# Credit risk management at retail in Mexico: An econometric improvement in the selection of variables and changes in their characteristics

## Administración del riesgo crediticio al menudeo en México: una mejora econométrica en la selección de variables y cambios en sus características

José Carlos Trejo-García *, Miguel Ángel Martínez-García, Francisco Venegas-Martínez

*Instituto Politécnico Nacional, SEPI ESE IPN, Mexico*

## Abstract

The early prediction of bad debtors for revolving credits in Mexico is a relevant issue today. The credit behavior econometric model proposed considers the changes in the characteristics of the consolidated accredited and provides better results than those obtained with the methodology utilized by the CNBV on provision matters. The results obtained show that the possibility of replacing the current model, minimizing the expected loss and increasing the ROA per financial institution at a national level by 2.20%, complies with the methodological criteria and the statistical tests in accordance with the Compiled Banking Regulation and Basel II guidelines on credit risk issues.
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* Corresponding author.
  *E-mail address:* jtrejog@ipn.mx (J.C. Trejo-García).
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**Resumen**

La predicción temprana de malos deudores para créditos rotatorios en México es un asunto de relevancia actual. El modelo econométrico propuesto de comportamiento crediticio considera los cambios en las características de los acreditados consolidados y proporciona mejores resultados que los obtenidos con la metodología utilizada por la CNBV en materia de provisiones. Los resultados obtenidos muestran que la posibilidad de reemplazar el modelo vigente, minimizando la pérdida esperada y aumentando el ROA por entidad financiera a nivel nacional en un 2.20%, cumple con los criterios metodológicos y pruebas estadísticas de acuerdo a la Circular Única de Bancos y lineamientos de Basilea II en materia de riesgo crediticio.
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*Palabras clave:* Banca; Crédito; Modelos econométricos; Metodología de estimación de datos; Técnicas de optimización.

## Introduction

Credit risk management has been one of the areas with greater growth in recent decades. The scoring techniques most used for credit risk management have been Credit Scoring and Behavioral Scoring, as well as various tools for the estimation of financial risk in relation to loans or financing to the retail market. In the Mexican consumer credit market, the classification divides in three types of pools: revolving credits, personal credits, and mortgages.[1]

All the credit applicants, as well as the consolidated clients of financial institutions in Mexico, have a score both in the credit request and in the behavior of the credit's life. There are two important objectives in the credit scoring techniques: the need to identify the consumer credit risk, and to minimize the percentage of defaulting clients. Using the latter, the banking or credit institutions optimize their pools for a good and better business.

Therefore, it is required to develop new models based on the historical information of the clients that allow the generation of decision models in the granting of credits, and consider the behavior of the consolidated clients (Mays, 2004).

According to the information – at the close of June 2014, by the National Banking and Securities Commission (*Comisión Nacional Bancaria y de Valores* – CNBV)[2] – one of the main credit instruments in Mexico are credit cards, given that there are approximately 23 million cards authorized by 24 recognized financial institutions.

This research develops a credit scoring technique that takes into consideration both domestic and international regulations. Furthermore, the proposed model is optimal in the sense that it minimizes the expected loss in the credit card sector, with positive repercussions in determining

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[1]  Second Title Prudential Regulations, Chapter V Credit Pool Qualification; documented in the General Provisions Applicable to Credit Institutions, or commonly known as the Compiled Banking Regulation issued by the National Banking and Securities Commission, published in the Official Journal on December 02, 2005, with a most recent modification on July 31, 2014.

[2]  Statistics Information Section of the Universal Bank Supervised Sector, with data to the closing close of the month of July, 2014, for Credit Card Consumer Credit http://www.cnbv.gob.mx/SECTORES-SUPERVISADOS/BANCA-MULTIPLE/Paginas/Información-Estadística.aspx.