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Legally Scored

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Agenda



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- Introduction
- Credit scoring data
- Legal vexations – a thorny path!
- Going 'back to basics'?
- A road less travelled...

- **Credit scorecard development**
 - Large amounts of data distilled into a predictive model
 - Models based on consumer info
 - Consumer info has *strings attached!*
 - Regulatory compliance – Basel II Accord
 - **Anti-discrimination laws – equal access to consumer credit**
- **Variables** used in modelling
 - Current practice – variables that appear 'discriminatory' are excluded from model – counter-intuitive?
 - Indirect discrimination
 - Dilution of model's effectiveness
 - Room for a wider interpretation of 'discrimination'?

Credit scoring data



Credit scoring → Prediction of lending risk

The credit scoring developer's quest

- Model should make best possible estimate of risks currently available
- To assist credit grantor in making most profitable decision

Diversity of applicants

Decisions made at various phases of an applicant's account

Then: Subjective 'judgmental' processes

Now: More consistent, objective, demonstrable methodologies

Information used to assess credit risk: Demographics, job, income, living arrangements, assets & liabilities, ...

Legal Vexations

A Thorny Path!



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- Most **variables** used in credit scoring models
 - Will have obvious associations with the risk of default
 - (Though a model will not necessarily **explain** why a particular applicant will default or otherwise)
- Selection of variables **limited** by **laws** pertaining to **equal treatment** of credit applicants
 - **UK**: Grant of credit should not discriminate on grounds of disability*, gender reassignment*, pregnancy and maternity*, race (incl. colour, nationality, ethnic or national origin), religion/belief, sex*, sexual orientation (*Equality Act 2010*)
 - *Some exceptions may apply in the insurance industry on grounds that there is a difference in risk associated with the characteristic, provided it is reasonable to treat such persons differently (*though recent ECJ ruling in March 2011 may throw a spanner in the works!*)
 - **US**: Grants of credit should not discriminate on grounds of race, colour, religion, national origin, sex, marital status, age (provided the applicant has the capacity to contract), status as a recipient of public assistance, any claim in good faith existing under the Consumer Credit Protection Act (*Equal Credit Opportunity Act 1976*)

Legal Vexations (2)

A Thorny Path!



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- How does one ensure that a credit scoring model does not discriminate against members of specific groups?

Exclude from the model any attributes that indicate membership of those groups?

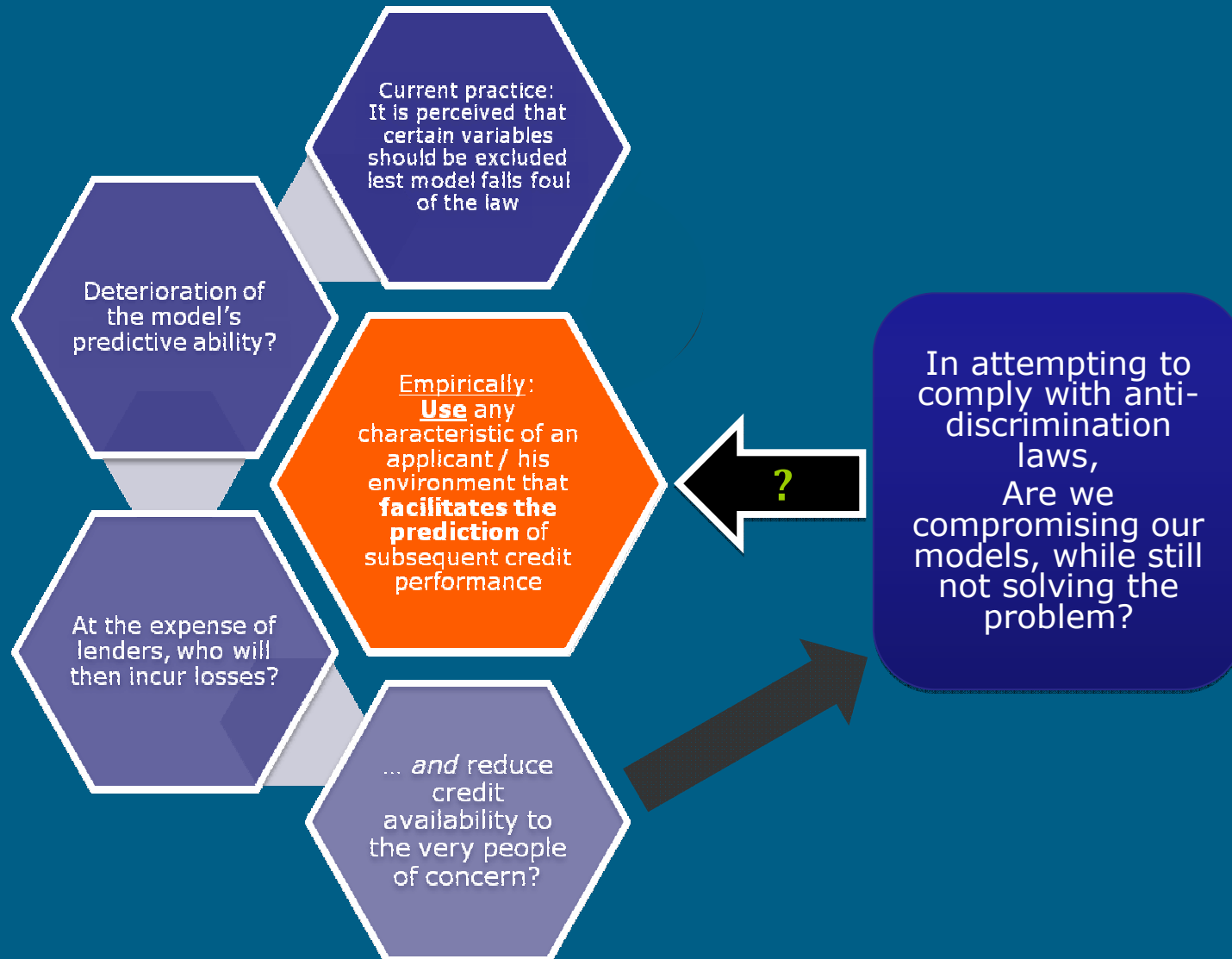
However,
this is far from a
straightforward solution

A misplaced attempt at ensuring non-discriminatory treatment?

(See Johnson, 2004)

- Minorities appeared >twice as likely to be denied a mortgage as whites, even though variables correlated with race were already omitted
(Munnell *et al*, 1996)
- What exactly causes discrimination in mortgage lending? What about personal prejudice of decision-makers?
(Yinger, 1996; Kim & Squires, 1995; Galster, 1992; Shear & Yezer, 1985)
- Problem of indirect discrimination
(Ruggieri *et al*, 2010; Andreeva *et al*, 2004; Capon, 1982)
- Certain variables 'protected' by US ECOA could have been significant in explaining loan repayment performance
(Boyes *et al*, 1986)
- Chandler & Ewert (1976)'s study – Models that included M/F variables offered better identification of credit risk

Going back to basics...



Going back to basics?



- **What is the intention of the law?**
 - The **outcome** of a credit-granting decision should not be discriminatory against the applicant
 - i.e. The 'protected' characteristics cannot be used as **grounds** for a **decision** to grant / not to grant credit
- We attempt to take a view in support of the inclusion of the so-called 'prohibited' variables in modelling

Our view: As long as the mechanics of the credit-scoring model and the eventual decision on whether to grant credit do not unfairly disadvantage protected groups, the relevant laws do not dictate that protected characteristics cannot be used as variables inputted into a modelling procedure

Going back to basics? (2)



• UK Law – Equality Act 2010

*“s. 29 (1): A person (a ‘service-provider’) concerned with the provision of a service to the public or a section of the public (for payment or not) **must not discriminate** against a person requiring the service by not providing the person with the service.*

(2) A service-provider (A) must not, in providing the service, discriminate against a person (B)—
(a) as to the terms on which A provides the service to B;
(b) by terminating the provision of the service to B;
(c) by subjecting B to any other detriment.

“s. 31 (2): A reference to the provision of a service includes a reference to the provision of goods or facilities.”

*“s.13 (1): A person (A) **discriminates** against another (B) if, because of a protected characteristic, A **treats B less favourably** than A treats or would treat others.”*

Note: “s. 28 (1): [Part 3 of the Act, which ss. 29 & 31 above are in] does not apply to the protected characteristic of—(a) age, so far as relating to persons who have not attained the age of 18; (b) marriage and civil partnership.”

Going back to basics? (3)



- Note: Previous **UK Law**

- Sex Discrimination Act 1975

*“s. 29 (1): It is unlawful for any person concerned with the provision (for payment or not) of goods, facilities or services to the public or a section of the public to discriminate against a woman who seeks to obtain or use those goods, facilities or services – (a) by refusing or deliberately omitting to **provide** her with any of them, or (b) by refusing or deliberately omitting to **provide** her with goods, facilities or services of the like quality, in the like manner and on the like terms as are normal in his case in relation to male members of the public or (where she belongs to a section of the public) to male members of that section.*

(2) The following are examples of the facilities and services mentioned in subsection (1) –

... (c) facilities by way of banking or insurance or for grants, loans, credit or finance;”

- Race Relations Act 1976

*“s. 20 (1): It is unlawful for any person concerned with the **provision** (for payment or not) of goods, facilities or services to the public or a section of the public to discriminate against a person who seeks to obtain or use those goods, facilities or services – (a) by refusing or deliberately omitting to **provide** him with any of them; or (b) by refusing or deliberately omitting to **provide** him with goods, facilities or services of the like quality, in the like manner and on the like terms as are normal in the first-mentioned person’s case in relation to other members of the public or (where the person seeking belongs to a section of the public) to other members of that section.*

(2) The following are examples of the facilities and services mentioned in subsection (1) –

... (c) facilities by way of banking or insurance or for grants, loans, credit or finance;”

- Disability Discrimination Act 1995

“s. 19(1): It is unlawful for a provider of services to discriminate against a disabled person –

*(a) in refusing to **provide**, or deliberately not providing, to the disabled person any service in which he provides, or is prepared to provide, to members of the public; ... (d) in the terms on which he **provides** a service to the disabled person;*

... (3) The following are examples of services to which this section ... appl[ies] –

...(e) facilities by way of banking or insurance or for grants, loans, credit or finance;”

Going back to basics? (4)



- **US Law – Equal Credit Opportunity Act 1976 (ECOA)**

“It shall be unlawful for any creditor to discriminate against any applicant, with respect to any aspect of a credit transaction – (1) on the basis of race, colour, religion, national origin, sex, marital status, age (provided the applicant has the capacity to contract) [, status as a recipient of public assistance, and a claim in good faith of any right under the Consumer Credit Protection Act];”

- Nielsen (1977): Impact of the ECOA on credit scoring – characteristics listed in the ECOA could not be used as criteria for determining that a person is not credit-worthy
 - 1970s – non-automated decision-making systems of risk adjudication were common
 - Empirically-derived scorecard systems have since dominated
- *“to discriminate against any applicant, with respect to any aspect of a credit transaction”* in the ECOA could be pragmatically interpreted to cover situations where the **decision** to grant or not to grant is based on a protected characteristic.
 - Further support for this view:
 - ECOA: It is not discrimination for a lender to enquire about marital status if it is to ascertain his legal rights pertaining to his spouse
 - ECOA: It is not discrimination to enquire about age, or if the applicant is receiving public assistance, when it is to determine the amount and probability of income stability.

A road less travelled



- **Obstacles abound!**

- Unless legislators and regulators were to amend the law, credit grantors would be hesitant to change
- Like all legal issues, our views cannot be conclusively validated unless a similar point of law comes to be considered by the courts
- Public relations nightmares unless public adequately educated on the workings of credit scoring models

- **Checks & balances**

- Human input into the decision-making process (which is already integral in most credit scoring procedures)
- Simulations of alternative models for comparison purposes to ensure that the model used is least discriminatory of classes protected by anti-discrimination laws
- Added costs involved – but, arguably, a justifiable trade-off for using sub-optimal models that could already be costing the industry in the form of lower acceptance rates (& prevalence of losses)