



"turning data into dollars"

Tom's Ten Data Tips – July 2007

Credit Scoring

Credit scoring has dramatically changed the face of the underwriting business. It is a "young" discipline. Only 30 years ago, the majority of credit acceptance decisions were taken intuitively by underwriters. As statistical evidence accumulated, and early adopters of automated techniques conquered the markets, a sea change took place. Nowadays, almost all credit decisions are processed automatically, using scorecards to determine default (and sometimes profitability) odds.

The benefits of objective risk assessment by credit scoring are many:

- Objective risk evaluation – an algorithm is consistent and never discriminates
- Efficient processing – automatic scoring of decision criteria generates faster decisions
- Statistical portfolio control – scorecard characteristics give expected default odds
- Controlled experimentation – on subsets of accounts *with known scores*, dedicated deviations from existing practices can be tried and tested

Source: Lawrence & Solomon (2002) *Managing a Consumer Lending Business*

1. Default Levels Are Only Relevant In Relation To The Profit A Product Is Generating

It is typical for many organizations to display knee-jerk reactions to jumps in write-off levels. However, because mature credit risk management is about balancing risks and rewards, a default percentage should *never* be regarded without reference to corresponding profit levels.

In times of economic downturn, it is quite expected to see a rise in defaults, and increased write-offs. This is not necessarily a bad thing, as an economic downturn will also cause people to tap into their credit reserves more readily, thus growing the revenue stream from this same credit product (you can safely assume average credit balances have risen). Only if the *balance* between risk and reward is shifting

unfavorably, defaults versus interest income, should policy changes be considered (see also tip# 10).

2. Delays In Policy Change Cause Oscillation

When a cutoff score is adjusted because there are too many write-offs, it takes a while before the actual (aggregated!) percentage of defaults will go down. Because if this, and impatience, management can be tempted to increase the cutoff even further, before this is required. As a result, they may find themselves with too few accepted applications.

When this happens, a “natural” response is to lower the cutoff score. Since this will not impact default levels until much later, sometimes another adjustment is made, before the new cohort of accounts have had sufficient time to “mature” (and get into arrears). The converse holds, too. This phenomenon can result in swings in default levels, that are caused by the very policies meant to “adjust” the percentage of bad accounts.

3. When Using Two Score Systems, They Must Operate Simultaneously

There can be very good reasons to use two separate scoring systems. For instance, when using a bureau score in conjunction with a bespoke scorecard. There is one pitfall that must be avoided, though: the two scoring systems must run in parallel, *not* sequentially.

The two scoring systems must be integrated and overlaid, to effectively guide the decision process. When the systems are used in sequence, too few applications are accepted. This has a statistical reason. Low-side applicants from *either* system can be rejected, resulting in a net lower acceptance rate. At the same time, the number of bads from either system remains constant, but they must now be offset by less accepted goods. Very bad practice, resulting in a poorly performing portfolio.

4. IT Management Needs To Support Operational Credit Management

When automated application and maintenance scoring proved to be the key to successfully competing in the last decades, the initial focus was on providing portfolio and management summaries. At the moment, however, productivity gains from successful IT deployment

are focused mainly at supporting operational processing at the “shop floor” level.

What we are seeing today with our clients, is that providing world-class support of the day-to-day operations provides biggest productivity gains. And these are immensely important to stay competitive in markets that are characterized by aggressive pricing schemes. Timely information, of immaculate quality, is crucial. If underwriters have any doubts about the validity of information “in the systems”, they will double check via alternative sources, immediately losing any productivity gains that automation was supposed to have. Interestingly, efficiency gains *also* improve throughput times, enhancing service and value to the customer.

5. Rapid Portfolio Growth Conceals Problems

When the rate of account acquisition grows, you are bound to see a decline in defaults. The reason for this is that new accounts take time to mature. Only after new accounts have been in use for a while, are beginning to carry significant balances, and start getting into arrears, will this new cohort begin to generate write-offs.

There is no ironclad rule against this conundrum except for *controlled* growth. For sure, there should be reports that break down write-offs by vintage, that is, the year/month in which accounts were acquired. In times of growth, the overall default percentage will decline, but the write-offs per vintage are still expected to remain constant. It is good practice to include accounts in overdraft and arrears, even though they haven't “technically” defaulted, yet (a Dynamic Delinquency report). The general rule about risk portfolio management is to get bad news out as early as possible.

6. You Never Know What Are The Right Questions To Ask, But Don't Stop Searching

Questions on a credit application form have the role of a psychometric instrument: you try to get the best possible “measurement” about the customer's situation. You need to balance the amount of information requested with the need to make the best possible acceptance decision. More is *not* always better: only the poorest credit risks are willing to fill out extensive application forms. So a longer form will bring in relatively more bad credit risks, whilst the good risks will refrain from applying (with you).

At the same time, you should be constantly updating your forms, on the lookout for newer and better items in terms of discriminatory power of the application process. You do this by adding new “test” items. Questions that are successful in sifting out bad risks today, may not hold up their statistical power in the future. For example, whether someone has a land line or cell phone plays a vastly different role in determining creditworthiness now, than it did five or ten years ago.

7. Group Product Lines By Terms And Conditions

When reporting about the inherent risk in a multi-tier portfolio, it is easy to lose track because of the proliferation of products that have been launched over time. To manage this information overload, it is good practice to cluster separate products, by product groups. What is a “good” criterion to cluster?

In terms of risk management, it is usually best to lump together products that are similar with regards to terms and conditions. This may be sensible for risk reporting, despite the fact that these products have been targeted at widely different audiences. Risk profiles are predominantly governed by the intrinsic product constraints rather than overt (e.g. marketing) characteristics. The needs for risk reporting can be demonstrably different from other business units.

8. Credit Risk Management Needs To Permeate Departmental Boundaries

Credit risk management should never be left to the credit risk department alone. World class organizations like Citi Group, American Express, MBNA and others, are renown for making risk policies an integral part of *all* departments. It is still true, though, that an integrated policy may nonetheless allow for diversity in targets for separate departments, as long as there’s rhyme and reason.

Throughout the entire customer life cycle from acquisition, to maintenance, to collections, the credit risk policies need to work in unison. If marketing keeps an eye out for targeting the right kinds of credit risks, maintenance will be more successful through up- and cross sell. Conversely, taking on poor accounts will lead to an overburdened collections department. Business targets should be aligned with the corporate bottom-line, allowing all departments the most leeway to perform to the best of their abilities.

9. A Recession Presents An Opportunity For A Well Managed Business

In times of economic recession, it is likely that write-off levels will go up. How this affects a portfolio, even in the fairly short term, is not quite clear though. Most businesses will respond to a rise in defaults by raising their cutoff scores (see tip# 10), which may be quite sensible.

Historically, even *through* recessions, the profitability of a portfolio may well stay intact. This is mainly because utilization levels will likely go up, and therefore interest revenues for revolvers and interchange fees for transactors may go up. Businesses with strong risk management practices can use this turbulence to gain market share.

10. Cutoff Scores Should Be Set On The Basis Of Profitability Analysis

Given the central importance of cutoff scores, they should be set (and understood!) by senior management. The cutoff score determines the ratio of good to bad accounts that flow in to the portfolio, and therefore will drive the write-off levels in the future. For each band of scores, this ratio also has utilization levels, that are the most important driver of profitability.

The key in setting a new cutoff score, is to balance profits and losses. When the score is raised (tighter credit extension), the data for these considerations are (at least potentially) available, and so *it should be calculated exactly*. When the cutoff score is lowered, there is probably little if any quantitative basis for calculating profitability, so *it should be simulated*. This latter case requires close tracking of newly acquired accounts.