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## Default, Transition, and Recovery: 2015 Annual U.S. Public Finance Default Study And Rating Transitions

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## Default, Transition, and Recovery:

# 2015 Annual U.S. Public Finance Default Study And Rating Transitions

U.S. public finance (USPF) exhibited growing credit strength in 2015, though at a slower rate than in 2014. Overall, upgrades outpaced downgrades by a ratio of 2.20 to 1 in 2015, compared with 3.33 to 1 the previous year. The ratio of upgrades to downgrades was 2.15 to 1 for bonds excluding housing and 4.27 to 1 for housing bonds. In the previous year, the ratio for nonhousing was 3.38 to 1, and housing had more downgrades than upgrades.

In addition, in 2015, upgrades outnumbered downgrades in every quarter for the third consecutive year. The year ended with 13 straight quarters of more upgrades than downgrades, the longest streak since the first quarter of 2001. In the midst of this, defaults increased to 12 in 2015 from eight in 2014. This continues a recent phenomenon of higher-than-average defaults, particularly among appropriation-backed debt. In the last five years, the number of defaults among credits not including housing has exceeded the average of three going back to 1986. There were 21 defaults of appropriation debt between 2011 and 2015, after only three in the previous 25 years. (Watch the related CreditMatters TV segment titled, "U.S. Public Finance Credit Strength Continues In 2015, But At A Slower Pace," dated May 6, 2016.)

### Overview

- S&P Global Ratings upgraded 991 bonds and downgraded 461 in USPF in 2015, excluding housing.
- There were 47 housing upgrades and 11 downgrades in 2015.
- All but one sector in USPF--higher education--had more upgrades than downgrades in 2015. This was the second consecutive year of negative rating trends in higher education.
- Twelve defaults occurred in USPF in 2015, compared with eight the previous year.
- Since 1986, the average annual number of defaults in all of USPF combined is five, out of a total of more than 21,000 ratings.

In 2015, positive rating trends were evident across every sector except higher education, which had about three downgrades to every upgrade. Charter school ratings that are classified as tax-secured debt are not categorized as higher education debt in this study. (In our quarterly rating trend articles, we group such ratings with higher education.) Still, the general trends in each report are consistent. Higher education credits endured more downgrades than upgrades in 2015, regardless of the categorization of charter school ratings, and tax-secured debt was upgraded more than downgraded.

Rating transitions reflected stronger performance among higher ratings and negative volatility among lower ratings. Overall in USPF, at least 94% of ratings in the 'A' category and higher at the start of 2015 ended the year in the same category or higher. 'BBB' category ratings were more likely to be raised than lowered. All four of the highest rating categories were more likely to have their ratings removed than be downgraded. In contrast, speculative-grade bonds remained within the same rating category or higher no more than 78% over the year, and downgrades exceeded

upgrades in every speculative-grade category.

Rating activity declined significantly in 2015 compared with the previous two years, when the implementation of revised local government criteria led to hundreds of additional changed ratings in that sector. There was a total of 1,510 changed ratings in USPF in 2015, 3,044 in 2014, and 2,030 in 2013. However, when excluding local government and state ratings, but including housing, the number of rating changes in USPF in 2015 increased by six from 2014 and by 23 from 2013.

The data here reflect ratings that changed throughout the year, as opposed to the number of rating changes. For example, a rating that experienced one upgrade in the first quarter and another in the third quarter is counted as one changed rating in this report. Those same two upgrades were counted as two rating changes in our quarterly reports. The different method of tabulating rating changes results in lower counts in this study, although the general trends remain the same. Our quarterly reports found that finances were the most common reason for rating changes in 2015, as would be expected given the breadth of the category. There were 655 upgrades and 256 downgrades primarily resulting from financial causes.

The second-most influential factor in our quarterly reports was the economy of the respective jurisdiction, which spurred 151 upgrades and 36 downgrades in USPF, virtually all within local government ratings. S&P Global Ratings' preliminary indications peg GDP growth at 2.3% in 2016, slightly slower than 2.4% in 2015. The unemployment rate averaged 5.7% in 2015. We forecast a lower unemployment rate of 5.2% in 2016.

In contrast, liquidity stress led to 137 downgrades, the second-highest cause of negative rating actions after finances. Liquidity--which is the availability of cash equivalents to service both debt and other expenditures--was the third-highest cause of rating changes overall, as documented in the quarterly reports, and by far the biggest cause of rating movement of more than two notches. There were 56 rating changes of this magnitude, 55 of them downgrades. In comparison, there were only 39 rating changes of more than two notches for reasons other than liquidity. Puerto Rico led all jurisdictions with 110 liquidity-related downgrades. The vast majority of liquidity downgrades occurred in the state sector, with local government, utilities, health care, and higher education accounting for the others. These downgrades outside of the state sector include several within Puerto Rico.

For the years covered in our study (Jan. 1, 1986, to Jan. 1, 2016), unenhanced debt (i.e., debt obligations not supported by financial guarantees, structuring techniques, multiple-party features, or other external credit support) rated by S&P Global Ratings generally has shown significant credit stability throughout a wide variety of events, including various economic cycles, federal government mandates, and tax reform measures, as well as other factors that can affect general credit quality. The data suggest the following:

- There is a correlation between rating level and default whereby higher-rated issues have a lower rate of default and vice versa.
- Higher-rated issues generally take longer to default than lower-rated issues, and incremental rating changes typically precede default.
- Higher rating levels correspond to greater rating stability and vice versa.
- Rating distributions throughout the sector remained relatively stable despite the economic stress throughout and following the Great Recession.

Because housing sector debt ratings reflect the credit quality from a mix of both public-sector entities and external credit enhancement providers, we present conclusions from this sector in separate tables. The USPF debt types included in the study are:

- General obligation (GO),
- Lease/appropriation/moral obligation,
- Special tax (sales, gas, etc.),
- Special district,
- Water and sewer revenue,
- Public power,
- Airports,
- Ports,
- Toll roads and bridges,
- Parking,
- Various types of bond pools,
- Transit,
- Public and private higher education,
- Auxiliary higher education debt,
- Independent schools,
- Hospitals (stand-alone and systems),
- Continuing care, and
- Physicians' practices.

The information on housing ratings in the text and tables includes all the types of municipal housing on which S&P Global Ratings maintains ratings. These are:

- GO for housing finance agencies and social housing providers, including public housing authorities and community development financing institutions;
- Single-family whole loans;
- Single-family U.S. government-supported mortgage-backed securities (MBS);
- Multifamily loans for affordable housing with U.S. government support;
- Multifamily loans for affordable housing without an explicit or implied U.S. guarantee;
- Military housing;
- Mobile home parks;
- Section 8 multifamily housing; and
- Capital fund securitization for public housing authorities.

## **Defaults In 2015**

A total of 12 USPF-rated bonds were defaulted on in 2015, more than the eight in 2014. Nine of the defaults were to obligations outside of housing, one more than in 2014 and greater than the annual mean of 2.97 and median of two defaults since 1986 (see table 8). The default rate for USPF, excluding housing, was 0.05%. While the default rate remains low, the increase in 2015 raised the mean and median from 2.79 and 1, respectively, in 2014. All nine of the defaulted nonhousing bonds had speculative-grade ratings prior to default, and five of them had 'BBB-' ratings at the

time they were issued. Four of the defaults occurred in Puerto Rico, and of the other five, two were in local government and one each in higher education, utilities, and charter schools.

Three housing bonds defaulted in 2015, following three years with just one default, which occurred in 2013. Two of the defaulted bonds had speculative-grade ratings, but one was rated 'AA+' at the time of default. Bonds that default when highly rated are extremely rare but can occur due to administrative or counterparty issues. In this case, S&P Global Ratings had not received information from the trustee following a default on bonds for the Candler Vista Apartments, issued by the DeKalb County, Ga. Housing Authority. This was the second default on bonds issued by the authority, the other taking place in 2005.

From 1986-2015, the mean and median annual number of housing defaults is 2.23 and 1, respectively, virtually unchanged from 1986-2014. Just as using percentages, rather than numbers, is more instructive when comparing two sectors, so it is when looking at defaults over time because the number of ratings tends to increase over time. The mean default rate for USPF bonds excluding housing since 1986 is 0.03%, with a median of 0.02%. The rate for nonhousing bonds was 0.05% in 2014. The mean default rate for USPF housing bonds during the same period is 0.07% with a median rate of 0.04%. The default rate for bonds not including housing was 0.05% in 2015, and the default rate for housing bonds was 0.13%.

The 12 defaults in USPF in 2015 among bonds that S&P Global Ratings rated were:

- Dowling College, N.Y.;
- Stockton, Ca.;
- Madison County, Miss.;
- Puerto Rico Public Finance Corporation (accounting for four defaults);
- Charter School of Boynton Beach, Fla.;
- Industrial Development Authority of the City of Phoenix, Ariz. (Glendale);
- Candler Vista Apartments, L.P., Ga. (DeKalb County Housing Authority); and
- California Rural Home Mortgage Finance Authority Homebuyer Fund (two defaults).

Additional information on recent one-, three-, five-, and 10-year rating performance is detailed in the Appendix.

Chart 1

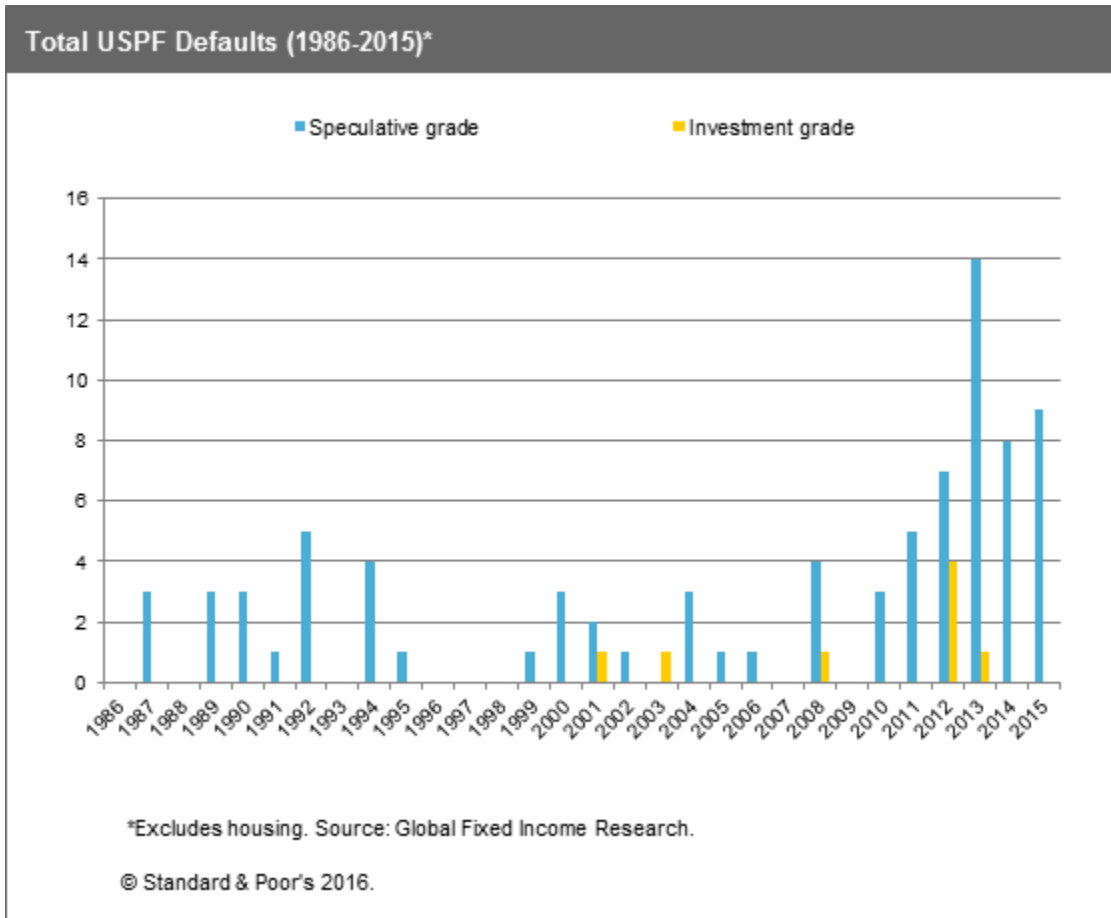
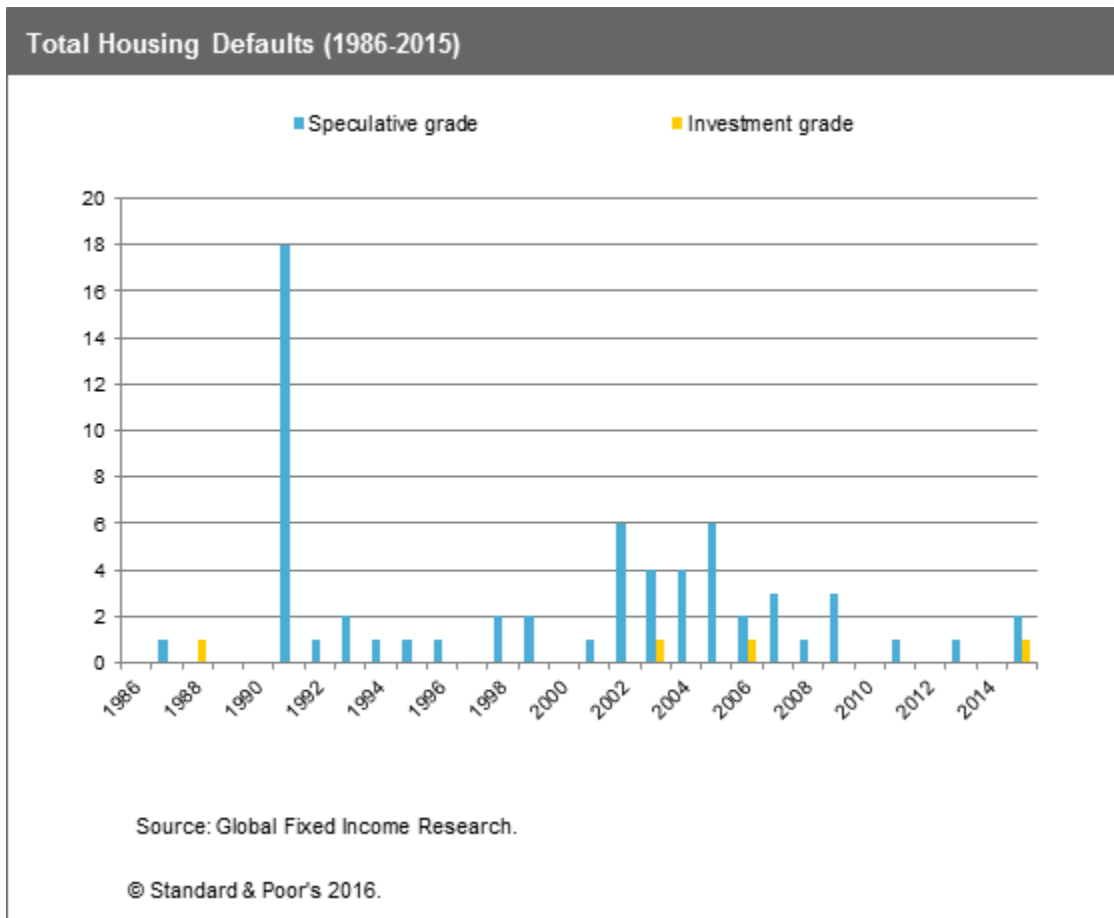


Chart 2



## Transition Rates Remain Very Stable

The study's transition analysis reveals the degree to which ratings change over time. In the transition tables, the intersection of a row and column of the same rating shows the percentage of that rating that ended the period at the same level that it started. If ratings never changed, 100% would appear along the diagonal. Movement toward the left shows the percent of ratings that were upgraded, and movement to the right indicates ratings that were downgraded, defaulted, or withdrawn.

We believe the data show that, generally speaking, USPF ratings outside of housing were highly stable during the period, particularly at the uppermost end of the scale (see tables 3-7). At the 'AAA' level, for example, 96.7% of ratings remained at 'AAA' one year later, as shown in table 3. At 'BBB', however, 86.5% were likely to be the same a year later. During the period studied, for 'AA' to 'B' ratings, the numbers to the left of the diagonal are greater than those to the right (excluding ratings that have been withdrawn, which are designated as 'NR'), showing more upgrades than downgrades over the years. Bonds we rated 'CCC' to 'C' were more likely to have defaulted (17.5%) in one year than to have been upgraded (11.2%). The same general trend is seen when examining rating transitions by modifier ("+" or "-" after the rating), although we believe the sample size renders any conclusions tentative, particularly at the

speculative-grade levels (see tables 4 and 6). Over long time horizons, investment-grade USPF bonds have a very low default rate. The 20-year average transition rate for an investment-grade bond excluding housing to default is 0.68%. The rate for housing bonds is 1.48%. These default rates are mostly identical to the performance one year ago. The only noticeable change is that the default rate for investment-grade housing bonds over a 20-year horizon is 0.17%, higher than it was at the end of 2014.

Across sectors, we observe generally increasing rating volatility as credit quality declines. In 2015, 'AA' ratings tended to move down more than up, while ratings in the 'A' and 'BBB' categories were more likely to be raised than lowered. At least 84% of the ratings in these three categories did not migrate from one category to another. Lower-rated bonds experienced more negative rating volatility. In the 'BB' category, 70% of bonds remained rated at that level throughout the year, and the percentage of speculative-grade-rated debt that retained its initial rating category by the end of 2015 declined with lower ratings. Most sectors experienced more upgrades than downgrades at all investment-grade rating categories, except higher education bonds in the 'AA' and 'BBB' categories, tax-secured bonds in the 'AA' category, appropriation-backed debt in the 'AA' and 'BBB' categories, and health care and housing in the 'AA' category.

One-year transition rates are more negative for appropriation and housing bonds than other municipal ratings. Table 7 shows that fewer than 90% of appropriation and housing bonds in the 'AA' category have remained at that level over the course of one year. Meanwhile, every other sector has retained a 'AA' category rating in more than 90% of instances.



Chart 3

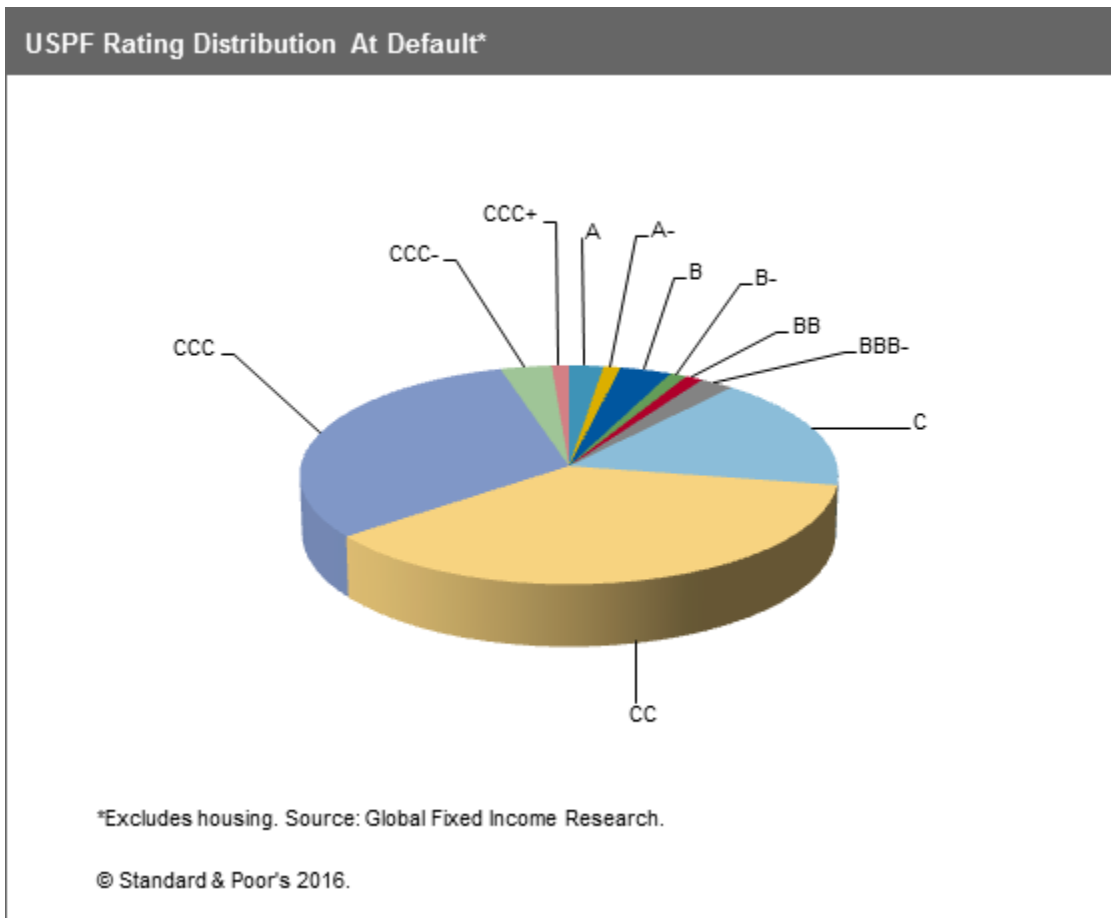


Chart 4

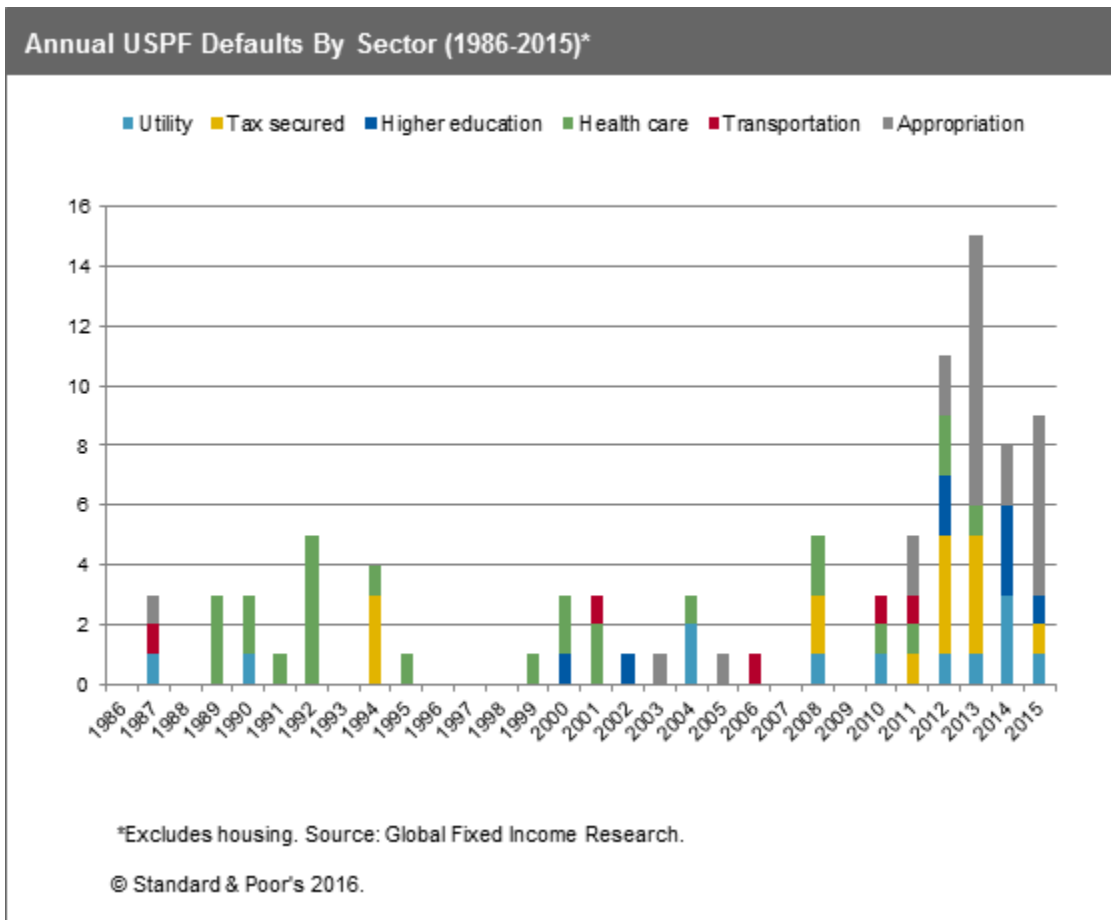
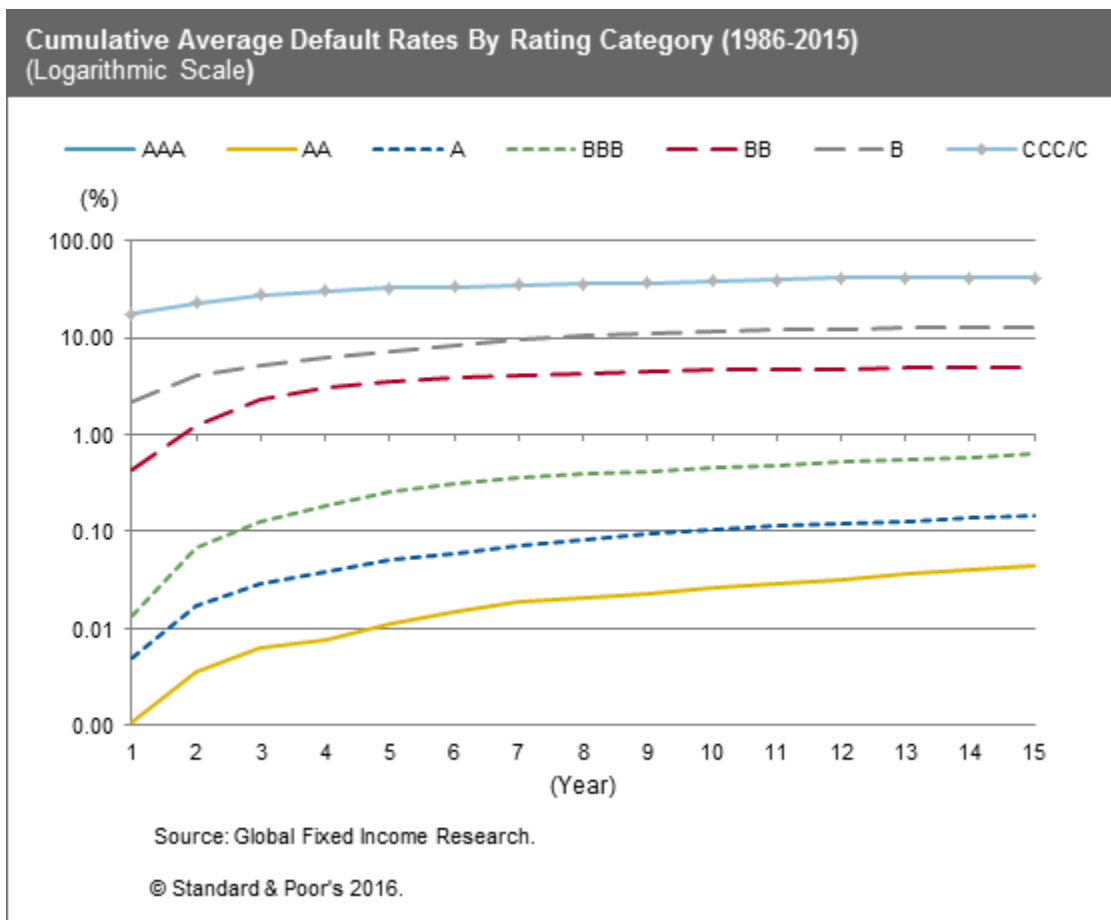


Chart 5



## The Number Of Defaults Is Low

Excluding housing, S&P Global Ratings-rated USPF default counts from 1986-2015 vary from none in eight of the years to a high of 15 in 2013. Of the 90 total nonhousing defaults in the study, 82 were speculative grade immediately before default (table 8). In the housing sector, defaults totaled 69 over the years studied, ranging from zero in eight years to 18 in 1991 (see table 9). Nearly all of the 18 defaults in 1991 were related to the failure of Executive Life Insurance Co. as an investment agreement provider. All but four housing defaults were bonds with speculative-grade ratings prior to default.

Although the number of defaults over these years has been relatively low, we believe securities issued by municipalities can still bear meaningful default risk. For one thing, the municipal market has tended to be self-selecting--municipal issuers with lower credit quality have generally not requested ratings. Correspondingly, the municipalities we rate generally are more creditworthy and less likely to default. However, while the initial credit quality of a municipal issue may be strong, that strength may decline over time. This can happen gradually or swiftly. In most cases, defaults are preceded by a series of downgrades, indicating that the path to default was long. The 90 defaults excluding housing include 54 bond issues (60%) that were initially rated 'BBB+' or lower. The proportion of

nonhousing ratings that are 'BBB+' or below was 1.57% as of Dec. 31, 2015.

## **The Small Number Of Speculative-Grade Ratings Exacerbates Their Default Rates**

Default rates generally are higher for lower-rated obligations and vice versa for debt in higher rating categories (see chart 5 and tables 12-13). We found a less-precise relationship when examining default rates by rating modifier (see tables 14-15). This is not surprising because the relatively small number of defaults and the small number of credits in some rating levels allow a single event to affect the average default rate more than it would at a rating level with a larger number credits. Examining default rates by rating category and by year further demonstrates the danger of reading too much into the average default rates (tables 16-21). No USPF defaults outside of housing have occurred at the 'AAA' level, and just one 'AAA' rated housing bond has ever defaulted. There are currently just over 1,000 'AAA' ratings in all of USPF. In our opinion, significant default volatility becomes evident as one examines ever smaller subsets of the data. At many rating levels, the standard deviation of the default rates raises questions about the value of the average statistic for assessing trends, particularly for smaller groups.

## **Relative Rating Performance**

In addition to examining the absolute performance of ratings, we examine their relative performance. One technique we use to measure relative performance is the Gini coefficient. The Gini coefficient--a summary statistic of the Lorenz curve--is a measure of the relative ability of ratings to differentiate risk. We believe that Lorenz curves and Gini coefficients are useful when compared with other Lorenz curves' Gini coefficients. USPF Lorenz curves--both excluding and including and housing--closely resemble the ideal Lorenz curves (see charts 6 and 10). For more detail regarding the derivation and construction of Lorenz curves and Gini coefficients, see the Appendix.

Chart 6 shows the one-year Lorenz curve for USPF, excluding housing. The points along the Lorenz curve represent different ratings, starting with bonds in the 'CCC' and lower categories on the far left. The first point indicates that the one-year transition to default was 56% at 'CCC' and lower ratings. As the ratings increase, the number of defaults decreases, yielding points that continue to climb through the remainder of the speculative-grade scale before turning sharply to the right in the 'BBB' category. As the investment-grade ratings continue to rise, the vertical distance representing defaults changes little while the proportion of ratings in the universe increases dramatically.

Chart 6

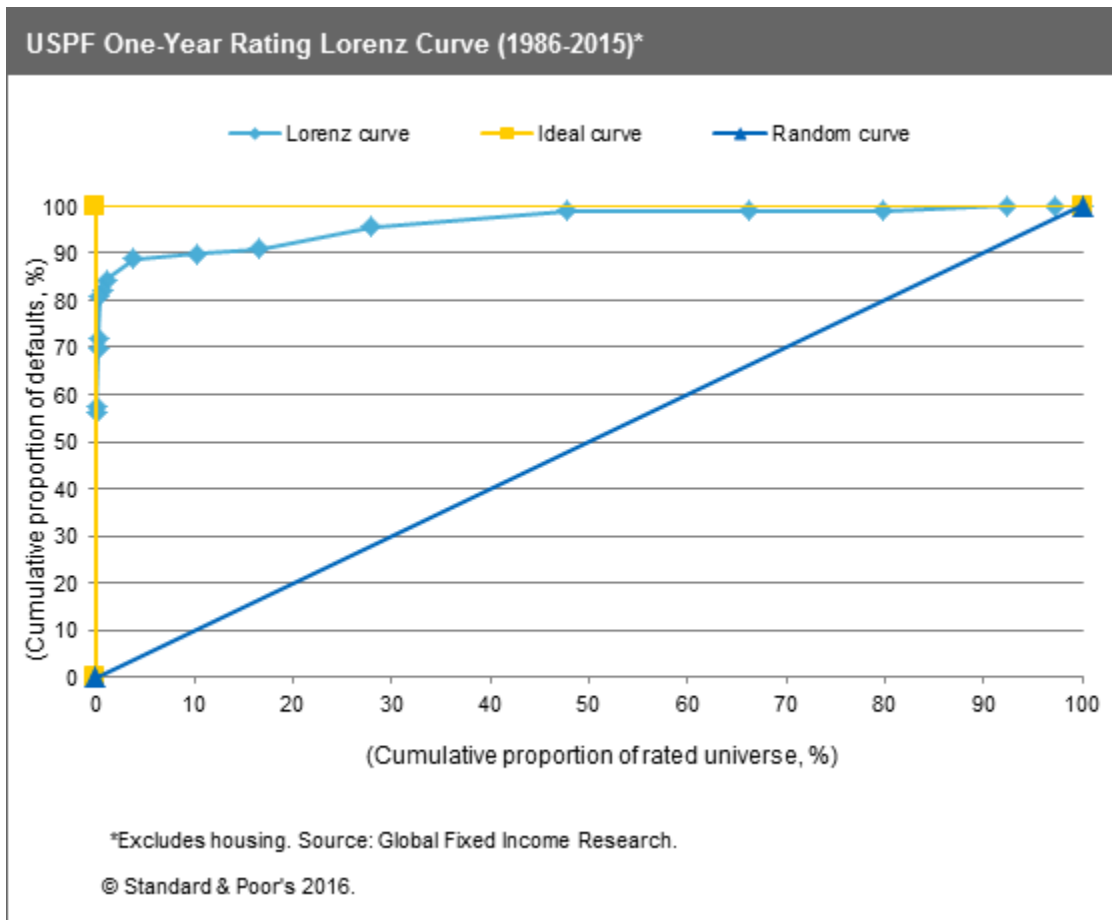


Chart 7

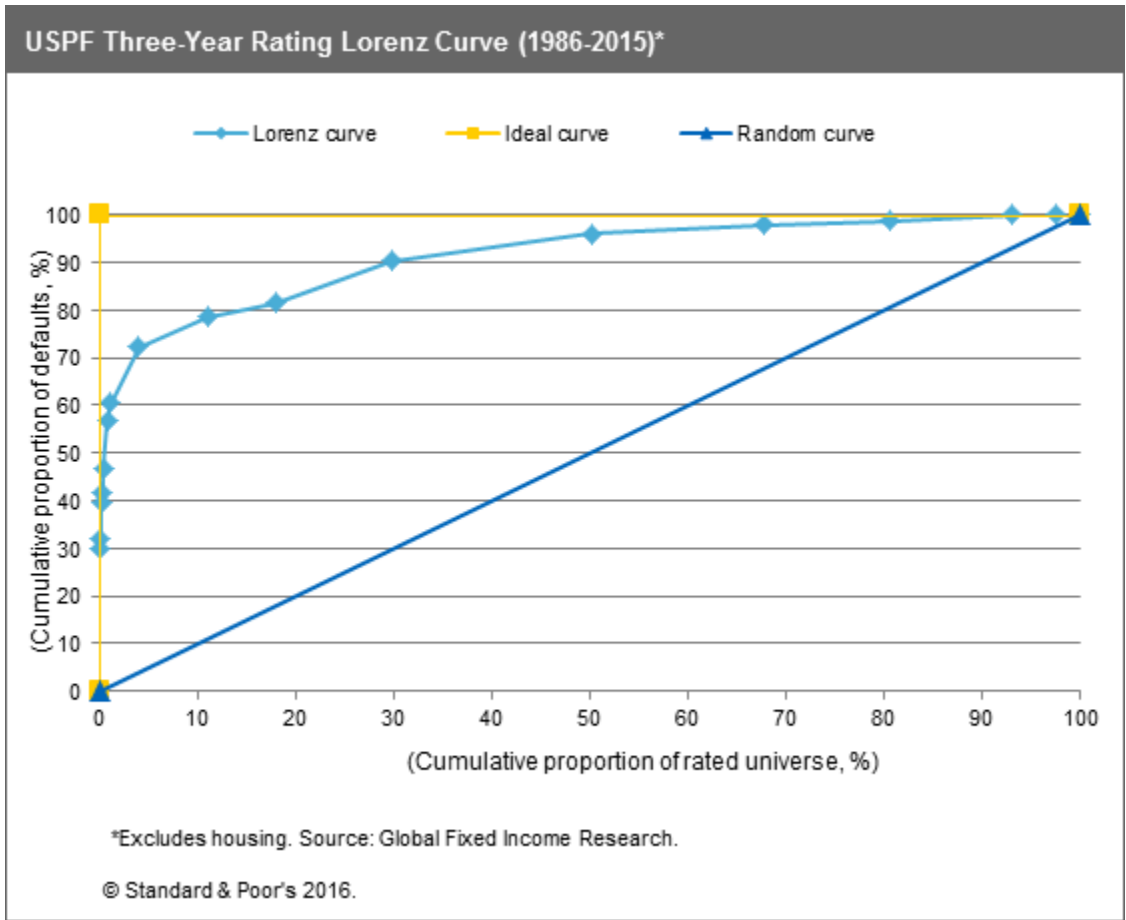


Chart 8

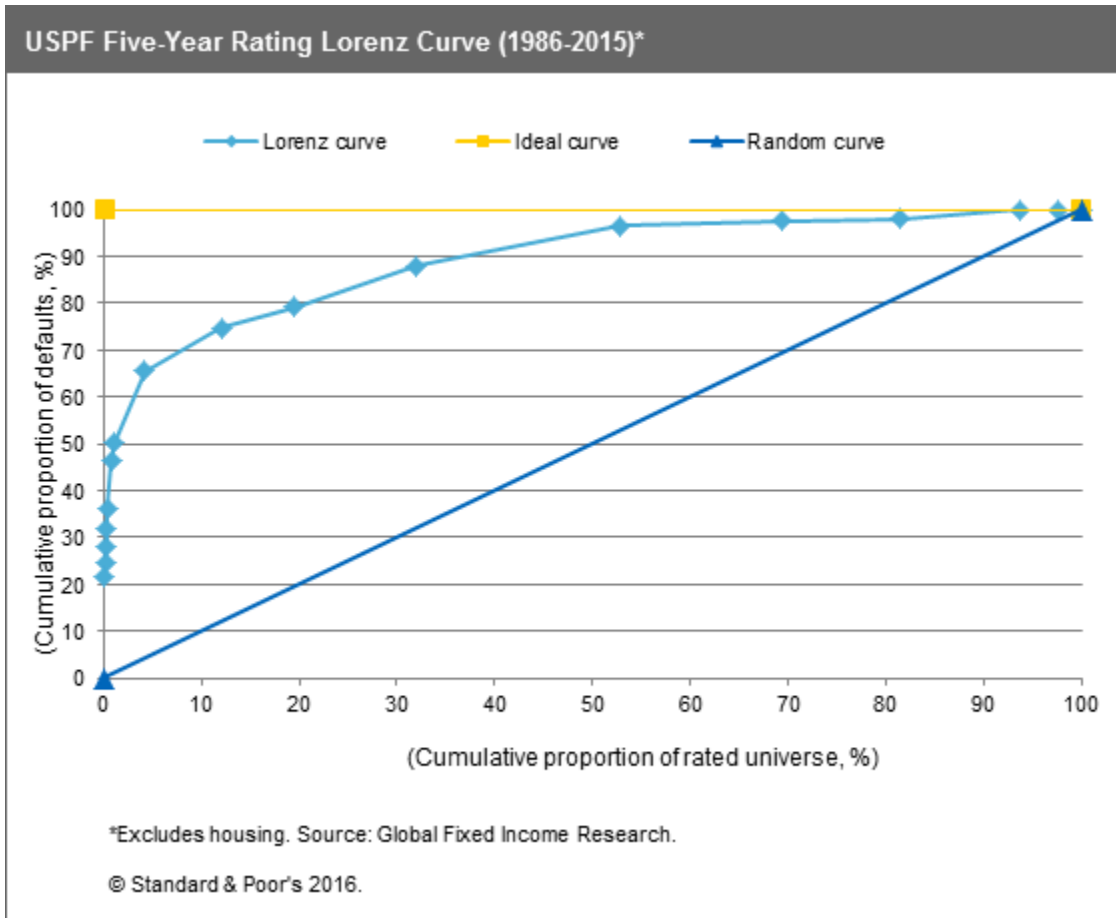


Chart 9

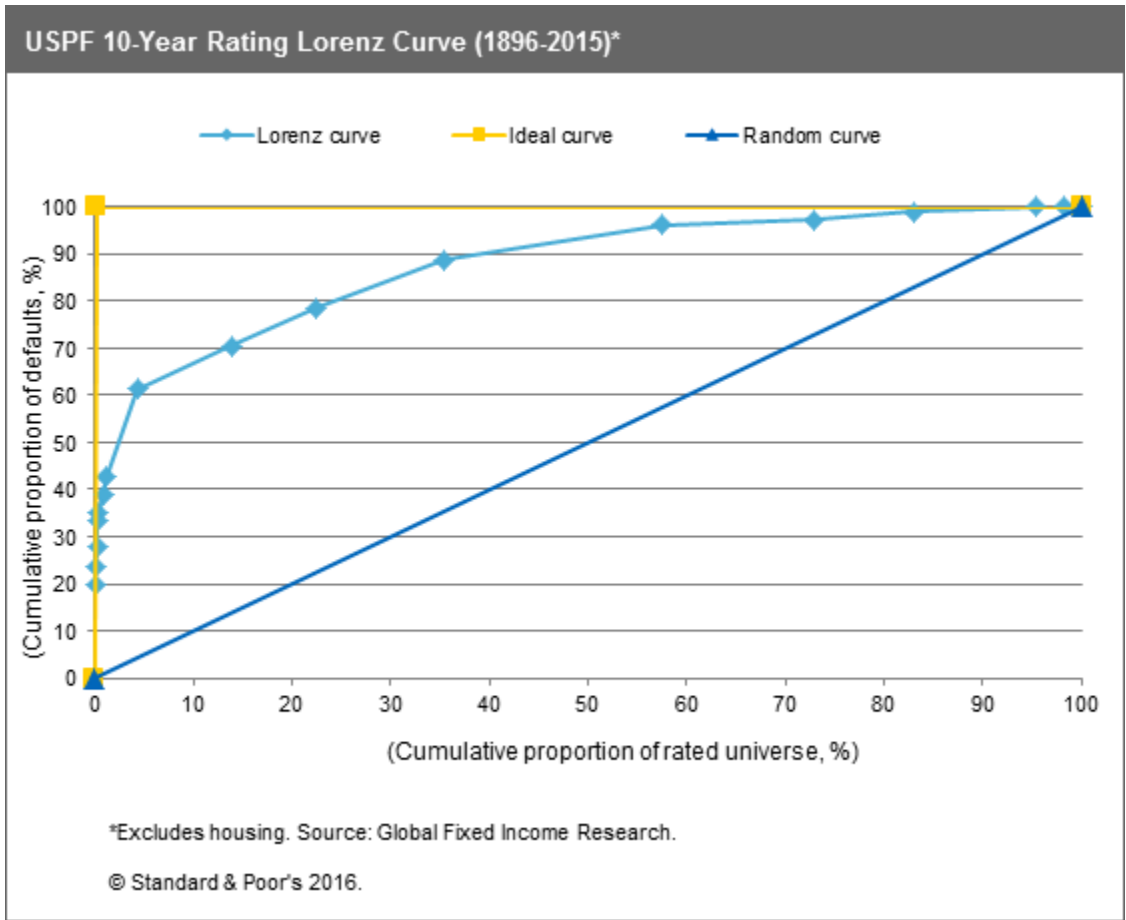




Chart 10

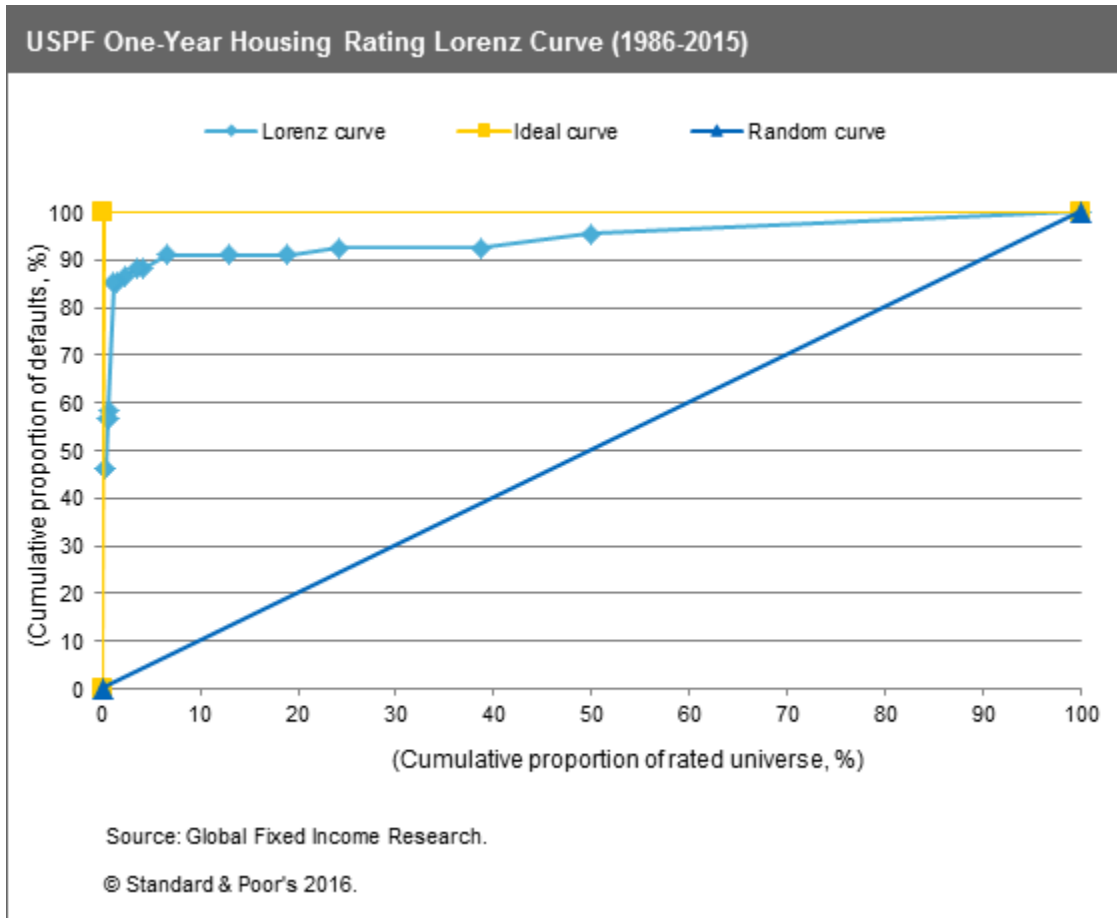


Chart 11

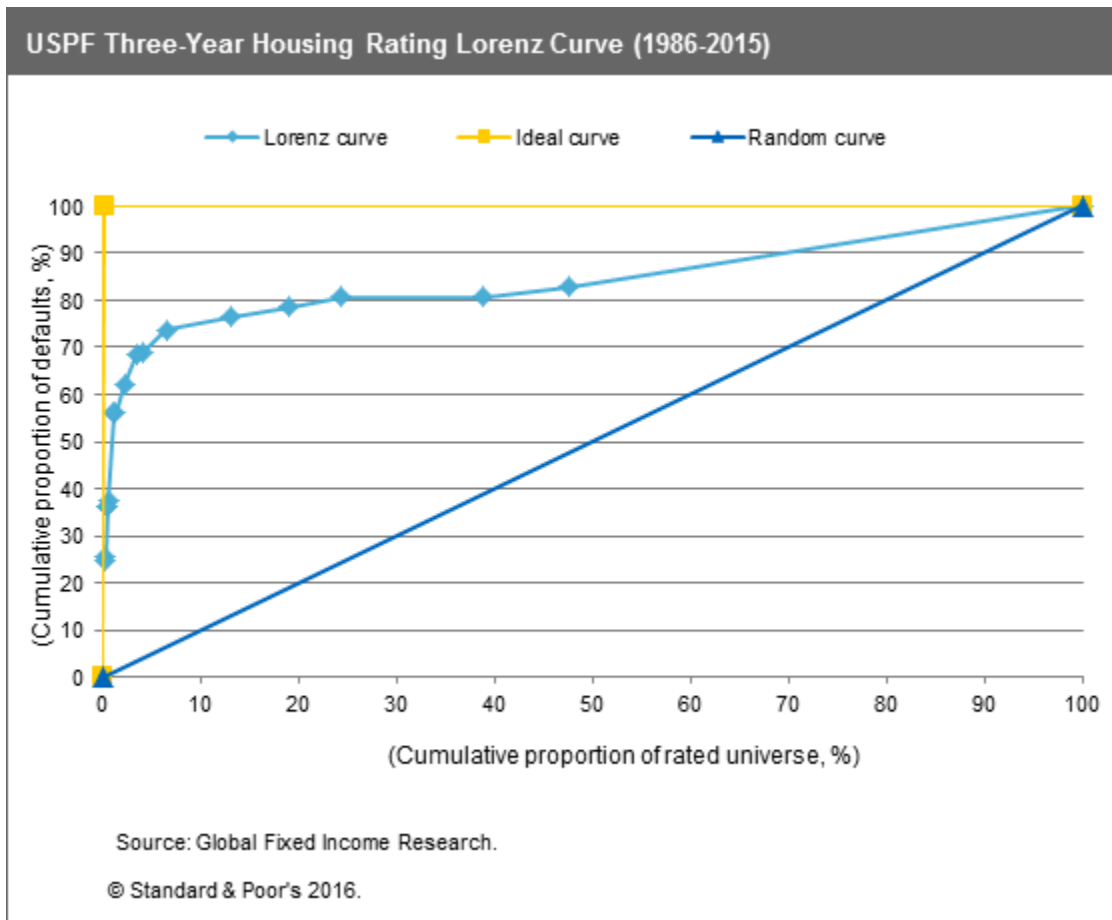


Chart 12

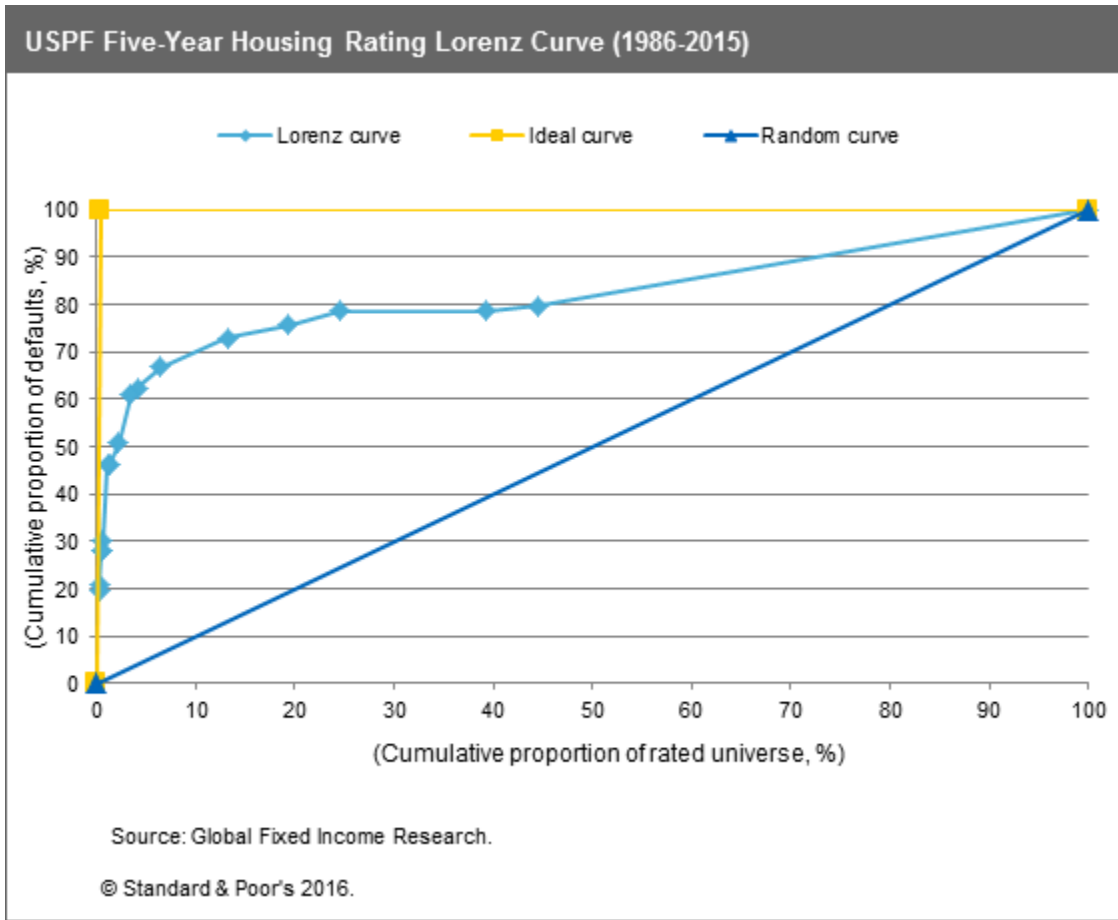
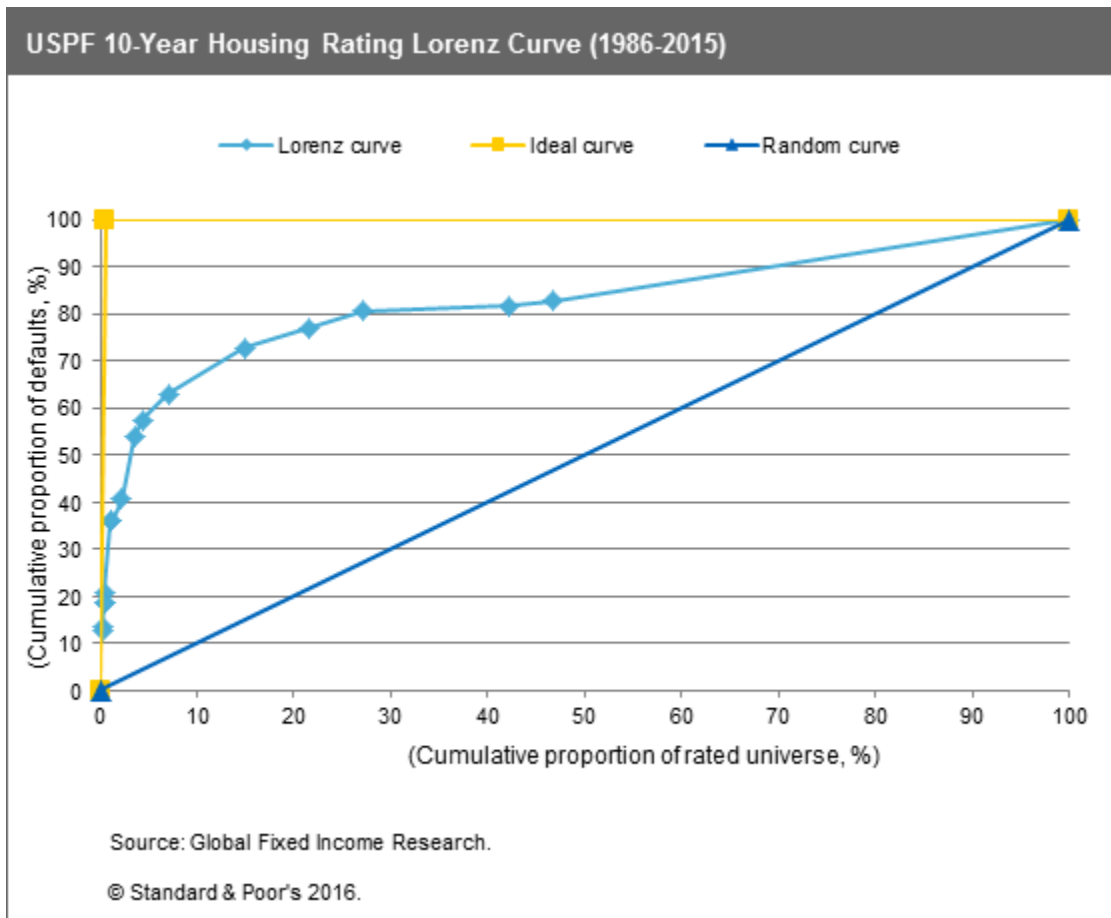


Chart 13



## Appendix: Methodology And Definitions

This long-term U.S. public finance default and rating transition study uses an internal database of long-term local currency credit ratings. With the exception of housing bonds, the analysis includes unenhanced debt (i.e., debt obligations not supported by financial guarantees, structuring techniques, multiple-party features, or other external credit support). Within this study, the USPF-wide conclusions and aggregated tables present data on unenhanced debt and exclude public finance structured and housing debt. Because the housing sector debt ratings reflect the credit quality from a mix of both public-sector entities and external credit enhancement providers, we present conclusions from this sector in separate tables.

S&P Global Fixed Income Research's ongoing improvements to the database used to generate this study could lead to outcomes that differ to some degree from those reported in previous studies. However, this poses no continuity problem because each study reports statistics back to Dec. 31, 1985. Therefore, each annual default study is self-contained and effectively supersedes all previous versions.

There are no changes in methodology or data from the "2014 Annual U.S. Public Finance Default Study And Rating

Transitions," published May 5, 2015.

### **Issuers included in this study**

The study analyzes the rating histories of 19,739 USPF parity obligations that S&P Global Ratings rated as of Dec. 31, 1985, or that were first rated between that date and Dec. 31, 2015. These include GO, lease/appropriation/moral obligation, special tax (sales, gas, etc.), special district, water and sewer revenue, public power, airports, ports, toll roads and bridges, parking, various types of bond pools, transit, public and private higher education, auxiliary higher education, independent schools, hospitals (stand-alone and systems), continuing care, and physicians' practices in the U.S. with long-term local currency ratings.

In terms of housing, the study includes 2,224 obligations tracked over the same period. These include general obligation, single-family whole loan, single-family multiple MBS, multifamily Fannie Mae, multifamily Freddie Mac, multifamily Ginnie Mae, affordable housing, Federal Housing Administration-insured loans, Section 8 housing, military housing, and capital fund securitization.

### **Issues with withdrawn ratings**

S&P Global Ratings withdraws ratings when an entity's entire debt is paid off or when the program or programs rated are terminated and the relevant debt extinguished. Others are withdrawn because of a lack of cooperation, particularly when an entity fails to provide all the information needed to continue surveillance on the ratings, or at the entity's request.

### **Definition of default**

An obligor rated 'D' or 'SD' (selective default) is in payment default on one or more of its financial obligations (rated or unrated) unless S&P Global Ratings believes that such payments will be made within five business days in the absence of a stated grace period or within the earlier of the stated grace period or 30 calendar days. S&P Global Ratings also lowers a rating to 'D' when an issuer takes an action that could jeopardize payments on a financial obligation, including the rare instance of a public finance entity filing for bankruptcy. S&P Global Ratings assigns a 'D' rating when we believe that the default will be a general default and that the obligor will fail to pay all or substantially all of its obligations as they come due. S&P Global Ratings assigns an 'SD' rating when it believes that the obligor has selectively defaulted on a specific issue or class of obligations but will continue to meet its payment obligations on other issues or classes of obligations in a timely manner. A selective default includes the completion of a distressed exchange offer, whereby one or more financial obligation is either repurchased for an amount of cash or replaced by other instruments having a total value that is less than par.

We deem 'D' and 'SD' ratings as defaults for the purposes of this study. A default is assumed to take place on the earliest of the date S&P Global Ratings revised the rating(s) to 'D' or 'SD', the date a debt payment was missed, the date a distressed exchange offer was announced, or the date the debtor filed for or was forced into bankruptcy.

When an issuer defaults, it is not uncommon for S&P Global Ratings to subsequently withdraw the 'D' rating. For the purposes of this study, if an issuer defaults, we end the associated bond's rating history at 'D'. If any defaulting entity reemerges from bankruptcy--or otherwise restructures its defaulted debt instruments, thereby reestablishing regular, timely payment of all its debts--we reenter this issuer (or if a selective default, just the bonds) into the database as a new set of bonds. The rating history on the bonds after the default event is included in all calculations as entirely

separate from the experience leading up to its earlier default.

## **Calculations**

**Static pool methodology.** S&P Global Fixed Income Research conducts its default studies on the basis of groupings called static pools. For the purposes of this study, we form static pools by grouping bonds by rating category at the beginning of each year, quarter, or month that the database covers. Each static pool is followed from that point forward. All bonds included in the study are assigned to one or more static pools. When an issuer defaults, we assign that default back to all of the static pools to which the issuer belonged.

S&P Global Fixed Income Research uses the static pool methodology to avoid certain pitfalls in estimating default rates. This is to ensure that default rates account for rating migration and to allow for default rates to be calculated across multiple-period time horizons. Some methods for calculating default and rating transition rates might charge defaults only against the initial rating, ignoring more recent rating changes that supply more current information. Other methods may calculate default rates using only the most recent year's default and rating data, which may yield comparatively low default rates during periods of high rating activity because they ignore prior years' default activity.

The pools are static in the sense that their universe remains constant over time. Each static pool can be interpreted as a buy-and-hold portfolio. Because errors, if any, are corrected by every new update and because the criteria for inclusion or exclusion of bonds in the default study are subject to minor revisions as time goes by, it is not possible to compare static pools across different studies. Therefore, every new update revises results back to the same starting date of Jan. 1, 1986, so as to avoid continuity problems.

Ratings that have had been withdrawn--that is, revised to 'NR'--are surveilled with the aim of capturing a potential default. Because static pools only include entities with active ratings as of the beginning date of a given pool, we exclude withdrawn ratings, as well as ratings on bonds that have defaulted, from subsequent static pools. If an entity's bond series has its rating withdrawn after the start date of a particular static pool and there occurs a subsequent default, we will include that series in that static pool as a default and categorize it into the rating category it was a member of at that time.

For instance, the 1986 static pool consists of all debt rated as of 12:01 a.m. Jan. 1, 1986. Adding debt first rated in 1986 to the outstanding debt of the 1986 static pool forms the 1987 static pool. All rating changes that took place as of 12:01 a.m. Jan. 1, 1987, are reflected in the newly formed 1987 static pool. We used the same method to form static pools for 1988 through 2015.

Consider the following example: A parity debt rating of 'BB' is assigned in mid-1986 and is lowered to 'B' in 1988, followed by a default in 1993. This hypothetical rating would be included in the 1987 and 1988 pools as a 'BB' and in the 1989 through 1993 pools as a 'B'. All pools that include this obligation would capture its 1993 default. It would not be part of the 1986 pool because it was not rated as of the first day of that year. Yet each of the pools in which this debt was included (1987 through 1993) would record its 1993 default at the appropriate time horizon.

**Default rate calculation.** We calculated annual default rates for each static pool, first in units and later as percentages with respect to the number of issuers in each rating category. We combined these percentages to obtain cumulative default rates for the 30 years the study covers (see tables 16, 17, 19, and 20).

**Issuer-weighted default rates.** All default rates that appear in this study are based on the number of issuers rather than the dollar amounts affected by defaults or rating changes. Although dollar amounts provide information about the portion of the market that is affected by defaults or rating changes, issuer-weighted averages are a more useful measure of the performance of ratings.

Many practitioners use statistics from this default study to estimate "probability of default" and "probability of rating transition." It is important to note that our ratings do not imply a specific probability of default.

**Average cumulative default rate calculation.** The cumulative default rates in this study average the experience of all static pools by first calculating marginal default rates for each possible time horizon and for each static pool, by weight averaging the marginal default rates conditional on survival (survivors being nondefaulters), and by then accumulating the average conditional marginal default rates (see tables 16, 17, 19, and 20). We calculated conditional default rates by dividing the number of issuers in a static pool that default at a specific time horizon by the number of debt issues that survived (did not default) to that point in time. Weights are based on the number of issues in each static pool. Cumulative default rates are one minus the product of the proportion of survivors (nondefaulters).

For instance, as shown in table 17, the weighted average first-year default rate for entities rated in the 'B' category for all 30 pools was 2.17%, meaning that an average of 97.84% made payments in accordance with their terms for the first year. Similarly, the second- and third-year conditional marginal averages were 2.04% for the first 29 pools (97.96% of those parity obligations that did not default in the first year did not default in the second year) and 0.93% for the first 28 pools (99.04% of those entities that did not default by the second year did not default in the third year either), respectively. Multiplying 97.84% by 97.96% results in a 95.84% nondefault rate at the end of the second year, or a two-year cumulative average default rate of 4.16%. Multiplying 96.10% by 99.03% results in a 94.92% nondefault rate at the end of the third year, or a three-year 5.08% cumulative average default rate. (The table is based on numbers calculated to four decimals. Calculations using numbers rounded to two decimals, as presented here, may yield slightly different results.)

## **Transition analysis**

Transition rates compare issuer ratings at the beginning of a time period with ratings at the end of the period. To compute one-year rating transition rates by rating category, we compared the rating on each parity obligation at the end of a particular year with the rating at the beginning of the same year. An obligation that remained rated for more than one year was counted as many times as the number of years it was rated. For instance, an obligation continually rated from the middle of 1987 to the middle of 1991 would appear in the four consecutive one-year transition matrices from 1988 through 1991. If the rating on the obligation was withdrawn in the middle of 1991, it would be included in the column representing transitions to 'NR' in the 1991 transition matrix. Similarly, if it experienced default in the middle of 1991, it would be included in the column representing transitions to 'D' in the 1991 one-year transition matrix.

All 1986 static pool members still rated on Jan. 1, 2015, had 30 one-year transitions, while debt first rated on Jan. 1, 2015, had only one. Tables 26 and 27 display the summaries of one-year transitions for USPF obligations not including housing and for only housing, respectively. Each one-year transition matrix displays all rating movements between letter categories from the beginning of the year through year end. For each rating listed in the matrix's left-most column, there are nine ratios listed in the rows, corresponding to the ratings from 'AAA' to 'D' plus an entry for NR.

The only ratings considered in these calculations are those on entities at the beginning of each static pool and those at the end. All rating changes that occur in between are ignored. For example, if an entity was rated 'A' on Jan. 1, 2015, and was downgraded to 'BBB' in the middle of the year and then later upgraded to 'A' later in the year (with no other subsequent rating changes), this entity would only be included in the percentage of issuers that began the year as 'A' that ended the year as 'A'. This also applies to transition matrices that span longer time horizons. If an obligation defaults or we withdraw its rating in the middle of the year, then we would consider its rating either a 'D' or 'NR' as of Dec. 31 of that particular year.

**Multiyear transitions.** Multiyear transitions were also calculated for periods of two up to 20 years. In this case, we compared the rating at the beginning of the multiyear period with the rating at the end. For example, three-year transition matrices were the result of comparing ratings at the beginning of the years 1986 through 2013 with the ratings at the end of the years 1988 through 2015. Otherwise, the methodology was identical to that used for single-year transitions.

We calculated average transition matrices on the basis of the multiyear matrices just described. These average matrices are a true summary, the ratios of which represent the historical incidence of the ratings listed on the first column changing to the ones listed on the top row over the course of the multiyear period (see tables 3 and 5). Transition matrices that present averages over multiple time horizons are also calculated as issuer-weighted averages.

### **Comparing transition rates with default rates**

Rating transition rates may be compared with the marginal and cumulative default rates described in the previous sections. For example, the one-year default rate column of tables 12 and 13 is equivalent to column 'D' of the average one-year transition matrix in tables 3 and 5 and to the cumulative average in summary statistics of the one-year column in tables 17 and 19.

**Initial-to-last transitions and default rates.** These transition rates compare debt ratings from the time of first rating to the last rating, regardless of the time elapsed in the interim. They provide a roadmap to all of the historically observed rating "states" inhabited by U.S. public finance ratings during their lifetimes.

### **The Gini coefficient calculation**

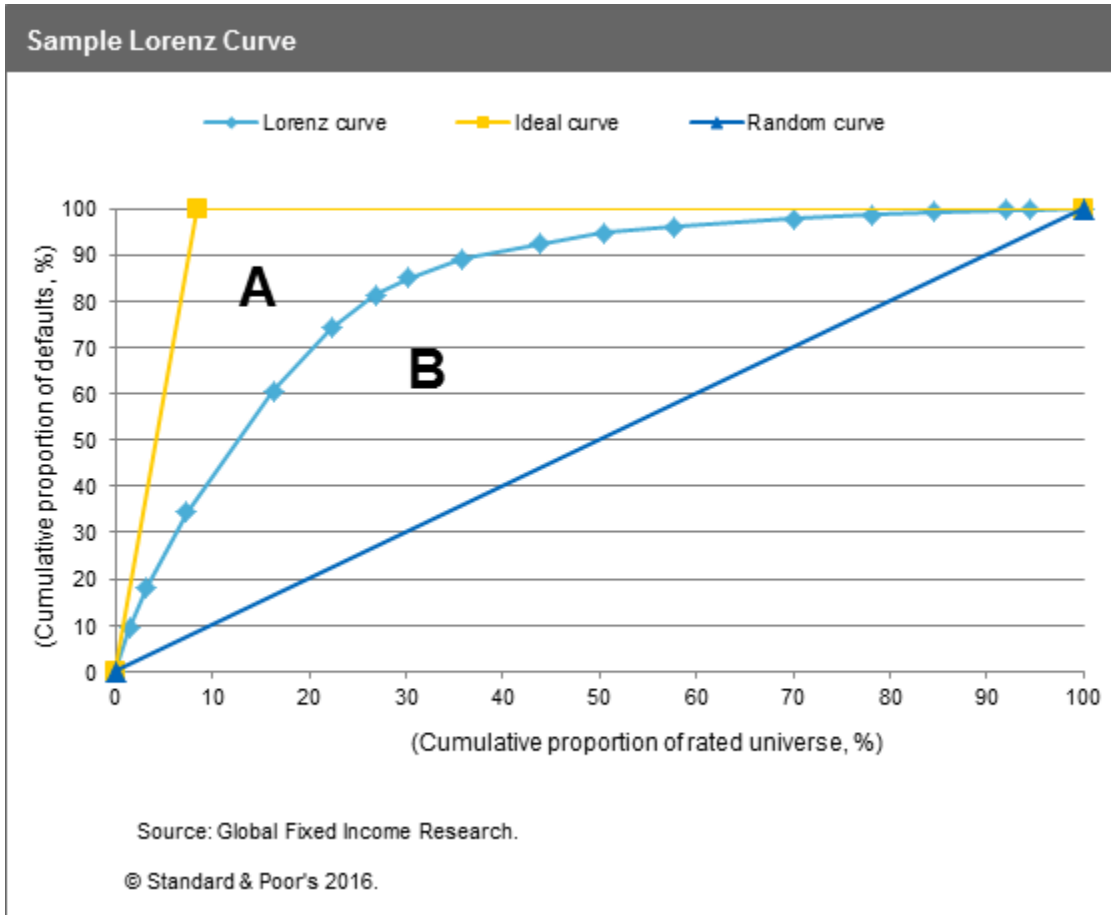
The Gini coefficient, developed by Corrado Gini, is a summary statistic of the Lorenz curve, which shows visually the accuracy of ratings' rank ordering. The Lorenz curve was developed by Max O. Lorenz as a graphical representation of the proportionality of a distribution. For this study, the Lorenz curve is built by plotting the cumulative proportion of parity obligations by rating category (from lowest to highest) with the cumulative proportion of defaulters by rating category. For example, if 'C' parity obligations represented 1% of the total parity obligations (x axis) and 20% of the defaulters (y axis), then the coordinate (1, 20) would be the first point on the curve.

To determine relative performance represented by the Lorenz curve, we compare it with the random curve and the ideal curve. If our rating rank orderings only randomly approximated default risk, the Lorenz curve would fall along the diagonal, and its Gini coefficient would be zero. If ratings were perfectly rank-ordered so that all defaults occurred only among the lowest-rated obligations, and all obligations with the lowest rating defaulted, the curve would be the ideal curve, and the Gini coefficient would be 1. The Gini coefficient is a ratio of two areas illustrated in chart 14 and is derived by dividing area B by the total area A plus B. In other words, the Gini coefficient captures the extent to which actual rating accuracy diverges from the random scenario and approaches the ideal.



The Gini coefficient can be calculated for different lengths of time, for example one year or three years, and for a single period, such as the year ended 2015, or by aggregating a series of one-year periods. To calculate the one-year Gini for 2015, we identify the parity obligation ratings at the beginning of the year and determine which did and did not default during the year. Then, we calculate the proportion of parity obligations at each rating level and the proportion of defaulters at each rating, based on their ratings at the beginning of the period. The aggregate Gini for 1986 through 2015 combines data for each of the 30 one-year periods. The same parity obligation may be counted multiple times in the aggregate Gini coefficient.

**Chart 14**



**Time sample**

This update limits the reporting of default rates to the 15-year time horizon. However, the data were gathered for 30 years, and all calculations are based on the rating experience of that period. In addition, average default statistics become less reliable at longer time horizons as the sample size becomes smaller and the cyclical nature of default rates has a bigger effect on averages.

Default patterns share broad similarities across all static pools, suggesting that our rating standards have been consistent over time. Adverse conditions tend to coincide with default upswings for all pools. Speculative-grade issuers have been hit the hardest by these upswings, but investment-grade default rates also increase in stressful periods.

**Table 1**

2015 One-Year Transition Rates By Category (%)									
From/to	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>USPF</b>									
AAA	96.36	0.71	0.12	0.12	0.00	0.00	0.00	0.00	2.70
AA	0.35	94.49	0.88	0.02	0.00	0.00	0.00	0.00	4.26
A	0.00	2.03	92.93	0.46	0.02	0.01	0.00	0.00	4.55
BBB	0.00	0.15	7.79	84.04	1.87	0.22	0.30	0.07	5.54
BB	0.00	0.00	0.41	8.20	70.49	1.64	11.07	1.64	6.56
B	0.00	0.00	0.00	0.00	9.09	68.18	13.64	2.27	6.82
CCC/C	0.00	0.00	5.88	5.88	0.00	5.88	64.71	17.65	0.00
<b>Utility</b>									
AAA	95.89	0.68	0.00	0.00	0.00	0.00	0.00	0.00	3.42
AA	0.43	94.30	2.37	0.00	0.00	0.00	0.00	0.00	2.90
A	0.00	1.82	95.88	0.57	0.00	0.00	0.00	0.00	1.72
BBB	0.00	0.00	15.79	81.58	1.32	0.00	0.00	1.32	0.00
BB	0.00	0.00	0.00	20.00	60.00	0.00	20.00	0.00	0.00
B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CCC/C	0.00	0.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00
<b>Higher education</b>									
AAA	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	0.00	96.48	1.51	0.00	0.00	0.00	0.00	0.00	2.01
A	0.00	1.17	93.00	0.58	0.00	0.00	0.00	0.00	5.25
BBB	0.00	0.00	0.00	89.24	3.16	0.63	0.63	0.00	6.33
BB	0.00	0.00	0.00	0.00	82.35	0.00	5.88	0.00	11.76
B	0.00	0.00	0.00	0.00	0.00	50.00	0.00	50.00	0.00
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Tax secured</b>									
AAA	97.37	0.82	0.16	0.16	0.00	0.00	0.00	0.00	1.48
AA	0.51	96.34	0.74	0.04	0.00	0.00	0.00	0.00	2.37
A	0.00	1.69	94.20	0.38	0.04	0.02	0.00	0.00	3.68
BBB	0.00	0.15	10.70	82.76	0.74	0.15	0.30	0.00	5.20
BB	0.00	0.00	2.44	19.51	53.66	0.00	14.63	0.00	9.76
B	0.00	0.00	0.00	0.00	5.00	65.00	30.00	0.00	0.00
CCC/C	0.00	0.00	14.29	14.29	0.00	0.00	57.14	14.29	0.00
<b>Health care</b>									
AAA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	0.00	98.90	1.10	0.00	0.00	0.00	0.00	0.00	0.00
A	0.00	4.91	89.43	1.89	0.00	0.00	0.00	0.00	3.77
BBB	0.00	0.60	7.83	76.51	4.22	0.00	0.00	0.00	10.84
BB	0.00	0.00	0.00	7.69	79.49	0.00	0.00	0.00	12.82
B	0.00	0.00	0.00	0.00	40.00	20.00	0.00	0.00	40.00
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00

**Table 1**

**2015 One-Year Transition Rates By Category (%) (cont.)**

From/to	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Transportation</b>									
AAA	66.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
AA	0.00	94.83	0.00	0.00	0.00	0.00	0.00	0.00	5.17
A	0.00	3.68	93.87	0.00	0.00	0.00	0.00	0.00	2.45
BBB	0.00	0.00	3.57	92.86	0.00	0.00	0.00	0.00	3.57
BB	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Appropriation</b>									
AAA	86.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79
AA	0.00	89.87	0.49	0.00	0.00	0.00	0.00	0.00	9.64
A	0.00	2.82	87.73	0.44	0.00	0.00	0.00	0.00	9.01
BBB	0.00	0.00	2.43	88.84	3.40	0.49	0.49	0.00	4.37
BB	0.00	0.00	0.00	5.76	71.22	2.88	13.67	2.88	3.60
B	0.00	0.00	0.00	0.00	5.88	88.24	0.00	0.00	5.88
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	33.33	66.67	0.00
<b>Housing issues</b>									
AAA	87.13	0.58	0.00	0.00	0.00	0.00	0.00	0.00	12.28
AA	0.00	91.78	0.12	0.00	0.06	0.00	0.00	0.06	7.99
A	0.00	10.23	72.35	0.00	0.00	0.00	0.00	0.00	17.42
BBB	0.00	0.00	7.50	90.00	0.00	0.00	0.00	0.00	2.50
BB	0.00	0.00	0.00	4.00	64.00	4.00	0.00	0.00	28.00
B	0.00	0.00	0.00	0.00	6.67	80.00	0.00	0.00	13.33
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	50.00	33.33	16.67

Source: Global Fixed Income Research.

**Table 2**

**2015 Upgrades And Downgrades**

	Ratings	Upgrades	Downgrades	Defaults	Downgrades plus defaults
Total USPF*	19,739	991	452	9	461
Utility	2,203	129	58	1	59
Tax secured	11,651	531	200	1	201
Higher education	756	15	40	1	41
Health care	570	83	44	0	44
Transportation	283	31	5	0	5
Appropriation	4,276	202	105	6	111
Housing issues	2,224	47	8	3	11

\*Does not include housing. Source: Global Fixed Income Research.

**Table 3**

USPF Average Transition Rates (1986-2015) (%)*									
Rating	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>One-year</b>									
AAA	96.65	1.16	0.04	0.01	0.00	0.00	0.01	0.00	2.13
AA	0.82	93.38	1.23	0.02	0.00	0.01	0.00	0.00	4.53
A	0.01	3.28	90.53	0.88	0.05	0.02	0.01	0.00	5.22
BBB	0.00	0.10	5.58	86.45	0.98	0.16	0.11	0.01	6.61
BB	0.00	0.00	0.40	7.13	77.69	3.48	1.88	0.44	8.97
B	0.00	0.31	0.47	2.95	7.14	69.10	7.14	2.17	10.71
CCC/C	0.00	0.00	1.40	0.70	1.40	7.72	58.25	17.54	12.98
<b>Three-year</b>									
AAA	91.04	3.26	0.22	0.02	0.00	0.00	0.02	0.00	5.44
AA	2.54	80.86	2.89	0.19	0.02	0.02	0.01	0.01	13.46
A	0.05	8.94	73.10	2.12	0.13	0.05	0.04	0.03	15.55
BBB	0.00	0.73	13.81	63.32	2.01	0.42	0.24	0.11	19.35
BB	0.00	0.00	2.04	14.58	46.91	5.93	1.26	2.09	27.18
B	0.00	0.89	1.42	9.61	9.79	33.99	8.54	4.80	30.96
CCC/C	0.00	0.00	2.40	2.00	7.60	5.20	29.20	27.20	26.40
<b>Five-year</b>									
AAA	86.24	4.65	0.47	0.06	0.00	0.00	0.00	0.00	8.58
AA	4.27	69.06	3.93	0.16	0.07	0.02	0.01	0.01	22.48
A	0.10	13.03	57.56	2.70	0.18	0.07	0.05	0.05	26.26
BBB	0.01	1.22	18.57	45.24	2.25	0.57	0.26	0.21	31.68
BB	0.00	0.11	3.02	16.35	28.05	5.21	1.46	2.97	42.83
B	0.00	0.81	3.65	10.14	6.69	16.63	5.88	5.88	50.30
CCC/C	0.00	0.00	1.52	9.14	1.52	5.08	18.78	30.96	32.99
<b>Seven-year</b>									
AAA	83.60	5.22	0.66	0.05	0.00	0.00	0.00	0.00	10.47
AA	6.14	58.67	3.83	0.19	0.03	0.02	0.01	0.02	31.09
A	0.17	15.82	43.90	2.66	0.21	0.07	0.06	0.05	37.05
BBB	0.02	2.01	20.56	31.10	2.05	0.53	0.24	0.30	43.20
BB	0.00	0.26	3.82	15.68	17.11	5.06	1.23	2.20	54.63
B	0.00	0.45	4.90	7.57	4.68	8.02	3.12	8.46	62.81
CCC/C	0.00	0.00	0.58	8.09	0.00	4.05	13.87	32.95	40.46
<b>10-year</b>									
AAA	81.69	6.37	0.41	0.00	0.00	0.00	0.00	0.00	11.53
AA	8.10	47.19	3.25	0.22	0.00	0.02	0.00	0.02	41.19
A	0.35	16.20	28.81	2.35	0.21	0.06	0.06	0.07	51.89
BBB	0.03	2.90	17.95	17.33	1.54	0.40	0.23	0.33	59.29
BB	0.00	0.66	4.83	11.22	6.96	3.52	1.31	2.21	69.29
B	0.00	0.28	4.42	3.04	2.49	2.21	1.38	10.77	75.41
CCC/C	0.00	0.00	0.00	6.49	0.00	1.30	6.49	36.36	49.35

**Table 3**

USPF Average Transition Rates (1986-2015) (%)* (cont.)									
Rating	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>15-year</b>									
AAA	79.87	9.90	0.74	0.08	0.00	0.00	0.00	0.00	9.41
AA	10.80	36.42	3.05	0.23	0.00	0.02	0.00	0.04	49.45
A	0.70	14.72	15.84	1.47	0.16	0.06	0.05	0.10	66.89
BBB	0.05	3.52	11.92	6.95	0.85	0.19	0.09	0.50	75.93
BB	0.00	2.01	3.54	5.90	1.06	1.53	0.00	1.77	84.18
B	0.00	0.00	2.41	1.20	0.00	0.00	0.00	9.64	86.75
CCC/C	0.00	0.00	0.81	4.84	0.00	0.00	0.00	39.52	54.84
<b>20-year</b>									
AAA	76.42	14.94	1.57	0.00	0.00	0.00	0.00	0.00	7.08
AA	11.58	28.09	3.00	0.24	0.00	0.00	0.00	0.07	57.03
A	1.02	12.96	9.49	1.06	0.12	0.04	0.02	0.15	75.15
BBB	0.06	4.03	8.43	2.98	0.39	0.11	0.01	0.46	83.54
BB	0.00	1.43	3.17	3.33	0.79	0.00	0.00	1.59	89.68
B	0.00	0.54	0.00	2.17	0.00	0.00	0.00	9.78	87.50
CCC/C	0.00	0.00	1.16	0.00	0.00	0.00	0.00	39.53	59.30

\*Excludes housing. Source: Global Fixed Income Research.

**Table 4**

Average One-Year Transition Rates By Modifier (1986-2015) (%)*																			
Rating	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC/C	D	NR
AAA	96.65	0.97	0.15	0.04	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	2.13
AA+	3.91	89.45	1.48	0.23	0.05	0.02	0.01	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.79
AA	0.40	3.84	89.20	1.45	0.28	0.10	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	4.68
AA-	0.09	0.75	5.61	86.80	1.89	0.44	0.08	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.30
A+	0.03	0.13	1.14	5.32	86.83	1.49	0.48	0.06	0.06	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	4.40
A	0.00	0.02	0.29	1.23	5.33	84.89	1.59	0.46	0.16	0.11	0.02	0.02	0.01	0.00	0.02	0.00	0.01	0.01	5.83
A-	0.00	0.02	0.08	0.85	2.11	6.82	82.14	1.52	0.56	0.28	0.02	0.06	0.01	0.00	0.04	0.01	0.03	0.01	5.46
BBB+	0.00	0.01	0.01	0.14	1.05	2.13	6.45	80.89	2.17	0.49	0.08	0.12	0.03	0.00	0.05	0.02	0.10	0.01	6.26
BBB	0.00	0.01	0.02	0.06	0.39	1.17	1.63	4.27	82.95	1.73	0.26	0.21	0.06	0.02	0.09	0.03	0.08	0.01	7.03
BBB-	0.00	0.01	0.00	0.01	0.01	0.21	1.60	1.43	4.99	80.88	2.25	1.03	0.47	0.05	0.26	0.09	0.20	0.05	6.45
BB+	0.00	0.00	0.00	0.00	0.00	0.09	0.47	0.66	1.32	6.24	72.75	5.77	2.55	0.76	0.76	0.38	0.19	0.19	7.85
BB	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.63	2.16	4.32	3.42	70.77	2.79	1.08	2.70	0.27	2.16	0.09	9.26
BB-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	0.61	1.83	2.74	3.96	62.50	1.83	2.44	2.44	6.40	2.44	11.59
B+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.00	0.74	3.68	63.24	4.41	4.41	5.15	1.47	15.44
B	0.00	0.28	0.00	0.28	0.28	0.28	0.00	0.57	2.56	1.42	1.14	6.53	1.99	2.84	59.38	4.26	6.82	3.13	8.24
B-	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.64	0.64	1.28	1.92	0.00	3.21	69.23	9.62	0.64	12.18
CCC/C	0.00	0.00	0.00	0.00	0.70	0.70	0.00	0.00	0.00	0.70	0.00	1.05	0.35	2.11	3.16	2.46	58.25	17.54	12.98

\*Excludes housing. Source: Global Fixed Income Research.

**Table 5**

Housing Average Issue Transition Rates (1986-2015) (%)									
Rating	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>One-year</b>									
AAA	87.46	3.84	0.22	0.02	0.12	0.02	0.02	0.01	8.28
AA	0.87	86.85	1.89	0.19	0.06	0.01	0.03	0.01	10.08
A	1.07	2.87	81.19	2.32	0.52	0.10	0.06	0.02	11.86
BBB	0.08	0.38	5.88	75.14	5.13	0.75	0.63	0.08	11.93
BB	0.14	1.11	0.97	5.71	61.28	10.45	3.76	2.65	13.93
B	0.00	2.33	0.33	0.00	3.65	64.12	9.97	2.33	17.28
CCC/C	0.45	0.91	0.45	1.36	1.36	0.00	55.00	14.09	26.36
<b>Three-year</b>									
AAA	64.82	9.64	0.55	0.07	0.23	0.07	0.04	0.07	24.51
AA	2.38	62.79	4.27	0.81	0.11	0.05	0.05	0.03	29.50
A	2.40	6.34	51.58	4.09	1.45	0.33	0.17	0.14	33.50
BBB	0.26	0.78	12.17	41.16	6.34	2.20	1.16	1.04	34.90
BB	0.15	1.51	3.63	8.62	24.81	10.59	7.41	5.60	37.67
B	0.00	2.95	1.11	0.74	4.43	31.00	8.12	8.12	43.54
CCC/C	0.00	0.99	0.99	1.97	2.96	0.00	19.21	22.66	51.23
<b>Five-year</b>									
AAA	45.83	13.20	0.67	0.09	0.25	0.11	0.05	0.13	39.67
AA	2.98	42.39	5.56	0.92	0.13	0.03	0.04	0.06	47.90
A	2.68	7.10	33.28	3.41	1.87	0.69	0.35	0.31	50.31
BBB	0.27	0.68	10.90	23.85	3.51	2.05	1.92	2.05	54.77
BB	0.00	1.54	4.96	6.67	10.77	7.35	3.93	8.55	56.24
B	0.00	1.86	0.47	0.00	3.26	14.88	4.19	10.70	64.65
CCC/C	0.00	0.52	0.00	1.55	2.59	0.00	5.18	27.98	62.18
<b>Seven-year</b>									
AAA	32.21	12.38	0.84	0.10	0.26	0.13	0.04	0.15	53.89
AA	3.01	29.90	4.69	0.67	0.04	0.03	0.04	0.08	61.54
A	2.30	7.21	21.27	2.52	1.63	0.70	0.42	0.51	63.43
BBB	0.33	0.62	9.75	12.55	1.66	1.52	1.42	3.13	69.03
BB	0.00	0.81	4.05	4.25	4.45	3.85	2.02	11.34	69.23
B	0.00	0.55	0.55	0.00	1.10	9.39	1.10	12.15	75.14
CCC/C	0.00	0.00	0.00	0.00	2.30	0.00	1.15	31.61	64.94
<b>10-year</b>									
AAA	15.30	9.80	0.72	0.05	0.21	0.15	0.04	0.17	73.56
AA	2.74	16.22	2.17	0.21	0.03	0.03	0.00	0.12	78.48
A	1.90	6.59	10.04	1.19	0.81	0.62	0.20	0.61	78.05
BBB	0.30	0.60	5.64	5.09	0.60	0.80	0.85	3.59	82.53
BB	0.00	0.45	1.82	2.73	1.59	2.27	0.00	13.18	77.95
B	0.00	0.00	0.00	0.00	0.76	4.55	0.76	14.39	79.55
CCC/C	0.00	0.00	0.00	0.00	0.71	0.00	0.00	30.71	68.57

**Table 5**

Housing Average Issue Transition Rates (1986-2015) (%) (cont.)									
Rating	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>15-year</b>									
AAA	3.68	4.15	0.37	0.02	0.06	0.05	0.02	0.27	91.39
AA	1.49	5.93	0.61	0.06	0.00	0.02	0.00	0.12	91.78
A	1.33	3.84	3.18	0.41	0.18	0.31	0.02	0.62	90.12
BBB	0.00	0.06	1.79	1.15	0.17	0.69	0.17	2.77	93.19
BB	0.00	0.00	0.00	1.88	0.31	0.31	0.63	12.19	84.69
B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.32	92.68
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.11	77.89
<b>20-year</b>									
AAA	0.86	0.85	0.19	0.00	0.00	0.02	0.02	0.43	97.63
AA	0.81	1.84	0.12	0.00	0.00	0.01	0.01	0.10	97.11
A	0.71	2.03	0.90	0.06	0.03	0.06	0.00	0.39	95.84
BBB	0.00	0.00	1.06	0.35	0.07	0.35	0.07	0.56	97.54
BB	0.00	0.00	0.00	0.72	0.72	0.00	1.08	9.03	88.45
B	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	92.86
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.72	80.28

Source: Global Fixed Income Research.

**Table 6**

Housing Average One-Year Issue Transition Rates By Modifier (1986-2015) (%)																			
Rating	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC/C	D	NR
AAA	87.46	3.32	0.40	0.12	0.03	0.13	0.07	0.00	0.02	0.01	0.06	0.06	0.00	0.01	0.01	0.00	0.02	0.01	8.28
AA+	0.55	86.23	1.79	1.26	0.06	0.13	0.10	0.00	0.01	0.00	0.02	0.02	0.01	0.00	0.00	0.02	0.01	0.02	9.75
AA	1.17	2.01	82.89	1.88	0.54	0.52	0.57	0.03	0.11	0.14	0.06	0.01	0.00	0.00	0.00	0.00	0.04	0.00	10.04
AA-	0.75	0.21	3.76	78.01	1.99	3.48	0.45	0.06	0.06	0.19	0.02	0.04	0.00	0.00	0.02	0.00	0.06	0.02	10.86
A+	0.89	0.49	1.88	3.23	79.95	0.82	0.44	0.44	0.02	0.27	0.08	0.04	0.00	0.00	0.00	0.00	0.04	0.00	11.41
A	1.40	0.09	0.59	0.41	3.04	78.09	1.38	0.25	1.16	1.22	0.18	0.48	0.00	0.02	0.16	0.00	0.07	0.00	11.45
A-	0.65	0.05	0.51	0.23	1.25	3.70	72.78	0.79	3.33	1.25	0.19	0.93	0.00	0.00	0.05	0.09	0.09	0.09	14.03
BBB+	0.00	0.00	0.00	0.34	0.51	1.72	3.95	72.04	1.20	1.03	2.74	1.72	0.17	0.00	0.86	0.00	0.00	0.00	13.72
BBB	0.20	0.00	0.10	0.20	1.27	2.16	3.53	1.96	70.69	0.59	0.69	5.49	0.49	0.00	0.98	0.00	0.69	0.10	10.88
BBB-	0.00	0.13	0.38	0.00	0.50	1.89	1.89	1.13	3.27	73.80	0.63	2.02	0.88	0.00	0.38	0.00	1.01	0.13	11.96
BB+	0.00	2.99	0.00	0.00	0.50	0.00	0.50	1.00	1.99	1.49	60.20	4.98	2.49	1.49	5.97	0.50	3.48	0.00	12.44
BB	0.22	0.43	0.00	0.00	0.43	0.43	0.22	1.09	2.39	3.26	0.65	57.39	1.09	0.87	9.57	0.43	3.70	3.91	13.91
BB-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	1.75	54.39	5.26	8.77	1.75	5.26	1.75	19.30
B+	0.00	10.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	3.57	60.71	7.14	0.00	0.00	0.00	14.29
B	0.00	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.24	0.40	0.00	63.16	1.62	10.12	2.83	17.81
B-	0.00	7.69	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.85	19.23	0.00	15.38
CCC/C	0.45	0.45	0.00	0.45	0.00	0.45	0.00	0.45	0.91	0.00	0.91	0.45	0.00	0.00	0.00	0.00	55.00	14.09	26.36

Source: Global Fixed Income Research.

**Table 7**

Average One-Year Transition Rates By Sector (1986-2015) (%)									
Rating	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Utility</b>									
AAA	96.54	0.92	0.08	0.00	0.00	0.00	0.00	0.00	2.46
AA	1.27	94.46	1.14	0.02	0.00	0.00	0.00	0.00	3.11
A	0.06	3.41	91.01	0.58	0.10	0.02	0.03	0.01	4.79
BBB	0.00	0.02	5.85	85.32	0.54	0.02	0.06	0.04	8.14
BB	0.00	0.00	1.49	14.36	72.28	0.50	1.49	1.98	7.92
B	0.00	0.00	0.00	5.26	5.26	65.79	2.63	0.00	21.05
CCC/C	0.00	0.00	0.00	0.00	0.00	10.42	77.08	10.42	2.08
<b>Higher education</b>									
AAA	97.50	1.18	0.00	0.00	0.00	0.00	0.00	0.00	1.32
AA	0.51	94.14	1.33	0.05	0.00	0.00	0.00	0.00	3.97
A	0.00	1.42	92.36	1.12	0.01	0.00	0.00	0.00	5.09
BBB	0.00	0.06	2.55	90.77	0.95	0.08	0.08	0.00	5.51
BB	0.00	0.00	0.00	2.94	84.71	2.94	1.18	0.59	7.65
B	0.00	0.00	0.00	0.00	0.00	36.36	27.27	27.27	9.09
CCC/C	0.00	0.00	0.00	0.00	0.00	0.00	16.67	66.67	16.67
<b>Tax secured</b>									
AAA	97.72	1.01	0.04	0.02	0.00	0.00	0.00	0.00	1.22
AA	1.09	95.49	0.68	0.03	0.00	0.00	0.00	0.00	2.71
A	0.01	3.46	92.01	0.53	0.03	0.02	0.00	0.00	3.94
BBB	0.00	0.14	6.74	87.38	0.36	0.17	0.07	0.02	5.12
BB	0.00	0.00	1.09	13.13	73.30	2.84	2.84	0.00	6.78
B	0.00	0.98	1.46	4.88	10.73	68.29	6.34	1.46	5.85
CCC/C	0.00	0.00	6.45	3.23	3.23	9.68	58.06	6.45	12.90
<b>Health care</b>									
AAA	90.48	9.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	0.04	92.14	2.84	0.00	0.00	0.00	0.00	0.00	4.97
A	0.00	1.03	88.13	3.03	0.12	0.04	0.01	0.01	7.63
BBB	0.00	0.04	1.88	87.63	2.65	0.28	0.12	0.01	7.39
BB	0.00	0.00	0.10	3.92	78.89	4.49	0.86	0.19	11.56
B	0.00	0.00	0.00	1.06	4.95	71.38	7.77	1.06	13.78
CCC/C	0.00	0.00	0.00	0.00	0.88	3.51	63.16	16.67	15.79
<b>Transportation</b>									
AAA	83.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67
AA	0.10	93.07	0.90	0.00	0.10	0.00	0.00	0.00	5.82
A	0.00	1.36	91.19	0.74	0.03	0.00	0.00	0.00	6.69
BBB	0.00	0.05	1.93	87.29	0.57	0.16	0.21	0.00	9.79
BB	0.00	0.00	0.00	9.09	76.36	1.82	0.00	0.00	12.73
B	0.00	0.00	0.00	0.00	11.11	66.67	11.11	0.00	11.11
CCC/C	0.00	0.00	0.00	0.00	0.00	10.00	40.00	50.00	0.00



**Table 7**

Average One-Year Transition Rates By Sector (1986-2015) (%) (cont.)									
Rating	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Appropriation</b>									
AAA	88.33	2.58	0.00	0.00	0.00	0.00	0.15	0.00	8.94
AA	0.32	89.32	2.08	0.02	0.00	0.01	0.00	0.00	8.25
A	0.01	4.24	86.68	1.22	0.04	0.01	0.03	0.01	7.77
BBB	0.00	0.16	8.41	81.35	1.33	0.11	0.20	0.00	8.46
BB	0.00	0.00	0.20	6.46	79.26	3.72	3.91	0.78	5.68
B	0.00	0.00	0.00	4.49	6.74	69.66	5.62	5.62	7.87
CCC/C	0.00	0.00	0.00	0.00	2.22	13.33	35.56	28.89	20.00
<b>Housing</b>									
AAA	87.46	3.84	0.22	0.02	0.12	0.02	0.02	0.01	8.28
AA	0.87	86.85	1.89	0.19	0.06	0.01	0.03	0.01	10.08
A	1.07	2.87	81.19	2.32	0.52	0.10	0.06	0.02	11.86
BBB	0.08	0.38	5.88	75.14	5.13	0.75	0.63	0.08	11.93
BB	0.14	1.11	0.97	5.71	61.28	10.45	3.76	2.65	13.93
B	0.00	2.33	0.33	0.00	3.65	64.12	9.97	2.33	17.28
CCC/C	0.45	0.91	0.45	1.36	1.36	0.00	55.00	14.09	26.36

Source: Global Fixed Income Research.

**Table 8**

Year	--Defaults--				--Default rate (%)--		
	Ratings	Total	Investment grade	Speculative grade	Overall	Investment grade	Speculative grade
1986	5,035	0	0	0	0.00	0.00	0.00
1987	5,195	3	0	3	0.06	0.00	0.06
1988	5,170	0	0	0	0.00	0.00	0.00
1989	5,314	3	0	3	0.06	0.00	0.06
1990	5,609	3	0	3	0.05	0.00	0.05
1991	5,965	1	0	1	0.02	0.00	0.02
1992	6,408	5	0	5	0.08	0.00	0.08
1993	6,723	0	0	0	0.00	0.00	0.00
1994§	6,774	4	0	4	0.06	0.00	0.06
1995	6,590	1	0	1	0.02	0.00	0.02
1996	5,684	0	0	0	0.00	0.00	0.00
1997	5,511	0	0	0	0.00	0.00	0.00
1998	5,940	0	0	0	0.00	0.00	0.00
1999	6,635	1	0	1	0.02	0.00	0.02
2000	6,998	3	0	3	0.04	0.00	0.04
2001	7,605	3	1	2	0.04	0.01	0.03
2002	8,352	1	0	1	0.01	0.00	0.01
2003	9,052	1	1	0	0.01	0.01	0.00

**Table 8**

USPF Annual Default Summary* (cont.)								
Year	Ratings	--Defaults--			--Default rate (%)--			
		Total	Investment grade	Speculative grade	Overall	Investment grade	Speculative grade	
2004	9,892	3	0	3	0.03	0.00	0.03	
2005	10,371	1	0	1	0.01	0.00	0.01	
2006	10,977	1	0	1	0.01	0.00	0.01	
2007	11,685	0	0	0	0.00	0.00	0.00	
2008	12,362	5	1	4	0.04	0.01	0.03	
2009	13,364	0	0	0	0.00	0.00	0.00	
2010	15,322	3	0	3	0.02	0.00	0.02	
2011	16,825	5	0	5	0.03	0.00	0.03	
2012	17,680	11	4	7	0.06	0.02	0.04	
2013	18,661	15	1	14	0.08	0.01	0.08	
2014	19,154	8	0	8	0.04	0.00	0.04	
2015	19,739	9	0	9	0.05	0.00	0.05	
Mean		2.97	0.47	2.50	0.03	0.00	0.03	
Median		2.00	0.00	1.50	0.02	0.00	0.02	
Standard deviation		3.56	0.96	3.12	0.03	0.01	0.02	
Minimum		0.00	0.00	0.00	0.00	0.00	0.00	
Maximum		15	4	14	0.08	0.02	0.08	

\*Excludes housing. §Orange County, Calif. defaulted the same year its rating was assigned.

**Table 9**

USPF Housing Annual Default Summary								
Year	Ratings	--Defaults--			--Default rate (%)--			
		Total	Investment grade	Speculative grade	Overall	Investment grade	Speculative grade	
1986	2,592	0	0	0	0.00	0.00	0.00	
1987	2,705	1	0	1	0.04	0.00	0.04	
1988	2,827	1	1	0	0.04	0.04	0.00	
1989	2,986	0	0	0	0.00	0.00	0.00	
1990	2,764	0	0	0	0.00	0.00	0.00	
1991	2,849	18	0	18	0.63	0.00	0.63	
1992	2,782	1	0	1	0.04	0.00	0.04	
1993	2,769	2	0	2	0.07	0.00	0.07	
1994	2,604	1	0	1	0.04	0.00	0.04	
1995	2,641	1	0	1	0.04	0.00	0.04	
1996	2,408	1	0	1	0.04	0.00	0.04	
1997	2,537	0	0	0	0.00	0.00	0.00	
1998	2,659	2	0	2	0.08	0.00	0.08	
1999	2,759	2	0	2	0.07	0.00	0.07	
2000	2,975	0	0	0	0.00	0.00	0.00	
2001	3,253	1	0	1	0.03	0.00	0.03	
2002	3,506	6	0	6	0.17	0.00	0.17	

**Table 9**

USPF Housing Annual Default Summary (cont.)							
Year	--Defaults--				--Default rate (%)--		
	Ratings	Total	Investment grade	Speculative grade	Overall	Investment grade	Speculative grade
2003	3,724	5	1	4	0.13	0.03	0.11
2004	3,749	4	0	4	0.11	0.00	0.11
2005	3,632	6	0	6	0.17	0.00	0.17
2006	3,472	3	1	2	0.09	0.03	0.06
2007	3,357	3	0	3	0.09	0.00	0.09
2008	3,290	1	0	1	0.03	0.00	0.03
2009	3,342	3	0	3	0.09	0.00	0.09
2010	3,193	0	0	0	0.00	0.00	0.00
2011	2,769	1	0	1	0.04	0.00	0.04
2012	2,641	0	0	0	0.00	0.00	0.00
2013	2,486	1	0	1	0.04	0.00	0.04
2014	2,328	0	0	0	0.00	0.00	0.00
2015	2,224	3	1	2	0.13	0.04	0.09
Mean		2.23	0.13	2.10	0.07	0.00	0.07
Median		1.00	1.00	1.00	0.04	0.00	0.04
Standard deviation		3.45	0.35	3.44	0.12	0.01	0.12
Minimum		0.00	0.00	0.00	0.00	0.00	0.00
Maximum		18.00	1.00	18.00	0.63	0.04	0.63

Source: Global Fixed Income Research.

**Table 10**

USPF Defaults (1986-2015)*					
Obligor	State	Category	Default date	--Rating--	
				Next to last	First
Lassen Community College District	CA	Appropriation	4/6/1987	CCC	BBB-
Devils Lake	ND	Utility rev	9/16/1987	B	BBB-
New Jersey Economic Development Authority	NJ	Trans rev	12/3/1987	CC	BBB
St. Josephs Hospital of Alton	IL	Health care rev	5/24/1989	CCC-	A
Central Medical Center Hospital	MO	Health care rev	6/7/1989	CCC-	BBB-
Metro Hospital	PA	Health care rev	12/19/1989	CCC	A-
Choate-Symmes Health	MA	Health care rev	1/8/1990	CCC	A-
Colorado Ute Electric Assn.	CO	Utility rev	7/6/1990	CCC	A-
Northwest General Hospital	MI	Health care rev	10/4/1990	C	BBB
Hyde Park Community Hospital; Central Community Hospital	IL	Health care rev	12/17/1991	CCC	BBB
Sacred Heart Medical Center of Chester	PA	Health care rev	1/8/1992	CCC	A-
Hialeah Hospital Inc.	FL	Health care rev	2/10/1992	CCC	BBB
Jackson Park Hospital Foundation	IL	Health care rev	3/4/1992	CCC	A
Jacksonville General Hospital & Medical Center	FL	Health care rev	4/2/1992	CCC	BBB
James C. Guiffre Medical Center	PA	Health care rev	7/2/1992	CCC	BBB
New Magma Irrigation & Drainage District	AZ	Tax secured	6/2/1994	C	BBB+

**Table 10**

USPF Defaults (1986-2015)* (cont.)						
Parkview Hospital	OH	Health care rev	10/13/1994	C		A-
Central Arizona Irrigation & Drainage District	AZ	Tax secured	12/2/1994	C		BBB
Orange County	CA	Tax secured	12/8/1994	CCC		AA-
Michigan Health Care Corp.	MI	Health care rev	9/20/1995	CCC		BB
Logan General Hospital	WV	Health care rev	2/3/1999	CCC		BBB
Graduate Health System Obligated Group	PA	Health care rev	1/4/2000	CCC		A
South Fulton Medical Center	GA	Health care rev	4/27/2000	CCC		BBB+
Bradford College	MA	Higher ed rev	11/2/2000	CCC		BBB-
Granada Hills Community Hospital	CA	Health care rev	5/14/2001	CCC		BBB-
Crouse Health Hospital	NY	Health care rev	7/3/2001	CCC		BBB
Spokane Downtown Foundation	WA	Trans rev	8/9/2001	CCC		BBB-
Oregon Coast Aquarium	OR	Higher ed rev	10/7/2002	CCC		BBB-
Illinois	IL	Appropriation	2/4/2003	A		A-
Mercy Hospital and Medical Center	IL	Health care rev	1/5/2004	CCC		A
St. Paul Housing & Redevelopment Authority	MN	Utility rev	12/2/2004	CCC		A
St. Paul Port Authority	MN	Utility rev	12/2/2004	CCC		A
Kerr County	TX	Appropriation	3/14/2005	CC		A-
Massachusetts Port Authority	MA	Trans rev	1/4/2006	CCC-		BBB+
North Oakland Medical Center	MI	Health care rev	3/31/2008	B		BBB
Jefferson County	AL	Utility rev	4/1/2008	CCC		A+
Jefferson County	AL	Tax secured	9/24/2008	B		AA-
Pascack Valley Hospital	NJ	Health care rev	9/30/2008	CC		A
Presidio County	TX	Tax secured	12/11/2008	BBB-		BBB-
Connector 2000 Assn.	SC	Trans rev	1/11/2010	C		BBB-
Valley Health System	CA	Health care rev	6/4/2010	C		BBB-
Xenia Rural Water District	IA	Utility rev	7/8/2010	BB		BBB
Northern Berkshire Healthcare	MA	Health care rev	6/20/2011	CCC		BBB-
Santa Rosa Bay Bridge Authority	FL	Trans rev	7/26/2011	CC		BBB-
Texas Midwest Public Facilities Corp.	TX	Appropriation	10/10/2011	CC		BB
Greater Wenatchee Regional Events Center Public Facilities District	WA	Tax secured	12/2/2011	CCC		A-
Jones County	TX	Appropriation	12/8/2011	CC		A-
Southern Montana Electric Generation & Transportationmission Co-op	MT	Utility rev	1/24/2012	CC		BBB
Stockton	CA	Tax secured	3/2/2012	CC		A+
Poudre Tech Metro District	CO	Tax secured	3/22/2012	A-		A-
Moberly	MO	Appropriation	3/22/2012	CC		A-
Moberly	MO	Appropriation	3/22/2012	CC		A-
Evergreen Country Day School	CO	Higher ed rev	3/27/2012	CCC		BB
Jefferson County	AL	Tax secured	4/4/2012	C		C
Capital Project Finance Authority	FL	Higher ed rev	7/13/2012	C		BBB
Stockton	CA	Tax secured	9/4/2012	C		AA
Westerly Hospital	RI	Health care rev	9/7/2012	C		BBB+
Southeastern Regional Medical Center	NC	Health care rev	9/28/2012	A		A

**Table 10**

USPF Defaults (1986-2015)* (cont.)					
Jefferson County	AL	Utility rev	2/8/2013	C	A
Vadnais Heights	MN	Appropriation	2/26/2013	CC	AA-
West Penn Allegheny Health System	PA	Health care rev	4/29/2013	CC	B+
Fritch	TX	Tax secured	5/31/2013	BBB-	BBB
Detroit	MI	Appropriation	6/18/2013	CC	BBB
Detroit	MI	Appropriation	6/18/2013	CC	BBB-
Detroit	MI	Appropriation	6/18/2013	CC	BBB-
Detroit	MI	Appropriation	6/18/2013	CC	BBB-
Detroit	MI	Appropriation	6/18/2013	CC	BBB-
Riverbank Redevelopment Agency	CA	Tax secured	8/8/2013	CC	BBB
Riverbank Redevelopment Agency	CA	Tax secured	8/8/2013	CC	BBB
Stockton	CA	Appropriation	9/3/2013	C	A
Stockton	CA	Appropriation	9/3/2013	C	A
Bradford Academy	MI	Appropriation	9/20/2013	CCC+	BBB-
Detroit	MI	Tax secured	10/2/2013	C	BBB
Lombard Vill	IL	Appropriation	01/06/2014	CC	AA-
Boston Biomedical Research Inst	MA	Higher ed rev	04/17/2014	CC	BBB-
North Star Charter School	ID	Appropriation	06/02/2014	C	BB
Please Touch Museum	PA	Higher ed rev	06/30/2014	CC	BBB-
Detroit	MI	Utility rev	09/04/2014	CC	A+
Detroit	MI	Utility rev	09/04/2014	CC	A
Detroit	MI	Utility rev	09/04/2014	CC	A+
Thomas Jefferson School of Law	CA	Higher ed rev	11/05/2014	CC	BB+
Dowling Coll	NY	Higher ed rev	8/7/2015	B-	BBB
Stockton	CA	Appropriation	9/1/2015	CC	A
Madison Cnty	MS	Tax secured	5/6/2015	CC	A
Puerto Rico	PR	Appropriation	8/3/2015	CC	BBB-
Puerto Rico	PR	Appropriation	8/3/2015	CC	BBB-
Charter School of Boynton Beach	FL	Appropriation	8/18/2015	CC	BBB-
Puerto Rico	PR	Appropriation	8/3/2015	CC	BBB-
Glendale	AZ	Utility rev	10/5/2015	CCC	A+
Puerto Rico	PR	Appropriation	8/11/2015	CC	BBB-

\*Excludes housing. Source: Global Fixed Income Research.

**Table 11**

USPF Housing Defaulted Issues (1986-2015)				
Obligor	State	Default date	--Rating--	
			Next to last	First
Pines of Yellow Creek	WY	12/2/1987	CC	AAA
St. Louis Land Clear Redevelopment Authority	MO	3/18/1988	AA+	AA+
El Paso Housing Finance Corp.	TX	5/2/1991	CC	AAA
Nebraska Investment Finance Authority	NE	5/2/1991	CC	AAA

**Table 11**

USPF Housing Defaulted Issues (1986-2015) (cont.)				
Obligor	State	Default date	--Rating--	
			Next to last	First
Nebraska Investment Finance Authority	NE	5/2/1991	CC	AAA
Adams County	CO	5/2/1991	CC	AAA
El Paso Housing Finance Corp.	TX	5/2/1991	CC	A
Midland County Housing Finance Corp.	TX	6/4/1991	CC	A+
Tucson Industrial Development Authority	AZ	6/6/1991	CCC	AAA
Tucson Industrial Development Authority	AZ	6/6/1991	CCC	AAA
Simi Valley	CA	8/6/1991	CC	AAA
Simi Valley	CA	8/6/1991	CC	AAA
St. Paul Housing & Redevelopment Authority	MN	9/3/1991	CCC	AAA
Southeast Texas Housing Finance Corp.	TX	9/3/1991	CC	AAA
St. Paul Housing & Redevelopment Authority	MN	9/3/1991	CCC	AAA
Health, Education, & Housing Facilities Board of Memphis	TN	9/17/1991	CC	AAA
Health, Education, & Housing Facilities Board of Memphis	TN	9/17/1991	CC	A
Northern California Home Mortgage Finance Authority	CA	10/1/1991	CC	AA-
Louisiana Agricultural Finance Authority	LA	10/2/1991	CC	AAA
Louisiana Agricultural Finance Authority	LA	10/2/1991	CC	AAA
El Paso County	CO	3/16/1992	B	A+
Jefferson County	AL	3/2/1993	CCC	A+
Aurora	CO	9/2/1993	CCC	A
El Paso County	CO	9/21/1994	CCC	AA
Louisiana Housing Finance Agency	LA	3/30/1995	CC	A
Los Angeles Housing Authority	CA	6/3/1996	CCC	A
Windsor Housing Foundation	MN	1/28/1998	NR	BBB
Windsor Housing Foundation	MN	1/28/1998	NR	A
Louisville & Jefferson County Metropolitan Government	KY	11/14/1998	CC	A-
Radcliff Housing Authority	KY	11/14/1998	CC	A-
Falls Township Hospital Authority	PA	2/2/1999	CCC	AAA
Boulder County	CO	11/1/1999	CC	A
Blackwater Housing Corp.	FL	9/6/2001	CC	BBB
Emerald Coast Housing Corp.	FL	1/8/2002	CCC	BBB
Emerald Coast Housing Corp.	FL	1/8/2002	B	A
Patten Towers L.P. II	TN	8/1/2002	C	BBB
Patten Towers L.P. II	TN	8/1/2002	CC	A-
Indianapolis	IN	11/11/2002	CCC	A
Indianapolis	IN	11/11/2002	CCC-	BBB
American Opportunity Foundation/Dallas Fort Worth Affordable Housing Corp.	TX	1/2/2003	CCC	BB-
Austin Housing Finance Corp.	TX	1/8/2003	CC	BBB
Austin Housing Finance Corp.	TX	1/8/2003	CCC	A
Birmingham	AL	1/30/2003	CCC-	BBB
Wichita	KS	6/23/2003	AAA	AAA

**Table 11**

USPF Housing Defaulted Issues (1986-2015) (cont.)				
Obligor	State	Default date	--Rating--	
			Next to last	First
Mercy Housing	AZ	8/19/2004	B	A
Mercy Housing	AZ	8/19/2004	CCC	BBB
Texas State Affordable Housing Corp.	TX	10/8/2004	CC	BBB-
Texas State Affordable Housing Corp.	TX	10/8/2004	C	BB
Harris County Housing Finance Corp.	TX	4/11/2005	B	BBB
Harris County Housing Finance Corp.	TX	4/11/2005	CCC	BB
Raleigh Housing Authority	NC	6/10/2005	CC	A-
American Opportunity for Housing	TX	9/22/2005	C	BBB-
American Opportunity for Housing	TX	9/22/2005	C	BB
De Kalb County Housing Authority	GA	10/20/2005	C	BBB
Shelby County Health, Education, & Housing Facilities Board	TN	1/13/2006	CCC	A
Liberty Housing Development Corp.	NY	3/20/2006	AA-	AAA
American Housing Foundation	TX	3/28/2006	C	BBB-
St. Louis Industrial Development Authority	MO	4/3/2007	C	BBB+
St. Cloud Housing & Redevelopment Authority	MN	5/29/2007	B	BBB
Little Rock Family Housing LLC	AR	10/11/2007	BB	A-
South Texas Affordable Housing Corp.	TX	9/9/2008	C	BB
Harris County Housing Finance Corp.	TX	3/3/2009	CCC	A
American Opportunity for Housing	TX	3/6/2009	C	A-
South Texas Affordable Housing Corp.	TX	3/12/2009	C	BBB-
American Housing Foundation	TX	5/20/2011	C	A
American Opportunity Foundation/Bexar Affordable Housing Corp	TX	10/21/2013	B	BBB-
Candler Vista Apartments, L.P.	GA	3/25/2015	AA+	AAA
California Rur Home Mtg Fin Auth Homebuyer Fund	CA	12/31/2015	CC	AA
California Rur Home Mtg Fin Auth Homebuyer Fund	CA	12/31/2015	CC	A

Source: Global Fixed Income Research.

**Table 12**

USPF Cumulative Average Default Rates By Category (1986-2015) (%)*																				
Rating	--Time horizon (years)--																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
AAA	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	0.00	0.00	0.00	0.00
AA	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07
A	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.10	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.17	0.18	0.18
BBB	0.01	0.07	0.13	0.19	0.25	0.31	0.36	0.40	0.42	0.45	0.49	0.53	0.56	0.59	0.63	0.64	0.66	0.68	0.68	0.69
BB	0.44	1.24	2.26	3.04	3.54	3.95	4.15	4.35	4.57	4.73	4.82	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02
B	2.17	4.17	5.06	6.39	7.39	8.43	9.75	10.46	11.22	11.77	12.07	12.39	12.73	12.73	12.73	12.73	12.73	12.73	12.73	12.73
CCC/C	17.54	23.14	27.52	30.67	32.65	33.73	34.85	36.02	37.24	38.49	39.80	41.15	41.15	41.15	41.15	41.15	41.15	41.15	41.15	41.15
Investment grade	0.00	0.02	0.04	0.05	0.07	0.09	0.11	0.12	0.13	0.15	0.16	0.17	0.18	0.20	0.21	0.22	0.23	0.24	0.24	0.25

**Table 12**

USPF Cumulative Average Default Rates By Category (1986-2015) (%)* (cont.)																				
		--Time horizon (years)--																		
Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Speculative grade	2.19	3.63	4.92	6.00	6.72	7.32	7.82	8.21	8.62	8.96	9.21	9.40	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62
All rated	0.03	0.06	0.09	0.12	0.15	0.17	0.20	0.22	0.23	0.25	0.26	0.28	0.29	0.31	0.32	0.33	0.34	0.35	0.36	

\*Excludes housing. Source: Global Fixed Income Research.

**Table 13**

USPF Housing Cumulative Average Default Rates by Category (1986-2015) (%)																				
		--Time horizon (years)--																		
Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
AAA	0.01	0.05	0.07	0.10	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
AA	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
A	0.02	0.07	0.14	0.22	0.30	0.40	0.48	0.53	0.56	0.57	0.58	0.59	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
BBB	0.08	0.55	1.02	1.47	2.02	2.57	3.00	3.19	3.34	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
BB	2.65	3.80	5.32	6.45	7.49	8.27	8.69	8.69	8.92	9.15	9.15	9.15	9.15	9.15	9.15	9.15	9.15	9.15	9.15	9.15
B	2.33	5.13	7.72	9.33	10.27	11.30	11.86	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48
CCC/C	14.09	20.13	23.07	25.63	27.20	28.31	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90
Investment grade	0.01	0.06	0.10	0.14	0.19	0.23	0.26	0.28	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Speculative grade	4.60	7.03	9.06	10.57	11.69	12.60	13.09	13.22	13.35	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50
All rated	0.08	0.15	0.23	0.29	0.35	0.40	0.43	0.45	0.47	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48

Source: Global Fixed Income Research.

**Table 14**

USPF Cumulative Average Default Rates By Modifier (1986-2015) (%)*																			
		--Time horizon (years)--																	
Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
AAA	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	0.00	0.00	0.00
AA+	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	0.00	0.00	0.00
AA	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
AA-	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.08	0.09	0.10	0.12	0.14	0.16
A+	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
A	0.01	0.01	0.02	0.04	0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.14	0.14	0.15	0.15	0.16	0.18	0.19	0.20
A-	0.01	0.04	0.06	0.08	0.09	0.10	0.11	0.14	0.16	0.17	0.19	0.21	0.23	0.27	0.30	0.31	0.32	0.33	0.34
BBB+	0.01	0.02	0.04	0.08	0.10	0.13	0.15	0.16	0.17	0.17	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.24	0.24
BBB	0.01	0.04	0.08	0.12	0.16	0.20	0.21	0.22	0.23	0.25	0.28	0.30	0.32	0.35	0.37	0.38	0.39	0.41	0.44
BBB-	0.05	0.23	0.43	0.63	0.87	1.04	1.25	1.43	1.57	1.73	1.87	2.04	2.19	2.34	2.51	2.55	2.60	2.60	2.60
BB+	0.19	0.40	0.89	1.16	1.61	2.09	2.44	2.63	2.84	3.07	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32
BB	0.09	1.05	2.26	3.43	3.98	4.33	4.46	4.72	4.99	5.14	5.14	5.14	5.50	5.50	5.50	5.50	5.50	5.50	5.50
BB-	2.44	4.58	6.55	7.38	7.83	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30	8.30
B+	1.47	3.87	4.76	8.42	10.29	12.24	15.30	17.53	18.72	18.72	20.20	21.80	23.75	23.75	23.75	23.75	23.75	23.75	23.75



**Table 14**

USPF Cumulative Average Default Rates By Modifier (1986-2015) (%)* (cont.)																			
Rating	--Time horizon (years)--																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
B	3.13	5.22	5.53	5.53	5.90	6.27	6.66	6.66	7.10	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56
B-	0.64	2.06	4.34	6.69	8.37	10.22	12.24	13.35	14.57	15.89	15.89	15.89	15.89	15.89	15.89	15.89	15.89	15.89	15.89
CCC/C	17.54	23.14	27.52	30.67	32.65	33.73	34.85	36.02	37.24	38.49	39.80	41.15	41.15	41.15	41.15	41.15	41.15	41.15	41.15
Investment grade	0.00	0.02	0.04	0.05	0.07	0.09	0.11	0.12	0.13	0.15	0.16	0.17	0.18	0.20	0.21	0.22	0.23	0.24	0.25
Speculative grade	2.19	3.63	4.92	6.00	6.72	7.32	7.82	8.21	8.62	8.96	9.21	9.40	9.62	9.62	9.62	9.62	9.62	9.62	9.62
All rated	0.03	0.06	0.09	0.12	0.15	0.17	0.20	0.22	0.23	0.25	0.26	0.28	0.29	0.31	0.32	0.33	0.34	0.35	0.36

\*Excludes housing. Source: Global Fixed Income Research.

**Table 15**

USPF Housing Cumulative Average Default Rates By Modifier (1986-2015) (%)																			
Rating	--Time horizon (years)--																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
AAA	0.01	0.05	0.07	0.10	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
AA+	0.02	0.04	0.07	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
AA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
AA-	0.02	0.04	0.09	0.14	0.19	0.24	0.26	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
A+	0.00	0.04	0.08	0.12	0.16	0.23	0.27	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
A	0.00	0.04	0.09	0.20	0.32	0.41	0.49	0.57	0.65	0.67	0.69	0.71	0.74	0.74	0.74	0.74	0.74	0.74	0.74
A-	0.09	0.24	0.44	0.49	0.60	0.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
BBB+	0.00	0.00	0.18	0.36	0.72	1.08	1.65	2.04	2.23	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
BBB	0.10	0.60	1.21	1.95	2.95	3.85	4.42	4.65	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89
BBB-	0.13	0.89	1.41	1.67	1.81	2.08	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
BB+	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	0.00	0.00	0.00
BB	3.91	5.68	7.73	8.90	9.88	10.64	10.90	10.90	11.18	11.48	11.48	11.48	11.48	11.48	11.48	11.48	11.48	11.48	11.48
BB-	1.75	1.75	3.94	9.13	15.62	19.29	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96
B+	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	0.00	0.00	0.00
B	2.83	5.78	8.42	9.82	10.88	12.03	12.63	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30
B-	0.00	4.00	8.57	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
CCC/C	14.09	20.13	23.07	25.63	27.20	28.31	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90
Investment grade	0.01	0.06	0.10	0.14	0.19	0.23	0.26	0.28	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Speculative grade	4.60	7.03	9.06	10.57	11.69	12.60	13.09	13.22	13.35	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50
All rated	0.08	0.15	0.23	0.29	0.35	0.40	0.43	0.45	0.47	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48

Source: Global Fixed Income Research.

**Table 16**

USPF Static Pool Default Rates (1986-2014) (%)*																
Rating	Issuers	--Time horizon (years)--														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1986	5,035	0.00	0.06	0.06	0.12	0.18	0.20	0.30	0.30	0.34	0.36	0.36	0.36	0.36	0.38	0.40
1987	5,195	0.06	0.06	0.12	0.17	0.19	0.29	0.29	0.33	0.35	0.35	0.35	0.35	0.37	0.39	0.39
1988	5,170	0.00	0.06	0.12	0.14	0.21	0.21	0.25	0.27	0.27	0.27	0.27	0.29	0.31	0.31	0.31
1989	5,314	0.06	0.11	0.13	0.21	0.21	0.24	0.26	0.26	0.26	0.26	0.28	0.30	0.30	0.30	0.30
1990	5,609	0.05	0.07	0.16	0.16	0.21	0.23	0.23	0.23	0.23	0.25	0.27	0.27	0.27	0.27	0.32
1991	5,965	0.02	0.10	0.10	0.15	0.17	0.17	0.17	0.17	0.18	0.20	0.20	0.20	0.20	0.25	0.25
1992	6,408	0.08	0.08	0.12	0.14	0.14	0.14	0.14	0.16	0.17	0.17	0.17	0.17	0.22	0.22	0.22
1993	6,723	0.00	0.04	0.06	0.06	0.06	0.06	0.07	0.09	0.09	0.09	0.09	0.13	0.13	0.13	0.13
1994	6,774	0.04	0.06	0.06	0.06	0.06	0.07	0.10	0.10	0.10	0.10	0.15	0.15	0.15	0.15	0.19
1995	6,590	0.02	0.02	0.02	0.02	0.03	0.06	0.06	0.06	0.06	0.11	0.11	0.11	0.11	0.15	0.15
1996	5,684	0.00	0.00	0.00	0.02	0.05	0.05	0.05	0.07	0.12	0.12	0.12	0.12	0.18	0.18	0.19
1997	5,511	0.00	0.00	0.02	0.05	0.07	0.07	0.09	0.15	0.15	0.15	0.15	0.20	0.20	0.22	0.25
1998	5,940	0.00	0.02	0.05	0.08	0.08	0.10	0.15	0.15	0.15	0.15	0.20	0.20	0.22	0.25	0.27
1999	6,635	0.02	0.06	0.11	0.12	0.14	0.18	0.18	0.18	0.18	0.23	0.23	0.26	0.29	0.30	0.32
2000	6,998	0.04	0.09	0.10	0.11	0.16	0.16	0.16	0.16	0.21	0.21	0.24	0.27	0.30	0.31	0.33
2001	7,605	0.04	0.05	0.07	0.11	0.11	0.11	0.11	0.16	0.16	0.18	0.21	0.24	0.26	0.28	0.29
2002	8,352	0.01	0.02	0.06	0.06	0.07	0.07	0.12	0.12	0.14	0.17	0.20	0.23	0.24	0.25	
2003	9,052	0.01	0.04	0.06	0.07	0.07	0.12	0.12	0.14	0.17	0.20	0.22	0.23	0.24		
2004	9,892	0.03	0.04	0.05	0.05	0.10	0.10	0.12	0.14	0.17	0.21	0.22	0.23			
2005	10,371	0.01	0.02	0.02	0.07	0.07	0.09	0.11	0.14	0.18	0.19	0.21				
2006	10,977	0.01	0.01	0.05	0.05	0.07	0.09	0.12	0.17	0.18	0.21					
2007	11,685	0.00	0.04	0.04	0.07	0.09	0.11	0.19	0.21	0.24						
2008	12,362	0.04	0.04	0.06	0.08	0.13	0.22	0.25	0.28							
2009	13,364	0.00	0.02	0.04	0.09	0.19	0.22	0.25								
2010	15,322	0.02	0.05	0.10	0.19	0.23	0.25									
2011	16,825	0.03	0.09	0.18	0.21	0.23										
2012	17,680	0.06	0.15	0.19	0.22											
2013	18,661	0.08	0.12	0.17												
2014	19,154	0.04	0.09													
2015	19,739	0.05														
Marginal average		0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Cumulative average		0.03	0.06	0.09	0.12	0.15	0.17	0.20	0.22	0.23	0.25	0.26	0.28	0.29	0.31	0.32
Standard deviation		0.02	0.04	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Median		0.02	0.05	0.06	0.09	0.12	0.12	0.15	0.16	0.18	0.20	0.21	0.23	0.24	0.25	0.28
Minimum		0.00	0.00	0.00	0.02	0.03	0.05	0.05	0.06	0.06	0.09	0.09	0.11	0.11	0.13	0.13
Maximum		0.08	0.15	0.19	0.22	0.23	0.29	0.30	0.33	0.35	0.36	0.36	0.36	0.37	0.39	0.40

\*Excludes housing. Source: Global Fixed Income Research.

**Table 17**

USPF Static Pool Default Rates By Category (1986-2015) (%)*																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: AAA</b>																
1986	53	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
1987	50	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
1988	49	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
1989	51	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
1990	57	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
1991	62	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
1992	57	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
1993	60	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
1994	63	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
1995	65	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
1996	69	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
1997	81	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
1998	100	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
1999	119	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
2000	131	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
2001	155	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
2002	204	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
2003	223	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
2004	240	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
2005	260	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
2006	270	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
2007	338	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
2008	381	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
2009	520	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
2010	614	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
2011	657	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
2012	652	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
2013	668	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
2014	757	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
2015	851	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
Marginal average		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
Cumulative average		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
Standard deviation		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
Median		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
Minimum		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
Maximum		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

**Table 17**

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: AA</b>																
1986	962	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
1987	1,032	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
1988	1,057	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
1989	1,135	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
1990	1,223	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
1991	1,336	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
1992	1,387	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
1993	1,478	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
1994	1,498	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	0.07
1995	1,495	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	0.07	0.07
1996	1,383	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.07
1997	1,395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.07
1998	1,487	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.07	0.07
1999	1,612	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.06	0.06
2000	1,717	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2001	2,095	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2002	2,514	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	
2003	2,726	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04		
2004	2,991	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03			
2005	3,063	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03				
2006	3,352	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03					
2007	3,567	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03						
2008	3,810	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05							
2009	4,570	0.00	0.00	0.00	0.00	0.00	0.02	0.02								
2010	5,739	0.00	0.00	0.00	0.00	0.02	0.02									
2011	6,548	0.00	0.00	0.02	0.02	0.02										
2012	6,695	0.00	0.01	0.01	0.01											
2013	6,987	0.00	0.00	0.00												
2014	7,377	0.00	0.00													
2015	8,051	0.00														
Marginal average		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
Cumulative average		0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Standard deviation		0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Median		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	0.02
Minimum		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
Maximum		0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.07

Table 17

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: A</b>																
1986	2,954	0.00	0.00	0.00	0.00	0.07	0.07	0.10	0.10	0.14	0.14	0.14	0.14	0.14	0.14	0.17
1987	2,981	0.00	0.00	0.00	0.07	0.07	0.10	0.10	0.13	0.13	0.13	0.13	0.13	0.13	0.17	0.17
1988	2,919	0.00	0.00	0.07	0.07	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.14	0.14	0.14
1989	2,933	0.00	0.07	0.07	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.14	0.14	0.14	0.14
1990	3,070	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.07	0.07	0.07	0.16
1991	3,174	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.13	0.13
1992	3,409	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.06	0.06	0.06
1993	3,505	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.06	0.06	0.06	0.06
1994	3,498	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.06
1995	3,329	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.06	0.06
1996	2,728	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1997	2,583	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1998	2,806	0.00	0.00	0.00	0.00	0.00	0.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1999	3,165	0.00	0.00	0.00	0.00	0.03	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2000	3,513	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.06	0.06	0.06	0.06	0.09	0.11	0.11
2001	3,682	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.08	0.11	0.11	0.11
2002	3,943	0.00	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.08	0.10	0.10	0.10	
2003	4,303	0.02	0.02	0.05	0.05	0.05	0.07	0.07	0.07	0.07	0.09	0.12	0.12	0.12		
2004	4,655	0.00	0.02	0.02	0.02	0.04	0.04	0.04	0.04	0.06	0.11	0.11	0.11			
2005	5,126	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.04	0.10	0.10	0.12				
2006	5,366	0.00	0.00	0.02	0.02	0.02	0.02	0.04	0.07	0.07	0.11					
2007	5,726	0.00	0.02	0.02	0.02	0.02	0.03	0.07	0.09	0.12						
2008	6,008	0.02	0.02	0.02	0.02	0.07	0.10	0.12	0.15							
2009	6,337	0.00	0.00	0.02	0.06	0.08	0.09	0.13								
2010	7,417	0.00	0.03	0.07	0.09	0.11	0.13									
2011	8,168	0.02	0.10	0.12	0.13	0.16										
2012	8,778	0.03	0.03	0.06	0.07											
2013	9,328	0.00	0.03	0.03												
2014	9,398	0.00	0.01													
2015	9,197	0.00														
Marginal average		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cumulative average		0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.10	0.11	0.11	0.12	0.13	0.14	0.15
Standard deviation		0.01	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Median		0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.05	0.07	0.07	0.07	0.07	0.08	0.08	0.09
Minimum		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.06
Maximum		0.03	0.10	0.12	0.13	0.16	0.13	0.13	0.15	0.14	0.14	0.14	0.14	0.14	0.17	0.17

Table 17

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: BBB</b>																
1986	991	0.00	0.30	0.30	0.50	0.50	0.61	0.91	0.91	1.01	1.01	1.01	1.01	1.01	1.11	1.11
1987	1,051	0.10	0.10	0.29	0.29	0.38	0.67	0.67	0.76	0.76	0.76	0.76	0.76	0.86	0.86	0.86
1988	1,065	0.00	0.09	0.09	0.19	0.38	0.38	0.56	0.56	0.56	0.56	0.56	0.66	0.66	0.66	0.66
1989	1,114	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18	0.18	0.27	0.27	0.27	0.27	0.27
1990	1,184	0.00	0.00	0.08	0.08	0.34	0.34	0.34	0.34	0.34	0.34	0.42	0.42	0.42	0.42	0.42
1991	1,302	0.00	0.08	0.08	0.31	0.31	0.31	0.31	0.31	0.31	0.38	0.38	0.38	0.38	0.38	0.38
1992	1,460	0.00	0.00	0.21	0.21	0.21	0.21	0.21	0.21	0.27	0.27	0.27	0.27	0.27	0.27	0.27
1993	1,597	0.00	0.06	0.06	0.06	0.06	0.06	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
1994	1,627	0.00	0.00	0.00	0.00	0.00	0.06	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.25
1995	1,617	0.00	0.00	0.00	0.00	0.06	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.25	0.25
1996	1,437	0.00	0.00	0.00	0.07	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.35	0.35	0.42
1997	1,388	0.00	0.00	0.07	0.22	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.43	0.43	0.50	0.65
1998	1,489	0.00	0.00	0.07	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.34	0.34	0.40	0.54	0.60
1999	1,676	0.00	0.12	0.24	0.30	0.30	0.30	0.30	0.30	0.30	0.42	0.42	0.54	0.66	0.72	0.78
2000	1,571	0.00	0.13	0.13	0.13	0.19	0.19	0.19	0.19	0.32	0.32	0.45	0.57	0.64	0.64	0.70
2001	1,604	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.19	0.19	0.31	0.37	0.44	0.44	0.50	0.56
2002	1,615	0.00	0.00	0.00	0.00	0.06	0.06	0.12	0.12	0.19	0.25	0.37	0.37	0.43	0.50	
2003	1,714	0.00	0.00	0.00	0.06	0.06	0.12	0.12	0.18	0.18	0.29	0.29	0.35	0.41		
2004	1,892	0.00	0.00	0.05	0.05	0.11	0.11	0.11	0.11	0.21	0.26	0.32	0.37			
2005	1,816	0.00	0.06	0.06	0.11	0.11	0.11	0.11	0.22	0.28	0.33	0.39				
2006	1,854	0.00	0.00	0.05	0.05	0.05	0.05	0.16	0.32	0.38	0.38					
2007	1,921	0.00	0.05	0.05	0.10	0.10	0.16	0.47	0.57	0.57						
2008	2,015	0.05	0.05	0.10	0.10	0.15	0.55	0.65	0.65							
2009	1,790	0.00	0.06	0.06	0.11	0.67	0.78	0.78								
2010	1,403	0.00	0.00	0.14	0.43	0.57	0.57									
2011	1,290	0.00	0.08	0.23	0.39	0.39										
2012	1,372	0.07	0.36	0.44	0.73											
2013	1,468	0.07	0.14	0.55												
2014	1,370	0.00	0.37													
2015	1,335	0.07														
Marginal average		0.01	0.05	0.06	0.06	0.07	0.06	0.05	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.04
Cumulative average		0.01	0.07	0.13	0.19	0.25	0.31	0.36	0.40	0.42	0.45	0.49	0.53	0.56	0.59	0.63
Standard deviation		0.03	0.10	0.13	0.17	0.18	0.21	0.23	0.21	0.21	0.20	0.20	0.21	0.23	0.25	0.26
Median		0.00	0.05	0.07	0.11	0.20	0.20	0.20	0.22	0.27	0.29	0.35	0.37	0.42	0.50	0.49
Minimum		0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.11	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Maximum		0.10	0.37	0.55	0.73	0.67	0.78	0.91	0.91	1.01	1.01	1.01	1.01	1.01	1.11	1.11

**Table 17**

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: BB</b>																
1986	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.82	1.82	1.82	1.82	1.82	1.82
1987	54	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
1988	55	0.00	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
1989	54	3.70	3.70	3.70	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56
1990	53	0.00	0.00	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89
1991	65	0.00	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
1992	66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.03	3.03	3.03
1993	56	0.00	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79
1994	62	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
1995	62	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
1996	48	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
1997	43	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
1998	37	0.00	0.00	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
1999	42	0.00	0.00	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
2000	46	0.00	0.00	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17
2001	49	0.00	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	4.08	4.08	4.08	4.08	4.08
2002	54	1.85	1.85	1.85	1.85	1.85	1.85	3.70	3.70	5.56	5.56	5.56	5.56	5.56	5.56	5.56
2003	63	0.00	0.00	0.00	0.00	0.00	3.17	3.17	4.76	6.35	6.35	6.35	6.35	6.35	6.35	6.35
2004	81	0.00	0.00	0.00	0.00	2.47	2.47	2.47	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
2005	81	0.00	0.00	0.00	1.23	1.23	1.23	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47
2006	95	0.00	0.00	1.05	1.05	1.05	2.11	2.11	2.11	2.11	3.16	3.16	3.16	3.16	3.16	3.16
2007	100	0.00	1.00	1.00	1.00	2.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
2008	112	0.00	0.00	0.00	0.89	2.68	3.57	3.57	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46
2009	110	0.00	0.00	0.91	2.73	3.64	4.55	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45
2010	120	0.83	2.50	4.17	10.00	11.67	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
2011	123	0.00	1.63	8.94	10.57	11.38	11.38	11.38	11.38	11.38	11.38	11.38	11.38	11.38	11.38	11.38
2012	134	0.00	5.97	8.21	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96	8.96
2013	137	0.00	0.73	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
2014	196	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53
2015	244	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64
Marginal average		0.44	0.80	1.03	0.80	0.52	0.43	0.20	0.21	0.23	0.17	0.09	0.00	0.21	0.00	0.00
Cumulative average		0.44	1.24	2.26	3.04	3.54	3.95	4.15	4.35	4.57	4.73	4.82	4.82	5.02	5.02	5.02
Standard deviation		0.81	1.38	2.24	2.97	2.97	2.55	1.60	1.65	1.91	1.87	1.95	2.00	1.96	1.74	1.55
Median		0.00	0.00	1.26	1.54	1.84	1.89	2.07	2.04	1.96	1.89	1.85	1.82	1.85	1.82	1.82
Minimum		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
Maximum		3.70	5.97	8.94	10.57	11.67	12.50	5.56	5.56	6.35	6.35	6.35	6.35	6.35	5.56	5.56

Table 17

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: B</b>																
1986	16	0.00	0.00	0.00	0.00	0.00	0.00	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
1987	20	0.00	0.00	0.00	0.00	0.00	5.00	5.00	5.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
1988	17	0.00	0.00	0.00	0.00	5.88	5.88	5.88	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76
1989	17	0.00	0.00	5.88	5.88	5.88	5.88	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76
1990	13	0.00	7.69	7.69	7.69	7.69	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38
1991	15	0.00	6.67	6.67	6.67	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33
1992	14	0.00	0.00	0.00	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14
1993	22	0.00	4.55	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09	9.09
1994	19	10.53	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79
1995	16	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
1996	15	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
1997	14	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
1998	15	0.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67
1999	12	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
2000	10	20.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
2001	14	0.00	0.00	0.00	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	14.29	14.29	14.29
2002	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	8.33	16.67	16.67	16.67	
2003	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	5.56	11.11	11.11	11.11		
2004	27	0.00	0.00	0.00	0.00	0.00	0.00	7.41	11.11	11.11	14.81	14.81	14.81			
2005	21	0.00	0.00	0.00	4.76	4.76	14.29	19.05	19.05	23.81	23.81	23.81				
2006	35	0.00	0.00	2.86	2.86	8.57	11.43	11.43	14.29	14.29	14.29					
2007	29	0.00	0.00	0.00	6.90	10.34	10.34	13.79	13.79	13.79						
2008	28	3.57	3.57	3.57	7.14	7.14	7.14	7.14	7.14							
2009	30	0.00	0.00	3.33	3.33	3.33	3.33	3.33								
2010	20	0.00	0.00	0.00	0.00	0.00	0.00									
2011	24	0.00	4.17	4.17	8.33	8.33										
2012	27	0.00	3.70	7.41	7.41											
2013	42	14.29	19.05	19.05												
2014	38	2.63	7.89													
2015	44	2.27														
Marginal average		2.17	2.04	0.93	1.40	1.07	1.13	1.44	0.79	0.85	0.62	0.34	0.36	0.40	0.00	0.00
Cumulative average		2.17	4.17	5.06	6.39	7.39	8.43	9.75	10.46	11.22	11.77	12.07	12.39	12.73	12.73	12.73
Standard deviation		4.69	6.85	6.90	6.27	6.52	6.98	6.99	7.13	7.33	7.20	7.25	6.90	7.03	7.23	7.27
Median		0.00	0.00	1.43	5.88	6.07	6.25	7.14	7.14	9.55	9.09	9.55	10.00	10.56	10.00	9.55
Minimum		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
Maximum		20.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00



Table 17

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: CCC/C</b>																
1986	4	0.00	0.00	0.00	25.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
1987	7	28.57	28.57	42.86	57.14	57.14	57.14	57.14	57.14	57.14	57.14	57.14	57.14	57.14	57.14	57.14
1988	8	0.00	12.50	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
1989	10	10.00	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
1990	9	33.33	33.33	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56	55.56
1991	11	9.09	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27	27.27
1992	15	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
1993	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	40.00	40.00	40.00
1994	7	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	42.86	42.86	42.86	42.86	42.86
1995	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33	33.33	33.33	33.33	33.33	33.33
1996	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
1997	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57
1998	6	0.00	0.00	0.00	0.00	0.00	0.00	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
1999	9	11.11	22.22	22.22	22.22	22.22	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44
2000	10	10.00	10.00	10.00	10.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
2001	6	33.33	33.33	33.33	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67
2002	10	0.00	0.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
2003	5	0.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
2004	6	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
2005	4	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
2006	5	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
2007	4	0.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
2008	8	12.50	12.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50
2009	7	0.00	28.57	28.57	28.57	42.86	42.86	42.86	42.86	42.86	42.86	42.86	42.86	42.86	42.86	42.86
2010	9	22.22	33.33	33.33	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44
2011	15	20.00	20.00	26.67	26.67	26.67	26.67	26.67	26.67	26.67	26.67	26.67	26.67	26.67	26.67	26.67
2012	22	31.82	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36
2013	31	25.81	29.03	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26
2014	18	22.22	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78	27.78
2015	17	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65	17.65
Marginal average		17.54	6.79	5.70	4.35	2.86	1.60	1.69	1.79	1.90	2.00	2.13	2.25	0.00	0.00	0.00
Cumulative average		17.54	23.14	27.52	30.67	32.65	33.73	34.85	36.02	37.24	38.49	39.80	41.15	41.15	41.15	41.15
Standard deviation		13.72	15.43	16.73	19.04	19.59	20.08	19.28	18.39	17.70	16.18	15.22	12.03	12.21	11.69	11.74
Median		11.81	22.22	25.83	26.67	28.64	30.00	31.67	30.00	31.67	33.33	36.67	40.00	40.00	40.00	40.00
Minimum		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	25.00	25.00
Maximum		50.00	60.00	60.00	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67

**Table 17**

USPF Static Pool Default Rates By Category (1986-2015) (%)* (cont.)															
Issuers	--Time horizon (years)--														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

\*Excludes housing. Source: Global Fixed Income Research.

**Table 18**

USPF One-Year Static Pool Default Rates By Modifier (%)*																	
Year	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC/C
1986	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	0.00
1987	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08	0.00	0.00	0.00	0.00	0.00	0.00	28.57
1988	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	0.00
1989	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	25.00	0.00	0.00	0.00	10.00
1990	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	33.33
1991	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	9.09
1992	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	33.33
1993	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	0.00
1994	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	14.29	0.00	14.29
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	0.00	0.00	11.11	0.00	0.00
1996	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	0.00
1997	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	0.00
1998	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	0.00
1999	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	11.11
2000	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	50.00	20.00	0.00	10.00
2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.33
2002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	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	50.00
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	0.00	25.00
2006	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	20.00
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	0.00
2008	0.00	0.00	0.08	0.00	0.00	0.04	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	6.67	0.00	12.50
2009	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	0.00
2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	22.22
2011	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
2012	0.00	0.00	0.00	0.00	0.00	0.03	0.14	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.82
2013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	17.65	0.00	25.81
2014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.34	8.33	0.00	0.00	22.22
2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	8.00	0.00	0.00	6.25	17.65

\*Excludes housing. Source: Global Fixed Income Research.

**Table 19**

USPF Housing Static Pool Default Rates (1986-2015) (%)																
Rating	Issuers	--Time horizon (years)--														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1986	2,592	0.00	0.04	0.08	0.08	0.08	0.15	0.19	0.27	0.31	0.31	0.31	0.31	0.31	0.31	0.31
1987	2,705	0.04	0.07	0.07	0.07	0.52	0.55	0.63	0.67	0.67	0.67	0.67	0.67	0.70	0.70	0.70
1988	2,827	0.04	0.04	0.04	0.46	0.50	0.57	0.60	0.60	0.60	0.60	0.60	0.64	0.64	0.64	0.64
1989	2,986	0.00	0.00	0.40	0.44	0.50	0.54	0.54	0.54	0.54	0.54	0.57	0.57	0.57	0.57	0.57
1990	2,764	0.00	0.58	0.62	0.69	0.72	0.72	0.72	0.72	0.72	0.76	0.76	0.76	0.76	0.76	0.76
1991	2,849	0.63	0.67	0.74	0.77	0.81	0.81	0.81	0.81	0.84	0.84	0.84	0.84	0.84	0.84	0.84
1992	2,782	0.04	0.11	0.14	0.18	0.18	0.18	0.18	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
1993	2,769	0.07	0.11	0.14	0.18	0.18	0.18	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
1994	2,604	0.04	0.08	0.12	0.12	0.12	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
1995	2,641	0.04	0.08	0.08	0.08	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
1996	2,408	0.04	0.04	0.12	0.21	0.21	0.25	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
1997	2,537	0.00	0.16	0.24	0.24	0.28	0.51	0.55	0.55	0.59	0.63	0.63	0.63	0.63	0.63	0.63
1998	2,659	0.08	0.15	0.15	0.19	0.41	0.53	0.60	0.64	0.71	0.75	0.75	0.75	0.75	0.75	0.75
1999	2,759	0.07	0.07	0.11	0.33	0.43	0.51	0.54	0.62	0.69	0.69	0.69	0.69	0.69	0.69	0.69
2000	2,975	0.00	0.03	0.24	0.37	0.44	0.57	0.64	0.71	0.71	0.74	0.74	0.74	0.74	0.74	0.74
2001	3,253	0.03	0.22	0.37	0.43	0.55	0.61	0.68	0.68	0.71	0.71	0.71	0.71	0.71	0.71	0.71
2002	3,506	0.17	0.31	0.43	0.54	0.60	0.66	0.66	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
2003	3,724	0.13	0.24	0.40	0.48	0.54	0.56	0.64	0.64	0.67	0.67	0.67	0.67	0.67	0.67	0.67
2004	3,749	0.11	0.27	0.35	0.40	0.43	0.51	0.51	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
2005	3,632	0.17	0.25	0.33	0.36	0.44	0.44	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
2006	3,472	0.09	0.17	0.20	0.29	0.29	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
2007	3,357	0.09	0.12	0.21	0.21	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
2008	3,290	0.03	0.12	0.12	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2009	3,342	0.09	0.09	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
2010	3,193	0.00	0.03	0.03	0.03	0.03	0.03	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
2011	2,769	0.04	0.04	0.04	0.04	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
2012	2,641	0.00	0.04	0.04	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2013	2,486	0.04	0.04	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
2014	2,328	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
2015	2,224	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Marginal average		0.08	0.08	0.07	0.06	0.06	0.05	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Cumulative average		0.03	0.06	0.09	0.12	0.15	0.17	0.20	0.22	0.23	0.25	0.26	0.28	0.29	0.31	0.32
Standard deviation		0.11	0.15	0.17	0.19	0.21	0.21	0.21	0.20	0.20	0.21	0.21	0.21	0.22	0.23	0.23
Median		0.04	0.11	0.15	0.21	0.35	0.51	0.52	0.54	0.56	0.60	0.62	0.64	0.65	0.64	0.63
Minimum		0.00	0.00	0.03	0.03	0.03	0.12	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Maximum		0.63	0.67	0.74	0.77	0.81	0.81	0.81	0.81	0.84	0.84	0.84	0.84	0.84	0.84	0.84

Source: Global Fixed Income Research.

**Table 20**

USPF Housing Static Pool Default Rates By Category (1986-2015) (%)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: AAA</b>																
1986	866	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
1987	888	0.11	0.11	0.11	0.11	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
1988	910	0.00	0.00	0.00	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
1989	1,005	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1990	968	0.00	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
1991	1,047	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
1992	1,121	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
1993	1,180	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1994	1,075	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
1995	1,215	0.00	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1996	1,247	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1997	1,447	0.00	0.00	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1998	1,721	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
1999	1,824	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2000	1,999	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2001	2,214	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2002	2,439	0.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	
2003	2,591	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04		
2004	2,586	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2005	2,533	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2006	2,303	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04					
2007	2,251	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04						
2008	2,200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05							
2009	2,173	0.00	0.00	0.00	0.00	0.00	0.00	0.05								
2010	2,000	0.00	0.00	0.00	0.00	0.00	0.05									
2011	1,521	0.00	0.00	0.00	0.00	0.07										
2012	202	0.00	0.00	0.00	0.00											
2013	169	0.00	0.00	0.00												
2014	184	0.00	0.00													
2015	171	0.00														
Marginal average		0.01	0.04	0.03	0.03	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative average		0.01	0.05	0.07	0.10	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15
Standard deviation		0.02	0.26	0.32	0.37	0.43	0.43	0.44	0.44	0.45	0.46	0.46	0.47	0.48	0.49	0.50
Median		0.00	0.00	0.00	0.00	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08
Minimum		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
Maximum		0.11	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45

Table 20

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: AA</b>																
1986	1,016	0.00	0.00	0.10	0.10	0.10	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30
1987	1,057	0.00	0.09	0.09	0.09	0.19	0.19	0.19	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
1988	1,090	0.09	0.09	0.09	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
1989	1,105	0.00	0.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
1990	1,006	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
1991	934	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
1992	690	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
1993	660	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
1994	619	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
1995	626	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
1996	554	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
1997	541	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18	0.18	0.18
1998	468	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21	0.21	0.21	0.21	0.21	0.21
1999	528	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
2000	564	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
2001	606	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
2002	655	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2003	664	0.00	0.00	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2004	701	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
2005	688	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2006	810	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
2007	794	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13
2008	801	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
2009	848	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
2010	866	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
2011	827	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
2012	2,032	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2013	1,907	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2014	1,776	0.00	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2015	1,703	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Marginal average		0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.00
Cumulative average		0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Standard deviation		0.03	0.04	0.05	0.06	0.07	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.11
Median		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.13	0.15	0.15	0.15	0.15	0.15	0.13
Minimum		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
Maximum		0.12	0.15	0.15	0.18	0.19	0.20	0.20	0.28	0.30	0.30	0.30	0.30	0.30	0.30	0.30

Table 20

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: A</b>																
1986	638	0.00	0.00	0.00	0.00	0.00	0.16	0.31	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
1987	658	0.00	0.00	0.00	0.00	0.15	0.30	0.61	0.61	0.61	0.61	0.61	0.61	0.76	0.76	0.76
1988	718	0.00	0.00	0.00	0.14	0.28	0.56	0.70	0.70	0.70	0.70	0.70	0.84	0.84	0.84	0.84
1989	637	0.00	0.00	0.16	0.16	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.47	0.47	0.47	0.47
1990	569	0.00	0.18	0.18	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
1991	623	0.00	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
1992	744	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
1993	727	0.00	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
1994	736	0.00	0.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
1995	655	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
1996	504	0.00	0.00	0.40	0.40	0.40	0.40	0.40	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
1997	464	0.00	0.22	0.22	0.22	0.22	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
1998	396	0.00	0.00	0.00	0.00	0.76	1.01	1.26	1.26	1.52	1.52	1.52	1.52	1.52	1.52	1.52
1999	337	0.00	0.00	0.00	0.89	1.19	1.48	1.48	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
2000	335	0.00	0.00	0.30	0.60	0.90	1.19	1.49	1.49	1.49	1.79	1.79	1.79	1.79	1.79	1.79
2001	348	0.00	0.29	0.57	0.86	1.15	1.44	1.44	1.44	1.72	1.72	1.72	1.72	1.72	1.72	1.72
2002	332	0.30	0.60	0.90	0.90	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
2003	373	0.00	0.27	0.27	0.54	0.54	0.54	0.80	0.80	1.07	1.07	1.07	1.07	1.07		
2004	355	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.56	0.56	0.56	0.56	0.56			
2005	308	0.00	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32			
2006	259	0.00	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39					
2007	223	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.90						
2008	212	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47							
2009	242	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
2010	231	0.00	0.00	0.00	0.00	0.00	0.00									
2011	292	0.00	0.00	0.00	0.00	0.00										
2012	270	0.00	0.00	0.00	0.00											
2013	280	0.00	0.00	0.00												
2014	271	0.00	0.00													
2015	264	0.00														
Marginal average		0.02	0.06	0.07	0.07	0.08	0.10	0.08	0.05	0.04	0.01	0.01	0.01	0.01	0.00	0.00
Cumulative average		0.02	0.07	0.14	0.22	0.30	0.40	0.48	0.53	0.56	0.57	0.58	0.59	0.60	0.60	0.60
Standard deviation		0.10	0.16	0.22	0.29	0.38	0.45	0.48	0.48	0.53	0.57	0.57	0.58	0.59	0.60	0.61
Median		0.00	0.00	0.07	0.14	0.25	0.32	0.37	0.56	0.62	0.61	0.62	0.63	0.78	0.76	0.69
Minimum		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
Maximum		0.45	0.60	0.90	0.90	1.20	1.48	1.49	1.78	1.78	1.79	1.79	1.79	1.79	1.79	1.79

**Table 20**

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: BBB</b>																
1986	71	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
1987	92	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
1988	82	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
1989	207	0.00	0.00	0.00	0.48	0.97	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
1990	166	0.00	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
1991	165	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
1992	156	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
1993	148	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
1994	134	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
1995	115	0.00	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
1996	85	0.00	0.00	0.00	0.00	0.00	1.18	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
1997	70	0.00	1.43	1.43	1.43	2.86	7.14	7.14	7.14	8.57	8.57	8.57	8.57	8.57	8.57	8.57
1998	62	0.00	0.00	0.00	1.61	6.45	8.06	9.68	11.29	11.29	12.90	12.90	12.90	12.90	12.90	12.90
1999	60	0.00	0.00	0.00	5.00	6.67	8.33	10.00	10.00	13.33	13.33	13.33	13.33	13.33	13.33	13.33
2000	63	0.00	0.00	4.76	6.35	7.94	11.11	11.11	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29
2001	57	0.00	3.51	7.02	8.77	12.28	12.28	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79
2002	55	1.82	5.45	9.09	10.91	10.91	14.55	14.55	16.36	16.36	16.36	16.36	16.36	16.36	16.36	16.36
2003	58	0.00	3.45	5.17	6.90	10.34	10.34	12.07	12.07	12.07	12.07	12.07	12.07	12.07	12.07	12.07
2004	57	1.75	3.51	7.02	8.77	8.77	10.53	10.53	10.53	10.53	10.53	10.53	10.53	10.53	10.53	10.53
2005	53	0.00	1.89	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77
2006	48	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
2007	39	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
2008	33	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
2009	36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2010	47	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
2011	34	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
2012	62	0.00	1.61	1.61	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2013	63	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
2014	39	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
2015	40	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
Marginal average		0.08	0.47	0.48	0.45	0.56	0.57	0.44	0.20	0.15	0.05	0.00	0.00	0.00	0.00	0.00
Cumulative average		0.08	0.55	1.02	1.47	2.02	2.57	3.00	3.19	3.34	3.39	3.39	3.39	3.39	3.39	3.39
Standard deviation		0.45	1.43	2.61	3.28	4.05	4.83	5.29	5.83	6.07	6.19	6.22	6.37	6.44	6.43	5.96
Median		0.00	0.00	0.00	0.00	0.00	0.60	1.16	0.87	1.16	1.45	2.49	1.45	1.16	0.87	0.74
Minimum		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
Maximum		1.82	5.45	9.09	10.91	12.28	14.55	15.79	16.36	16.36	16.36	16.36	16.36	16.36	16.36	15.79

**Table 20**

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: BB</b>																
1986	1	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
1987	3	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
1988	19	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
1989	22	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
1990	46	0.00	2.17	2.17	4.35	4.35	4.35	4.35	4.35	4.35	6.52	6.52	6.52	6.52	6.52	6.52
1991	69	24.64	24.64	26.09	27.54	28.99	28.99	28.99	28.99	30.43	30.43	30.43	30.43	30.43	30.43	30.43
1992	47	0.00	0.00	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13
1993	28	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
1994	20	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
1995	15	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
1996	7	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
1997	8	0.00	25.00	25.00	25.00	25.00	25.00	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50
1998	4	0.00	0.00	0.00	0.00	0.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
1999	5	0.00	0.00	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
2000	10	0.00	10.00	30.00	40.00	40.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
2001	16	0.00	6.25	12.50	12.50	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75
2002	12	8.33	8.33	16.67	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
2003	19	0.00	5.26	15.79	15.79	15.79	21.05	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	
2004	33	3.03	6.06	6.06	9.09	12.12	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	
2005	28	0.00	0.00	3.57	3.57	10.71	10.71	10.71	10.71	10.71	10.71	10.71	10.71	10.71	10.71	
2006	28	0.00	3.57	3.57	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	
2007	21	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	
2008	17	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	
2009	16	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	
2010	25	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	
2011	66	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	
2012	39	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	
2013	37	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	
2014	32	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	
2015	25	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	
Marginal average		2.65	1.19	1.58	1.19	1.11	0.85	0.45	0.00	0.25	0.26	0.00	0.00	0.00	0.00	0.00
Cumulative average		2.65	3.80	5.32	6.45	7.49	8.27	8.69	8.69	8.92	9.15	9.15	9.15	9.15	9.15	9.15
Standard deviation		4.63	6.53	9.27	11.52	13.20	14.62	15.56	15.67	15.84	15.86	16.17	16.56	17.01	17.28	17.12
Median		0.00	0.00	0.00	0.00	0.00	2.13	3.24	4.35	5.75	7.14	8.62	6.52	4.32	2.13	1.06
Minimum		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
Maximum		24.64	25.00	30.00	40.00	40.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00



**Table 20**

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: B</b>																
1986	5	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
1987	5	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
1988	7	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
1989	5	0.00	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
1990	5	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
1991	19	5.26	10.53	10.53	10.53	10.53	10.53	10.53	15.79	15.79	15.79	15.79	15.79	15.79	15.79	15.79
1992	10	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
1993	6	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
1994	4	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
1995	4	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
1996	1	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
1997	2	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
1998	1	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
1999	2	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
2000	6	0.00	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67
2001	9	22.22	33.33	33.33	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	0.00
2002	8	0.00	0.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	0.00	
2003	7	0.00	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	0.00		
2004	12	8.33	8.33	8.33	16.67	16.67	16.67	25.00	25.00	25.00	25.00	25.00	0.00			
2005	14	0.00	7.14	14.29	14.29	14.29	14.29	14.29	14.29	14.29	14.29	0.00				
2006	18	11.11	11.11	16.67	16.67	16.67	16.67	16.67	16.67	16.67	0.00					
2007	15	0.00	6.67	6.67	6.67	6.67	6.67	6.67	6.67	0.00						
2008	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
2009	13	0.00	0.00	0.00	0.00	0.00	15.38	0.00								
2010	21	0.00	0.00	0.00	0.00	9.52	0.00									
2011	33	0.00	0.00	0.00	6.06	0.00										
2012	23	4.35	4.35	13.04	0.00											
2013	15	0.00	0.00	0.00												
2014	15	0.00	0.00													
2015	0	0.00														
Marginal average		2.33	2.87	2.73	1.75	1.03	1.16	0.63	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative average		2.33	5.13	7.72	9.33	10.27	11.30	11.86	12.48	12.48	12.48	12.48	12.48	12.48	12.48	12.48
Standard deviation		4.64	8.87	10.15	11.49	11.57	11.73	12.24	12.39	12.65	12.87	13.15	13.01	12.49	12.12	7.90
Median		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
Minimum		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
Maximum		22.22	33.33	33.33	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	44.44	20.00

**Table 20**

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)																
Issuers	--Time horizon (years)--															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Rating: CCC/C</b>																
1986	2	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
1987	3	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
1988	3	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
1989	4	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
1990	6	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67
1991	5	0.00	0.00	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
1992	16	12.50	18.75	25.00	25.00	25.00	25.00	31.25	31.25	31.25	31.25	31.25	31.25	31.25	31.25	31.25
1993	14	7.14	14.29	14.29	14.29	14.29	21.43	21.43	21.43	21.43	21.43	21.43	21.43	21.43	21.43	21.43
1994	11	9.09	9.09	9.09	9.09	18.18	18.18	18.18	18.18	18.18	18.18	18.18	18.18	18.18	18.18	18.18
1995	7	14.29	14.29	14.29	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57	28.57
1996	6	0.00	0.00	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67
1997	6	33.33	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
1998	4	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
1999	2	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
2000	6	16.67	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33	33.33
2001	4	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	0.00
2002	11	36.36	36.36	45.45	45.45	45.45	45.45	45.45	45.45	45.45	45.45	45.45	45.45	45.45	0.00	
2003	10	20.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	0.00	
2004	10	50.00	60.00	60.00	60.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	0.00		
2005	10	20.00	20.00	20.00	40.00	40.00	50.00	50.00	50.00	50.00	50.00	0.00				
2006	11	0.00	9.09	27.27	27.27	36.36	36.36	36.36	36.36	36.36	0.00					
2007	12	8.33	25.00	25.00	33.33	33.33	33.33	33.33	33.33	0.00						
2008	11	27.27	27.27	36.36	36.36	36.36	36.36	36.36	0.00							
2009	11	0.00	9.09	9.09	9.09	9.09	9.09	0.00								
2010	8	12.50	12.50	12.50	12.50	12.50	0.00									
2011	3	0.00	0.00	0.00	0.00	0.00										
2012	7	0.00	0.00	0.00	0.00											
2013	11	0.00	18.18	0.00												
2014	6	33.33	0.00													
2015	0	0.00														
Marginal average		14.09	7.03	3.68	3.33	2.11	1.52	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative average		14.09	20.13	23.07	25.63	27.20	28.31	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90	28.90
Standard deviation		13.68	16.09	16.92	17.10	17.87	18.47	18.64	18.89	19.21	19.47	19.00	15.89	15.56	14.52	14.82
Median		8.71	14.29	15.48	20.00	22.50	25.00	25.00	25.00	23.21	21.43	20.71	20.00	19.09	18.18	17.42
Minimum		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
Maximum		50.00	60.00	60.00	60.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	50.00	50.00	50.00	50.00

**Table 20**

USPF Housing Static Pool Default Rates By Category (1986-2015) (%) (cont.)															
Issuers	--Time horizon (years)--														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Source: Global Fixed Income Research.

**Table 21**

USPF Housing One-Year Static Pool Default Rates By Modifier (%)																	
Year	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC/C
1986	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	0.00
1987	0.11	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
1988	0.00	0.38	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
1989	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	0.00
1990	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	0.00
1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.87	0.00	0.00	0.00	0.00	16.67
1992	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	5.56	0.00	0.00
1993	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	12.50
1994	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	7.14
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	0.00	0.00	0.00	0.00	9.09
1996	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	14.29
1997	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	0.00
1998	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	33.33
1999	0.05	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	25.00
2000	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	0.00
2001	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	16.67
2002	0.00	0.00	0.00	0.00	0.00	0.00	3.13	0.00	3.23	0.00	0.00	12.50	0.00	0.00	25.00	0.00	25.00
2003	0.04	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	36.36
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	100.00	0.00	0.00	0.00	20.00
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	11.11	0.00	50.00
2006	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
2007	0.00	0.00	0.00	0.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.76	0.00	0.00
2008	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	8.33
2009	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	27.27
2010	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	0.00
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	12.50
2012	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	0.00
2013	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	6.67	0.00	0.00
2014	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	0.00
2015	0.00	0.08	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	33.33

Source: Global Fixed Income Research.

**Table 22**

Most Recent One-, Three-, and 10-Year Original USPF Default Rates By Modifier (%)*				
Rating	One year (2015 pool)	Three years (2013 pool)	10 years (2006 pool)	Initial rating
AAA	0.00	0.00	0.00	0.00
AA+	0.00	0.00	0.00	0.00
AA	0.00	0.00	0.08	0.03
AA-	0.00	0.00	0.00	0.10
A+	0.00	0.04	0.00	0.09
A	0.00	0.03	0.29	0.17
A-	0.00	0.00	0.00	0.28
BBB+	0.00	0.00	0.00	0.18
BBB	0.00	0.23	0.14	0.79
BBB-	0.28	1.78	1.69	2.08
BB+	0.00	0.00	2.44	1.05
BB	0.00	4.08	0.00	5.00
BB-	8.00	0.00	15.38	0.00
B+	0.00	0.00	33.33	20.00
B	0.00	23.53	0.00	0.00
B-	6.25	0.00	22.22	0.00
CCC/C	17.65	32.26	20.00	16.67

\*Excludes housing. Source: Global Fixed Income Research.

**Table 23**

USPF Most Recent Rating Transition Rates By Modifier (%)*																			
Rating	Issuers	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	D	NR
<b>One year (2015)</b>																			
AAA	851	96.36	0.59	0.12	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
AA+	1,655	1.51	91.18	0.91	0.18	0.12	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.98
AA	2,863	0.10	2.93	91.72	0.80	0.21	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16
AA-	3,533	0.00	0.25	3.51	90.97	1.50	0.17	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54
A+	4,582	0.00	0.00	0.17	3.69	89.90	1.99	0.26	0.09	0.09	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	3.78
A	3,109	0.00	0.00	0.03	0.19	6.69	86.01	1.74	0.19	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.05
A-	1,506	0.00	0.00	0.00	0.20	0.80	7.70	83.73	1.39	0.13	0.07	0.07	0.00	0.00	0.00	0.00	0.07	0.00	5.84
BBB+	537	0.00	0.00	0.19	0.00	0.74	0.74	14.15	72.81	4.28	0.19	0.19	0.00	0.00	0.00	0.56	0.00	0.00	6.15
BBB	442	0.00	0.00	0.00	0.23	0.23	0.45	2.49	11.09	75.34	3.39	0.91	0.45	0.00	0.00	0.00	0.00	0.00	4.75
BBB-	356	0.00	0.00	0.00	0.00	0.00	0.84	0.84	2.53	6.18	78.37	4.21	0.84	0.00	0.00	0.00	0.00	0.28	5.62
BB+	125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60	0.80	5.60	72.00	8.00	2.40	0.00	0.00	0.00	9.60
BB	69	0.00	0.00	0.00	0.00	0.00	1.45	0.00	2.90	2.90	4.35	4.35	59.42	4.35	0.00	1.45	0.00	0.00	2.90
BB-	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	4.00	2.00	2.00	40.00	2.00	0.00	4.00	8.00	4.00
B+	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.18	45.45	9.09	0.00	0.00	27.27
B	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.88	0.00	0.00	64.71	5.88	0.00	0.00
B-	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.00	0.00	75.00	6.25	0.00
CCC/C	17	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	5.88	17.65	0.00

Table 23

USPF Most Recent Rating Transition Rates By Modifier (%)* (cont.)																			
Rating	Issuers	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	D	NR
<b>Three year (2013-2015)</b>																			
AAA	668	90.72	2.69	0.45	0.00	0.15	0.00	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.69
AA+	1,286	11.43	70.30	3.50	0.78	0.23	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.61
AA	2,493	1.76	14.96	66.83	4.49	0.68	0.44	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.71
AA-	3,208	0.12	3.80	18.67	62.72	3.71	0.44	0.16	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.22
A+	4,587	0.07	0.63	3.66	14.72	64.07	3.68	2.49	0.24	0.24	0.02	0.07	0.04	0.00	0.00	0.00	0.02	0.04	9.98
A	3,297	0.00	0.06	1.12	4.94	16.71	59.18	3.82	0.70	0.64	0.12	0.00	0.03	0.03	0.00	0.03	0.03	0.03	12.56
A-	1,443	0.00	0.00	0.21	2.84	6.38	18.09	52.88	4.16	1.59	0.97	0.00	0.14	0.00	0.00	0.21	0.00	0.00	12.54
BBB+	641	0.00	0.00	0.16	0.94	10.45	6.08	21.06	38.22	5.46	1.09	0.47	0.00	0.16	0.00	0.00	0.00	0.00	14.66
BBB	433	0.00	0.00	0.23	0.46	2.54	2.31	6.47	14.78	48.50	6.93	1.39	0.92	0.00	0.00	0.23	0.00	0.23	13.63
BBB-	394	0.00	0.00	0.00	0.25	0.25	1.27	1.02	3.30	9.90	44.16	11.17	3.30	2.28	0.51	0.00	0.25	1.78	15.23
BB+	75	0.00	0.00	0.00	0.00	1.33	2.67	5.33	1.33	1.33	8.00	38.67	12.00	4.00	0.00	0.00	6.67	0.00	18.67
BB	49	0.00	0.00	0.00	0.00	0.00	2.04	0.00	6.12	6.12	6.12	8.16	32.65	4.08	0.00	0.00	2.04	4.08	24.49
BB-	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69	15.38	0.00	0.00	23.08	0.00	7.69	0.00	0.00	46.15
B+	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	25.00	0.00	0.00
B	34	0.00	2.94	0.00	0.00	0.00	0.00	2.94	0.00	0.00	5.88	2.94	5.88	2.94	2.94	23.53	5.88	23.53	11.76
B-	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
CCC/C	31	0.00	0.00	0.00	0.00	3.23	0.00	0.00	0.00	0.00	6.45	0.00	0.00	0.00	0.00	0.00	9.68	32.26	35.48
<b>10 year (2006-2015)</b>																			
AAA	270	74.07	5.93	0.37	1.48	0.00	0.37	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.41
AA+	470	28.09	22.13	3.19	0.85	0.64	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.89
AA	1,198	13.86	22.12	22.20	5.18	0.75	0.67	0.33	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	34.56
AA-	1,684	3.03	11.22	20.90	12.83	3.03	0.83	2.26	0.30	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.06	0.00	45.43
A+	1,655	1.03	5.38	17.52	18.97	14.92	3.02	1.15	0.18	0.54	0.00	0.36	0.06	0.06	0.00	0.00	0.00	0.00	36.74
A	2,074	0.24	2.65	9.02	15.28	19.05	10.56	2.80	0.72	0.29	0.43	0.05	0.00	0.05	0.00	0.10	0.10	0.29	38.24
A-	1,636	0.00	1.10	3.42	10.15	19.07	14.43	8.56	1.71	0.98	0.86	0.06	0.12	0.00	0.00	0.06	0.00	0.00	39.43
BBB+	783	0.00	0.26	1.79	8.56	18.39	14.94	8.68	5.24	2.30	1.02	0.64	0.26	0.13	0.00	0.00	0.13	0.00	36.78
BBB	717	0.14	0.28	1.26	2.93	9.90	12.83	11.02	4.32	5.58	2.23	0.70	0.98	0.42	0.00	0.00	0.00	0.14	46.44
BBB-	354	0.00	0.57	0.28	1.41	1.41	5.65	10.73	7.06	8.76	8.76	2.54	0.85	1.13	0.28	0.00	0.57	1.69	46.61
BB+	41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.44	14.63	7.32	4.88	0.00	0.00	2.44	0.00	2.44	60.98
BB	41	0.00	0.00	0.00	0.00	0.00	0.00	7.32	2.44	0.00	4.88	0.00	7.32	2.44	0.00	4.88	2.44	0.00	68.29
BB-	13	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	7.69	15.38	76.92
B+	9	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	33.33	66.67
B	17	0.00	0.00	0.00	0.00	5.88	17.65	11.76	0.00	5.88	5.88	0.00	0.00	5.88	0.00	0.00	0.00	0.00	47.06
B-	9	0.00	0.00	0.00	0.00	11.11	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.22	44.44
CCC/C	5	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	20.00	80.00
<b>Original to last</b>																			
AAA	373	71.31	6.70	4.02	3.22	0.00	0.80	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.67
AA+	1,270	8.82	52.13	4.41	0.87	0.24	0.31	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.99
AA	3,776	6.67	10.62	33.95	3.81	1.14	0.64	0.32	0.08	0.11	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.03	42.58

**Table 23**

USPF Most Recent Rating Transition Rates By Modifier (%)* (cont.)																			
Rating	Issuers	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	D	NR
AA-	4,156	2.00	5.56	14.41	41.05	3.59	0.41	1.49	0.14	0.10	0.02	0.12	0.00	0.00	0.00	0.00	0.02	0.10	30.97
A+	6,504	1.08	2.68	6.30	11.58	42.10	2.98	1.54	0.29	0.26	0.05	0.11	0.02	0.00	0.00	0.00	0.02	0.09	30.86
A	8,409	0.69	1.77	3.94	6.72	11.08	24.90	2.22	0.51	0.38	0.24	0.08	0.04	0.00	0.00	0.02	0.04	0.17	47.09
A-	4,315	0.37	0.97	3.29	6.07	11.82	10.89	19.68	1.78	0.83	0.58	0.09	0.09	0.05	0.00	0.07	0.05	0.28	42.97
BBB+	2,197	0.41	0.86	2.55	5.19	9.79	8.24	7.28	9.97	1.91	0.46	0.18	0.27	0.05	0.00	0.00	0.00	0.18	52.03
BBB	2,786	0.32	0.65	1.33	2.55	5.28	5.67	4.45	3.16	7.32	1.36	0.39	0.29	0.25	0.00	0.07	0.04	0.79	65.87
BBB-	1,153	0.09	0.17	1.04	1.04	1.56	3.99	5.38	6.24	7.46	20.64	3.47	1.21	0.95	0.17	0.26	0.43	2.08	43.02
BB+	95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	2.11	9.47	50.53	6.32	2.11	0.00	2.11	1.05	1.05	23.16
BB	80	2.50	0.00	1.25	1.25	0.00	0.00	0.00	0.00	0.00	1.25	2.50	33.75	3.75	0.00	2.50	2.50	5.00	41.25
BB-	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.69	30.77	7.69	0.00	7.69	0.00	38.46
B+	5	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	40.00	0.00	0.00	20.00	40.00
B	16	0.00	6.25	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00	0.00	0.00	6.25	6.25	0.00	0.00	68.75
B-	1	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	0.00	100.00
CCC/C	6	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	16.67	83.33

\*Excludes housing. Source: Global Fixed Income Research.

**Table 24**

Most Recent One-, Three-, And 10-Year Original USPF Housing Default Rates By Modifier (%)				
Rating	One year (2015 pool)	Three years (2013 pool)	10 years (2006 pool)	Initial rating
AAA		0.00	0.00	0.35
AA+		0.08	0.07	0.14
AA		0.00	0.00	0.17
AA-		0.00	0.00	0.18
A+		0.00	0.00	0.41
A		0.00	0.00	1.89
A-		0.00	0.00	1.87
BBB+		0.00	0.00	1.56
BBB		0.00	0.00	10.38
BBB-		0.00	0.00	11.90
BB+		0.00	0.00	0.00
BB		0.00	0.00	44.44
BB-		0.00	0.00	33.33
B+		0.00	0.00	0.00
B		0.00	20.00	0.00
B-		0.00	0.00	100.00
CCC/C		33.33	0.00	0.00

Source: Global Fixed Income Research.

Table 25

USPF Housing Most Recent Rating Transition Rates By Modifier (%)																			
Rating	Issuers	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	D	NR
<b>One year (2015)</b>																			
AAA	171	87.13	0.58	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	12.28
AA+	1,270	0.00	92.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	7.40
AA	289	0.00	0.00	88.93	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	11.07
AA-	144	0.00	0.69	0.00	90.97	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.94
A+	114	0.00	0.00	0.88	22.81	62.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.04
A	73	0.00	0.00	0.00	0.00	5.48	86.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.22
A-	77	0.00	0.00	0.00	0.00	0.00	12.99	55.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.17
BBB+	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBB	22	0.00	0.00	0.00	0.00	0.00	0.00	13.64	0.00	86.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BBB-	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29
BB+	14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.14	0.00	64.29	0.00	0.00	0.00	0.00	0.00	0.00	28.57
BB	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.67	16.67	0.00	0.00	0.00	0.00	16.67
BB-	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	20.00	0.00	0.00	0.00	40.00
B+	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	60.00	0.00	0.00	0.00	20.00
B	9	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	77.78	11.11	0.00	11.11
B-	1	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	100.00	0.00	0.00
CCC/C	6	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	33.33	16.67
<b>Three year (2013-2015)</b>																			
AAA	169	67.46	2.37	0.59	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	29.59
AA+	1,435	0.00	74.84	2.37	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.07	0.00	0.07	22.51
AA	286	0.00	6.29	68.18	5.24	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.93
AA-	186	0.00	1.08	4.84	52.69	7.53	1.08	2.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.65
A+	127	0.00	0.79	3.15	26.77	35.43	1.57	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.50
A	74	0.00	1.35	1.35	1.35	6.76	45.95	2.70	1.35	0.00	0.00	1.35	0.00	0.00	0.00	0.00	0.00	0.00	37.84
A-	79	0.00	8.86	0.00	1.27	5.06	12.66	25.32	1.27	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.77
BBB+	8	0.00	0.00	0.00	0.00	12.50	12.50	37.50	0.00	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
BBB	38	0.00	0.00	0.00	0.00	0.00	26.32	10.53	2.63	15.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.74
BBB-	17	0.00	0.00	0.00	0.00	0.00	11.76	0.00	0.00	17.65	17.65	5.88	0.00	0.00	0.00	0.00	0.00	0.00	47.06
BB+	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.29	0.00	0.00	0.00	0.00	0.00	0.00	58.82
BB	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.38	0.00	0.00	15.38	7.69	7.69	0.00	0.00	0.00	53.85
BB-	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.57	14.29	0.00	0.00	0.00	57.14
B+	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	50.00	0.00	25.00	0.00	0.00
B	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	33.33	0.00	20.00	40.00
B-	4	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	25.00
CCC/C	7	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00	57.14
<b>10 year (2006-2015)</b>																			
AAA	2,303	2.04	23.80	1.65	0.43	0.04	0.22	0.04	0.00	0.00	0.04	0.09	0.04	0.09	0.13	0.13	0.04	0.04	71.12
AA+	155	0.00	27.10	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	72.90
AA	483	0.00	8.28	15.11	3.73	1.24	0.62	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.19

**Table 25**

**USPF Housing Most Recent Rating Transition Rates By Modifier (%) (cont.)**

Rating	Issuers	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	D	NR
AA-	172	0.00	11.05	8.14	6.98	1.74	2.91	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	68.02
A+	130	0.00	7.69	8.46	4.62	8.46	3.08	0.00	0.77	0.00	0.00	2.31	0.00	0.00	0.00	0.00	0.00	0.00	64.62
A	113	0.00	6.19	5.31	7.96	0.89	3.54	2.65	0.00	0.00	0.00	1.77	0.00	0.00	0.00	0.00	0.00	0.00	71.68
A-	16	0.00	0.00	0.00	0.00	6.25	18.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25	68.75
BBB+	8	0.00	0.00	0.00	12.50	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00
BBB	25	0.00	0.00	0.00	8.00	4.00	12.00	4.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.00
BBB-	15	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.00
BB+	5	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	0.00	100.00
BB	20	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	5.00	80.00
BB-	3	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	33.33	66.67
B+	2	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	0.00	100.00
B	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.09	0.00	0.00	0.00	9.09	9.09	72.73
B-	1	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	100.00	0.00
CCC/C	10	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	50.00	50.00
<b>Original to last</b>																			
AAA	5,455	2.95	14.89	0.70	0.22	0.04	0.15	0.13	0.00	0.00	0.04	0.05	0.02	0.05	0.05	0.05	0.02	0.35	80.26
AA+	722	0.42	31.99	0.97	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	66.34
AA	1,809	0.33	5.03	8.79	1.60	0.55	0.17	0.17	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	83.14
AA-	555	0.00	8.11	6.13	15.32	2.52	0.90	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	66.67
A+	731	0.27	4.24	3.15	3.56	4.79	0.82	0.14	0.14	0.14	0.00	0.68	0.14	0.00	0.00	0.00	0.00	0.41	81.53
A	794	0.00	2.52	1.51	1.64	2.77	6.30	0.76	0.00	0.00	0.00	0.25	0.13	0.00	0.00	0.25	0.00	1.89	81.86
A-	321	0.00	0.00	0.00	0.00	0.62	4.98	10.59	2.18	1.56	0.62	0.00	0.00	0.00	0.31	0.00	0.00	1.87	77.26
BBB+	64	0.00	0.00	0.00	1.56	3.13	1.56	6.25	6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.56	79.69
BBB	106	0.00	0.00	0.00	1.89	0.94	4.72	1.89	1.89	9.43	0.00	0.00	0.00	0.00	0.94	0.94	10.38	66.98	
BBB-	42	0.00	0.00	0.00	0.00	2.38	4.76	0.00	0.00	11.90	4.76	2.38	0.00	0.00	0.00	0.00	0.00	11.90	61.90
BB+	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BB	9	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	11.11	0.00	0.00	11.11	0.00	0.00	0.00	0.00	44.44	22.22
BB-	3	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	33.33	66.67
B+	0	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	0.00	0.00
B	1	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	100.00	0.00	0.00	0.00
B-	0	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	0.00	0.00
CCC/C	4	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	0.00	100.00

Source: Global Fixed Income Research.

**Table 26**

**USPF Static Pool One-Year Transition Matrices By Category (%)\***

From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Static pool: 1/1/1986</b>										
AAA	53	84.91	13.21	0.00	0.00	0.00	0.00	0.00	0.00	1.89
AA	962	0.31	93.04	0.94	0.10	0.00	0.00	0.00	0.00	5.61
A	2,954	0.00	1.56	90.01	1.02	0.07	0.00	0.03	0.00	7.31



**Table 26**

<b>USPF Static Pool One-Year Transition Matrices By Category (%)* (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
BBB	991	0.00	0.20	1.21	89.91	0.71	0.20	0.20	0.00	7.57
BB	55	0.00	0.00	0.00	9.09	80.00	5.45	0.00	0.00	5.45
B	16	0.00	0.00	0.00	6.25	0.00	87.50	0.00	0.00	6.25
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/1987</b>										
AAA	50	92.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,032	0.29	91.67	1.16	0.00	0.00	0.00	0.00	0.00	6.88
A	2,981	0.00	0.94	88.73	1.34	0.07	0.00	0.00	0.00	8.92
BBB	1,051	0.00	0.10	2.47	88.68	0.95	0.29	0.10	0.10	7.33
BB	54	0.00	0.00	0.00	9.26	74.07	0.00	1.85	0.00	14.81
B	20	0.00	0.00	0.00	20.00	0.00	70.00	5.00	0.00	5.00
CCC/C	7	0.00	0.00	0.00	0.00	0.00	0.00	71.43	28.57	0.00
<b>Static pool: 1/1/1988</b>										
AAA	49	97.96	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,057	0.09	95.18	1.51	0.00	0.00	0.00	0.00	0.00	3.22
A	2,919	0.00	0.89	92.15	0.82	0.03	0.00	0.00	0.00	6.10
BBB	1,065	0.00	0.28	1.60	91.08	0.28	0.19	0.09	0.00	6.48
BB	55	0.00	0.00	0.00	9.09	80.00	1.82	1.82	0.00	7.27
B	17	0.00	0.00	0.00	0.00	5.88	82.35	5.88	0.00	5.88
CCC/C	8	0.00	0.00	0.00	0.00	0.00	0.00	87.50	0.00	12.50
<b>Static pool: 1/1/1989</b>										
AAA	51	98.04	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,135	0.09	95.33	0.26	0.79	0.00	0.00	0.00	0.00	3.52
A	2,933	0.00	1.23	94.17	0.44	0.00	0.00	0.07	0.00	4.09
BBB	1,114	0.00	0.00	1.80	93.72	0.54	0.00	0.00	0.00	3.95
BB	54	0.00	0.00	0.00	3.70	83.33	1.85	0.00	3.70	7.41
B	17	0.00	0.00	5.88	0.00	5.88	70.59	0.00	0.00	17.65
CCC/C	10	0.00	0.00	0.00	0.00	0.00	0.00	70.00	10.00	20.00
<b>Static pool: 1/1/1990</b>										
AAA	57	98.25	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,223	0.16	95.34	2.37	0.00	0.00	0.00	0.00	0.00	2.13
A	3,070	0.00	0.59	93.06	2.64	0.10	0.03	0.00	0.00	3.58
BBB	1,184	0.00	0.17	0.84	92.06	0.93	0.17	0.51	0.00	5.32
BB	53	0.00	0.00	0.00	0.00	84.91	7.55	0.00	0.00	7.55
B	13	0.00	0.00	0.00	15.38	7.69	61.54	7.69	0.00	7.69
CCC/C	9	0.00	0.00	0.00	0.00	11.11	0.00	44.44	33.33	11.11
<b>Static pool: 1/1/1991</b>										
AAA	62	90.32	8.06	0.00	0.00	0.00	0.00	0.00	0.00	1.61

**Table 26**

<b>USPF Static Pool One-Year Transition Matrices By Category (%)* (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
AA	1,336	0.00	91.09	6.14	0.00	0.00	0.00	0.00	0.00	2.77
A	3,174	0.00	0.60	93.42	1.35	0.09	0.00	0.00	0.00	4.54
BBB	1,302	0.00	0.00	1.15	93.32	0.23	0.08	0.23	0.00	4.99
BB	65	0.00	0.00	0.00	3.08	87.69	0.00	1.54	0.00	7.69
B	15	0.00	0.00	0.00	0.00	0.00	86.67	6.67	0.00	6.67
CCC/C	11	0.00	0.00	0.00	0.00	0.00	0.00	90.91	9.09	0.00
<b>Static pool: 1/1/1992</b>										
AAA	57	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,387	0.14	93.58	1.66	0.00	0.00	0.00	0.00	0.00	4.61
A	3,409	0.00	0.65	90.32	1.47	0.03	0.00	0.00	0.00	7.54
BBB	1,460	0.00	0.00	0.96	92.05	0.62	0.14	0.00	0.00	6.23
BB	66	0.00	0.00	0.00	13.64	65.15	6.06	3.03	0.00	12.12
B	14	0.00	0.00	0.00	0.00	0.00	71.43	7.14	0.00	21.43
CCC/C	15	0.00	0.00	0.00	0.00	6.67	40.00	13.33	33.33	6.67
<b>Static pool: 1/1/1993</b>										
AAA	60	98.33	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,478	0.07	91.27	0.74	0.00	0.00	0.00	0.00	0.00	7.92
A	3,505	0.00	0.43	88.76	0.63	0.00	0.00	0.00	0.00	10.19
BBB	1,597	0.00	0.00	2.19	86.60	0.63	0.06	0.06	0.00	10.46
BB	56	0.00	0.00	0.00	3.57	78.57	5.36	0.00	0.00	12.50
B	22	0.00	0.00	0.00	0.00	27.27	59.09	4.55	0.00	9.09
CCC/C	5	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/1994</b>										
AAA	63	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,498	0.07	90.79	2.00	0.00	0.00	0.00	0.00	0.00	7.14
A	3,498	0.00	0.94	87.16	0.97	0.00	0.00	0.00	0.00	10.92
BBB	1,627	0.00	0.00	1.04	87.34	0.61	0.06	0.06	0.00	10.88
BB	62	0.00	0.00	0.00	1.61	79.03	3.23	0.00	0.00	16.13
B	19	0.00	0.00	0.00	0.00	5.26	63.16	0.00	10.53	21.05
CCC/C	7	0.00	0.00	0.00	0.00	0.00	14.29	71.43	14.29	0.00
<b>Static pool: 1/1/1995</b>										
AAA	65	96.92	3.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,495	0.13	85.22	1.00	0.00	0.00	0.00	0.00	0.00	13.65
A	3,329	0.00	0.57	75.70	1.47	0.00	0.03	0.00	0.00	22.23
BBB	1,617	0.00	0.00	1.05	77.55	0.68	0.25	0.00	0.00	20.47
BB	62	0.00	0.00	0.00	17.74	56.45	0.00	0.00	0.00	25.81
B	16	0.00	0.00	0.00	6.25	12.50	62.50	0.00	6.25	12.50
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	66.67	0.00	33.33

Table 26

USPF Static Pool One-Year Transition Matrices By Category (%)* (cont.)										
From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Static pool: 1/1/1996</b>										
AAA	69	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,383	0.72	90.02	1.01	0.00	0.00	0.00	0.00	0.00	8.24
A	2,728	0.00	1.83	85.15	0.77	0.07	0.04	0.00	0.00	12.13
BBB	1,437	0.00	0.07	2.09	85.53	0.49	0.00	0.07	0.00	11.76
BB	48	0.00	0.00	0.00	14.58	64.58	2.08	2.08	0.00	16.67
B	15	0.00	0.00	0.00	0.00	6.67	60.00	13.33	0.00	20.00
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	25.00
<b>Static pool: 1/1/1997</b>										
AAA	81	97.53	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,395	1.08	93.41	0.57	0.00	0.00	0.00	0.00	0.00	4.95
A	2,583	0.04	1.66	91.37	0.23	0.00	0.00	0.00	0.00	6.70
BBB	1,388	0.00	0.00	1.73	91.35	0.22	0.14	0.00	0.00	6.56
BB	43	0.00	0.00	0.00	6.98	76.74	0.00	0.00	0.00	16.28
B	14	0.00	0.00	0.00	0.00	7.14	92.86	0.00	0.00	0.00
CCC/C	7	0.00	0.00	0.00	0.00	0.00	0.00	85.71	0.00	14.29
<b>Static pool: 1/1/1998</b>										
AAA	100	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	1,487	0.94	91.93	0.27	0.00	0.00	0.00	0.00	0.00	6.86
A	2,806	0.00	2.32	87.46	0.39	0.00	0.11	0.00	0.00	9.73
BBB	1,489	0.00	0.00	1.34	87.58	0.54	0.00	0.07	0.00	10.48
BB	37	0.00	0.00	2.70	5.41	67.57	2.70	2.70	0.00	18.92
B	15	0.00	0.00	0.00	6.67	20.00	53.33	6.67	0.00	13.33
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/1999</b>										
AAA	119	97.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.52
AA	1,612	0.50	93.80	0.62	0.00	0.00	0.00	0.00	0.00	5.09
A	3,165	0.00	1.30	88.47	0.63	0.00	0.03	0.00	0.00	9.57
BBB	1,676	0.00	0.00	8.77	77.21	0.78	0.12	0.00	0.00	13.13
BB	42	0.00	0.00	0.00	7.14	73.81	9.52	0.00	0.00	9.52
B	12	0.00	0.00	0.00	0.00	0.00	16.67	33.33	0.00	50.00
CCC/C	9	0.00	0.00	0.00	0.00	0.00	0.00	66.67	11.11	22.22
<b>Static pool: 1/1/2000</b>										
AAA	131	98.47	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.76
AA	1,717	1.05	95.98	0.47	0.00	0.00	0.00	0.00	0.00	2.50
A	3,513	0.03	6.32	90.38	0.34	0.00	0.00	0.00	0.00	2.93
BBB	1,571	0.00	0.25	2.99	90.77	0.45	0.19	0.06	0.00	5.28
BB	46	0.00	0.00	4.35	2.17	84.78	4.35	0.00	0.00	4.35

**Table 26**

**USPF Static Pool One-Year Transition Matrices By Category  
(%)\* (cont.)**

From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
B	10	0.00	0.00	10.00	0.00	0.00	50.00	10.00	20.00	10.00
CCC/C	10	0.00	0.00	0.00	0.00	0.00	20.00	40.00	10.00	30.00
<b>Static pool: 1/1/2001</b>										
AAA	155	98.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29
AA	2,095	1.24	92.51	2.72	0.00	0.00	0.00	0.00	0.00	3.53
A	3,682	0.22	8.56	87.37	0.46	0.03	0.00	0.11	0.00	3.26
BBB	1,604	0.00	0.06	8.23	87.66	0.69	0.06	0.00	0.06	3.24
BB	49	0.00	0.00	0.00	4.08	85.71	2.04	2.04	0.00	6.12
B	14	0.00	0.00	0.00	0.00	0.00	71.43	14.29	0.00	14.29
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	50.00	33.33	16.67
<b>Static pool: 1/1/2002</b>										
AAA	204	99.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
AA	2,514	0.56	93.16	1.19	0.00	0.00	0.00	0.00	0.00	5.09
A	3,943	0.00	2.31	92.29	1.04	0.00	0.00	0.00	0.00	4.36
BBB	1,615	0.00	0.00	3.10	90.96	0.99	0.19	0.00	0.00	4.77
BB	54	0.00	0.00	1.85	9.26	83.33	1.85	0.00	1.85	1.85
B	12	0.00	0.00	0.00	0.00	0.00	83.33	0.00	0.00	16.67
CCC/C	10	0.00	0.00	0.00	0.00	0.00	40.00	50.00	0.00	10.00
<b>Static pool: 1/1/2003</b>										
AAA	223	98.21	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.90
AA	2,726	0.33	93.69	1.25	0.00	0.00	0.00	0.00	0.00	4.73
A	4,303	0.00	1.84	90.61	2.53	0.14	0.00	0.00	0.02	4.86
BBB	1,714	0.00	0.06	3.33	89.56	1.17	0.18	0.06	0.00	5.66
BB	63	0.00	0.00	0.00	7.94	79.37	11.11	0.00	0.00	1.59
B	18	0.00	0.00	0.00	0.00	11.11	88.89	0.00	0.00	0.00
CCC/C	5	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/2004</b>										
AAA	240	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	2,991	0.33	91.01	2.94	0.03	0.00	0.00	0.00	0.00	5.68
A	4,655	0.00	1.57	92.67	0.58	0.02	0.00	0.02	0.00	5.13
BBB	1,892	0.00	0.05	6.71	85.62	0.79	0.00	0.00	0.00	6.82
BB	81	0.00	0.00	1.23	12.35	75.31	2.47	0.00	0.00	8.64
B	27	0.00	0.00	0.00	3.70	3.70	66.67	0.00	0.00	25.93
CCC/C	6	0.00	0.00	0.00	0.00	0.00	16.67	33.33	50.00	0.00
<b>Static pool: 1/1/2005</b>										
AAA	260	97.31	1.15	0.00	0.00	0.00	0.00	0.38	0.00	1.15
AA	3,063	0.46	95.10	0.88	0.00	0.00	0.00	0.00	0.00	3.56
A	5,126	0.00	3.63	92.18	0.68	0.04	0.14	0.00	0.00	3.34

**Table 26**

<b>USPF Static Pool One-Year Transition Matrices By Category (%)* (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
BBB	1,816	0.00	0.00	3.85	89.37	0.83	0.44	0.06	0.00	5.45
BB	81	0.00	0.00	0.00	9.88	83.95	2.47	0.00	0.00	3.70
B	21	0.00	0.00	0.00	0.00	9.52	85.71	0.00	0.00	4.76
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	75.00	25.00	0.00
<b>Static pool: 1/1/2006</b>										
AAA	270	96.30	0.37	0.00	0.00	0.00	0.00	0.00	0.00	3.33
AA	3,352	1.76	94.27	0.54	0.03	0.00	0.00	0.00	0.00	3.40
A	5,366	0.07	2.76	93.01	0.43	0.00	0.00	0.00	0.00	3.73
BBB	1,854	0.00	0.00	4.48	90.94	0.65	0.00	0.00	0.00	3.94
BB	95	0.00	0.00	0.00	8.42	81.05	3.16	1.05	0.00	6.32
B	35	0.00	0.00	0.00	0.00	17.14	71.43	2.86	0.00	8.57
CCC/C	5	0.00	0.00	0.00	0.00	0.00	0.00	40.00	20.00	40.00
<b>Static pool: 1/1/2007</b>										
AAA	338	97.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07
AA	3,567	0.87	95.60	0.36	0.00	0.00	0.00	0.00	0.00	3.17
A	5,726	0.00	2.46	94.22	0.38	0.00	0.03	0.02	0.00	2.88
BBB	1,921	0.00	0.00	2.97	91.93	0.78	0.26	0.05	0.00	4.01
BB	100	0.00	0.00	0.00	9.00	80.00	2.00	0.00	0.00	9.00
B	29	0.00	0.00	0.00	3.45	17.24	65.52	6.90	0.00	6.90
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/2008</b>										
AAA	381	98.95	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.79
AA	3,810	2.83	93.10	0.26	0.00	0.00	0.05	0.00	0.03	3.73
A	6,008	0.03	8.62	88.48	0.40	0.00	0.05	0.02	0.02	2.38
BBB	2,015	0.00	0.30	14.14	81.74	0.60	0.05	0.00	0.05	3.13
BB	112	0.00	0.00	0.00	4.46	83.93	1.79	0.89	0.00	8.93
B	28	0.00	0.00	3.57	0.00	3.57	78.57	3.57	3.57	7.14
CCC/C	8	0.00	0.00	12.50	12.50	0.00	0.00	50.00	12.50	12.50
<b>Static pool: 1/1/2009</b>										
AAA	520	95.96	0.38	0.00	0.00	0.00	0.00	0.00	0.00	3.65
AA	4,570	1.58	92.91	1.40	0.00	0.00	0.00	0.00	0.00	4.11
A	6,337	0.00	8.08	89.13	0.60	0.05	0.00	0.00	0.00	2.15
BBB	1,790	0.00	0.61	25.03	70.22	1.45	0.00	0.00	0.00	2.68
BB	110	0.00	0.00	0.00	6.36	79.09	2.73	0.00	0.00	11.82
B	30	0.00	3.33	0.00	6.67	6.67	56.67	13.33	0.00	13.33
CCC/C	7	0.00	0.00	0.00	0.00	0.00	0.00	71.43	0.00	28.57
<b>Static pool: 1/1/2010</b>										
AAA	614	95.44	1.14	0.16	0.00	0.00	0.00	0.00	0.00	3.26

**Table 26**

<b>USPF Static Pool One-Year Transition Matrices By Category (%)* (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
AA	5,739	0.84	90.38	1.12	0.02	0.00	0.03	0.00	0.00	7.61
A	7,417	0.00	6.01	86.95	1.12	0.08	0.00	0.01	0.00	5.82
BBB	1,403	0.00	0.29	19.10	72.84	1.00	0.29	0.29	0.00	6.20
BB	120	0.00	0.00	0.00	8.33	79.17	0.83	2.50	0.83	8.33
B	20	0.00	0.00	0.00	5.00	0.00	80.00	5.00	0.00	10.00
CCC/C	9	0.00	0.00	0.00	0.00	0.00	0.00	66.67	22.22	11.11
<b>Static pool: 1/1/2011</b>										
AAA	657	94.52	2.59	0.00	0.00	0.00	0.00	0.00	0.00	2.89
AA	6,548	0.35	93.19	2.73	0.02	0.02	0.00	0.00	0.00	3.70
A	8,168	0.00	2.09	94.12	1.27	0.09	0.04	0.02	0.02	2.34
BBB	1,290	0.00	0.00	5.74	87.83	1.78	0.31	0.31	0.00	4.03
BB	123	0.00	0.00	0.00	7.32	76.42	3.25	2.44	0.00	10.57
B	24	0.00	0.00	0.00	0.00	4.17	62.50	16.67	0.00	16.67
CCC/C	15	0.00	0.00	0.00	0.00	0.00	6.67	53.33	20.00	20.00
<b>Static pool: 1/1/2012</b>										
AAA	652	96.78	1.53	0.00	0.00	0.00	0.00	0.00	0.00	1.69
AA	6,695	0.30	94.92	0.82	0.06	0.00	0.01	0.01	0.00	3.87
A	8,778	0.00	1.46	93.68	0.92	0.07	0.00	0.06	0.03	3.78
BBB	1,372	0.00	0.00	3.13	90.96	0.73	0.29	0.66	0.07	4.15
BB	134	0.00	0.00	0.00	2.24	76.12	11.19	2.99	0.00	7.46
B	27	0.00	0.00	0.00	7.41	0.00	70.37	14.81	0.00	7.41
CCC/C	22	0.00	0.00	9.09	0.00	4.55	13.64	36.36	31.82	4.55
<b>Static pool: 1/1/2013</b>										
AAA	668	95.96	2.10	0.00	0.00	0.00	0.00	0.00	0.00	1.95
AA	6,987	1.39	94.30	0.77	0.00	0.00	0.00	0.00	0.00	3.54
A	9,328	0.01	4.35	91.31	0.68	0.16	0.00	0.00	0.00	3.49
BBB	1,468	0.00	0.41	10.49	81.74	3.13	0.20	0.14	0.07	3.81
BB	137	0.00	0.00	2.92	2.92	81.02	5.84	0.00	0.00	7.30
B	42	0.00	2.38	0.00	4.76	2.38	61.90	7.14	14.29	7.14
CCC/C	31	0.00	0.00	0.00	0.00	0.00	0.00	41.94	25.81	32.26
<b>Static pool: 1/1/2014</b>										
AAA	757	95.77	0.53	0.00	0.00	0.00	0.00	0.00	0.00	3.70
AA	7,377	1.33	94.47	1.03	0.03	0.00	0.00	0.00	0.00	3.14
A	9,397	0.02	6.82	88.78	1.09	0.03	0.01	0.00	0.00	3.25
BBB	1,370	0.00	0.15	8.10	82.26	4.53	0.44	0.29	0.00	4.23
BB	196	0.00	0.00	0.00	7.65	80.10	3.06	0.00	1.53	7.65
B	38	0.00	0.00	0.00	2.63	10.53	71.05	10.53	2.63	2.63
CCC/C	18	0.00	0.00	0.00	0.00	5.56	16.67	50.00	22.22	5.56

**Table 26**

**USPF Static Pool One-Year Transition Matrices By Category (%)\* (cont.)**

From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Static pool: 1/1/2015</b>										
AAA	851	96.36	0.71	0.12	0.12	0.00	0.00	0.00	0.00	2.70
AA	8,051	0.35	94.49	0.88	0.02	0.00	0.00	0.00	0.00	4.26
A	9,197	0.00	2.03	92.93	0.46	0.02	0.01	0.00	0.00	4.54
BBB	1,335	0.00	0.15	7.79	84.04	1.87	0.22	0.30	0.07	5.54
BB	244	0.00	0.00	0.41	8.20	70.49	1.64	11.07	1.64	6.56
B	44	0.00	0.00	0.00	0.00	9.09	68.18	13.64	2.27	6.82
CCC/C	17	0.00	0.00	5.88	5.88	0.00	5.88	64.71	17.65	0.00

\*Excludes housing. Source: Global Fixed Income Research.

**Table 27**

**USPF Housing Static Pool One-Year Transition Matrices By Category (%)**

From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Static pool: 1/1/1986</b>										
AAA	866	91.92	1.96	0.23	0.12	0.00	0.00	0.00	0.00	5.77
AA	1,016	0.10	95.57	1.67	0.30	0.10	0.00	0.10	0.00	2.17
A	638	0.00	0.16	95.30	2.51	0.16	0.47	0.16	0.00	1.25
BBB	71	0.00	0.00	0.00	97.18	0.00	2.82	0.00	0.00	0.00
BB	1	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
B	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CCC/C	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Static pool: 1/1/1987</b>										
AAA	888	92.91	4.73	1.35	0.00	0.00	0.00	0.00	0.11	0.90
AA	1,057	0.19	95.08	3.41	0.09	0.09	0.00	0.00	0.00	1.14
A	658	0.30	0.00	94.68	0.30	1.67	0.00	0.00	0.00	3.04
BBB	92	0.00	1.09	9.78	84.78	0.00	0.00	1.09	0.00	3.26
BB	3	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
B	5	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
CCC/C	2	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/1988</b>										
AAA	910	96.81	0.55	0.77	0.00	0.11	0.00	0.00	0.00	1.76
AA	1,090	0.18	93.03	1.10	2.39	0.00	0.09	0.00	0.09	3.12
A	718	0.14	0.14	80.36	14.90	0.14	0.14	0.00	0.00	4.18
BBB	82	0.00	0.00	0.00	85.37	3.66	0.00	0.00	0.00	10.98
BB	19	0.00	0.00	0.00	0.00	89.47	0.00	10.53	0.00	0.00
B	5	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
CCC/C	3	0.00	0.00	0.00	0.00	0.00	0.00	33.33	0.00	66.67
<b>Static pool: 1/1/1989</b>										
AAA	1,005	85.07	0.10	0.00	0.00	0.00	0.00	0.00	0.00	14.83

**Table 27**

<b>USPF Housing Static Pool One-Year Transition Matrices By Category (%) (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
AA	1,105	0.36	83.80	1.09	0.18	0.09	0.00	0.00	0.00	14.48
A	637	0.00	0.94	81.63	1.26	0.63	0.00	0.00	0.00	15.54
BBB	207	0.00	0.00	1.93	74.40	9.18	0.97	0.48	0.00	13.04
BB	22	0.00	0.00	0.00	0.00	95.45	4.55	0.00	0.00	0.00
B	7	0.00	0.00	0.00	0.00	14.29	28.57	0.00	0.00	57.14
CCC/C	3	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/1990</b>										
AAA	968	89.36	1.55	0.83	0.00	1.45	0.00	0.00	0.00	6.82
AA	1,006	0.30	79.62	4.27	0.20	0.10	0.00	0.00	0.00	15.51
A	569	0.35	1.93	85.94	2.99	0.53	0.00	0.00	0.00	8.26
BBB	166	0.00	0.00	3.01	84.34	3.01	0.00	0.00	0.00	9.64
BB	46	0.00	0.00	0.00	0.00	91.30	2.17	4.35	0.00	2.17
B	5	0.00	20.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/1991</b>										
AAA	1,047	92.36	1.15	0.19	0.29	0.00	0.00	0.00	0.00	6.02
AA	934	0.32	61.99	14.45	0.43	0.00	0.00	0.00	0.00	22.81
A	623	0.00	0.48	75.44	1.77	0.00	0.00	0.00	0.00	22.31
BBB	165	0.00	0.00	1.21	76.36	10.30	1.82	0.00	0.00	10.30
BB	69	0.00	0.00	2.90	10.14	42.03	18.84	1.45	24.64	0.00
B	5	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	40.00
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	66.67	16.67	16.67
<b>Static pool: 1/1/1992</b>										
AAA	1,121	93.58	0.54	0.27	0.00	0.00	0.00	0.00	0.00	5.62
AA	690	0.14	81.01	4.06	0.00	0.00	0.00	0.14	0.00	14.64
A	744	0.27	4.17	84.27	1.34	0.00	0.00	0.27	0.00	9.68
BBB	156	0.00	0.00	5.13	76.28	3.85	0.00	0.00	0.00	14.74
BB	47	0.00	0.00	4.26	19.15	40.43	2.13	8.51	0.00	25.53
B	19	0.00	0.00	0.00	0.00	15.79	47.37	31.58	5.26	0.00
CCC/C	5	0.00	0.00	0.00	20.00	0.00	0.00	60.00	0.00	20.00
<b>Static pool: 1/1/1993</b>										
AAA	1,180	78.64	0.76	1.27	0.00	0.00	0.00	0.00	0.00	19.32
AA	660	0.45	82.42	5.30	0.61	0.00	0.00	0.00	0.00	11.21
A	727	0.41	1.79	85.69	0.96	0.00	0.00	0.00	0.00	11.14
BBB	148	0.00	2.03	9.46	73.65	1.35	0.00	0.00	0.00	13.51
BB	28	0.00	0.00	3.57	28.57	50.00	3.57	3.57	0.00	10.71
B	10	0.00	0.00	0.00	0.00	20.00	40.00	10.00	0.00	30.00
CCC/C	16	0.00	0.00	0.00	0.00	12.50	0.00	68.75	12.50	6.25



**Table 27**

USPF Housing Static Pool One-Year Transition Matrices By Category (%) (cont.)										
From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Static pool: 1/1/1994</b>										
AAA	1,075	93.30	0.09	0.74	0.00	0.00	0.00	0.00	0.00	5.86
AA	619	0.48	86.59	2.75	0.16	0.00	0.00	0.00	0.00	10.02
A	736	0.27	6.66	75.82	1.09	0.00	0.00	0.00	0.00	16.17
BBB	134	0.75	0.00	5.97	72.39	0.00	0.00	0.00	0.00	20.90
BB	20	0.00	0.00	0.00	10.00	75.00	0.00	5.00	0.00	10.00
B	6	0.00	0.00	0.00	0.00	0.00	66.67	33.33	0.00	0.00
CCC/C	14	0.00	0.00	0.00	0.00	0.00	0.00	57.14	7.14	35.71
<b>Static pool: 1/1/1995</b>										
AAA	1,215	79.42	0.41	0.41	0.00	0.00	0.00	0.00	0.00	19.75
AA	626	0.80	72.68	1.28	0.00	0.00	0.00	0.00	0.00	25.24
A	655	0.61	6.72	66.56	0.15	0.00	0.00	0.00	0.00	25.95
BBB	115	0.00	0.00	7.83	59.13	1.74	0.87	1.74	0.00	28.70
BB	15	0.00	0.00	0.00	20.00	33.33	0.00	0.00	0.00	46.67
B	4	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00	25.00
CCC/C	11	0.00	0.00	9.09	9.09	0.00	0.00	45.45	9.09	27.27
<b>Static pool: 1/1/1996</b>										
AAA	1,247	90.70	0.00	0.24	0.00	0.00	0.00	0.00	0.00	9.06
AA	554	0.90	86.46	0.36	0.18	0.00	0.00	0.00	0.00	12.09
A	504	0.60	1.98	78.57	0.20	0.40	0.00	0.00	0.00	18.25
BBB	85	0.00	0.00	12.94	64.71	0.00	0.00	0.00	0.00	22.35
BB	7	0.00	0.00	0.00	14.29	42.86	0.00	14.29	0.00	28.57
B	4	0.00	0.00	0.00	0.00	25.00	25.00	0.00	0.00	50.00
CCC/C	7	0.00	0.00	0.00	0.00	0.00	0.00	71.43	14.29	14.29
<b>Static pool: 1/1/1997</b>										
AAA	1,447	96.06	0.00	0.07	0.00	0.00	0.00	0.00	0.00	3.87
AA	541	7.76	73.75	0.55	0.00	0.00	0.00	0.00	0.00	17.93
A	464	0.86	3.23	76.94	0.00	0.00	0.00	0.00	0.00	18.97
BBB	70	0.00	1.43	2.86	82.86	0.00	0.00	0.00	0.00	12.86
BB	8	0.00	0.00	0.00	0.00	50.00	12.50	25.00	0.00	12.50
B	1	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	66.67	0.00	33.33
<b>Static pool: 1/1/1998</b>										
AAA	1,721	90.94	1.05	0.00	0.00	0.00	0.00	0.00	0.00	8.02
AA	468	0.85	91.03	0.43	0.00	0.00	0.00	0.00	0.00	7.69
A	396	0.25	4.04	74.24	2.02	0.00	0.00	0.00	0.00	19.44
BBB	62	0.00	0.00	0.00	74.19	1.61	0.00	0.00	0.00	24.19
BB	4	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00

**Table 27**

<b>USPF Housing Static Pool One-Year Transition Matrices By Category (%) (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
B	2	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	50.00	33.33	16.67
<b>Static pool: 1/1/1999</b>										
AAA	1,824	93.37	0.38	0.00	0.00	0.00	0.00	0.00	0.05	6.20
AA	528	1.70	89.58	0.57	0.00	0.00	0.00	0.00	0.00	8.14
A	337	0.30	4.45	81.31	2.37	0.00	0.30	0.00	0.00	11.28
BBB	60	1.67	1.67	0.00	83.33	8.33	0.00	0.00	0.00	5.00
BB	5	0.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00	20.00
B	1	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	50.00
<b>Static pool: 1/1/2000</b>										
AAA	1,999	96.85	0.20	0.10	0.00	0.00	0.00	0.00	0.00	2.85
AA	564	0.89	94.50	1.06	0.00	0.00	0.00	0.00	0.00	3.55
A	335	0.60	1.79	90.75	0.90	0.60	0.90	0.00	0.00	4.48
BBB	63	0.00	0.00	1.59	80.95	7.94	3.17	3.17	0.00	3.17
BB	10	0.00	0.00	0.00	0.00	80.00	0.00	20.00	0.00	0.00
B	2	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00
CCC/C	2	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
<b>Static pool: 1/1/2001</b>										
AAA	2,214	96.93	0.18	0.00	0.00	0.00	0.00	0.00	0.00	2.89
AA	606	2.64	92.41	0.83	0.00	0.00	0.00	0.00	0.00	4.13
A	348	2.59	6.03	82.76	1.44	0.29	0.00	0.00	0.00	6.90
BBB	57	0.00	0.00	5.26	84.21	3.51	0.00	0.00	0.00	7.02
BB	16	0.00	0.00	0.00	0.00	50.00	37.50	0.00	0.00	12.50
B	6	0.00	0.00	0.00	0.00	0.00	33.33	16.67	0.00	50.00
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	50.00	16.67	33.33
<b>Static pool: 1/1/2002</b>										
AAA	2,439	95.94	0.04	0.04	0.00	0.00	0.00	0.00	0.00	3.98
AA	655	0.92	89.31	1.22	0.00	0.00	0.00	0.00	0.00	8.55
A	332	0.60	0.60	90.06	1.51	1.20	0.60	0.30	0.30	4.82
BBB	55	0.00	0.00	0.00	78.18	9.09	0.00	3.64	1.82	7.27
BB	12	0.00	0.00	0.00	0.00	66.67	16.67	8.33	8.33	0.00
B	9	0.00	0.00	0.00	0.00	0.00	44.44	33.33	22.22	0.00
CCC/C	4	0.00	0.00	0.00	0.00	0.00	0.00	75.00	25.00	0.00
<b>Static pool: 1/1/2003</b>										
AAA	2,591	91.70	0.31	0.00	0.00	0.08	0.00	0.00	0.04	7.87
AA	664	0.60	91.57	1.05	0.00	0.00	0.00	0.00	0.00	6.78
A	373	1.07	2.41	79.89	2.95	3.49	0.00	0.00	0.00	10.19

**Table 27**

<b>USPF Housing Static Pool One-Year Transition Matrices By Category (%) (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
BBB	58	0.00	0.00	1.72	63.79	15.52	0.00	1.72	0.00	17.24
BB	19	0.00	0.00	0.00	0.00	47.37	21.05	5.26	0.00	26.32
B	8	0.00	0.00	0.00	0.00	0.00	37.50	25.00	0.00	37.50
CCC/C	11	0.00	0.00	0.00	0.00	0.00	0.00	45.45	36.36	18.18
<b>Static pool: 1/1/2004</b>										
AAA	2,586	91.18	0.12	0.00	0.00	0.00	0.00	0.00	0.00	8.70
AA	701	2.43	87.73	0.00	0.00	0.00	0.00	0.00	0.00	9.84
A	355	7.04	0.28	74.93	1.97	1.13	0.28	0.28	0.00	14.08
BBB	57	0.00	0.00	0.00	75.44	8.77	3.51	3.51	1.75	7.02
BB	33	3.03	0.00	0.00	0.00	54.55	12.12	6.06	3.03	21.21
B	7	0.00	0.00	0.00	0.00	0.00	71.43	14.29	0.00	14.29
CCC/C	10	0.00	0.00	0.00	0.00	0.00	0.00	40.00	20.00	40.00
<b>Static pool: 1/1/2005</b>										
AAA	2,533	84.09	3.87	0.00	0.00	0.04	0.00	0.00	0.00	12.00
AA	688	0.87	84.88	0.00	0.00	0.00	0.00	0.00	0.00	14.24
A	308	9.09	4.22	71.10	1.95	0.97	0.32	0.00	0.00	12.34
BBB	53	0.00	0.00	1.89	64.15	11.32	1.89	1.89	0.00	18.87
BB	28	0.00	0.00	0.00	0.00	64.29	17.86	7.14	0.00	10.71
B	12	0.00	0.00	0.00	0.00	0.00	58.33	25.00	8.33	8.33
CCC/C	10	0.00	0.00	0.00	0.00	0.00	0.00	40.00	50.00	10.00
<b>Static pool: 1/1/2006</b>										
AAA	2,303	90.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.73
AA	810	4.32	85.19	0.00	0.00	0.00	0.00	0.00	0.12	10.37
A	259	7.34	5.02	74.90	1.16	0.39	0.00	0.00	0.00	11.20
BBB	48	0.00	2.08	12.50	66.67	12.50	0.00	0.00	0.00	6.25
BB	28	0.00	0.00	0.00	3.57	50.00	28.57	3.57	0.00	14.29
B	14	0.00	0.00	0.00	0.00	0.00	71.43	21.43	0.00	7.14
CCC/C	10	0.00	0.00	0.00	0.00	0.00	0.00	70.00	20.00	10.00
<b>Static pool: 1/1/2007</b>										
AAA	2,251	91.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.09
AA	794	1.76	89.55	0.00	0.00	0.13	0.00	0.25	0.00	8.31
A	223	2.24	0.45	84.75	0.00	0.45	0.45	0.90	0.45	10.31
BBB	39	0.00	0.00	7.69	74.36	0.00	0.00	2.56	0.00	15.38
BB	21	0.00	0.00	0.00	0.00	71.43	4.76	0.00	0.00	23.81
B	18	0.00	0.00	0.00	0.00	0.00	72.22	0.00	11.11	16.67
CCC/C	11	0.00	0.00	0.00	0.00	0.00	0.00	63.64	0.00	36.36
<b>Static pool: 1/1/2008</b>										
AAA	2,200	92.59	1.59	0.05	0.05	0.00	0.00	0.00	0.00	5.73

**Table 27**

<b>USPF Housing Static Pool One-Year Transition Matrices By Category (%) (cont.)</b>										
<b>From/to</b>	<b>Issuers</b>	<b>AAA</b>	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</b>	<b>CCC/C</b>	<b>D</b>	<b>NR</b>
AA	801	3.75	88.01	3.50	0.62	0.00	0.00	0.00	0.00	4.12
A	212	1.42	1.42	90.57	0.47	2.36	0.00	0.00	0.00	3.77
BBB	33	0.00	0.00	6.06	84.85	0.00	3.03	3.03	0.00	3.03
BB	17	0.00	0.00	5.88	5.88	64.71	5.88	5.88	0.00	11.76
B	15	0.00	0.00	0.00	0.00	0.00	93.33	6.67	0.00	0.00
CCC/C	12	0.00	0.00	0.00	0.00	0.00	0.00	66.67	8.33	25.00
<b>Static pool: 1/1/2009</b>										
AAA	2,173	87.67	5.43	0.09	0.09	0.28	0.00	0.23	0.00	6.21
AA	848	1.30	82.08	1.77	0.35	0.83	0.00	0.35	0.00	13.33
A	242	4.55	0.00	78.51	6.61	1.24	0.00	0.00	0.00	9.09
BBB	36	0.00	0.00	8.33	63.89	8.33	5.56	2.78	0.00	11.11
BB	16	0.00	6.25	0.00	6.25	37.50	12.50	0.00	0.00	37.50
B	16	0.00	0.00	0.00	0.00	0.00	56.25	0.00	0.00	43.75
CCC/C	11	0.00	0.00	0.00	9.09	0.00	0.00	18.18	27.27	45.45
<b>Static pool: 1/1/2010</b>										
AAA	2,000	70.90	3.45	1.30	0.20	1.45	0.45	0.15	0.00	22.10
AA	866	0.23	82.56	4.50	0.00	0.00	0.00	0.00	0.00	12.70
A	231	2.60	0.43	80.09	1.30	1.73	0.00	0.43	0.00	13.42
BBB	47	0.00	0.00	12.77	46.81	34.04	0.00	0.00	0.00	6.38
BB	25	0.00	0.00	0.00	0.00	60.00	12.00	0.00	0.00	28.00
B	13	0.00	0.00	0.00	0.00	0.00	69.23	7.69	0.00	23.08
CCC/C	11	9.09	0.00	0.00	0.00	0.00	0.00	27.27	0.00	63.64
<b>Static pool: 1/1/2011</b>										
AAA	1,521	12.23	78.57	0.00	0.00	0.00	0.00	0.00	0.00	9.20
AA	827	0.48	85.37	1.21	0.00	0.00	0.00	0.00	0.00	12.94
A	292	0.00	5.14	80.82	8.22	0.00	0.00	0.00	0.00	5.82
BBB	34	0.00	2.94	0.00	88.24	2.94	2.94	0.00	0.00	2.94
BB	66	0.00	9.09	0.00	1.52	56.06	24.24	0.00	0.00	9.09
B	21	0.00	19.05	0.00	0.00	0.00	76.19	0.00	0.00	4.76
CCC/C	8	0.00	12.50	0.00	0.00	0.00	0.00	37.50	12.50	37.50
<b>Static pool: 1/1/2012</b>										
AAA	202	77.72	6.44	0.00	0.00	0.00	0.00	0.00	0.00	15.84
AA	2,032	0.00	87.89	0.69	0.00	0.15	0.10	0.05	0.00	11.12
A	270	0.00	2.59	81.48	0.37	0.74	0.00	0.00	0.00	14.81
BBB	62	0.00	1.61	3.23	88.71	1.61	1.61	0.00	0.00	3.23
BB	39	0.00	0.00	2.56	2.56	79.49	0.00	2.56	0.00	12.82
B	33	0.00	3.03	0.00	0.00	0.00	60.61	9.09	0.00	27.27
CCC/C	3	0.00	0.00	0.00	0.00	0.00	0.00	66.67	0.00	33.33

**Table 27**

**USPF Housing Static Pool One-Year Transition Matrices By Category (%) (cont.)**

From/to	Issuers	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
<b>Static pool: 1/1/2013</b>										
AAA	169	94.08	0.59	0.00	0.00	0.00	0.00	0.00	0.00	5.33
AA	1,907	0.00	89.09	0.84	0.00	0.05	0.00	0.05	0.00	9.96
A	280	0.00	8.21	75.36	1.07	0.71	0.00	0.00	0.00	14.64
BBB	63	0.00	0.00	38.10	49.21	3.17	0.00	0.00	0.00	9.52
BB	37	0.00	2.70	0.00	2.70	67.57	0.00	5.41	0.00	21.62
B	23	0.00	4.35	4.35	0.00	8.70	65.22	8.70	4.35	4.35
CCC/C	7	0.00	14.29	0.00	0.00	0.00	0.00	85.71	0.00	0.00
<b>Static pool: 1/1/2014</b>										
AAA	184	86.96	1.63	0.00	0.00	0.00	0.00	0.00	0.00	11.41
AA	1,776	0.00	92.62	0.51	0.00	0.00	0.00	0.00	0.00	6.87
A	271	0.00	5.90	81.92	3.32	0.00	0.00	0.00	0.00	8.86
BBB	39	0.00	0.00	35.90	51.28	5.13	0.00	0.00	0.00	7.69
BB	32	0.00	0.00	0.00	12.50	62.50	12.50	0.00	0.00	12.50
B	15	0.00	0.00	0.00	0.00	6.67	66.67	6.67	0.00	20.00
CCC/C	11	0.00	0.00	0.00	0.00	9.09	0.00	45.45	0.00	45.45
<b>Static pool: 1/1/2015</b>										
AAA	171	87.13	0.58	0.00	0.00	0.00	0.00	0.00	0.00	12.28
AA	1,703	0.00	91.78	0.12	0.00	0.06	0.00	0.00	0.06	7.99
A	264	0.00	10.23	72.35	0.00	0.00	0.00	0.00	0.00	17.42
BBB	40	0.00	0.00	7.50	90.00	0.00	0.00	0.00	0.00	2.50
BB	25	0.00	0.00	0.00	4.00	64.00	4.00	0.00	0.00	28.00
B	15	0.00	0.00	0.00	0.00	6.67	80.00	0.00	0.00	13.33
CCC/C	6	0.00	0.00	0.00	0.00	0.00	0.00	50.00	33.33	16.67

Source: Global Fixed Income Research.

## Related Research

- Is The U.S. Economy Ready To Roll Up Around The Bend?, March 31, 2016
- U.S. Public Finance Records Nearly Twice As Many Upgrades As Downgrades In 2015, Feb. 16, 2016
- Recessions Don't Hinder U.S. Public Finance Ratings In The Long Run, July 30, 2015

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