

The Time Dimension Of Standard & Poor's Credit Ratings

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The Time Dimension Of Standard & Poor's Credit Ratings

I) Introduction

1. Some philosophers and physicists believe that time is merely an illusion. (1) For purposes of credit and credit ratings, however, time absolutely exists and plays several key roles. This article explores several of those roles in the distinct contexts of (i) credit as a property of issuers and financial instruments and (ii) credit ratings.
2. This article consists of four parts. Part one is this brief introduction. Part two explores our views regarding the connection between creditworthiness and time. It illustrates that although the concept of credit is inherently connected to time, an obligor's default risk may not remain constant as time passes. Also, we have observed that different types of obligors tend to display differing paths of deterioration before they default, revealing significant variation in how creditworthiness can change over time.
3. Part three is organized into three sub-parts and broadly explores the connection between credit ratings and time. Subpart A examines how credit rating systems treat time. It starts with a discussion of four basic paradigms we have identified for defining creditworthiness in a rating system and briefly explores the pros and cons of each paradigm. It discusses how Standard & Poor's Ratings Services' credit rating system embodies aspects of the four basic paradigms. Subpart B examines the key connections between time and Standard & Poor's rating system. It explains the notion that ratings can be both "forward looking" (in that they may embody analytic forecasts and projections) and "timely" (by fully reflecting current views, including any forecasts and projections). Subpart B then explains the relationship between credit stability and rating stability and explores the interplay of credit stability, time, and macroeconomic stress. Finally, Subpart C considers other areas where time and ratings intersect: the time horizon of Standard & Poor's ratings, the timing of rating changes, and the use of CreditWatches and outlooks. Part four concludes and summarizes.

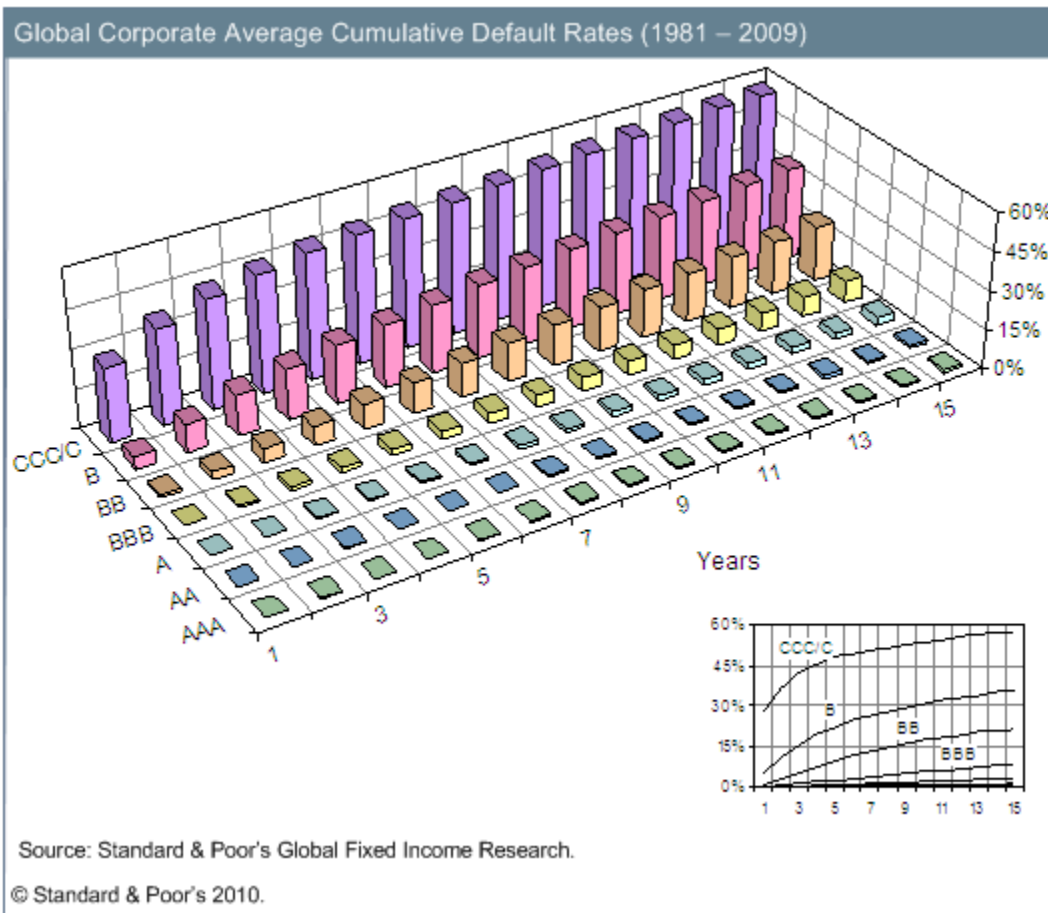
II) Creditworthiness And Time

4. Time is an essential element of credit. The essence of credit is the idea of value given in the present in exchange for the promise of repayment in the future. The risk of future nonpayment—a broken promise—is the central question of credit analysis.
5. Academics (and certain market participants) sometimes treat credit like mortality. They ascribe a constant periodic (e.g., annual) default probability to credits and then use the periodic default probability to figure out the probability of default over any time horizon. This method assumes that the periodic default probability remains constant over time. For example, if a credit has an annual default probability of p , the probability that it will survive (i.e., not default) for one year is $1-p$. The probability that it will survive for n years is $(1-p)^n$, and the probability that it will default at some point during n years is $1 - (1-p)^n$. Moreover, for any value of p less than or equal to 1, the value is:

$$\lim_{n \rightarrow \infty} (1 - (1-p)^n) = 1$$

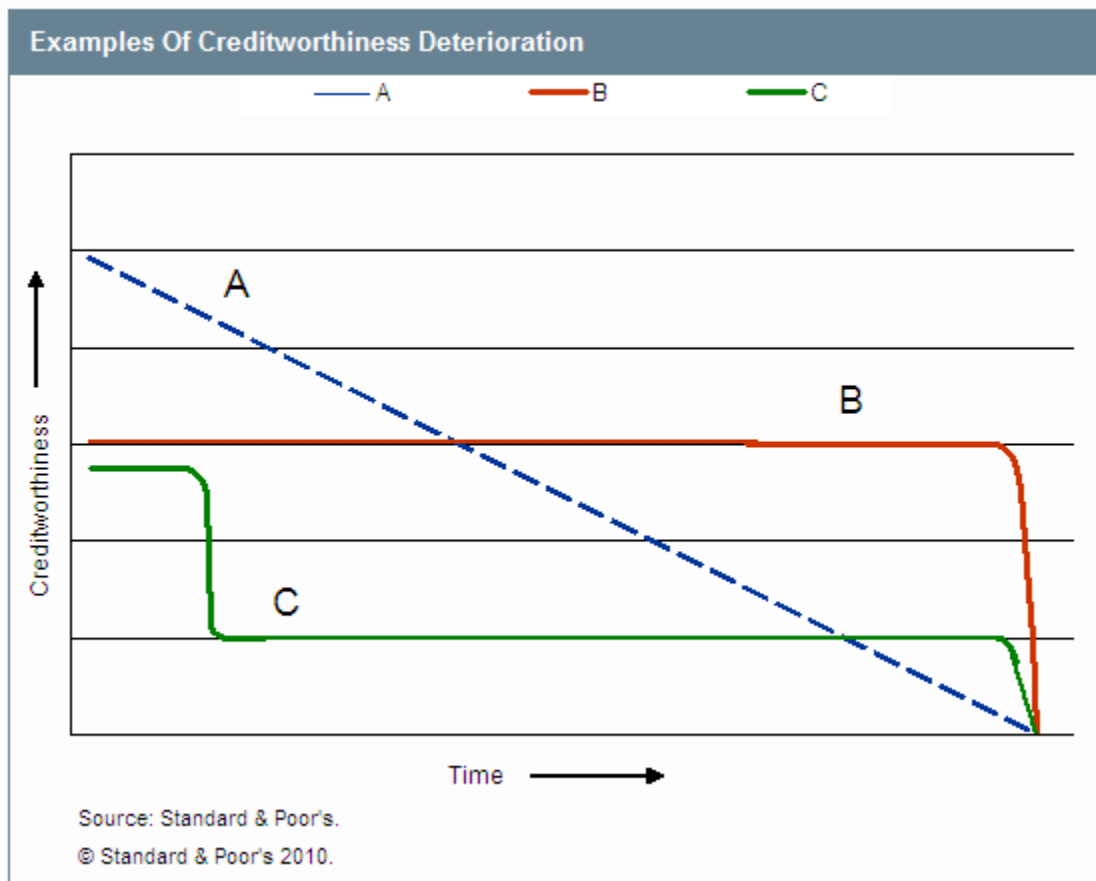
6. In other words, under this view, given enough time, the probability of any credit defaulting approaches 100%.
7. Academics also connect time to credit through options theory. The theory of options can be used to describe many basic financial relationships. One of the most familiar is the notion that a firm's equity can be viewed as a call option on the firm's assets (with a strike price equal to the firm's debt). Likewise, in the context of credit, the borrower on a non-recourse, asset-based loan essentially has a put option on the underlying collateral at a strike price equal to the amount of the loan. In mortgage lending and similar settings, a borrower can be viewed as holding two distinct options for terminating a mortgage loan: the option to prepay and the option to default. The option to prepay is a call option on the loan, and the option to default is a put option on the collateral. As with other options, the value of both the prepayment option and the default option increase with the amount of time remaining before expiration (i.e., at the maturity of the loan). (2)
8. In the real world, we have observed that marginal (e.g., annual) default rates vary as credits age. That is, there is no constant default probability p for credits at any rating level. However, we also observe that marginal default rates never drop to zero. In other words, cumulative defaults keep rising with the passage of time. This is illustrated in Chart 1, which displays key relationships between credit and time. It shows the average cumulative default rates for global corporate credits for time horizons up to 15 years based on observations from 1981 to 2009. (3) The rising height of the bars in each series shows that cumulative default rates have risen over time. The curvature of the different series (highlighted in the inset chart) shows that marginal default rates have varied over time.

Chart 1



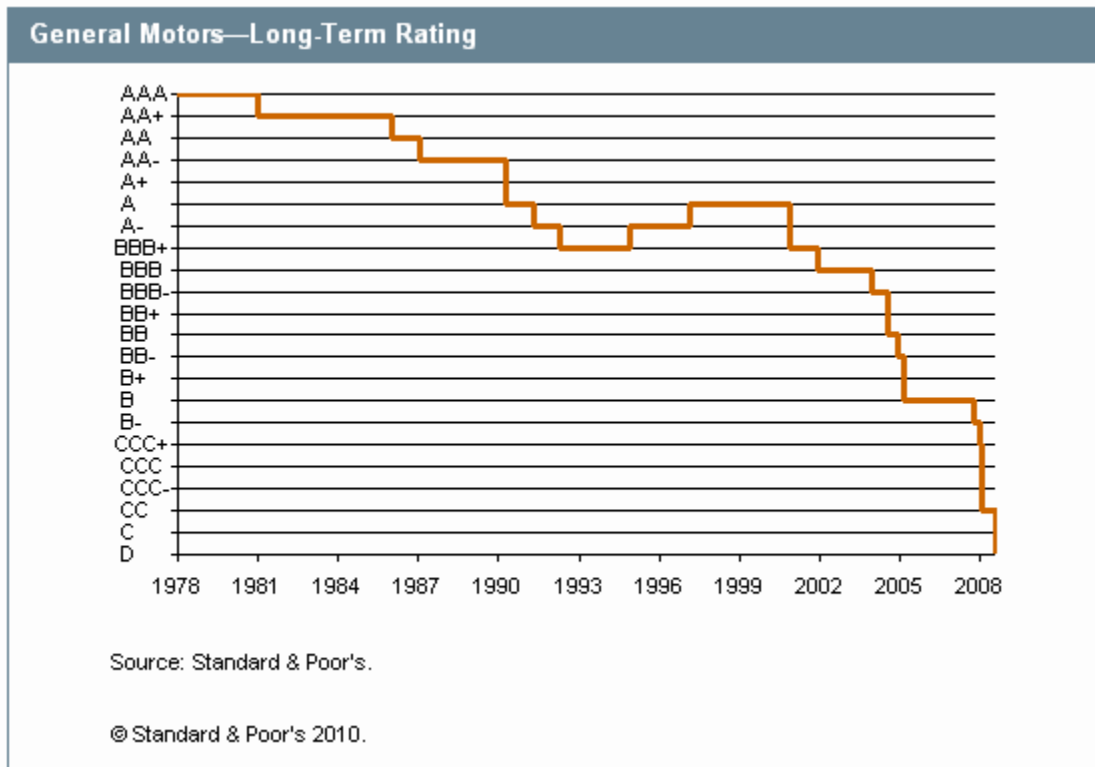
9. The fact that a credit's propensity to default can change or evolve over time is an important point, but it is only part of the story. Chart 1 reflects an aggregation of all types of corporate credits and so does not reveal any information about whether different credits have behaved differently in how they evolved toward default.
10. Consider Chart 2. The chart displays three lines depicting different hypothetical paths of credit deterioration. Line A shows an issuer's creditworthiness starting at a high level of strength and then deteriorating gradually over time (in a linear fashion) toward default. Line B shows an issuer's creditworthiness starting at a medium level and then remaining at that level for an extended period before declining suddenly to default. Line C shows an issuer's creditworthiness starting at a medium level, then declining sharply after short while, and then continuing at a weak level for an extended period up to the issuer's demise.

Chart 2



11. We have observed that the deterioration of major industrial credits usually follows a gradual path, most similar to Line A in Chart 2. For example, Chart 3 displays the gradual decline of the rating on General Motors to 'D' in mid-2009 from 'AAA' in late 1981. The company was founded in 1908 and received an initial rating of 'AAA' in November 1953. The company went into bankruptcy on June 1, 2009. The successor entity exited bankruptcy on July 10, 2010, and continues operating today.

Chart 3



12. Other types of credits, such as financial institutions, tend to display a stronger propensity to suffer sudden deterioration, similar to Line B in Chart 2. Charts 4 and 5 show the examples of Lehman Brothers and Washington Mutual Bank (Wamu). In the period leading into the 2008 financial crisis, those two credits were quite similar to other financial firms that survived the recent crisis. A key difference, though—and one that was entirely invisible in advance—was that unlike many other financial firms, neither Lehman nor Wamu was rescued by government intervention.

Chart 4

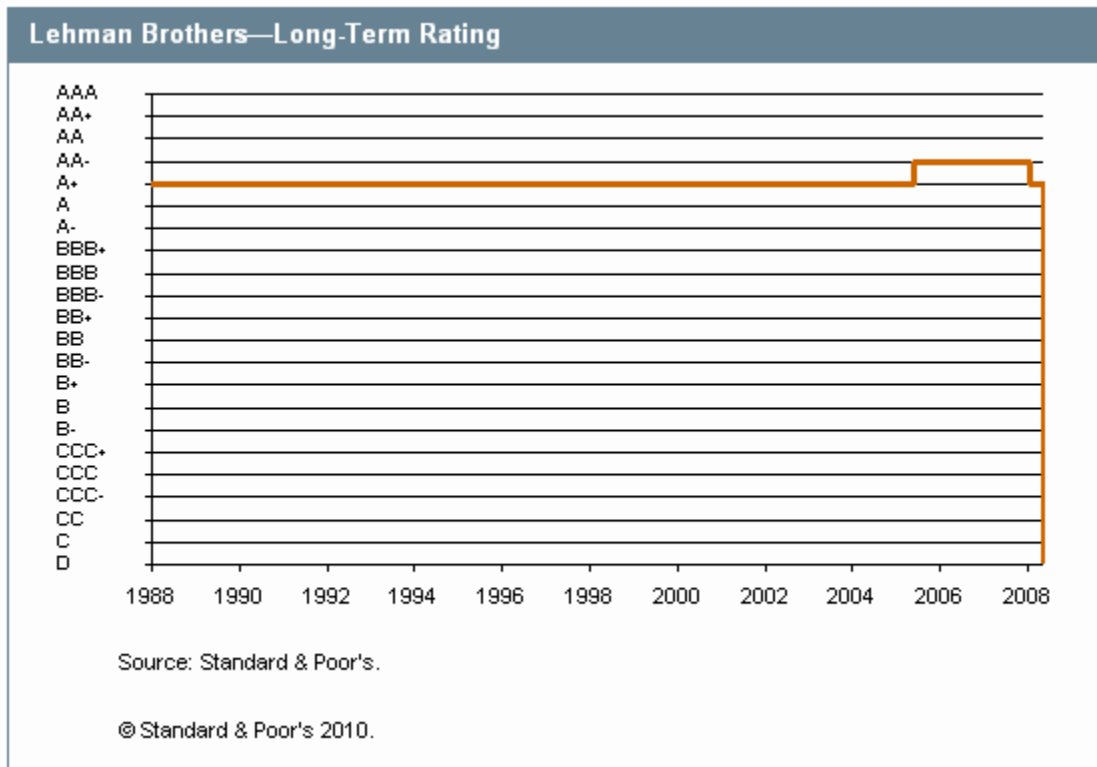
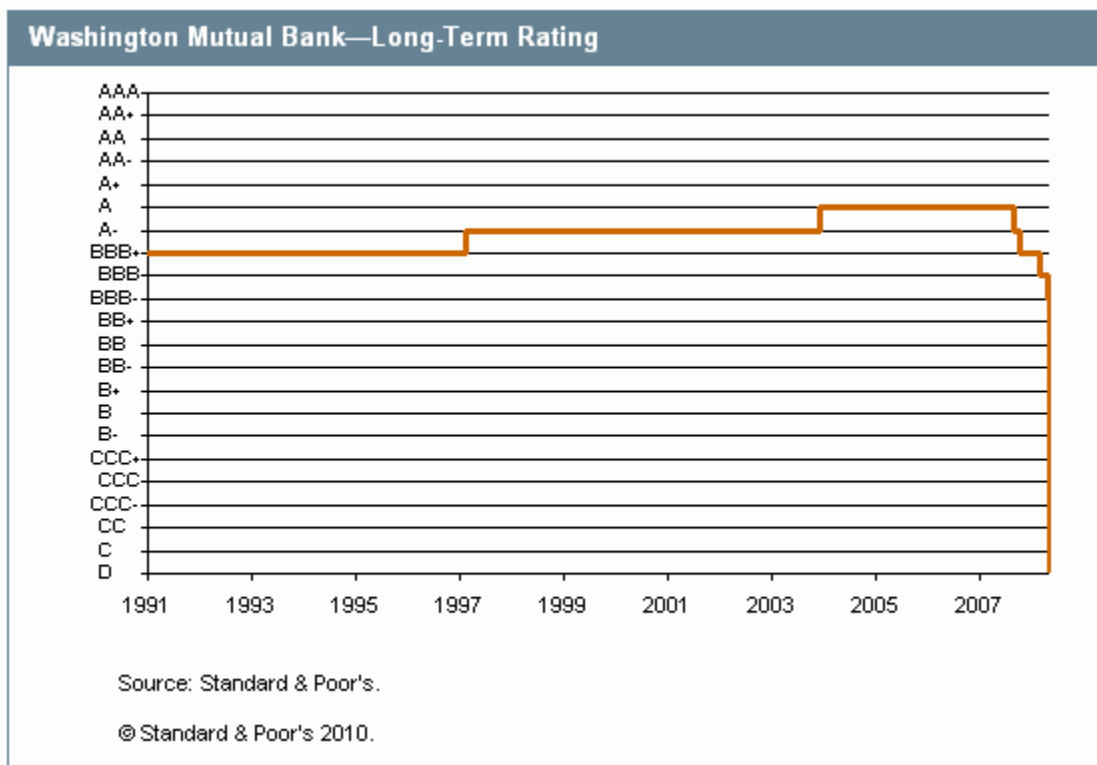
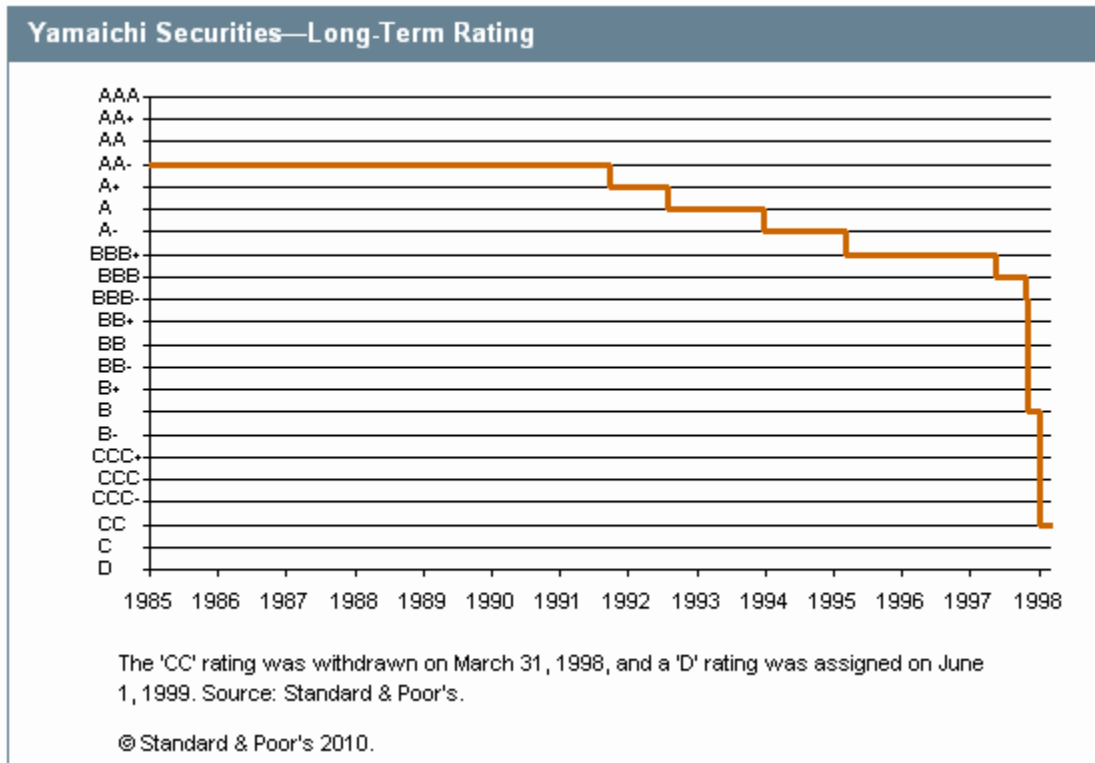


Chart 5



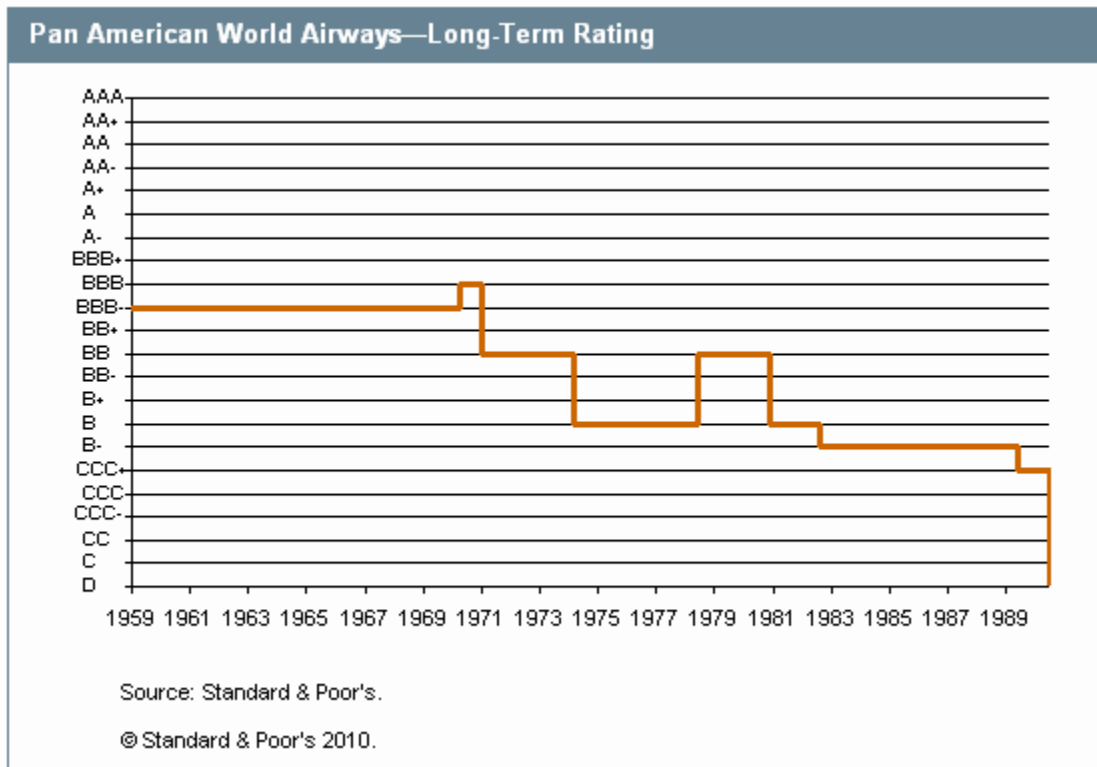
13. Another example, from before the 2008 financial crisis, is Yamaichi Securities (Yamaichi). As shown on Chart 6, the company initially received a rating of 'AA-' in early 1985 and held that rating for more than six years. Then, from October 1991 to March 1995, the rating declined in single-notch steps to the 'BBB+' level, where it remained for more than two years. In June 1997, the rating slipped to 'BBB', where it remained for roughly six months. Then, on Nov. 14, 1997, the rating dropped to 'BBB-' and, just a week later, all the way to 'B'. Two months later, on Jan. 23, 1998, the rating dropped to 'CC'. Standard & Poor's withdrew the rating at the company's request on March 31, 1998, and roughly two years later, reinstated the rating at 'D' following the ultimate default. The sharp drop of the rating on Yamaichi in late 1997 and early 1998 closely mirrors the drop observed in the cases of Lehman and Wamu.

Chart 6



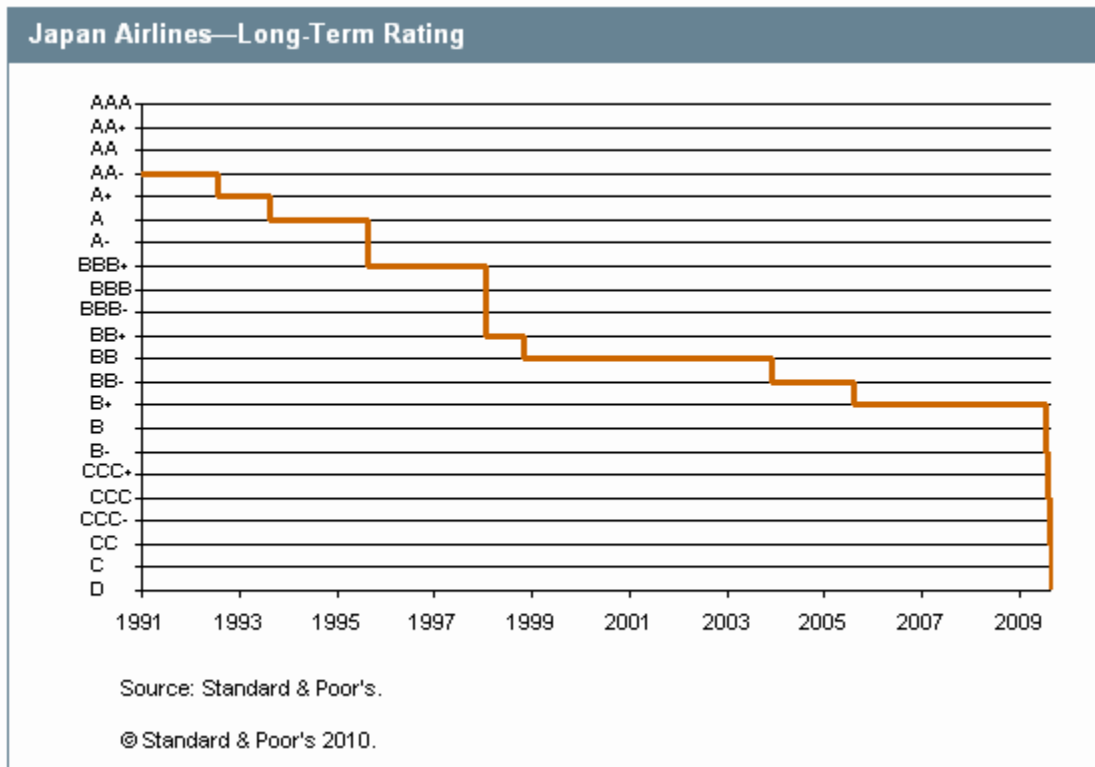
14. A smaller group of corporate credits, exemplified by airlines, tends to display a deterioration pattern somewhat similar to Line C in Chart 2. Chart 7 shows the example of Pan American World Airways (Pan Am). The company was founded in 1927 and received an initial investment-grade rating in 1959. It remained an investment-grade credit until mid-1971. Then it fell into speculative-grade territory and fluctuated between the 'BB' and 'B' categories for nearly 10 years before settling at the 'B-' level in early 1983. The rating remained at 'B-' for nearly seven years, before dropping to 'CCC+' around the end of 1989. The company entered bankruptcy just over a year later on Jan. 8, 1991 (the rating dropped to 'D'), and it ceased operations on Dec. 4, 1991.

Chart 7



15. Another example, shown on Chart 8, is Japan Airlines (JAL). JAL received an initial rating of 'AA-' in April 1991 and remained an investment-grade credit for seven years. Then, in April 1998, it fell to speculative grade. Over the following 11 years, the rating declined gradually, with long periods of stability at the 'BB' level (February 1999 to March 2004) and at the 'B+' level (November 2005 to October 2009). Finally, on Oct. 16, 2009, the rating started a rapid decline, reading at 'SD' (selective default) on Dec. 2, 2009, and 'D' on Jan. 19, 2010.

Chart 8



16. Charts 2 through 8 illustrate how different kinds of credits have displayed different types of paths of credit deterioration over time. We believe they also show, though somewhat less directly, that the path of deterioration is not necessarily tied to an issuer's initial creditworthiness. Indeed, both Wamu and Pan Am started out with initial ratings in the 'BBB' range but then followed very different paths of deterioration.
17. In a broad and general sense, we believe the data show that the type of industry in which a credit operates tends to be a key driver for the path that its deterioration will follow. In other words, credits in different industries have tended to display differing stability characteristics, which are reflected in how suddenly their creditworthiness deteriorates in reaction to stress.

III) Credit Ratings And Time

18. Just as time is an essential aspect of the concept of credit, it is also an essential aspect of credit ratings. Credit ratings are never prepared merely as an academic exercise. They are created to be used as one of the several tools that market participants use for evaluating relative credit risk and making business decisions in the real world.
19. We believe that credit ratings are most useful when they are forward looking. That is, they are the most useful when they embody an analysis that considers not only the past and the present but also extends into the future. In that vein, credit analysis frequently includes the use of forecasts and projections. After all, the central question of creditworthiness is whether a financial commitment will be fulfilled in the future.
20. Every credit rating system implicitly embodies choices about the treatment of time. For example, one system could

emphasize average default rates over the long term, while another might emphasize how suddenly credits can deteriorate. Both systems can provide helpful insights to users. However, the different systems may produce divergent assessments.

A) Defining a rating system

21. The heart of a credit rating system is its definitions. Rating definitions can be divided into several groups. The first group is simple definitions, each of which is based on one primary attribute. The second group is compound definitions, made by combining the simple definitions in fixed proportions. A third group, complex definitions, combines simple definitions in ways that allow for flexibility as well as variation over time.

1. Simple definitions

22. There are at least four basic paradigms for creating simple rating definitions:
 - **Fixed default/loss metric.** One simple type of rating definition is based on fixed (absolute) default or loss metrics. An example of such a definition would be where each rating category corresponds to a specified default frequency (or to a specified level of expected loss). Such a definition is sometimes described as "probability of default" or "PD," although it does not necessarily depend on any assumption that defaults are produced by a probabilistic process. A fixed default/loss metric definition essentially disregards the element of business cycles. Accordingly, it has the potential to make ratings over- or under-predict the measured factor as the economic climate fluctuates over time.
 - **Cycle-adjusted default/loss metric.** A second type of simple definition emphasizes rank ordering of risk instead of fixed default frequencies or loss rates. This type of definition would allow for the fluctuations of the business cycle. Under this type of definition, the observed default frequency (or expected loss) for each rating category would be expected to rise and fall with changes in the business and economic environment. This type of definition might or might not make reference to target long-term averages over multiple business cycles. In either case, under a cycle-adjusted default/loss metric definition, ratings would not give the appearance of poor performance when actual default frequencies or loss rates rise and fall over the economic cycle, provided that rank ordering is preserved.
 - **Scenario-based.** A third type of simple definition is based on scenarios or stress tests associated with each rating category. For example, the top rating category might be defined in terms of a historical example of severe or extreme stress that credits in the top category would be expected to survive without defaulting. A scenario-based definition acknowledges the fact of varying amplitude of the peaks and troughs of successive business cycles. Also by focusing on stress scenarios, a scenario-based definition solidly addresses the notion that, during periods of stress, market participants may have the greatest desire for opinions about the creditworthiness of credits to which they have exposure. However, a scenario-based scheme of definitions may present difficult measurement problems because of the inherently limited precision of grading new episodes of stress against historical antecedents.
 - **Distance/time to default.** A fourth type of simple definition emphasizes the "warning" aspect of ratings. Under a distance/time-to-default definition, credits with higher ratings should be "farther away" from defaulting than credits with lower ratings. One way to implement a distance/time-to-default definition is to equate distance with time. Under such an approach, credits at higher rating levels should take longer to default than credits at lower ratings levels. Another way to implement a distance/time-to-default definition would be to frame it in terms of the standard indicia of credit quality: financial ratios, market position, and business prospects, among others.
23. Of the four basic paradigms, the fixed default/loss metric would be the hardest to administer but the simplest to

measure. It would be hard to administer because it requires adjustment of ratings over the course of a business/economic cycle to achieve stable default/loss rates for each rating category at differing points in the cycle. However, it would be easy to measure performance simply by observing whether default rates for each rating level diverge from the target rate. Professionals who use ratings as inputs to quantitative models sometimes might favor this paradigm because they use ratings to ascribe assumed default probabilities to credits in their models.

24. The other three simple definitions bear greater similarity to each other, and each one addresses the issue of business cycles in a different way. The cycle-adjusted default/loss metric recognizes that default/loss rates vary over the course of a cycle. If a rating system based on this paradigm targets a long-term average default or loss rate, then it necessarily embeds the assumption that successive economic cycles are generally similar (i.e., that the amplitude of their fluctuations does not vary from one cycle to the next and that the time spent in each phase of the cycle is similar).
25. A rating system based on the scenario approach emphasizes the potential variations in cycles but does not provide convenient numerical guideposts for measuring whether the system is over- or under-estimating risk.
26. Distance/time to default has a very different flavor but amounts to nearly the same thing as the scenario-based approach. While the distance/time to default paradigm may be easy to implement, it too is hard to measure. Also, from the perspective of providing warning, the distance/time to default paradigm works better on some types of credits than on others. Credits of the type corresponding to Line A on Chart 2 can provide plenty of warning before they default. Credits of the type corresponding to Line B on Chart 2 may provide little or no warning.
27. In our view, none of the simple paradigms is optimal to serve as the sole basis of a highly useful scheme of ratings definitions. Each is too inflexible and may fail to optimally meet the expectations of users. However, we believe that by combining the simple definitions into compound or complex definitions, it is possible to make a more useful rating system.

2. Standard & Poor's rating definitions

28. Standard & Poor's rating definitions do not explicitly follow any of the basic paradigms described above. Standard & Poor's rating definitions are phrased in terms of an obligor's "capacity to meet its financial commitment." The actual language of the definitions uses different adjectives for each generic rating category to describe the obligor's capacity as follows: 'AAA' (extremely strong), 'AA' (very strong), 'A' (strong), and 'BBB' (adequate). At first blush, this makes Standard & Poor's rating system seem close to the fourth paradigm: distance/time to default.
29. Apart from the language of the definitions themselves, Standard & Poor's has published articles that help to explain and interpret the definitions with greater technical rigor. One such article was "Understanding Standard & Poor's Rating Definitions," June 3, 2009. There, we explained that Standard & Poor's ratings focus on "relative likelihood of default" as the primary factor—the centerpiece—of creditworthiness. That focus on relative likelihood of default suggests that Standard & Poor's rating definitions partly follow the second basic paradigm (cycle-adjusted default/loss metric).
30. However, in the same article, we also explained that we would start using specific stress scenarios as one of the key tools for calibrating our criteria. The focus on stress scenarios suggests that an element of the third simple paradigm is embedded in our rating system. In addition, the article explained that one of the secondary factors of creditworthiness is "credit stability." The notion of credit stability calls to mind both the third and the fourth simple paradigms (scenarios and distance/time to default).

31. Thus, to make Standard & Poor's ratings as meaningful as possible, Standard & Poor's system embodies elements of several of the simple paradigms. Moreover, as highlighted in the article mentioned above, "there is no 'formula' for combining the various facets; our credit ratings attempt to condense their combined effects into rating symbols along a simple, one-dimensional scale. Indeed... the relative importance of the various factors may change in different situations."

B) Time and Standard & Poor's rating system

32. Standard & Poor's strives to make ratings timely. That means that at any point in time, we want our rating to reflect a current view—including the impact of relevant forecasts and projections—about the creditworthiness of the subject issuer (or issue). Thus, if an issuer's creditworthiness changes (either in the sense of its current situation or in the sense of its future prospects), we want our rating to adjust quickly to reflect the full magnitude of that change. In reality, it takes some time to complete the analysis of new developments, so rating adjustments may not follow instantaneously after a change in underlying creditworthiness. However, when the rating adjustment occurs, Standard & Poor's intends for it to reflect our current opinion of the full underlying change in creditworthiness. Thus, Standard & Poor's intends for the behavior of a rating over time to closely mirror the behavior of its subject credit.

1. Credit stability versus rating stability

33. Some market participants argue that stability of ratings is desirable and, therefore, that when a credit suffers severe deterioration, a rating agency should refrain from reflecting the full amount of deterioration when it downgrades the related rating. (4) Standard & Poor's does not embrace that view. Rather, we want our ratings to express our current opinion of an issue's or an issuer's creditworthiness at all times. That means that if creditworthiness changes abruptly, our ratings would likely change abruptly as well.

34. On the other hand, Standard & Poor's explicitly factors credit stability into ratings. (5) This appears to create a contradiction between the notion that we focus on stability and the notion that we strive to keep ratings fully current. The apparent contradiction disappears, however, upon noting the distinction between credit stability and rating stability. Credit stability refers to whether the creditworthiness of an issuer or issue is susceptible to sudden changes. Rating stability refers to whether a rating is susceptible to sudden changes. In focusing on credit stability, Standard & Poor's considers whether an issuer or issue has a high likelihood of experiencing unusually large adverse changes in credit quality under conditions of moderate stress. Thus, if an issuer or issue possesses weak stability characteristics, it should receive a somewhat lower rating in the first place.

35. Our credit stability criteria produce the by-product that ratings at the higher end of the rating scale should tend to be more stable than ratings at the lower end. This is because weak credit stability characteristics can prevent a credit from receiving a high rating in the first place. Many market participants feel that the overall result is desirable because the market often finds sudden rating changes to be disruptive.

2. Credit stability and time

36. As noted above, our focus on credit stability is tied to the idea of stress scenarios through the reference to "conditions of moderate stress." The emphasis on stability in the face of stress is different from the idea of stability over time. Indeed, in a strict sense, Standard & Poor's notion of credit stability is not tied to any specific interval of time or even time. The only way to impute a connection between "stability over time" and "stability vs. stress" is through an assumption or expectation about the frequency with which episodes of stress occur.

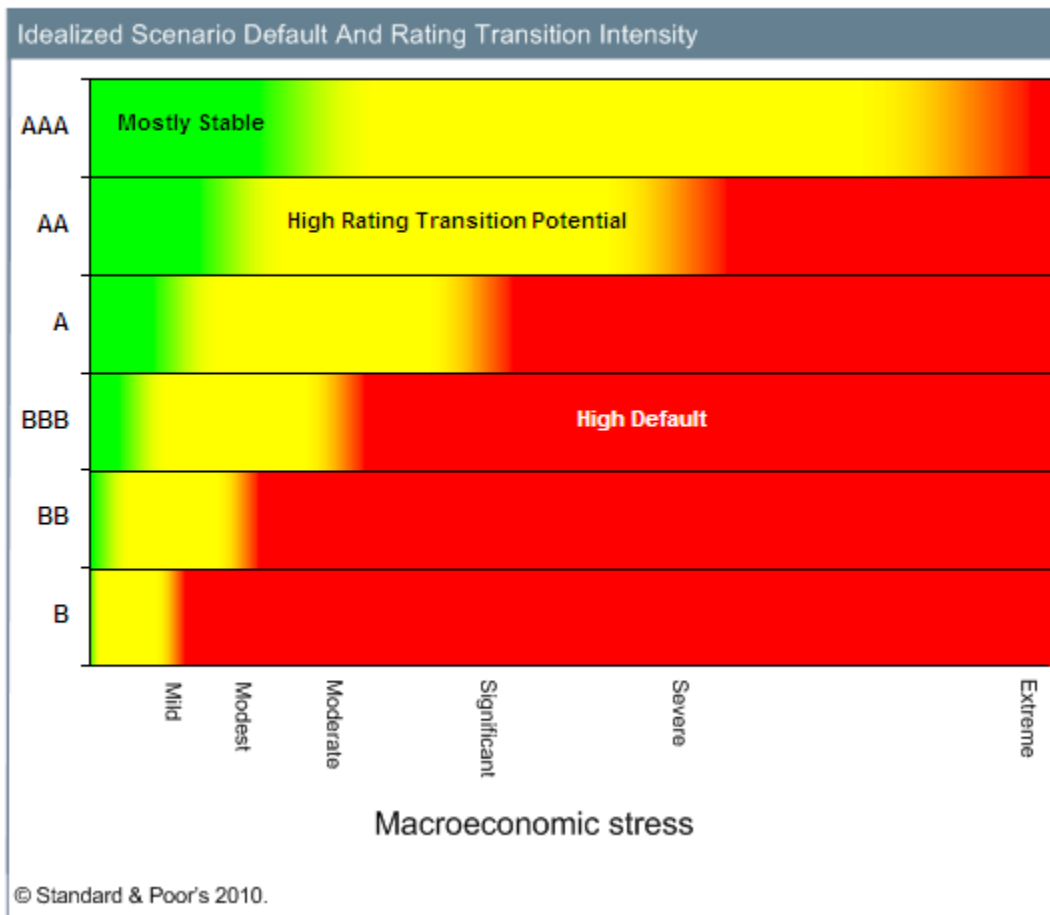
3. Stress and time

37. It is almost a fact of human nature that people think about events in terms of how often they happen. For example, engineers sometimes design structures to withstand a "100-year storm" or a "500-year flood." That terminology implies or assumes a certain level of stability and repeatability of the underlying phenomenon. The assumption of stability and repeatability is often reasonable when dealing with physical phenomena. However, even in that context, rare and unusual events occur for which it is impossible to make reliable estimates of frequency. Consider the following:
- "In the summer of 1993, the Mississippi River flooded an extensive area of the central U.S. The federal government designated 534 counties in nine states as federal disaster areas. The flood covered an area 500 miles long and 200 miles wide. It damaged more than 50,000 homes, 10,000 of which were completely destroyed. The flood inundated at least 15 million acres of farmland.
 - "At roughly 7:17 p.m. June 30, 1908, a huge explosion occurred at a remote location in Siberia (60° 55' North, 101° 57' East near the Tunguska River). Scientists estimate [the] size of the explosion in the range of 10 to 20 megatons. The explosion knocked down roughly 60 million trees over an area of more than 2,000 square kilometers. Scientists believe that a large meteor may have exploded at an altitude of about 8,000 meters.
 - "At roughly 10:16 p.m. on July 9, 1958, an earthquake triggered a landslide at the head of Lituya Bay, Alaska. Geologists estimate that roughly 40 million cubic yards of rock plunged 3,000 feet into the bay. The landslide generated a huge splash wave that surged 1,740 feet up the opposite slope. The force of the water swept away trees and soil up to the wave's full height, leaving behind only bare rock. Geologists study the Lituya Bay event because of concerns that volcanic activity on the island of La Palma could trigger a rockslide and an even larger wave that would threaten the East Coast of the U.S." (6)
38. In the area of social sciences, including finance and economics, assumptions of stability and repeatability may be even less reliable. Very few social science phenomena display steady or predictable rhythms. Economic cycles are real in the sense that the economic environment fluctuates over time. It may be favorable for a time and then become unfavorable. Periods of unfavorable conditions eventually end, to be followed by favorable times. However, the duration of each cycle varies unpredictably. Efforts to time economic cycles have, in our view, consistently failed.
39. Moreover, the occurrence of asset bubbles is a further complication that thwarts efforts to predict economic cycles. The latest real estate bubble in the U.S. is just one example. Past examples include: the Dutch tulip bulb mania of the early 17th Century, the U.S. stock market bubble of the 1920s, the gold bubble of 1979-80, the Japanese real estate bubble of 1986-91, and the U.S. tech/dot-com/NASDAQ bubble of 1997-99.
40. More broadly, bubbles can be viewed as simply members of a larger class of "rare" phenomena that sometimes define inflection points for business or economic cycles. Familiar non-bubble examples include: the U.S. Panic of 1837, the U.S. Panic of 1857, the U.S. Panic of 1893, World War I, the Great Depression (apart from the 1920s stock market bubble), World War II, the oil shock of 1973, the Asian debt crisis of 1997-98, the Russian debt crisis of 1998, and the 2007-2010 global financial crisis (apart from the U.S. housing bubble). Although we can fairly characterize such events as rare or unusual, it is impossible to quantify exactly how rare or unusual they are. Thus, in describing their general features, it is essentially meaningless to say that such events have a frequency of "once in a century" or "once in 250 years."
41. In addition, because economic stress events do not have stable frequencies, many market participants fall victim to thinking of them as being even rarer than they actually are. For example, one noted commentator has observed that

"[w]e have a once-in-a-lifetime crisis every three or four years." (7)

42. In our view, all this means that it is generally more illuminating to focus on the stress events themselves or on the stress episodes that they produce, than to focus on stress as a function of time. In other words, one can meaningfully explore how credits and their ratings will behave as the environment changes (i.e., as stress increases because of some event) even if it is impractical to predict the timing of such changes. This essentially boils down to replacing "time" with "stress" as the variable against which one frames an expectation.
43. From that point of departure, we construct Chart 9, which uses green, yellow, and red coloring to depict the idealized behavior of credits and their ratings when they encounter stress environments of varying magnitude.

Chart 9



44. Each horizontal band on Chart 9 corresponds to one of Standard & Poor's major rating categories, starting with 'AAA' as the top band and going through 'B' at the bottom band. The x-axis of the chart reflects the degree of stress in the economic environment, ranging from mild stress near the left side of the chart to extreme stress at the right side. The color and changes of color within each horizontal band denote the idealized behavior of credits in each rating category in relation to the level of economic stress. Green coloring means that the ratings on credits in a given band should be mostly stable. This is because the degree of economic stress is likely too slight to seriously affect them. Yellow coloring means that the ratings on credits in a band face significant likelihood of being downgraded.

This is because the degree of stress is at a sufficiently high level to affect them. Red coloring means that credits in a given band have a high potential for default.

45. As shown in the top band of the chart, the idealized behavior of the strongest credits (i.e., those with ratings of 'AAA') is that they should not become subject to a high potential for default until economic conditions suffer a deterioration of extreme magnitude. In addition, the ratings on such credits should generally remain stable (apart from idiosyncratic factors) until economic conditions deteriorate to at least a moderate or significant degree. Conversely, the bottom bands of the chart show that credits at the weak end of the spectrum may become vulnerable to default from only slight economic stress.
46. Chart 9 also illustrates a key point about the stability of ratings. Notice that the green segments of the bands are wider for credits at the high end of the rating scale than for those at the low end. This illustrates that the ratings on highly rated credits should remain stable for longer—that is, until macroeconomic conditions experience deterioration of greater magnitude—than the ratings on lower-rated credits.
47. Likewise, for highly rated credits, the path of rating transitions (downgrades) before default generally should be longer than the path for lower-rated credits. This is illustrated by the width of the yellow segments of the bands for the different rating categories. The yellow segment of the band for 'AAA' is the widest and the yellow segment of the band for 'B' is the narrowest. This also reflects the fact that the "spacing" between the successively higher levels of stress is not linear, but rather geometric. The table illustrates this by summarizing the key parameters associated with the stress scenarios described in Understanding Standard & Poor's Rating Definitions:

| Macroeconomic Stress Scenario Parameters | | | | | | |
|--|-----|----|-----|----|----|------|
| Stress scenario | B | BB | BBB | A | AA | AAA |
| GDP decline (%) | 0.5 | 1 | 3 | 6 | 15 | 26.5 |
| Unemployment (%) | 6 | 8 | 10 | 15 | 20 | 24.9 |
| Equity market decline (%) | 10 | 25 | 50 | 60 | 70 | 85 |

Source: Standard & Poor's.

48. Although none of the parameters follows a strict geometric progression for its entire range, each follows a geometric progression for part of its range. The combined impact of the three parameters is clearly geometric: the difference between the 'BB' and 'B' scenarios is tiny compared to the difference between the 'AAA' and 'AA' scenarios or the difference between the 'AA' and 'A' scenarios.
49. Chart 9 displays key relationships among creditworthiness, ratings, and economic stress in an idealized way. However, it focuses only on economic stress as a driving factor, and it omits all the other ways that credits (and their ratings) potentially can suffer. For example, the chart does not capture the notion that different types of credits may display differing paths of deterioration, as discussed in the "Creditworthiness And Time" section above. Likewise, Chart 9 does not capture the notion that even highly rated credits sometimes suffer deterioration for idiosyncratic reasons that do not affect other, similar credits.
50. If one views economic stress as something that fluctuates over time, then Chart 9 offers some insight into the idealized behavior of credits and ratings over time, as the economic cycle progresses through its phases.

C) Other connections between time and ratings

1. Time horizon of Standard & Poor's credit ratings

51. Market participants frequently ask: "What is the time horizon for Standard & Poor's ratings?" The short answer is that ratings on speculative-grade credits are based on analysis of shorter time horizons, generally emphasizing two years, because such credits are inherently vulnerable to the ordinary fluctuations of the business cycle. Conversely, ratings on investment-grade credits are based on analysis of longer time horizons, generally three to five years, because such credits should be able to survive the ordinary cyclical fluctuations. Market participants have sometimes condensed the answer (or at least the second half of it) into essentially a slogan: "Standard & Poor's rates through the cycle." (8)
52. The long answer is somewhat more involved: The time horizon of a rating can be viewed from two perspectives. The first relates to the time horizon of the analytic exercise itself. The second relates to the idea that the potential for greater stress increases as the time horizon extends.
53. From the perspective of the analytic time horizon, forecasts and projections have greatest reliability over short time horizons. More precisely, projections and forecasts over relatively short time horizons usually permit comparatively greater analytical rigor than those over longer horizons. This means that when an analysis depends on specific projections of revenue or earnings, those aspects of the analysis may be limited by a time horizon of three to five years. Conversely, projections of a very generally nature—such as that proven oil reserves will continue to be key assets of energy companies—offer somewhat stronger degrees of certainty over longer time horizons. Broadly speaking, the overall time horizon of a given analysis is the shortest time horizon of any of its major parts.
54. The notion of a time horizon from the perspective of economic stress is more subtle. As noted above, it is impossible to reliably associate specific frequencies to economic stress episodes of varying magnitude. Nonetheless, economic history reveals that episodes of lesser stress generally have occurred more often than episodes of greater stress. (9) Therefore, because episodes of greater stress are less frequent, stronger credits (i.e., those with higher ratings) encounter stress that can hurt them less often than do weaker credits. Thus, the weak association between time and the magnitude of stress supports the concept of a ratings time horizon through the idea that, all other things being equal, credits with higher ratings should survive longer without defaulting than credits with lower ratings. Thus, from the standpoint of the ability to withstand stress, one can reasonably characterize higher ratings as having longer time horizons than lower ratings.
55. In simple terms, referring again to Chart 9, credits rated in the investment-grade range (i.e., 'BBB' through 'AAA') generally are expected to survive the fluctuations of a typical economic cycle because the magnitude of the fluctuation is likely to be only mild or modest. In today's world, it is typically only the unusual cycle that brings about fluctuations that amount to "moderate" or worse, which could meaningfully endanger investment-grade credits. Speculative-grade credits, on the other hand, may be at risk of default even during the fluctuations of a typical cycle.

2. Timing of rating actions

56. Market participants sometimes assert that rating agencies are too fast or too slow to raise or lower ratings as events occur that affect creditworthiness. However, those professionals mistakenly ignore the fact that rating agencies need to continually strike a balance between being too fast and too slow.
57. In most cases, there are always professionals who hold views on both sides of the issue. That is, in most cases when a rating agency upgrades or downgrades credits, there are some market participants who feel that the actions were

too early and others who feel that they were too late. When both views are present, it likely means that the rating agency's timing is about right.

58. For example, consider the numerous RMBS downgrades by Standard & Poor's and Moody's on July 10, 2007. After the downgrades, one researcher observed that he had essentially predicted the rating action about three weeks earlier (June 22, 2007). He observed that, to some extent, the market had anticipated the downgrades, as reflected in the pricing of the ABX indices. However, he also observed that not all market participants had shared similar views, as indicated by the wave of selling that the downgrades triggered. (10)
59. It is always easy to criticize with the benefit of hindsight. Whatever the rating agencies do, professionals on one side of the market or the other will find fault with it. If rating agencies are quicker to downgrade, there may be more downgrades that get reversed within a short time. Investors that already own the affected bonds, as well as the issuers and their bankers, will be dissatisfied. If rating agencies are slower to downgrade, investors who buy the securities shortly before the rating action will argue that the action should have been quicker and that if it had been they would have decided not to invest.
60. As noted above (see Paragraph 32), Standard & Poor's strives to make ratings timely. This means that we want our ratings to reflect current information that affects credit quality. At the same time, we are always mindful that the latest piece of information can represent either the start of an emerging trend or just a random anomaly that means nothing. In practice, this means that as developments occur, Standard & Poor's evaluates whether they have a real impact on credit quality. The evaluation continues as further information emerges or as we see the impact of events becoming clearer.
61. Consider, for example, the actions on the rating of BP PLC following the explosion on the Deepwater Horizon drilling platform in the Gulf of Mexico on April 20, 2010 (the rig sank on April 22). On May 7, Standard & Poor's revised the outlook on the rating to negative from stable, citing uncertainty about the cost of cleaning up the oil spill. At the time, the oil leakage from the damaged well was estimated in the range of 1,000 to 5,000 barrels per day. On June 4, Standard & Poor's lowered the rating to 'AA-' from 'AA' and placed the rating on CreditWatch for possible further downgrade. By then, estimates of the leakage had increased to the range of 12,000 to 19,000 barrels per day. On June 14, Standard & Poor's lowered the rating again, this time to 'A' from 'AA-', citing higher estimates of the magnitude of the oil spill and the associated liabilities to which the company would be exposed. By then, estimates of the rate of leakage were up to 25,000 to 30,000 barrels per day. The oil leakage was finally stopped on July 15. On July 27, BP announced that it had taken a \$32.2 billion charge for the oil spill. Roughly a week later, the Deepwater Horizon Unified Command announced new estimates of the oil leakage, stating that actual rate had started at about 62,000 barrels per day and later declined to 53,000 barrels per day by the time the well was capped. The total leakage from April 22 to July 15 was estimated at 4.9 million barrels, of which roughly 800,000 barrels were captured by containment efforts. (11)
62. As of this writing, there is some continuing uncertainty about cleanup costs, litigation, and the regulation of deepwater drilling in U.S. waters. The rating on BP stands at 'A' and is on CreditWatch for possible downgrade. The example illustrates how Standard & Poor's monitors a developing situation and reacts by adjusting the rating as the reliability of information improves (i.e., the estimates of oil leakage) and as new information emerges.

3. CreditWatch and Outlook (12)

63. A further connection between time and Standard & Poor's rating actions is evident through Standard & Poor's "CreditWatch" and "Outlook" designations. Standard & Poor's uses CreditWatch to announce that it believes a

rating is likely (i.e., at least a 50% likelihood) to change within 90 days. CreditWatch applies in three types of situations:

- An event or deviation from an expected trend has occurred or is expected and when additional information is necessary to take a rating action (if no additional information is necessary, the rating action occurs right away).
- There is a material change in the performance of an issue or issuer, but the magnitude of the rating impact has not been fully determined, and Standard & Poor's believes that a rating change is likely in the short term.
- A change in criteria has been adopted that necessitates a review of an entire sector or multiple transactions and Standard & Poor's believes that rating changes are likely in the short term.

64. Outlooks work somewhat differently. We have previously described the use of Outlooks as follows:
65. Outlooks have a longer time horizon than CreditWatch listings and incorporate trends or risks that we believe have less-certain implications for credit quality. The time frame for an outlook generally is up to two years for investment grade and generally up to one year for speculative grade. The shorter time frame for speculative-grade outlooks reflects the very nature of speculative-grade credits: They are more volatile and more susceptible to nearer-term refinancing risks, liquidity issues, and covenant triggers.
66. Even though Standard & Poor's assigns positive or negative outlooks to issuer ratings when we believe that an event or trend has less-certain implications for rating change than CreditWatch, the potential for change must be realistic and not remote. Standard & Poor's assigns positive or negative outlooks to issuer ratings when we believe that an event or trend has at least a one-in-three likelihood of resulting in a rating action over the intermediate term for investment-grade credits (generally up to two years) and over the shorter term for speculative-grade credits (generally up to one year). (13)
67. Thus, both CreditWatches and Outlooks involve specific time horizons. As complements to the actual ratings, the CreditWatch and Outlook products give market participants additional insight about how creditworthiness and credit ratings change over time.

IV) Conclusion

68. The concepts of "credit" and time are directly linked. Credit is essentially a question about the future: will a borrower repay money borrowed, or, stated more generally, will an obligor fulfill its financial commitment? Moreover, the linkage between credit and time starts to appear even closer when one considers the idea that the risk of default by any given obligor generally increases as a function of time. But there's a catch: Default risk may not increase in a mathematically steady way. It can sometimes change suddenly. This is evident from observing differing paths to default of different types of credits.
69. Although the concepts of credit and time are directly linked, the connection between ratings and time is somewhat more subtle. Although highly rated credits do not have specific estimated "lifespans" (until they default), they generally are expected to outlive weaker credits because highly stressful conditions occur less frequently than conditions of slight stress. (14) The softness of the linkage between time and stress reinforces the idea that Standard & Poor's rating system focuses primarily on the relative ranking of creditworthiness, rather than on an absolute rate of defaults over time.
70. The four basic paradigms for credit rating definitions—(i) fixed metric, (ii) cycle-adjusted metric, (iii) scenario-based,

and (iv) distance/time to default—reveal the potentially conflicting objectives for which a rating system can be designed. One can envision hypothetical rating systems designed to provide the greatest warning before default or to minimize the fluctuation of default rates within each category during an economic cycle. Standard & Poor's rating system is not optimized around a single paradigm. Instead Standard & Poor's seeks to strike a balance in a way that makes the system most meaningful across a range of potential objectives.

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Notes

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- (11) Deepwater Horizon Incident Joint Information Center, "U.S. Scientific Teams Refine Estimates of Oil Flow from BP's Well Prior to Capping" (Aug. 2, 2010) (<http://www.deepwaterhorizonresponse.com/go/doc/2931/840475/>).
- (12) The material in this section is adapted from Puccia, M. et al., *Use Of CreditWatch And Outlooks*, Standard & Poor's criteria article (Sept. 14, 2009).
- (13) *Id.*
- (14) Empirical studies show that credits with higher initial ratings survive longer before defaulting than credits

with lower initial ratings. See Vazza, D., D. Aurora, and N. Kraemer, 2009 Annual Global Corporate Default Study and Rating Transitions, Standard & Poor's Global Fixed Income Research report (March 17, 2010) (Tables 10 to 13 show time-to-default statistics and fastest defaulters at each rating level).

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