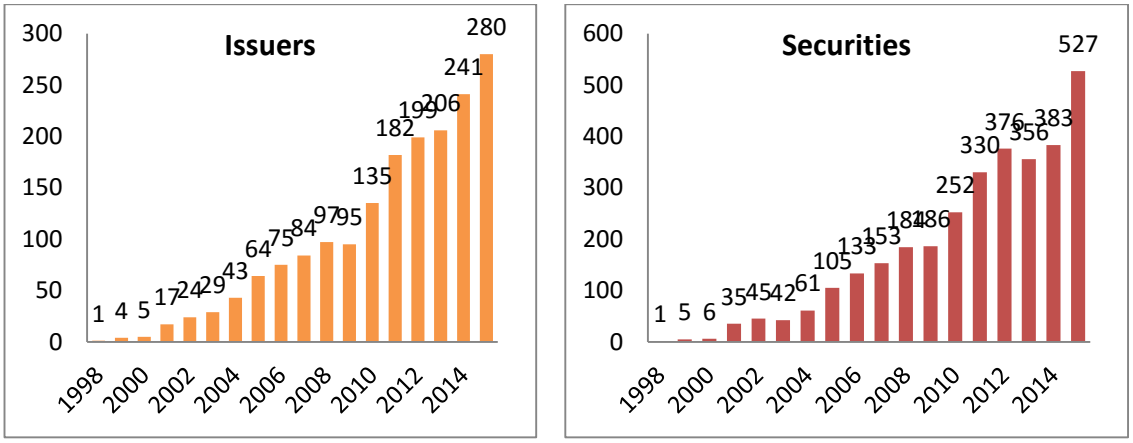
# PCR: Credit Transition Matrices – December 2015

Credit transition matrices (also referred to as "credit migration matrices") are a key tool for the analysis of credit risk. In the regulatory field, the new Basel agreement requires capital estimations in accordance with rating migration behavior. Concerning investments, these matrices enable the comparison and forecast of the level of exposure to losses caused by default and devaluation due to credit spread movements. Consequently, they are cardinal inputs for financial applications such as portfolio risk management or the valuation of bonds and derivatives.

Pacific Credit Rating (PCR) prepares periodically the credit transition matrix using ratings assigned by all subsidiaries and strategic partners[1]. The matrices[2] were made with a total data of 1,781 issuers, from which 280 were rated in 2015, 39 more than the year before. Additionally, 527 securities were classified in 2015 and 383 in 2014 (this represents an average 1.88 securities per issuer in 2015).




Source: PCR

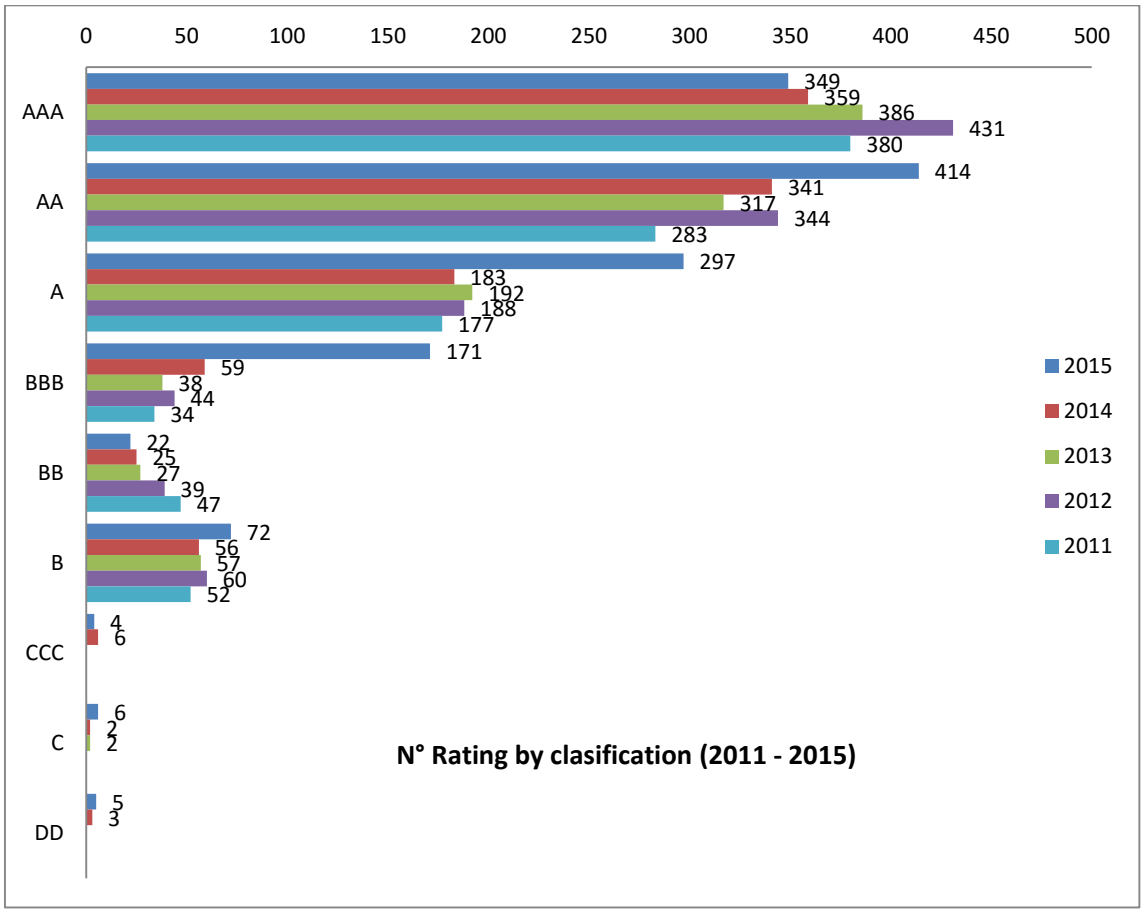
The following summary will show the main findings of the assessment and analysis made with the credit transition matrices worked.

Year 2015 was characterized by a slowdown economic activity in countries where PCR has offices, mainly in Latin America and Caribbean. These economies not only had a weak growth, they also see a period of price for metals sharp decreasing, heavy

[1] Pacific Credit Rating (PCR) has subsidiaries in Bolivia, Peru, Ecuador, Panama, Costa Rica, Nicaragua, Honduras, El Salvador, Guatemala y Mexico as a strategic partner.
[2] For further information about methodology used consult annex 2.

currency depreciations and a second half price rises accelerated[3].

In this scenario, companies rated by PCR have reached desirable ratings[4]. In 2015 79% of PCR customers securities were rated A, inclusively. However, this performance has been weaker than that of 2014 with 85%. Furthermore, during the last whole year, PCR rated on default (DD) 2 companies, more than unique default firm of the previous year. On the immediately following ratings (C and CC) there were 5 firms, slightly different from the 2 found in 2014 (See the following table).




Source: PCR

In regard to the ratio of downgrades to upgrades that shows rating improvement and deteriorations, it was highlighted that 2.8% of ratings were downgrades during 2015, a bigger portion than 2014 (2.4%). On the other hand, the upgrades represent 0.11% and

[3] In the cases of Central America, Mexico and the English- and Dutch-speaking Caribbean, the trend of slowing inflation since 2013 became more pronounced in 2015. Conversely, in the South American economies inflation has continued to gather pace, so that the cumulative figure for the 12 months to October rose from 7.6% in 2014 to 8.5% in 2015 in accordance with the Economic Commission for Latin America and the Caribbean (ECLAC), Preliminary Overview of the Economies of Latin America and the Caribbean, 2015, (LC/G.2655-P), Santiago, Chile, 2015.

[4] See annex 1

1.09% on 2014 and 2015, respectively.

Then, if we take in count transitions for the whole period of information under analysis (1998 – 2015) and compare with the information until 2014, it is seem that 0.92% of ratings were downgrades until 2015, a small extent compared to the 0.71% until 2014. On the contrary, upgrades were hardly smaller with 0.91% and 1.03% until 2015 and 2014, respectively.

In order to have a reference, during the closer years of real state financial crisis of United States (2007 and 2009) the ratio of downgrades were duplicated (from 9.3 in 2007 to 19.18 in 2009)[5] and the upgrades fall significantly on a third (from 13.47 in 2007 to 4.81 in 2009).

On the following tables are shown credit transition matrices of 2014 and 2015. From these tables is important to mention that the probability of remaining on the higher rating (AAA) is of 90%, slightly less in comparison to 2014 (92%). In the case of the ratings AA, beside the chances for keeping in this category is significantly higher, it is less likely that the company gets a better rating and more plausible to downstairs. There is a similar situation on other classifications like A and BBB. Low-quality ratings sustain high probability of remaining the same performance.

Overall, it is relevant to remark that companies rated by PCR keep on credit quality stable for the year 2015 beside that the transition matrices analysis shows that chances to raise ratings are lower and long opportunities to downgrades.

PCR will stay watching closely credit risk by the study of credit migration matrices.

[5] This information were found on the Standar & Poors report "Default, Transition, and Recovery: 2014 Annual Global Corporate Default Study and Rating Transitions".

## Credit Transition Matrix[6] (For year 2015)

| | Notch T+1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Notch T** | **AAA** | **AA** | **A** | **BBB** | **BB** | **B** | **CCC** | **C** | **DD** | **Total** |
| AAA | 90.45% | 7.61% | 1.88% | | | | | | | 100% |
| AA | | 88.82% | 9.70% | | | | | 1.40% | | 100% |
| A | | | 97.93% | | | 1.95% | | | | 100% |
| BBB | | | 0.65% | 88.53% | 5.04% | 4.23% | 0.65% | 0.78% | 0.12% | 100% |
| BB | | | 17.60% | | 28.92% | 16.64% | 17.77% | 18.42% | 0.65% | 100% |
| B | | | | | | 84.93% | | 7.53% | 7.53% | 100% |
| CCC | | | | | | | 100.00% | | | 100% |
| C | | | | | | | | 100.00% | | 100% |
| DD | | | | | | | | | 100.00% | 100% |

Source: PCR

[6] La matriz de transición fue trabajada con el método de cohortes y consideró transiciones trimestrales. Para anualizar la matriz se elevó a la cuarta.

## Credit Transition Matrix (For year 2014)

| | Notch T+1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Notch T** | **AAA** | **AA** | **A** | **BBB** | **BB** | **B** | **CCC** | **C** | **DD** | **Total** |
| AAA | 92.25% | 6.26% | 0.26% | | | | | 1.13% | | 100% |
| AA | 6.02% | 80.77% | 9.16% | | | | 2.49% | | 1.24% | 100% |
| A | 0.30% | 11.11% | 81.14% | 2.42% | 2.27% | 2.57% | 0.12% | | | 100% |
| BBB | | | | 100.00% | | | | | | 100% |
| BB | | | | | 84.35% | 15.65% | | | | 100% |
| B | | | | | | 100.00% | | | | 100% |
| CCC | | | | | | | 100.00% | | | 100% |
| C | | | | | | | | 100.00% | | 100% |
| DD | | | | | | | | | 100.00% | 100% |

Source: PCR

**Bibliography y References**


- PCR: Credit Transition Matrices – December 2014
- Standar & Poors: Default, Transition, and Recovery: 2014 Annual Global Corporate Default Study And Rating Transitions
- Scotiabank: Latin America Regional Outlook Winter 2016
- Economic Commission for Latin America and the Caribbean (ECLAC), Preliminary Overview of the Economies of Latin America and the Caribbean, 2015, (LC/G.2655-P), Santiago, Chile, 2015.
- PCR Transition rating matrix (cohort method) model - excel
- RISKO http://www.risk-o.com/

**Annex 1: Rating scales**

As part of the process, we identified the following nine specific rating scales employed by PCR. It should be noted that as part of the PCR methodology, some ratings can be qualified (accompanied by signs "+" or "-"). Also, each scale contains a notch corresponding to Not-Rated ("NR").

**Table 2: Specific rating scales assumed for the analysis**

| N° | Scale | Notches | Code |
|---|---|---|---|
| 1 | Short-term debt issues | 8 | CP |
| 2 | Short-term deposits at financial system entities | 6 | CPF |
| 3 | Medium and long term deposits at financial system entities | 19 | DSF |
| 4 | Medium- and long-term debt issues and preferred shares | 20 | LP |
| 5 | Common shares | 6 | AC |
| 6 | Mutual funds | 18 | FM |
| 7 | Insurance companies debt (CPA) | 19 | CPA |
| 8 | Financial Strength of Banks and insurance companies | 23 | FF |
| 9 | Securitizations | 22 | TI |

Source: PCR

An exercise of unification of the ratings scales between countries was conducted, so that the statistics could be compatible and integrated into the desired transition matrices.

The qualified notches used on each scale are presented below.

- Short-term debt issues: 1+; 1; 1-; 2; 3; 4; 5; NR
- Short-term deposits at financial system entities: I; II; III; IV; V; NR
- Medium and long term deposits at financial system entities: AAA; AA+; AA; AA-; A+; A; A-; BBB+; BBB; BBB-; BB+; BB; BB-; B+; B; B-; CCC; DD; NR

- Medium- and long-term debt issues and preferred shares: AAA; AA+; AA; AA-; A+; A; A-; BBB+; BBB; BBB-; BB+; BB; BB-; B+; B; B-; CCC; DD; D; NR
- Common shares: N1; N2; N3; N4; N5; NR
- Mutual funds: AAAf; AAf+; AAf; AAf-; Af+; Af; Af-; BBBf+; BBBf; BBBf-; BBf+; BBf; BBf-; Bf+; Bf; Bf-; CCCf; NR
- Insurance companies debt (CPA): AAA; AA+; AA; AA-; A+; A; A-; BBB+; BBB; BBB-; BB+; BB; BB-; B+; B; B-; CCC; DD; NR
- Financial Strength of Banks and insurance companies: AAA; AA+; AA; AA-; A+; A; A-; BBB+; BBB; BBB-; BB+; BB; BB-; B+; B; B-; CCC; C+; C; DD; D; E; NR
- Securitizations: AAA; AA+; AA; AA-; A+; A; A-; BBB+; BBB; BBB-; BB+; BB; BB-; B+; B; B-; CCC; C+; C; DD; D; NR

**Rating scale and specific matrices assumed for the analysis**

The following unified scale was finally used for transition matrix: AAA, AA, A, BBB, BB, B, CCC, C, DD and NR.

Five specific transition matrices were produced for the following types of issuers or securities:

1. Debt Issues of medium and long term debt and Preferred Stock
2. Financial Institutions
3. Insurance Companies
4. Issues of Government Entities
5. Asset Backed Securities

**Annex 2: Other assumptions and methodological aspects**

**a) The treatment of the Default case (D) and the Not-Rated case (NR)**

In all of the ratings scales, there are two special categories: the "D" rating, which stands for the default condition and the "NR" rating, standing for "not rated". The final form of the matrix depends on the ways in which these categories are processed as part of the analysis.

The "D" category will be treated like any other notch on credit ratings scale. This is an informational value, because it allows the identification of the proportion of securities or companies that migrated to the default condition. However, the "NR" value is often considered in the literature as a non-informative condition, since it is not possible to know with certainty what is the source or reason for the ratings moving to this category.

The two practical approaches to deal with the case of "NR" are as follows:

- To exclude the "NR" category. This requires distributing the probabilities from the "NR" column in the matrix between all elements of each row in proportion to their values. This is achieved by progressively eliminating the companies in the sample whose ratings are entering this category. Although, such a procedure effectively removes the "NR" column from the matrix, it affects the value of the rest of the probabilities.
- To include the "NR" category. This method maintains and presents information about the proportion of cases that migrated to condition "NR", so that they may be subject to further analysis and keep untouched the rest of the values in the matrix.

We will adopt both approaches separately in the following analysis.

**b) Point estimate (point-in-time) versus estimation through the cycle (through-the-cycle)**

In the estimation of a transition matrix, one can usually distinguish two kinds of procedures according to the size of the data sample used.

If the sample only corresponds to the most recent observations then it is categorized as a point estimate (point-in-time). This kind of statistical measure is not affected by prior events, but is strongly affected by the short-term trends. In other words, does not allow for capturing of the value of medium term trends of transition probabilities. If the estimation is done with a wide sample, covering a series of stages of the economic cycle, it qualifies as an estimate done through the cycle (through-the-cycle).

Four different samples will be used as part of this project, one point-in-time and three through-the-cycles:

- Two one-year samples (2014 and 2013)
- A three-years sample ending in 2014 (2012-2014)
- A ten-years sample ending in 2014 (2005-2014)
- The whole database sample (spanning 17 years from 1998 to 2014)

### c) Ratings mapping for the Financial Strength of Banks and Insurance Companies in Peru

The following mapping procedure was used for the historical ratings of the financial strength of banks and insurance companies in Peru.

**Table 3: Ratings Mapping**

**Financial Strength Of Banks And Insurance Companies In Peru**

| N° | Original rating | Equivalent rating |
|---|---|---|
| 1 | A+ | AAA |
| 2 | A | AA |
| 3 | A- | A |
| 4 | B | BBB |
| 5 | C | BB |
| 6 | D | B |
| 7 | E | C |
| 8 | E | D |

| | | |
|---|---|---|
| 9 | E | E |

Source: PCR

### d) Other assumptions and adjustments

In addition to the aforementioned procedures, the following assumptions and adjustments were adopted:

1. Country prefixes were removed from ratings.
2. Rating outlooks were not taken into account.
3. For those rating dates which were given as intervals (e.g. "first half of 2001"), the median date for the time interval was assumed.
4. Rating cancellation dates posterior to the maturity of the security were adjusted.

For securities which had an ending date ("termination of classification"), it was assumed that a transition to the "NR" rating occurred on that date.