important goal is a ‘fresh start’ (or the ability of a

country to grow and undertake appropriate social and economic development expenditures following a restructuring). {3} The existing market-based mechanisms for resolving sovereign bankruptcy have not been effective at adequately reducing debt levels for borrower countries in crises. In fact, in many countries, they have not reduced the level of debt at all. These mechanisms can be seen as useful rollover operations to manage liquidity problems, but they do not solve the problem when debt levels are unsustainable.

While the question of whether a debt write off is sufficient and fair is usually assessed by looking at a debtor's ability to continue to service its debt, this paper starts by asking the question from the other side: how much creditors recovered or lost on their investments in the current bankruptcy regime. Standard measures used to calculate the expected recoveries in defaults{4} rely on the price of the distressed debt around the time of the default. {5} This is because the yield on the debt (on which the price is based) is meant to compensate investors for the expected loss from default, i.e. the probability of default and the size of the loss in the case of default. But because the yield also incorporates other factors, such as investor uncertainty, market risk, and risk aversion, the standard recovery values can't isolate the portion that is based solely on the expected value of investors' recoveries, and doesn't give good information on expected recovery values. These measures are not necessarily good estimates of the amount creditors will ultimately receive (or the debtor will ultimately repay, which is a perhaps the most important element for the issuer's ability to achieve a fresh start).

We therefore derive a new measure that is independent of the market yield, or discount factor, to estimate ultimate recovery values. Instead of basing recoveries on market prices, we estimate the total returns that investors would have received if they had held the bonds through the default and restructuring. We find that, on average, investors who bought their bonds prior to default and sold them around the time of default would have sustained significant losses, but in most cases, bondholders who didn't liquidate their holdings would have actually earned positive returns on their initial investments.

We also find that there is a marked difference between write-downs on unilateral defaults, which can be significant (implying low recovery rates), and write-downs on market-based restructurings, which have been minimal (implying high recovery rates). One reason for this is that for market-based swaps to work, the new bonds offered have to be attractive enough to entice creditors to participate voluntarily. {6} In most such cases, creditors agree to extend the maturity of the old bonds to give countries more time to repay their debt, but do not write down the face value of the liabilities. Given the longer maturities of the new bonds, countries have often still had to offer investors relatively high coupons (and/or upfront cash payments) to induce them to participate in the swap, resulting in high recoveries for the creditors, but little relief for the debtor. We believe that the high recoveries are at least in part due to the uncertainty surrounding the EM sovereign restructuring process, and to investors' desire to avoid this uncertainty (generally referred to as risk aversion). To the extent that this is true and investors are, in fact, recovering higher portions of their debt during restructurings, we should expect to find that EM sovereign debt markets pay investors a positive return (after adjusting for

market risks).

Next, we turn our analysis to the wider EM bond market (including good times as well as bad) to analyze whether, more broadly, investors in EM bonds earn an excess return compared to returns on other market instruments. Our work builds on the research of Kingen, Weder, and Zettelmeyer (2004). Kingen et al. constructed returns on EM debt from 1970 through 2000, and found that the EM debt has not paid investors an excess return over US Treasuries. We focus on the subset of years, starting in the 1990s, over which time the preponderance of EM debt has been in bond issuances subject to the current bankruptcy regime, and extend the data through 2008 to cover 15 years of bond data. Rather than focusing on returns over US Treasuries, we follow Fama and French (1992), and use a multi-factor model to test whether investments in emerging market debt pay investors an excess return versus various market risk factors (including US Treasuries, US equity, emerging market equity, and corporate credit). Here, we find that emerging bond markets have, in fact, paid investors a significant excess return (that is uncorrelated with the returns paid on other market risks) over this time. This excess return can be viewed as compensating investors for uncertainty and risk aversion that is unique to EM bond markets. Although there are many interwoven reasons why this might be the case, the lack of an efficient mechanism for sovereign bankruptcy is one such risk factor that is unique to EM debt. As the high return for investors is at the expense of developing countries in distress, we believe clearer rules for sovereign bankruptcy could be an effective tool in reducing the cost of borrowing for these countries.

This chapter is divided into four sections. The first introduces the emerging market bond asset class and the debt restructuring process. The second analyzes methodologies for estimating recovery values and presents our return-based recovery values. The third presents our factor model of EM bond returns. The fourth concludes.

Emerging market external bonds since the 1990s

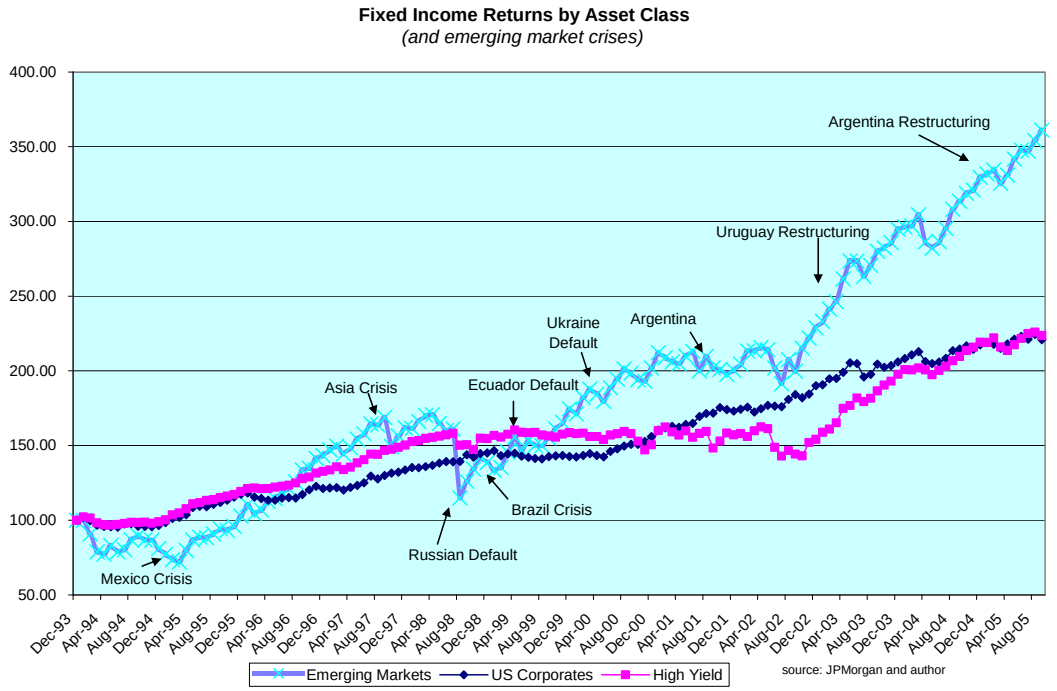
The emerging bond market developed in its current form in the early 1990s, after defaulted bank loans to developing countries were restructured into Brady bonds. Despite its short lifespan, {7} emerging market bonds have already been through a series of crises and a full spectrum of economic cycles.

Figure 6.1 shows cumulative returns for emerging market bonds, {8} compared to US high yield and investment grade corporate bonds. {9} Emerging markets returned approximately 13.8% annually versus 7.4% for investment grade corporate bonds and US high yield, despite the fact that emerging markets experienced a series of currency and/or debt crises over the period. Reflecting this, the risk of investing in emerging market bonds, as measured by volatility, {10} has been extremely high over the period. Emerging bond market annualized monthly volatility averaged 15.4% versus 6.7% for US high yield and 4.8% for US investment grade bonds.

The EM crises include the Mexican crisis in 1994, the Asian crisis in 1997, the Russian crisis in 1998, the Brazilian crisis in early 1999, the Ecuadorian default in 1999, the

Turkish crisis and Ukrainian default in 2000, and the Argentinean default and crisis in 2001-2. Several of these episodes were triggered by currency crisis (as in Turkey and Brazil) and/or defaults on domestic corporate debt (as in the Asian crisis) that did not include sovereign defaults. But there were also events that incorporated (or were triggered by) defaults on sovereign debt. These included defaults on debt that had already been restructured, such as Brady Bonds (as in Ecuador and Argentina), defaults on Eurobonds (also in Ecuador and Argentina, as well as other countries discussed below), and defaults on domestic sovereign debt (as in Russia).

Figure 6.1 Bond Restructuring Experiences



As there is no clear framework for restructuring sovereign bonds in distress, the process for restructuring these bonds has evolved into an informal set of practices that can be divided into two groups: unilateral default followed by an exchange of non-performing

debt for new issues, or market-based negotiated exchanges of new bonds for debt that was either defaulted or "distressed" but still performing (albeit with late payments or other actions that give creditors concern, such as a government request to restructure the obligations). Russia and Argentina both announced unilateral defaults, but most countries chose to restructure their debt through market-based distressed exchanges or swaps negotiated before a default actually occurred.

Table 6.1 documents some of the main restructurings that occurred between the late 1990s and the mid-2000s, broken down into two categories: unilateral defaults and market-based restructurings.

Table 6.1

SOVEREIGN DEBT DISTRESSED EXCHANGES 1997-2005					
Country	**Year**	**Description**	**Distressed Exchange**	**Principal Write-down**	**New Maturity**
Dominican Republic	2004 2005	Missed bond payments in 2004 and 2005, followed by distressed exchange.	Longer maturities, CACs added to new bonds, exit consents added to eligible bonds. No change in coupon.	None	extended by 5 years
Uruguay	2003	Distressed exchange on international bonds following Argentina crisis	Extended maturities, some cash payments. CACs on new bonds, exit consents added to old bonds still outstanding.	None	Extended maturities from 2008 to 2033
Moldova	2001 2002	Missed payment in 2002, followed by distressed exchange.	New coupon. No write-down of principal.	None	2009
Ivory Coast	2000	Missed coupon and principal on Brady Bonds in April 2000 and September 2000.	No market exchange. Paris Club restructuring in 2001.		
Ecuador	1999	Missed payment followed by official default and request for debt restructuring.	Brady bond default followed by Eurobond default due to cross-default clauses. First country to include exit consents.	30-40% in NPV Terms	2012 and 2030

Pakistan	1999	Late payment on Asian Development Bank loans in Oct 98, followed by London Club rescheduling, followed by distressed exchange.	Distressed exchange prompted by Paris Club comparability demands. 3-yr grace on the new bond.	None	6 years
Ukraine	1998 1999 2000	Default on local debt in Aug 98. Foreign-held T-bills swapped for Eurobonds. Distressed exchange of dollar and euro Eurobonds in 2000.	Seven-year amortization bonds. New Coupon. The EUR bonds have a 6-mo grace period. No grace period for the USD bonds.	None	2007 with 4.5 year average life

Sources: Bloomberg and Moodys (2006)

SOVEREIGN UNILATERAL DEFAULTS[1]					
Argentina	2001 2002	Missed payment followed by bank-run and outright default on all sovereign bonds. Protracted dispute over restructuring.	$30 Billion bond swap with extended maturities in June 2001, followed by swap of bonds for loans with local banks in November 2001 and finally across-the-board default on all bonds at year end.	Estimates of 60-70% NPV.	
Russia	1998	Default on local currency domestic debt, followed by default on Soviet-era restructured foreign currency domestically issued debt, followed by default on the Soviet era bonds.	Restructuring agreement in March, 1999, which included 3% cash; 27% short term instruments, and 70% 3-5 year instruments. All cash proceeds subject to foreign exchange controls. Bond exchange for FX debt in January 2000. Bondholders offered 8 Year USD bond with 3% coupon or 4-year domestic bond.		2012 and 2030

Sources: Bloomberg, Moodys (2006), Sturzenegger and Zettelmeyer (2005).

As discussed above, these restructurings have tended to extend the maturity of the debtor's obligation, but not write-down the principal. The yields on the new bonds in the exchanges have usually been below the prevailing secondary market rate for the country

[1] For additional detail, see the chapters by Damill, Frenkel and Repetti on Argentina and by Gorbunov on Russia.

at the time. {11} Nonetheless, on average, the new securities still offered investors a significant risk premium over the rate paid by comparable US Treasuries. The result is that countries' debt burdens did not drop significantly due to the exchanges.

Table 6.2 shows external debt as a percent of exports and gross domestic product (GDP) pre and post restructurings. In most countries, debt remained at extremely high levels post-restructuring. For example, even in Ecuador, a country in which creditors accepted a principal write-down, {12} external debt remained at 68% of GDP after the debt exchange. Just two years after the restructuring, analysts were quoted as saying that Ecuador would be able to continue to service its bonds… "as long is it ran up *arrears* with bilateral institutions and suppliers." {13} In other words, according to these analysts, Ecuador would only be able to repay its newly restructured bonds if it defaulted on debt to other creditors. Uruguay, which engaged in a cooperative market-based swap with no reduction in principal, was left with debt at over 100% of GDP and 304% of exports. Debt servicing also remained high, at 46% of exports following the restructuring. As in Ecuador, just one year after the swap, analysts were discussing Uruguay's continued debt problems. {14} In Argentina, a country that wrote down its principal, the debt ratios initially increased as a percent of GDP, due to the currency devaluation, which reduced the dollar value of GDP relative to the dollar-based debt, highlighting the risks in borrowing in foreign currencies.

Table 6.2 External Debt Pre- and Post-Restructurings

(Shadings show years of default/restructuring)

Country	External Debt	1997	1998	1999	2000	2001	2002	2003	2004
Argentina	% GDP			52.1	54.1	61.2	158.8	130.1	114.1
	% Exports			433.0	397.5	444.8	503.6	453.1	404.3
Ecuador	% GDP	76.4	83.2	116.2	99.7	67.8			
	% Exports	248.4	328.0	302.6	232.0	257.9			
Pakistan	% GDP	53.6	55.7	62.8	58.9	57.3			
	% Exports	335.6	340.7	412.3	373.0	322.8			
Russia	% GDP	40.0	62.5	80.4	52.8				
	% Exports	157.4	190.7	183.0	117.0				
Ukraine	% GDP	28.2	46.2	65.6	61.2	53.0	46.7		
	% Exports	68.9	109.1	120.8	97.3	94.8	84.1		
Uruguay	% GDP					83.5	104.8	118.3	106.6
	% Exports					378.4	408.8	398.0	304.2

Source: Institute of International Finance

Our point here is that the market-based exchanges, which are today the main form of sovereign debt restructurings, have not significantly reduced the debt burdens of countries in crisis. Indeed, they were never meant to do so. The goal of the swaps was usually to avoid outright default (due to its perceived high cost), by offering creditors a high enough return to make it attractive to participate in the exchange, and not necessarily to lower debt burdens. {15} We should note, however, that many of these countries improved their debt ratios in the late 2000s, in large part due to GDP growth based on the commodities boom (combined with better debt management). From this perspective the later improvement in ratios was largely due to external events, which were not anticipated at the time of the restructuring. A full country-by-country analysis of debt sustainability is, however, beyond the scope of this paper. Instead we look at the

flipside, and focus on how much investors were able to recover on their initial investments following credit events.

Estimating recovery values

There are several alternative methods that are typically used to estimate recovery values. There is a large literature and history on corporate defaults and corporate recovery values (Altman (1989)), but relatively little on sovereign recoveries. {16} The conventional rule of thumb used by the financial industry has been to assume that investors recover around 25% of the face value of bonds in default for sovereign debt and around 45% for corporate debt. (These numbers are, of course, understood to be a rough guide.) While the market convention for defaults on corporate bonds can be said to be roughly based on historical recovery values, it is not completely clear what the 25% estimate for sovereigns is based on. Although a 2003 Moody's {17} emerging market report estimated that average recovery rates were relatively close to the 25% level, based on high weightings and low recoveries for Russian and Argentine bonds, Moody's revised this number up to 54% in its 2006 report. {18}

Price-based Recovery Values

The Moody's methodology uses the first bid price available 30 days after default to estimate recovery values. {19} As discussed above, the discount factor implicit in the price incorporates elements of uncertainty and risk aversion, making it difficult to isolate

the market's expected loss due to default. We need a way to measure the extent of risk aversion at the time of default in order to isolate recovery values. Although this is difficult to do, we can come up with an approximate measure by comparing the market prices around the time of default with 'ultimate recovery values', or how much investors should expect to ultimately recover.

For corporate bonds, the 'ultimate recovery value' is usually defined as the discounted value of the bonds at the emergence from restructuring. {20} Altman (2003), using data from Keisman's Standard & Poor's assessment of bank loan and bond recoveries from 1988 to 2003, shows that the ultimate discounted recovery value on senior unsecured US corporate debt was an average of 42% of original face value, which is relatively close to the 45% estimate used by the market as a rule of thumb. In addition, there is some evidence that ultimate recovery value and the 30-day recovery value are fairly close for corporate issues, implying that investors' expectations of their recovery is fairly accurate and that risk aversion is not particularly significant at the time of a firm's default on its bonds as compared to the restructuring. {21}

Note that this method of calculating the ultimate recovery value implicitly compares the 'recovery price' to par (or 100% of a bond's notional value, i.e. what investors would generally have paid if they bought the bond when it was first issued). However, as it is unreasonable to assume that investors actually bought the bonds at issuance in liquid markets, two alternative methods have been suggested to calculate recovery values. The Bank of England (2005) looks at the ratio of the present value (PV) of cash flows of the

new bonds versus the old, using the yield to maturity immediately prior to default as the discount factor. They come up with an average recovery value of 64%—which is significantly above recovery values calculated using Moody's 30-day price method. Sturzenegger and Zettelmeyer (2005) use a similar calculation to the Bank of England's, but use the discount rate at the time of the restructuring rather than at the time of default. Their results are not completely comparable since they only look at a subset of countries, but given that the discount factor is generally lower at the time of the restructuring than default, they come up with recovery values around 5% higher than the Bank of England's estimates. This 5% difference implies that there is a positive return to be earned from holding bonds between default and restructuring dates.

Both of these ratios are important market indicators and useful measures of the terms of the new bonds versus the old. However, both of them still rely on the discount rate in the market at one specific point in time. As discussed above, the discount rate incorporates risk aversion and uncertainty, and can be highly unstable. Because discount factors tend to be high around the time of the default or restructuring, measures that are based on discount factors tend to lower the recovery value of the new bonds relative to the old. This is because the new bonds have a longer maturity, and discounting reduces the value of distant payments but does not have as much of an impact on payments that are expected in the near future. To avoid relying on discount factors to calculate recovery values, we derive a new measure of recovery values based on investor returns.

Return-based Recovery Values

Our return-based recovery methodology calculates total returns for countries that defaulted on their debt or engaged in a distressed market-based exchange over the period studied using monthly JP Morgan country indices. {22} Our goal is to estimate how much investors recover on their initial investment. In order to calculate investor returns, we need to assume holding periods for the bonds (or buy and sell dates). To keep our results as robust as possible, we allow both of these dates to fluctuate. We first test recoveries assuming the investor holds the bond for alternative periods of time following the restructuring, which we refer to as holding periods. The ability to look at different holding periods after the default allows us to analyze changes in the discount factor over time as part of our analysis. As we discuss below, the difference between returns at the time of the default and returns for different holding periods indicates the extent of risk aversion at the time of the default.

As mentioned above, one of the difficulties in estimating return-based recovery values in liquid markets is that it's unreasonable to assume that the bondholder bought the bond at issuance, since many bondholders buy securities in the secondary market. The best way to calculate recovery values for liquid securities is not based on face value, but rather, on the investor's buy-price or the mark-to-market price at some time prior to default. We therefore estimate returns assuming that securities were purchased at different times prior to default. For the sake of simplicity results presented in this chapter assume investors

bought the bond in 1 or 3 year ‘purchase intervals’ prior to the credit event. Our analysis allows us to include coupon and other payments that are received by the investor over the purchase interval in the total return analysis. We believe this is an important difference between our return-based estimates and price based-estimates. Since EM bonds pay investors a high coupon to compensate investors for the risk of default, not including these means that the recovery calculation is ignoring the primary way investors are compensated. Therefore, it makes sense to include this as part of the total recovery value. {23}

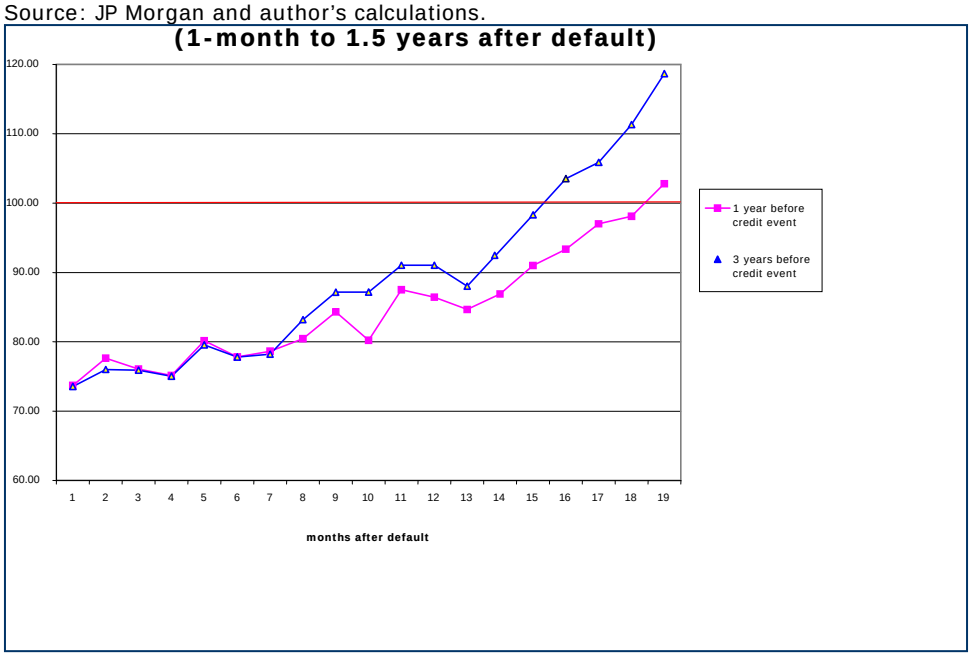
Figure 6.2 graphs the recovery values assuming the bonds were purchased in one and three year purchase intervals prior to the credit event. {24} The graph shows average recoveries across countries assuming bondholders liquidated their positions anywhere from one to nineteen months after the credit event. The first notable result of the analysis is that recoveries calculated using this method are much higher than the standard measurements of recovery values. There are two aspects of this higher price. The first, which is discussed above, is based on the way we construct the total return index as compared to the standard measures. Our calculation begins with the purchase price of the bond at a point in time, whereas the Moody’s price-based recovery value compares the price after 30-days to the par value of the bond. In addition, as mentioned above, the investor gets credit for the interest payments they receive over the purchase interval, which are not included in the Moody’s numbers.

We can isolate the difference in values due to these “technical” elements by comparing of our results 30 days after the credit event with Moody’s results. Since both calculations in this exercise use the same 30 day post-crisis holding period, the difference in these two recovery values should be due to the difference between the purchase price and face value and to interest payouts prior to the crisis period. We find that recoveries are 20% higher in our return-based method than in the Moody’s 30-day price method. In our calculations, we find that recoveries are, on average, 74%, as compared to Moody’s estimate of 54% for the same time period. For the three year purchase interval, this difference is mostly due to interest income (of approximately 6% annually). In the one year case, we find that the market price is already discounting the future default, so that a larger portion is due to the difference in buying price.

More interestingly, as Figure 6.2 shows, in our return based methodology recoveries generally continue to increase relatively significantly over time. In fact, on average, investors who held the bonds for just 19 months after the credit events actually earned a positive rate of return, with annual returns averaging around 3.9% annually over the 4.5 years {25} for the 3-year purchase interval (or 18.7% for the period) and 1% annually over the 2.5-year period for the 1-year purchase interval.

Figure 6.2 Average Sovereign Debt Recovery Values (%) Relative to Purchase 1 year or 3 Years before Credit Event

Source: JP Morgan and author's calculations.



On a county-by-country basis, the return-based method gives higher recoveries than the usual calculations across *all* countries. Again, we can break the countries into two groups, those that experienced write-downs in principal and those that did not. Table 6.3 compares the different recovery values for the three countries that had some degree of principal reduction as part of their restructuring package with the average for countries that engaged in market-based swap restructurings.

Table 6.3 Recovery Values for Countries with Debt Write-downs

	1- year purchase interval[2]	3-year purchase interval[3]	Moody's 1-Month Market Prices[4]	PV Ratio of Cash Flows[5]
Argentina	41%	47%	33%	30%
Ecuador	63%	63%	44%	60%
Russia	66%	204%	18%	50%
Average of market-based restructurings	134%	156%	63%	73%

[2] JP Morgan and author's calculations, assuming the investor held the bond until 18 months after the credit event.
[3] Ibid.
[4] Moody's (2006)
[5] Bank of England (2005)

Using the return-based method, recoveries of Argentinean debt were 41%-47%, around 10% higher than the price-based estimate of around 30%. In Ecuador, the return-based recovery was around 63%, significantly higher than the 44% estimated by Moody's 1-month market price, but relatively close to the level based on the ratio of the PV of the new and old bonds. In Russia the holding period returns are, again, significantly higher than the usual measures, though the PV Ratio of 50% has recoveries that are not too far off from the 1-year purchase interval analysis. However, here, investors who bought Russian external debt one year prior to the credit event recovered 66% of their investment within 18 months of the credit event, but investors who bought Russian bonds 3 years prior to the event earned a 204% return on their initial investment within 18 months of the event, or an annual return of 17% over the four and a half year investment period – despite the credit event. Russian yields prior to the default were so high that investors were more than compensated for the write-down in 1998 and 1999, and the longer they held the bonds prior to default, the better off they were.

Perhaps even more striking is the differences in recoveries on the market-based restructurings. Here, both the 1-year and 3-year holding period recoveries are around twice as large as the Moody's and PV Ratio recoveries. On a country-by-country basis, every country recorded positive returns for investors who bought the bonds both one year and three years prior to the credit event. This is not unexpected, given that there were no write-downs of principal in these exchanges. In our analysis, the recoveries implied positive returns at an average of 7% annually for those investors who bought the bonds three years prior to the event, and 17% annually for those who bought the bonds one year

prior to the restructuring. Furthermore, there is not a single country where returns did not increase steadily over the first 12 months following default.

Overall, across countries, returns increase from the 74% level one month following the credit event to 118% within 19 months, representing a gain of around 60% in a just a year and a half. Whereas, the 20% differential between the return-based recovery of 74% and Moody's recovery value of 54% can be explained by technical factors, the 60% gain is more complex, and reflects a significant drop in the discount factor over the time period.

Explaining the Differential

There are two potential explanations for why recoveries based on market prices are significantly lower than recoveries based on total returns. The first explanation is that the high discount rate might embody a fair compensation for a tail event, i.e. the risk of events with low probabilities but high costs that do not show up in the data because they have not yet materialized. However, the volatility of the discount rate implies that the rate reflects investor uncertainty rather than an expected probability of default. In other words, the difference between recovery value estimates is likely due to investors' reluctance to take on EM risks during the restructuring process, i.e. risk aversion. Both the Moody's and PV ratio methodologies incorporate the markets' level of risk aversion in their recovery estimates. As the total return methodology is based on historical numbers it eliminates this factor. The difference in estimates in large part tells us how much countries are paying for the uncertainty surrounding the restructuring process for

emerging market debt. To the extent that this is the case, over a longer time period, emerging market bonds should incorporate an excess return to compensate investors for the risk aversion that is related to the restructuring process.

The emerging market bond asset class: Measuring excess returns

In this section we test whether emerging bond markets have, in fact, paid investors an excess return. According to standard financial analysis, investors only receive excess returns for risks that are not diversifiable. Investors don't get compensated for idiosyncratic risk associated with an individual investment, since they should be able to reduce this risk through diversification. Our goal is to test whether emerging market bonds have paid returns in excess of other asset classes. Following Fama and French (1992), we use a multivariate regression to determine whether there is a return on emerging market bonds in excess of market risk factors that is uncorrelated with these risks.

The model tests the extent to which market risk factors explain the returns to EM bondholders, based on data from January 1993 through May 2008. (The results are presented in the appendix.) We tested a wide range of risk factors and identified four that have a significant correlation with EM bond markets: (i) the broad US stock market portfolio (measured by the S&P 500) (ii) the US government bond market (as measured by the 5-year Salomon Brothers index) (iii) US corporate credit spreads (measured by the Lehman T-Baa bond index) and (iv) emerging market equities (as measured by the MSCI

EM Free index). In essence these four risk factors represent global economic risks and global bond market risks (as proxied by the US financial markets), as well as risks that are specific to emerging markets. Overall, we found that these factors are able to explain less than half of EM bond returns, although what they do explain is statistically significant.

What is more notable is that in the estimated equation of the model the intercept (or α) is also statistically significant, contributing 44 basis points (bps) of return on a monthly basis (or 5.4% excess return annually). This return is not related to any of the identified factors, and can therefore be said to be in excess of the other risk factors. The results are robust for different time periods, with α remaining at around 40 bps and statistically significant whether the period is shortened by cutting off the early to mid-1990s, when returns were high, or by cutting off the commodity boom period of the mid-2000s.

We must, of course, view these findings with some care. Although 15 years of data is a relatively long time period for financial markets, it is still relatively short for a dataset, especially when compared to other asset classes, such as corporate bonds or EM equity. It is possible that what appears to be excess return is actually compensation for 'tail risk', i.e. investors are demanding a high return for the risk of a 'disaster scenario', a low probability event with high costs. As we noted early on, EM debt has historically experienced periods of large losses followed by periods of large gains. In their paper on EM debt from 1970 to 2000, Klingen et. al. divided EM debt history over this time into three periods: 1970-89 (a period characterized by low returns), 1989-1993 (characterized

by extremely high returns), and 1993-2000 (which they find to be characterized by lower, but still positive, returns.) In our analysis, we focus on the period starting in the 1990s when emerging markets debt was primarily issued as bonds under the current framework for sovereign debt restructuring. We exclude data from the early 1990s and start our analysis in December 1993, {26} so as not to include a possible bounce-back effect following the earlier period of large losses. {27} (We did not include the 2008 to 2009 period of the global economic crisis in our analysis, although including these years would probably strengthen the results since emerging market losses have, to date, been less than losses in other asset classes.) However, as noted above, our 15 years of data does include a series of emerging market crises. We think it is less likely that the excess return is pricing in tail risk that has not yet shown up in the return based data, given that the data includes crises periods.

A second measurement issue in the data is 'survival bias.' The JP Morgan EMBIG index is rebalanced monthly, which means that the index weights of countries that restructure their debt are reduced at a time when markets are illiquid. It is unlikely that investors who own emerging market bonds would be able to sell their positions at the price at which the bonds are retired from the index. {28} Depending on the price at which the bonds are retired this can over- or under- state investor returns. However, Klingen et al. adjusted their data for this survival bias during and found that it made very little difference to aggregate returns. Their analysis only went through 2000 and therefore left out the Argentinean restructuring. Building on their results, we adjusted Argentina's

weight in the index after the restructuring, and found that the excess returns remained significant.

Conclusion

In sum, we find that emerging economy sovereign bond markets do, in general, provide a significant 'excess' return above the main market risk factors. We also find that the ultimate amount that investors recover on emerging market debt in debt restructurings has been higher than the usual measures of recovery values. This difference in measurements appears to be largely due to investors' risk aversion based on uncertainty in the restructuring process.

Emerging market creditors need to pay a premium for investors' risk aversion. Although there are undoubtedly many interwoven reasons behind the high degree of risk aversion, we believe that one of the issues is that the market penalizes developing countries for the huge uncertainty surrounding sovereign default and sovereign debt restructurings. An important step towards reducing the cost of borrowing for developing countries would be to reduce the uncertainty associated with this asset class through clearer rules of the game for bankruptcy and restructurings, as in corporate restructurings, which fall under national bankruptcy laws. We acknowledge that there is no one clear-cut proposal that's been put forth today that will necessarily work well enough to significantly reduce uncertainty and risks associated with the process. But we believe that is all the more reason to re-open debate on this issue, and that we can, and should, do better.

In the mid to late 2000s, the rally in commodity prices and global liquidity fed a rally in the bonds of emerging markets that some countries were able to take advantage to improve their debt structures. Nonetheless, the recent global economic weakness has begun to negatively affect the economies and debt ratios of even the best managed countries. There are some indications that the next emerging market crisis might be in privately issued debt or in domestic debt; but we still might see ‘serial restructurings’ in emerging markets sovereign debt unless we find an alternative mechanism that better addresses the needs of the debtor while protecting the legitimate interests of the creditors.

Appendix

The equation estimated for the model discussed in the text is

$$(R_{EMB_t} - R_{f_t}) = \alpha + \beta 1[R_{M_t} - R_{f_t}] + \beta 2[R_{5Y_t} - R_{f_t}] + \beta 3[R_{C_t} - R_{f_t}] + \beta 4[R_{EME_t} - R_{f_t}] + \varepsilon_t$$

where,

R_{EMB_t} is the monthly return on the JPMorgan EMBIG index at period t.

R_{f_t} is the risk-free rate at period t, measured by one month USD Libor.

R_{M_t} is the monthly return on the US stock market portfolio rate at period t

$\beta 1$ is the coefficient for the risk premium of the stock market portfolio over the risk-free rate, as measured by the S&P 500.

R_{5Y_t} is the monthly return on the 5-year US government bond, as measured by the 5-year Salomon Brothers index at period t

$\beta 2$ is the coefficient for the risk premium of the 5-year bond over the risk-free rate

R_{C_t} is the monthly return on credit spreads at period t

$\beta 3$ is the coefficient for the risk premium of credit spreads over the risk-free rate

R_{EME_t} is the monthly return on the emerging markets equity portfolio rate at period t

$\beta 4$ is the coefficient for the risk premium of the emerging markets equity portfolio over the risk-free rate

α is the intercept, which represents the monthly excess return

ε_t is the error term at time t

The results for the full time period December 1993 to May 2008 are

Regression Statistics	
Multiple R	0.69
R Square	0.48
Adjusted R Square	0.47
Standard Error	0.03
Observations	184

	Coefficients	*Standard Error*	*t-statistic*
Intercept α	0.0044	0.0021	2.1*
RM_t	0.1432	0.0718	2.0*
$R5Y_t$	0.9059	0.1526	5.9***
RC_t	0.5874	0.2820	2.1*
$REME_t$	0.2914	0.0439	6.6***

Where (*) indicates significance at .05 level and (***) indicates significance at <.0001 level.

Endnotes

1. Although we do not discuss collective action clauses (CACs) directly, several of the debt restructurings examined included CACs in the bond contracts.

2. In the Argentine case in particular, the four years needed to reach a settlement, the deepness of the write down of the bonds, and the fact that some bondholders decided to try their luck in the courts rather than accept the swap underline that one needs separate categories of contentious and consensual debt workouts.

3. See Joseph Stiglitz's chapter in this volume for a discussion of goals of sovereign bankruptcy regimes and how bankruptcy theory applies to sovereign debt.

4. The terms 'recoveries' and 'recovery values' refer to the amount that investors are able to recover on their investment in the event of default or restructuring.

5. Alternative measures are based on ratios of the net present value of the new cash flow to the old cash flow using the discount factor at the time of either the default or the restructuring, as we discuss later in this chapter.

6. In contrast to cooperative market-based swaps, "exit consents" serve as "cram down" mechanisms to alter the non-financial terms of the old bonds so as to lower their market value, and thus lower the amount needed to be paid on the new bond to some extent.

7. Bonds were a major mechanism of sovereign finance in earlier periods, such as the 1930s. In the 1970s and 1980s emerging market debt was dominated by bank loans. The change to bonds led to increased liquidity in the market as well as a different class of creditors. It also led to change in the resolution mechanism in the case of default due to increased dispersion of the creditors. We therefore look at the asset class as starting with the emergence of the most recent bond market indices.

8. In this chapter, emerging market bonds refers to external bonds issued by emerging market sovereign issuers.

9. The emerging market data in this section is based on monthly data from the JP Morgan EMBI+. US High Yield is based on monthly data from the Merrill Lynch US high yield index, US Investment Grade corporates is based on monthly data from the Salomon Brothers US Corporate Bond Index (SBCT) and the Lehman Baa index.

10. Based on the standard deviation.

11. In some cases the effective market rate on new borrowing was infinite, as the country would not have been able to borrow at all without the concerted exchange, because of the perceived high risk of default.

12. The Ecuador restructuring used exit consents, through which a majority of the old bondholders agreed to diminish the non-financial terms of the old bonds to pressure potential holdouts to accept the deal.

13. Salomon Smith Barney, Economic and Market Analysis, Country Analysis and Commentary, May 13 2002.

14. Citibank and IPD breakfast meeting on local markets, 2004.

15. This was confirmed by Isaac Alfie, the former Minister of Finance of Uruguay, in his address before the Latin American Borrowers and Investors Forum Miami, May 12th, 2005.

16. See Singh (2003), Moody's (2003, 2006a, and 2006b), and Sturzenegger and Zettelmeyer (2005) for studies on sovereign recovery rates.

17. Moody's (2003).

18. Moody's (2006b).

19. This methodology assumes that the bid price quoted is actually a market-clearing price, which may or may not be the case.

20. Discounted at the market rate at the time of the restructuring.

21. Using data from 1997 to 2006, Moody's found ultimate recovery values for corporate bonds to be 38% versus a 35% recovery rate using the 30-day methodology (Moody's (2007)).

22. For a description of the calculation method, see JP Morgan (2004) or www.morganmarkets.com. In the event of a restructuring or swap, JP Morgan removes the amount of debt retired and adds the new issue to the index at the month-end rebalancing date immediately following a debt exchange. Countries included in the analysis include Argentina, the Dominican Republic, Ecuador, the Ivory Coast, Pakistan, Russia, Ukraine, and Uruguay.

23. We can, however, still quantify its contribution to recoveries.

24. Longer purchase intervals produce similar results, though the longer the dataset the more noise in the return series. We also tested returns based on static dates (such as January 1997), and arrived at similar results.

25. This includes the 3 year purchase interval and the 1½ year holding period.

26. The first EMBI data was published in 1991.

27. Excluding 2003 from our sample and using 2004 as a starting date leads to similar results.

28. For example, Argentina's weight in the EMBI+ was cut in half between 2000 and 2001.

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