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First-mover matters

Building credit monitoring for competitive advantage

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Contents

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First-mover matters: Building credit monitoring for competitive advantage

Introduction

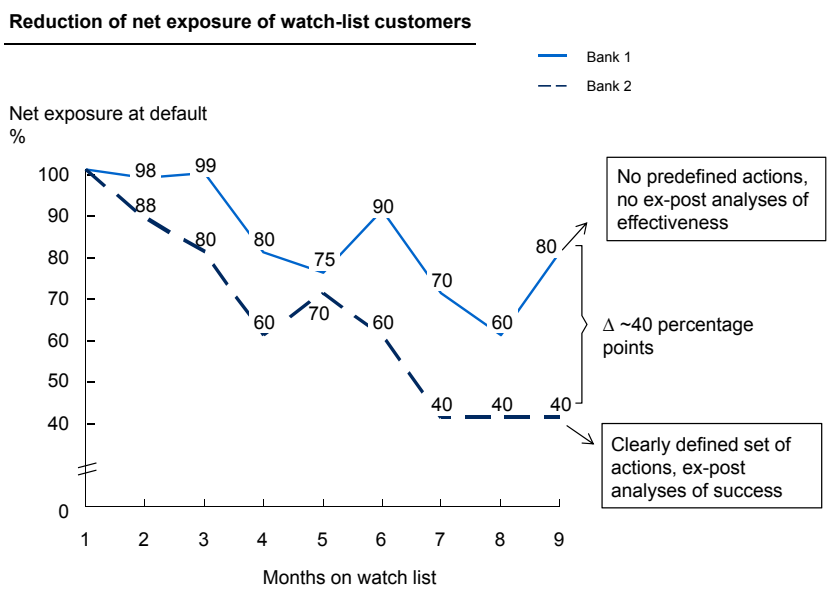
The financial crisis has shown in dramatic fashion why banks need to monitor credit risk. Credit-risk costs for European banks have skyrocketed and continue to rise in certain markets. Loan-loss provisions for credit books have reached record-high levels. Even banks with conservative and once-praised provision approaches have suffered. Banks exposed to deteriorating credit portfolios often react by deleveraging. The International Monetary Fund warned in April 2012 of a vicious circle in which deleveraging further shrinks the supply of credit, worsening customers' creditworthiness even more. Nervous external stakeholders—from investors and regulators to media and activists—increasingly want reassurances that banks know the drill in lending and are developing sound credit-monitoring and risk-mitigation capabilities.

Banks can meet these expectations both through early detection and effective mitigation of credit risk. Although this sounds straightforward, differences among banks' credit-monitoring practices are much greater than might be expected. While banks with sound credit-monitoring practices and effective early-warning systems identify risky customers six to nine months before they face serious problems, others may only take notice once a customer is past due or ratings have deteriorated substantially. The later a bank responds to a deterioration in a customer's credit risk, the smaller its opportunity to protect itself against losses. Banks with good credit-monitoring practices reduce unsecured exposures for customers on the watch list by about 60 percent within nine months, whereas average banks achieve only around 20 percent unsecured-exposure reductions. In some banks, overall client exposure actually increases prior to default. Differences in credit losses will vary accordingly (Exhibit 1).

Differences in the effectiveness of credit-monitoring approaches are also visible from credit conversion factors (CCFs) or the extent to which customers manage to draw previously undrawn credit facilities during the last year before they then default. CCFs for corporate and retail credit lines range from 39 to 72 percent and 17 to 69 percent, respectively.

Exhibit 1 A clearly defined set of risk-mitigating actions and efficient monitoring can lead to significant reduction of exposure.

CLIENT EXAMPLES



The business case for developing and implementing an early-warning system (EWS) is straightforward: effective monitoring reliably lowers both credit losses and capital requirements by identifying opportunities to de-risk and improve asset quality. Experience shows that improving the effectiveness of monitoring can reduce loan-loss provisions by 10 to 20 percent and risk-weighted assets and required regulatory capital by up to 10 percent. Institutions with good credit-monitoring practices therefore have higher risk-bearing capacity, higher returns on equity, or better capital productivity. They can also offer better pricing through a number of levers:

- *Reducing the probability of customer defaults.* Portfolio monitoring analyzes the quality of the portfolio. Single-customer monitoring regularly scans the portfolio—exposure by exposure—with an EWS and triggers actions to prevent default.

- *Increasing collateral value of defaulted loans (reducing loss given default, or LGD).* Both portfolio and single-customer monitoring seek to maximize collateralization for sectors or customers on watch lists, thereby reducing the average loss in the event of actual default (LGD) and loan-loss provisions of facilities granted to a customer.

- *Reducing exposure at default (EAD) of defaulting customers.* While portfolio monitoring makes sure that the bank has lower exposures to endangered sectors, early interventions at the single-customer level can reduce exposure to high-risk customers (for instance, decreasing uncommitted lines or pricing credit offerings so that they are less attractive). This reduces credit conversion factors (known as LEQs in the United States) and loan-loss provisions.

It is critical to monitor and mitigate both on a single-loan level and an overall-portfolio level. This paper focuses on the single-loan or customer level because banks often have significant potential for improvement here. At the heart of the monitoring process lies the EWS. Still, the basic monitoring process is simple.

A rules-based EWS identifies borrowers at risk of distress or default. It must not only integrate a reliable database and rigorous statistics—it must also ensure "soft" success factors are in place, particularly close collaboration among monitors, underwriters, and the front line. Identified cases are assigned to different watch-list categories depending on the nature and severity of the risk. Assignment to a watch-list category triggers a predefined set of risk-mitigating actions, including some that are mandatory and others that are optional (for example, reducing internal limits or increasing pricing). However, as always, the devil is in the detail.

A bank can typically optimize and upgrade corporate credit-monitoring activities through three phases: assessment, target-model definition, and implementation. Each phase includes a different set of activities and clearly defined end products (Exhibit 2).

Assessment of current monitoring function

Each of the vital signs of the current monitoring system must be thoroughly examined. Some of the most important questions and analyses are set out below.

Building block 1: Model and classification rules
Banks must monitor a multitude of customers simultaneously. Institutions with good practice have a classification system that preselects potential watch-list candidates, with the final decision made by a designated monitoring officer who is experienced in making "borderline" credit decisions. To become effective, the EWS should be built on a statistical analysis of triggers or breaches of thresholds of early-warning indicators (for example, overdrafts, line utilization, and overdue installments) that historically have been predictive of defaults. Moreover, the system should also include qualitative information (such as negative news)

and expert information (for instance, interim figures), rather than relying only on late-emerging information such as rating deterioration; Exhibit 3 shows that real early-warning indicators lead late-emerging information by three to five months—thereby enabling banks to take risk-mitigating actions earlier and more effectively.

Exhibit 2 Optimizing monitoring activities typically occurs in three phases: a detailed assessment is essential to focus improvements on hot spots.

	Assessment	Target-model definition	Implementation
Activities	▪ Model and classification rules ▪ Management of watch-listed customers ▪ Processes and organization	▪ Design **target model** for monitoring, focusing on a few issues: – Effectiveness – Categorization – Mandatory actions – Monitoring/reporting – Independence of function – Classification rights	▪ Develop **action plan** to close gaps against proposed guidelines ▪ Define **implementation plan** and start implementation
End products	▪ Assessment of status quo, including main issues	▪ Target model for monitoring	▪ Implementation plan

Exhibit 3 Analysis of average time gap between occurrence of trigger and default provides further indication regarding relevance of triggers.

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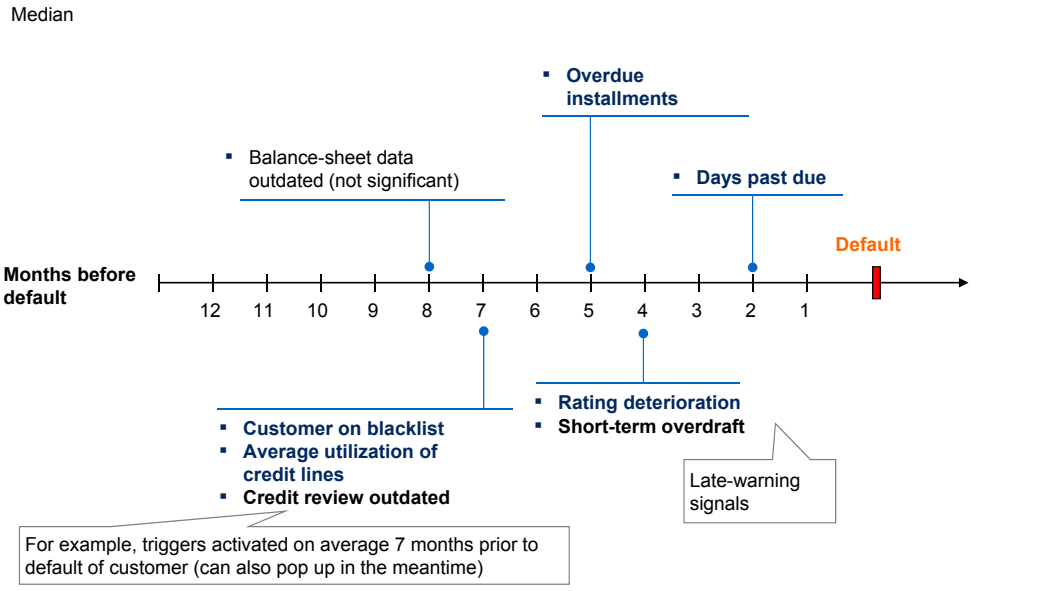


Any assessment of the quality of such a system should address the following issues and questions:

- *Hit ratio.* How many customers are flagged by the system or by a trigger, and what proportion of these customers is transferred to the watch list?
- *Direct transfers.* How many restructuring or workout customers were not on the watch list before, that is, how many have not been captured by the EWS?
- *Selectivity.* How many sub- or nonperforming customers, as opposed to performing customers, are flagged by a particular trigger?
- *Regression.* Which combinations of indicators are statistically significant in a univariate or multivariate context?
- *Time.* What is the average time before default when the system or trigger identifies a nonperforming customer for the first time?

In designing the system, it is crucial to find the right balance between alpha and beta errors—that is, there must be a trade-off between efficiency (for example, flagging too many customers) and completeness (flagging too few customers or missing customers that later default).

Building block 2: Management of watch-listed customers
The watch list should have different categories that reflect different degrees of risk severity and allow for differentiated responses. Several questions will be relevant:

- How many watch-list categories does the bank use?
- What are the conditions for falling into a certain watch-list category, and how are combinations of different triggers evaluated?
- Which mitigating actions are applied for each of the watch-list categories? What are the criteria for choosing specific mitigating actions?
- What is the typical EAD or unsecured-exposure development of customers for each mitigating action?
- What are potential escalations and additional measures if mitigating actions do not yield the expected results?
- How are lessons from successful mitigating actions applied to new watch-list candidates?

Building block 3: Processes and organization
It is critical that the setup of the monitoring unit allows for an independent assessment of customers and that the unit has the necessary influence to initiate and follow through on critical decisions. In this context, banks must investigate several questions:

- What are the roles and responsibilities of the credit-monitoring unit as opposed to customer relationship managers and underwriters?
- Where is the credit-monitoring unit located in the organization, and where does it report?
- Which committees exist to support monitoring activities, and what decision rights do they have?

In particular, it is essential to be clear on the competences and escalation hierarchies for loan classification, mitigation, and control:

- Who decides on the final classification of customers?
- Who proposes and who implements actions to mitigate the risks from watch-listed customers?
- Who controls the timely execution of the appointed actions and their outcome?

Finally, in order to ensure a smooth process flow, an efficient monitoring process requires a fair share of IT support:

- To what extent is the workflow design manual or automated and, if it is automated, does the IT tool work well?
- How does the bank track the management of watch-listed customers, for example, the progressive reduction of the net exposure of the watch-listed customers? What happens if exposures increase?
- How is the overall effectiveness of the process tracked and reported?

If a bank falls below the bar on any of these dimensions, it will find it difficult to manage credit risk effectively. Either future problematic customers will be identified too late or actions will not be sufficient to achieve a sustainable risk reduction. In turn, banks that perform well against these criteria not only have a more resilient credit operating model—they may also capture advantages in pricing and capital requirements, allowing opportunities for more growth and better margins.

Target-model definition

There are six essential requirements, grouped into three categories, for an effective monitoring process (Exhibit 4).

Exhibit 4 There are six key requirements for a sound monitoring process.

	Key elements
Model and classification rules	1 **Effective early-warning system** to identify risky customers ▪ Core triggers, including technical triggers (eg, overdrafts), manual expert triggers (eg, interim figures), and external data (eg, credit-default-swap spreads) ▪ Additional triggers and specific thresholds for certain segments/industries (eg, commercial real estate)
	2 **Different watch-list categories** reflecting different degrees of riskiness of watch-list customers
Management of watch-listed clients	3 **Predefined set of mandatory actions/strategies** for different watch-list categories/segments to mitigate risks early
	4 **Monitoring/reporting of effectiveness of monitoring/actions** (and possible root causes for nonsuccess)
Processes and organization	5 **Monitoring** as an **independent unit** within CRO
	6 **Monitoring** with **final decision in classification** of customers **and actions** for watch-list customers

Model and classification rules

The core of any monitoring setup is the EWS for effectively identifying risky customers within the portfolio. The quality of the system crucially depends on the selection of signals and how they combine. While there are certain universal signals (for instance, rating deterioration and changes in line drawings), it is also important to define specific signals that target the characteristics of different segments. For instance, while the financial difficulties of the owner may be a useful signal for the future creditworthiness of a small or midsize enterprise, in commercial real estate banks should instead look into the development of the average rental rate in the area of the company's operation. A good EWS aggregates the following information:

- electronic information or automatic triggers (for example, rating, registered overdue, or change in credit line drawings above a certain threshold) available from the bank's credit systems
- expert knowledge of relationship managers and credit-risk officers (soft facts such as interim figures, personal problems of a business owner, deterioration of receivables quality)
- external information (for instance, negative news or a blacklist)

Banks need to make their EWS specific for their customers and product landscapes, geographies, and business cultures. A bank with a below-average share of wallet with corporate clients has less access to automatic triggers from credit systems and correspondingly is less able to monitor the behavioral patterns of customers. It would need to rely much more on qualitative facts or external information to identify risky clients. However, banks with an established lending business should carefully think through the best possible use of automatic early-warning triggers from credit systems and distill the typical long list of more than 50 potential early-warning signals into the 10 to 15 signals that best fit the portfolio. To do so, they must take a number of steps:

- build a representative data sample for developing the EWS that consists of both problematic and fully performing customers
- calculate hit ratios for individual (automatic) early-warning triggers to sort out triggers that rarely occur in the underlying credit portfolio
- test (individual) early-warning triggers with high hit ratios for selectivity, making sure that early-warning signals flag problematic customers significantly more often than performing customers ("type two errors")
- conduct multivariate regressions to exclude redundant early-warning triggers
- back-test "excluded" early-warning triggers to avoid deleting triggers that have predicted single large default cases in the past to ensure that the EWS is optimized to predict not only the best possible number of early warnings, but also the maximum exposure
- analyze average times between the occurrence of triggers and defaults in order to rank triggers by relevance

The resulting quantitative EWS should then be combined with the respective qualitative expert early-warning triggers (soft facts) and external warnings. These can be collected by relationship managers and credit officers, as well as from external information sources.

After thorough statistical testing of individual signals and their combinations, as well as a continuous discussion of model assumptions and final sign-off on the assumptions by credit risk (credit monitoring and underwriting, in addition to the business), the model is ready to use. When the EWS flags potential default candidates, it is up

to the monitoring unit to investigate these customers more thoroughly and decide on a course of action: it can override the suggestion of the EWS and keep the customer in the standard category, put it on the watch list, or—in serious cases—move directly into restructuring or collection. In order to have a differentiated picture for those loans that are shaky but not yet hopeless, the watch list should allow for different degrees of customer riskiness and trigger different risk-mitigation actions. In practice, a watch list should have at least three client categories, each leading to different responses:

- *Category 1: Temporary difficulties.* This category aims to ensure closer and continuous monitoring of customers, including more frequent customer interactions and more careful credit decision making.
- *Category 2: Structural or strategic issues.* In this category, the aim is actively to reduce risk exposures.
- *Category 3: Seriously impaired creditworthinesss.* This category can be used to facilitate an exit or to prepare a rather fast transfer to restructuring or workout.

How to develop a predictive set of early-warning triggers

A predictive set of early-warning triggers is typically developed based on two elements: a series of statistical analyses (if the required data are available) and expert workshops to define qualitative triggers.

1) Analyses to identify statistically significant triggers

A statistically relevant or significant set of triggers can be selected based on a series of analyses if the required data or time series is available. Exhibit A shows the steps and results of statistical analyses for one trigger, "limit utilization."

- A short list of potential early-warning triggers needs to be derived from a set of more than 50 potential early-warning signals. The bank should select those that are economically meaningful for the portfolio, that is, those signals that are associated with risky customers. All short-listed triggers then become subject to the statistical analysis.
- A data sample covering an extended period (for example, 24 months) must be created for performing and nonperforming loans and the triggers that occurred one year before default.
- Univariate analyses and tests showed the following results:
  - The hit ratio was greater than 10 percent—that is, the system flags 10 customers to identify one customer that later becomes a nonperforming loan.
  - Selectivity is more than five—that is, this trigger occurs five times more often for loans that later turn out to be nonperforming than for performing; Exhibit B (overleaf) shows this example for a plain-vanilla corporate lending portfolio.

Exhibit A This example illustrates the results of statistical analyses for the trigger 'limit utilization.'

FIGURES DISGUISED

Sample	
▪ Number of loans	>25,000
– Number of nonperforming loans	>1,000
▪ Time series	>24 months
Performed analyses	
▪ Hit ratio	>10%
▪ Selectivity	>5
▪ Significance in multivariate analyses	>99% (highly significant)
▪ Results of back-testing	10 loans
▪ Time lag	~6 months

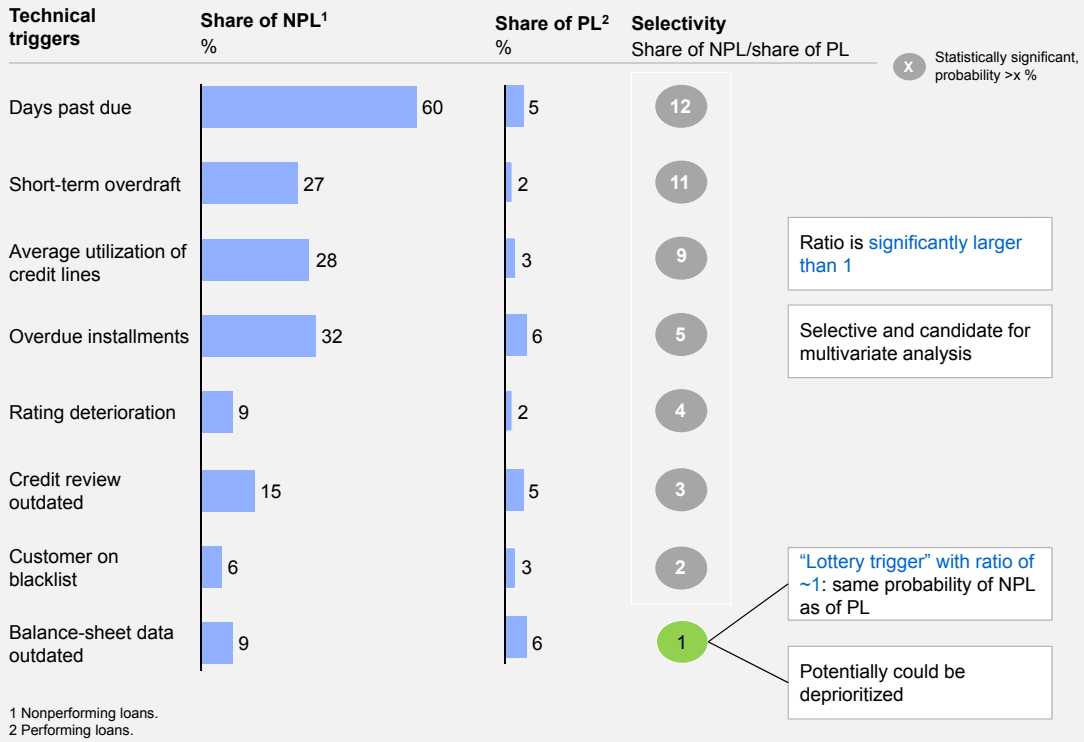
- A multivariate regression model demonstrates 99 percent statistical significance, that is, the trigger itself is highly significant and not redundant.
- The result of the back-testing is approximately 10—that is, 10 defaults (out of approximately 1,000) would not have been identified if this trigger were not in place. (This element is not considered when other triggers would have identified the default.)
- A time-lag analysis shows that this trigger on average occurs the first time six months before default.
- Finally, before going live with a statistically derived early-warning system, all banks should check whether deprioritized early-warning signals—although they are not significant—have pointed to single large defaults in the past. If so, it may be useful to keep such signals.

2)How to develop additional qualitative triggers

In addition to triggers with sufficient data for tests, a predictive early-warning system also should account for qualitative information or triggers with insufficient historical data. These triggers can be initially defined in expert workshops with the overall business and with groups such as risk, credit or underwriting, and workout or restructuring. The triggers usually depend on the customer's size and the business segment; examples include changes of ownership or negative news. One year after the initial definition of the triggers (when a minimum set of data is available), tests similar to those described earlier should be performed.

Exhibit B Selectivity separates 'lottery triggers' from valid ones.

CLIENT EXAMPLE



1 Nonperforming loans.
2 Performing loans.

Management of watch-listed customers
Classifying risky customers into different watch-list categories is only the first step in building an effective EWS. The value of monitoring ultimately stems from decisively defining and following through on risk-mitigating actions. To ensure minimum standards for watch-list customers, both mandatory and optional risk-mitigating actions (such as reducing uncommitted credit limits or increasing collateralization) should be pre-defined and differentiated for each category. In order to ensure discipline, deviations from mandatory actions should require explicit approval from a relevant authority. The seamless cooperation of the monitoring unit, underwriting, and the business is crucial.

The target operating model of an effective monitoring system requires an efficient system to ensure continuous improvement. The predictive power of the EWS can be improved over time by analytics, including regular assessments, such as the back-testing of parameter selections and thresholds or the thorough investigation of restructuring cases that never showed up on the watch list (direct transfers). However, good monitoring is not only about excellence in identifying risky customers. It is also about decisive actions to reduce risks for the bank. Another good indicator of how well the watch list is working is the achieved net-exposure reduction of watch-listed customers.

Processes and organization
How the credit-monitoring team is organized depends a lot on the bank's broader organization. Overall, a preferred solution is that risk "owns" the monitoring task, for instance, through an independent monitoring unit within the risk department. This ensures independence and allows for a clear focus on the monitoring task. A key requirement is that monitoring has the final decision-making authority on classifying loans and customers into watch-list categories and on defining and controlling risk-mitigating actions for loans and customers.

However, underwriting and the business need to be closely involved in the monitoring process. The business must identify appropriate expert early-warning signals (soft facts) and can also propose customers be put on the watch list if they have pertinent information from direct customer contacts. Furthermore, the business is at the forefront of implementing risk-mitigating actions and driving customer communication for lower-risk cases if there is no regional risk organization available and no immediate restructuring need. Similarly, underwriters may have information from their daily work that puts them in a position to propose customers be put on the watch list or to recommend specific risk-mitigating actions.

Challenges of implementation

Success is highly dependent on smooth implementation. Three factors are critical:

- An EWS cannot be based on the work of the monitoring department alone. Collaboration with underwriting and the business is crucial to ensure an effective analysis and forceful mitigation. Making sure these departments work well together, though they naturally have different agendas and focuses, is perhaps the most critical factor.

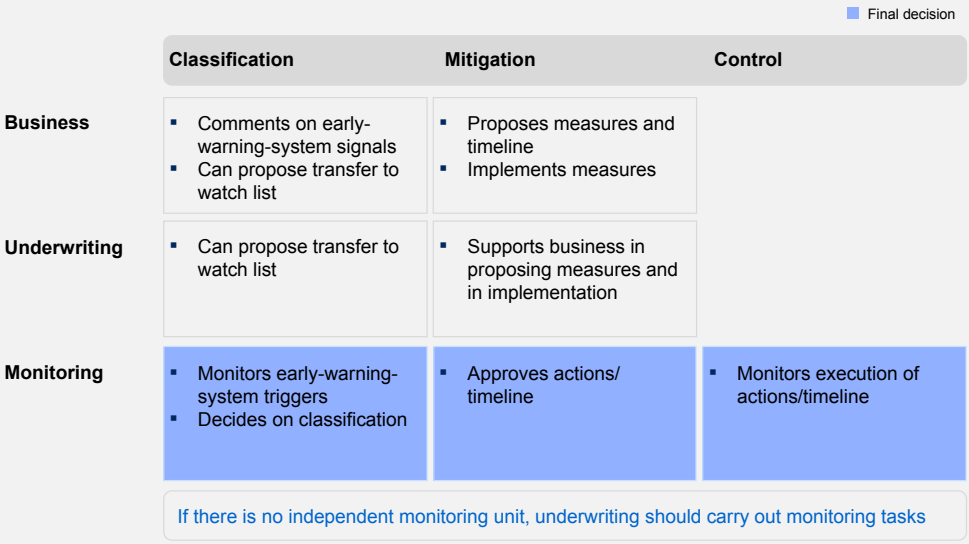
- The overall quality of the bank's data-warehouse systems is crucial. Obviously, the predictive capability of the tool heavily depends on the accuracy of the signals, which in turn mostly come out of the bank's databases. An overall data-quality initiative is often needed in parallel to the establishment of the EWS. Furthermore, the EWS needs to provide for back-testing of the selection and combination of triggers, as well as the chosen thresholds.

- Finally, staffing the monitoring organization with sufficiently experienced people has proved to be a challenge for some banks. Without sufficient expertise and capacity, the unit may not be able to provide full value to the bank in identifying risky customers and rigorously driving mitigation.

Example of monitoring process and responsibilities

As the exhibit shows, an effective monitoring process typically encompasses three main phases (ideally embedded in a workflow tool):

Exhibit A number of key elements make up the monitoring process; the business, underwriting, and monitoring share responsibilities.



- **Classification.** This phase aims to identify and signal exposures that could run into problems. Classification is usually triggered by signals provided by an automatic early-warning system (EWS). A number of things occur in this phase:

  — An EWS regularly (say, each month) provides a list of customers flagged by triggers to the business side for validation.

  — The business analyzes the client portfolio with the support of information automatically provided by the EWS, commenting on the information and creating transparency on the actual situation of flagged exposures.

  — Based on the analyses performed by the business side, monitoring determines the risk status of the customer (for instance, watch or transfer to restructuring).

  — The underwriting department can also propose customers be transferred to the watch list and signal endangered positions to business and monitoring.

- **Mitigation.** In this phase, the goal is to deploy the most effective risk-mitigation measures for clients that have been confirmed problematic (put on the watch list) by monitoring officers. Activities in this phase include the following:
  - The business proposes risk-mitigation initiatives and an action plan with a timeline of interventions (in cooperation with underwriting, if required) based on a predefined set of strategies.
  - The monitoring unit approves the action plan.
  - The business implements the action plan with the support of underwriting for those actions involving credit decisions; monitoring tracks the implementation.
- **Control.** Here, the aim is to supervise the implementation of agreed-upon risk-mitigation actions and their effectiveness. The control activity is typically performed by the monitoring unit, which could also decide on a new client classification or determine a new action plan on the basis of the evolution of endangered positions.

□□□

No bank will ever be able to identify all of its risky customers before their default. However, in today's volatile economic environment, it is more important than ever for banks to establish as comprehensively and quickly as possible a prudent system and processes to identify and monitor problematic accounts. This not only minimizes individual losses and satisfies increased regulatory scrutiny but also reduces capital demand, thereby better equipping banks to continue issuing credit to the real economy—and doing so with confidence based on increased risk insights about their customers. In addition, troubled borrowers can benefit early on from banks' experience in helping businesses overcome their difficulties. Establishing state-of-the-art monitoring is one building block in creating a more resilient banking sector and ultimately a more stable economy.

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