

## DEBT AND DEBT RECOVERY

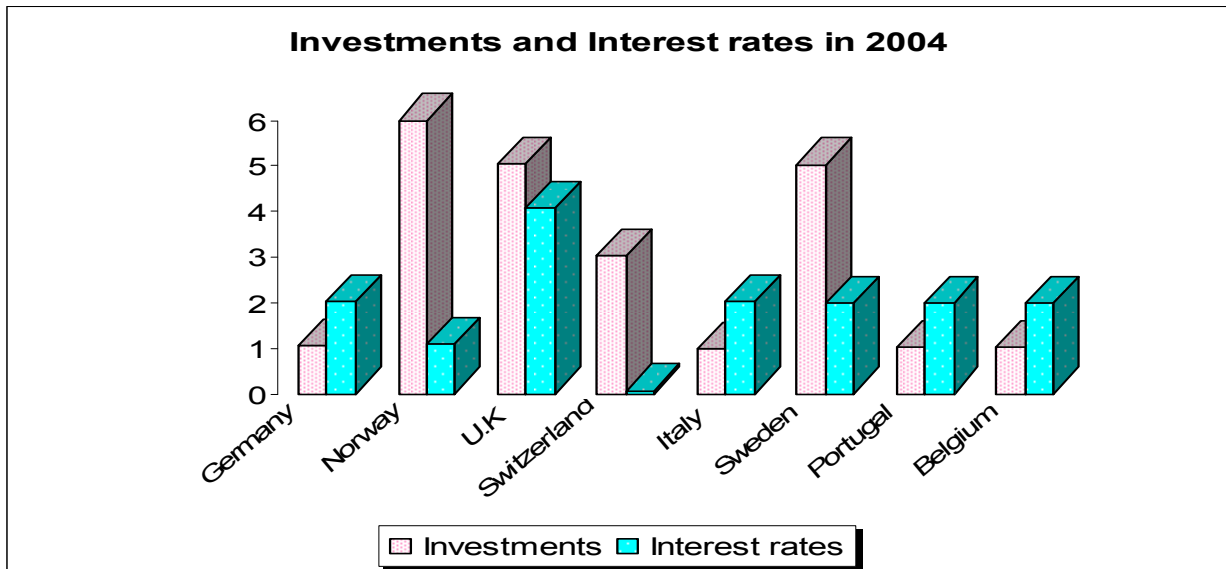
- **Debt is a sound** way to finance good investments
- **Debt is dangerous** only when assets are declining in value and income is shrinking
- **Good investments** either create wealth or protect wealth, economic growth and rising incomes
- **Macro Economic indicators** – Inflation, consumer spending , short term interest rates, Economic growth, Investments, GDP, corporate insolvencies are all important to determine the state of the economies consider and evaluate bad debt risk for the countries considered in this presentation.
- **Credit Information** is a good indicator in differentiating a good investment from a bad one. Good investments – Good credit risk, Bad investments - bad credit risk
- **Information is important** in determining the outcome of any event. Considering an event the expectation of receiving the money at a certain date, greater the information available in the market, greater is the possibility of judging the outcome of an investment in the future given the information available to me today

*Before arriving at a credible solution for efficient debt collection we will have to find the answer to the*

**Question : Which countries are facing dangerous debt and why? the answer to which will depend on the macro economic indicators relative to each country.**

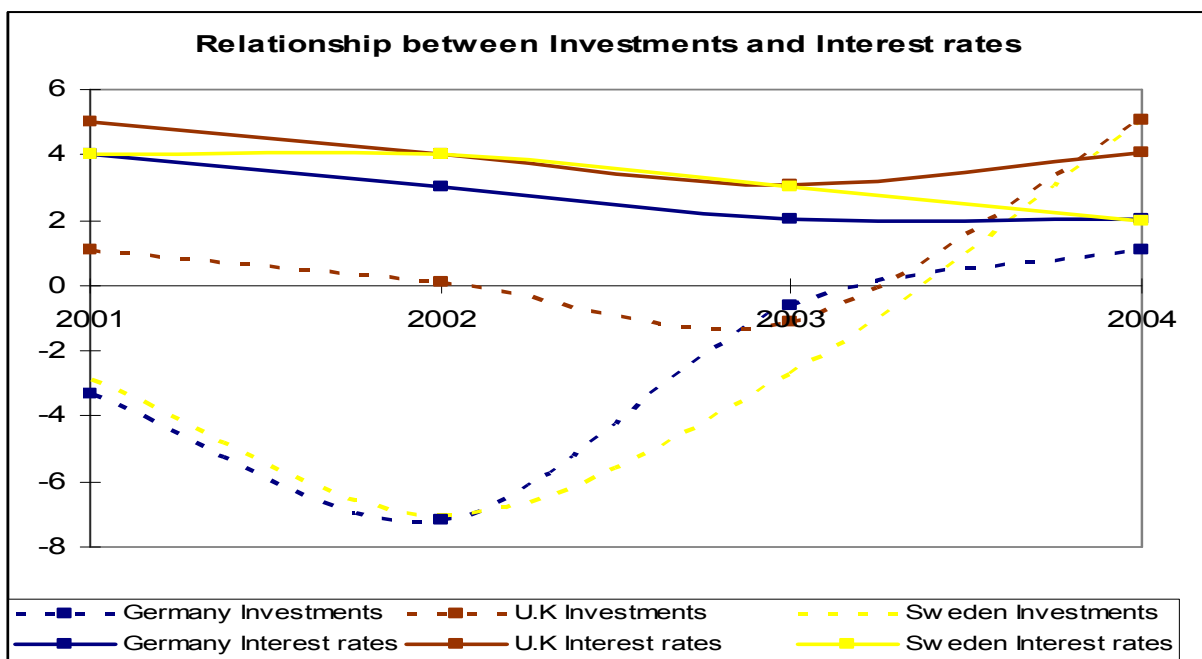
# Macro Economic Indicators relative to the year 2004

- Interest rates and change in investments

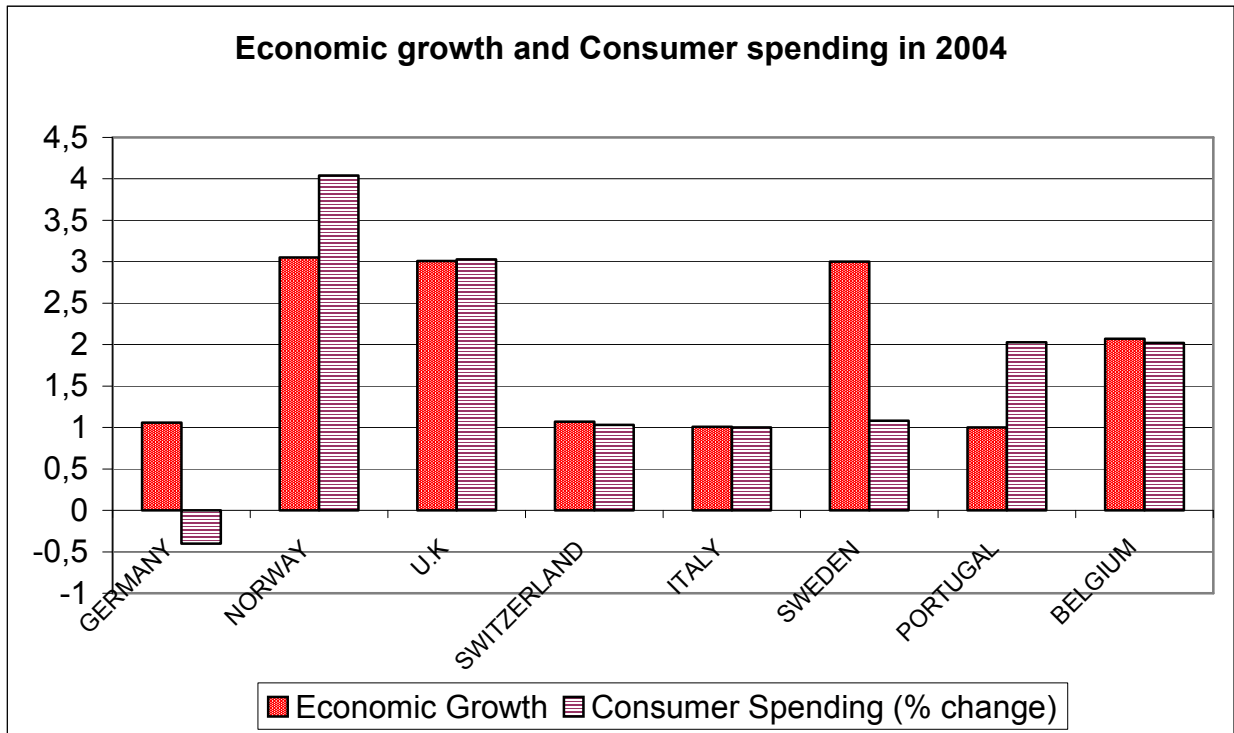


The **highest** percentage change in **investments** in the year 2004 has been recorded by the **Norway, U.K, Sweden** and **Switzerland**, and the **lowest** by **Germany, Italy, Portugal** and **Belgium**

**For all the countries a decrease in interest rates has caused investments to increase. Below in Fig .. this relationship has been plotted , for U.K, Sweden, Germany.**



- **Economic growth and Consumer Spending**



- **Germany and Sweden Higher Economic growth than consumer spending**
- **Norway and Portugal Higher Consumer spending than Economic growth**
- **Italy, U.K, Switzerland and Belgium Consumer spending and Economic growth balanced**

GERMANY	NORWAY	UK	SWITZERLAND
Higher Economic growth than consumer spending	Higher Consumer Spending than Economic growth	Consumer spending and Economic growth balanced	Consumer spending and Economic growth balanced
ITALY	SWEDEN	PORTUGAL	BELGIUM
Consumer spending and Economic growth balanced	Higher Economic growth than consumer spending	Higher Consumer Spending than Economic growth	Consumer spending and Economic growth balanced

- **Getting Credit**

*Measures on credit information sharing and the legal rights of borrowers and lenders*

- **The Legal Rights Index** ranges from 0-10, with higher scores indicating that those laws are better designed to expand access to credit.
- **The Credit Information Index** measures the scope, access and quality of credit information available through public registries or private bureaus. It ranges from 0-6, with higher values indicating that more credit information is available from a public registry or private bureau.

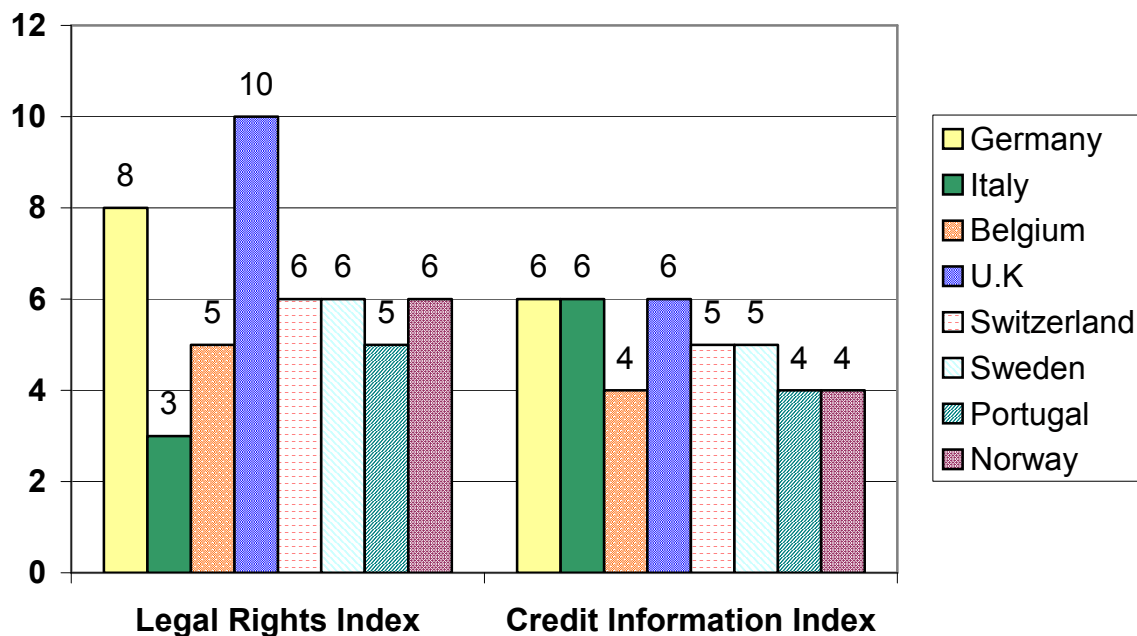
- **Closing A Business**

*The time and cost required to resolve bankruptcies.*

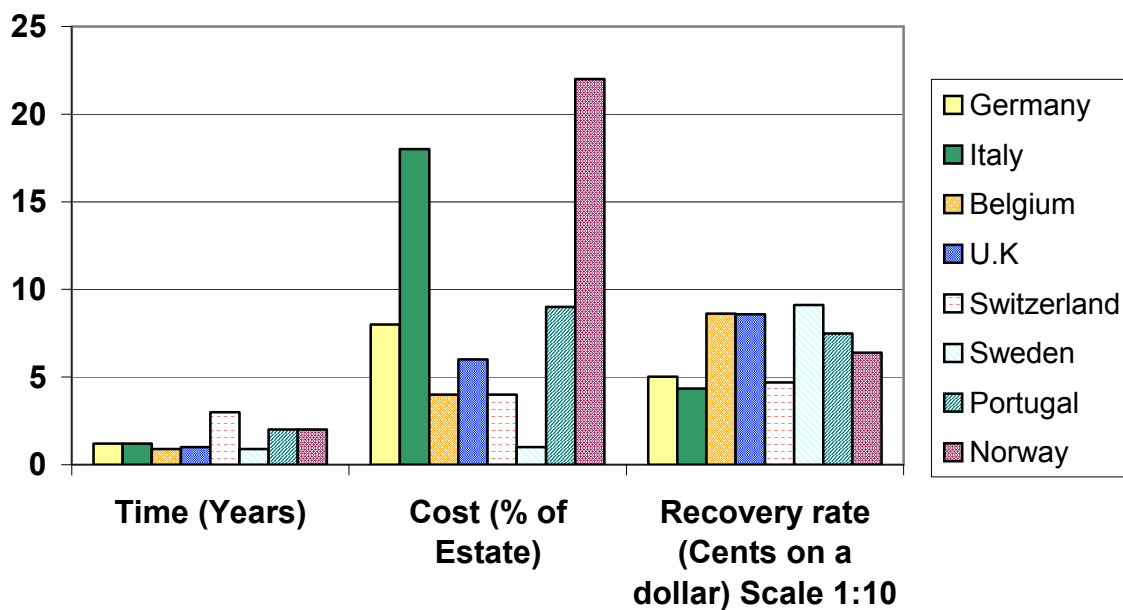
- **Time** is the length of the process in years
- **Costs** is measured as a percentage of the Estate Value.
- **Recovery rate** expressed in terms of how many cents on the dollar claimants recover from the insolvent firm

<b>Rankings</b>	1	2	3	4
<b>Getting Credit</b>	U.K	Germany	Sweden	Switzerland
<b>Closing a Business</b>	Norway	Belgium	U.K	Sweden
<b>Rankings</b>	5	6	7	8
<b>Getting Credit</b>	Norway	Belgium	Italy	Portugal
<b>Closing a Business</b>	Portugal	Germany	Switzerland	Italy

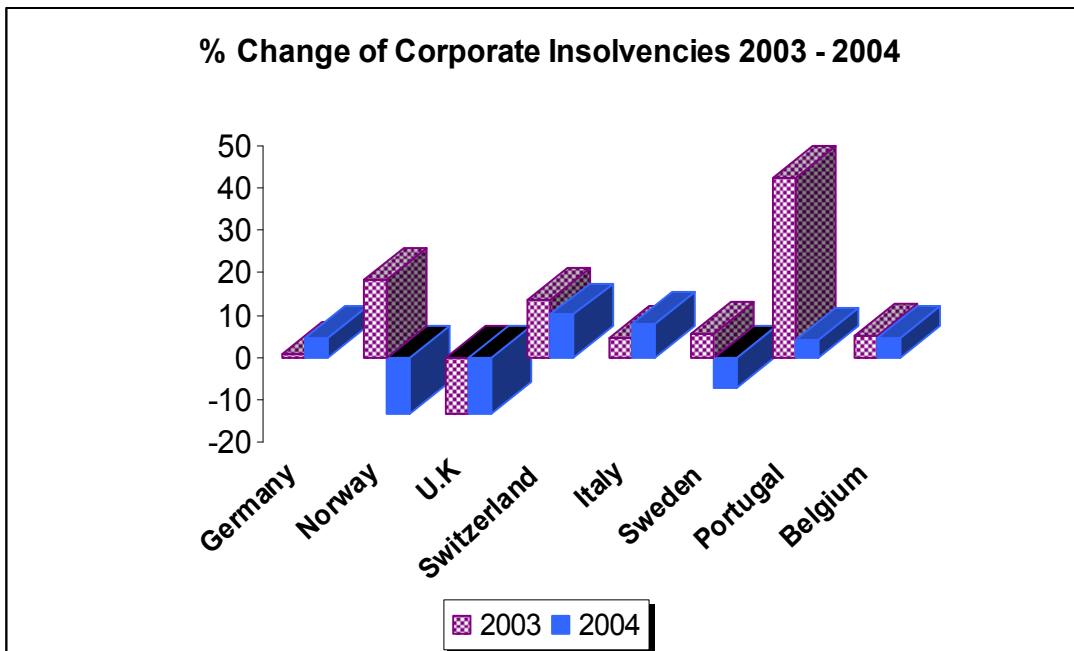
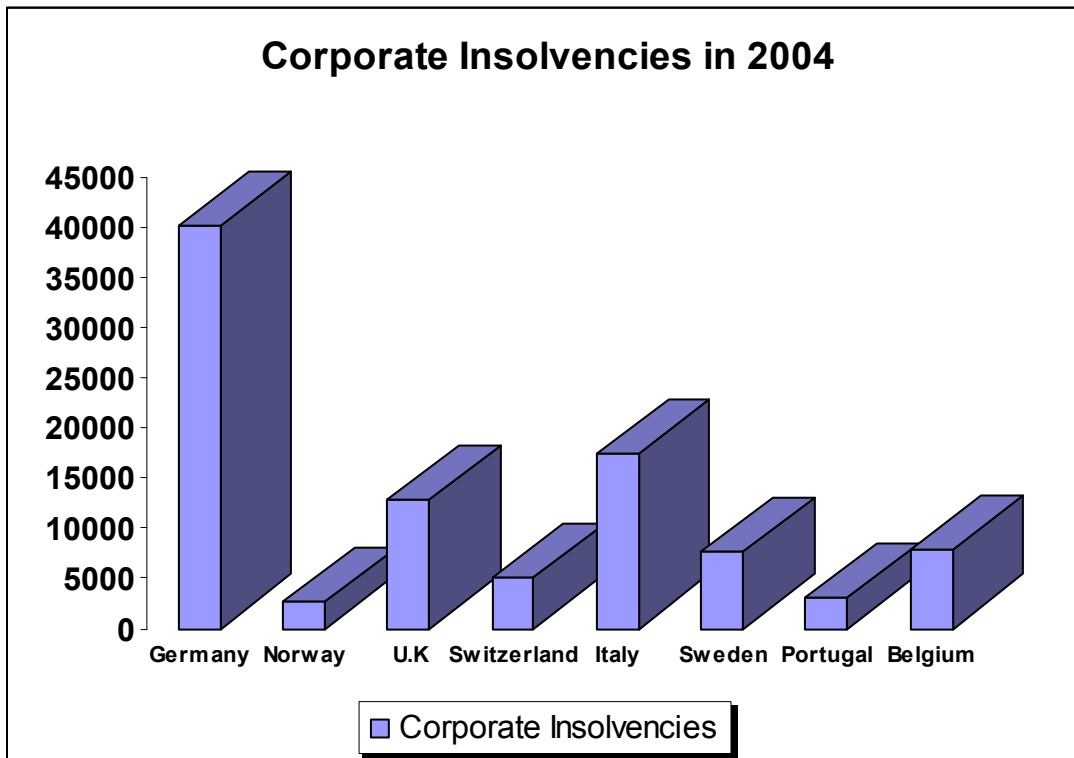
### Getting Credit











### Closing a Bunsiness



- **Corporate Insolvencies**



<b>Rankings</b>	1	2	3	4
<b>Corporate Insolvencies</b>	Germany	Italy	U.K	Belgium
<b>Tendency in 2004 compared to 2003</b>				
<b>Rankings</b>	5	6	7	8
<b>Corporate Insolvencies</b>	Sweden	Switzerland	Portugal	Norway
<b>Tendency in 2004 compared to 2003</b>				

- **Categorising the countries facing dangerous debt**

*The table below ranks the countries from those with the highest to those with the lowest risk in facing dangerous debt, based on the economic indicators relative to each country.*

	<b>Countries facing Dangerous debt</b>			
<b>Risk</b>	1	2	3	4
	Italy	Portugal	Germany	Belgium
	5	6	7	8
	Switzerland	Norway	UK	Sweden

Comparing the above table to that of the credit information index, we note that the countries with the best Credit information index are faced with a lower in risk in dangerous debt. **This stresses on the importance of having good access to credit information in a country.**

- **Customer data helpful in optimising debt collection**

*Predicting outcomes better than handling the situation, when or after the insolvency has occurred.*

**Greater credit information** would lead to debt to be given wisely to customers, who, consequently make better investments, thus resulting in good debt. Good debt hinders growth and rising incomes. As long as we grow healthier it is harmless to roll over the debt to fund new growth.

**Optimising debt collection** using customer data.

- The increase in the already considerable consumer debt mountain, and the subsequent need to manage the collection of that debt , is the issue that affects all companies who deal with consumer credit.
- Credit card lending, has seen writ off and consumer debt mountain increasing. For example in the UK household debts have already reached the £1 trillion mark in 2005£1 trillion mark in 2005, and the need to manage revenue collection intelligently becomes even more important.
- Evaluating vast amounts of data about a company's customer base and past behaviour on a data mining platform provides a clear forecast for the future behaviour of customers at an individual customer level, allowing the application of the collections strategy with the highest likelihood of success. vast amounts of data about a company's customer base and past behaviour.

*Current strategies are usually based on a set of limited data, such as:*

1. **The time** the debt has been outstanding
2. **The amount** of the outstanding debt
3. **The address** details/post code

*A flexible technique, which can be utilised through the entire collections process to improve performance, particularly in the following 4 key areas should be adopted*

1. **Choosing the right customers** to contact to maximise collections cash flow
2. **Optimising payment options for customers** to minimise future debt
3. **Analysing existing processes** to identify improvements that increase collections and reduce debt
4. **Deploying real time collection strategies** to reduce credit risk

This technique would increase the recovery of delinquent accounts by making use of information specific to each customer, to identify those who are most likely to settle their accounts when called.

Therefore, collections departments can prioritise the accounts with the most probable success rate, which can improve collections by up to 100

The process uses existing data as a basis to predict the future actions of individual customers. In its basic form, it works through the creation of a model based around the specific information required.

'discovers' the relationship between payment performance (for example, if revenue is usually collected after a call or not) and other customer data, such as the amount of days since the last bill and the last collections event.

By using a real set of data from a past event, the predictions can be compared to the actual outcome. Once tested and proven, the predictive model can be applied to the entire customer database.

## **The predictive models can be based on a range of modern analytical techniques such as:**

- Decision trees
- Association Rules
- Neural Networks
- Regression
- Segmentation and clustering

Decision trees are an important technique well documented in Financial calculus when pricing financial derivatives and credit derivatives.

## **Example of risk neutral valuation in the pricing of defaultable bonds**

When stocks and bonds are available in the market and the market is complete

- Markets are working efficiently
- All products are tradable

**Thus the information available** in the market is complete. A simple way to measure the default probability of a bond is by comparing it to a government treasury bond where there is no risk in the transaction. Any other defaultable bond can be priced under an **equivalent risk neutral measure**

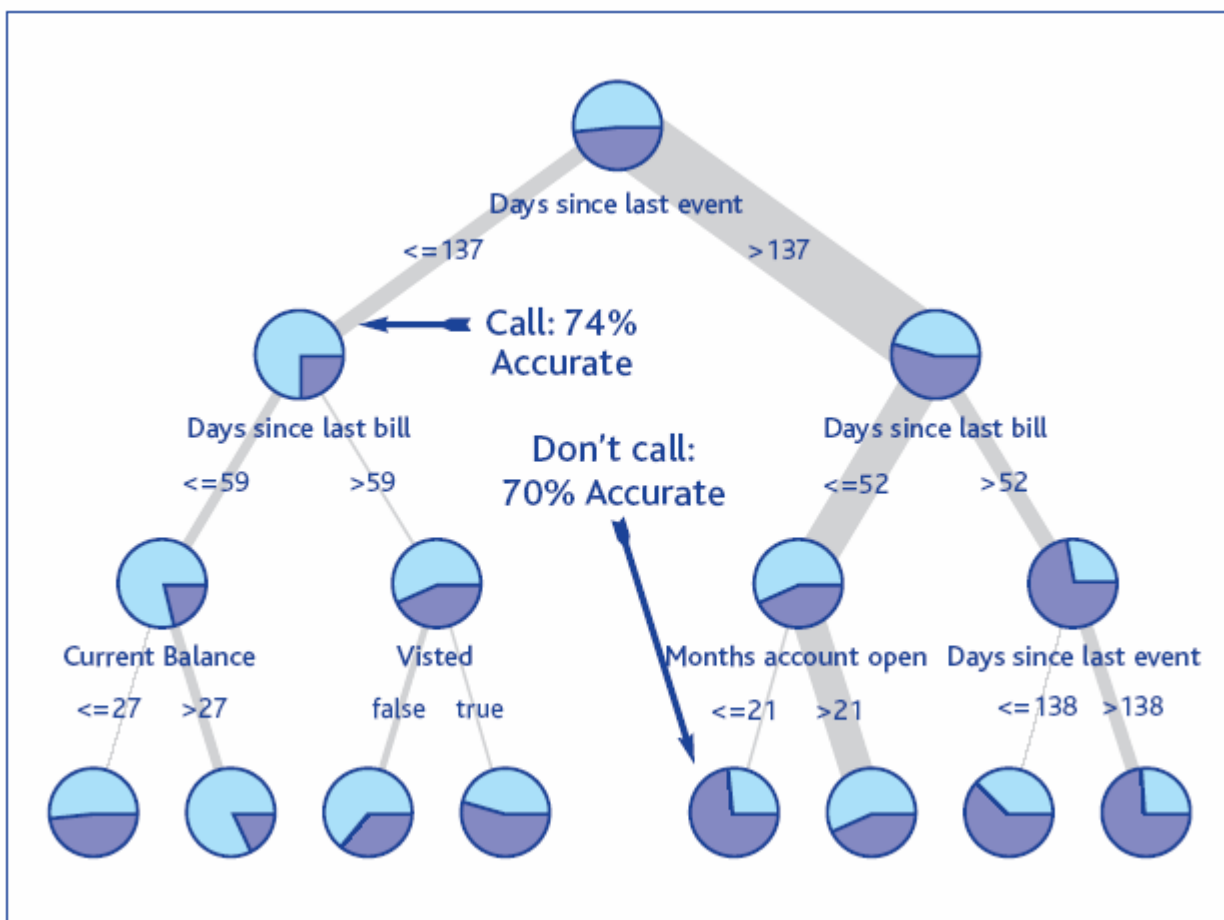
Thus if a government Treasury Bond has a price ' $X$ ' and goes up to ' $X1$ ' with prob ' $p$ ' and down to ' $X2$ ' with probability  $(1-p)$

And similarly we have a defaultable bond whose price is ' $Y$ ' and goes up to ' $Y1$ ' with prob ' $p$ ' and down to ' $Y2$ ' with prob  $(1-p)$ , then under an equivalent, risk neutral, measure ***their expectation should be the same***. Thus

$p = (Y2-X2)/(Y2+Y1) - (X1+X)$  is the value of  $p$  needed to set up this risk neutral measure, thus  $1-p$  will be the probability of default of this defaultable bond.

## Example Modelling Technique 1: Decision trees

The following example model is based on the decision tree technique. A decision tree works through the following basic process:



Each node in the tree is a question based on the customer data used to train the tree, except the bottom (leaf) nodes which represent a prediction. To make a prediction for a customer, the tree is traversed from the top. The path to a leaf node is determined by the correct answer to the question at each visited node, based on the data held about the customer. A predominately dark blue leaf node is a prediction that a customer is likely to pay, and a predominately light blue node indicates that a customer is not likely to pay. The

proportion of the colour in the leaf node gives the expected accuracy of the prediction; for example, a leaf node that is 3/4 dark blue is a prediction the customer will pay with 75% accuracy. The thickness of the lines in the tree shows the proportion of customers in the training set following each traversal path through the tree. In this example, the overall tree is up to 85% accurate at predicting which customers will pay when they are called.

## The result

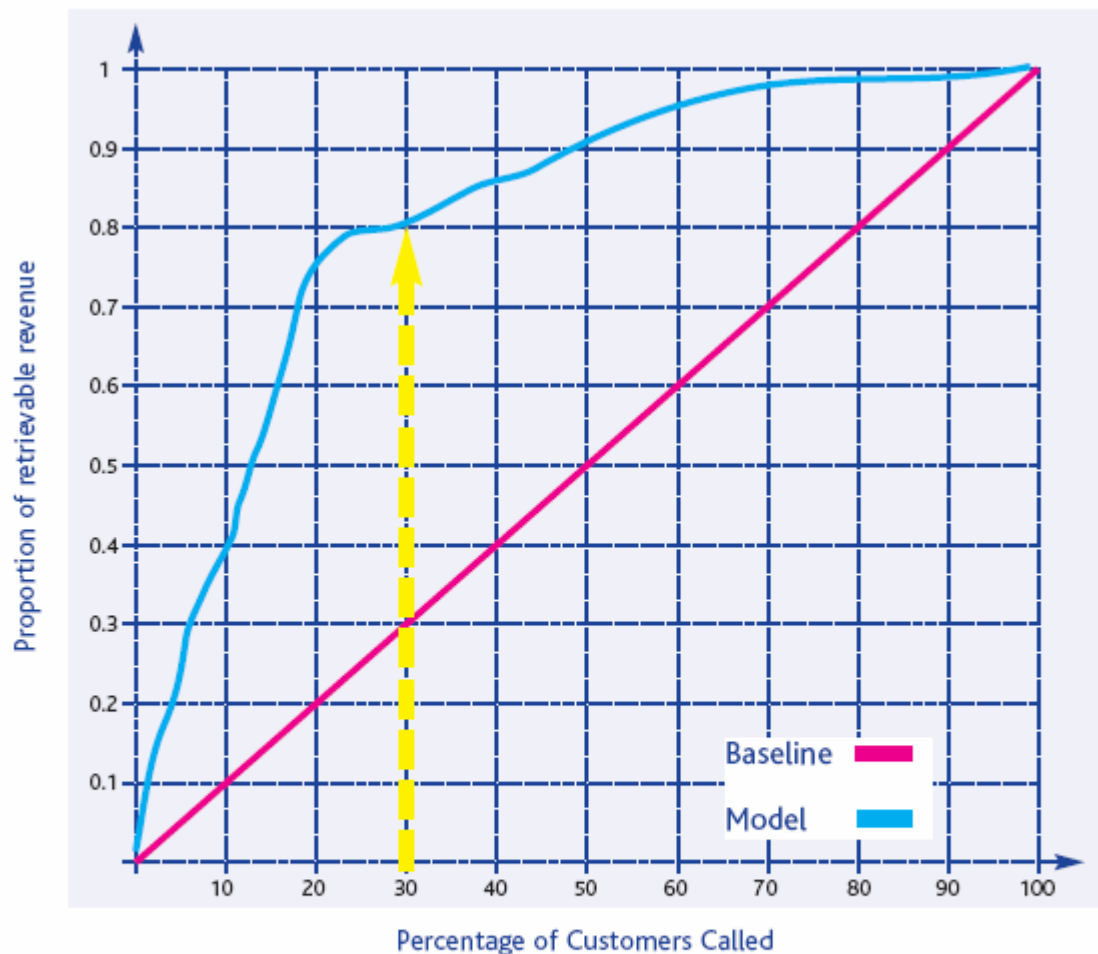
In practice, maximising collections by calling those customers who are most likely to pay,

would work as follows:

- Use the software to sort delinquent accounts on the probability that the customer will pay
- Sub-sort on the amount owed
- Load the diallers with the ordered list, and **call the customers in order (highest probability first)**

**The advantages** of this are clear – not only the revenue will be collected, but it will be achieved with the minimum of resource. This **reduces call centre time and operational costs**, freeing up collections agents to work on other accounts.

The diagram below shows the comparison between this process, and random calling. As can be seen, using predictive analytics techniques has resulted in 80% of the revenue being collected from the top 30% of customers as ordered by the software. This is in contrast to the proportion of revenue collected through random calling.



Baseline = revenue vs proportion of customers contacted without the use of analytics (random)

Model = revenue vs proportion of customers contacted with the use of analytics (targeted)

- **Current most common procedures adopted for debt collection and payments in the countries examined.**

## Payments

Bills of exchange are widely used for commercial transactions. In order to be valid, however, they are subject to stamp duty whose rate is set each year in the country's budget. A bill of exchange is generally deemed independent of the contract to which it relates.

While creditors, in the event of payment default, are not required to issue a protest notice before bringing an action to court, such a notice can be used to publicise payment default and pressure the debtor to honour his obligations, albeit belatedly.

Cheques too are widely used. They are payable on presentation and subject to the minimum stamp duty that is borne by the bank. It is no longer an offence to issue uncovered cheques as a guarantee for staggered payments.

In the event of default, cheques, bills of exchange and promissory notes offer effective guarantees to creditors as they are enforceable instruments in law and entitle holders to initiate *executory proceedings*. Under this process, creditors may petition the court to issue a writ of execution and notify the debtor of such an order. Where the debtor still fails to pay up, creditors may request the court to issue an attachment order against debtor's property.

SWIFT bank transfers, which are both flexible and efficient, also account for a growing proportion of payments.

## **Debt collection**

Out-of-court collection starts with the debtor being sent a final demand for the payment of the principal amount, plus any default interest that may have been agreed between the Parties, within eight days.

Save as otherwise provided in the agreement, from 18 February 2003, the rate of interest applicable is the European Central Bank's refinancing rate marked up by seven basis points.

The Ministerial Order of April 1999, which set the legal default interest rate at 12% for commercial debt, remained in force until 30 September 2004.

Since 19 March 2003, the fast-track procedure (injunction to pay) applicable to commercial claims considered uncontested and whatever the amount involved must be heard by the court in whose jurisdiction the obligation is enforceable.

For disputed claims, creditors may initiate formal and costly "declarative proceedings", lasting a year or more, to obtain a ruling establishing their right to payment. They must then initiate "enforcement proceedings" to enforce the court's ruling.

<b>PAYMENTS</b>	<b>Bills of exchange</b>	<b>Cheques</b>	<b>Bank transfers</b>	<b>Other means of payments</b>
Germany	Rarely used,	Not considered a payment but a payment attempt. <b>German law ignores the principal of uncovered cheques</b>	Prevalent means of payment	
UK	Rarely used	Widely used. Not secure, since non payment of cheques is not a criminal offence.	Widely used. Parties must have established trust	Centralised Accounting
Belgium	Commonly used. In the event of default protests maybe drawn up within two days of the due date.	Commonly used. The Belgian prosecutors office is willing to press criminal charges for claims over 5000 Euros	Not commonly used since there is no fullproof guarantee of payment	
Sweden	Rarely used	Sanctions for issuing uncovered cheques had become relaxed	Widely used. Parties must have established trust	Promissory notes, rarely used
Switzerland	Rarely used. Commercial operators are particularly demanding as regards their formal validity	Rarely used. Commercial operators are particularly demanding as regards their formal validity	Widely used	
Norway	Not widely used nor recommended. Used to substantiate the existence of a debt	Not widely used nor recommended. Used to substantiate the existence of a debt	Rapidly gaining popularity	Centralised Accounting
Portugal	Widely used	Widely used. No longer an offence to issue uncovered cheques as a guarantee for staggered payments.	Widely used	
Italy	Secure but rare. High stamp duty. Lengthy cashing period	Wide spread. When used abroad must bear the wording non trasferibile	Widely used. Parties must have established trust	Promissory notes, widely used