

## GUESTARTICLE

## WINTER

## Weathering the Economic Storm

Mexican crisis experience illustrates need for advanced analytics, greater portfolio intelligence. **By Alejandra Martinez**

**T**he job of managing a consumer credit portfolio through a period of significant economic change can be likened to that of the captain of a ship caught in a storm. The ability to bring the ship safely to shore with minimal damage depends not only on the vessel's strength, but it's positioning relative to the waves buffeting it. The captain benefits from knowing, as early as possible, the expected duration of the storm, the direction from which it approaches, and its severity. Having some idea of these, the captain can work to best position the ship relative to the waves, and with skill and experience bring her to a safe harbor.

Today's U.S. portfolio managers looking for lessons in managing through economic change need only look to the Mexican consumer credit market of the 1990's. Taking stock of the damage resulting from the volatile economic change in Mexico in the last decade helps one develop new ways for managing in times of volatility and uncertainty, such as those currently being experienced in the U.S.

The economic seas were indeed stormy in Mexico over the last decade. A true crisis emerged when between December 1994 and March 1995 interest rates soared from 14% to 75%. The average peso/dollar exchange rate for 1995 was 6.37 – roughly double the rate of 3.27 for 1994. GDP dropped from a growth of 3.5% in 1994 to a decrease of 6.9% in 1995.

The waves of change hitting the economy during the decade were characterized by unprecedented volatility: movements on interest rates from 10 to 60 percentage points; exchange rates that yielded 15%-50% depreciation of the local currency, inflation rates that varied from 10% to more than 20%. During August and September 1998 alone, interest rates rose from 17% to 39% and then returned to normal levels. However short-lived, that episode caused financial institutions to make radical decisions related to their consumer credit portfolios damaging long-term value and development. Given concern

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Sidals

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for the impacts of such changes on credit quality, participants in the industry (then dominated by banks) invested in predictive technology during the 1990's in order to better manage their consumer portfolios. These investments focused on account level predictive technology for consumer portfolio management. Banks adopted world-class (at the time) technologies for establishing risk-based credit decision processes and profitability-based market segmentation. Such technologies have proven robust in rank ordering projected consumer-level risk. But projections are subject to considerable drift because they are hard-wired to the historical environment. Since they do not specifically quantify the impact of exogenous impacts in the history, they implicitly project that the environment of the past will repeat in the future. In periods of change in the environment, this reduces the utility of the tools significantly.

Experience with such tools during those tumultuous years taught two important lessons: success with predictive models used in markets experiencing economic change depends largely on the ability of the portfolio manager to arrive at and implement the right adjustments – major or minor. And, the policy changes and adjustments need to vary in size and direction as swings of the economy occur. Unfortunately, the adjustments tend to lag in time – depending on how rapidly the portfolio manager is able to identify the direction and magnitude of the swing. One is left to employ too much art and not enough science – often late in the game.

Ineffective adjustments can adversely affect customer relationships, leaving little hope of reconstructing them later. To return to our analogy, the ship may not sink completely, but may sustain long-lasting and expensive damage. Indeed, this is

precisely what occurred in the consumer credit market in Mexico in the 1990's. With this experience in mind, it is now time to invest in strategic decisioning platforms that reflect and address these issues.

Portfolio management decisions taken to cope with the 1994-1995 Crisis in Mexico would have been approached very differently if the analytical tools capable of distinguishing intrinsic behavior from exogenous effects had been available. The ships would have been navigated far more more skillfully in the face of the heavy seas. A few examples:

n Identification of portfolio segments projected to deteriorate, no matter what restructuring efforts took place, would have enhanced the effectiveness of exit strategies from the outset. Segments showing high sensitivity to exogenous impacts and more certain deterioration in performance could have received the focus of targeted policy changes. On the other hand, identification of segments projected to continue to perform well regardless of economic swings, even large ones, would have avoided the damage to relationships with credit card customers inappropriately affected by credit line decreases and blocked authorizations – sometimes implemented even for current accounts.

n Segmentation based on lifetime value as opposed to short-term risk and profitability would have yielded major benefits. In particular, such criteria would identify segments capable of paying for the short term decreases in revenue or marginal increases in losses given a long term view of the relationship modeled through various future economic scenarios.

n Model calibration and redesign would have been less intense given that much of the calibration required was driven by exogenous impacts – impacts that vary over time and occur more sporadically than maturation (intrinsic portfolio change) effects.

n Policy establishment would have been less erratic in reaction to increasing uncertainty. The policies would have recognized credit quality and profitability generation capability in a range of potential scenarios.

After the Crisis ended in 1996/1997, important questions arose: Is this value now seen coming from good economic times or from intrinsically good portfolio constitution? Is it time to extend more credit within projected loss constraints or is it better to be cautious? The critical (but unaddressed) need was for reliable measures of segment-level sensitivity to exogenous impacts. Large up-side opportunities could have been realized if such measures had been available.

The post-crisis environment brought many significant market developments – burgeoning consumer loan portfolio purchases and sales, as well as mortgage portfolio valuations and investments by foreign banks. All would have benefited from the capability to distinguish a portfolio's intrinsic value from the potential generation or destruction of value coming from the environment. In the later part of that decade, newer industry participants increased their presence as well, most notably finance companies (including

# Alejandra Martínez

is a pioneer in the use of risk, profitability and value forecasting technologies for consumer credit portfolios in Mexico, successfully customizing and incorporating them into management decision practices. Several of the risk measures she developed were considered by Mexican financial regulators to establish minimum provision standards.

Through profitability, value measurements and segmentation analytical tools, she converted consumer credit portfolios after the 1994 economic crisis into performing, profitable, sustained-growth businesses for a major banking institution in Mexico.

She was Chairman of the Board for Trans Union de México, S.A. de C.V., the Mexican credit bureau and was a member of the North American Customer Advisory Board for Fair, Isaac & Co., based in San Rafael, CA.

Alejandra Martínez holds an MBA from Stanford University, Palo Alto, CA, and a BS in Industrial Engineering from Universidad Iberoamericana in Mexico City. Currently, she is the CEO of Analyze, S.A. de C.V. a Consulting company focused on consumer portfolios in Mexico.



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# David Franklin: New York meets New Mexico in SA's CEO

What brings a New York executive with decades-long interests in financial markets and economics to the oldest (and highest altitude) capital city of the West? Santa Fe, New Mexico is well known for its abundance of natural beauty, recreational opportunity, and rich cultural heritage. The area has a pull so powerful it can lure long time city slickers to pack up the family, head west, settle on a beautiful piece of land and buy very large trucks in the process. David Franklin, CEO of Strategic Analytics, has done all of that.

But doing so brought an unanticipated benefit – the opportunity to meet two new partners – Joseph Breeden and Tony Giancola, both longtime New Mexico residents. Dave quickly found himself not only living exactly where he wanted to be, but also building with his partners an exciting new company in consumer and portfolio analytics. Since the founding of Strategic Analytics in 1999, the challenge and allure of leading the company – including being its primary voice to vital early investors – has never waned.

The move, however, was not a small one for this former Managing Director of McLagan Partners, a management consulting firm that specializes in multi-client compensation surveys and market share studies throughout the financial services business. While at McLagan, based in Stamford, Connecticut, Dave worked with the top managers of leading global brokerage firms – a position combining complex technology deployment with exposure to a diverse set of organizations and their various brands of leadership. As a financial analyst for Morgan Stanley, and with an MBA from New York University's Stern School of Business, Dave had all the prerequisites for

Only by creating and maintaining the right atmosphere can we benefit from the incredible technical and professional contributions that bright and creative people offer. Coupled with a lot of hard work and vision, I'm very confident that this combination of skill and effort has started to payoff, bringing new and significant analytics-based applications to the financial services business."

continued success in a high-paced East Coast-based career in America's financial center. What more could one want?

More "outdoorsy stuff" – in David's words. His long



David Franklin winter camping

time passions include fly-fishing, bird hunting, skiing, hiking and camping – not exactly the recreational strengths of mid-town Manhattan. In Santa Fe, at the end of a week filled with the complex demands of leading a start-up, Dave can take off with the family and unwind actively on his Northern New Mexico property – fixing up old buildings and fences, and planting trees. When he's not out on the ranch, Dave can often be found doing the things that a husband and father does most anywhere on a typical weekend.

It's the kind of recreation that helps balance a serious side. David is a long-time (since age 12) student of markets, investments and the economy. His outlook on the U.S. economy and the performance of the equity markets is not rosy. "I believe we face longer and more difficult challenges in economic conditions than is generally accepted" – a view that underscores his conviction in the value of technologies that assist businesses in planning for and dealing with uncertainty. On the job, Dave is back to his executive self – in constant motion – phoning clients and prospects, speaking to potential investors, finalizing proposals, and reviewing new product designs. In contrast, his non-authoritative leadership style reflects the balance he has achieved elsewhere.

"My role at Strategic Analytics is about setting the tone, the values, and the company's direction, in concert with the talented team we have built. Only by creating and maintaining the right atmosphere can we benefit from the incredible technical and professional contributions that bright and creative people offer.

Coupled with a lot of hard work and vision, I'm very confident that this combination of skill and effort has started to payoff, bringing new and significant analytics-based applications to the financial services business."

# Vintage Sensitivities—Measuring the Quality of Originations

Using Dual-time-Dynamics™ (DtD), consumer portfolio performance data is decomposed into three components: **maturations effects**, **exogenous impacts**, and **vintage sensitivities**. Vintage sensitivities provide a unique metric for originations quality, independent of the age of the account and the nature of the environment experienced during the measurement period. A vintage is a kind of cohort—a group

of accounts opened in the same time period. For example, the February 2001 vintage is the group of consumer accounts opened in February of 2001. Vintages are a segmentation approach compatible with any demographic or behavioral segmentation management may choose to define. Strategic

contribution of the maturation effects or exogenous impacts in explaining an individual vintage.

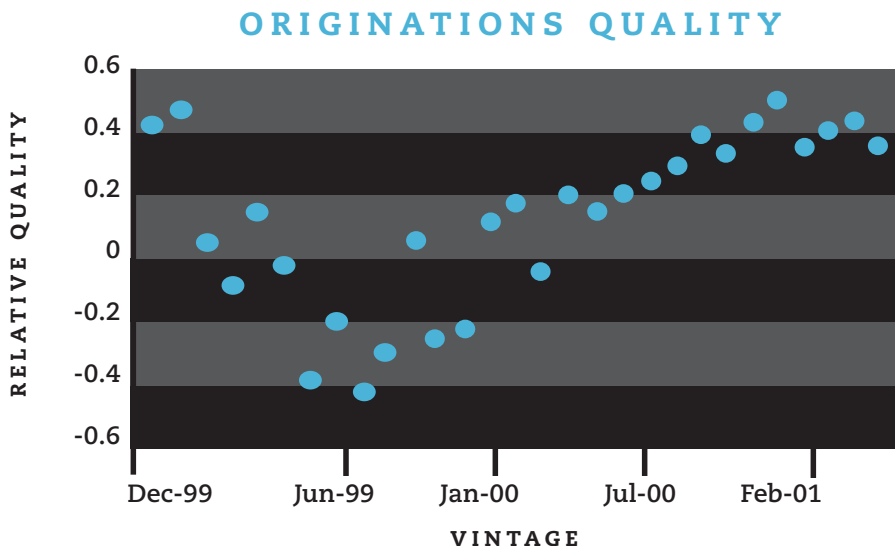
In a recent client project, SA studied the vintage sensitivities associated with delinquency rates. We found that originations within the last two years had low maturation sensitivities to delinquency risk. That

is, these recent vintages were predicted to have low delinquency rates according to our measure of their progress along the maturation curve. However, these same apparently low-risk customers exhibited high sensitivity to exogenous impacts. In effect, they were low risk customers in good environments, but their delinquency risk would likely soar during economic downturns.

Measuring the quality of originations is a decades-old problem in consumer lending. Previously available approaches do not meaningfully compare groups of consumers through different economic conditions because the impact of the environment is not separately quantified. Similarly, such approaches fall short when comparing customers early in their life cycle to those on the books for many years.

Traditional vintage analysis is an important practice in consumer lending, but it amounts to a superficial inspection of vintage performance without identifying the components of cause and effect. Vintage sensitivity measures enabled by Dual-Time-Dynamics provide a breakthrough in this area. Further application will play a key role in understanding segment behavior and in turn, higher value portfolio and acquisitions management.

Analytics' DtD decomposition is applied to performance data for a group of vintages, each vintage is calibrated to nominal maturation and exogenous curves. These vintage calibrations measure the sensitivity of each vintage to the maturation and exogenous impacts also quantified by DtD. Conceptually, vintage sensitivities are like a pair of multipliers, either accentuating or diminishing the



# SA Delivers Portfolio Case Study for the World's Largest Computing Project

**Strategic Analytics** recently completed a comprehensive portfolio study for the SETI@home project, the world's largest computing endeavor. Because SETI@home is a voluntary undertaking and is composed of millions of active accounts, the project managers face many of the same issues faced by managers of consumer financial product portfolios.

Like usage of a credit card, a subscriber's access by SETI@home is voluntary. Attrition and unit return rates for SETI@home are analogous to voluntary attrition and credit utilization rates for a credit card. In both cases, user behavior matures with the age of the account, but is affected by external impacts. And like retail bank customers influenced by the economic environment, competition and policy changes, SETI@home subscribers are dramatically affected by server failures, CPU upgrades, and software upgrades. Our challenge: quantify, through the use of advanced portfolio analytics, forward-looking measures of customer value, and identify strategies for optimal portfolio growth and high-value customer retention.

At the heart our approach to the problem is the use of SA's unique and proprietary Dual-time-Dynamics (DtD) technology. DtD, unlike typical scoring and forecasting methods, analyzes intrinsic behavior separately from behavior influenced by environmental influences. For financial services companies, this capability allows portfolio managers the capacity to develop and test scenarios that faithfully reflect the response of a portfolio to various environmental factors. Designed to work at the strategic level, our technology enables portfolio managers to better control, understand and implement their decisions.

For SETI@home, the approach entailed analysis of project growth projections, recruitment and attrition rates, and the critical variables driving the future of the project, such as usage impacts from hardware and software upgrades, new policies, software versions, and electric power concerns. Using 26 months of historical data, and an emphasis on forecasted behavior, we produced accurate models of customer

"net present value" and in the process uncovered which groups will drive long-run value – apart from their near-term behavior.

The results revealed several crucial management strategies for growth and management of the portfolio of SETI@home users. For instance, the quantified net present value (based on long-run behavior) of users in every major country enables clear recruitment strategies. With a projection-based NPV by segment calculated, management can now use acquisition and other anticipated costs to make decisions about originations and optimal portfolio construction in varying environments.



SETI@home (Search for Extraterrestrial Intelligence) is a non-profit scientific organization housed at the UC Berkeley Space Sciences Laboratory that utilizes donated computing cycles from over three million users worldwide in the search for evidence of extraterrestrial life by combing massive amounts of radio telescope data for signs of structured communication. The project was initiated in 1999 and has grown to become the largest distributed computing project in history. SETI@home users download a screensaver program that harnesses idle time on the user's computer to mine data packets shipped automatically over the Internet. Over 600,000 CPU years have gone into the effort, making it the largest computer processing capability in the world. The success of SETI@home has spawned a number of other scientific computing efforts in areas such as protein folding and cancer research.

The analysis also showed which computing platforms could be counted on for portfolio growth, and which users should be targeted for retention work. We also quantified cross-sell opportunities among the different user platforms – identifying the precise stages (by customer segment) when the segment is optimally receptive to changing to higher value versions of the software. This analysis is an important input for building account-level models to optimize cross-sell and illustrates our focus on integrating strategic decision-making with existing tactical tools.

The deployment of SA's advanced analytics at SETI@home illustrates their ability to enable management to make sound assessments of long-term value, and weigh costs and benefits of alternative actions rapidly—within a comprehensive and consistent analytical framework. As applicable to financial services and other consumer-based portfolio issues as they are to SETI@home, these capabilities translate to better, faster portfolio decisions and significantly enhanced bottom-line results.

**retailers and non-bank mortgage lenders** (i.e. the *sofoles*), and the captive auto finance companies. These companies in general have not incorporated the tools to help cope with economic change. Their portfolios are increasing in size and becoming more complex to manage, reflecting new products and customer expectations – reshaping the use of credit and the performance of existing portfolios.

The Mexican consumer credit industry has always coped through difficult times even when measured with international yardsticks. The financial community requires world-class standards of evaluation in order to maintain access capital and debt markets. Today the rating agencies, financial markets and potential investors find an industry that has rapidly adopted all the standard U.S.-developed technologies and processes. For example, most Mexican credit card issuers use the major credit card processors, as well as more general methods offered by U.S. risk management and consulting companies. The financial arms of U.S. automakers have established operations in Mexico similar to those they have in the States, bringing their traditional account-level approaches with them.

Changes in account-level approaches are now under

Mexican finance companies (*sofoles*, retailers) have not experienced the major economic swings because most of them flourished after 1995 when banks were building reserves for losses and recovering from the Crisis. As a consequence, today's finance companies need to prepare to cope with difficult times. With their huge portfolios, they are primed to establish the analytical platforms necessary to better understand the impacts on their consumer and mortgage portfolios, and achieve the world-class standards required of them to access the international debt markets.

In 2001 the seas are much calmer, but not without waves capable of generating significant drift and dislocation. Macroeconomic indicators are now stable in Mexico with single digit interest rates and stable foreign exchange rates. However, the market is feeling the effects of the U.S. economic downturn, since international trade depends almost 90% on exports to the U.S. Concerns of portfolio managers have turned to growth in uncertain times. They may have experience in keeping a steady hand on the helm through negative economic conditions, but this does not assure their success unless new tools for portfolio navigation are deployed. Without these tools, precise forecasts remain

elusive, because the history of the portfolio is loaded with a combination of negative exogenous effects and recent optimistic numbers resulting from good economic times.

While another economic storm of the scale experienced in 1995 is considered a remote possibility, Mexico

is not insured for environmental effects that may partially destroy the value of existing consumer portfolios. Now is the time to learn from past experience. We must study the recent history available using more sophisticated approaches that distinguish and quantify intrinsic portfolio effects and the exogenous impacts in a consumer credit portfolio. Understanding with new clarity our position, our direction, and the forces affecting our movement, we will be much better prepared to weather the storms, however severe, as we manage credit portfolios into the future.



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way. Spanish global banks made several Mexican acquisitions in 2000/2001, and have quickly switched from the traditional U.S.-based analytical methods to a more intuitive day-to-day approach. Before acquisition, Mexican banks would pay for sophisticated account-level tools that, given the size of the market, were difficult to cost-justify. Now they consider block-level segmentation for differentiated treatment adequate. As a result, there is less perceived need for the account-level differentiation treatment – it is too expensive when a strategic block segmentation based on value is in place.

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