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Expected Loss Models for Estimating Loan Portfolio Impairment

By Raúl Real

1. Introduction

The Global Financial Crisis (GFC) revealed the limitations of using accounting models based on an incurred loss model by banks for recognizing losses in loan portfolios. Summed up in the phrase “too little, too late,” the recognition of credit losses before and during the GFC was generally lower and less timely than it should have been, a situation related to banks’ excessive risk-taking. After the GFC and following a G20 mandate, the international accounting standard setters (IASB, FASB [1]) shifted their loss recognition approach from an Incurred Credit Loss (ICL) approach to a prospective, Expected Credit Loss (ECL) approach. They expected that the more timely and complete recognition of losses would benefit financial stability.

While most regional banking supervisors currently maintain an accounting (and prudential) approach of loss recognition based on ICL, several authorities have been interested in exploring the future implementation of ECL models.

Recognizing this issue’s importance in banking supervisors’ role and financial stability, the Center has incorporated this issue into its lines of work. In October 2022, a face-to-face “credit risk management” workshop was organized in Antigua Guatemala. An overview of these models and the challenges for their supervision, among other topics, was provided.

Also, at the request of some authorities, CAPTAC-DR has continued to offer bilateral technical assistance by building capacities and collaborating with the design of roadmaps for their potential gradual implementation, cautiously considering the different elements that a strategic decision of this nature entails.

This article briefly delves into the main challenges that using ECL models implies for banking supervisors.

2. The Expected Loss Models

The accounting approach to credit losses is critical for banks, given the volume of credit risk they manage and its direct impact on results and capital adequacy. Under an ICL model, only accounting losses are recognized in the event of an incurred default. At the same time, an ECL approach seeks to anticipate the recognition of losses that will occur when banks have a reasonable degree of certainty to estimate their occurrence.

In this way, the expected loss can be associated with the product of three components:

1. The probability of default, or *PD*.
2. The loss given the default, or *LGD*.
3. Exposure at default, or *EAD*.

$$\text{Expected Loss} = PD \times LGD \times EAD$$

[1] IASB: International Accounting Standard Board, FASB: Financial Accounting Standard Board.

These parameters are random variables estimated based on historical data, considering the portfolio characteristics and the prospects for collecting the stipulated cash flows. Thus, ECL models are theoretical constructions to estimate the distribution of the probability of loss for loans. The estimation of these parameters includes challenges for the entities and supervisors.

The concept of default should be defined to determine the PD. Although in practice, it is usually associated with the concept of delinquency (in general, more than ninety days past due), it also refers to qualitative events (e.g., bankruptcy situations, debt restructurings, moratoriums, credit rating reductions) or the deterioration of the debtor's financial health. Without historical data to estimate the PD, the entity can resort to internal ratings by building homogeneous groups of debtors based on a priori judgments to assess their ability to pay using transition matrices or market variables (if any). However, the relationship of PD with these variables is not always direct.

The main difficulty in estimating LGD lies in the entities' lack of adequate data and the complex recovery processes of problematic loans. Their cash flows are usually recorded in different years and for different concepts, where other variables of legal or political nature are also involved.

Finally, estimating the EAD can be complicated for some loans where it is uncertain when default will occur. Therefore, the estimates of the parameters and the models should withstand a minimum contrast, and the entities should provide robust data and systems. Likewise, they must have trained and specialized personnel to make these estimates. Despite these difficulties, the effort in building ECL models is useful and provides qualitative information relevant to the behavior of borrowers, mainly in terms of retail credit.

From the importance of loss determination through ECL models and its construction challenges, it is clear that banking supervisors have a key role in authorizing its use by supervised entities. In this regard, the Basel Committee of Banking Supervisors (BCBS) has issued guidelines for supervisors on credit risk and using ECL models. The BCBS sets out the responsibilities of the board and senior management of banks in model governance, the need to adopt sound methodologies for estimates, and the need to establish policies and procedures for assessing and calculating the resulting credit losses. Lastly, it is established that supervisors should continue to evaluate banks' credit risk management practices and ensure that the methods employed by banks allow for adequately calculating expected losses and capital adequacy.

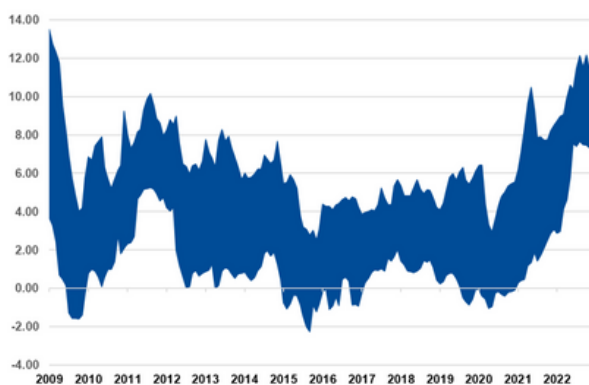
Forecasting and Policy Analysis Systems (FPAS)

By Daniela Gallardo

1. Introduction

Currently, central banks worldwide have faced inflation readings not seen in many years; in the CAPDR region, headline inflation readings have recorded levels not seen since 2009 (Figure 1). Inflation, defined by Milton Friedman [2] as “a tax without legislation,” affects lower-income families in higher proportions. Central banks have price stability among their main policy objectives. Many even commit to achieving a quantitative inflation target announced for the medium and long term.

Figure 1. General Inflation. Range CAPRD Region - Annual variation of the General Price Index



Source: Prepared with data from the Central Bank of Costa Rica, the Central Reserve Bank of El Salvador, the Central Bank of Guatemala, the Central Bank of Honduras, and the Central Bank of the Dominican Republic.

To fulfill their price stability mandate, central banks make monetary policy decisions subject to uncertain scenarios about the current and future state of the economy. At the same time, the decision they make for the interest rate and which they consider the most appropriate to achieve their objectives efficiently, interacts with and affects the outlook for the economy.

Any central bank or organization that formulates economic policies based on forecasts for decision-making has a system for compiling and processing information. Still, the details of its components and structure may differ from one organization to another. The Forecasting Policy and Analysis System (FPAS) is a formal system of tools and processes designed to support forward-looking monetary policymaking based on economic data and analysis.

What is now known as “FPAS” originated in the pioneering work of the early inflation targeting (IT) central banks in the second half of the 1990s to develop procedures and tools to provide a more rigorous analytical basis for interest rate adjustments. It is a coherent and well-organized framework for collecting, processing, and analyzing economic data and information with a special emphasis on providing analysis and recommendations to policymakers to support their monetary policy decisions.

A good forecasting model includes a good forecasting process, a practical use/handling of the model, and adequate data. Therefore, instead of checking how accurate the forecast was regarding a number, it considers whether they reflect the consistency of assumptions and the economy’s structure. The evaluation focuses on the process rather than the forecast.

[2] Friedman, M. (1974). In *Inflation: Causes, Consequences, Cures*. IEA Readings, no. 14 Institute of Economic Affairs.

The system of processes revolves around constructing a coherent economic history, considering the current state of the economy, the validity of external assumptions, the evaluation of shocks, and the specification of the model or models used. Throughout the forecasting process, the unity between inputs provided and the results for each variable should be verified. It involves several meetings by the technical team, consisting of different administrative areas and some with decision-makers.

Some teams make short-term forecasts, and others provide assumptions for exogenous variables such as the path of external interest rates, external growth, and international oil prices. For its part, the team of operators of macroeconomic models must know what is behind these expectations since the forecast of the economy is conditioned on external assumptions. Specifically, the evaluation of shocks is of utmost importance since the proposed monetary policy response will depend on it, considering the preference of the monetary policy maker.

There is a consensus on responding to the economy's demand shocks but not to supply shocks; some central banks prefer to respond to these shocks until inflation expectations are affected. At the same time, it is necessary to identify if these are transient or permanent. Depending on this characterization, it is how the model will be introduced, either following a moving average process in the first case or the autoregressive default in the second. Finally, suppose that anticipated shocks are presented to the model. In that case, the policy response will be more robust because the endogenous response of the interest rate is incorporated to bring inflation to its steady state. Therefore, communication between the different teams throughout the process is essential for the necessary feedback to achieve a single economic story.

Central banks can use micro-founded structural models that describe the economy's relationship and broad structure.

The semi-structural models collect the equations of the optimization problem and, through a linearization process, capture the exact relationship of the variables in a more flexible and easily communicated way. However, central banks using both types of models must use the same economic story to obtain consistent forecasts.

The FPAS facilitates collecting, processing, and analyzing financial information to provide inputs to policymakers to support their decisions.

The FPAS has contributed to modern central banking and helped central banks transition to a forward-looking, interest-rate-based monetary policy. Central banks in the CAPRD region have developed macroeconomic forecasting models to support their monetary policy decisions and provide authorities with scenarios for different shocks.

To meet the demand for technical assistance in macroeconomic models and FPAS, CAPTAC-DR incorporated this line of work into its portfolio for the fiscal year 2023. In February 2023, the Center organized a face-to-face workshop on the forecasting process, which was held in Antigua Guatemala, Guatemala. The workshop provided training on the type of meetings between the technical teams that should precede the execution of a canonical forecasting semi-structural model [3] and the primary analysis tools, such as filtering, impulse response functions, shock decomposition, and predictive evaluation. Additionally, CAPTAC-DR continues to provide bilateral technical assistance by building



Participants of the workshop "Regional Workshop on FPAS: Forecasting System and Policy Analysis." The workshop was attended by Alfredo Blanco, Vice President of the Central Bank of Guatemala, and Lisandro Ábrego, Director of CAPTAC-DR.

[3] J Gali & T Monacelli (2005). Monetary policy and exchange rate volatility in a small open economy. Oxford University Press, vol. 72

Summary of Capacity Development Activities

Tax Administration

- Technical assistance in risk management was provided to El Salvador, Nicaragua, and Honduras. In Honduras, emphasis was made on identifying risks for aggressive tax planning and high-net-worth individuals. Panama received assistance in strengthening audit procedures in selected economic sectors and international operations.
- Dominican Republic was assisted in compliance for filing and payment of taxes and the recovery of tax debts. In Costa Rica, progress of the Compliance Improvement Plan (CIP) 2022 was reviewed, and the 2023 was developed.
- A face-to-face workshop on strategic planning, and two virtual seminars on audit procedures, tax filing, payment, and collecting tax debts were organized.

Customs Administration

- Honduras, with the support of the Center, reviewed and updated its strategic planning, resulting in the preparation of a multi-year Customs Modernization Plan. Costa Rica conducted an evaluation of the results of the pilot plan implemented in 2022 for post-clearance auditing under a sectoral approach. In the case of Guatemala, the Customs Administration began work to modernize its processes in application of international best practices.
- A training event was held for customs auditors in collaboration with Spain's Customs Administration and the Inter-American Development Bank. The objective was to disseminate good practices applied by Spanish customs officials in the planning, preparation, and execution of audits, and to present IT systems for risk analysis and support for audits used in Spain.

Public Finance Management

- Costa Rica received two technical assistance sessions to introduce budgeting with a gender approach, formulating a methodological guide tested four pilot entities, and training staff in budgeting for gender-based programs. In the Dominican Republic, support was provided in the definition of general guidelines to improve the treasury asset and liability management framework.
- Honduras received two technical assistance sessions: one for formulating the 2024 cash program and its alignment with the debt strategy; and another one on plans related to the convergence to the International Public Sector Accounting Standards.
- The Center held a regional online webinar on transparent management of fiscal information, focusing on the relevance of Pillar I of the IMF's Fiscal Transparency Code.

Banking Supervision and Regulation

- Technical assistance (TA) was provided to the Superintendency of Banks of the Dominican Republic in developing an expected credit loss model and training technical staff in aspects related to the development of expected credit loss models. Besides, assistance was provided to follow up the roadmap for implementing the Basel II/III standards by the bank supervisor, addressing the recommendations related to the liquidity coverage ratio.
- TA to the Superintendency of Banks of Guatemala on retail credit risk and regulation continued, contributing to diagnose the level of over-indebtedness in the retail credit segment.

Central Banking Topics

- A hybrid mission was carried out to support the Central Reserve Bank of El Salvador in developing nowcast models consistent with the change in methodology in the System of National Accounts (SNA). A virtual activity was initiated to review the parameters of the semi-structural model, responding to the update of the SNA.
- The Center worked with the Central Bank of Honduras to strengthen modeling and forecasting capacities. On the one hand, a face-to-face mission supported the Central Bank in recalibrating the parameters of the semi-structural model. On the other hand, a virtual mission developed nowcast models for the Honduran economy.

Real Sector Statistics

- The Central Bank of Nicaragua was assisted in continuing to compile the quarterly GDP series. The staff of the *Instituto Nacional de Información de Desarrollo* was also assisted in reviewing short-term survey questionnaires for use in National Accounts (NA). Methodological guidance on institutional sector accounts was provided to the Central Bank of Costa Rica. Also, work was done on the quarterly compilation of Panama's export and import price indexes.
- As regard regional training, two courses were imparted for officials of the NA divisions to strengthen capacities in compiling high-frequency indicators and index number management.

Government Finance Statistics

- Panama was supported in the sectorization, classification, and methodology of accrued interest and debt valuation. Technical assistance was provided twice in Honduras: the first focused on expanding the compilation and consolidation of high-frequency public debt statistics, and the second on preparing financial balances for the leading entities of the non-financial public sector. Technical assistance to El Salvador was the first mission to include work classifying government functions.
- A regional workshop focused on compiling the financial balance sheet, the stock and flow integration, and public finance statistics.

Meet the new member of the CAPTAC-DR team

Luis Pablo San José Gómez - Technical Assistant and Economist



Luis Pablo studied for his bachelor's degree in Business Economics at Universidad Rafael Landívar de Guatemala. He has studies and experience in project management in the public sector and several years of experience in economic research. Luis Pablo has also published articles for national magazines and media. He joined CAPTAC-DR's Public Finance Management in December 2022.