

## SECTOR IN-DEPTH

30 January 2019



### TABLE OF CONTENTS

Summary	1
Introduction	2
The number of emerging market companies continues to rise rapidly	2
Emerging market defaults are concentrated in Capital Industries	4
Emerging market corporate default rate remains low despite 2018 stress	5
Emerging market company ratings were slightly more volatile compared with advanced markets'	10
Default rates by rating category are comparable across emerging and advanced markets	11
Recovery rate is comparable in emerging and advanced markets	12
Rating performance: Emerging market ratings accurately differentiate defaulters from non-defaulters	12
Appendix	14
Moody's related publications	28

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## Nonfinancial Corporates - Emerging Markets

# Emerging market corporate default and recovery rates, 1995-2018

### Summary

In this study, we examine the credit performance of nonfinancial companies in emerging markets from 1995 to 2018, the variance among countries, the contributing factors to defaults, and a comparison with trends in advanced markets. Below are highlights of our analysis:

- » **The number of rated emerging markets companies continues to rise.** We had ratings outstanding on more than 800 emerging market nonfinancial companies in 49 countries as of year-end 2018. Investment-grade companies in emerging markets accounted for 48% of all nonfinancial company ratings vs. 39% in advanced markets.
- » **Despite the challenging external environment in 2018, the overall default rate remains low.** The corporate default rate in emerging markets stood at 1.4% at year-end 2018, lower than the historical average of 2.8%. The 2018 rate was also below the 1.6% rate in advanced markets. However, weakened growth in some emerging market countries, along with tightening global financial conditions and escalating trade and political risks, will make credit conditions more challenging in 2019.
- » **Corporate default rates vary by country.** The variance reflects in part the small number of rated companies in some countries as well as country-specific risk. For example, the average one-year default rate from 1995 to 2018 exceeded 7% in Indonesia, compared with 6% in Argentina and 5% in Mexico. Brazil, South Africa, China and Russia had rates ranging from 1% to 3%.
- » **Emerging market defaults tend to be clustered during country crises and recessions.** The corporate default rate rises in "crisis" years among major emerging market countries. Across emerging markets, the aggregate default rate roughly doubles during "crisis" years on average over one- and three-year horizons. A case study of Brazil shows that in 2015-16, the economic recession in the country contributed to a surge in defaults.
- » **Recovery rates are comparable across emerging and advanced markets.** The issuer-weighted recovery for senior unsecured bonds in emerging markets stood at 39% compared with 37% in advanced markets over the 1995-2018 period.
- » **Ratings are strongly predictive of default risk in emerging and advanced markets.** The one-year Average Position (AP) in both regions has exceeded 90%, with the historical average of AP in emerging markets at 90%, similar to the 91% in advanced markets.

## Introduction

Emerging markets weathered a turbulent year in 2018. Tightened global financial conditions triggered a slowdown of net capital flows in many countries. Currencies in major emerging market countries, including Argentina and Turkey, depreciated substantially. The escalation of global trade tensions and domestic political uncertainties further clouded emerging markets' prospects. Despite these challenges, the corporate default rate in emerging markets has remained low compared with the historical average, owing to the synchronized global growth, recovery of oil prices and favorable external funding conditions over the past several years.

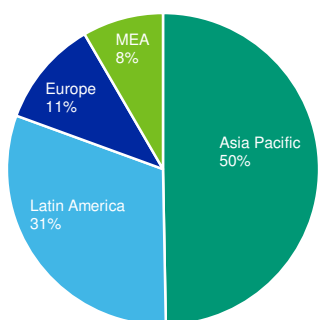
Looking forward, rapid debt expansion in recent years, combined with more restrictive monetary policies and heightened political uncertainties, continues to pose challenges to credit conditions. Countries with less supportive growth, structural weakness and poor policy response will be particularly vulnerable to an adverse macro environment. In order to gain a better understanding of the impact of macro factors on credit conditions, this paper reviews defaults and rating performance of emerging market nonfinancial companies from 1995 to 2018 and examines contributing factors in defaults.

## The number of emerging market companies continues to rise rapidly

Since 1995, we have rated more than 1,400 nonfinancial companies in 55 emerging market countries. As of year-end 2018, we had ratings outstanding on 859 nonfinancial companies, representing 16% of all rated nonfinancial companies globally. Half of the emerging market companies were in the Asia-Pacific region, 31% were in Latin America, 11% in emerging Europe and 8% in the Middle East and Africa (MEA). By country, China represented a 36% share of companies, followed by Brazil at 12% and Russia at 7%. (See Appendix for a list of emerging market countries included in the study).

Exhibit 1

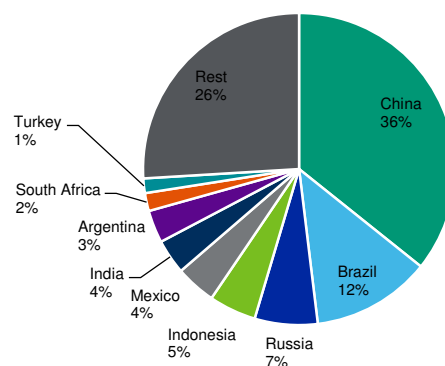
**Rated emerging market companies as of 12/31/2018**  
By region



Source: Moody's Investors Service

Exhibit 2

**Rated emerging market companies as of 12/31/2018**  
By country

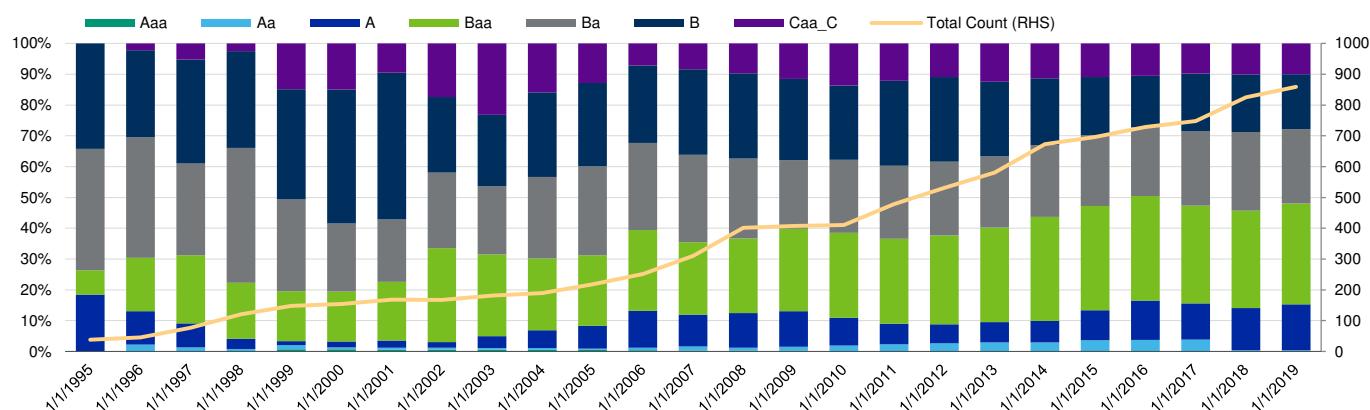


Source: Moody's Investors Service

As Exhibit 3 shows, along with the marked expansion of the number of rated companies, the proportion of investment-grade companies in emerging markets nearly doubled to 48% as of January 1st, 2019 from 26% on January 1st, 1995, exceeding that of investment-grade companies in advanced markets (39%). The expansion of the investment-grade share was mostly seen in the Baa-rated universe.

Exhibit 3

## Rating distribution of emerging market nonfinancial companies

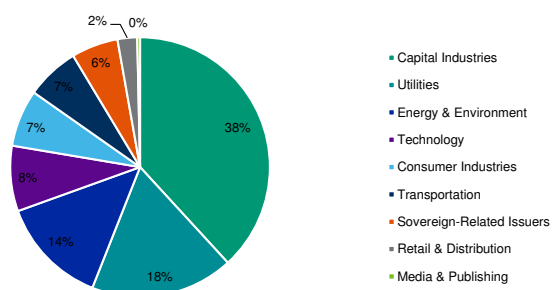


Source: Moody's Investors Service

The Capital Industries, Utilities, and Energy & Environment sectors total more than two-thirds of all rated nonfinancial companies in emerging markets. Compared to advanced markets, emerging markets have fewer rated issuers in Consumer Industries and Technology, and more in Transportation and Sovereign-Related Issuers (see Exhibit 27).

Almost all industries have had rapid growth in the number of rated emerging market companies, but growth since 2000 has been most pronounced among Sovereign-Related Issuers (average annual growth of 15% over 2000-18), Utilities (annual growth of 14%) and in the Retail & Distribution sector (annual growth of 14%).

Exhibit 4

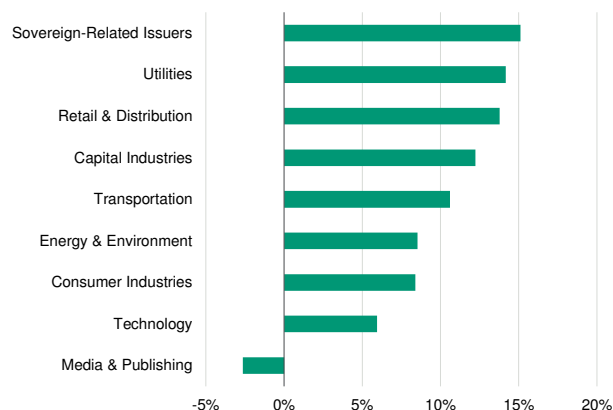
Distribution of rated emerging market companies by industry  
As of 12/31/2018

Sovereign-Related includes the following industries in transportation services: government rail network and toll roads.

Source: Moody's Investors Service

Exhibit 5

## Annual credit growth in emerging markets, 2000-18



Sovereign-Related includes the following industries in transportation services: government rail network and toll roads.

Source: Moody's Investors Service

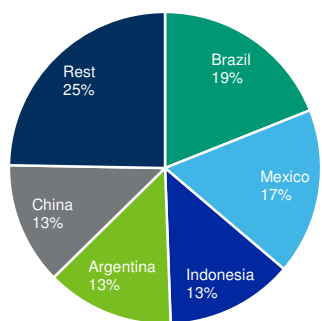
## Emerging market defaults are concentrated in Capital Industries

There were 174 defaults of rated emerging market companies between 1995 and 2018, totaling \$123.5 billion in defaulted debt.

Brazil, which has the highest number of emerging market companies with rated debts, also had the most corporate defaults and the highest volume of debt in default. Brazil (with 33 defaults of rated companies) was followed by Mexico (30 defaults), Argentina and Indonesia (23 each), and China (22 defaults). In terms of the volume of debt in default, Venezuela was in second place as a result of the default of state oil company Petroleos de Venezuela, S.A. (PDVSA) in 2017.

Exhibit 6

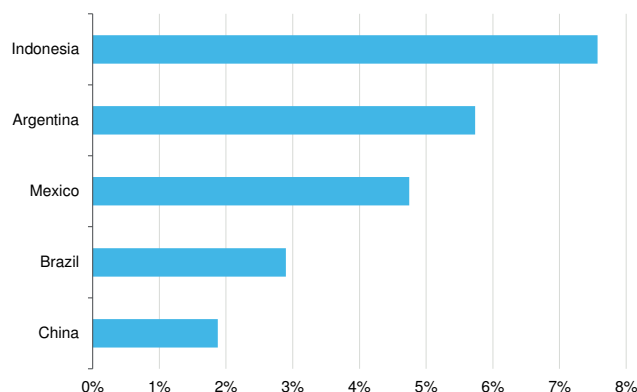
### Distribution of defaults by country, 1995-2018



Source: Moody's Investors Service

Exhibit 7

### Average default rates by country, 1995-2018

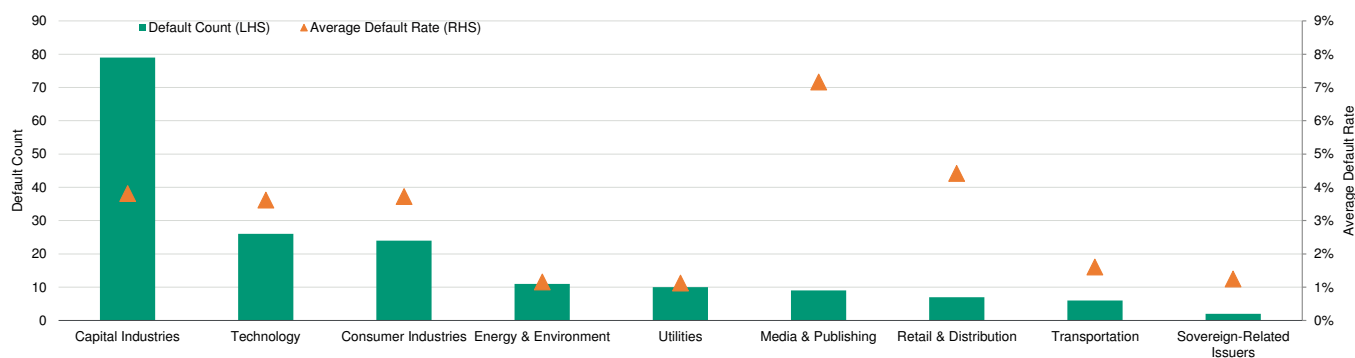


Source: Moody's Investors Service

Almost half of emerging market defaults were concentrated in the Capital Industries, which accounted for less than one-third of defaults in advanced markets. Technology and Consumer Industries also had a large share of emerging market defaults. In terms of emerging market defaults as a share of the total number of rated companies, Media & Publishing had the highest default rate, followed by Retail & Distribution and Capital Industries. The Utilities sector had the lowest default rate.

Exhibit 8

### Distribution of default counts by industry and average default rates, 1995-2018



Source: Moody's Investors Service

Exhibit 9

**Largest 10 corporate defaults in emerging markets since 1995**

Company Name	Domain	Default Date	Default Type	Default Volume (in USD millions)
Petroleos de Venezuela, S.A.	Venezuela	11/2/2017	Missed Principal Payment	\$26,419.9
Oi S.A.	Brazil	6/20/2016	Bankruptcy	\$13,708.1
Pacific Exploration And Production Corp	Colombia	2/18/2016	Missed Interest Payment	\$5,428.0
Petroleos de Venezuela, S.A.	Venezuela	10/21/2016	Distressed Exchange	\$2,802.1
Nii Capital Corp.	Brazil	9/14/2014	Missed Interest Payment	\$2,750.0
Bumi Resources Tbk (P.T.)	Indonesia	7/2/2014	Distressed Exchange	\$2,627.6
Nii Holdings, Inc.	Brazil	2/1/2002	Missed Interest Payment	\$2,331.5
Agrokor D.D.	Croatia	5/31/2017	Missed Interest Payment	\$2,309.9
Kaisa Group Holdings Ltd	China	4/17/2015	Missed Interest Payment	\$2,272.9
Samarco Mineracao S.A.	Brazil	10/26/2016	Missed Interest Payment	\$2,200.0

Source: Moody's Investors Service

**Emerging market corporate default rate remains low despite 2018 stress**

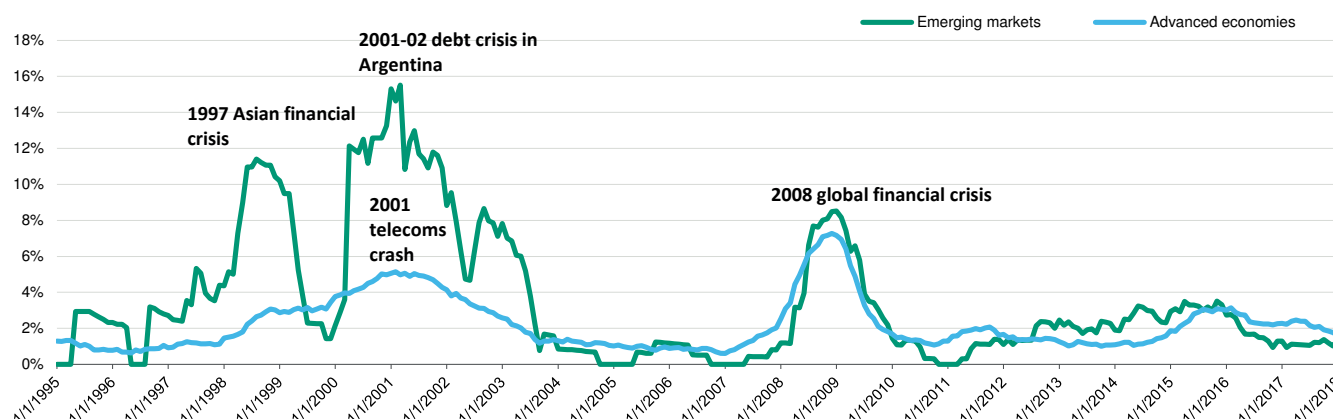
As of year-end 2018, the trailing 12-month corporate default rate in emerging markets stood at 1.4%, up only slightly from 1.3% a year earlier and lower than the historical average of 2.8%. The 2018 rate was also below the 1.6% rate in advanced markets. During the same period, downgrades fell noticeably, to 8.2% from 16.6% a year earlier, amid the recovery in commodity prices and the pickup in global growth.

The aggregate corporate default rate in emerging markets has been very similar to that in advanced markets since 2005, reflecting three main developments: (1) the increase in the rated universe as the aggregate default rate smooths out variations across countries, (2) the long period of relatively synchronized growth across countries globally, and (3) the severity and the global spillovers of the 2008-09 financial crisis. As economic conditions start to diverge across countries, this trend is unlikely to continue. We expect credit conditions to become more challenging in 2019 and 2020, as detailed in our outlooks: [2019 Outlook - Global credit conditions to weaken amid slowing growth and rising risks, 12 November 2018](#), [Global Macro Outlook: 2019-20 Global growth to decelerate amid tightening global liquidity and elevated trade tensions, 8 November 2018](#) and [Emerging Markets — Global: 2019 outlook broadly stable; higher rates, politics and trade tensions pose some risks, 15 November 2018](#).

As Exhibit 10 illustrates, default spikes often coincide with economic crises in a particular country or region. During 2001-02, Argentina accounted for nearly 40% of emerging market corporate defaults, coinciding with the country's sovereign debt crisis. The aggregate emerging market corporate downgrade rate exhibits a similar trend as the aggregate default rate. The most recent episode of credit deterioration in emerging markets occurred in 2015-16, although defaults were muted. The weakening in credit quality during this period mostly took place in the commodity sector. Additionally, regional economic events, including the slowdown in China and the deterioration of economic and fiscal conditions in Brazil, caused further pressure on credit quality in these countries.

Exhibit 10

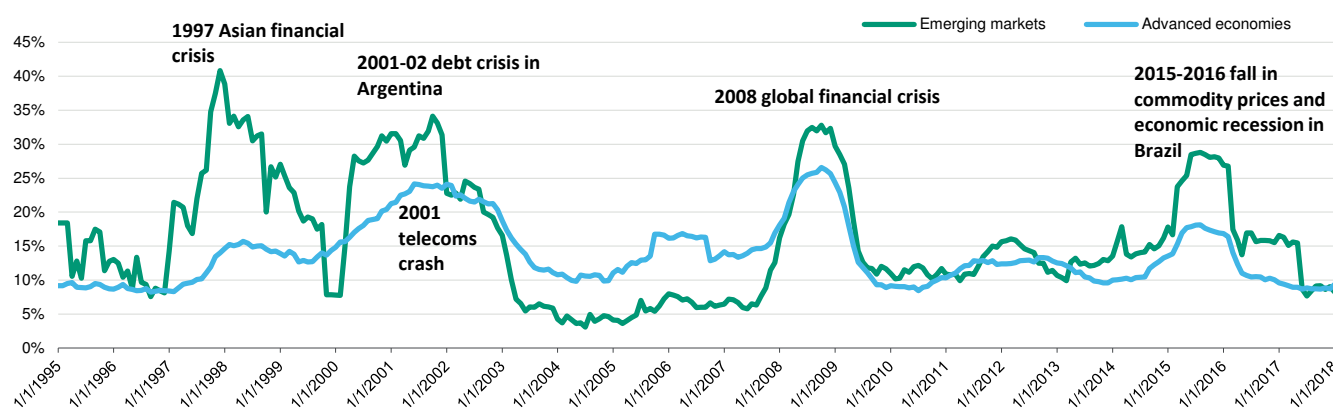
## One-year default rates in emerging and advanced markets



Source: Moody's Investors Service

Exhibit 11

## One-year downgrade rates in emerging and advanced markets



Source: Moody's Investors Service

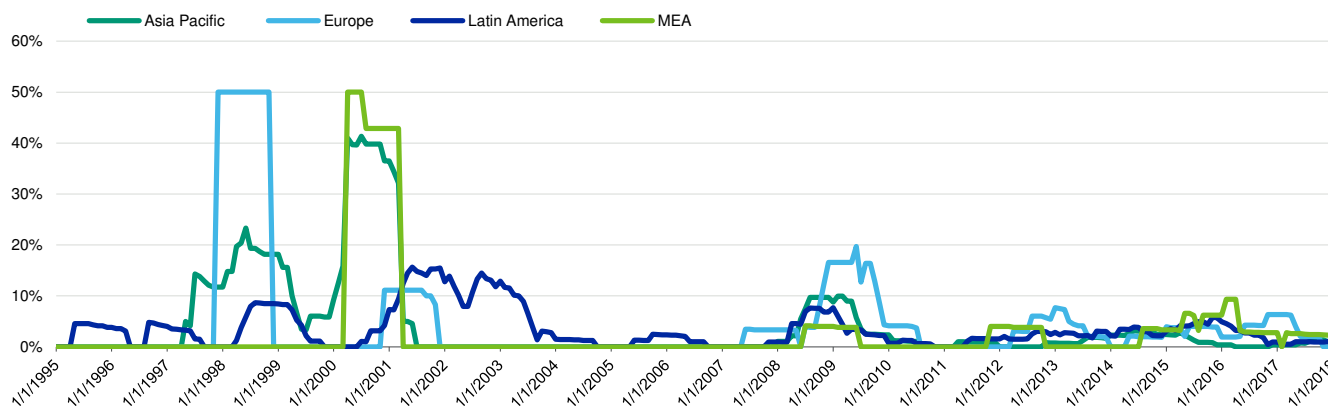
Indeed, if we look at the emerging market corporate default rates by region or country, we see that defaults tend to be clustered over time, which is a reflection of both the smaller size of the emerging market rated portfolio compared with advanced markets, but also of the clustering of corporate defaults during country crisis periods.

Exhibit 12 shows that default rates vary quite a lot by region. For example, during the 2015-16 fall in commodity prices, the Latin America default rate increased to 5.8%, the emerging Europe default rate climbed to 6.3%, and the Middle East and Africa default rate went up to 9.4%. Meanwhile, the default rate in Asia Pacific followed a declining trend. Similarly, as Exhibit 13 and 14 show, corporate default rates have tended to vary greatly across countries, which partly reflects the small size of the rated portfolios and country-specific developments. The average annual corporate default rate from 1995-2018 exceeded 7% in Indonesia, compared with 6% in Argentina and 5% in Mexico. The rate was in the 1%-3% range in Brazil, South Africa, China and Russia, and below 1% in the UAE, Chile and India. No rated companies have defaulted to date in Malaysia and Turkey.

Exhibit 12

**One-year default rates in emerging markets**

By region

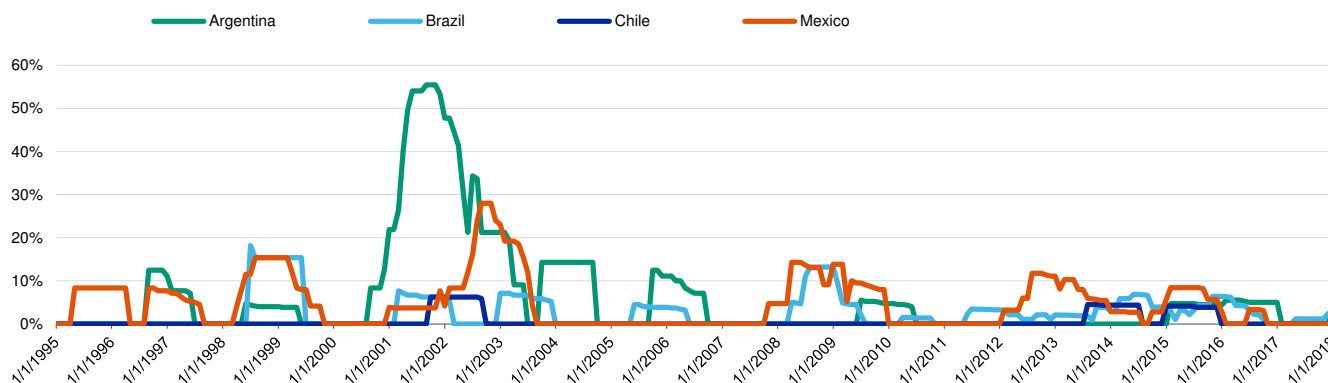


Source: Moody's Investors Service

Exhibit 13

**One-year default rates in emerging markets**

For selected countries

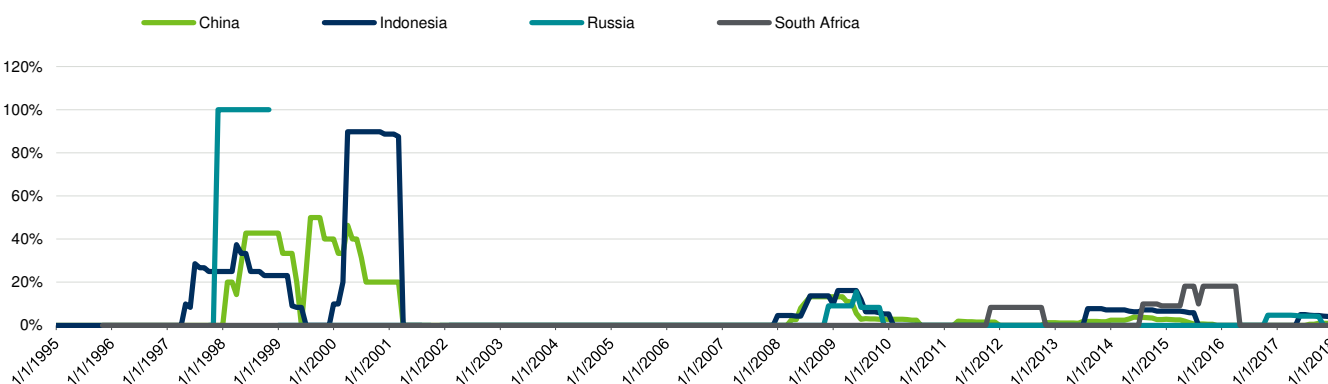


Source: Moody's Investors Service

Exhibit 14

**One-year default rates in emerging markets**

For selected countries



Source: Moody's Investors Service

### Country risk drives large deterioration in emerging market corporate credit quality

One way to quantify the impact of country risk on corporate default rates is to use sovereign spreads as a measure of stress or "crisis" periods. We define "crisis" periods as years in which both the average annual growth and the standard deviation of the sovereign spreads are above the corresponding yearly median from 1995-2018. As Exhibit 15 shows, the one-year corporate default rate rises 40% to 170% in "crisis" years depending on the country. We find similar results over a three-year horizon, where the default rate rises 30% to 150%.<sup>1</sup> Across emerging markets, the default rate roughly doubles in "crisis" years on average over both one- and three-year horizons.

Exhibit 15

#### Default rate rises during "crisis" years for emerging market countries\*

		All Emerging Markets	Argentina	Brazil	Chile	China	Indonesia	Mexico
Average One-year Default Rate	Crisis	5.3%	8.3%	4.8%	0.6%	7.1%	3.6%	5.4%
	Non-Crisis	2.6%	5.1%	1.8%	0.9%	4.7%	2.3%	3.9%
	All	3.4%	6.3%	2.8%	0.6%	5.3%	8.0%	4.3%
Average Cohort Size		266	18	46	17	52	14	26
Average Three-year Default Rate	Crisis	12.7%	16.5%	11.9%	1.8%	18.8%	11.1%	15.8%
	Non-Crisis	7.0%	9.0%	6.4%	2.6%	7.6%	4.8%	12.3%
	All	10.6%	14.8%	10.2%	1.7%	13.7%	18.3%	14.2%
Average Cohort Size		236	18	42	17	38	13	26

\* Countries are selected based on average cohort size (>10).

Source: Moody's Investors Service, JP MORGAN EMBI

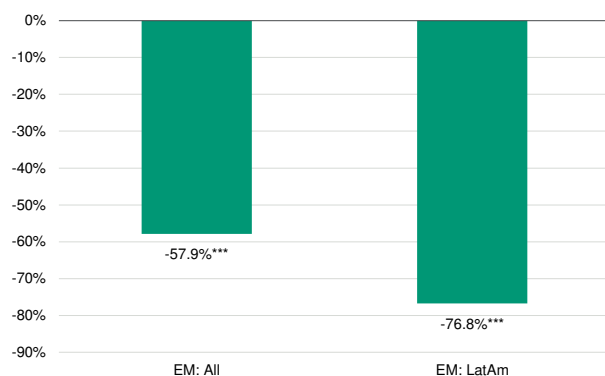
In addition to defaults, downgrades of nonfinancial companies also move closely with country risk. For example, the correlation between emerging market sovereign bond spreads (as measured by the JP Morgan EMBI index) and the nonfinancial corporate downgrade rate is statistically significant at 56%. Further, as Exhibit 16 shows, the corporate downgrade rate in emerging markets correlates significantly with currency movements. The correlation is slightly more prominent in Latin America, where nonfinancial companies have a relatively stronger reliance on dollar-denominated debt.

Fluctuations in commodity prices have a widespread credit impact on commodity-exporting countries in emerging markets. Stress from commodity prices spreads much more widely through the economy in commodity-exporting countries than in commodity-nonexporting countries, where the stress remains contained within commodity sectors. Exhibit 17 shows the correlation between commodity prices and credit downgrades in emerging markets. For commodity-exporting countries, the correlation is high in both commodity sectors (76%) and noncommodity sectors (61%). On the other hand, for commodity-nonexporting countries, the correlation is much lower in both industry groups and is not statistically different from zero in noncommodity sectors.



Exhibit 16

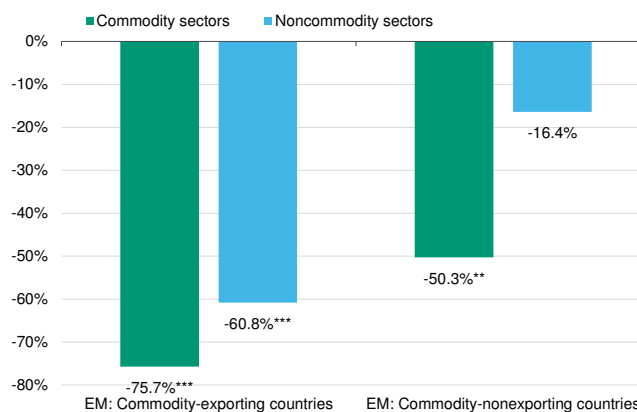
### Credit quality of emerging market nonfinancial companies deteriorates when the currency depreciates (Correlation)



\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. The bar shows the correlation between the change in the MSCI EM Currency Index (or the JP Morgan Latin America Currency Index) and the overall emerging market (or Latin America) nonfinancial corporate downgrade rate.  
Sources: Moody's Investors Service, MSCI EM Currency Index, Bloomberg JP Morgan Latin America Currency Index

Exhibit 17

### Commodity-exporting countries in emerging markets show tighter correlation with commodity price cycles (Correlation)



\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. The bar shows the correlation between the change in the IMF Primary Commodity Price Index and the nonfinancial corporate downgrade rate, respectively for commodity and noncommodity sectors, within each country group.  
Sources: Moody's Investors Service, IMF Primary Commodity Prices

## Case study: Brazil 2015-16

Brazil experienced the largest recent surge in emerging market corporate defaults, with 10 in 2015-16. Both domestic and external developments, as well as firm-specific credit characteristics, contributed to the default surge. The economic recession that started in mid-2014 did not end until late 2016. Between 2015 and 2016, the country's GDP contracted 6%.<sup>2</sup> Soaring inflation not only eroded the purchasing power of consumers but forced Brazil's central bank to raise interest rates to a nine-year high of 14.25% in July 2015. In addition, Brazil was gripped by a billion-dollar corruption scandal involving the state-owned oil company, Petrobras. Prosecutors forced businesses that depended on Petrobras to suspend operations. The political turmoil, combined with low growth and the large fiscal deficit, pushed up Brazil's sovereign spread to 548 basis points in December 2015 from 270 basis points in December 2014.<sup>3</sup> Further, falling commodity prices affected key Brazilian exports, such as iron ore and sugar. The sharp decline in net capital flows and the currency depreciation limited credit availability for companies.

Combined, these factors created distress in multiple sectors including Capital Industries (seven defaults), Consumer Industries (one), Technology (one) and Transportation (one). The faltering economy and weak consumer confidence aggravated the deterioration of the Construction & Building sector,<sup>4</sup> which recorded four defaults during 2015-16. Additionally, in early 2015, [Mega Energia Locacao e Admin. de Bens S.A.](#), a local provider of equipment rental, missed an interest payment because of its direct and indirect exposure to the heavy construction industry as well as the Petrobras investigation. [Usinas Siderurgicas de Minas Gerais S.A.](#), another defaulted company in Capital Industries, and [Oi S.A.](#), a local exchange carrier, also experienced weakened cash flow generation, resulting from the contraction of domestic demand amid the economic slowdown.<sup>5</sup>

The decline in nonenergy commodity prices adversely affected [Agropecuaria Nossa Senhora do Carmo S.A.](#), a privately held sugar and ethanol producer. The low-price environment reduced the company's cash position by restricting its letters of credit and aggravated its operational difficulty. The company's liquidity deterioration resulted in its missed interest payment in February 2015.<sup>6</sup> In addition to the economic slowdown and commodity price decline, the depreciation of the Brazilian real induced higher leverage and contributed to the defaults of both [Agropecuaria Nossa Senhora do Carmo S.A.](#) and [Gol Linhas Aereas Inteligentes S.A.](#),<sup>7</sup> given their large US-dollar-denominated debts.

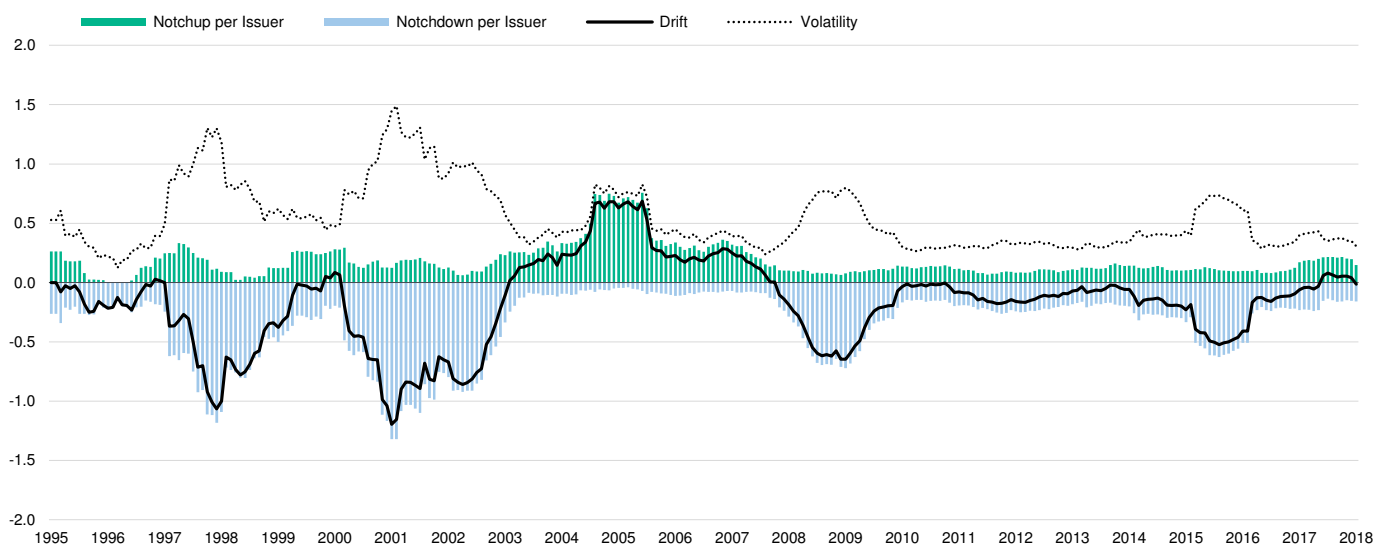
## Emerging market company ratings were slightly more volatile compared with advanced markets'

For most of the study period, the ratings of emerging market companies were slightly more volatile than those in advanced markets. Exhibits 18 and 19 plot the time series of one-year rating drift<sup>8</sup> and rating volatility<sup>9</sup> in both emerging and advanced markets. The larger fraction of speculative-grade companies for most of the study period partially explains the higher rating volatility in emerging markets. Moreover, emerging market companies have had exposure to a wider range of risks, such as currency exchange rate risks and political risks, and a higher frequency of crisis episodes.

Exhibit 18

### One-year rating drift and volatility in emerging markets

Number of rating notches

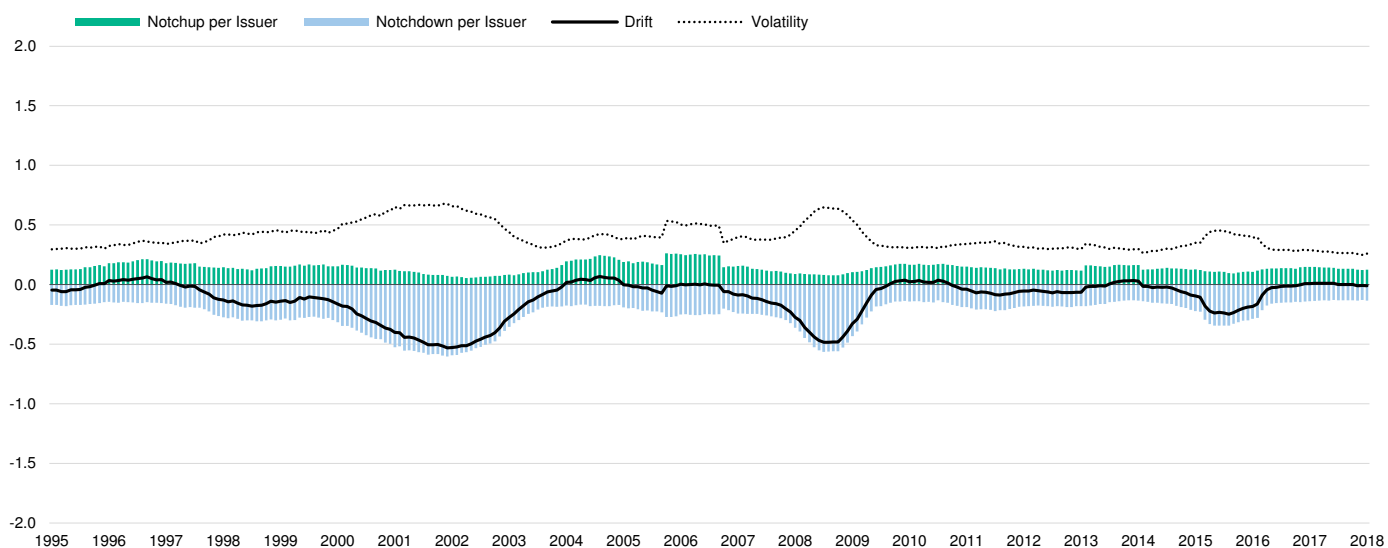


Source: Moody's Investors Service

Exhibit 19

### One-year rating drift and volatility in advanced economies

Number of rating notches

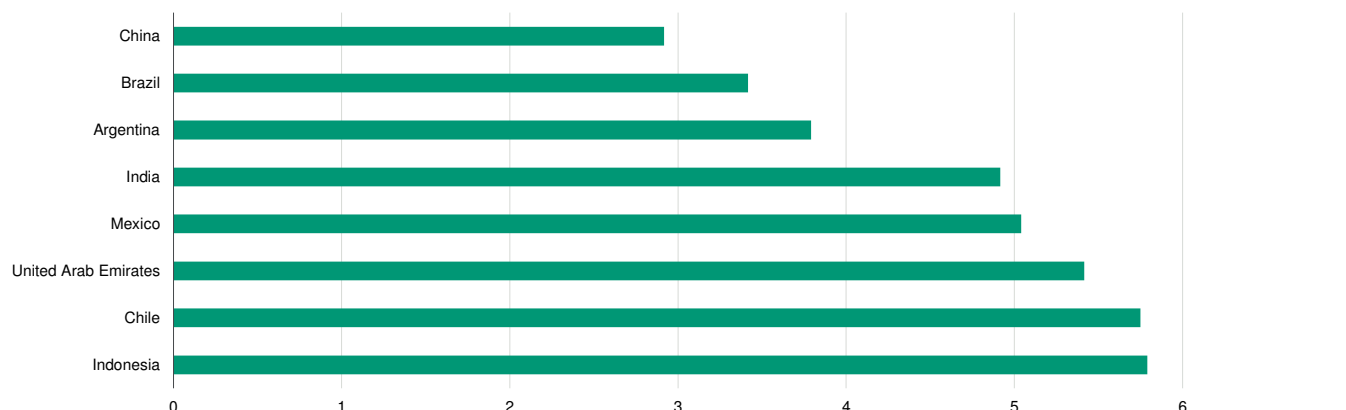


Source: Moody's Investors Service

In addition to being more prone to macroeconomic and political risks, emerging market companies are also more susceptible to rollover risks because their debt typically has shorter maturities. Exhibit 20 shows that the maturities of debt issued by companies<sup>10</sup> in emerging markets vary significantly across countries, with a median debt maturity of no more than four years in several major emerging markets, including China, Brazil and Argentina. The median debt maturity in emerging markets is 3.8 years, compared with 5.8 years in advanced markets.<sup>11</sup> A tightening of global financial conditions could translate into greater refinancing risk, especially for companies with shorter debt maturities and larger external funding needs.

Exhibit 20

**Median debt maturity of emerging market nonfinancial companies varies by country**  
Years, as of 12/31/2018



The bars show the median time to maturity of currently outstanding and rated long-term debts issued by nonfinancial companies as of 12/31/2018 in corresponding countries.

Source: Moody's Investors Service

## Default rates by rating category are comparable across emerging and advanced markets

The default rates by rating category in emerging markets are roughly comparable with those in advanced markets, as shown in Exhibits 21 and 22, especially given that the size of the rated portfolio in emerging markets is much smaller.<sup>12</sup>

Exhibit 21

**Average default rates in emerging markets, 1995-2018**

Emerging Markets	Average Cohort Size	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aaa	1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
Aa	5	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	24	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Baa	77	0.16%	0.35%	0.50%	0.73%	1.10%	1.55%	2.03%	2.34%	2.41%	2.41%
Ba	66	0.61%	2.17%	4.44%	8.01%	10.59%	12.21%	13.43%	14.66%	16.33%	17.73%
B	65	3.77%	9.10%	14.92%	20.16%	24.64%	28.39%	32.02%	33.98%	34.67%	34.67%
Caa_C	30	16.84%	29.10%	39.90%	46.75%	51.13%	54.36%	57.92%	60.83%	63.23%	66.46%
IG	106	0.11%	0.25%	0.36%	0.53%	0.81%	1.14%	1.50%	1.71%	1.76%	1.76%
SG	159	4.66%	9.39%	14.24%	18.83%	22.31%	24.88%	27.18%	28.79%	30.12%	31.15%
All Ratings	266	2.78%	5.56%	8.34%	10.96%	12.99%	14.54%	15.92%	16.85%	17.52%	18.01%

Source: Moody's Investors Service

Exhibit 22

**Average default rates in advanced markets, 1995-2018**

Advanced Economies	Average Cohort Size	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aaa	34	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa	151	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	574	0.03%	0.08%	0.16%	0.24%	0.35%	0.46%	0.58%	0.69%	0.80%	0.89%
Baa	797	0.10%	0.29%	0.53%	0.82%	1.15%	1.47%	1.75%	2.05%	2.35%	2.69%
Ba	390	0.51%	1.63%	3.09%	4.76%	6.25%	7.83%	9.42%	10.93%	12.47%	14.10%
B	739	2.57%	6.98%	11.85%	16.46%	20.71%	24.58%	27.89%	30.60%	33.15%	35.39%
Caa_C	551	9.33%	16.99%	23.65%	29.42%	34.45%	38.47%	42.04%	45.30%	48.38%	50.44%
IG	1557	0.06%	0.17%	0.32%	0.50%	0.70%	0.90%	1.08%	1.27%	1.45%	1.63%
SG	1680	4.31%	8.88%	13.31%	17.32%	20.84%	23.91%	26.57%	28.83%	30.95%	32.82%
All Ratings	3237	2.23%	4.49%	6.59%	8.40%	9.91%	11.17%	12.21%	13.08%	13.85%	14.52%

Source: Moody's Investors Service

**Recovery rate is comparable in emerging and advanced markets**

Recovery rates generally correlate with the priority of claim in the capital structure. The recovery rate of first-lien bonds generally exceeds that of senior unsecured bonds. For both emerging and advanced markets, the recovery experience is fairly comparable, especially for senior unsecured bonds. Based on a limited number of observations available, the recovery rate of first-lien loans in emerging markets is slightly higher in both issuer- and dollar-weighted measures, while the recovery rates for first-lien bonds is slightly lower in emerging markets.

Exhibit 23

**Recovery rates in emerging and advanced markets, 1995-2018**

Priority Position	Region	Issuer-weighted recoveries	Issuer count	Volume-weighted recoveries	Dollar volume (in billions of USD)
First Lien Bond	Emerging	46.5	38	50.5	\$13.3
	Advanced	55.4	266	57.6	\$117.9
Sr. Unsecured Bond	Emerging	38.9	106	30.4	\$90.6
	Advanced	36.8	726	32.0	\$456.1
First Lien Loan	Emerging	69.0	2	65.6	\$1.1
	Advanced	67.7	435	63.3	\$274.2

Source: Moody's Investors Service

**Rating performance: Emerging market ratings accurately differentiate defaulters from non-defaulters**

The Average Position of defaults (AP) measures the ordinal power of ratings and is our preferred metric for measuring ratings accuracy. A more powerful ratings system should have low-rated defaulters and high-rated non-defaulters, meaning the average position of defaulted companies should be high for an effective rating system.

Our ratings are strongly predictive of default risk in both emerging and advanced markets. The one-year AP in both regions has exceeded 90%, with the historical average of AP in advanced markets at 91% compared with 90% in emerging markets. Recently, the rating accuracy has been very high in emerging markets. For the one-year cohort starting in January 2018, emerging markets registered an AP of 97%, above the 92% level for advanced markets.

Exhibit 24

## Emerging market rating performance metrics, 1995-2018

Performance Metrics		All Emerging Markets	EM - Asia Pacific	EM - Europe	EM - Latin America	EM - Middle East & Africa	All Advanced Markets
One Year Average Position	Current	96.52%	93.93%		98.68%	100.00%	91.66%
	(Hist Avg)	(90.43%)	(90.57%)	(95.58%)	(90.30%)	(90.44%)	(91.14%)
Five Year Average Position	Current	89.32%	94.61%	89.40%	83.95%	95.83%	83.34%
	(Hist Avg)	(80.81%)	(81.32%)	(83.73%)	(79.74%)	(89.42%)	(85.79%)
Median Rating One Year Before Default	Current	Caa3	Caa2		Caa3	B3	Caa3
	(Hist Avg)	(B3)	(B3)	(Caa2)	(B3)	(B3)	(Caa1)

Source: Moody's Investors Service

## Appendix

Exhibit 25

### List of emerging market countries included in the study

Argentina	Ecuador	Mexico	South Africa
Azerbaijan	Egypt	Mongolia	St. Maarten
Bahamas	El Salvador	Nigeria	Thailand
Bangladesh	Guatemala	Oman	Trinidad & Tobago
Bermuda	Hungary	Pakistan	Turkey
Bolivia	India	Panama	Ukraine
Brazil	Indonesia	Paraguay	United Arab Emirates
Bulgaria	Jamaica	Peru	Uruguay
Cayman Islands	Kazakhstan	Philippines	Venezuela
Chile	Kuwait	Poland	Vietnam
China	Liberia	Qatar	
Colombia	Macau	Romania	
Costa Rica	Malaysia	Russia	
Croatia	Marshall Islands	Saint Lucia	
Dominican Republic	Mauritius	Saudi Arabia	

Source: Moody's Investors Service

Exhibit 26

### Distribution of nonfinancial companies with outstanding ratings by country As of 12/31/2018

Domain	Issuer Count	Domain	Issuer Count	Domain	Issuer Count	Domain	Issuer Count	Domain	Issuer Count
Argentina	29	China	307	Jamaica	5	Oman	11	South Africa	16
Azerbaijan	1	Colombia	10	Kazakhstan	12	Panama	1	St. Maarten	1
Bangladesh	1	Costa Rica	3	Kuwait	1	Paraguay	1	Thailand	10
Bermuda	6	Croatia	1	Liberia	1	Peru	20	Trinidad & Tobago	2
Bolivia	3	Dominican Republic	1	Macau	3	Philippines	2	Turkey	13
Brazil	106	El Salvador	1	Malaysia	18	Poland	7	Ukraine	1
Bulgaria	2	Guatemala	3	Marshall Islands	11	Qatar	6	United Arab Emirates	18
Cambodia	1	Hungary	1	Mauritius	8	Romania	1	Uruguay	1
Cayman Islands	10	India	31	Mexico	36	Russia	56	Vietnam	1
Chile	26	Indonesia	42	Nigeria	2	Saudi Arabia	9		

Source: Moody's Investors Service

Exhibit 27

**Rating distribution by industry in emerging markets vs. advanced economies**  
As of 12/31/2018

Sector	Currently Outstanding Ratings by industry		Avg Annual Growth Rate - 2000 - 2018	
	Emerging Markets	Advanced Economies	Emerging Markets	Advanced Economies
Capital Industries	38.2%	32.9%	12.2%	2.3%
Consumer Industries	7.1%	17.5%	8.4%	1.2%
Energy & Environment	13.5%	9.9%	8.5%	1.6%
Media & Publishing	0.3%	4.0%	-2.6%	-1.0%
Retail & Distribution	2.4%	6.2%	13.8%	1.2%
Sovereign-Related Issuers	5.8%	0.7%	15.1%	7.2%
Technology	8.1%	12.6%	5.9%	0.9%
Transportation	6.6%	3.7%	10.6%	0.2%
Utilities	17.8%	12.5%	14.2%	2.6%

Source: Moody's Investors Service

Exhibit 28

**Rating distribution of emerging market companies**

Cohort Date	Aaa	Aa	A	Baa	Ba	B	Caa_C	IG	SG	Total Count
1/1/1995	0	0	7	3	15	13	0	10	28	38
1/1/1996	0	1	5	8	18	13	1	14	32	46
1/1/1997	0	1	6	17	23	26	4	24	53	77
1/1/1998	0	1	4	22	53	38	3	27	94	121
1/1/1999	1	2	2	24	44	53	22	29	119	148
1/1/2000	1	1	3	25	34	67	23	30	124	154
1/1/2001	1	1	4	32	34	80	16	38	130	168
1/1/2002	1	1	3	51	41	41	29	56	111	167
1/1/2003	1	1	7	48	40	42	42	57	124	181
1/1/2004	1	1	11	44	50	52	30	57	132	189
1/1/2005	1	1	16	50	63	59	28	68	150	218
1/1/2006	1	2	30	66	71	63	18	99	152	251
1/1/2007	1	4	32	73	88	86	26	110	200	310
1/1/2008	1	4	45	97	104	111	39	147	254	401
1/1/2009	1	5	47	109	91	107	47	162	245	407
1/1/2010	0	8	37	113	97	99	56	158	252	410
1/1/2011	0	11	32	132	113	132	58	175	303	478
1/1/2012	0	14	33	153	127	146	58	200	331	531
1/1/2013	0	17	38	179	134	141	72	234	347	581
1/1/2014	0	20	47	227	157	146	76	294	379	673
1/1/2015	0	25	68	236	160	131	76	329	367	696
1/1/2016	0	27	93	248	163	121	77	368	361	729
1/1/2017	0	29	88	237	181	140	73	354	394	748
1/1/2018	0	3	113	261	211	154	83	377	448	825
1/1/2019	0	3	128	282	207	153	86	413	446	859

Source: Moody's Investors Service

Exhibit 29

## Rating distribution of advanced market companies

Cohort Date	Aaa	Aa	A	Baa	Ba	B	Caa_C	IG	SG	Total Count
1/1/1995	59	241	595	452	344	458	83	1347	885	2232
1/1/1996	60	247	639	505	371	491	94	1451	956	2407
1/1/1997	69	236	674	549	430	572	120	1528	1122	2650
1/1/1998	60	234	681	657	446	751	142	1632	1339	2971
1/1/1999	50	247	684	778	453	905	210	1759	1568	3327
1/1/2000	52	244	757	841	451	978	267	1894	1696	3590
1/1/2001	47	261	797	872	432	933	288	1977	1653	3630
1/1/2002	54	239	793	973	428	794	311	2059	1533	3592
1/1/2003	51	204	733	918	450	781	310	1906	1541	3447
1/1/2004	56	173	685	926	435	854	289	1840	1578	3418
1/1/2005	53	163	702	927	422	931	338	1845	1691	3536
1/1/2006	56	166	708	919	420	1004	383	1849	1807	3656
1/1/2007	53	168	673	935	421	1004	425	1829	1850	3679
1/1/2008	45	160	685	944	378	851	640	1834	1869	3703
1/1/2009	35	165	672	911	353	684	709	1783	1746	3529
1/1/2010	26	152	639	923	347	626	668	1740	1641	3381
1/1/2011	22	126	654	936	380	723	701	1738	1804	3542
1/1/2012	20	104	642	937	387	733	805	1703	1925	3628
1/1/2013	15	110	571	997	391	731	902	1693	2024	3717
1/1/2014	15	106	565	1005	426	790	1080	1691	2296	3987
1/1/2015	14	122	593	973	438	804	1306	1702	2548	4250
1/1/2016	14	117	596	986	461	746	1348	1713	2555	4268
1/1/2017	13	107	559	997	487	708	1359	1676	2554	4230
1/1/2018	13	100	564	1012	502	688	1371	1689	2561	4250
1/1/2019	13	98	551	1065	494	725	1484	1727	2703	4430

Source: Moody's Investors Service

Exhibit 30

## Nonfinancial corporate defaults in emerging markets vs. advanced economies, 1995-2018

Sector	Emerging Markets		Advanced Economies	
	Default Count	Default Volume (in USD millions)	Default Count	Default Volume (in USD millions)
Capital Industries	79	\$36,211.88	487	\$336,014.06
Consumer Industries	24	\$7,122.82	323	\$179,692.46
Energy & Environment	11	\$38,297.78	254	\$257,694.16
Media & Publishing	9	\$3,333.14	173	\$195,649.05
Retail & Distribution	7	\$4,929.33	161	\$81,933.80
Sovereign-Related Issuers	2	\$1,181.40	1	\$1,150.00
Technology	26	\$27,636.17	213	\$201,754.64
Transportation	6	\$1,567.93	77	\$63,364.65
Utilities	10	\$3,231.78	7	\$13,110.48

Source: Moody's Investors Service



Exhibit 31

## Average one-year rating transition matrix in emerging markets, 1995-2018

From\To	Avg Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa	1	79.13%	10.43%						10.43%	
Aa	8		79.21%	17.71%					3.08%	
A	31		1.42%	86.38%	8.84%	0.52%	0.74%	0.03%	2.06%	
Baa	100			1.80%	89.32%	5.11%	0.29%	0.14%	3.22%	0.12%
Ba	87			0.16%	4.96%	79.78%	7.25%	1.35%	6.00%	0.50%
B	86			0.08%	0.30%	6.76%	73.09%	7.87%	8.99%	2.92%
Caa_C	41				0.02%	0.55%	7.73%	63.70%	15.68%	12.33%

Source: Moody's Investors Service

Exhibit 32

## Average one-year rating transition matrix in advanced markets, 1995-2018

From\To	Avg Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa	39	87.13%	8.07%	0.58%	0.16%	0.13%	0.02%		3.92%	
Aa	175	0.70%	85.94%	8.40%	0.58%	0.08%	0.02%		4.29%	
A	664	0.03%	1.02%	88.38%	6.11%	0.32%	0.06%	0.05%	3.99%	0.03%
Baa	875	0.01%	0.03%	2.84%	88.27%	3.10%	0.68%	0.21%	4.77%	0.09%
Ba	420		0.03%	0.18%	6.39%	75.91%	7.43%	0.91%	8.70%	0.46%
B	783	0.01%	0.02%	0.08%	0.32%	4.42%	73.57%	8.23%	11.06%	2.30%
Caa_C	583		0.01%	0.01%	0.03%	0.20%	5.69%	71.10%	14.46%	8.49%

Source: Moody's Investors Service

Exhibit 33

## Average one-year rating transition matrix in emerging markets, 1995-2018

## Asia Pacific

From\To	Avg Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa	15		74.72%	24.24%					1.05%	
A	21		1.68%	89.13%	7.90%	0.22%			1.06%	
Baa	34			3.04%	90.78%	2.77%	0.25%		3.06%	0.10%
Ba	22			0.19%	5.45%	76.82%	7.56%	2.41%	6.60%	0.96%
B	24					6.34%	73.81%	10.36%	6.56%	2.93%
Caa_C	15					0.60%	9.36%	66.27%	13.87%	9.90%

Source: Moody's Investors Service

Exhibit 34

## Average one-year rating transition matrix in emerging markets, 1995-2018

## Europe

From\To	Avg Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa										
A	2			75.44%	21.05%				3.51%	
Baa	17			1.53%	91.33%	5.30%			1.84%	
Ba	20			0.26%	6.53%	82.28%	4.51%	0.76%	5.42%	0.24%
B	18				0.45%	8.05%	76.50%	5.27%	8.54%	1.19%
Caa_C	6						8.82%	58.42%	18.73%	14.03%

Source: Moody's Investors Service

Exhibit 35

## Average one-year rating transition matrix in emerging markets, 1995-2018

Latin America

From\To	Avg Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa	1	84.21%							15.79%	
Aa	1		78.28%	10.86%					10.86%	
A	5		1.23%	83.81%	9.08%	0.07%		0.20%	5.60%	
Baa	45			1.13%	87.08%	7.16%	0.38%	0.26%	3.88%	0.11%
Ba	46			0.12%	3.82%	81.28%	7.60%	1.03%	5.82%	0.34%
B	41			0.17%	0.35%	6.87%	71.35%	7.86%	9.93%	3.48%
Caa_C	20				0.04%	0.72%	7.03%	62.59%	15.92%	13.71%

Source: Moody's Investors Service

Exhibit 36

## Average one-year rating transition matrix in emerging markets, 1995-2018

Middle East &amp; Africa

From\To	Avg Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa	1	69.23%	30.77%							
Aa	5		87.13%	8.88%					3.99%	
A	10		1.13%	83.06%	8.93%	1.78%	3.44%		1.67%	
Baa	7			0.60%	92.37%	3.11%	0.45%	0.30%	2.56%	0.60%
Ba	3				11.88%	59.87%	17.17%	1.77%	8.03%	1.28%
B	6				0.90%	3.59%	72.94%	4.26%	14.50%	3.81%
Caa_C	3						2.21%	69.22%	17.38%	11.19%

Source: Moody's Investors Service

Exhibit 37

## Current one-year rating transition matrix in emerging markets

As of 12/31/2018

From\To	Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa	3		100.00%							
A	113			99.12%					0.88%	
Baa	261			1.92%	90.80%	2.68%			4.60%	
Ba	211				5.21%	82.46%	3.32%	0.95%	7.58%	0.47%
B	154					6.49%	77.92%	6.49%	8.44%	0.65%
Caa_C	83						8.43%	66.27%	16.87%	8.43%

Source: Moody's Investors Service

Exhibit 38

## Current one-year rating transition matrix in advanced markets

As of 12/31/2018

From\To	Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa	13	100.00%								
Aa	100		89.00%	7.00%					4.00%	
A	564		1.42%	89.18%	6.91%				2.48%	
Baa	1012			2.87%	94.07%	0.79%		0.10%	2.17%	
Ba	502				6.57%	80.68%	3.98%	0.60%	8.17%	
B	688					4.94%	78.49%	5.67%	10.32%	0.58%
Caa_C	1371					0.07%	3.65%	77.10%	15.10%	4.08%

Source: Moody's Investors Service

Exhibit 39

**Current one-year rating transition matrix in emerging markets**

As of 12/31/2018, Asia Pacific

From\To	Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa										
A	91			100.00%						
Baa	142			3.52%	90.14%	0.70%			5.63%	
Ba	44				4.55%	81.82%	4.55%	2.27%	6.82%	
B	75					5.33%	72.00%	10.67%	10.67%	1.33%
Caa_C	39						7.69%	76.92%	7.69%	7.69%

Source: Moody's Investors Service

Exhibit 40

**Current one-year rating transition matrix in emerging markets**

As of 12/31/2018, Europe

From\To	Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa										
A	1			100.00%						
Baa	31				87.10%	12.90%				
Ba	41				17.07%	70.73%	4.88%		7.32%	
B	19					10.53%	78.95%	5.26%	5.26%	
Caa_C	7						14.29%	42.86%	42.86%	

Source: Moody's Investors Service

Exhibit 41

**Current one-year rating transition matrix in emerging markets**

As of 12/31/2018, Latin America

From\To	Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa										
A	8			100.00%						
Baa	59				91.53%	3.39%			5.08%	
Ba	114				0.88%	89.47%	1.75%	0.88%	7.02%	
B	53					7.55%	83.02%	1.89%	7.55%	
Caa_C	33						9.09%	63.64%	18.18%	9.09%

Source: Moody's Investors Service

Exhibit 42

**Current one-year rating transition matrix in emerging markets**

As of 12/31/2018, Middle East &amp; Africa

From\To	Cohort Count	Aaa	Aa	A	Baa	Ba	B	Caa_C	WR	Def
Aaa										
Aa	3		100.00%							
A	13			92.31%					7.69%	
Baa	29				96.55%				3.45%	
Ba	12				8.33%	58.33%	8.33%		16.67%	8.33%
B	7						100.00%			
Caa_C	4							25.00%	50.00%	25.00%

Source: Moody's Investors Service

Exhibit 43

## One-year downgrade rates by region

Start Date	Emerging Markets					Advanced Markets
	All	Asia Pacific	Europe	Latin America	Middle East & Africa	All
1/1/1995	18.42%	18.18%		20.00%	0.00%	9.18%
1/1/1996	13.04%	7.14%		17.24%	0.00%	8.68%
1/1/1997	14.29%	33.33%		7.55%	0.00%	8.38%
1/1/1998	38.84%	79.41%	66.67%	20.00%	50.00%	14.64%
1/1/1999	27.03%	32.35%	25.00%	25.96%	16.67%	13.92%
1/1/2000	7.79%	8.57%	0.00%	7.84%	12.50%	14.82%
1/1/2001	31.55%	28.57%	42.86%	29.73%	50.00%	21.24%
1/1/2002	22.75%	7.14%	5.00%	30.43%	0.00%	24.11%
1/1/2003	16.57%	7.89%	0.00%	25.00%	0.00%	18.71%
1/1/2004	4.23%	0.00%	3.03%	6.93%	0.00%	10.77%
1/1/2005	4.13%	10.00%	6.52%	0.88%	0.00%	11.06%
1/1/2006	7.97%	13.89%	0.00%	7.50%	10.00%	16.14%
1/1/2007	6.45%	12.77%	5.88%	1.50%	13.33%	14.19%
1/1/2008	16.21%	23.77%	17.24%	10.97%	10.81%	18.09%
1/1/2009	29.73%	26.83%	42.68%	22.50%	40.48%	24.34%
1/1/2010	10.98%	7.69%	12.33%	6.86%	33.33%	9.17%
1/1/2011	10.88%	13.67%	5.88%	8.87%	19.61%	10.33%
1/1/2012	15.63%	20.38%	12.50%	15.61%	6.12%	12.40%
1/1/2013	10.67%	11.23%	6.38%	12.94%	4.44%	12.54%
1/1/2014	13.52%	6.72%	17.65%	19.43%	4.00%	10.01%
1/1/2015	17.82%	13.41%	24.04%	19.93%	16.00%	13.55%
1/1/2016	26.89%	19.21%	5.10%	41.67%	33.96%	16.82%
1/1/2017	16.58%	23.15%	4.00%	9.51%	32.79%	9.57%
1/1/2018	8.24%	7.67%	11.11%	5.62%	17.65%	9.34%

Source: Moody's Investors Service

Exhibit 44

## One-year downgrade rates by selected country

Start Date	Argentina	Brazil	Chile	China	India	Indonesia	Malaysia	Mexico	Russia	South Africa	United Arab Emirates
1/1/1995								28.57%			
1/1/1996								35.71%			
1/1/1997	10.00%		10.00%			30.00%		13.33%			
1/1/1998	6.25%	80.00%	0.00%			87.50%		12.00%			
1/1/1999	51.85%	25.00%	13.33%			30.77%		11.11%			
1/1/2000	7.69%	0.00%	11.11%			0.00%		3.70%			
1/1/2001	88.46%	5.56%	11.76%			80.00%		16.67%			
1/1/2002	10.00%	54.17%	26.32%	0.00%				29.03%			
1/1/2003	6.67%	32.00%	25.00%	25.00%				29.03%			
1/1/2004		3.57%	4.55%	0.00%		0.00%		18.52%	7.14%		
1/1/2005		2.70%	0.00%	12.50%		8.33%		0.00%	5.00%		
1/1/2006		10.00%	4.55%	36.00%		0.00%	0.00%	3.33%	0.00%		
1/1/2007	0.00%	0.00%	0.00%	13.33%	20.00%	0.00%	18.18%	2.94%	0.00%	18.18%	
1/1/2008	5.00%	11.11%	5.00%	40.48%	30.77%	6.45%	25.00%	20.00%	13.04%	26.67%	0.00%
1/1/2009	4.35%	26.87%	13.64%	32.56%	14.29%	25.81%	25.00%	34.62%	36.17%	25.00%	66.67%
1/1/2010	7.41%	2.67%	0.00%	9.76%	7.14%	3.45%	0.00%	15.38%	4.76%	6.25%	60.00%
1/1/2011	18.18%	5.68%	4.35%	18.97%	0.00%	10.00%	13.33%	16.13%	7.84%	10.00%	26.67%
1/1/2012	38.24%	16.36%	9.09%	25.32%	33.33%	10.00%	12.50%	10.53%	3.92%	15.00%	0.00%
1/1/2013	8.11%	9.65%	22.73%	9.52%	7.14%	3.45%	16.67%	21.95%	3.57%	11.11%	0.00%
1/1/2014	78.95%	16.13%	8.33%	7.95%	0.00%	6.90%	0.00%	2.22%	19.67%	11.76%	0.00%
1/1/2015	8.82%	26.83%	8.00%	14.94%	5.26%	21.43%	0.00%	9.52%	36.07%	31.25%	12.50%
1/1/2016	18.18%	75.21%	14.81%	18.57%	28.00%	16.00%	11.76%	12.20%	5.17%	13.33%	7.69%
1/1/2017	13.33%	11.11%	0.00%	28.70%	7.69%	14.81%	5.88%	7.50%	1.67%	50.00%	0.00%
1/1/2018	3.33%	6.36%	0.00%	8.27%	3.45%	13.16%	0.00%	2.70%	1.67%	10.53%	0.00%

Source: Moody's Investors Service

Exhibit 45

## One-year downgrade rates by industry in emerging markets

Start Date	Capital Industries	Consumer Industries	Energy & Environment	Media & Publishing	Retail & Sovereign-Related Distribution	Issuers	Technology	Transportation	Utilities
1/1/1995	30.77%	100.00%	0.00%	0.00%		100.00%	0.00%	0.00%	0.00%
1/1/1996	31.25%	0.00%	0.00%	100.00%		0.00%	0.00%	0.00%	0.00%
1/1/1997	13.64%	14.29%	16.67%	0.00%		0.00%	10.00%	40.00%	11.11%
1/1/1998	55.00%	27.27%	33.33%	42.86%	0.00%	40.00%	31.25%	16.67%	27.27%
1/1/1999	21.43%	12.50%	20.83%	50.00%	66.67%	71.43%	12.00%	33.33%	50.00%
1/1/2000	0.00%	23.08%	4.17%	0.00%	0.00%	60.00%	11.76%	12.50%	0.00%
1/1/2001	44.44%	16.67%	24.00%	30.77%	60.00%	33.33%	31.71%	0.00%	25.00%
1/1/2002	16.13%	7.69%	27.27%	30.00%	40.00%	0.00%	20.51%	10.00%	37.50%
1/1/2003	18.18%	0.00%	21.05%	33.33%	16.67%	0.00%	8.33%	25.00%	25.00%
1/1/2004	9.09%	6.25%	2.44%	0.00%	0.00%	0.00%	0.00%	12.50%	4.17%
1/1/2005	8.89%	4.76%	2.13%	0.00%	0.00%	0.00%	2.22%	0.00%	6.90%
1/1/2006	16.95%	3.13%	2.13%	0.00%	0.00%	10.00%	4.35%	18.75%	6.90%
1/1/2007	10.84%	9.30%	2.08%	0.00%	0.00%	0.00%	3.92%	16.67%	2.63%
1/1/2008	26.50%	16.95%	6.67%	10.00%	30.00%	0.00%	8.62%	23.81%	11.76%
1/1/2009	37.70%	38.18%	25.40%	20.00%	11.11%	6.25%	17.24%	54.55%	23.08%
1/1/2010	13.22%	8.89%	15.63%	0.00%	11.11%	0.00%	10.00%	12.00%	8.47%
1/1/2011	14.65%	11.32%	15.15%	0.00%	0.00%	11.54%	4.92%	26.92%	0.00%
1/1/2012	18.78%	13.46%	8.11%	0.00%	15.79%	0.00%	13.56%	23.33%	23.08%
1/1/2013	14.58%	14.04%	8.33%	0.00%	21.74%	0.00%	17.46%	3.13%	2.30%
1/1/2014	11.11%	14.06%	15.31%	12.50%	28.57%	0.00%	11.76%	21.05%	16.49%
1/1/2015	19.59%	12.28%	23.76%	25.00%	25.93%	7.69%	18.46%	13.33%	13.76%
1/1/2016	29.23%	16.07%	21.21%	20.00%	52.38%	34.69%	20.90%	20.00%	30.33%
1/1/2017	13.48%	5.26%	24.24%	25.00%	23.08%	22.00%	10.77%	17.65%	20.93%
1/1/2018	8.44%	20.69%	2.86%	0.00%	3.70%	0.00%	11.59%	9.09%	9.09%

Source: Moody's Investors Service

Exhibit 46

## One-year default rates by region

Start Date	All Emerging Markets			EM Asia Pacific			EM Europe			EM Latin America			EM Middle East & Africa			All Advanced Markets		
	IG	SG	All	IG	SG	All	IG	SG	All	IG	SG	All	IG	SG	All	IG	SG	All
1/1/1995	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				0.00%	0.00%	0.00%		0.00%	0.00%	0.00%	3.14%	1.29%
1/1/1996	0.00%	3.45%	2.33%	0.00%	0.00%	0.00%				0.00%	4.76%	3.85%	0.00%	0.00%	0.00%	0.00%	1.90%	0.79%
1/1/1997	0.00%	4.00%	2.72%	0.00%	0.00%	0.00%				0.00%	5.56%	4.04%	0.00%	0.00%	0.00%	0.00%	2.12%	0.92%
1/1/1998	0.00%	5.62%	4.36%	0.00%	16.00%	11.76%		50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.15%	1.46%
1/1/1999	0.00%	12.59%	10.20%	0.00%	21.43%	18.18%	0.00%	0.00%	0.00%	0.00%	10.39%	8.42%	0.00%	0.00%	0.00%	0.06%	5.90%	2.86%
1/1/2000	0.00%	2.66%	2.15%	0.00%	11.18%	9.24%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.24%	7.59%	3.76%
1/1/2001	0.00%	19.85%	15.32%	0.00%	47.62%	36.52%	0.00%	12.50%	11.11%	0.00%	9.58%	7.33%	0.00%	60.00%	42.86%	0.17%	10.75%	5.06%
1/1/2002	0.00%	13.25%	8.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.47%	12.79%	0.00%	0.00%	0.00%	0.74%	8.61%	4.14%
1/1/2003	0.00%	11.96%	7.82%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	19.15%	12.90%	0.00%	0.00%	0.00%	0.00%	5.71%	2.58%
1/1/2004	0.00%	1.32%	0.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	1.49%	0.00%	0.00%	0.00%	0.00%	2.87%	1.32%
1/1/2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.13%	2.01%	1.02%
1/1/2006	0.00%	1.98%	1.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.61%	2.36%	0.00%	0.00%	0.00%	0.00%	1.80%	0.88%
1/1/2007	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.21%	0.61%
1/1/2008	1.09%	1.24%	1.19%	0.00%	1.56%	1.10%	0.00%	4.55%	3.33%	2.33%	0.00%	0.93%	0.00%	0.00%	0.00%	0.00%	4.85%	2.53%
1/1/2009	1.01%	13.14%	8.51%	0.00%	13.08%	8.77%	0.00%	26.95%	16.60%	0.00%	12.45%	7.67%	7.14%	0.00%	4.00%	0.00%	13.74%	7.16%
1/1/2010	0.00%	2.38%	1.45%	0.00%	3.69%	2.34%	0.00%	6.67%	4.17%	0.00%	1.19%	0.73%	0.00%	0.00%	0.00%	0.00%	3.38%	1.68%
1/1/2011	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.54%	1.30%
1/1/2012	0.00%	1.80%	1.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.54%	0.00%	10.00%	4.00%	0.00%	3.07%	1.66%
1/1/2013	0.00%	4.37%	2.46%	0.00%	1.49%	0.75%	0.00%	11.54%	7.69%	0.00%	4.71%	2.88%	0.00%	0.00%	0.00%	0.00%	2.31%	1.26%
1/1/2014	0.00%	3.59%	1.90%	0.00%	4.83%	2.28%	0.00%	0.00%	0.00%	0.00%	3.81%	2.18%	0.00%	0.00%	0.00%	0.00%	1.91%	1.09%
1/1/2015	0.00%	5.78%	2.93%	0.00%	5.46%	2.44%	0.00%	6.62%	3.94%	0.00%	5.47%	3.10%	0.00%	11.11%	3.33%	0.00%	3.19%	1.88%
1/1/2016	0.00%	5.81%	2.74%	0.00%	1.16%	0.41%	0.00%	3.03%	1.92%	0.00%	8.28%	4.93%	0.00%	22.22%	6.25%	0.00%	5.03%	3.00%
1/1/2017	0.00%	2.60%	1.29%	0.00%	1.28%	0.41%	0.00%	9.79%	6.35%	0.00%	1.35%	0.96%	0.00%	10.00%	2.78%	0.00%	3.82%	2.28%
1/1/2018	0.00%	2.65%	1.36%	0.00%	3.60%	1.36%	0.00%	0.00%	0.00%	0.00%	2.08%	1.49%	0.00%	5.56%	2.33%	0.00%	2.70%	1.62%

Source: Moody's Investors Service

Exhibit 47

## One-year default rates by selected country

Start Date	Argentina	Brazil	Chile	China	India	Indonesia	Malaysia	Mexico	Russia	South Africa	United Arab Emirates
1/1/1995							0.00%	0.00%			
1/1/1996							0.00%	8.33%			
1/1/1997			0.00%			0.00%	0.00%	7.69%			
1/1/1998	0.00%	0.00%	0.00%			25.00%	0.00%	0.00%			
1/1/1999	4.00%	15.38%	0.00%			23.08%	0.00%	15.38%			
1/1/2000	0.00%	0.00%	0.00%			10.00%	0.00%	0.00%			
1/1/2001	21.89%	0.00%	0.00%			88.75%	0.00%	3.85%			
1/1/2002	47.71%	5.88%	6.25%				0.00%	4.17%			
1/1/2003	21.25%	7.14%	0.00%	0.00%			0.00%	23.08%			
1/1/2004		0.00%	0.00%	0.00%		0.00%	0.00%	0.00%			
1/1/2005		0.00%	0.00%	0.00%		0.00%	0.00%	0.00%			
1/1/2006		3.85%	0.00%	0.00%		0.00%	0.00%	0.00%	0.00%		
1/1/2007	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%	0.00%		
1/1/2008	0.00%	0.00%	0.00%	0.00%		4.55%	0.00%	4.76%	0.00%		
1/1/2009	0.00%	13.25%	0.00%	13.31%		9.77%	0.00%	13.88%	9.09%	0.00%	
1/1/2010	4.76%	0.00%	0.00%	2.86%		5.26%	0.00%	0.00%	0.00%	0.00%	0.00%
1/1/2011	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1/1/2012	0.00%	3.26%	0.00%	0.00%		0.00%	0.00%	0.00%	0.00%	8.33%	0.00%
1/1/2013	0.00%	2.12%	0.00%	1.19%		0.00%	0.00%	11.11%	0.00%	0.00%	0.00%
1/1/2014	0.00%	2.94%	4.35%	2.44%		7.14%	0.00%	2.86%	0.00%	0.00%	0.00%
1/1/2015	0.00%	3.94%	4.17%	2.77%	0.00%	6.67%	0.00%	5.72%	0.00%	9.09%	0.00%
1/1/2016	4.35%	6.40%	0.00%	0.00%	0.00%	0.00%	0.00%	2.94%	0.00%	18.18%	0.00%
1/1/2017	5.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	4.76%	0.00%	10.00%
1/1/2018	5.00%	2.36%	0.00%	1.39%	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Source: Moody's Investors Service



Exhibit 48

## One-year default rates by industry in emerging markets

Start Date	Capital Industries	Consumer Industries	Energy & Environment	Media & Publishing	Retail & Distribution	Sovereign & Public Finance	Technology	Transportation	Utilities
1/1/1995	0.00%								
1/1/1996	6.25%								
1/1/1997	4.76%		0.00%				0.00%		
1/1/1998	10.53%	0.00%	4.76%				0.00%		0.00%
1/1/1999	14.63%	15.38%	0.00%	30.00%			0.00%		0.00%
1/1/2000	0.00%	9.09%	0.00%				0.00%		0.00%
1/1/2001	40.25%	9.09%	0.00%	11.11%			8.50%		0.00%
1/1/2002	0.00%	10.00%	8.70%				16.57%		6.67%
1/1/2003	2.70%	0.00%	4.00%				20.83%		6.25%
1/1/2004	0.00%	0.00%	0.00%				0.00%		0.00%
1/1/2005	0.00%	0.00%	0.00%				0.00%		0.00%
1/1/2006	2.04%	6.25%	0.00%			0.00%	0.00%	0.00%	0.00%
1/1/2007	0.00%	0.00%	0.00%			0.00%	0.00%	0.00%	0.00%
1/1/2008	1.23%	0.00%	0.00%			0.00%	3.13%	0.00%	0.00%
1/1/2009	16.38%	16.83%	2.44%			0.00%	3.33%	0.00%	3.23%
1/1/2010	0.00%	3.03%	2.38%			0.00%	0.00%	5.88%	2.94%
1/1/2011	0.00%	0.00%	0.00%			0.00%	0.00%	0.00%	0.00%
1/1/2012	0.81%	0.00%	2.04%		0.00%	0.00%	0.00%	0.00%	4.26%
1/1/2013	2.87%	7.09%	0.00%		0.00%	0.00%	7.89%	0.00%	0.00%
1/1/2014	2.37%	2.13%	0.00%		6.67%	0.00%	7.89%	0.00%	0.00%
1/1/2015	4.85%	4.21%	0.00%		12.50%	0.00%	2.44%	0.00%	1.35%
1/1/2016	2.98%	2.27%	2.70%		12.50%	0.00%	2.27%	5.26%	1.20%
1/1/2017	1.49%	0.00%	2.69%		7.14%	0.00%	2.50%	0.00%	0.00%
1/1/2018	2.25%	2.50%	0.00%		0.00%	0.00%	0.00%	2.33%	1.03%

Source: Moody's Investors Service

Exhibit 49

## Average default rates in emerging markets by region, 1995-2018

## Asia Pacific

Rating/Horizon	Avg Cohort Count	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Aaa</b>											
<b>Aa</b>	12	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
<b>A</b>	17	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Baa</b>	28	0.11%	0.23%	0.23%	0.34%	0.37%	0.37%	0.37%	0.37%	0.37%	0.37%
<b>Ba</b>	17	1.30%	3.23%	5.71%	10.29%	13.28%	15.60%	16.56%	17.30%	17.30%	17.30%
<b>B</b>	20	3.64%	7.70%	12.50%	18.07%	21.66%	23.45%	24.33%	24.33%	24.33%	24.33%
<b>Caa_C</b>	12	12.74%	26.71%	41.15%	44.72%	44.72%	44.72%	44.72%	44.72%	44.72%	44.72%
<b>IG</b>	45	0.07%	0.14%	0.14%	0.21%	0.23%	0.23%	0.23%	0.23%	0.23%	0.23%
<b>SG</b>	48	4.70%	9.74%	15.02%	19.86%	22.74%	24.55%	25.39%	25.81%	25.81%	25.81%
<b>All Ratings</b>	93	2.35%	4.86%	7.43%	9.81%	11.19%	12.03%	12.41%	12.60%	12.60%	12.60%

Source: Moody's Investors Service

Exhibit 50

## Average default rates in emerging markets by region, 1995-2018

## Europe

Rating/Horizon	Avg Cohort Count	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Aaa</b>											
<b>Aa</b>											
<b>A</b>	1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Baa</b>	9	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Ba</b>	9	0.37%	1.91%	3.16%	5.19%	7.29%	7.29%	7.29%	7.29%	7.29%	7.29%
<b>B</b>	8	2.55%	6.58%	12.32%	17.90%	23.43%	28.87%	36.73%	37.16%	37.16%	37.16%
<b>Caa_C</b>	3	25.25%	46.59%	61.42%	80.44%	98.64%					
<b>IG</b>	10	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>SG</b>	19	4.61%	9.46%	13.84%	18.63%	23.13%	25.82%	29.76%	29.98%	29.98%	29.98%
<b>All Ratings</b>	27	3.07%	6.30%	9.16%	12.18%	14.89%	16.39%	18.30%	18.39%	18.39%	18.39%

Source: Moody's Investors Service

Exhibit 51

## Average default rates in emerging markets by region, 1995-2018

## Latin America

Rating/Horizon	Avg Cohort Count	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Aaa</b>	1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
<b>Aa</b>	1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>A</b>	5	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Baa</b>	37	0.13%	0.29%	0.58%	0.94%	1.57%	2.37%	3.20%	3.72%	3.84%	3.84%
<b>Ba</b>	40	0.40%	1.76%	4.13%	7.62%	10.18%	11.75%	13.18%	14.72%	17.25%	19.43%
<b>B</b>	34	4.03%	10.60%	17.04%	21.98%	26.66%	30.82%	34.71%	37.38%	38.28%	38.28%
<b>Caa_C</b>	14	19.41%	29.06%	36.87%	43.80%	48.65%	52.25%	55.79%	58.63%	62.15%	66.30%
<b>IG</b>	43	0.11%	0.25%	0.50%	0.81%	1.34%	2.01%	2.69%	3.11%	3.21%	3.21%
<b>SG</b>	88	4.60%	9.04%	13.60%	17.98%	21.54%	24.26%	26.77%	28.82%	30.75%	32.25%
<b>All Ratings</b>	131	3.09%	5.99%	8.91%	11.68%	14.02%	15.91%	17.67%	19.03%	20.15%	20.97%

Source: Moody's Investors Service

Exhibit 52

## Average default rates in emerging markets by region, 1995-2018

## Middle East &amp; Africa

Rating/Horizon	Avg Cohort Count	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Aaa</b>											
<b>Aa</b>	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>A</b>	6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Baa</b>	5	0.86%	1.91%	1.91%	1.91%	1.91%	1.91%	1.91%	1.91%	1.91%	1.91%
<b>Ba</b>	3	0.00%	2.74%	4.16%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%	5.12%
<b>B</b>	5	4.42%	7.97%	14.23%	19.71%	24.62%	31.21%	38.06%	38.06%	38.06%	
<b>Caa_C</b>	3	11.61%	23.76%	36.19%	44.45%	50.11%	58.09%	68.43%	77.85%		
<b>IG</b>	10	0.44%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%	0.95%
<b>SG</b>	8	5.32%	11.16%	18.31%	23.78%	27.92%	33.42%	39.88%	43.68%	43.68%	43.68%
<b>All Ratings</b>	17	2.52%	5.14%	7.76%	9.67%	11.09%	12.93%	14.93%	15.99%	15.99%	15.99%

Source: Moody's Investors Service

## Moody's related publications

- » [Emerging Markets — Global: 2019 outlook broadly stable; higher rates, politics and trade tensions pose some risks](#), November 15, 2018
- » [Global credit conditions to weaken in 2019 amid slowing growth and rising risks](#), November 12, 2018
- » [Global Macro Outlook 2019-2020: Global growth to decelerate amid tightening global liquidity and elevated trade tensions](#), November 8, 2018
- » [Sovereigns — Global 2019 outlook still stable, but slowing growth signals increasingly diverging prospects](#), November 6, 2018
- » [Policy uncertainty could thwart economic recovery and worsen credit conditions](#), September 20, 2018
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- » [Lower oil prices and recent market turmoil support rating actions on oil- and commodity-dependent credits](#), March 7, 2016
- » [Credit implications of exchange-rate movements depend on source of the shock and issuers' exposures](#), April 30, 2015

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

## Endnotes

- [1](#) Chile is an exception, where the one- and three-year default rates averaged slightly lower during "crisis" periods, potentially because of the small sample size.
- [2](#) Measured by real GDP. Data from Haver.
- [3](#) According to JP Morgan EMBI Sovereign Spread Index for Brazil.
- [4](#) [Economic downturn will delay industry recovery until at least mid-2017](#), February 15, 2016
- [5](#) [Corporate Liquidity – Brazil: Funding Becomes More Challenging and Liquidity Risk Increases](#), May 2, 2016.
- [6](#) [Credit opinion: Agropecuária Nossa Senhora do Carmo S.A.](#), January 29, 2016
- [7](#) [Moody's downgrades Gol Linhas Aereas's ratings with planned debt exchange; senior unsecured to Caa3](#), May 5, 2016.
- [8](#) The rating drift, defined as the average number of notches upgraded per issuer minus the average number of notches downgraded per issuer, captures the net average number of notches a credit changes over a 12-month period.
- [9](#) The rating volatility — the sum of the average number of notches upgraded and downgraded per issuer — measures the gross number of notches by which a credit changes over a 12-month period.
- [10](#) Here we look at maturities of currently outstanding and rated long-term bonds and loans of nonfinancial companies.
- [11](#) The difference in debt maturities between emerging and advanced markets exists even when broken down by industries. Except Energy & Environment and Media & Publishing, the debt maturities of corporate issuers are generally shorter in emerging markets than in advanced markets.
- [12](#) The average cumulative default rates (CDRs) of emerging and advanced markets are aligned for investment- and speculative-grade companies. We formed nonoverlapping cohorts between 1995 and 2018 and gathered the pooled credit counts and default counts for each rating group to run Fisher tests through one-to-three year horizons. The test result agrees with what we observed from the average CDR charts: p-values of rating buckets from Aaa to B are all above the 5% significance level, which indicates that there is no significant difference between the default rates of emerging and advanced markets in corresponding rating groups.

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