**Topic 8 Credit assessment - retail**

## **Learning objectives**

In this topic we shall cover:

* the ways in which banks use credit scoring;
* advantages and disadvantages of credit scoring;
* the reasons for using credit bureaux;
* how behavioural scoring is used to predict payment default;
* the main life events affecting unlikeliness to pay.

When an individual approaches a bank intending to open an account, the bank will take steps to ensure it understands who it is dealing with. This is generally known as know your customer (KYC) and is part of the onboarding, or new customer process. This is covered in detail in Topic 10.

Once a customer is onboarded, they may require credit to use certain services. In this topic, we will define credit risk and explore the management of creditworthiness for retail customers.

**8.1 Credit risk**

In addition to verifying a customer’s identity and the source of their funds, the bank will need to assess whether the customer poses a potential credit risk. When a customer applies for a loan, such as an overdraft, credit card, personal loan, or mortgage, the bank will undertake a credit assessment to determine whether it is willing to offer these types of credit products and, if so, the maximum amount it is willing to lend to the customer (the credit limit).

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| **Key terms****Credit risk**The risk that a customer fails to repay all or part of their obligation when it falls due.**Credit assessment**The process lenders undertake to analyse a customer’s request to borrow money – including the purpose of the loan – to prevent the need for legal recovery at a future date. A credit assessment aims to establish, as far as possible, that the borrower has both the intention and the capability to repay the funds borrowed, according to the terms agreed.**Credit limit**The maximum amount of credit a financial institution extends to a customer on a credit card or line of credit. Lenders usually set credit limits based on a customer's credit report. |

**8.2 Credit scoring**

A credit score provides a snapshot of a customer’s creditworthiness at a particular point in time. It is a static observation valid at that point only. The main aim of credit scoring is to approve or reject a loan application. It is typically undertaken using a combination of credit bureau information with a bank’s own internal data (see section 8.3).

The way in which banks implement their credit scoring system depends on the size of their portfolio: most banks apply different levels of sophistication to modelling for different parts of their portfolio including:

* human judgement;
* own client data;
* credit bureau data;
* off-the-shelf credit models; and
* in-house built, bespoke models.

Many banks use a combination of these methods depending on the size of both the bank and the portfolio. For example, a bank with a large portfolio of personal loans and a small portfolio of mortgages may have a bespoke credit scoring model for personal loans.

The credit scoring process for a credit application typically starts with an allocation of points to each item of information that the customer provides on their application form, such as those included in the diagram.

The way in which points are assigned to each item of information depends on the bank’s internal credit scoring system, which is also referred to as a credit score card. Additionally, banks will have their own internal procedures indicating the minimum number of points required to accept a customer, as well as the interest rate that would need to be charged to cover the risk of customers with lower scores. These criteria are closely related to the bank’s risk appetite. Each bank will have its own thresholds, and therefore it is possible that a customer can be rejected by one bank but accepted by another.

**8.2.1 Statistical analysis**

Retail banks have large numbers of customers, and therefore collect huge amounts of information on repayment history, and other borrower characteristics. All this information is used to undertake statistical analysis to identify which characteristics may predict the likeliness of a customer to repay the amount they borrowed. In order to be effective, credit scoring models need a large amount of data that can be categorised in a standardised way. This way, borrowers with similar characteristics can easily be compared and common conclusions can be drawn.

Attaching a credit score to each customer allows a bank to determine a generic risk profile in a cost-effective way, as shown in Figure 8.1. However, it is not without risk as the process relies on generalisations which may not apply in the same way to each customer. For example, if the scorecard assigns a high probability that customers aged 30 to 50 years will repay, that does not mean that every customer in that age range will repay. A credit scoring model cannot differentiate the subtle variations between an individual and the generalised characteristics derived from a large group of customers.

**Figure 8.1 Examples of low, medium and high credit risk customers**

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| **Leron****45 years old****Risk – Low** | **Date opened** | **Overdraft/credit limit/loan amount** | **Balance** | **Note** | **Late payment** |
| **Bank account 1** | March 1998 | US$1,000 | US$4,000 |  | No |
| **Bank account 2** | June 2015 | US$0 | US$2,000 |  | No |
| **Credit card** | December 2001 | US$10,000 | -US$2,500 | Balance paid in full at end of month | 80 days, 3 years ago, 1 occurrence, US$657 |
| **Personal loan** | October 2018 | US$4,500 | US$500 |  | No |
| **Car loan** | January 2020 | US$20,000 | US$12,000 |  | No |
| **Mortgage** | January 2000 | US$250,000 | US$250,000 | Interest only | No |

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| **Sonali****36 years old****Risk – High** | **Date opened** | **Overdraft/credit limit/loan amount** | **Balance** | **Note** | **Late payment** |
| **Bank account 1** | January 2020 | US$1,000 | -US$219 |  | No |
| **Bank account 2** | May 2021 | US$500 | -US$496 |  | No |
| **Credit card** | December 2020 | US$6,000 | -US$5,973 | Minimum balance paid each month | Up to 20 days most months. |
| **Personal loan** | October 2018 | US$4,500 | -US$4,492 |  | No |

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| **Kadeen****25 years old****Risk – Medium** | **Date opened** | **Overdraft/credit limit/loan amount** | **Balance** | **Note** | **Late payment** |
| **Bank account 1** | March 2015 | US$500 | US$2,769 |  | No |
| **Credit card** | December 2019 | US$10,000 | -US$4,796 | At least 50% of balance paid every month | 90 days late, 6 months ago, 1 occurrence |
| **Student loan** | June 2018 | US$76,000 | US$76,000 |  | First payment due June 2024 |

**Bankruptcy**

Any potential change in borrowing behaviour will need to be incorporated into the credit scoring model to ensure the model is effective. Take, for example, bankruptcy. In many countries, bankruptcy used to be considered something to be ashamed of and customers would try to avoid this at all costs. However, as people’s attitude towards personal bankruptcy is changing, this has generally led to an increase in defaults on loans and credit cards, leading to an increase in bad debt.

For banks, though, bankruptcy is still considered to be a cause for concern and a reason for default. To counteract this change in behaviour, to reduce their exposure to default, and to assist customers rebuilding their credit scores, banks will offer other transaction types such as collateralised loans and credit cards. Changes in behaviour and perception can be gradual or sudden, which is why it is important to regularly review the credit scoring to ensure it remains fit for purpose. In addition, due to the fact that over time a borrower’s circumstances and behaviour changes, the bank will regularly review a customer’s credit score and amend its lending decisions accordingly.

**Algorithms**

Most credit scoring systems for individual clients are based on algorithms in combination with statistical analysis to reach a credit score. This process involves little to no human intervention. Therefore, if the credit scoring system is no longer fit for purpose, it will result in more and more loan applications falling outside the approval scores and being accepted or rejected by the model for the wrong reasons. Credit scoring systems provide a score based on the available information, and do not determine whether lending to one customer is more or less risky than lending to another with a similar credit score.

Although largely automated, the credit approval process usually involves a review of applications by a credit officer when they fall within a predetermined range of credit scores, as well as a sample review of applications below or above a set score that would be automatically approved or denied.

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| **Check your understanding**What would be the effect of each of the following on the bank’s business:1) A loan is accepted although, based on current information, it should have been rejected.2) A loan is rejected although, based on current information, it should have been accepted. |

**Table 8.1** **Advantages and disadvantages of credit scoring**

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| **Advantages** | **Disadvantages** |
| The majority of decisions are made on the basis of statistics, which means the subjective human element of the assessment process is reduced. Therefore, individual lending managers’ judgement cannot be influenced by personal factors. | Individual applications may be rejected without there being a single identifiable reason. The total score based on an average of different factors does not meet the bank’s internal threshold required for acceptance.  |
| Speed of processing loan applications is faster due to the use of technology. | There may be a perception that individuals have been rejected by a computer. |
| Costs reduce because it is automated and does not require lengthy manual credit assessment by skilled staff. | Exclusion – some people’s circumstances may not fit the criteria for a good score. For example, breaks in employment, part-time employment and self-employment, typically have a negative impact on credit score, even if the customer has sufficient income. |
| Banks can apply and change a standard set of lending criteria across the organisation quickly and efficiently. | Credit scoring can be seen as inflexible and is inappropriate for some specialist lending situations.  |
| Credit scoring models are always being improved, enhancing the robustness of their assessment of potential borrowers. |  |
| The applicant does not need to have a track record with the bank, because their repayment profile across all lenders is taken into consideration. | Customers can manipulate the application to achieve a satisfactory score, though the answers will need to be verified with an independent source to ensure they are true.  |
| The credit score from the model can be linked to a pricing table, so that the interest rate charged reflects the level of risk and probability of repayment. | Credit footprints – the credit‑scoring system makes enquiries to credit reference agencies for information on a loan application which are recorded. This means that shopping around may have a negative impact on a customer’s credit report, as multiple applications can indicate over‑borrowing or that the applicant is being declined. This is being resolved with the introduction of what are known as ‘soft footprints’, which are registered when a borrower is shopping around or checking their own credit score but not applying for credit. These checks are still visible, though they do not affect the credit rating in the same way as a hard check. |
| Credit score models can be linked to other sources of information, including credit and reference agency data and account conduct information held by the bank, leading to greater accuracy. |  |

In addition, credit scoring models are always being improved, enhancing the robustness of their assessment of potential borrowers. In fact, in many countries, they can be linked to other sources of information, including credit and reference agency data and account conduct information held by the bank, leading to greater accuracy.

**8.3 Credit bureau**

A credit bureau, also known as a credit reporting agency or credit reference agency, is responsible for calculating credit scores. They are private companies that compile and analyse financial information related to individuals and companies. Although they are private companies, credit bureaux are regulated by financial regulators such as the UK’s Financial Conduct Authority (FCA).

A credit bureau does not decide on a loan or credit application; rather it collects data from a variety of sources, organises and stores the information, calculates credit scores, and sends the information to banks and other users. Credit bureau information can be used as a source, or it can be used to independently verify information provided by a third party. Information held by credit bureaux is a valuable resource for assessing the accuracy of applicant details and for identifying potentially fraudulent or non-creditworthy applications.

Although there are numerous credit rating agencies, globally the most commonly used are the following:

* [Equifax](https://www.equifax.com/personal/);
* [Experian](https://www.experian.com/);
* [TransUnion](https://www.transunion.com/).

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| **FACTFIND**Find out what happened when Equifax had a large data breach. Who were the regulators enforcing the penalty? Hint – they were fined in multiple countries. BBC News – [Equifax to pay up to $700m to settle data breach](https://www.bbc.co.uk/news/technology-49070596). |

Some of the information, such as bankruptcy and taxes owed, is publicly available. Other information is obtained from banks, credit card companies, mobile phone providers, utility companies, government agencies, other creditors and debt collection agencies.

The information collected includes the following.

In addition, a credit bureau will also keep track of searches made by other potential lenders, as that could suggest the person has applied for loans elsewhere. A credit bureau may obtain information from industry-wide databases containing fraud warnings, and people who have moved house without forwarding their new address.

There is no legal obligation for any bank or creditor to provide this information to a credit bureau and, because there are costs involved for this as well as for accessing the data, many institutions choose to work with only a limited number of credit bureaux.

Credit bureaux have two main types of customer.

1. Lending institutions who wish to know the creditworthiness of their customers and incorporate their score into their own credit scoring systems, such as:
* banks;
* mortgage lenders;
* credit card issuers; and
* personal finance providers.
1. Individuals who wish to understand their own credit score.

Although each credit bureau has its own method to determine the credit score of an individual customer, they are generally based on the models developed by the [Fair Isaac Corporation (FICO)](https://www.ficoscore.com/) and [VantageScore](https://vantagescore.com/).

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| **Key term****Prime**This type of borrower has either a very low or zero chance of defaulting on loan obligations.  |

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| **What is a credit score?**This is a three-digit number calculated from the data on credit reports. It predicts how likely someone is to repay an agreed credit obligation. Lenders use credit scores to help them quickly, consistently and objectively evaluate potential borrowers' credit risk. Each model has its own scores – the FICO and VantageScore credit scores are shown below.

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| **FICO score** | **Rating** | **Meaning** |
| < 580 | Poor | High risk borrower |
| 580–669 | Fair | Below average, but will be accepted by many lenders |
| 670–739 | Good | Average borrower, generally considered a good risk |
| 740–799 | Very good | Low risk borrower |
| >800 | Exceptional | Very low risk borrower |

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| **VantageScore**  | **Rating** | **Meaning** |
| <600 | Subprime  | High risk borrower |
| 601–660 | Near prime | Average borrower, will be accepted by many lenders |
| 661–780 | Prime | Low risk borrower |
| 781–850 | Super-prime | Very low risk borrower |

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| **Reflect**Credit scores for FICO and VantageScore range from 300–850. How does this compare to credit bureaux used in your country?  |

A customer with a FICO score below 580 or a VantageScore below 600 is often referred to as having a very poor credit rating. This does not mean they will be unable to obtain a loan. Some banks will decline customers with a bad credit score, others will extend loans to these customers but charge a higher interest rate to cover their risk.

In order to determine a credit score, characteristics are grouped in different categories each with their own weight, as follows:

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| **Category** | **Description** | **FICO risk weight** | **VantageScore risk weight** |
| Payment history | Repayment behaviour – are credit obligations paid on time? | 35% | 41% |
| Credit utilisation or amounts owed | The amount owed on different credit obligations. A large amount owed does not necessarily mean a low credit score. The consideration is for the ratio of money owed to the amount of credit available to the person. | 30% | 20% |
| Length or depth of credit  | In general, if a person has a longer credit history it is easier to assess their score since there will be more data available. | 15% | 20% |
| New credits | Number of recently opened accounts. If a customer has opened a large number of new accounts in a short period this raises concern.  | 10% | 11% |
| Credit mix | Variety of accounts. | 10% | - |
| Balances | Total amount of recently reported balances. | - | 6% |
| Available credit | Amount available to draw under credit lines. | - | 2% |
| **Total** | **100%** | **100%** |

Both methodologies are updated regularly to reflect changes in borrower behaviour as well as the micro and macro environment. Credit bureaux supplement the methodology they use with their own observations. As each credit bureau will apply its own methodology and have access to different pieces of data, an individual’s score can be different for each of the credit bureaux. Figure 8.2 shows the categories of information that are used to create an individual credit history.

## **Figure 8.2 Good and bad characteristics of a candidate's credit rating**

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| **IN BRIEF: Microenterprises**These are small businesses consisting of typically up to ten employees and created with the help of a modest startup loan. Financed by microcredit – a type of loan for people with no collateral, credit history or employment history – microenterprises have helped to transform the lives of those in developing countries by providing the means to offer necessary services or products in local communities. |

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| **FACTFIND**Research a credit bureau to discover your credit score. You can use a local or global one, but bear in mind that global companies may not operate in your country.* [Equifax](https://www.equifax.com/personal/);
* [Experian](https://www.experian.com/);
* [TransUnion](https://www.transunion.com/).
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# Activity: How a FICO credit score is determined

# Six minutes.

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## Watch the [video](https://www.youtube.com/watch?v=Hf4BgvN5f_E) and answer the following four questions.

1) Name the five categories that FICO includes in its credit scoring system.

2) Typically, how many years does it take for late payment entries to disappear from a credit report?

3) How is the debt to credit ratio defined?

4) On a US$10,000 loan, Soo Young receives an 8% simple interest rate, while Min Yeo has a 5% simple interest rate. How much interest does Soo Young pay over a year compared to Min Yeo?

**8.4 Behavioural scoring**

A credit score provides a snapshot of the credit worthiness of a customer – a static observation valid at a specific point in time only. Behavioural scoring uses a customer’s known credit score and analyses recent behaviour of a customer to predict whether their likelihood to default has changed.

Payment behaviour over a period of six to 12 months is used, analysing characteristics such as average, minimum, and maximum balance, credit and debit turnover, missed payments, and the use of overdrafts. This information is used to assess whether there is a possible trend indicating a deterioration in credit quality. For example, an increase in the number of missed payments, or in the number of days paying late, frequent use of cash advances on credit cards, or a change from paying a credit card balance in full to only paying the minimum monthly instalment are all indicators of possible payment difficulties.

Although each bank will have its own way to implement behavioural scoring, the models often have some overlap with credit scoring models, particularly in relation to customer segmentation by age and income brackets, or geographical areas.

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| **IN BRIEF: The advantages of behavioural scoring**Contrary to credit scoring, the aim of behavioural scoring is not to approve or deny a loan application, but to assess whether a client continues to be able to repay their loans, or potentially become delinquent. There are some advantages of behavioural scoring.* The information is available in the bank’s own systems and the bank does not need to rely on a third party for accuracy and completeness. It gives objective analysis based on experience and is possibly more reliable than that obtained from external sources.
* The information is fully up to date and, provided it stays current in the appropriate systems, it is available in real time.
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Although behavioural scoring is mainly used to identify trends in customer behaviour, it can also be used to assess the likelihood of accounts becoming inactive or closing or, for accounts already in default, to help structure the best repayment schedule for a customer.

## **8.5 Life events affecting ability to pay**

There are a number of events in an individual’s life that may affect their ability to repay a debt or increase their levels of overdrafts.

Each of these events has either a cost associated with them or result in temporary or permanent loss of all or some income. In addition, each of these events has an emotional impact on the person involved. This impact may cause a person to be temporarily incapable of looking after their affairs or be unable to repay their debt.

When a bank has been notified by a customer that they have been affected by a major life event, it will be able to assess any increased levels of potential credit risk and help the customer by implementing an achievable repayment plan.

## Test your knowledge

1. When a customer applies to open a bank account, the bank will undertake a process called:
2. the fair treatment of customers.
3. know your customer.
4. a spending review.
5. behaviour assessment.
6. Credit risk is defined as the risk that:

a. an individual will become bankrupt.

b. a customer will be regularly in debt.

c. a customer fails to repay all or part of their obligation when it falls due.

d. an individual will have long-term health issues.

1. Credit bureau data is used by banks to assess:
2. employment status of the customer.
3. profitability of a loan for the bank.
4. a customer’s credit score.
5. homeownership.
6. In credit terms, soft footprints can adversely affect a customer’s credit rating. True or false?
7. A FICO credit score of 685 is considered to be:
8. poor – a high risk borrower.
9. exceptional – a very low risk borrower.
10. good – an average borrower, generally considered a good risk.
11. fair – a below average borrower, but will be accepted by many lenders.

**References**

Econlowdown (2015) *How a FICO credit score is determined* [video]. Available at: <https://www.youtube.com/watch?v=Hf4BgvN5f_E>

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## **Further reading**

Thomas, L.C., Ho, J., and Scherer, W.T. (no date) *Time will tell: Behavioural scoring and the dynamics of consumer credit assessment* [pdf]. Available at: <https://eprints.soton.ac.uk/36113/1/01-174.pdf>