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‘Lending by numbers’: credit scoring and the constitution of risk within American consumer credit

Donncha Marron

Abstract

This paper examines how statistical credit-scoring technologies, sanctioned by the state in the interests of promoting equality, became applied by lenders to the problem of controlling levels of default within American consumer credit. However, these technologies, constituting consumers as ‘risks’, are themselves seen to be problematic, subject to their own conceived sets of methodological, procedural and temporal risks. Nevertheless, as this article will show, such technologies have increasingly been applied to other areas of consumer lending, thus interpreting a wider array of operational contingencies in terms of risk. Finally, it is argued that, since the 1980s, the constitution of credit consumers as risks has been deployed to new ends through technologies of ‘profit scoring’ and new practices of ‘risk pricing’.

Keywords: United States; consumption; consumer credit; credit scoring; risk; government.

Introduction

Within the United States, particularly from the 1970s, a probabilistic conception of risk increasingly came to define what was meant by the creditworthiness of an individual consumer, that is, the understanding of a

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lender that a borrower would repay some outstanding loan contracted for the purposes of consumption. This is not something that was progressively achieved or represented a necessary logical follow-on from older conceptualizations of creditworthiness. Arising within the context of an ongoing expansion in the market for consumer credit, the conceiving of creditworthiness as risk evidences a discursive break, a new departure in managing consumers and their credit agreements that distinguishes it from older focal points such as 'character'. Risk represents an abstract technology, or sets of technologies, operationalized within particular techniques and practices of statistical credit scoring that came to be applied by lenders, unevenly and in a relatively unplanned manner, to the problem of reducing losses due to the non-repayment of credit loans. To these ends, thus, the attribution of risk signifies a generalized means of understanding, of grasping the nature of credit consumers with respect to the future.

As Les Levidow (1994) notes, contemporary discussions about risk have a pronounced tendency to reify the concept. Within credit therefore, the conceptualization and technical production of someone as a 'risk' naturalizes the potential harm of default as an inherent property of the individual. However, as Ewald (1990, 1991) suggests, there is no risk in reality but anything can be considered as a risk, depending on how one understands the circumstance. The production of consumer credit as a profit-making enterprise within an advanced capitalist economy represents the binding of time, the location of such transactions in relation to a sense of the future which, because of the complexity of social life, the disembeddedness of transactions from social relations and a heightened dependence upon the self-governing potential of individuals, is permeated with uncertainty. As capitalism is built upon instrumental rationality and the capacity for foresight, risk therefore, as a probabilistic analysis of the recursiveness of events within complexity, brings the future contingency of default and financial loss within the boundaries of consideration in the present, making it knowable in specific ways and thus incorporable within the calculated objective of maximizing profit. Risk, thus, represents the relations between people and a way of thinking about the future contingency of those relations, finding form in particular settings for the attainment of particular ends.

In this article I wish to examine the emergence of the question of the population within American consumer credit and how its role as a new locus of analysis was bound up in new forms of consumption and new media of mass credit in tandem with the development of a collectively oriented, Keynesian rationality of economic governance. From the 1970s, a technocratic, statistical expertise gradually became applied by lenders to the problem of regulating default within populations of borrowers, exposing consumers to new kinds of visibility and making them amenable, as risks, to new kinds of government. Later this novel form of intervention was given official sanction by the state through legislation as a means of guaranteeing equality of opportunity to the market according to the individual's capacity for self-government. This

capacity, naturalized and cohered as 'objective' risk, removed it from the terrain of politics and thus from the possibility of political challenge.

Yet, as I will attempt to show, the use of technologies to constitute default risk are themselves held to be subject to 'risks' which degrade their theoretical and practical facility for distinguishing between populations of 'good' and 'bad' credit consumers. Such technologies are thus subject to a constant process of reflexive re-evaluation and re-generation by experts seeking to sustain and enhance the discriminating efficacy of the models they produce as well as the seductive offerings of competing epistemologies promising alternative, more effective ways of constituting individuals as risks.

At the same time, the successful proliferation of credit-scoring technologies among consumer lenders in determining default risk has led to its colonization of other areas of contingent decision-making within the operations of lenders, stretching and rearticulating the meaning of risk in temporally, spatially and functionally novel ways. The construction of individuals as risks has also become interlinked in a new fashion with other circuits of risk woven to enframe the uncertainties experienced by lenders and other institutions trading entire portfolios of loans encompassing multitudes of consumers and credit agreements.

The final section of this article endeavours to explore how determinations of default risk are used in practice to govern consumers. Against the backdrop of the shifting figuration of the American consumer credit industry in the 1980s and 90s, I argue that the modality of such risk has become disjointed away from strategies of hierarchized avoidance by lenders to ones of polysemous engagement, from the treatment of risk as a cost to its deployment as a profitable opportunity. To these ends two recent practices are explored, the development of 'profit-scoring' technologies and the use of 'risk-based pricing'.

Consumer credit and the emergence of the population

Retail instalment credit was already relatively widespread within the United States in single-line retailers by the end of the nineteenth century, some of whom were compelled to offer credit terms due to the competitive pressures evinced by large, new multi-line department stores who themselves did not provide credit facilities (Leach 1993; Calder 1999). However, the twentieth century increasingly saw the facilitation of instalment and charge account credit lines at large department stores and mail-order firms who had previously offered cash-only terms as the profitable opportunities presented, competition and the legitimization of instalment credit through automobile sales conspired to render them more widespread.

Within department stores themselves, specialized credit offices came to be established, tasked with the specific responsibility of managing credit applications in a systematic and ordered fashion. Potential applicants were

interviewed and assessments of creditworthiness made on the basis of the perceived physical demeanour of the applicant – how ‘shifty’, ‘evasive’, ‘seedy’ or ‘flashy’ they looked (Jeacle and Walsh 2002: 743). Specialized staff also examined the applicant’s local neighbourhood and made judgements as to its reputability, cross-referencing with local retailers to incorporate their appraisal of the individual’s standing within the locality. In addition, existing credit accounts were maintained with a regularly updated written narrative as to the customer’s perceived wealth, income and personal circumstances. These assessment procedures, concentrating on a localized, qualitative perception of the borrower’s ‘character’ grounded within the intimacy of personal relations and community, acted upon an understanding of the individual as a concrete subject with an autonomous capacity for action (see Castel 1991). In doing so, the possibility of default seemed to reside as an immanent, intrinsically uncertain aspect of the individual. Examining their physical attributes, inquiring as to their local status, recording the narrativized observations of staff members represented a discrete, individualized search for symptoms of an eventuality of default and an attempt to intervene to prevent its occurrence through the denial of credit.

This system, though, gradually gave way to a more rationalized, bureaucratic set of procedures during the 1920s and 1930s (Jeacle and Walsh 2002). New innovations in record administration: the unit file, a systematic, permanent customer identification scheme, a tabulated coding procedure for categorizing customers and innovations in accounting techniques opened up the debtor to the individualizing gaze of the lender, rendering their credit use more visible and malleable through a systematization of facts and numbers within a customer’s written dossier. Similarly, within the operations of national mail order firms such as Sears, Roebuck and Spiegels, assessments to grant credit increasingly came to be made on the basis of a calculated appraisal of questionnaires returned by potential customers governed through a standardized set of credit terms coming under the regulation of a specialist credit manager rather than, as had been the case, the use of local attorneys and investigators to assess the socially embedded, locally articulated character of the individual (Emmet and Jeuck 1950; Smalley and Sturdivant 1973).

Simultaneously then, through a totalizing gaze, the collective body of borrowers was made visible as a dynamic entity within itself, with certain norms of repayment present across its breadth that could be discerned and made known and against which the individual could be made subject for the purposes of controlling costs, increasingly cohering the body of borrowers as a whole, its attributes, extended balances and repayment streams as autonomous, self-referential phenomena within the firm’s accounts. Therefore new ways of recording data and understanding transactions within the firm, in addition to the greater reach of credit, increasingly rendered for lenders the agglomerated body of consumers as a coherent entity demonstrating attributes as though

they were intrinsic to it, independent from the actions of the individual consumers composing it.

In the post-Second World War consumption boom, the population of consumers was, more broadly, entering into the calculations of government for the first time. The altering of the political landscape by the New Deal had changed the nature of liberal rule within the United States, as had the expert economist's understanding of how the economy, that charge upon liberal government to manage neither too much nor too little, could be directed through the fiscal resources and sovereign power of the state. Classical liberalism had emphasized private production and savings for investment, independent of the state, as being the key determinants of national economic growth and full employment. In contrast, programmatic Keynesianism, ascendant in economic policy at the end of the 1930s and in the post-war era, crystallized most clearly in the federal government's commitment to full employment under the Employment Act 1946, presented economic output as being the product of consumption spending, requiring increased government spending to stimulate consumption and thus promote economic growth (Ahiakpor 2001; Klausen 2002).¹ Thus consumers, as an aggregate, entered into the calculations of the state as a key resource of economic management while the task of widening consuming possibilities sustained the legitimacy of a reinvigorated capitalism against a revolutionary Bolshevik alternative (May 1988; Gelpi and Julien-Labruyère 2000; Cohen 2003).

The 1950s saw the further elaboration of the population as the locus of analysis within consumer credit with the emergence of a mass revolving consumer credit market within the United States. The turn of the century had seen, for the first time, the establishment of specialist finance companies supplying mass instalment credit for the purchase of expensive durable goods for household consumption, most particularly the automobile (Seligman 1927; Clark 1930; Plummer and Young 1940; Olney 1991; Calder 1999). The 1950s, however, saw the materialization of dedicated new companies and the entry of existing financial institutions into the profitable provision of credit for more mundane, ephemeral forms of personal consumption. Whereas, before, such facilities had been offered directly by individual stores and mail order companies, managed through their specialized credit offices, for the purposes of stimulating sales and cementing customer loyalty to the firm, these new players sought to realize such consumer credit as a profitable commercial activity in and of itself (Mandell 1990; Nocera 1994; Evans and Schmalensee 1999; Manning 2000). Following the creation of Diners Club and American Express, Bank of America, the largest bank in the United States, and Chase Manhattan issued the first general purpose bank credit cards in 1958 which, pivotally, allowed consumers to purchase items on credit at a multitude of diverse retailers combined with the possibility of carrying balances forward at the end of the monthly billing cycle.

The 1950s and 1960s thus represent the birth of a new form of mass consumer credit, with provision dislocated away from specific retailers and even types of goods to the diverse, borderless domain of everyday, generalized consumption, in turn, widening the scope and possibilities of consumer choice. In a very pragmatic way, these emerging credit card providers epitomized a new industry paradigm of managing consumers as a population rather than as individual subjects. First and foremost, rather than extra sales or loyalty, their profitability depended on a percentage of a high turnover of low-value credit purchases, both in terms of interest payments paid by consumers and the discount fees paid by affiliated retailers. It was not isolated acts of consumption enabled by credit which engaged the calculations of these new lenders but the sustained use of credit in and of itself. In this regard, the task which most preoccupied them was establishing a wide customer base for without this merchants would not be attracted to join the scheme while, in turn, consumers would not be drawn into a system where few retailers were willing to accept their cards. To tackle this, banks engaged in the strategic mass mailing of cards to attract a critical mass of customer numbers, initially at least, impervious to the resulting high levels of fraud (Mandell 1990; Nocera 1994; Evans and Schmalensee 1999). In dealing with such a large body, the administration of accounts was abstracted from the heuristic processes and 'tacit knowledge' (Leyshon and Thrift 1999: 441) that had previously characterized retailer-specific credit accounts and dealt with bureaucratically by way of simple application forms with a limited number of tightly categorized variables on each individual customer (Mandell 1990: 56). Within this agglomeration of a large customer base, individuals were no longer acted upon as subjects but as an accretion of a limited array of attributes, bureaucratically accumulated over time and assessed with reference to the distribution of those attributes across the population of customers.

With the mid-century adoption of Keynesianism, mass consumption by the population came to dominate the governmental calculations of the American state in relation to the economy, a consumption increasingly mediated through plastic credit to ever finer levels of expenditure. At the same time, the growth of a profit-oriented, specialized consumer credit disembedded from the intricacies of personal relations and specific sites of consumption was becoming implicated in the facilitation of a generalized, ascendant mass consumption. The profit goals of these lenders, where revenues were generated as a particular percentage of the individual low-value/high-volume credit transactions they facilitated, became more directly mapped onto the total volume of consumers they could enlist and consumer credit they could generate. The economic exigencies of this new generic credit nurtured a bureaucratic administration of limited, categorical, quantified data such as occupation, neighbourhood, balances and repayment history so that the breadth and colour of detail on each customer, characterizing older credit

forms, faded relative to a new depth and specificity of data on the whole population of such consumers.

Constructing risk, objectifying equality and the ghost of cause

In 1941, the first known formal application of a specific statistical 'imaginary' to the problem of controlling the incidence of consumer credit default was carried out by David Durand on behalf of the National Bureau of Economic Research (Durand 1941). The particular methodology he used, discriminant analysis, had been developed by the statistician Gary Fisher (1936) in order to determine population differences where the explicit differentiating quality was not visible – he succeeded in deducing different varieties of iris and origins of skulls by their physical measurements. In Durand's case, applying this abstract statistical technology, he analysed a selected sample of historical loan accounts at a range of institutional creditors including commercial banks and a variety of specialized finance companies and demonstrated that groups of 'creditworthy' and 'uncreditworthy' borrowers, defined in probabilistic terms as to whether they would or would not default on a specific credit agreement, could be adduced in advance from an analysis of certain attributes demonstrated by those individuals. Analysing his case-study samples, he formulated numerical decision rules which could, theoretically, be applied to new applicants for credit (Durand 1941: 83–91).

A series of scholarly exercises by other researchers followed on a variety of different types and scope of creditor, each attempting to formulate a particular 'credit scoring' model using actual, historical credit data and retrospectively demonstrating how the model in question would have reduced, anywhere between 7 per cent and 24 per cent, the number of bad loans that were actually accepted at that creditor had it been in operation.² Within these academic exercises, the possibility of governing credit-sanctioning decisions by risk was demonstrated through the construction of a model embodying certain understandings on the part of the statistician such as the ascription of thresholds, the categorization of the application data, the definition as to what constituted 'default' and how the length of the credit agreement was to be defined. Against an accumulation of actual historical data including application details and the performance of credit agreements during their lifespan, these derived models ascribed certain statistical relations between attributes and repayment outcomes which, when applied to individuals, produced a predictive, probabilistic statement as to the calculated likelihood, or 'risk', of default.

As Rose (1993) and Rose and Miller (1992) suggest, expertise operates a key role within 'government' in its widest sense, the knowledge from which it derives its authority, grounded in neutrality, disinterestedness and claims to efficacy as distinct from the argument and rhetoric of politics, becoming harnessed in various ways within its exercise. Thus statisticians and

consultants, exerting title to a scientific and technical knowledge, became employed as experts in the construction of technical models for the identification of risk. Their claims as to the objectivity and efficiency they could provide promised lenders new possibilities for the governing of consumers, creating norms in terms of risk around which could be ordered the population of consumers, thereby opening up default across the population of consumers as something to be rendered calculable in the interests of profit. For lender management, scoring technologies came to provide a nexus threading together commercial considerations of the default costs threatened by individual consumers, the operational costs of the firm encompassing the whole field of customers and the standardization of credit-sanctioning procedures engaged by the lender's credit-sanctioning staff. Scoring and the process of constituting risk thus came to provide the lender with a new means of understanding and conjoining the government of individual consumers, its population of customers and its rank of employees (Lewis 1992b).

From the 1950s, with economic governance by the state effected through the management, en masse, of the capacity of its citizens to consume, the ability to engage in consumption constituted a crucial manifestation of one's membership of society as a free individual. However, in the 1960s and 1970s, marginalized groups such as blacks and women, increasingly agitating for equality through the civil rights movement and second-wave feminism, articulated specific demands for the end of discriminatory practices within consumer credit which often curtailed the ability of these social groups to access credit (Hiltz 1971; Garrison 1976; Cohen 2003; Williams 2004). After hearings held by the National Commission on Consumer Finance to investigate the discrimination experienced by mostly married women in applying for credit, the Equal Credit Opportunity Act 1974 (with subsequent amendments) was enacted to outlaw discrimination in credit sanctioning based on the characteristics of gender, marital status, race, national origin, religion or income source (ECOA 1974; Anonymous 1979; Hsia 1979; Elliehausen and Durkin 1989; Chandler 2001). To this end, credit scoring was encoded in 'Regulation B' of the act, explicitly delineating what could constitute a statistical model by defining it as one based on the analysis of key applicant attributes and default based on statistically representative sample groups – anything else was residually termed a 'judgmental system'. The act effectively gave legislative recognition to scoring systems as being objective, scientific devices permitting a dispassionate, empirically derived account of credit-worthiness and explicitly identified the role they could play in eliminating 'subjective' discrimination and helping to bring about an enhanced mass consumer credit market that would discriminate only on merit.³

Through the objectivity produced in scoring, bound to a necessary consideration of consumers as risks within the context of a population, the act gave impetus to creditors to deploy statistical models as a means for defending against suits for unlawful discrimination in credit granting, the scientific-statistical-empirical framework of scoring thus allowing lenders to

claim that all credit decisions were made in line with the 'real' creditworthiness of the credit applicant and not some inherent discrimination or prejudice. In addition, with scoring objectified within a document-based bureaucratic system, the creditor could demonstrate irrefutably, through the presentation of the procedural audit trail through which the sanctioning decision was accomplished, that it was arrived at in a 'legitimate' fashion (see Bunn and Wright 1991: 509). Thus, in a certain sense, it is not just the 'scientific statistical' nature of the scoring endeavour based on its consistency of application and correct weighting of predictive variables which forges the seeming objectivity needed for impartial sanctioning decisions but also its rigorously documented nature and its amenability to audit (Dawes *et al.* 1989; Bunn and Wright 1991). As Rothstein *et al.* (2006: 93) remark, risk provides a 'defensible procedural rationality' not only in terms of managing the objects which an organization is tasked with regulating but also the wider institutional threats that the organization experiences. Risk thus becomes an expedient means not merely of determining whether to grant credit, but of minimizing the legal threat of decisions not to do so.

The multifarious judgements and subjective decisions which go into the creation of quantified risk systems and underlie every single determination of risk are, in Rose's (1999, 2002) words, 'blackboxed', rendered hidden and incontestable by the apparent simplicity of the single figure which is generated. Yet, as both Porter (1992, 1995) and Rose (1996, 1999) observe, reliance on the apparent objectivity of numbers occurs not when institutions are strong but when they are weak, beset by challenges to their ability to govern. Therefore, by camouflaging its subjective design, considering individuals not as individuals but as arrays of categorized attributes, demonstrating a verifiable relationship between these variables and certain outcomes and creating a quantified probabilistic statement that can be demonstrably audited, the deployment of credit scoring creates individual creditworthiness as something which exists as though it were something real, independent of its measurement.⁴

The facility that credit scoring offers to the question of discrimination is the treatment of individuals, not as subjects, the bearers of particular aptitudes or moral qualities, but as objects, agglomerations of particular quantifiable attributes. In doing so, scoring undercuts the coherent identity of being 'female' or 'black' within which oppression or marginalization is experienced, displacing credit decisions onto an array of discrete characteristics or attributes seemingly innocent within themselves and seemingly individually predictive of repayment performance, independent of subjective will. Yet power divisions, inequalities and exploitation are inherently bound within society. Their worst excesses may be alleviated through legislation and the nurturing of credit scoring; however, within a system which individualizes responsibility for the opportunity to consume, their effects cannot be eliminated if a profitable, extensive system of consumer credit in its current form is to exist, for one's

position in the social structure does indeed predict whether one has the ability to repay credit.

Pete McCorkell (2002: 214), a representative of credit-scoring design firm Fair Isaac, defends the technology from charges of discrimination against minorities by arguing that detractors are asking the wrong question. Although scoring results in higher rejection rates for certain groups, he argues that this is because ‘income, property, education and employment’ – structural factors he sees as bearing upon an individual’s capacity and propensity to default – are not evenly distributed across society. In fact it would be irrational, he suggests, for an objective measurement of risk *not* to demonstrate systematic risk discrepancies under such conditions – however, it is ‘social’ and ‘political’ questions that such discrimination raises rather than ‘technical’ ones. Whether some kind of ‘affirmative action’ should be put in place to favour minority groups is a question that McCorkell reserves for political consideration, albeit one he admits to being unthinkable in the current neo-liberal political climate.⁵

Nevertheless, the production of objectivity through the elimination of the question of the subject and its re-situation across disparate, independent variables creates a counter problem, and source of dissent, in terms of the loss of a coherent sense of cause (Johnson 1992: 21–4). Despite its disavowal of cause in practice and its concern simply with counting the calculable effects of default (Lewis 1992a: 6–7; Thomas 2000: 152), risk rests uneasily with how individuals experience the world as subjects. Dawes (1999), a researcher in the field of economic psychology, argues that individuals are more or less incapable of acting solely on the basis of objective probabilities, that there is always a need for a causal explanatory narrative to justify or explain relations between variables. Without such a narrative, a statistical relation will tend to be rejected or ignored, especially if there are alternative intuitive explanations or it clashes with prevailing cultural beliefs. Concern with the effects of ‘brute-force empiricism’ informed Capon’s (1982) trenchant denunciation of scoring systems where he argued that credit decisions should be confined to variables which have an ‘explanatory’ bearing on repayment outcomes rather than a ‘statistical’ one. The treatment of individuals simply on the basis of statistical correlation, he believed, offended against cultural traditions of individual responsibility and due process. More recently sociologist George Ritzer (1995), in an extension of his famous neo-Weberian ‘McDonaldization’ thesis, has criticized credit-scoring systems for their degrading potential and their celebration of the virtues of calculability over human meaning and understanding. On a practical level, with rejected credit applicants being statutorily entitled to know the ‘reasons’ for the refusal of their application, the implementation of a risk system is constrained by the degree to which it can be contextualized within an explicatory framework. Therefore, by law, it cannot be enough to say that there is an abstract statistical correlation between an attribute and likelihood of default – a refusal decision framed by credit scoring must be couched in terms that make it intuitively comprehensible to the applicant (Chandler 2001: 47).⁶

Risky risk

From the 1970s, particularly with the wider dissemination of the credit card among American consumers, the development of computing power for statistical modelling and the electronic storage of records, credit-scoring technologies were progressively deployed by lenders so that the sanctioning of new credit to new consumers increasingly became framed within a discourse of risk. In 1990, 82 per cent of banks had adopted credit-scoring mechanisms (Rosenberg and Gleit 1994: 606), while today the technology is seen to be virtually ubiquitous within the consumer credit industry (Makuch 2001a: 3–4). Yet analysts of credit scoring present this not as a straightforward, unhindered rational adoption by lenders – on the contrary, it is put forward as a narrative of the persuasive triumph of the unquestionable efficiency of risk scoring over the relative inefficiency of human 'judgmental' decision-making. On one level, this is presented as a straightforward quantitative superiority – for example, its discriminatory potential is estimated to be 20–30 per cent better, thus increasing the number of profitable customers accepted and decreasing the number of costly defaulters (McCorkell 2002: 213). Yet it is not only in elevated revenues and dampened costs that the use of risk is adjudged to prove its worth but in the wider efficiencies that it imparts to the lender's organizational operations. To these ends, credit scoring is deemed transparent, consistent, uniform, unbiased, less labour intensive and automatable. In addition it is time-saving, thus lowering the attrition levels of lost customers experienced while also providing a close calculable management control over lending policy (see, for example, Lawrence 1992: 76–7; Jennings 2001; Makuch 2001a: 3; Glassman and Wilkins 1997: 54–5; Rosenberg and Gleit 1994: 590; Leyshon and Thrift 1999: 445; Avery *et al.* 2000: 523).

Yet, scoring had not only to face the problem of effectively constituting individuals as risks, it also had to 'gain the acceptance of the credit community' (Lewis 1992a: 19). In this account of the 'mercurial outsider', statistical and operations research experts battled the regressive conservatism of lender managements historically wedded to judgmental decision-making as the traditional means of sanctioning credit to convince them of the progressive potential that credit scoring offered (*ibid.*: 10–11). For instance, on the website of score modeller Fair Isaac noting 'milestones' in the company's history, one of the early events recorded in 1958 was when the company 'sends letter to the 50 biggest American credit grantors, asking for the opportunity to explain a new concept: credit scoring. Only one replies' (Fair Isaac 2006). Yet, that one reply from American Investment Corporation provided the humble launch-pad for Fair Isaac to prove the irresistible benefits of credit scoring (Lawrence 1992: 74).

But, while a discourse of risk may have eventually triumphed over this managerial rear-guardism to become the pre-eminent means of conceptualizing consumers in relation to default, the technologies through which risk itself is constituted are seen by experts to be subject to a permanent process of failure,

contestation and regeneration and the rivalrous claims of competing methodologies, or even epistemologies, of risk.

The conceptual and operational basis upon which scoring models are built and deployed is subject to a permanent reflexive analysis that seeks not to dissolve the framework of statistical scoring methods but, on the contrary, to improve their potential discriminatory power in practice by rendering more accurately the predictive risk determinations of particular cases of default that they attempt to formulate. However, failure is endemic to the government of default through risk for the underlying ontological assumption is one of indeterminism and irreducible stochasticity; although certain regularities can be seen within the population, the future actions of any one individual are not only not known but are inherently *unknowable* (Knight 1971; Hacking 1990). The effectiveness of a credit-scoring model can thus be judged only macroscopically on how well it distinguishes, at the level of the population of consumers and across numerous cases, the distinctive sub-groupings of 'good' and 'bad' consumers.

Yet a credit-scoring model's efficacy at distinguishing these sub-populations is seen itself to be subject to numerous 'risks' which interfere in its effective constitution of default risk.

First, *methodological risks* attach to specific techniques used in the construction of models: discriminant analysis may be seen to suffer from the assumption of equal co-variance and normal distribution within the population sample while logistic regression may be particularly prone to analytical difficulties if the sample size is insufficient (e.g. Rosenberg and Gleit 1994: 594; Lee and Jung 2001).

Second, *procedural risks* attach to the specific construction of a model. Most critical here also is seen to be the problem of 'sample bias' (e.g. Lewis 1992a: 41–2; Glennon 2001: 245–52; Hand 2001). Credit scoring is based upon the bureaucratic archived repayment history of the creditor which inscribes the collective against which any individual is deconstructed and assessed in terms of risk. However, by definition, that recorded history will be composed only of those consumers who were accepted in the past and thus is not representative of the whole range of applicants that the creditor will encounter in the future. Another issue is seen to be that of an excessively homogeneous population (Avery *et al.* 2000). A large creditor deploying a scoring model across a large territory with a homogeneous conception of population cannot take into account regional economic characteristics and thus evident regional sub-population differences. Therefore, while the model may be predictive overall, it records relatively inaccurate risk scores, that is, an inappropriate ranking for individuals between regions.

Third, *temporal risks* pose a threat to the integrity of a scoring model's risk determination (e.g. Glassman and Wilkins 1997: 55; Hand and Henley 1997: 525; Lee 2001). Conceived as the problem of 'population drift', the correlations calculated between variables used to make risk predictions are

fixed within the model but change and alter over time 'in the real world' of the population.

All these 'risks' – methodological in terms of the statistical technique to be used to animate the empirical data, procedural in terms of the technical process of crafting the model and temporal, by virtue of the dynamism and naturalism of populations – are perceived to affect the ability of a formulated credit-scoring model to distinguish groups of 'good' and 'bad' borrowers, deplete the accuracy of the risk assessment made at an individual level and degrade the efficiency of the lender at producing profit. At any given threshold, more costly defaulters will be accepted and more profitable consumers will be refused credit. In response, the experts who elucidate these risks simultaneously offer means for obviating them: by formulating new techniques to improve predictive accuracy, establishing benchmarks for deriving representative samples, detailing how multiple scorecards can be deployed to account for regional and population variations, suggesting 'reject inference' techniques to estimate the probabilistic fates of historically rejected consumers and advocating the implementation, in association with lenders, of practices of periodic model validation and revision. Therefore, within credit scoring, the construction of the constitution of risk is thus never taken for granted but must be constantly evaluated, maintained and recreated in order to preserve the integrity and reliability of such constitution.

However, in terms of the constitution of risk, not only have statistical models been problematized, but they have been challenged by alternative epistemologies that have found some application with the domain of consumer credit, including Decision Tree and Neural Network systems (Boyle *et al.* 1992; Thomas 2000; Malhotra and Malhotra 2003). Nevertheless, these competing alternatives do not engender a fundamental challenge to the discourse of risk around which the sanctioning systems of creditors are built. In fact, as Gruenstein (2001: 182) suggests, any credit risk evaluation system is implicitly a statistical one. Each technology, in practice, seeks to know better the risk adhering to an individual applicant within the context of a population, to represent it more accurately in order to reduce the overall incidence of default endured by the creditor. In essence, the use of any one of these diverse techniques is assembled around the same ontological conception of what risk means. Although they differ by offering alternative avenues for knowing that risk, they share a common objective which is to render it more accurately as an objectivized quality of the individual. Each, too, is concerned with the calculable effects of default, not 'causes'. In every case, default is conceived as an inherent aspect of the group and individuals are persistently conceived as agglomerations of attributes that are historically, probabilistically associated with a repayment outcome. Like more conventional statistical techniques, all of these alternative methods are predicated on failure. As the occurrence of default is conceived as being integral to the group and all attributes presented by all individuals are integrally related to a greater or lesser effect with default,

then default remains inescapably uncertain at an individual level (see Kavanagh 1993: 15–17).

At the same time, none of these alternatives provides a clearly dominant paradigm for the construction of risk in terms of exhibiting an agreed discriminatory superiority in the practice of making credit decisions (Hand and Henley 1997: 535–7; Makuch 2001b: 138–9; Thomas 2000: 160–1). Not only are they bound to a common conception of risk, but none represents an advanced coherent rationalization of the problem of knowing risk for each rival appears to confront its own autonomous technical dilemmas in the process of creating risk. Whereas risk technologies are presented as an advance upon traditional ‘judgemental’ sanctioning processes, assessable through a discourse of efficiency that measures its superiority in terms of greater calculability and accuracy, lower costs and higher revenues, competing risk technologies are locked into a discourse of relativism. For instance, a logistic regression model might be more predictive than a discriminant analysis but it is vastly more difficult to compute and implement in practice (Lee and Jung 2001: 217). Similarly, a neural network might be good for modelling from a small number of cases but its key strength of mapping hidden relations in data renders it impenetrable to an intuitive explanation as to why a customer was determined to be an excessive risk – a statutory requirement under federal law in the United States (Malhotra and Malhotra 2003: 93).⁷

Proliferating risk

Through the strategic deployment of an array of technologies to mine their recorded history of lending to a population of credit consumers, consumer lenders have come to conceive of future default contingencies by new credit customers within a discourse and apparatus of risk. But, with the entrenchment of credit scoring within commercial practices of consumer credit, the idea of risk has also come to colonize aspects and domains of the lending process beyond the original problematic of determining the ‘creditworthiness’ of new customers, in doing so extending the scope of risk as well as rearticulating other contingent areas and events of the lending process through its rubric. The development of credit scoring, as a system of risk, has also innovated and facilitated the treatment of conditional losses experienced by a lender across its portfolio of consumers, producing imaginative new connections between the ‘micro’-risk of the individual credit consumer and the ‘macro’-risk of a portfolio of such consumers.

Risk colonization

With the advent of new technologies of so-called ‘behavioural scoring’, the concept of default risk becomes temporally unbounded. Rather than just

assessing a defined, fixed notion of risk before the credit agreement commences ('credit scoring' becomes more aptly termed 'application scoring'), the deployment of risk comes to be extended within the post-sanctioning phase in order to encompass the on-going management of the account by the creditor (Coffman and Chandler 1983; Hopper and Lewis 1992; Thomas *et al.* 2001). With application scoring, the ascertainment of an applicant's objectivized risk is implicated in the decision as to whether to accept them or what interest rate and restrictive conditions they should be assigned. However, with behavioural scoring, the applicant's risk is monitored on an ongoing basis through the systematic incorporation of new information as to how the applicant performs in order to frame a lender's contingent decisions on whether to renew a credit card account, adjust credit limits, target marketing efforts for other products or submit a delinquent account for collection.⁸

A second crucial dimension of credit risk colonization has been the spatial extension of risk through the construction of bureau-based 'generic' scoring models. In 1989, the scoring consultancy firm Fair Isaac developed a credit-scoring model based on the consumer credit history data held by the credit bureau Equifax; by the 1990s, it had extended the formulation of the risk model to the two other national credit bureaux, known today as Trans Union and Experian (Chandler 2001). Credit bureaux are essentially commercially competing but overlapping electronic repositories of the credit histories of virtually all American credit consumers, derived from the records of all mainstream consumer lenders and, in turn, used as a resource by lenders in guiding credit-sanctioning decisions (Cole 1988; Hunt 2002; Avery *et al.* 2003). Whereas such data had been used by lenders within their own 'customized' risk models, the creation of the so-called 'FICO' model transformed credit scores into a commodity that could be bundled with individual credit reports sold to lenders who were unwilling or unable to formulate risk-scoring models of their own, or who could incorporate the score ranking within their own customized systems. In either case, the marketing of FICO transformed risk from a discontinuous, variable attribution generated within the bounded population of a creditor's customer base into a standardized, continuous measure of risk constructed within the context of the wider national population, an enduringly standardized measure of risk permanently absorbing the repayment attributes of millions of credit consumers and dynamically updated across the entire field of consumer lenders.⁹

Finally, a third avenue in the colonization by risk has been its transplantation into other functional areas of contingent decision-making within commercial consumer finance. Just as credit scoring transforms the uncertainty of repayment into a calculable risk, the application of statistical modelling attempts to transform relative operational uncertainties in such areas as segmented marketing, debt collection and fraud avoidance into similarly numerical probabilities incorporable into a more efficient organization of those domains. Other operational decision processes beyond new credit sanctioning

thus become reconfigured through the framework of risk, with expert designed empirically derived models discerning statistical associations between an array of individual variables and observable events modelled in order to reconstruct decisions on the basis of risk eventualities (Gosh and Reilly 1994; Stanghellini *et al.* 1999; Jost 2001: 198; McAllister and Eng 2001).

From micro- to macro-risk

Even across a stock of credit agreements, uncertainty is never rendered completely calculable by the application of credit scoring (Jacobson and Roszbach 2003: 627). The use of statistical modelling by a lender attempts to calculate the future quantified probability of default of an individual consumer, thus rendering the total anticipated costs of default across an array of customers as calculable and predictable. However, inappropriate modelling, the dependence of risk scoring on extrapolation from the past (which as we have seen, can be buffeted by such factors as unaccounted population drift or market-specific conditions) and the simple perils of chance, which can impact upon overall default rates in any given year, all conspire to render levels of default imperfectly calculable at a macro-level and so make uncertainty a seemingly irreducible aspect of consumer credit.

During the mid-1980s, a process known as ‘securitization’ grew to encompass stocks of consumer loans (Watkins 2000: 922; Barth 2002; Johnson 2002). This involved consumer credit providers packaging their inventories of credit agreements as tradable instruments which could be sold at a price discounted on the basis of future revenue flows accruing to the credit agreement and reflective of the level of risk underlying these new assets. Although arising initially for stocks of auto instalment loans, loans with fixed predictable repayment schedules, the most recent growth has been in tranches of credit card debt. In this, the five major credit card providers – Bank One, MBNA, Citibank, American Express and Morgan Stanley Dean Witter (‘Discover Card’) – comprise 70 per cent of the market for so-called credit card ‘asset-backed securities’ (Johnson 2002: 288). Although maintaining responsibility for servicing the repayments from consumers, large credit providers such as banks have been able to remove stocks of debt from their balance sheets, raise fresh liquid capital on the basis of such illiquid assets and lower their stock of non-interest bearing reserves required under trans-national banking regulations. Employing a battery of instruments known as ‘credit enhancements’, securitizing firms have also been able, independently of their own corporate risk profile, to isolate and channel the level of risk presented by the portfolio that they are offering in order to minimize the premium needed to attract investors. Particularly in the case of auto-loans, lenders have also been able to offload the majority of the macro-level risk presented by this stock of loans to the investing institutions.

It has been argued that the creation of such securities, carefully calibrated for risk in terms of the likelihood of revenue and default losses across the portfolio exceeding a certain anticipated amount, is inherently connected to the proliferation of credit-scoring mechanisms within consumer lending (Glassman and Wilkins 1997: 55; Guseva and Rona-Tas 2001: 632; Makuch 2001a: 17–18; Barth 2002: 311–12). In consequence, the deployment of risk systems which construct risk determinations at the 'micro'-level of an individual consumer set within the context of a population become intimately connected to, and a necessary precondition for, the construction of a higher order of 'macro'-risk expressed at the level of the portfolio itself, enabling stocks of debt to be sold and traded as assets at a price premium-tailored to its specific level of risk exposure.

Deploying risk

Some authors (Simon 1987, 1988; Feely and Simon 1992, 1994) view the use of risk and the deployment of statistical techniques as being indicative of a broader shift in the characteristic form of power being exercised at large in society, from discipline to actuarialism, wherein the latter is characterized by the increasing pervasiveness of abstract risk systems concerned with the management of populations. However, as O'Malley (1992, 1996, 2004) argues, risk systems are deployed in particular contexts for the resolution of practical quandaries within which they are enfolded. Within consumer credit, risk is a technology that is deployed in a diversity of ways and settings for a multitude of ends. Scoring systems are not modelled and executed within generalized social conditions encompassing the increasing diffusion of actuarialism, imposing itself as a linear rationalization in the exercise of power. Rather, they are brought into being within the relatively localized environs of specific creditors for the achievement of more or less cognizable goals. This is not to say that the creation of credit risk does not have its own discursive intensity and dynamism but its adoption and the purposes to which it is put are not uniform. The overall strategic objective behind utilizing a risk technology is not to capture more exactly the risk of individual default presented by credit applicants but to make them visible and knowable as risks in particular, variable ways within the context of the population in order that they can be governed towards the achievement of certain objectives.

Profit scoring

The original development of credit-scoring systems held likely defaulters as 'high risks' whose probable failure to repay constituted a potentially burdensome cost to lenders. Through the hierarchized attribution of risk to credit applicants, the technocratic dreams of efficiency that scoring promised

were that the excessively risky could be isolated and managed through the denial of credit. However, the 1980s and 1990s saw significant changes in the market for consumer credit, particularly in the field of credit card lending, involving a greater emphasis on marketing and branding by Visa, Mastercard and American Express, the emergence of new products like the American Express 'Optima' card and Montgomery Ward's 'Discover' card, the playing out of the effects of deregulation on interest rates and industry structures leading to the arrival of non-financial institutions like AT&T and General Electric to credit card provision and the emergence of new 'monoline' banks specializing in the targeted marketing of credit cards to different profiles of consumer (Evans and Schmalensee 1999; Klein 1999; Manning 2000; Millman 2001). Against this backdrop, credit card ownership proliferated over broader swathes of the consuming population with possession among all American households increasing from around one-sixth in 1970 to over two-thirds in 1998 while becoming virtually ubiquitous among the economic elite. In the same time frame, although continually stratified by income, card possession increased most markedly for the lowest income groups, from a low base rising fourteen-fold to 28 per cent (Durkin 2000).

This 'democratization' of revolving credit in the form of the bank credit card helped reorient the way that risk was to be deployed and acted upon. Traditionally, mail order firms, finance companies and others involved in the sanctioning of credit had experienced risk as loss. However, the evolving form of plastic credit manifested a concern with consumer credit as a profitable enterprise in its own right, divorced from the sale of particular goods bound within fixed locations of time and space. Implicated within the perpetual, fluid, more self-governed consumption of goods, it heralded a shift away from credit as a discrete instrument of purchase to the regularization of debt as a continuous, lived experience of consumption. This, combined with the standardization of an interest-free grace period, displaced how risk could be understood. Whereas consumers who carried balances month to month paid interest on their debt, those who paid off their balances in full each month essentially paid nothing – earning the moniker of 'deadbeat' within industry parlance due to their lack of profitability, even costliness (Manning 2000: 294). Crucially now, deadbeats were no longer those who were excessively risky but those who were excessively *safe*. This transformation altered the way risk could be conceived; it might no longer be represented hierarchically, as something to be isolated and minimized. On the contrary, risk might now be embraced in a lateral government of credit users, as something positive and productive, conducive to market share and profitability (Graney and Wynn 1992).

As a result, the seemingly straightforward prioritization given to the identification and minimization of default risk by credit-scoring experts has been distracted by a range of problematizations in the complex contemporary credit market (see Rosenberg and Gleit 1994: 592–3; Hand and Henley 1997: 525; Jacobson and Roszbach 2003: 626–7). For example:

- Although a customer might be deemed an unacceptable risk at a given time period, refusal to grant credit might interfere with potentially profitable credit agreements with that customer in the future.
- Forms of credit such as credit cards may be more profitable for customers who are a higher risk when interest charges, fees and penalties are taken into account.
- The costs of misclassifying 'good' and 'bad' applicants are not constant; for example, a defaulted loan may be reclaimed through the use of a collection agency or may need to be written off, with obvious implications for profitability.
- If a lender offers a portfolio of credit products, it may be profitable overall, through cross-product subsidization, to accept a relatively high-risk applicant for one product if it opens marketing opportunities to offer them another, although, complicating this, there is no guarantee that the customer will necessarily accept the offering of a future credit product.

If the simple isolation of high-risk consumers has become subordinate to a range of more diffuse goals in terms of lender profitability, this does not represent the eclipsing of the role of statistical expertise and scoring technologies within consumer credit. On the contrary, the problematizations outlined above, along with advances in computer modelling and electronic data retrieval, have incited something of a transformation in the nature of credit scoring itself. As Thomas (2000) charts, there has been a recent shift away from models based on the determination of default towards the introduction of profit-scoring models that explicitly aim to optimize profitability, independently of the minimization of default risk. Crucially, this increases the complexity of data management, necessitating the regard for a whole array of new factors such as marketing, service levels, organizational operations and pricing across the breadth of the creditor's operations. In effect, with the deliberate attempt to target profitability, the risk of default risk becomes simply one variable to be included within a more diffuse actuarial form of decision-making within the lender organization, breeding the development of more complex modelling techniques (e.g. Carr and Luong 2005; Crowder *et al.* 2005). The systematic determination of default risk continues but under conditions whereby that risk is subsumed and integrated into another, wider and more complex determination of risk – the risk that the credit consumer will be unprofitable to the lender.

Risk pricing

Although default risk becomes subsumed within new techniques of profit scoring, the development of new risk-pricing techniques denotes an alternative avenue for the deployment of risk. We have seen up to now how creditors have come to utilize scoring techniques in order to produce a risk assessment of

individual applicants from which a fixed threshold serves as the decision rule of acceptance or rejection.¹⁰ However, the development of ‘risk pricing’ within the consumer credit industry during the 1980s displaced this binary conception of accept/reject with a continuum where interest rates and agreement terms are set according to the particular level of risk attributable to the applicant. The higher the risk presented, in general, the higher the interest rate imposed on the credit product by the creditor, ostensibly, to compensate themselves for the differential costs of default presented by differential categories of risk (Makuch 2001a; Edelberg 2003; Chatterjee *et al.* 2005).

Dean argues that the use of risk in such a form renders it a continuum rather than a break or, in his memorable phrase, it ‘does not divide populations by a single division so much as follow the warp and weft of risk within a population’ (1999: 146). There are no longer single population demarcations but rather categories of risk – the rejected are no longer the inverse of the accepted but are subdued as a residual category deemed too risky, even with the attribution of high interest rates. Although the population as a whole remains the primary locus of risk, risk now becomes deployed to allow the targeting of sub-populations – the population as such becoming managed not as a mass but as a spectrum. A similar process of what is termed ‘risk unpooling’ or ‘segmentation’ has recently become evident in the domain of private insurance. Rather than the ‘socializing’ of responsibility (Baker 2002), private insurance firms are now motivated towards producing ever-finer discriminations of risk among their populations of policy holders in order to individualize responsibility while maintaining the exclusion of the excessively costly (Ericson *et al.* 2000).

Edelberg (2003) contends that credit risk pricing became more common only in the mid-1990s in the United States as more sophisticated risk-modelling techniques and lower computerization storage costs made such a process practicable, noting that since 1995 risk-defined premiums have increased for numerous types of consumer credit, most prominently first-home mortgages, automobile loans and credit cards. The extension of risk-based pricing is related to the profit-motivated expansion of consumer credit, allowing as it does for market growth in two directions: individuals who were formally excluded for being unacceptably risky are now included at a higher price, even among conservative creditors, while individuals who were formerly included are now offered credit at a lower price and so are given the potential to consume more of it. Risk pricing is thus seen to enhance the general welfare – rewarding the low risk with low rates and allowing the high risk the opportunities of credit formerly denied to them (Johnson 1992: 28; Edelberg 2003: 20–1; White 2004: 503–4).

Perhaps one of the most high-profile outcomes of risk-based pricing for consumer credit within the United States has been the emergence of the so-called ‘sub-prime’ market. With the development of more sophisticated scoring models, some creditors, due to the perceived saturation of the mainstream credit market for ‘good’ risks, began to specialize in differentiating between ‘bad’ risks, offering credit to the more acceptably risky with restrictive terms including high

interest rates, low credit limits, collateral deposits and swingeing penalties and fines (Gilreath 1999: 150–3). Among the most infamous of the sub-prime lenders was credit card provider Providian, one of a new breed of monoline banks that emerged within the United States during the 1990s:

Providian may not have invented sub-prime lending, but it certainly perfected it. The company's genius was in segmenting people based on financial behavior. Founded in the mid-1980s and originally called First Deposit, Providian created a [scoring] system that made it possible to find the 'perfect' credit card customer: someone who cared more about low minimum monthly payments than high interest rates and who would pile up debt but would rarely default. 'We found the best of the bad', says a former executive.

(Koudsi 2002: 2)

Providian's rapid expansion in the late 1990s, assisted by favourable economic conditions and low employment, led to it becoming the fifth largest credit card provider in the United States and one of the most revered companies of Wall Street for its uninterrupted earnings growth, spurring more established competitors like Capital One to copy its sub-prime practices. Here, entrepreneurialism, represented as the development and deployment of a superior scoring technology combined with the foresight, verve and skill to embrace a particular market segment that more established competitors were too 'risk averse' to countenance brought what seemed like just rewards for the company in terms of spectacular increases in earnings, market share and equity return (Millman 2001: 105). Its business success was clouded, however, by accusations of predatory lending, illegal collection practices and exploitation, leading to class-action suits and company settlements of \$300 million. By the end of the 1990s, economic recession and consequent risk over-exposure drastically curtailed the sub-prime market, almost destroying the acutely risk-exposed Providian. As such, Providian perhaps represents the emblematic cautionary tale of neo-liberalism, that taking risks for reward implies the very real possibility of failure and loss without restitution if greed for success overtakes one's entrepreneurial capacity to manage those risks.¹¹

A similar 'down-market' process is discerned by Ericson *et al.* (2000) in their analysis of the contemporary insurance industry.¹² They argue that risk segmentation is simultaneously a process of risk assessment and marketing. The more sophisticated deployment of risk does not mean excluding bad risks – on the contrary, the diffusion of a more complex risk assessment is characterized by a greater level of incorporation of individual consumers within its market fold through firms either pricing different levels of risk or concentrating on a particular risk niche market. 'Substandard' risks may be profitable once they are adequately priced, no alternative exists and the insurance coverage is compelled. They cite the example of a motor insurance firm which deliberately marketed itself to high-risk consumers, profiting handsomely from the high premiums it charged, a lack of competition, its

restriction of coverage payments and the high interest rates it charged on instalment payments.

Risk pricing and the emergence of the sub-prime markets in credit as well as other markets demonstrate the new ends to which risk is being deployed. Before, the attribution of risk was used to exclude those deemed more likely to add to costs than to revenues, manifesting as a bifurcate division between the acceptably and the unacceptably risky. However, in a competitive consumer market propelled by profit, this simple division gives way under such techniques as risk pricing to an inclusionary impulse. As with profit scoring, rather than the 'risky' being suppressed they are actively engaged with, the attribution of risk serving not to locate and divide but to define and price. In a sense, there are no longer 'bad' risks, only un-entrepreneurial lenders with inferior or badly leveraged risk technologies resigned to the saturated, low-profit 'prime' markets. The expansion of capital thus leads to an increased downward targeting of consumers with more and more being integrated, on differential terms, leaving only a residuum of excluded non-consumers. As with the problematizations and potentials presented by the targeting of profitability, risk pricing cannot simply be reduced to some unilinear, rationalizing process of 'actuarialism' or even the manifestation of a practical response to a capitalistic profit motive on the part of lenders. Rather, risk pricing coalesces from the articulation of new forms of expertise and profit with new ways within which individuals as consumers can be understood and acted upon as risks.

With this new potential, the identification of risk comes to be used to adjust the price of credit to the particular, discrete self-governing potential of all consumers so that the availability of choice wrought by credit is restricted to their calculated ability to uphold the freedom to choose. Risk pricing ensures that the individual is made culpable for the costs of their own risk and those who share it through a segmented pooling of the similarly risky. They are thus made responsible for their own capacity as consumers, for the consuming costs and horizons of opportunity implicit in their individualized projects of consumption. 'Deserving' consumers pay less (Makuch 2001a: 16) while, by implication, 'undeserving' consumers pay more. Like O'Malley's (1992, 1996, 2000, 2004) conception of the 'new prudential' individual who, under newly contrived governmental arrangements, must exercise their own careful, individualized choices in defence against 'risks' like illness and unemployment that were formerly distributed across the social body, the contemporary credit consumer is made responsible for the risk that they themselves represent, for the condition of their own life and the choices that they have made in the past determining their credit-consuming potential in the present.

But the question arises as to the fate of the 'excluded', that 'risk residuum' deemed to lack the responsibility to pay for their own risk, 'what to do about those not in a position to aspire (legitimately) to the seductions of commodities – the unemployed, the incompetent, the criminal and the dispossessed?' (O'Malley 1994: 213). They are denied access to the seductions

of the market, excluded from circuits of credit consumption through their paltry or blackened credit record and the manifestation of personal attributes – occupation, income, neighbourhood – ‘objectively’ indicative of their lack of creditworthiness or, what amounts to the same thing, their inability to manage themselves. For them, the ‘second-tier’ financial services await – the pawn-broker, the payday lender and the rent-to-own centre which envelop the un-self-governable within more coercive mechanisms that ensure their governability: the pledge of collateral, the holding of a customer’s post-dated, guaranteed cheque or the scheduling of incremental ‘rental’ contracts that mask the rights of the individual as a credit consumer (Caskey 1994, 2005; Manning 2000: 195–225; Peterson 2004).

Conclusion

Against the backdrop of the post-war consumption boom of the 1950s, a new form of mass consumer credit developed in the credit card; unconnected for the first time with any specific form of consumption, its profitability was inherently bound to its own perpetuation within generalized consumption, implying new forms of population management by lenders as well as a greater reliance on the self-governing capabilities of the consumer. Such ‘plastic credit’, in expanding the scope and reach of credit within the everyday lives of consumers, regularized a more or less permanent state of indebtedness. At the level of the state, a new economic policy of Keynesianism elevated collective mass consumption over production as the critical lever of economic growth – deficit spending echoing personal indebtedness in the promotion of consumption. At this time statistical techniques, with the legislative support of the state, began to give a novel articulation to the problem of identifying non-payers and reducing the costs associated with default across a lender’s population of consumers. Credit scoring, the analysis of statistical relationships between variables and default outcomes within a population, thus became applied to the governing of sanctioning decisions by these mass lenders, rendering credit applicants visible and governable in new ways as risks.

However, systems of risk do not simply disperse through the consumer credit industry according to their own interminable logic as more rational, more efficient means of governing consumers. Crucially, the systematic statistical constitution of default risk is itself perceived by its experts as being beset by a perpetual array of risks which require the constant reappraisal of methods and procedures and the periodic renewal of models within which risk assessments are created. At the same time, though, the very success of risk as a generalized technology in conceiving and governing the problem of default has led to the imaginative investment of its technologies in new ways and in new areas within the operations of lenders, fragmenting its cohesiveness by re-articulating it through an unbinding of time, a broader more continuous reach across the population and a penetration into other areas of contingent

consumer management. The calculation of individual default risk has also become interconnected with a higher order of risk conceived and systematized around the governance of uncertainty and loss experienced at the level of an entire portfolio of consumers and their contracted debts.

Yet, not only are systems of risk open to ‘risks’ and continuous re-evaluation and the concept of risk subject to fragmentation through its application to new practices but the risk determinations constructed within models are themselves invoked by experts and lenders in new and shifting ways. Within consumer credit, this has taken one form through the incorporation of default risk within a statistical determination of the profitable credit consumer. Here, the subtext of risk changes, from that which is potentially dangerous and to be avoided to that which is too safe and uncondusive to financial return. Elsewhere, the centrality of default risk to the government of credit consumers persists but in a form which increasingly responsabilizes the individual for the costs of their own self-government through the adjustment of interest rates and other terms to the specific identification of risk. Here, the idea of a single risk representing a single checkpoint to a homogeneous collective becomes dissolved into a spectrum of risks enveloping a segmented market. What was avoided before as ‘bad risk’ becomes sought after as a high return, growth-fuelled dynamic market segment, as distinct from a ‘safe’, sclerotic, ‘middle of the road’ market. Costs, formerly socialized by a single, common interest rate are now individualized, turned upon those segments each according to their due.

Notes

1 However, Keynesianism was not simply a transformation in macroeconomic policy by the state but represents, more fundamentally, the invention of macroeconomics itself as a discipline, a new means of economic governance bound up in a new ‘avalanche of numbers’ – GDP, balance of payments, industrial production and consumer prices – made known and harnessed for war production (Suzuki 2002).

2 For a brief account of these early studies, see Meyers and Forgy (1963).

3 Of course, risk is not an overarching definition but is created within particular relations with specific lenders for particular types of credit product. It has no stable coherency as an identity for individuals but emerges, discontinuously, at particular access points within circuits of consumption. Nevertheless, the preponderance of risk definitions which encompass the individual through their credit choices, shaping their credit opportunities, do coalesce around the individual over time to determine their general place within, or outside, the margins of consumption.

4 Consider the following quote from score modelling firm Fair Isaac: ‘*Scoring considers only credit-related information*. Factors like gender, race, nationality and marital status are not included. In fact, the Equal Credit Opportunity Act (ECOA) prohibits lenders from considering this type of information when issuing credit. Independent research has been done to make sure that credit scoring is not unfair to minorities or people with little credit history. Scoring has proven to be an accurate and consistent measure of repayment for all people who have some credit history. In other words, *at a given score, non-minority and minority applicants are equally likely to pay as agreed*’ (Fair Isaac 2005, emphasis added).

5 However, the constitution of risk is no mere 'social construction'. The attributions of risk produced by credit scoring come into being within particular social contexts for the organization of individuals in respect of the future; nevertheless, through such production, individuals are materially acted upon as risks, an identification which restricts or enhances their future consuming possibilities which, in turn, influences their future identification as risks. Risk, as a means of intervening within the world, changes the nature of the world within which it is created (Reith 2004: 385) – in being acted upon as risks, people *become* risks.

6 Similarly, at the level of the firm, Lawrence (1992) shows that the implementation of a scoring model to replace a judgemental system requires the approval and oversight of management who may call into question the use of certain attributes where there is no intuitive reason for their effect. Without 'cause', a variable will often be left out of the design of a credit-scoring system, regardless of its statistical predictiveness. Even the fact that the Equal Credit Opportunity Act prohibits the use of the characteristics of gender or race indicates that, despite possible statistically significant correlations between such characteristics and default outcomes, political and cultural values of equality specify what 'should' determine whether an individual can get access to credit.

7 More generally, the application of a risk technology to the question of how to govern credit consumers is not seen to confront a homogeneous problem of how to ascertain risk. In a large and diverse market with lenders of varied size and specialism armed with different priorities and resources, and engaging with a particular array of consumer niche markets, different technical means have particular characteristics that make them suitable for different kinds of creditor in different contexts depending on the structure of the data, the characteristics used and the speed of change in the population (Hand and Henley 1997).

8 Different approaches exist for creating a framework to determine this conception of risk. One simply incorporates new information as it comes on-stream within an existing scoring model. Another approach is to model customer behaviour directly – either by a conventional means of relating individual attributes to the experience of the group or through the use of Bayesian methods which attempt to extrapolate statistically into the future based on the relatively small amount of information inherent in the individual consumer's demonstrable actions.

9 Ironically, though, it is this very standardization and commodification, creating a permanent circuit of risk visibility, that undermines the effect of its hegemony as a measure of default risk. Because it is a generalized measure of risk based on a mass population of consumers and constructed on the limited characteristics of repayment history, it is perceived to be a relatively inaccurate measure of risk when contrasted to models developed on the more particular empirical framework and market profile of individual lenders and which assess and incorporate a wider array of data including income, occupation and address (Chandler 2001: 50). As the profitability and competitive advantage of lenders are seen to be linked to the discriminatory efficacy of the risk models they deploy, then a generic commodified model, which any lender can access, provides no competitive advantage.

10 Within consumer credit, the development of a scoring model by a lender typically resulted in the use of two forms of decision rule: either a single risk cut-off point would serve as a threshold or else a double threshold top-and-tail system would be introduced. In this latter, the lender would automatically accept all applicants exceeding the upper threshold and reject all applicants underneath the lower threshold. Intermediate area risks would then be subject to a more intensive review before a final decision would be made as to whether credit would be advanced or not.

11 For an account of 'sub-prime' and 'predatory' lending practices in relation to the home mortgage market, see Squires (2004).

12 The link between risk in insurance and in consumer credit has acquired a new significance in recent years with the development of so-called 'insurance scores'. Fair Isaac, for instance, has developed a 'generic' modelling product which predicts an individual's probabilistic likelihood of making an insurance claim based on their credit use recorded at the national credit bureaux, such scores being used to set coverage and premium levels for insurees as well as the targeting of marketing efforts (see Boyd 2001). Such products have proven controversial with certain states moving legislatively to limit their use by insurance companies.

References

- Ahiakpor, J. C. W.** (2001) 'On the mythology of the Keynesian multiplier: unmasking the myth and the inadequacies of some earlier criticisms', *American Journal of Economics and Sociology* 60(4): 745–73.
- Anonymous** (1979) 'Credit scoring and the ECOA: applying the effects test', *Yale Law Journal* 88(7): 1450–86.
- Avery, R. B., Bostic, R. W., Calem, P. S. and Canner, G. B.** (2000) 'Credit scoring: statistical issues and evidence from credit bureau files', *Real Estate Economics* 28(3): 523–47.
- Avery, R. B., Calem, P. S. and Canner, G. B.** (2003) 'An overview of consumer data and credit reporting', *Federal Reserve Bulletin*, February: 47–73.
- Baker, T.** (2002) 'Risk, insurance, and the social construction of responsibility', in T. Baker and J. Simon (eds) *Embracing Risk: the Changing Culture of Insurance and Responsibility*, Chicago, IL: University of Chicago Press, pp. 33–51.
- Barth, J.** (2002) 'Discussion – consumer loan securitization', in T. A. Durkin and M. E. Staten (eds) *The Impact of Public Policy on Consumer Credit*, Boston, MA: Kluwer, pp. 307–12.
- Boyd, L. D.** (2001) 'Insurance risk scores: forecasting claim performance through the use of credit data', *Today's Insurance Professionals* Fall: 36–7.
- Boyle, M., Crook, J. N., Hamilton, R. and Thomas, L. C.** (2002) 'Methods for credit scoring applied to slow payers', in L. C. Thomas, J. B. Crook and D. B. Edelman (eds) *Credit Scoring and Credit Control*, Oxford: Clarendon Press, pp. 75–90.
- Bunn, D. and Wright, G.** (1991) 'Interaction of judgemental and statistical forecasting methods: issues and analysis', *Management Science* 37(5): 501–18.
- Calder, L.** (1999) *Financing the American Dream: A Cultural History of Consumer Credit*, Princeton, NJ: Princeton University Press.
- Capon, N.** (1982) 'Credit scoring systems: a critical analysis', *Journal of Marketing* 46(2): 82–91.
- Carr, V. and Luong, D.** (2005) 'Strategy optimization for credit: maximise profit while managing risk', *Proceedings of the Ninth Conference on Credit Scoring and Credit Control*, 7–9 September, University of Edinburgh, available at: < <http://www.crc.man.ed.ac.uk/conference/presentations/2005/carr-v-luong-d.pdf> > (accessed 28 March 2006).
- Caskey, J.** (1994) *Fringe Banking: Check-Cashing Outlets, Pawnshops, and the Poor*, New York: Russell Sage.
- (2005) 'Fringe banking and the rise of payday lending', in P. Bolton and H. Rosenthal (eds) *Credit Markets for the Poor*, New York: Russell Sage, pp. 17–45.
- Castel, R.** (1991) 'From dangerousness to risk', in G. Burchell, C. Gordon and P. Miller (eds) *The Foucault Effect: Studies in Governmentality*, Chicago, IL: University of Chicago Press, pp. 281–98.
- Chandler, G. C.** (2001) 'Generic and customized scoring models: a comparison', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 23–55.
- Chatterjee, S., Corbae, D. and Rios-Rull, J.** (2005) 'A recursive equilibrium model with credit scoring and competitive pricing of default risk', *Working Paper*,

- Federal Reserve Bank of Atlanta Research Department, available at: < <http://www.atl-res.com/macro/papers/chatterjee%20paper.pdf> > (accessed 16 March 2006).
- Clark, E. (1930) *Financing the Consumer*, London: Harper.
- Coffman, J. Y. and Chandler, G. G. (1983) 'Applications of performance scoring to accounts receivable management in consumer credit', *Working Paper* No. 46, Credit Research Center, Krannert Graduate School of Management – Purdue University.
- Cohen, L. (2003) *A Consumer's Republic: The Politics of Mass Consumption in Post-war America*, New York: Knopf.
- Cole, R. H. (1988) *Consumer and Commercial Credit Management*, Scarborough, ON: Irwin.
- Crowder, M. J., Hand, D. J. and Krzanowski, W. J. (2005) 'On customer lifetime value', *Proceedings of the Ninth Conference on Credit Scoring and Credit Control*, 7–9 September, University of Edinburgh, available at: < <http://www.crc.man.ed.ac.uk/conference/presentations/2005/Crowder%20Hand%20Krzanowski%20talk.pdf> > (accessed 28 March 2006).
- Dawes, R. M., Faust, D. and Meehl, P. E. (1989) 'Clinical versus actuarial judgment', *Science* 243(4899): 1668–74.
- Dawes, R. M. (1999) 'A message from psychologists to economists: mere predictability doesn't matter like it should (without a good story appended to it)', *Journal of Economic Behavior and Organization* 39(1): 29–40.
- Dean, M. (1999) 'Risk, calculable and incalculable', in D. Lupton (ed.) *Risk and Sociocultural Theory: New Directions and Perspectives*, Cambridge: Cambridge University Press, pp. 131–59.
- Durand, D. (1941) *Risk Elements in Consumer Instalment Financing (Technical Edition)*, New York: National Bureau of Economic Research.
- Durkin, T. (2000) 'Credit cards: use and consumer attitudes, 1970–2000', *Federal Reserve Bulletin* September: 623–34.
- Edelberg, W. (2003) 'Risk-based pricing of interest rates in household loan markets', *Finance and Economics Discussion Series: Staff Working Papers*, United States Federal Reserve Board.
- Elliehausen, G. E. and Durkin, T. A. (1989) 'Theory and evidence of the impact of equal credit opportunity: an agnostic review of the literature', *Monograph No. 28*, Credit Research Center, Krannert Graduate School of Management – Purdue University.
- Emmet, B. and Jeuck, J. E. (1950) *Catalogues and Counters: A History of Sears, Roebuck and Company*, Chicago, IL: University of Chicago Press.
- Equal Credit Opportunity Act (1974) United States Government Printing Office, available at: < <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=ee1c3ba700283b3b6ca3a35322eb4db5&rgn=div5&view=text&node=12:2.0.1.1.2&idno=12> > (accessed 9 September 2005).
- Ericson, R., Barry, D. and Doyle, A. (2000) 'The moral hazards of neo-liberalism: lessons from the private insurance industry', *Economy and Society* 29(4): 532–58.
- Evans, D. S. and Schmalensee, R. (1999) *Paying with Plastic: The Digital Revolution in Buying and Borrowing*, London: MIT Press.
- Ewald, F. (1990) 'Norms, discipline and the law', *Representations* 30(1): 138–61.
- (1991) 'Insurance and risk', in G. Burchell, C. Gordon and P. Miller (eds) *The Foucault Effect: Studies in Governmentality*, Chicago, IL: University of Chicago Press, pp. 197–210.
- Fair Isaac (2005) 'Credit scoring: facts and fallacies', available at: < <http://www.myfico.com/CreditEducation/FactsFallacies.aspx?fire=5> > (accessed 9 September 2005).
- (2006) 'Company milestones', available at: < <http://www.fairisaac.com/Fairisaac/Company/Milestones> > (accessed 27 March 2006).
- Feely, M. and Simon, J. (1992) 'The new penology: notes on the emerging strategy of corrections and its implications', *Criminology* 30(4): 449–74.

- (1994) 'Actuarial justice: the emerging new criminal law', in D. Nelken (ed.) *The Futures of Criminology*, New York: Sage, pp. 173–201.
- Fisher, G.** (1936) 'The use of multiple measurements in taxonomic problems', *Annals of Eugenics* 7: 179–88.
- Garrison, M. L.** (1976) 'Credit-ability for women', *The Family Coordinator* 25(3): 241–8.
- Gelpi, R. and Julien-Labruyère, F.** (2000) *The History of Consumer Credit: Doctrines and Practices*, trans. L. Gavin, Basingstoke: Macmillan.
- Gilreath, E. M.** (1999) 'The entrance of banks into subprime lending: First Union and The Money Store', *North Carolina Banking Institute* 3: 149–68.
- Glassman, C. and Wilkins, H.** (1997) 'Credit scoring: probabilities and pitfalls', *Journal of Retail Banking Services* 19(2): 53–6.
- Glennon, D.** (2001) 'Model design and validation: identifying potential sources of model risk', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago: Glenlake, pp. 243–73.
- Gosh, S. and Reilly, D. L.** (1994) 'Credit card fraud detection with a neural-network', *Proceedings of the 27th Annual Hawaii International Conference on System Sciences* 3, 4–7 January, Maui, HI, pp. 621–30.
- Graney, M. F. and Wynn, A. J.** (1992) 'An optimistic and proactive view of credit assessment?', in L. C. Thomas, J. B. Crook and D. B. Edelman (eds) *Credit Scoring and Credit Control*, Oxford: Clarendon Press, pp. 209–16.
- Gruenstein, J. M.** (2001) 'Optimal use of statistical techniques', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 149–83.
- Guseva, A. and Rona-Tas, A.** (2001) 'Uncertainty, risk and trust: Russian and American credit card markets compared', *American Sociological Review* 66(5): 623–46.
- Hacking, I.** (1990) *The Taming of Chance*, Cambridge: Cambridge University Press.
- Hand, D. J.** (2001) 'Reject inference in credit operations', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 225–40.
- Hand, D. J. and Henley, W. E.** (1997) 'Statistical classification methods in consumer credit scoring: a review', *Journal of the Royal Statistical Society: Series A* 160(3): 523–41.
- Hiltz, S. R.** (1971) 'Black and white in the consumer finance system', *American Journal of Sociology* 76(6): 987–98.
- Hopper, M. A. and Lewis, E. M.** (1992) 'Behaviour scoring and adaptive control systems', in L. C. Thomas, J. B. Crook and D. B. Edelman (eds) *Credit Scoring and Credit Control*, Oxford: Clarendon Press, pp. 257–76.
- Hsia, D. C.** (1979) 'Credit scoring and the equal credit opportunity act', *Hastings Law Journal* 30(2): 371–448.
- Hunt, R. M.** (2002) 'The development and regulation of consumer credit reporting in America', *Working Paper 02-21*, Federal Reserve Bank of Philadelphia.
- Jacobson, T. and Roszbach, K.** (2003) 'Bank lending policy, credit scoring and value-at-risk', *Journal of Banking and Finance* 27(4): 615–33.
- Jeacle, I. and Walsh, E.** (2002) 'From moral evaluation to rationalization: accounting and the shifting technologies of credit', *Accounting, Organizations and Society* 27(8): 737–61.
- Jennings, A.** (2001) 'The importance of credit information and credit scoring for small business lending decisions', *Proceedings from the Global Conference on Credit Scoring*, 2–3 April, Washington DC, pp. 5–12.
- Johnson, K. W.** (2002) 'Consumer loan securitization', in T. A. Durkin and M. E. Staten (eds) *The Impact of Public Policy on Consumer Credit*, Boston, MA: Kluwer, pp. 287–306.
- Johnson, R. W.** (1992) 'Legal, social and economic issues in implementing scoring in the US', in L. C. Thomas, J. B. Crook and D. B. Edelman (eds) *Credit Scoring and Credit Control*, Oxford: Clarendon Press, pp. 19–32.
- Jost, A.** (2001) 'Data mining', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 185–213.

- Kavanagh, T. M.** (1993) *Enlightenment and the Shadows of Chance: The Novel and the Culture of Gambling in 18th Century France*, Baltimore, MD: Johns Hopkins University Press.
- Klausen, J.** (2002) 'Did World War II end the New Deal?', in S. Milkis and J. Mileur (eds) *The New Deal and the Triumph of Liberalism*, Boston, MA: University of Massachusetts Press, pp. 193–230.
- Klein, L.** (1999) *'It's in the Cards': Consumer Credit and the American Experience*, Westport, CT: Praeger.
- Knight, F. H.** (1971) *Risk, Uncertainty and Profit*, Chicago, IL: University of Chicago Press.
- Koudsi, S.** (2002) 'Sleazy credit', *Fortune* 145(5): 143–6.
- Lawrence, D.** (1992) *Handbook of Consumer Lending*, Englewood Cliffs, NJ: Prentice Hall.
- Leach, W.** (1993) *Land of Desire: Merchants, Power, and the Rise of a New American Culture*, New York: Pantheon.
- Lee, T.** (2001) 'Measures for model validation', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago: Glenlake, pp. 275–84.
- Lee, T. and Jung, S. C.** (2001) 'A multi-score approach for portfolio management', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 215–24.
- Levidow, L.** (1994) 'Dereifying risk', *Science as Culture* 4(3): 440–56.
- Lewis, E. M.** (1992a) *An Introduction to Credit Scoring*, San Rafael, CA: Fair Isaac.
- (1992b) 'Credit scoring and credit control from four points of view', in L. C. Thomas, J. B. Crook and D. B. Edelman (eds) *Credit Scoring and Credit Control*, Oxford: Clarendon Press, pp. 3–17.
- Leyshon, A. and Thrift, N.** (1999) 'Lists come alive: electronic systems of knowledge and the rise of credit-scoring in retail banking', *Economy and Society* 28(3): 434–66.
- McAllister, P. and Eng, D.** (2001) 'Score-based collection strategies', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 303–20.
- McCorkell, P. L.** (2002) 'The impact of credit scoring and automated underwriting on credit availability', in T. A. Durkin and M. E. Staten (eds) *The Impact of Public Policy on Consumer Credit*, Boston, MA: Kluwer, pp. 209–20.
- Makuch, W. M.** (2001a) 'Scoring applications', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 3–21.
- (2001b) 'The basics of a better application score', in E. Mays (ed.) *Handbook of Credit Scoring*, Chicago, IL: Glenlake, pp. 127–48.
- Malhotra, R. and Malhotra, D. K.** (2003) 'Evaluating consumer loans using neural networks', *Omega* 31(2): 83–96.
- Mandell, L.** (1990) *The Credit Card Industry: A History*, Boston, MA: Twayne.
- Manning, R.** (2000) *Credit Card Nation: The Consequences of America's Addiction to Credit*, New York: Basic.
- May, E. T.** (1988) *Homeward Bound: American Families in the Cold War Era*, New York: Basic Books.
- Meyers, J. H. and Forgy, E. W.** (1963) 'The development of numerical evaluation systems', *Journal of the American Statistical Association* 58(3): 799–806.
- Millman, G. J.** (2001) 'Plastic meltdown', *Institutional Investor* 35(12): 105–10.
- Nocera, J.** (1994) *A Piece of the Action: How the Middle Class Joined the Money Class*, New York: Simon & Schuster.
- O'Malley, P.** (1992) 'Risk, power and crime prevention', *Economy and Society* 21(3): 252–75.
- (1994) 'Regulating enterprise culture', *Canadian Journal of Law and Society* 9(2): 205–15.
- (1996) 'Risk and responsibility', in A. Barry, T. Osborne and N. Rose (eds) *Foucault and Political Reason: Liberalism, Neo-Liberalism and Rationalities of Government*, London: University College London Press, pp. 189–207.

- (2000) 'Uncertain subjects: risk, liberalism and contract', *Economy and Society* 29(4): 460–84.
- (2004) *Risk, Uncertainty and Government*, London: Glasshouse.
- Olney, M. L.** (1991) *Buy Now, Pay Later: Advertising, Credit, and Consumer Durables in the 1920s*, Chapel Hill, NC: University of North Carolina Press.
- Peterson, C. L.** (2004) *Taming the Sharks: Towards a Cure for the High Cost Credit Market*, Akron, OH: University of Akron Press.
- Plummer, W. C. and Young, R. A.** (1940) *Sales Finance Companies and their Credit Practices: Financial Research Program*, Studies in Consumer Instalment Financing 2, New York: National Bureau of Economic Research.
- Porter, T. M.** (1992) 'Quantification and the accounting ideal in science', *Social Studies of Science* 22(4): 633–51.
- (1995) *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, Princeton, NJ: Princeton University Press.
- Reith, G.** (2004) 'Uncertain times: the notion of "risk" and the development of modernity', *Time and Society* 13(2): 383–402.
- Ritzer, G.** (1995) *Expressing America: A Critique of the Global Credit Card Society*, Thousand Oaks, CA: Pine Forge.
- Rose, N.** (1993) 'Government, authority and expertise in advanced liberalism', *Economy and Society* 22(3): 283–99.
- (1996) 'Psychiatry as a political science: advanced liberalism and the administration of risk', *History of the Human Sciences* 9(2): 1–23.
- (1999) *Powers of Freedom: Reframing Political Thought*, Cambridge: Cambridge University Press.
- (2002) 'At risk of madness', in T. Baker and J. Simon (eds) *Embracing Risk: The Changing Culture of Insurance and Responsibility*, London: University of Chicago Press, pp. 209–37.
- Rose, N. and Miller, P.** (1992) 'Political power beyond the state: problematics of government', *British Journal of Sociology* 43(2): 173–205.
- Rosenberg, E. and Gleit, A.** (1994) 'Quantitative methods in credit management: a survey', *Operations Research* 42(4): 589–613.
- Rothstein, H., Huber, M. and Gaskell, G.** (2006) 'A theory of risk colonization: the spiralling regulatory logics of societal and institutional risk', *Economy and Society* 35(1): 91–112.
- Seligman, E. R. A.** (1927) *The Economics of Instalment Selling: a Study in Consumers' Credit, with special reference to the automobile*, New York: Harper.
- Simon, J.** (1987) 'The emergence of a risk society: insurance, law and the state', *Socialist Review* 95: 61–89.
- (1988) 'The ideological effects of actuarial practices', *Law and Society Review* 22(4): 771–800.
- Smalley, O. A. and Sturdivant, F.** (1973) *The Credit Merchants: A History of Spiegel, Inc.*, Carbondale and Edwardsville, IL: Southern Illinois University Press.
- Squires, G. D.** (2004) 'The new red-lining', in G. Squires (ed.) *Why the Poor Pay More: How to Stop Predatory Lending*, Westport, CT: Praeger, pp. 1–24.
- Stanghellini, E., McConway, K. J. and Hand, D. J.** (1999) 'A discrete variable chain graph for applicants for credit', *Applied Statistics* 48(2): 239–51.
- Suzuki, T.** (2003) 'The epistemology of macroeconomic reality: the Keynesian revolution from an accounting point of view', *Accounting, Organizations and Society* 28(5): 471–517.
- Thomas, L. C.** (2000) 'A survey of credit and behavioural scoring, forecasting financial risk of lending to consumers', *International Journal of Forecasting* 16(2): 149–72.
- Thomas, L. C., Ho, J. and Scherer, W. T.** (2001) "'Time will tell", behavioural scoring and the dynamics of consumer credit assessment', *IMA Journal of Management Mathematics* 12(1): 89–103.

- Watkins, J. P.** (2000) 'Corporate power and the evolution of consumer credit', *Journal of Economic Issues* 34(4): 909–32.
- Williams, B.** (2004) *Debt for Sale: A Social History of the Credit Trap*, Philadelphia, PA: University of Pennsylvania Press.
- White, A.** (2004) 'Risk-based mortgage pricing', *Housing Policy Debate* 15(3): 503–31.

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