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FEASIBILITY STUDY ON A METHODOLOGY FOR MEASURING DISCRIMINATION IN RESIDENTIAL MORTGAGE LENDING

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Prepared For:
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ABSTRACT

Mortgage discrimination has been at the centre of housing policy research in the United States for the past two decades. Despite increasing levels of regulation to eliminate this practice, a furious debate remains over whether it exists at all. Increasingly sophisticated research has produced ambiguous results. There is no evidence to suggest that mortgage market discrimination is a problem in Canada. However, because it exists in many other areas of society, there is no reason to assume that the mortgage lending process is immune.

Because discrimination may potentially eliminate otherwise credit-worthy borrowers, standard economic theory argues that profit-maximizing lenders will not discriminate. Discrimination may however, result from lack of experience or understanding of certain groups of borrowers. For example, lenders who are conservative in the face of uncertainty may discriminate inadvertently. In other cases, lenders may be willing to forego profit if discrimination is practised for personal, cultural, or social reasons.

Therefore, some lenders may wish to use the methods described in this paper to assess whether their own lending institution excludes qualified borrowers. Further, the basic tenets of fairness, as well as the creation of an environment where newcomers to Canada can succeed, argue for an interest in this question by governments.

This paper examines the concept of discrimination in residential mortgage lending, reviews and evaluates the approaches that have been developed to detect the existence of discrimination in the US, and presents a possible research program suitable for lending firms and governments in Canada.

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EXECUTIVE SUMMARY

Any consideration of discrimination is bound to be controversial and has the potential to raise uncomfortable issues. There is no direct evidence that discrimination exists in the Canadian mortgage market. By presenting a review of research approaches to assess the extent of mortgage discrimination, we are not suggesting either that discrimination exists or that a research program to assess mortgage market discrimination is warranted.

This paper seeks to answer the following questions:

- What is meant by mortgage market discrimination?
- What methods exist and are methods specific to the attributes of the borrower (gender, occupation, etc.)? What are the requirements for each method? Which methods are analytically superior and why?
- Are there trade-offs between a methodology and the type of discrimination being studied?
- What are the critical success factors for the chosen method and can these be met in Canada?
- What is a feasible research program as defined by:
  - costs; timing; accuracy / validity of results; type of discrimination; and, Canadian content (data availability, reasonableness)?
  - what ethical and legal considerations apply in Canada?

Mortgage market discrimination occurs in the context of the overall housing market. It is clear that someone may encounter discrimination at various stages of the home purchase process. A realtor may guide buyers to certain areas or fail to exert the same effort for all purchasers. A mortgage lender may adjust repayment terms or impose more stringent conditions on different borrowers. When these terms or conditions vary systematically and consistently by class or group, then discrimination may exist.

Most agree that the only basis for accepting or rejecting a mortgage application should be the applicant's expected repayment performance. Horizontal equity exists when two applicants, with identical economic status and credit histories and wishing to purchase the same home in the same neighbourhood, are offered identical mortgage options. Vertical equity requires that two applicants, with different economic status and credit history and/or who may be seeking to finance houses of different value, be offered mortgages on terms that reflect these differences proportionately. Thus, if the general rule is that a borrower can finance up to twice his/her gross income, all things being equal, the borrowing limits should reflect this rule for all applicants. If this is the case, an applicant with twice the income should qualify for a mortgage of twice the value, all things being equal.

We make no assumption that mortgage market discrimination exists in Canada. If there is no direct evidence that this is the case, why investigate the feasibility of testing for mortgage market discrimination?

There are five reasons this discussion is useful:

- First, within the Canadian Charter of Rights and Freedoms, lenders and borrowers, as well as others involved in housing such as community groups and government, need to be aware of what constitutes mortgage market discrimination, how it is defined, how discrimination can seem to be present when it is not, and what data collection and analytical methods are useful in establishing the existence of discriminatory behaviour.

- Second, the neo-classical economic view of discrimination is that profit maximizing firms will not discriminate in their employment or customer practices. Recently, researchers in institutional economies, and even some theorists who work in the new-classical paradigm, agree that firms may have other goals. These other goals may allow discrimination provided profits are maintained at some minimum level. Finally, a lender may be reluctant to lend to those who have a short credit history.

  Most of the methods discussed in this paper can be applied by a lender to test that its own practices are completely devoid of discriminatory bias. With increased competition in financial markets lenders are seeking to improve their performance. Testing their own practices is a useful step in the competitive strategy of a lender. A central finding of this paper is that lenders should be in the forefront of those institutions testing their methods for discrimination. It makes good business sense to do so.

- Third, investigating the method for testing discrimination significantly raises understanding of what constitutes discriminatory action. Most important is the basic point that observed patterns of mortgage holding and home ownership may not match the distribution of population groups such as ethnic groups, single women, etc. This mismatch may arise from the operation of many social and economic forces, as well as discrimination in job markets and education. Such analysis leads to a deeper understanding of how our economy and society function.

- Fourth, with the relatively high rates of immigration, access to high standards of living are important elements of public policy. In addition to educational and employment opportunities new Canadians legitimately seek home ownership. Ensuring that housing markets, of which the mortgage market is a key component, are efficient and fair is an important aspect of overall programming to welcome immigrants to Canada. Many see this source of population increase as important to our future economic growth.

- Fifth, the issue of mortgage market discrimination is high profile in the United States. After twenty years of active and sometimes acrimonious research and debate, financial regulators in that country are moving ahead with *reverse onus* procedures where lenders must prove they do not discriminate. Since many researchers in the United States are convinced that discrimination is endemic in mortgage markets, it is reasonable to ask whether the same is true for Canada given the many other similarities in the two countries.

This paper is directed to three main audiences. First, assuming that lenders maximize profits, and assuming discriminatory decisions compromises profits, then lenders will be interested in those methods that will allow them to assess their lending procedures. Second, government will be interested in these methods since, as a matter of public policy, equal access to mortgage markets forms an important part of the overall policy framework in Canada. Third, community groups and advocacy organizations representing those potentially affected by discrimination are an important audience. Establishing the existence of discrimination is complex. It requires meticulous data collection and sophisticated research designs. Advocacy groups need to understand that most apparent manifestations of differential treatment in the mortgage market are more easily explained by education and labour market deficiencies rather than flaws in the mortgage market.

Five key points emerge from this research:

- Despite 20 years of research on this issue in the US, no single combination of research strategy, data collection activities, and statistical techniques has been found to be the "correct" way to study mortgage discrimination. This is a very complex topic, conceptually and empirically.

- Discrimination may be observed directly using trained observers or inferred from secondary data such as the outcomes of individual applications. A research method combines perspective (direct versus indirect observation), data collection method, and analytical procedures. There is no one best method. Because little work has been completed in Canada, almost any method will shed increased light on the issue. No single method can provide all information. For this research we specify a research program comprised of different methods.

- The United States has created an elaborate regulatory and reporting system to forestall the existence of mortgage market discrimination. As a by-product of this regulatory effort, very substantial amounts of administrative data have become available with which to study mortgage market discrimination. Because the same regulatory structures do not exist in Canada and are not contemplated, these administrative data are unavailable in Canada. This means that certain methods are not available to Canadian researchers without either replicating this regulatory structure, unless lenders undertake the research themselves, or by government obtaining high levels of cooperation from lenders.

- The research methods are conceptually independent of who sponsors or commissions the investigation. However, lenders have access to their client base and this provides them with an important resource in mortgage market discrimination research. For this reason we specify two research programs, one suitable for a lender and the other that a government department or NGO may wish to consider.

- The regulatory structure in the US emerged from the civil rights movement. There is no basis for replicating this structure in Canada. In our view, research into discrimination in Canadian mortgage markets should be done by the financial industry and by joint ventures between the financial industry, government, and non-governmental groups.

Five discrimination research methods are examined:

- Statistical analysis of census tract data is the research method that initiated the US debate. This method has fallen into disfavour and is not analytically powerful in proving that discrimination exists against a certain group, but it has a role in identifying where discrimination is probably not an issue.

- Sample surveys of recent mortgage applicants can be executed by lenders and government/NGOs. This type of research can be seen as part of client satisfaction studies so widely used in the industry.

- Bilateral surveys are administered to applicants and lenders to obtain a balanced or dyadic view of the mortgage application/decision process.

- Paired auditing is a classic design in discrimination studies where two auditors, identical in all respects except one "discrimination" dimension, apply for a mortgage.

- Experiments with the application involve sending trial applications to loans officers. These applications are rated for risk of default. If loans officers assign higher risks to certain groups, all other things being equal, then discrimination is a possibility.

RÉSUMÉ

Tout examen de la discrimination est voué à la controverse et peut soulever des questions désagréables. On ne possède pas directement la preuve que la discrimination existe sur le marché hypothécaire canadien. Dans cette étude des méthodes de recherche, que nous présentons pour évaluer la mesure de la discrimination en matière de prêt hypothécaire, nous ne suggérons pas que la discrimination existe, ni qu'un programme de recherche se justifie pour évaluer la discrimination sur le marché hypothécaire.

Dans ce document, on cherche à répondre aux questions suivantes :

- o Que veut-on dire par discrimination sur le marché hypothécaire?
- o Quelles sont les méthodes en vigueur et existe-t-il des méthodes particulières liées aux caractéristiques de l'emprunteur (genre, occupation, etc.)? Quelles sont les exigences pour chaque méthode? Quelles méthodes sont supérieures du point de vue analytique et pourquoi?
- o Y a-t-il des méthodologies comparables au type de méthodologie choisie et au type de discrimination à l'étude?
- o Quels sont les facteurs critiques de succès pour la méthode choisie et ceux-ci peuvent-ils être utilisés au Canada?
- o La définition d'un programme de recherche réalisable en fonction :
  - des coûts, de l'échéance, de l'exactitude/validité des résultats, du type de discrimination ainsi que du contenu canadien (disponibilité des données, caractère raisonnable)?
  - Quelles sont les considérations éthiques et juridiques applicables au Canada?

La discrimination sur le marché hypothécaire se présente-elle dans le contexte du marché global du logement? Il est évident que quiconque peut faire l'objet de discrimination à diverses étapes du processus d'achat d'une maison. Un agent immobilier peut guider les acheteurs vers certains secteurs ou ne pas faire les mêmes efforts pour tous les acheteurs. Un prêteur hypothécaire peut ajuster les modalités de remboursement ou imposer des conditions plus strictes selon les emprunteurs. Lorsque ces modalités ou conditions varient systématiquement par classe ou groupe, il peut y avoir discrimination.

La plupart conviennent que l'acceptation ou le rejet d'une demande de prêt hypothécaire devrait être régi par la capacité de l'emprunteur à rembourser. L'équité horizontale existe lorsque l'on offre les mêmes

options hypothécaires à deux demandeurs de condition économique et d'antécédents en matière de crédit identiques ou qui désirent acheter la même maison dans le même quartier. L'équité verticale exige que l'on offre à deux demandeurs de situation économique et d'antécédents en matière de crédit différents ou qui cherchent à financer des maisons de différentes valeurs, des modalités hypothécaires qui tiennent compte proportionnellement de ces différences. Ainsi, si la règle générale est qu'un emprunteur peut financer jusqu'à deux fois son revenu brut, toutes choses étant égales, les limites d'emprunt doivent respecter cette règle pour tous les demandeurs. Si c'est le cas, un demandeur qui dispose de deux fois le revenu devrait être admissible à un prêt de deux fois la valeur, toutes choses étant égales.

Nous ne supposons pas que la discrimination existe sur le marché hypothécaire canadien. S'il n'est pas évident que c'est le cas, pourquoi étudie-t-on la faisabilité de l'existence de discrimination sur le marché hypothécaire?

Cette discussion est utile pour cinq raisons :

- Premièrement, conformément à la Charte canadienne des droits et libertés, les prêteurs et les emprunteurs, ainsi que les autres personnes s'occupant de logement comme les groupes communautaires et les gouvernements, doivent savoir ce que constitue la discrimination sur le marché hypothécaire, comment on la définit, quand on juge à tort qu'il y a discrimination et quelles méthodes de collecte de données et d'analyse sont utiles pour établir l'existence d'un comportement discriminatoire.

- Deuxièmement, l'idée économique néoclassique de la discrimination est que les entreprises qui maximisent les profits ne feront pas preuve de discrimination dans leurs pratiques d'emploi ou à l'égard de leur clientèle. Dernièrement, les chercheurs en matière d'économies institutionnelles, et même certains théoriciens qui travaillent dans le paradigme néoclassique, conviennent que les entreprises peuvent avoir d'autres objectifs. Dans ceux-ci peut entrer de la discrimination à condition que les profits soient maintenus à un niveau minimum. Enfin, un prêteur peut hésiter à consentir un prêt aux personnes n'ayant pas beaucoup d'antécédents en matière de crédit.

  Un prêteur peut vérifier que ses propres pratiques excluent totalement la tendance à la discrimination à l'aide des méthodes expliquées dans ce document. Vu la concurrence accrue sur les marchés financiers, les prêteurs cherchent à améliorer leur performance. La vérification des pratiques est une étape qui peut être utile au prêteur dans sa stratégie concurrentielle. Ce document fait surtout ressortir que les prêteurs devraient devancer les établissements qui évaluent leurs méthodes pour discrimination. C'est une mesure commerciale sensée.

- Troisièmement, la recherche d'une méthode visant à déceler la discrimination fait mieux comprendre ce qui constitue une action discriminatoire. Le point essentiel est que les tendances observées en ce qui concerne la détention d'un prêt hypothécaire et la propriété d'une maison peuvent ne pas correspondre avec la distribution de groupes d'habitants, tels que les groupes ethniques, les femmes célibataires, etc. Cette disparité peut résulter de l'exercice de nombreuses forces sociales et économiques. Une telle analyse permet de mieux comprendre le fonctionnement de notre économie et de notre société.

- Quatrièmement, étant donné les taux d'immigration relativement élevés, l'accès à des niveaux de vie supérieurs sont des éléments importants de la politique publique. Outre les possibilités éducatives et d'emploi qui leur sont offertes, les nouveaux Canadiens cherchent, à juste raison, à devenir propriétaire d'une maison. Le fait de veiller à l'efficacité et à l'équité des marchés du logement, dont le marché hypothécaire est une importante composante, est un aspect essentiel du programme d'accueil global des immigrants au Canada. Nombreux sont ceux qui jugent que cette source d'augmentation de la population est un aspect essentiel de notre future croissance économique.

- Cinquièmement, la question de la discrimination sur le marché hypothécaire est d'actualité aux États-Unis. Après vingt années de recherche et de débats actifs et parfois désagréables, les organismes de réglementation financiers de ce pays vont de l'avant avec des méthodes de charge inversée où les prêteurs doivent démontrer qu'ils n'exercent pas de discrimination. Étant donné que de nombreux chercheurs aux États-Unis sont convaincus que la discrimination est endémique sur les marchés hypothécaires, il est raisonnable de se demander s'il en est de même au Canada.

Ce document concerne directement trois catégories. D'abord, en supposant que les prêteurs maximisent leurs profits et que les décisions discriminatoires compromettent les profits, ces méthodes les intéresseront parce qu'ils pourront ainsi évaluer leurs modalités de prêt. Ensuite, le gouvernement pourra s'intéresser à ces méthodes, puisqu'en matière de politique publique, l'égalité d'accès à des formes de marchés hypothécaires représente une part importante du cadre d'action global au Canada. Enfin, les groupes communautaires et les organismes de pression, représentant les personnes qui éventuellement peuvent être touchées par la discrimination, constituent un groupe important. Déterminer qu'il existe une discrimination est une tâche complexe. Il faut pour ce faire des méthodes de collecte de données précises et des plans de recherche perfectionnés. Les groupes de pression doivent comprendre que la plupart des manifestations du traitement différentiel dans le marché hypothécaire s'expliquent plus facilement par l'éducation et les déficiences du marché du travail que par les lacunes sur le marché hypothécaire.

Cinq points essentiels ressortent de cette recherche :

- Malgré 20 années de recherche sur cette question aux États-Unis, il n'a pas été possible de trouver une seule combinaison de stratégie de recherche, d'activités de collecte de données et de techniques statistiques, qui soit la bonne formule pour étudier la discrimination en matière hypothécaire. C'est un sujet très complexe, conceptuel et empirique.

- On peut observer directement la discrimination au moyen d'observateurs formés ou de déductions provenant de données secondaires comme les résultats des applications individuelles. Une méthode de recherche combine la perspective (observations directe c. indirecte), la méthode de collecte de données et les procédés analytiques. Il n'y a pas de méthode qui soit meilleure que les autres. Puisque peu de recherches ont été effectuées au Canada, n'importe quelle méthode devrait pour ainsi dire éclaircir la question. Aucune méthode ne peut fournir toute l'information. Dans ce document nous présentons un programme de recherche regroupant diverses méthodes.

- Les États-Unis ont créé un système réglementaire et de rapport très complexe pour empêcher l'existence de la discrimination sur le marché hypothécaire. Par suite de cet effort de réglementation, on a pu recueillir de nombreuses données administratives afin d'étudier la discrimination sur le marché hypothécaire. Parce qu'il n'existe pas au Canada de structures semblables de réglementation et que l'on n'envisage pas d'en établir, nous ne possédons pas ces données administratives. Cela signifie que les chercheurs canadiens ne peuvent pas utiliser certaines méthodes sans devoir reproduire cette structure de réglementation, à moins que les prêteurs n'entreprennent la recherche eux-mêmes ou que le gouvernement obtienne l'entière collaboration des prêteurs.

- D'un point de vue conceptuel, les méthodes de recherche sont indépendantes de l'organisme qui parraine ou commande le projet de recherche. Cependant, les prêteurs ont accès à la base de leur client et ils ont ainsi une ressource importante du point de vue de la recherche en matière de discrimination sur le marché hypothécaire. C'est la raison pour laquelle nous préconisons deux programmes de recherche, l'un pour les prêteurs et l'autre pour un ministère ou un organisme non gouvernemental.

- La structure de la réglementation aux États-Unis émane du mouvement pour la défense des droits civiques. Il n'y a pas de raison de reproduire cette structure au Canada. À notre avis, l'industrie financière et les entreprises conjointes entre l'industrie financière, le gouvernement et les organismes non gouvernementaux devraient se

charger de la recherche en matière de discrimination sur les marchés hypothécaires canadiens.

Cinq méthodes de recherche en matière de discrimination ont été examinées :

- La méthode de recherche ayant amorcé le débat aux États-Unis est l'analyse statistique des données du secteur de recensement. Cette méthode n'est plus acceptée et elle ne peut pas prouver suffisamment que la discrimination existe à l'égard d'un certain groupe, mais elle joue un rôle pour établir là où la discrimination n'est probablement pas un problème.

- Des enquêtes par sondage parmi les personnes ayant récemment demandé un prêt hypothécaire peuvent être réalisées par les prêteurs et les gouvernements ou organismes non gouvernementaux. On peut considérer que ce genre de recherche fait partie des études sur la satisfaction de la clientèle si répandues dans l'industrie.

- Des enquêtes bilatérales sont effectuées auprès des demandeurs et des prêteurs pour obtenir un aperçu équilibré ou dyadique du processus de demande ou de décision en matière de prêt hypothécaire.

- La vérification par paires est un concept classique dans les études sur la discrimination où deux vérificateurs, identiques à tous les égards, sauf sur l'aspect de la discrimination, demandent un prêt hypothécaire.

- Des essais relatifs à la présentation des demandes consistent à envoyer des demandes provisoires aux agents de prêt. Ces demandes sont classées par risque de défaut. Si les agents de prêt attribuent des risques élevés pour certains groupes, tous les autres aspects étant identiques, il est possible qu'il y ait discrimination.

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1.0 INTRODUCTION AND OVERVIEW

Buying a home is the largest purchase most people make and most must use mortgage financing. How the mortgage market operates therefore is an essential element of housing affordability and access.

Ideally, two equally creditworthy mortgage applicants seeking to finance identical homes should both be offered loans with the same range of terms (interest, down payment, and amortization). In the United States, however, there is a widespread belief that discrimination, that is credit allocation based on non-economic factors, enters the mortgage lending decision.[1] When it does, creditworthy applicants are denied access to housing finance because of characteristics unrelated to their potential ability to repay their loans. Discrimination in mortgage lending presents a potential problem for prospective home owners, lending institutions, government, housing authorities, community groups, and the real estate industry.

US evidence suggests that borrowers from various ethnic and racial minorities receive fewer mortgage loans when compared with white families (Canner, Passmore, and Smith 1994), and that these differences have persisted over many years (Canner and Smith 1991, Canner and Smith 1992). It is not clear, however, whether such variation in loans are attributable to discrimination or to objective economic factors such as lower incomes and wealth that typifies many ethnic and racial minorities. Those with low incomes and no wealth do not receive mortgages at the most favourable rates.

Lower incomes and wealth may arise because of discrimination in education and employment opportunities, but this is not a failure in the mortgage market. Because of these socioeconomic differences, objective mortgage assessments can lead to patterns of mortgage holdings that are still markedly lower for some groups than for others. Because many ethnic and racial minorities, as well as others such as single women, tend to have lower incomes and wealth <u>on average</u>, borrowers from these groups may qualify less frequently, or be offered less favourable terms than borrowers in general.

This subtlety seriously complicates mortgage discrimination research. In fact, after 20 years of increasingly intensive research, US researchers know little about mortgage market discrimination. One leading US researcher has gone so far as to state that:

> *Given its social importance and media attention, it is staggering that researchers in fact have little definitive knowledge about the existence and severity of discrimination in mortgage markets.* (Galster, 1992a, 652).

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1 See Section 2 for a detailed discussion of US research findings.

This conclusion is reached for the US despite a well-developed research literature and an extensive legislative/regulatory framework designed to detect and eliminate the practice of discrimination in mortgage markets.

Canada stands in contrast to the United States on this issue. After a thorough review of both Canadian and American sources, we were unable to uncover evidence of research activity or newspaper articles addressing the issue in Canada. Although some authors mention discrimination as a distorting factor in the housing market (Smith 1983, Henry 1989), these studies cite no empirical evidence. They provide neither anecdotal nor testimonial evidence to suggest the practice has been examined by community groups or others interested in housing markets in Canada.

Canadian researchers have studied some forms of lending discrimination (e.g. loans to small business and women entrepreneurs), but these rely heavily on theory and methods borrowed from the United States and other countries. Furthermore, Canadian research seems to be focused primarily on discrimination in an industrial/commercial context. For example, Evans and Quigley (1990) studied discrimination in bank policies against manufacturing firms of different sizes, while Riding and Swift (1990) and Marleau (1995) studied discrimination against women entrepreneurs.

That no research has been done does not imply that mortgage discrimination is non-existent in Canada. The dominant black-white racial environment in the US has dramatically focussed the debate in that country. It may be that in Canada, a more multicultural environment, smaller ethnic groups, and a different environment for financial regulation may diffuse the incidence and magnitude of discrimination, making it harder to detect and investigate. Further, advocacy groups may be more occupied with issues in labour or rental housing markets and may not think that mortgage markets are as pressing. Additionally, a shortage of applicable data in Canada makes it more difficult to study mortgage market discrimination. This may also suggest why community and rights groups have paid this issue little attention. Finally, it may be that mortgage market discrimination is not a problem in Canada.

1.1 Purpose of the Report

This report examines and assesses alternative approaches to measuring discrimination in residential mortgage lending in Canada. Since the vast bulk of research in this area has been conducted in the US, we rely heavily on the US experience. The report identifies characteristics of approaches and critical success factors that would allow mortgage discrimination research to be reproduced in Canada. To this end, the study includes recommendations to lenders and to government or NGOs for a potential research program to investigate the practice in the Canadian mortgage market.

We address the following questions.

- What is meant by mortgage market discrimination?
- What methods exist and are methods specific to the attributes of the borrower (gender, occupation, etc.)? What are the requirements for each method? Which methods are analytically superior and why?
- Are there trade-offs between a methodology and the type of discrimination being studied?
- What are the critical success factors for the chosen method and can these be met in Canada?
- What is a feasible research program as defined by:
  - costs; timing; accuracy / validity of results; type of discrimination; and, Canadian content (data availability, reasonableness)?
  - what ethical and legal considerations apply in Canada?

1.2 Intended Audiences for the Report

Three main audiences exist for this report:

- First, assuming that lenders act to maximize profits, and assuming that financial lending that is based in part on discriminatory decisions compromises profits, then financial companies will be interested in those methods that will allow them to assess their lending procedures.
- Second, financial regulators and government will be interested in these methods since, as a matter of public policy, equal access to mortgage markets forms an important part of the overall policy framework in Canada.
- Third, community groups and advocacy organizations representing those potentially affected by discrimination are an important audience. Establishing the existence of discrimination is complex. It requires meticulous data collection and sophisticated research designs. Advocacy groups need to understand that most apparent manifestations of differential treatment in the mortgage market may be more easily explained by factors other than the operation of the mortgage market.

1.3 Outline of the Report

Section 2 briefly discusses the US history, context, and experience with mortgage discrimination. The US experience is very important because the research literature on mortgage market discrimination is far in advance of any other country. The problem this literature highlights is the need to ascertain whether differential treatment of mortgage applicants is based on illegal *discrimination* or on the relative *economic disadvantage* of individuals. These two concepts are fundamental to the study of mortgage market discrimination and how it occurs. Discrimination in mortgage markets must also be separated from discrimination in education and labour markets that leads to the inability to present the lender with sufficient income and wealth to qualify for a loan or to obtain funding on the most favourable terms.

Section 3 outlines selected research methods used to study mortgage discrimination in the United States. We have identified the procedures and methods most suitable for the Canadian context. We describe these according to three components of research methods: research perspective, data collection method, and analysis techniques. These components are presented in greater detail in this section.

Section 4 provides suggestions for a possible research program for studying mortgage market discrimination in Canada. These methods are available to lenders seeking to assess their own operations as well as regulators and government.

Section 5 presents two research programs: one for lenders and the other for government or NGOs. We present costs and time lines for each methodological component of each program.

2.0 THE CONTEXT OF MORTGAGE DISCRIMINATION: LESSONS FROM THE US EXPERIENCE

Identifying and eliminating mortgage discrimination has been a priority for US researchers and regulators since the late 1960s. Under US fair lending laws, financial regulators undertake a vast program to detect whether individual lending institutions (and groups of institutions) discriminate on the basis of borrower characteristics unrelated to the ability to repay a loan.

Despite this very significant effort, the US research experience has been marked by controversy and conflicting research findings. Some prominent US researchers view the existence of discrimination in the lending process as unproven and dispute how to detect and prevent the practice. Leading economists such as Gary Becker Stigler and Kenneth Arrow (both Nobel laureates) argue there is evidence to show that mortgage market discrimination does not exist.[2] Arrayed against this view is a large body of research that purports to show the opposite.

Canada shares neither the history nor the regulatory/research experience of the United States in regard to mortgage discrimination. This situation presents an opportunity for us to learn from the US experience and design a feasible and effective research program. Further, this opportunity is open to both lenders wishing to renew their procedures, government, and non-profit organizations.

The complexity of the mortgage lending process presents important challenges to identifying discrimination in mortgage markets. In particular, the complexity of the mortgage market, specifically the fact that it is embedded in the home purchase process, explains why existing research has generated inconclusive results. This section draws out these issues. While not all these issues apply in Canada, most will affect Canadian studies in the same way as they have influenced research in the United States. These issues form the background for our assessment of alternative research methods in Sections 3 and 4 and our outline of what we believe is a potential research program in Canada in Section 5.

2 See Gary Becker "How Bad Studies Get Turned Into Bad Policies", *Business Week*, June 26, 1995, p.26.

2.1 A Brief Review of Mortgage Discrimination Research in the United States

Mortgage discrimination research developed out of two social trends in the United States in the late 1960s and early 1970s. First, mortgage discrimination was strongly linked to the broader issue of access to housing for black and Hispanic minorities (Cloud and Galster 1993) and arose as part of the civil rights movement (Guy, Pol, and Ryker 1982). The focus on racial discrimination has remained strong since then, to the extent that research based on other attributes (age, religion, etc.) remains underdeveloped (Galster 1992a).

As a separate but related movement in the late 1960s, mortgage discrimination was suggested as a factor in the economic decline of racially segregated inner city areas. (See Guy, Pol, and Ryker 1982 for a discussion.) Because of the possible impact on credit flows needed to sustain residential reconstruction and repair, the community reinvestment movement pointed to mortgage discrimination as an important social problem. It encouraged local communities to organize against banks which "redlined" their neighbourhoods by accepting local deposits but refusing local loans. Community organizers painted an evocative picture of savings being extracted from poor areas with high ethnic populations, and then lent elsewhere. Research was needed to support these allegations, and so a variety of community groups studied the degree to which lending institutions discriminated against individual neighbourhoods. (Shlay (1989) provides an abridged "research manual" for such community studies.)

By the early 1970s, pressure on Congress from civil rights leaders and community activists resulted in a series of legislative interventions[3] in housing and mortgage markets designed to address discrimination and make it easier to study the practice. The key legislative action for researchers was the creation of the Home Mortgage Disclosure Act (HMDA) database that outlines the geographic distribution of mortgage loans for the entire country. Since the database is organized according to Census tracts, mortgage flow data can be combined with socioeconomic variables (such as the percentage of black residents in a given Census tract).

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3 *The Fair Housing Act* (FHA) of 1968 banned discrimination in the sale or rental of housing units. In 1974, the *Equal Credit Opportunity Act* (ECOA) established a series of protected attributes (including race, sex, and age) which could not be considered in an assessment of creditworthiness. *The Home Mortgage Disclosure Act 1975* (HMDA) (amended in 1988 and 1991) requires mortgage lenders to disclose the geographic location of their loan applications and denials. *The Community Reinvestment Act 1977* (CRA) encourages financial institutions to help meet the credit needs of their delineated communities. Enforcement of this legislation is shared by the US Department of Housing and Urban Development (HUD) (FHA and ECOA) and the federal financial regulators (ECOA, HMDA, and CRA). Dane (1993) provides a detailed discussion of the events which led up to the enactment of these measures.

Correlating mortgage flows from HMDA with social indicators from the Census is simple and such studies quickly became popular. (Many of these are reviewed in Benston 1981). The studies showed different patterns of mortgage lending to white and minority neighbourhoods. Academics widely criticised these studies for methodological and theoretical flaws.

In principle, the percentage of residents having a mortgage varies among communities for many reasons, including:

- low incomes and wealth can produce a low level of demand for a mortgage;
- lenders restricting the supply of mortgages because applicants do not have sufficient income and wealth to be an acceptable credit;
- discrimination (redlining).

Poverty, low education and unemployment are factored into a mortgage lending decision. Since many ethnic groups reside in well defined areas, and since these groups often have lower than average socio-economic status (partly because they are recent arrivals and partly due to endemic discrimination in education and employment), applicants from these areas tend to qualify for mortgage finance less often than applicants from more affluent and mainstream communities. Denial of an application cannot be attributed only to discrimination in mortgage markets since socio-economic status confounds the data. The discrimination may have occurred "upstream" in education and labour markets.

Illegal discrimination, especially the process of "redlining" is a contentious issue in the United States. Redlining involves a lender identifying certain areas as high risk and either limiting the number of loans offered or offering less favourable terms for applicants. Much of the impetus for the current regulatory process in mortgage loans stems from early studies that showed much lower mortgage holdings in black communities. This led to allegations of redlining and community groups pressed for legislative change.

Since discrimination is only one of several explanations for differential[4] mortgage lending patterns, redlining studies have fallen into disrepute, and interest in the subject waned during the early to mid part of the 1980s. (Canner, Gabriel, and Woolley 1991; Credit Union Executive 1994).

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4 The term "differential treatment" is common in the research literature. If a given census tract is predominantly black, and if the percentage of households holding a mortgage is lower than average, differential treatment may be indicated.

Mortgage discrimination regained national attention in the US after a series of newspaper articles again reported disparities in credit flows to minority groups (Dedman 1988; Blossom, Everritt, and Gallagher 1988). These articles coincided with revisions to the HMDA and Community Reinvestment Act that substantially improved the data being collected. For the first time, these revisions allowed researchers to compare the outcomes of individual mortgage applications while holding income constant for the applicant.

This is a critically important methodological point. Redlining studies rely on inferring discrimination against the individual on the basis of averages across a census tract. The revised HMDA and CRA data produce information on the individual applicant and offer the potential for eliminating the confounding of homeowner characteristics with the more general socioeconomic context. Combined with a commitment from the Clinton Administration to use fair lending laws to address racial and social inequities in housing markets (Tepper 1994), mortgage discrimination has returned to the forefront of the housing research agenda.

2.2 The US Experience with Mortgage Discrimination: A Synopsis of Research and Regulatory Findings

Even with its long history of mortgage discrimination research, the US experience is better characterized by what researchers and regulators do not know than by what they do know. Leading discrimination researcher George Galster (1992a) summarized the US experience in this way:

> *Attempts to detect discrimination in mortgage markets have been fraught with indirect ambiguous inferences; the few definitive methodologies have revealed mixed results and have not been replicated with newer data. Paired testing is in its infancy. Adverse impact discrimination has been given no systematic investigation. Given its social importance and media attention, it is staggering that researchers in fact have little definitive knowledge about the existence and severity of discrimination in mortgage markets.* (pp. 652)

> *There is simply not enough basic information about the nature and extent of (mortgage market) discrimination. Indeed, a sizable body of influential public opinion holds that there is no significant discrimination problem in this sector. Given the obvious importance of this market, . . . such factual uncertainty is inexcusable. Obviously, worry about the motivations for, consequences of, and antidotes to mortgage discrimination seems a bit premature before the degree of the problem has been ascertained.* (pp. 673)

This assessment is shared by others (e.g. Wienk 1992) and seems to reflect the views of many in the academic research community. This view arises for two reasons:

- **Conflicting Findings:** First, research and regulatory findings have been mixed about the presence of mortgage discrimination in the United States. Mortgage flow studies based on the HMDA data show that the allocation of credit is correlated with the race of the census tract studied, even when many socioeconomic features of the tract have been accounted for in the study. These studies, however, have been heavily criticised for their methodological inadequacy.[5]

  A second branch of research has modelled the probability that applicants would be denied loans based on their race, gender, age, and other protected characteristics. These studies have generally found that race/sex/age variables have only modest statistical power in explaining mortgage application denials -- many studies have found race/sex/age to be statistically insignificant.[6]

  A third strand has shown that minority applicants rely more heavily on government-insured loans. Nevertheless, it is unclear whether discrimination directs these applicants into such loan markets or if they simply prefer the lower down payment levels and longer terms provided by government mortgage insurance.[7]

  A fourth point is that if mortgage market discrimination exists, then only highly qualified minority applicants would receive mortgage loans or their loans would be offered under more restrictive terms. In any event, discrimination would be indicated by a lower than average default rate for loans made to minority applicants. In fact, the default rates of minorities are no different than the average default rates. (See Becker (1971) and Arrow (1973)).

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5 For a detailed review and criticism of these studies, see Benston 1981, Shlay 1989, and Canner and Gabriel 1992.

6 See Galster 1992a and Wienk 1992 for a review of these studies.

7 See Canner, Gabriel, and Woolley (1991) for a review of these studies.

Finally, despite routine investigations of more than 10,000 state member banks, the regulatory program of the US Federal Reserve has only uncovered discriminatory lending practices at a handful of institutions. Since investigations are as frequent as every six months and involve up to 40 hours of file review of actual loan applications, the absence of discriminatory findings is evidence that overt discrimination is probably isolated.

- **Methodological Problems:** The second reason for the ambiguity in the US research is the methodological problems of existing discrimination models. Many industry officials and academics have questioned the validity of research studies[8] based on issues such as:

  - research design (direct observation using primary data versus indirect designs using administrative information);

  - data collection and handling (choice of micro versus macro data; time series versus cross-sectional data; administrative information from reporting forms and applications versus survey questionnaires; selection of a proper unit of analysis; improper cleaning of survey data; etc.); and,

  - statistical testing methods (bivariate test versus multivariate models; functional form of the equations tested; inclusion/exclusion of specific variables; etc.).

Methodological criticisms are as telling as conflicting evidence. The choice of method can be based on data availability, cost constraint, ethical and logistical issues and the values of the researcher. To develop sound methods for testing discrimination it is important to understand the mortgage approval process.

8 See, for example, Carr and Megbolugbe's (1993) discussion in regard to criticisms of Munnell, *et. al.* (1992).

2.3 Mortgage Lending Process As An Element of The Home Purchase Process

One reason for the difficulty in obtaining clear research findings is that available data (usually from HMDA) only record finalized loan applications. By this point, however, home buyers have already met with real estate agents, shopped around for loan terms, met with loan officers in one or more lending institutions, completed a loan application, and had their prospective home appraised. Only after these steps have been completed does the bank decide to accept or deny a loan. Evidence from US national housing studies (Turner, Struyk, and Yinger 1991) shows that discrimination may occur at each of these steps.

The variety of points at which discrimination can enter the lending process complicates mortgage discrimination research. Wienk (1992) points out that discrimination in housing credit markets is mostly seen as an issue involving only the behaviour of lenders - where they market, to whom, and how.

This does not represent the full process because other agents (buyers, sellers, insurers, appraisers, and others) may also contribute to discrimination and its effects in mortgage markets. A real estate agent can easily discourage an applicant by misrepresenting financial requirements. Wienk also notes that mortgage applicants themselves may also contribute to the appearance of discrimination if they avoid certain lending institutions because they believe they will be treated unfairly. Self-selection bias is a major problem for researchers in all fields. Using administrative data or census data, how does one identify whether the pattern of mortgage holding has resulted from prospects who avoid applying because they believe they are not yet qualified and those who avoid applying because they think the process will be unfair? If these perceptions are based on shared experiences with friends, the varying pattern of approvals may reflect the reality of discrimination.

In part, not knowing where to look for discrimination stems out of the relative invisibility of the mortgage lending transaction to researchers and government. Even where government is involved (e.g. through the provision of mortgage insurance), the chief elements of the transaction still occur between private lenders and individuals. The confidentiality of the process makes it difficult to apply standard research designs using direct and participant observation. As a result, researchers often do not have access to many of the important data elements needed to determine if and where discrimination enters the mortgage lending process.

A second complicating factor is the need to distinguish between discrimination and non-discriminatory differential treatment (Warner and Ingram 1982; Canner, Gabriel, and Woolley 1991). At each stage in the home-buying process, some applicants will become discouraged. For example, some may not find a home they like, others may not be able to afford one they do like, and yet others may disagree with appraisers over the value assigned to the home they have selected. Some of these applicants will eventually drop out of the mortgage lending process entirely, either by their own action, or by the actions of others (e.g. real estate agents may discourage buyers from applying at institutions known to have high credit standards).

The key task in detecting mortgage discrimination is to separate legal decisions based on the economic status of the applicant from illegal discrimination based on considerations unrelated to the expected repayment of the loan. Wienk (1992) points out three major conceptual and measurement problems associated with this task:

- First, which types of screening behaviour are illegal? For example, if mortgage lenders require applicants to present established credit ratings, does this discriminate against minority applicants from cultures or religions which regard money lending and banking practices as wrong? These applicants, as well as those who are young cannot present a strong credit rating to lenders. For those who may not have an independent credit history, such as a recently separated woman or young person, is this requirement discriminatory?

- Second, the research must distinguish self-screening from screening by others, especially at the pre-application stage. If applicants fail to complete all steps in the application process, have they experienced discrimination or simply changed their minds about buying a home at that time? Information consisting only of completed applications, such as the HMDA database, cannot support research on this point since screened applicant data are not included.

- Finally, a research program into mortgage discrimination should include analysis of all steps in the mortgage lending process. Existing US data cannot distinguish the relative importance of the various parties to the home-buying process (including the buyer) who deals with purchase transactions. A real estate agent can discourage an applicant prior to making an application. Is this a failure of the mortgage market, or of the broader housing market?

US researchers still have much to learn about how and where mortgage discrimination enters the lending decision. This presents important challenges to studies that focus on a single point (e.g. the approval process) because it is difficult to separate the impact of discrimination at this point from effects entering the process before or after. In particular, there is a danger in assigning responsibility for discriminatory treatment at the wrong point. If that is the case, then regulation may be applied inappropriately and the problem may persist.

2.4 Discrimination or Disadvantage?

This discussion of differential treatment brings us to the fundamental issue in mortgage discrimination research: namely, the difference between treatment based on *discrimination* and treatment based on *economic disadvantages* of the applicant. Under ideal circumstances, two equally creditworthy applicants should each receive mortgage loans.[9] In practice, however, no applicant has *exactly* the same credit profile as another. Job histories, income levels, down payment levels, credit histories, and other credit factors all combine to produce unique circumstances for each applicant. The task for lenders and other agents is to assess these circumstances and determine whether an applicant is creditworthy *enough* to counterbalance the risk of lending money. Some applicants (e.g. those with poor credit histories) will not be creditworthy and will typically be denied mortgage loans. For many of these applicants (probably the large majority), denial has nothing to do with gender, race, ethnic origin, or membership in a protected class. Instead, these applicants are denied credit because they are economically disadvantaged relative to other (creditworthy) applicants.

The discrimination/disadvantage distinction is fundamental to understanding the study of mortgage discrimination. At its heart, the distinction implies that while everyone should have equal *access* to credit, the actual *distribution* of credit will reflect the distribution of economic status. Since economic status is unequal, so too will be mortgage lending. The question is whether discrimination in the mortgage market increases this maldistribution.

Inequality in mortgage approval arises because lenders take on the risk that borrowers will default on their loans. Since lenders earn profit only if borrowers repay their loans, they deny loans to those they expect will default. In the absence of discrimination, factors unrelated to repayment performance (e.g. race, gender, age) should not enter calculations of profitability, and consequently, should not affect the likelihood of obtaining a loan or obtaining a loan with the most favourable conditions. Discrimination may not be overt. A lender may expect that repayment is related to ethnicity, race, gender and other circumstances and use this "information" to allocate credit. This is not a standard test of creditworthiness and most researchers would concur that using these personal characteristics to allocate credit amounts to discrimination.

If membership in a given population group is correlated with high credit risk, (i.e. low income) fewer loans will be made to members of that group. In other words, if single mothers have poorer credit ratings on average than the rest of the population, one would

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9 Provided, of course, that down payment amounts, purchase price, and property characteristics of the home being purchased are similar. This also assumes that the purchase price of the home reflects the true market value of the home.

expect that as a group, they would receive fewer mortgage loans.[10] This is because they are economically disadvantaged relative to other groups of credit applicants.

It is clear why the discrimination/disadvantage distinction is controversial. Because much of the process is hidden, it is not obvious that profitability is the only issue driving lender decisions.[11] Lenders can conceal discrimination behind the creditworthiness test. The key problem for discrimination researchers is therefore to determine whether unequal credit distributions can fully be explained by the economic status indicators of the borrowing population. In practical terms, this means standardizing for varying degrees of disadvantage among borrowers, and identifying those cases in which discrimination appears to tip the balance. To do this successfully, researchers must develop analytical models that treat possible sources of discrimination (e.g. race, age, and sex) in a way that isolates their effect on the lending decision. If one controls for measures of creditworthiness (income, occupation, etc.) and if variations in personal attributes such as race, ethnicity, gender, etc. match variations in mortgage approvals, these attributes can be assumed to have played a part in the process, and the claim of discrimination is credible (Warner and Ingram 1982).

Why should the distinction between differential treatment and economic disadvantage lead to ambiguous research results? For one, discrimination is subtle. Munnell, *et. al.* (1992), for example, found that differences in lending rates to blacks and Hispanics in the Boston area could be explained partially by the greater debt burdens, higher loan-to-value ratios, and weaker credit histories (i.e. disadvantages) of the minority applicants. They also found, however, that clearly eligible minority applicants do not encounter discrimination. This leads to the important conclusion that discrimination usually occurs in marginal cases where lenders may have sound business reasons for denying a loan. A fiscally conservative lender may appear to discriminate if the weaker application tends to be presented by minority applicants with whom little credit experience is available.

An applicant may present an application which is weaker than average in one or more areas, or deficient in enough areas to support a clear refusal. However, the applicant may also

10 Note that on a case-by-case basis, one could not make this assertion without accounting for individual economic factors of the single parent applicants. The discrimination/disadvantage distinction provides a rationale for credit differences between population *groups*, not between individuals.

11 This has caused significant controversy in the United States. US researchers, for example, are often faced with the task of explaining to community and civil rights groups that large observed disparities in lending rates can partly be accounted for by differences in socioeconomic status between population groups. (See Canner and Smith 1991; Canner and Smith 1992; Canner, Passmore, and Smith 1994 for these kinds of discussions.) Community groups reject this argument as apologetic for discriminatory lending practices.

present a higher than average risk. In these cases, the judgement of the loan officer is used to compensate for the fact that the information on the application may not capture all aspects of risk of default. Two applicants presenting the same application are treated equally if the same decision emerges. However, when the two applicants differ by a personal characteristic (race, gender, age, etc.), and the loans officer makes a different judgment about creditworthiness, illegal discriminatory action is possible. Most mortgage denials thus appear legitimate by some objective standards. Therefore, systematic bias in mortgage lending is very difficult to document at the level of the institution (hence the experience of the US financial regulators) and many applications need to be examined together (pooled) before statistically valid patterns emerge. The need for large samples is mandatory in this research.

Pooling applications presents its own problems. Discrimination may be infrequent: it is prohibited by law; denials (of applicants) are uncommon (partly because of self-selection)[12] minorities do not patronize all lending institutions; some loan officers may discriminate routinely, most may never, etc. As the incidence of a phenomenon falls, testing for that phenomenon becomes more difficult. If discrimination is uncommon, it is hard to distinguish intentional behaviours from the random unintentional differences in treatment (Galster 1992a). The power of statistical tests for discrimination can be very weak, especially when data is aggregated across institutions, regions and different groups experiencing discrimination.

The study by Munnell, *et. al.* shows the need for massive samples in discrimination studies. This landmark study collected data on <u>all</u> black and Hispanic applicants in the Boston area in 1990, for a total of slightly more than 1200 applications. The final sample used in statistical testing consisted of only 700 such applications. Of these, 28% were denied, reducing the sample of interest to about 200 rejected applications. Assuming that all black or Hispanic applicants were denied because of discrimination, this implies that differential treatment occurred in 200 cases in all of Boston for the entire year. Considering that 131 lenders took part in the study, this works out to just more than one and a half discriminatory incidents for each bank over a whole given year. Clearly not all, and probably only a minority of denials were rejected because of discrimination, the frequency of discrimination is even lower. Based on this simple accounting, it is clear that factors that might increase the denial rate for minority applicants could be interpreted (incorrectly) as discrimination. It is also clear that systematic and intentional discrimination by a single lender in an aggregated

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12 Prospective homeowners often shop for a mortgage first. They examine the loan-to-value ratio and down-payment requirements and if they clearly do not have the resources, they will wait. People do not apply for a mortgage unless they have a good sense that they will be accepted.

study could lead to the false conclusion that discrimination is practised by all lenders.[13] This will emerge as a fundamental issue for research in Canada, especially for studies a single financial institution may wish to undertake.

2.5 Denial and Differential Terms: Black, White and Shades of Grey

An applicant perceived as presenting a higher than average risk may not be denied a loan but offered less favourable terms to compensate for this risk. This is common and widely accepted in financial markets. Government bonds have less risk than corporate bonds and short-term interest rates are usually lower than long-term rates.

If two applicants with equal applications are offered different "deals," then discrimination is indicated. Testing for differences in mortgage loans involves comparing differing interest rates, terms, loan-to-value ratios, etc. This is much more complicated than testing for differing patterns of approval or examining denials. With this view, mortgage discrimination research must also examine approved loans to see if the terms vary with personal characteristics unrelated to the ability to repay debt. Furthermore, the terms offered to an applicant can also reflect the ability to negotiate. An applicant may be able to improve upon the initial offer by bargaining and trading off down-payment with amortization and term. Most lenders have an array of repayment options and the final mortgage package selected may reflect the range of terms offered as well as the applicant's willingness to bargain. This can be culturally related as well. Rarely is the information on the initial options offered ever available after the mortgage has been finalized. This explains why research has concentrated on the acceptance/denial issue. It is sobering that discrimination may actually be more prevalent among those with approved loans than those denied.

2.6 Theories of Why Discrimination Occurs

A final complicating feature of existing discrimination research is its inability to provide a theoretical justification for why the practice continues. Economists simply believe that profit maximizing lenders would never discriminate. Standard economic theory states that if mortgage lenders are in business to maximize profit, they would not forego revenue by denying loans to creditworthy applicants, whatever their race, gender, or age.[14] As a result, lenders and researchers have argued that what *appears* to be discriminatory behaviour can

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13 It is this study that is criticized by Becker (1995) as a "bad study leading to bad policies."

14 This is argued by US regulators as well. See Syron 1993 for an example.

be explained by objective factors other than discrimination (Avery, Beeson, and Sniderman 1993).

This position is consistent with the theoretical work completed by Stiglitz and Weiss (1981) in the early 1980s. These authors argued that lenders must rely on imperfect information about the creditworthiness of loan applicants. In particular, lenders only know that applicants will repay their loans after the loans are repaid. Meanwhile, lenders risk default loss if their assessment of borrowers was incorrect. To moderate this risk, Stiglitz and Weiss argued that lenders may alter the credit terms offered to risky loan applicants if they doubt the applicants' ability to repay their loans as scheduled. In mortgage markets, this suggests that if lenders correctly believe that a particular racial or ethnic group reflects repayment risk not fully measured by other characteristics (such as employment history, credit history, etc.), it makes economic sense for them to adjust the terms of the mortgage (Canner, Gabriel, and Woolley 1991; Galster 1992a). The issue obviously turns on whether ethnicity, race, gender (or whatever variable is being used as a proxy for lending risk), increases the predictive power for loan default beyond conventional measures such as income and wealth. If knowing the race, ethnicity or gender of the applicants increases the ability of the lender to accurately forecast loan default, then profit maximizing lenders will use this information to extend or withdraw credit.

This argument has clearly inflamed the debate. It is problematic to state that an application fails to contain all the relevant objective information needed to assess risk and that other data must be used. For example, one might perceive increased risk because the applicant cannot make eye contact. In a North American context, eye contact is synonymous with honesty, a basic issue for a lending relationship. However, refusal to make eye contact is a sign of deference in some cultures and may well reflect appropriate behaviour between borrower and lender in the mind of the applicant. Aside from the potential for discrimination to be inadvertent, this example illustrates the problems in developing a theory of discrimination. Economists who stress self-interest and profit motive doubt that rational lenders would ever discriminate. Those operating from a cross-cultural perspective see the phenomenon as universal.

The economic theory of labour market discrimination (Arrow 1973; Becker 1971) has also been applied to mortgage markets (Shear and Yezer 1983; Shear and Yezer 1985; Canner, Gabriel, and Woolley 1991). The Arrow model suggests that discrimination can be directed at borrowers in mortgage markets because of demographic or neighbourhood characteristics that are unrelated to individual creditworthiness. Should this occur, however, borrowers would attempt to minimize their costs of borrowing by seeking substitutes for conventional loans, namely those insured by the government. Thus in the presence of mortgage discrimination, borrowers are expected to be "crowded-out" of the conventional sector into the government-insured sector. By implication, then, higher usage of government-insured mortgages by black and minority applicants might show the presence of discrimination in the conventional mortgage market, provided that the study controls for factors related to the demand for mortgages.

Discrimination may result from a mistaken attempt to reduce the overall risk in a loan portfolio. The loans officer may deny loans to certain groups or adjust the terms to maintain the overall risk profile of the loans outstanding. Since no application can ever contain all possible information to predict the probability of default, and since one never really knows if profits are at a maximum, stereotyping is used to complete the information on potential default. Since variations in profit are not easily linked to discriminatory decisions, the practice can persist as long as profits are acceptable. The claims by academic economists that discrimination is irrational may not be relevant because they ignore the fact that discrimination has occurred in many markets. What reason is there to believe that the mortgage market is different?

Some lenders may accept a specific level of profit and as long as that is achieved they may be unconcerned about the possibility of discrimination. It is possible also that lenders may place aditional tests on borrowers with whom they have had little experience. Single women, same sex couples, newcomers, and others who may not have been common mortgage borrowers could face additional tests and scrutiny compared to the white men who are commonly borrowers. Here the reasons for discrimination may be understandable, but few would argue that the situation is acceptable. It is useful to point out that some discrimination may result from a conservative lending practice as opposed to mean spiritedness.

What constitutes the information needed to predict loan repayment with sufficient accuracy to allow a lender to operate? Few studies have questioned this, yet it lies at the heart of the problem. Clearly the more information one has on applicants and the repayment performance of current mortgages, the more accurate the repayment forecast. Imagine that lenders only used current income as a measure of loan repayment and obtained no other information. The prediction of loan repayment would be clearly inferior to one that is based on a broader range of variables such as income, assets, previous loan repayment patterns, employment, occupation, etc. At what point is a personal attribute irrelevant to the estimation of the probability of loan repayment? If information about gender and marital status allows a lender to make a more accurate prediction about loan default, is this or should this be irrelevant to the decision to accept an application? A few might argue that such information is legitimate, but many would feel uncomfortable.

If information on "non-economic" attributes such as ethnicity, race, gender or marital status, for example, improves the ability of a lender to predict loan repayment performance, it is most likely because this information is acting as a proxy for other phenomena. For example, some employers are reluctant to hire women because they believe they use more sick leave than men. In fact this is true, but this is because women still have primary responsibility for child care and because it remains more socially acceptable in the workplace for them to leave work to attend to a family problem. In this case, a deeper phenomenon lies below the surface.

Without a theoretical basis to explain how discrimination occurs, a serious gap exists in the research:

- First, the theoretical justifications supplied by economists who criticize the current research are based on the traditional assumptions of rationality and profit maximization. When we step out of the neoclassical economic framework, however, these theories are no longer successful at predicting lender behaviour. In particular, if we assume that discrimination is not a rational act, institutional economic models can be applied to establish non-profit-maximizing justifications for lender behaviour. A lender may be satisfied to make a certain minimum level of profit and discriminate against certain groups for a range of personal reasons. Unfortunately, models for discrimination based on these personal reasons have not been elaborated in any detail. We are left with the explanations provided by Stiglitz, Weiss, Becker, and Arrow. These explanations, implausible as they may be, suggest that discrimination cannot exist in a competitive market environment.

- Second, the lack of theoretical justification significantly undermines the empirical work being conducted in the area. Even rigorous studies (such as the Boston Fed study by Munnell, *et. al.* 1992) are open to criticism from those who counter that the practice simply cannot exist (See Becker 1993, cited in Carr and Megbolugbe 1993). As a result, attention is diverted from the search for discrimination to respond to economists who ask why rational, selfish lenders would discriminate and deny themselves profit.

Without a theory of discrimination and a theory of what constitutes the basis for appraising credit risk, the empirical massaging of data has no framework.

A point missed by academic literature is that discrimination may be irrational from an economic perspective, but widely practised. People discriminate against race, gender, etc. for non-economic reasons. The problem is that a consistent theory is important to the development of a data collection and analysis strategy to test for any phenomenon. If there is a sociological or psychological explanation for discrimination by mortgage lenders, a theory is needed to explain why, how, when, and against whom. Then a data collection strategy can be developed to test hypotheses about the extent of the practice.

A fundamental problem in all statistical analyses of mortgage market discrimination is to select all the factors that influence the decision to approve. Once all "legitimate" information is included in the statistical model, if the protected group still receives a lower proportion of mortgage approvals, discrimination is inferred. However, the range of legitimate factors is malleable. Many data sets fail to include all variables and analysis proceeds on partial information. The cost of collecting additional information is often high and much of the literature is cluttered with incomplete studies. As a result, the US literature in this area remains ambiguous and racked with controversy.

2.7 Summary

This section has summarized the main issues involved in the study of mortgage discrimination and explains why these features have led to ambiguous research results in the United States. Financing a home involves several discrete steps; discrimination can enter at any stage from search to final mortgage approval. The bulk of the existing research has focused on the outcome of the home financing process, largely because of data availability. Outside the lending institution, it is difficult to collect information on discrimination at the pre-application stage where applicants disqualify themselves for perceived or actual discriminatory actions by lenders and other agents in the real estate market.

The research in the US has also encountered several methodological problems. The basic requirement for any program to detect and remedy discrimination in mortgage markets is to recognize that the distribution of mortgages will be uneven as the result of decisions is based on:

- an appraisal of a prospective borrower's ability and likelihood of repaying based on measures of credit worthiness common to all applicants; and,
- factors not related to the probability of repayment.

Other key findings from the review of the US experience are that the incidence of overt discrimination is probably low and pertains to marginal applications, decisions made on applications that are weak in one or more respects will involve judgements that may be defensible in any individual case, and that discrimination may involve offering less favourable terms rather than outright denial. The challenge is to define measures that, at a minimum, test for horizontal equity in mortgage approvals and then desirably test for vertical equity.

3.0 DEFINING A RESEARCH PROGRAM FOR MEASURING DISCRIMINATION IN MORTGAGE MARKETS

This section has two purposes:

- We clarify the term research methodology as comprising three distinct, but integrated ideas -- *research perspective, data collection activities*, and *data analysis techniques*. Most studies in this area do not define methodology in such a segmented fashion. Here the goal is to study methods for researching mortgage market discrimination and to identify those that are feasible within the Canadian context.

- We also discuss various ethical and legal issues inherent in discrimination research. These issues are common to social research in general, but mortgage discrimination presents a few twists.

These considerations lead to the concept of a research *program*. A research program is defined by a sponsor, such as a financial institution, regulatory agency, or industry association, to produce increased understanding of a phenomenon. A program can consist of a single delimited study or a series of linked research projects designed to lead progressively to deeper insight. Discrimination in mortgage markets is a complex issue, fraught with scientific and ethical challenges. Canada has no research in this area, and compared to the US, with 25 years of debate, hundreds of studies and millions of dollars of effort, it is wrong to believe that there is a single "best" method.

It is important to emphasize that we have different research methods that could be implemented by a lender, industry association, government or non profit group. For some, the method a lender employs may have an advantage in that it has access to detailed information on the mortgage application. In other instances, the non profit group may have better access to consumers.

3.1 Defining Research Methodology

Methodology refers to the way a research study defines hypotheses, creates a framework for inferring causality, controls for extraneous factors, organizes data collection, and specifies an inferential structure, either quantitative or qualitative to test the hypotheses. Methodology is complex, combining a research perspective, data collection process and inferential system. Speaking about these components individually allows us to highlight how they fit into an overall research method.

It is important to define the philosophical perspective upon which this paper rests. Most of the policy and regulatory oriented research we reviewed assumes that discrimination is the outcome of specific actions, conscious or unconscious, on the eligibility for a loan or the conditions (terms) under which that loan is made. Further, these actions, if they exist, should manifest systematic and observable differences in the way in which "equals" are treated. The research assumes that a consensus exists on what is meant by the terms "systematic", "observable" and "equals."

Systematic means that the differences can be observed consistently and that differences in discrimination reflect differences to which an individual has membership in a group. Thus, if the patterns of mortgage application denials are not distinguishable from a random process, even if some minority groups are denied mortgages, there is a weak basis for concluding that discrimination is the cause. *Observable* means two things. First, the basis for discrimination must be an attribute of the applicant that places them in a specific group. Sexual preference may or may not be apparent from the individual, but race and gender are usually not attributes that are disguised. The technical issues in detecting and measuring discrimination are formidable. To attempt to include attributes of the applicant that may or may not be observed by the loans officer simply adds a complication that makes the research transcendental in difficulty. Second, the data used to infer discrimination must include complete information on the applicant and the terms of the mortgage. One critical lesson of the research in the US is that data on individual mortgage applicants is superior than information on groups of applicants such as might be available for a census track. *Equals* simply means that the information on all candidates is the same, and that two economically equal candidates applying for financing on the same house should be offered the same mortgage terms.

This perspective rules out a post-modern view where the existence of discrimination is determined by the subjective perspective of the borrower. If discrimination is perceived then it certainly exists for the applicant. Determining the general validity of discrimination is the outcome of the vantage points of all market participants. Further, extensions of such a post-modern view might include the argument that the perspective of the weaker market participant, presumably the borrower, is more valid than that of the lender. Although perceptions of the existence of discrimination are important and can be a useful initial step in researching this area, this approach may never generate the information needed by a lender to improve its practices or to support policy.

Before research methodology is discussed, it is useful to review the concept of "discrimination dimension." It is also useful to discuss how adverse impact may result from a policy of not lending to someone and may reflect uncertainty and a process of avoiding risk.

3.2 Discrimination Dimension

Certain attributes of the individual define a "protected group"[15] which lead to variables typically thought to be the dimensions along which discrimination may exist. These include:

- race;
- gender;
- marital status;
- age;
- ethnicity;
- religion;
- occupation.

The first three dimensions are universally accepted as those along which discrimination might occur. The remaining variables are complex, interrelated, and may be causally related to the first two. Ethnicity, for example, is a complex phenomenon involving nationality, culture, race and language.[16] It can be an exceedingly hard variable to quantify and only rarely will it be included in mortgage application data. It may, however, be inferred by last name and citizenship status.

The ability to clearly identify the discrimination dimension is crucial both to the existence and detection of discrimination. A lender who wishes to discriminate against a certain group must be able to detect to which group an applicant belongs. This means that discrimination on the basis of sexual orientation is more difficult than discrimination on the basis of race. Some dimensions along which discrimination is alleged to have occurred are difficult to model. Ethnic discrimination is certainly possible, although it is hard to operationalize this concept within a survey or a database using lender files. As one increases the complexity of discrimination, such as adverse impact against native women who are single (three discrimination dimensions), the demands on the data increase. For this reason most research has been confined to race, gender, and marital status taken one at a time.

We will consider the operationalization of discrimination dimension in more detail below.

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15 The term "protected group" is common to the US literature.

16 See Smith (1984) for a review of the main issues in measuring ethnicity.

3.3 Research Perspectives

Mortgage discrimination studies have generally used either a *direct* or *indirect* research perspective. The concept of perspective simply refers to the relationship between the researcher and the actual process of discrimination.

- **Direct or experimental perspectives** allow the researcher to observe the mortgage loan *process*. This perspective is illustrated by the well known studies *(paired audits)* where two prospective tenants, one black the other white, but otherwise identical, inquire about room availability. If the room is available for one and not the other, discrimination is inferred. The direct perspective essentially carries out an experiment of the actual market transaction to test whether non-economic factors bear on acceptance of an application. Like any experiment, all factors that could affect the decision must be carefully controlled. Using a white male professional and a black university student invalidates the experiment.

  Direct measures can be used to detect discrimination by individuals involved in the lending process. These measures involve a degree of subterfuge and present more significant ethical and legal challenges than indirect measures, which are discussed below.

- **Indirect perspectives** infer discrimination by correlating the outcomes of the mortgage decision with a range of applicant and housing attributes. The information is obtained from applications where attributes of the applicant (income, occupation, credit rating, race, gender, etc.) are combined with attributes of the house.

  Models relying on Arrow's theoretical work provide a good example of indirect research perspectives. The theory states that in the presence of discrimination in conventional loan markets, minority applicants will be "crowded into" government-insured loans. By studying whether minority groups rely more frequently on government-insured loans, researchers can indirectly infer that discrimination occurs in conventional loan markets. Equally, if use of government insured loans shows no relation to whether the applicant is a member of a minority group, discrimination is said not to exist.

  Other examples of indirect perspectives are redlining studies using census data of mortgage holdings. When the spatial patterns of mortgage holding is different than the spatial patterns of ethnicity or race, some analysts have alleged discrimination.

Studies using data sets comprising individual applications from the HMDA regulations are also indirect. The mortgage application outcome (acceptance or rejection) is the dependent variable in multivariate models to be *explained* by applicant and house attributes usually by using a multivariate statistical model.

Yet another indirect method is to compare the default performance of various groups. Assuming that clearly qualified borrowers receive competitive loans (same term, amortization, interest rate, etc.) no matter to what group the applicant belongs, then equally qualified men and women, for example, should receive exactly the same range of mortgage options. Taking marginal applications[17] as a whole, discrimination against women should result in relatively greater numbers of denials for them compared to men. If, on average, women are required to show greater creditworthiness than men with similar means, the default rate for female borrowers should be lower than for men. This becomes an indirect test for lending discrimination.

Both the direct/experimental and the indirect perspective can provide insight into the existence and degree of discrimination in mortgage markets. A critical component of each method is defining and collecting appropriate information.

3.4 Data Definition and Collection

Data collection is the best understood component of a research method. If data are unavailable, the entire method must usually be reexamined. Data availability and quality often determines the feasibility of a research method. Often, researchers use the data opportunistically and to respond to a range of questions, some of which cannot be adequately addressed. The use of the HMDA data is an excellent example. These data report on all mortgage approvals, but do not allow any insight into the application/approval process or the failures in the market that may have occurred prior to this point. This database does not track those applicants who become discouraged as a result of discriminatory actions by brokers or loans officers prior to the formal application.

Data can be defined in several dimensions. One common dimension is along the quantitative/qualitative spectrum. Asking the identical close-ended question of a large

17 A marginal application is one with a few deficiencies such as a weaker credit rating, lower income, lower down payment, that reduce the attractiveness of the borrower and/or property, but does not result in immediate denial. Marginal applications can restrict the range of mortgage repayment options.

number (more than 100) of respondents produces *quantitative* data. By close-ended question, we mean a question to which there is a simple answer easily translated into a countable quantity. Therefore, "What is your income?" "Do you agree/disagree with capital punishment?" or "How satisfied are you with your job on a scale of 0 to 10?" are all questions producing quantitative information. Information collected from mortgage applications such as income, wealth, etc. is quantitative. Statistical processing of large random samples of data is the process used to infer the significance of patterns within the data.

Quantitative data can be further classified as *time series, cross section* or a combination. Time series are variables associated with a date and are further classifiable into stochastic, cohort and longitudinal. Cross section data, collected at an instant in time, are associated with a position (census tract), individual, organization, etc. Whether data are time series or cross section has an impact on the inferential model used and whether it is possible to test for differential treatment among groups of mortgage applicants.

The question - "Were you treated fairly by the loans officer?" - calls for a complex response since it is so general. Such data are termed "*qualitative*". An analysis strategy specific to qualitative information is needed and usually is not suitable for inferring the existence of discrimination. Such information is usually termed qualitative and a variety of ethno-methodological procedures are used to derive meaning.[18] Personal interviews, focus groups, and participant observation are among the data collection techniques that produce qualitative information. An open-ended question on a survey such as, "Why do you advocate capital publishment?" usually produces qualitative information that varies with the respondent.

There are a number of broad categories of data collection which are relevant to mortgage discrimination research. These data collection strategies tend to overlap with the research perspectives outlined above. For the most part, mortgage discrimination research has relied on quantitative data, either from lender files or collected from applicants through surveys.

- **Review of Lender Files (Administrative Data):** Under the Home Mortgage Disclosure Act, US lenders are required to provide statistical information to regulatory authorities on their lending activity. Details on each application are forwarded to the regulator, compiled and published in the HMDA database.

  File review also supports the compliance investigations of the Federal Reserve and other financial regulators. Since information on key variables

18 Ethno-methodological techniques have been adapted from anthropology and sociology. The extent to which these methods can support causal inference is discussed below in Section 4.

used to decide creditworthiness (such as the applicant's credit rating) is only available in lender files, this data collection activity is especially useful in trying to establish the credit standards used by individual lenders. Because of the number of studies based on HMDA and regulatory activity in the United States, this is probably the most common data source used in mortgage discrimination research. As such it forms the most important data for studying mortgage discrimination from an indirect perspective.

- **Participant Observation:** This involves a variety of data collection activities that attempt to monitor lender behaviour directly. Paired auditing, closely related to the common market research technique of mystery or secret shopping, is a typical example of this approach and is discussed below.

- **Applications Experiments:** This data collection approach examines discrimination by determining how lenders view various applications. In one version of this research participating lenders are sent a sample of mortgage applications to evaluate. Within the sample are sub-samples of files that differ in only one salient aspect such as race or gender. The lender then rates the files on the basis of tests they would commonly use to assess credit worthiness.

  The basic objective in this direct test is to closely mimic the standard approach used in a scientific experiment where everything is controlled except for the specific attribute being tested. One can design a sampling process to test along more than one discrimination dimension. The complexity of experimental design is limited only by the creativity of the researcher and the budget available. Two key requirements are that lenders be willing to participate in the experiment and a sophisticated design be used so that the intent of the experiment is not obvious.

- **Primary Data Collection (Respondent Self-Reports):** Two general classes of self-report data exist - sample surveys and census surveys. These data collection approaches support an indirect measure of mortgage market discrimination. The hallmark of primary data collection is the use of self-reported data supplied by those involved in the mortgage application and/or approval process -- either borrowers or lenders.

  The information collected in sample and census surveys is characterized by respondent recall and memory. Large variation in recall among respondents can reduce the reliability of statistical analysis. Survey data can be analysed at the respondent level, but census information is rarely released except at a spatial (census tract) level.

- **Qualitative Data Collection:** Qualitative approaches, such as focus groups or in-depth interviews are apparently not widely used as the primary data collection or analysis techniques related to testing for discrimination. Paired auditing logs may allow the tester to record impressions of how they were treated, but these recollections are only suggestive and most researchers would avoid drawing any conclusion about discrimination. However, in-depth interviews and focus groups are often used as key elements in refining particular data collection approaches in paired auditing and sample surveys.

The data collection approach and research perspective are two distinct but closely related ideas underlying methodology. The final element in methodology is the analytical or inferential process whereby association and causal relationships among variables are explored.

3.5 Analysis Techniques

3.5.1 Quantitative Analysis

The purpose of statistical analysis of quantitative data on mortgage discrimination is to partition and assign the variation in patterns of mortgage approvals to three sources:

- credit worthiness among applicants;
- economic advantage (income, occupation, wealth, etc.); and,
- personal attributes, some of which may be the object of discrimination (race, ethnicity, sex, age, etc.).

Statistical models test whether the pattern of mortgage application success varies only with credit worthiness and economic advantage or whether personal attributes are also associated. A basic challenge in statistical analysis of discrimination is causal attribution. In an indirect study using lender files, income, age, or gender are measurable, but the act of discrimination is not directly observed. Rather, discrimination is inferred because outcomes for one group are different from the average. In cases where it is possible to sharply separate groups (such as single men and single women applicants) the test can be even stronger. Pursuing this latter example, if the rate of approved applications for single men (measured by approval rates) is different than for women, taking <u>all</u> other factors into account, discrimination may be responsible. This test is often performed within the context of a multivariate model (regression) using lender files.

The paired audit and experimental approaches use a research design (and statistical test such as analysis of variance) intended to control for all factors and with variation only along the discrimination dimension. In these cases the statistical test can be correspondingly simpler and bivariate models such as difference of means and analysis of variance are possible.

A basic challenge for all analysis is control. In an experiment, the only difference among loan applications being rated should be the single attribute being tested (such as race, gender, or marital status). In a multivariate test using quantitative data, control variables (such as qualitative measures of race, gender, etc.) allow the researcher to isolate the variation in mortgage approvals due to differences in the discrimination dimension. The information available to the analyst must include "all other factors." Unfortunately, many studies use incomplete data sets where some factors pertinent to mortgage approvals may not be included. The results of these analyses may be inconclusive or worse yet, they may produce false positive or false negative indications of discrimination.[19]

Specific analysis methods are not tied to the research perspective or the type of data collection. For example, regression models can be built on data collected by sample surveys (respondent information) or from lender files (some elements of which may be verified by third parties). Issues common to all of the data collection activities, however, can influence the selection of a technique. For example, since large sample sizes are generally needed to provide reliable statistical results for multivariate statistics, any data collection must generate sufficient information to support inference. Analysing the five or six data points generated by a case study would produce poor results with a regression model.

Another important need for quantitative analysis is standardization. For a sample survey, each respondent must be asked the same question in the same way. For lender files, applicant information from different lenders needs to be identical. Often, different firms will collect similar information in different ways. These variations may not be known to researchers, and differences in data collection may masquerade as discrimination if one firm specializes in making loans to one group.

Quantitative data analysis techniques can be grouped into a hierarchy of inferential power:

- **Exploratory Analysis:** Most researchers start with a variety of exploratory analyses to reveal major features of the information collected. Usually this consists of summary measures (means, medians, variance, etc.), tables, and charts.

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19 In multiple regression the inclusion of an irrelevant variable does not produce biased estimates of the remaining parameters, but the omission of a relevant variation will always bias the estimates for other parameters.

- **Measures of Association/Significance:** Cross tabulation and correlation analysis seem particularly suited to discrimination studies involving survey data, especially at an initial phase where simple measures are required to justify more detailed work. Correlation analysis is also used in redlining studies where spatial patterns of mortgage holding are correlated with spatial patterns of ethnicity and racial group residences. These techniques can be applied to survey data obtained from telephone interviews as well as census information. Measures of association and tests of significance have somewhat greater inferential power than exploratory analysis, but correlation is not causation and research using these methods should only ever be seen as suggestive.

- **Bivariate Tests of Means and Frequencies:** Some research methods can produce data that conform to the standards of experiments as defined by the medical and scientific community. For example, paired auditing controls for all variation by ensuring that the two investigators are identical in all respects except the dimension being tested for discrimination. The outcome of the application, acceptance or rejection, can then be examined using standard bivariate tests such as difference of means tests.

- **Multivariate Methods:** A range of techniques have been used in mortgage discrimination research.

  Regression models employ a linear relationship between a dependent variable (mortgage acceptance/denial) and a series of independent variables (attributes of the borrower). The statistically significant independent variables are used to "explain" the variation in the dependent variable. That is, do these variables explain a statistically significant portion of the variation in the dependent variable. In mortgage discrimination, a typical approach is to model the probability that a given applicant will receive a loan (dependent variable) as a function of income, property characteristics, credit history, and other factors assumed to ensure creditworthiness (independent variables). By including a series of demographic variables (usually race, age, sex, and education) as additional independent variables, researchers can determine if these play a part in determining application success. Statistical significance of certain demographic variables (as a group or independently) is taken to indicate discrimination. Many existing quantitative mortgage discrimination studies have relied on regression models or some variations.

Systems of equations methods attempt to overcome the fact that measures of credit worthiness and economic advantage (income and wealth) are related to race, gender, etc. A single equation model fails to capture these interdependencies. Where the data has such relationships (specifically where the independent variables are related to each other), the effect of discrimination may be poorly identified and a systems model is needed.

General Linear Models such as *Discriminant analysis, logit/probit* and more arcane models have been applied in an attempt to overcome deficiencies with simple linear models.[20]

A number of basic problems exist for quantitative approaches to studying discrimination. Most important is that statistical methods can neither prove nor disprove the existence of discrimination. Rather, statistical methods allow one to state that "the non-existence of discrimination is probably untrue." Many social activists find this type of statement unsatisfactory. Further, with each study that purports to have found evidence of discrimination, a rebuttal often follows pointing out critical flaws in the design or data collection process. The result is that ever more complex models have been applied with the result that fewer understand the methodology used. This creates an increasing gulf among researchers, policy makers, and community organizers.

The selection of a specific quantitative test is determined by the format of the data.[21] The variables must be measurable at a low level. What this means is that data on exact age of the applicant will perform better than information that presents age as a categorical variable indicating one of five age categories. Ideally variables need to be a ratio (i.e. have a zero point and be capable of supporting division). The use of census information with census tracts or enumeration areas as the unit of analysis is a very common, and very defective approach to discrimination analysis. The dependent variable might be a proportion of residents holding mortgages. Independent variables might include average income, average age, proportion of single head households, etc. A key variable is the proportion of non-white households. These models invariably show that ethnicity is inversely related to mortgage holding and this is taken to be evidence of mortgage discrimination. The fatal flaw in this analysis is that ethnicity is related to variables relevant to the decision to lend such as income.

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20 Any current econometrics text will present a treatment of these models.

21 This does not invalidate the point made above that regression can be applied to different types of data such as survey data or information from lender files.

Another requirement of quantitative analysis of mortgage discrimination is their reliance on large sample sizes to ensure statistical power.[22] When comparing those who are presumed to suffer from discrimination with others, there must be enough representatives in the "protected" group to allow one to control for all relevant factors in a mortgage decision to emerge. Only then can one be sure that a statistically significant result indicates the possibility of discrimination.[23] This point is crucial for testing discrimination in countries such as Canada where there are many smaller ethnic/racial groups. Obtaining large enough samples is often challenging and a major limitation to this research.

Quantitative techniques also must account for all factors influencing mortgage approvals and terms. These techniques should not be "stretched" to account for gaps in the data or for uncollected information. Often administrative files do not contain all the decision variables. For example, a lender file might contain total household income. However, lenders might view income sources as important indicators of repayment risk. Two households with equal total incomes may be assigned different risk profiles if one has a single income earner and the other has two. Decisions on mortgages may not be fully explained without variables indicating multiple income sources. This lack of coverage adds to the unexplained variation in the data and reduces the power of any statistical tests of discrimination. The implication for mortgage discrimination research is that the data must span all the information needed. This is a very challenging requirement which is usually not met.

3.5.2 Qualitative Analysis

Focus groups, interviews and participant observation all have a role in mortgage discrimination research if only as part of the preliminary investigations supporting more formal study.

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22 Statistical power is the probability of accepting an incorrect research hypothesis (committing a Type II error). The higher the probability of making such an error, the lower the statistical power of the test. Since the research hypothesis for mortgage discrimination studies is usually that no discrimination exists, committing a Type II error means ruling out discrimination when it is in fact present. The easiest way to avoid Type II errors is to increase the sample size used in the test.

23 In a standard regression model (simplified), one might create a dependent variable for mortgage acceptance ($Y=1$) or denial ($Y=0$). The independent variables might be age, income, wealth, occupation (all denoted X_i), etc. The gender variable might be denoted $X_g = 1$ for men and 0 for women. In the regression model (here a logit/probit specification), there must be a sufficient number of women to support statistical testing. Most econometricians argue that at least 10% of the observations must pertain to the "treatment" group.

Qualitative analysis has rapidly evolved in the last decade. Many methods for "processing" focus groups, interviews and other qualitative data have been devised.[24] The basic approach to deriving meaning from qualitative data is known as "coding." This is common to survey research where open-ended questions are classified into a few well-defined codes for statistical processing. The processing of ensuring uniformity and consistency among coders is a basic challenge for all survey research. Controversy exists over the Miles/Huberman (1995) approach to qualitative data analysis. Some researchers believe that this structured analytical approach deprives qualitative data of its "meaning"; others question whether qualitative data is helpful in testing for specific phenomenon.

Most studies in discrimination use qualitative data in a variety of supporting roles such as using a focus group to assist with questionnaire design. Paired auditing is an example of a qualitative research method widely used in discrimination studies. The transcripts of the auditors are subject to qualitative review as well as quantitative analysis. The data recording process whereby investigators record their experiences varies from general anecdotal recording to the completion of a detailed questionnaire. The more structured and detailed the "debriefing" guide and the larger the number of trials, the more the data become quantitative.

3.5.3 Summary on Data Analysis

Academics and policy-makers appear to agree that quantitative studies using lender files augmented by standardized questionnaires administered to applicants and lenders is the superior information base for testing discrimination. Certainly work on pay-equity, labour market discrimination and housing policies are increasingly quantitative and more sophisticated from a statistical perspective.

In addition to purely methodological aspects of research into discrimination, ethical and legal issues are important for this work for a range of reasons. The notion of discrimination is politically charged and even the act of asking the question may strike some as offensive. Collecting data from human subjects requires certain protocols and informed consent. Finally, mortgage applicants legitimately assume that the information they provide and lender's files are confidential. Accessing this personal information can be problematic and this impedes research into discrimination.

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24 Miles and Huberman (1995) is a widely cited source on qualitative data analysis.

3.6 Ethical Issues in Research on Mortgage Discrimination

The ethical issues in social science research are well expressed by the guidelines used by the Social Sciences and Humanities Research Council of Canada (SSHRCC).[25] At the heart of these guidelines is the principle of informed consent. According to these guidelines, those who are the subjects of research must know: the intent of the research; the risks and benefits associated with participation; that their privacy will not be invaded; the identity of the investigators; the purposes to which the research will be put; that cultural heritages will be respected; and, that the investigators will be discreet. Also data collected for one stated purpose cannot be used for another unstated purpose.

A human subject is defined in the SSHRCC as "*any person who is a source of raw or unformulated data and who is not acting as or assisting the principal investigator.*" Informed consent must acknowledge the level of comprehension of the subject. Generally, children under 18 cannot be included in any study without parental or guardian consent. The guidelines also specify that written consent should be used and identify the purpose of the research, the expected benefits, potential costs and inconvenience from participating, the tasks involved, and their rights especially to withdraw at anytime and without penalty.

Constraints on using deception is a problem for researchers since much of social science research proceeds best with a degree of subterfuge. For example, in market research, the survey research company rarely provides the name of the sponsor, usually to protect strategic advantage and to ensure that responses are not influenced by name brands. This is not considered unethical since the respondent is free to withdraw at any time. It is the ability to leave the research at any point, and without penalty that increases the fairness of the research to the subject. Market research is benign in terms of potential impact on the welfare of the respondent and does not have the same potential for harm as some psychological experiments. Psychological experimentation and research in social pathologies, such as compulsive gambling or criminal activity, are the main focus for the SSHRC guidelines.

The use of deception in social research is hotly debated. For example, Kelman (1982) writes:

> *(... the use of deception) deprives participants of the respect to which fellow humans are entitled as a basic assumption of decent interpersonal relations.*

Kelman is also concerned about how deception in research leads to an erosion of social institutions. Elms (1982) also writes that some who see deception as necessary for social research are:

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> *those who see life as filled with moral conflicts, rarely easy to resolve, and who see social scientific research as a necessary part of their ethical life. They see such research as the best route to certain ethical goals ...*

Deception is addressed directly in the SSHRCC guidelines. Since a degree of subterfuge is central to some of the methods contemplated in researching mortgage discrimination (e.g. paired auditing and experimental trials of applications), it is worth presenting this concept in full.

> *Deception is a situation in which subjects have essential information withheld and/or are intentionally misled about procedures and purposes.*
>
> *Deception should never be permitted when there is a risk of harm to the subject or when it is not possible to advise subjects subsequently as to reasons why the deception was necessary.*
>
> *The researcher must satisfy the review committee (of SSHRCC) that:*
>
> - *significant scientific advance could result; and that,*
> - *no other methodology would suffice.*
>
> *Nothing must be withheld which might have caused subjects to refuse to participate.*[26]

Research into socially undesirable activity, such as mortgage discrimination lies between the relatively benign market research that screens the sponsor's name from the respondent and a potentially more invasive psychological experiment. A number of specific ethical issues pertain to research in mortgage markets.

- The subject is the lender, landlord, real estate agent or home seller. It is not the applicant. The ethical concerns pertain to individual employees in lending institutions, the real estate industry and various government agencies. Research designs need to respect the rights of personnel. Where labour organizations exist, some degree of control may be afforded the employee, but since the financial industry has low levels of unionization, it is the responsibility of management to ensure that the research meets ethical

[26] SSHRC Guidelines on Research with Human Subjects.

criteria. Some have suggested using peer consultants such as loans officers not being assessed to vet the protocols.[27]

- The general awareness that such research is proceeding may easily be interpreted as an investigation of either the institutions or individuals. This is less an ethnical issue and more an issue of who sponsors the research and who is being investigated. A single lender can decide to examine its own systems for fairness and such an internal review is entirely within the rights of a firm. Indeed, institutions may have already undertaken such reviews to examine the decision making process and whether lending follows corporate guidelines.

  If the research is sponsored by an industry association, real estate board or other private sector group (e.g. Chamber of Commerce), then most likely the association members, through the board, would sanction such investigation. Whether all firms and employees would be informed of the research is largely up to the association and its directors. While a widespread notification of such research might meet all possible ethical objections to the research, it is likely that the validity and reliability of the research would suffer. Detecting conscious discrimination invariably requires subterfuge.

- Research into mortgage market discrimination by financial regulators or government agencies and departments is problematic. In most cases, federal and provincial housing organizations depend on a close working relationship with the lending and real estate industry. For this research, industry should be consulted. For some methods, access to confidential lender files is essential. If these are not made generally available, as in the US under the various fair lending acts, then clearly lenders must be encouraged to cooperate. This suggests that the potential for discrimination to be a problem in mortgage markets must be demonstrated to elicit such industry support.

  Regulatory and government agencies could sponsor paired audits of the mortgage application process without informing the industry. Although this is technically possible, it would be most unadvisable. If the existence of such research were detected, the relationship between government agencies and the industry could be damaged.

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27 See Federal Reserve System - Consumer Advisory Council, 1991 for a review of the ethnical issues in paired audits. This study emphasizes the importance of industry cooperation in mortgage discrimination research.

- Lender files are a central information source in the bulk of mortgage discrimination research. Naturally, all personal information is deleted from the file to preserve the confidentiality of the applicant. *Residual disclosure* refers to a situation where the identity of the applicant could be inferred from their attributes. If the combination of attributes were unique, such as a single, female, Jamaican lawyer in the Toronto area, her identity may be inferred. Other information such as credit rating, income, etc. would then become apparent to those using the file. The usual approach to dealing with this problem is to delete additional personal identifiers. In the case of research into mortgage discrimination, these are often the variables needed to be retained. For example, deleting race and marital status would invalidate the research.

  The issue of residual disclosure is an important ethical problem that needs to be addressed with administrative data files containing personal attributes. Random records need to be examined to determine whether combinations of variables uniquely identify an individual. For example in the case above, additional masking is performed by not identifying the city and aggregating to the provincial level. An inevitable trade-off exists between removing personal information to reduce the risk of residual disclosure to zero (and eliminating the value of the data), and retaining sufficient data to support analysis (but risking violating confidentiality of applicants).

In summary, SSHRCC has created a number of useful guidelines for research into mortgage market discrimination where human subjects are involved. This is primarily relevant to the direct approach, such as paired audits, where the process of granting a loan is directly observed. Residual disclosure is a problem where lender files are used in indirect analyses. None of these ethical issues pose an insurmountable threat to mortgage market discrimination research but they do point to the care and sensitivity needed in this research. A lender would be advised to inform its employees that paired audits were being conducted.

3.7 Defining a Research Program

Based on the review of research in the United States, a number of distinct research methods appear suitable for application in Canada. As discussed above, the term "research method" consists of a perspective, data collection process, and analysis activity.

It is useful to re-emphasize that some of the methods discussed below might be implemented by lenders, the housing industry, community groups, as well as government agencies. Indeed, because of data access issues and the growing importance of client satisfaction and total quality management, an individual lender wishing to ensure that its own operations are efficient and effective may be the most logical entity to incorporate discrimination issues into a review of its own operations.

Choosing a research method involves selecting a research perspective, defining and executing data collection activities, and then analysing and interpreting the information. This choice is not mechanical.

- No one best method exists. While a trend toward quantitative analysis using lender files exists, other methods using direct observation, qualitative data collection, and qualitative data analysis based on interviews and focus groups can also provide insight into the existence of discrimination. A single research method may include more than one data collection activity, or analytical technique. For example, lender files will often contain quantitative and qualitative techniques calling for a variety of analytical approaches.

- Second, the selection of each component of a research method is usually made in conjunction with the selection of the others. This comes about for many reasons. Most important, the context affects whether a direct or indirect perspective can be used. If a lender is unwilling to access its own applicant files, then statistical analysis of these data are clearly not viable.

As a result, choosing a research design involves more than the simple selection of a perspective, data collection activity, and data analysis technique. The researcher must balance many considerations, including the cost of data collection, the availability of research subjects, and the ethical/moral/political implications of conducting a research study. Since these feasibility elements show up most clearly in relation to the data collection activities,[28] we raise them in section 5 when defining a suggested research program.

Data collection is usually the most costly and time-consuming element of the research process. Accordingly, feasibility is largely conditioned by data availability. The direct dollar cost and time required can be estimated for "typical" approaches within a method. But the range within any method is extreme. A single lender might review its own files, say 2000 applications. Of these, perhaps 10% might be marginal. This is a far cry from a national study sponsored by an association where all lenders pool their applications. Another example is a survey of recent mortgage applicants. Taking a sample of 500 or 5000 and

28 The feasibility of a data analysis technique is really dependent on the data collected - the more data collected, the more techniques that become feasible. Furthermore, since analysis is usually conducted in a "backroom", it rarely generates the ethical or political dilemmas that can face data collection. The same kinds of considerations apply to the research strategy. As a result, we discuss the feasibility of these two other components of research design in the context of our review of data collection activities.

using a 5 question survey versus a 50 question instrument all have vastly different costs. Assuming a lender, non-governmental agency, or government department believed it is a useful topic for exploration, the logical place to start is a small exploratory study. More sophisticated and more expensive research can be executed later.

It is unreasonable to expect that the judicious choice of a single "best" method in Canada, either by a lender or government, could replicate over 25 years of research in the US. For reasons discussed elsewhere in this paper, mortgage market discrimination is a more complicated problem to study in Canada.

The analytical or inferential process are also determined by data form and availability. Some methods, such as public opinion surveys and focus groups, are broadly indicative. Other methods such as statistical analysis of lender files may be capable of supporting cause and effect conclusions, provided that the information is complete. It never is. Validity and reliability are the outcome of a research process, combining several methods, and multiple lines of evidence. It is a limited perspective to position alternative methods on a cost-benefit scale and then chose one single "best" approach. The challenge for research into mortgage market discrimination in Canada is to define a research *program.* Further, that program will vary depending on who is sponsoring the research. A lender that is interested in quality control might limit its study to an analysis of its applications to determine whether approvals and/or terms are influenced by attributes of the borrower. It might do this to determine whether eligible applicants are being screened on the basis of inappropriate criteria. A lender might also be interested in client service and could concentrate on paired audits and mystery shopping to examine whether their "counter" service discriminated on the basis of race, age, gender, etc. Finally, an industry association or government agency may define a broader research program starting with some initial exploratory work to determine the magnitude of the program. Public opinion research may be a logical initial step. If the problem is perceived to exist, then additional research with greater inferential power might be defined and could be justified to the industry.

The essential point is that Canadian institutions and agencies have not researched mortgage market discrimination, compared to the US where 25 years and many millions of dollars have been consumed in this issue. Choosing a single best method as a one-time resolution to the "problem" or to replicate the large volume of American research is not feasible for the financial industry and government at this time. Each method has advantages and disadvantages and the appropriateness of a method will vary with the sponsor and the objectives of the research. A private lender seeking to evaluate customer service has a different vantage than an ethno-cultural organization seeking social justice. Both may use the same method, but clearly for different ends.

The type of discrimination studied (race, gender, etc.) is determined by the ability to observe or measure the characteristic in question. Certain attributes (such as sexual orientation) may not be observable. The attribute believed to influence lending decisions must be visible either by interviewing the person (race and gender) or through the background information collected on the individual (marital status or occupation). Sexual orientation and ethnicity are less consistently observed than race or gender. Methodology is not really affected by the type or target of discrimination, but the visibility of the attributes of the individual is affected.

Another issue is the separability of attributes. Race and gender are separable, but income and occupation are not. These two variables tend to be correlated, and it is hard to disentangle the effect of income (a legitimate decision variable for a mortgage) from occupation or age. With a large enough sample, it may be possible to control for the interaction of these two variables. It is well to remember the inconclusiveness of the US literature with much larger samples than would be available for Canada. More fundamentally, in the US it is a simple issue of comparing whites and non-whites. To explore attributes such as occupation, and age that are correlated with income or wealth, is premature in the extreme for Canadian researchers.

The presence of critical success factors (availability of data, objectiveness of information sources, reasonableness of geographic representation, cooperation from stakeholders, etc.) are determined by the context of information. Quantitative analysis of mortgage applications requires access to lender files. In the US, regulations require lenders to share this information with federal regulators. This implies that replication in Canada of research methods relying on lender files, requires the research be done by lenders or in close cooperation with the financial community.

Concentrating our discussion of feasibility on the issues pertaining to data collection allows us to both meet the terms of reference and manage the evaluation of alternate methodologies. This also meshes well with our conclusions from the US experience. In that country, access to detailed data sets has been a distinguishing feature of the most complete and methodologically successful research studies. In particular, studies based on incomplete and potentially biased data (such as those from the HMDA database used to study redlining) are now totally discounted. As a result, data collection issues are primary for any study in Canada.

3.8 Summary on a Research Program

This section has attempted to outline the main issues underlying a research program. The concept of a research program is general and may range from a single project (opinion survey, interviews, paired audit, etc.) or it can include a structured series of research projects designed to lead to progressively greater understanding. A research program in mortgage discrimination for Canada needs to start from the fundamentals of determining the extent and nature of the problem. Does it exist in Canada? Once this has been established, further studies can be defined in a progressive series of more sophisticated investigations.

Another important idea advanced in this section, and indeed throughout this paper, is that the issue of discrimination in mortgage markets is not the sole purview of government. A financial institution could easily undertake a review of its lending practices to eliminate discrimination. The neo-classical economics' view of discrimination is that it is irrational behaviour and lowers profit. A firm could test its own operations to eliminate discrimination as a strategy to increase profits and maintain market share, especially in growing ethno-cultural communities.

The fact that mortgage market discrimination can be examined by several sponsors considerably mutes problems of ethics. The SSHRCC has provided a number of useful guidelines for research involving human subjects. These constrain what can be done, but there is nothing inherently problematic about studying discrimination in mortgage markets from an ethical view.

4.0 VIABLE RESEARCH METHODS IN A CANADIAN CONTEXT

Because Canada does not have the regulatory structure for accessing mortgage application data as the US does, lenders and government agencies in this country interested in researching issues of discrimination must adopt a process of progressive and sequential investigation. In other words, a lender wishing to review the effectiveness of its own operation may incorporate questions of discrimination, conscious or unconscious, into its client satisfaction surveys. It may also undertake paired audits and perform statistical analysis of their own acceptances and rejections. Such a sequence of research methods is a program of investigation into discrimination. A government agency wishing to review this could well undertake a similar form of progressive investigation but on a regional or national basis.

In this section we draw on the US experience to identify a number of specific methods that have been used in researching the existence and extent of mortgage market discrimination. The fact that mortgage application data has been made available under legislation means that the research has been completed by academics, regulatory agencies (various Federal Reserve Banks), Congress, lenders, community groups and consultants. This has produced extensive literature.

It is important to emphasize that the extensive data in the US is the result of civil rights legislation. The fact that Canada does not have this legislation merely means that political and social pressures have not arisen to create such a legal structure. At this time, there is no evidence to support such regulation in Canada. Certainly, the fact that research into discrimination is facilitated by such regulation reverses the reasons that regulation emerges in the first place. As we shall show, viable research methods exist to explore and assess the extent of mortgage market discrimination without needing to impose regulation.

Each method is described generally along with its salient features in terms of perspective, data collection techniques and analysis method. We comment on the expected reliability and validity, as well as the power to clarify cause and effect. Finally, we consider the special requirements for implementing this research in Canada, by a lender and by a government agency respectively.

In summary, the methods we review include:

- Exploratory and confirmatory research using census and spatially defined data sets;
- Surveys of households;
- Paired audits;

- Experimental trials of the mortgage eligibility process; and,
- Exploratory and confirmatory research using lenders files.

The terms *exploratory* and *confirmatory* simply indicate the degree of certainty the researcher has about a phenomenon. If the existence and extent of discrimination is unknown, one will collect and analyse data in a general way. The intent is to explore the problem and by examining the patterns and relationships among mortgage acceptances/denials, the attributes of the borrower and the characteristics of the house, one develops a descriptive picture of mortgage market operations with respect to the various "protected" borrowers compared to the norm.

In a confirmatory analysis the researcher has a specific hypothesis in mind. In this case, data must be defined and collected specifically to test that hypothesis. This is the situation that occurs with the regulatory environment in the US. A basic conclusion of this paper is that public domain data in Canada (e.g. census) do not support confirmatory analysis and only provide a partial glimpse of the relationships among mortgage holding and attributes of the borrower. Lenders, on the other hand, are in a stronger position to test hypotheses about mortgage market discrimination by virtue of their direct access to files and their own operations.

4.1 Census and Geographic Based Studies

The use of census studies and research based on administrative files where the unit of analysis[29] is a specific area represents the starting point for discrimination studies in the US. For that reason alone there is merit in reviewing this method. Also, the analysis method, namely regression modelling, is a common approach for a wide variety of data.[30] This method is a useful context for summarizing the statistical modelling issues in discrimination research.

In the same way that studies in pay-equity started with a comparison of average wages paid to men and women in various occupations, studies of mortgage discrimination started with a simple comparison of the proportion of residents holding mortgages in a given census tract.

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29 The term unit of analysis is the "denomination" of the survey/census data. Opinion polls define the individual as the unit of analysis. The Survey of Family Expenditures uses a reference person to collect the data, but the household is the unit of analysis. The census collects information on individuals, but typically releases the information for census tracts or other geographies.

30 The same analysis method can be used with radically different data. Regression can be used with census tracts, surveys, and lender files.

Correlation analysis between the proportion of residents holding mortgages and the non-white ethnic proportion tended to show that the rate of mortgage holding varies inversely with the ratio of non-white to white population. This finding sparked the debate about mortgage market discrimination and redlining.

Studies using geography as the unit of analysis are firmly in the indirect perspective. The incidence of mortgage holding observed in census tract data is far removed from the decision on mortgage acceptance/rejection -- one possibly made many years prior to the respondent completing the questionnaire. The data collection is also completely removed from any influence by the researcher.

The designers of census questionnaires must meet many objectives, but the basic goals are to count and describe the population. Information on specific personal attributes such as ethnicity, gender, marital status, etc is often fairly complete, but information on credit rating, wealth, sources of income, etc. pertinent to lending decisions are non-existent or poorly specified. Census information is taken at face value and rarely subject to recheck unless the data are truly extreme.

Analysis usually consists of simple correlation and its variations. For each census tract one can plot percentage of residents holding mortgages against percentage of non-white households and usually find a statistically significant inverse linear relationship for all tracts. Regression modelling has been commonly used to increase inferential validity. The basic format appears as follows:

$$Y_i = A_0 + B_1X_{i1} + B_2X_{i2} + \dots B_kX_{ik} + e,$$

where "i" indexes the census tract (or whatever geographical unit is being used). Y typically measures the proportion of respondents holding a mortgage in census tract "i". The various X_i measure all the determinants of mortgage holding, such as average income for census tract "i", other measures of socio-economic status, and measures of ethnicity, race or gender. The set of X_i' s is drawn solely from the variables available from the census questionnaire.

The simple correlation model is defined where $A_0 = 0$ as well as $B_2 \dots B_k = 0$. Then, if Y_i measures the proportion of households holding a mortgage in census tract "i" and X_{i1} the ratio of non-white households in census tract "i", the value B_1 is the simple correlation. Based on the number of census tracts being used a statistical significance for this correlation can be calculated.

Adding additional explanatory variables increases the power of this test.[31] Since income, age, etc. all influence the qualification for a household, adding these other variables accounts for increasing proportion of the variation in Y_i (in other words the R^2 will rise)[32]. However, in any linear statistical model, adding more explanatory variables to the model tends to weaken the contribution of the remaining variables. As models become more sophisticated, a weaker contribution emerges for those variable(s) describing attributes along which discrimination might be practised. [33]

The inferential flaws in this research method are self-evident. There is no ability to control completely for other factors that influence mortgage holding. Percentage ethnicity will usually be correlated with income, occupation etc. Income and occupation are often highly correlated. Without controlling for all socio-economic factors in mortgage approvals, census-based studies invariably confound the various influences on mortgage holding and usually overstate the finding that ethnicity/race/gender etc. are correlated with mortgage holding.

Finally, as everyone knows, correlation is not causation. However, if there is no correlation there is a fairly strong case that causality does not exist.[34] Therefore, using census data allows one to identify whether certain groups are likely *not* to suffer from mortgage market discrimination. A finding of no correlation is a good indication that discrimination does not exist, or that it operates indirectly. To elaborate on this point, if one defined a variable as "percent Jewish" for each census tract, the finding is that there is a high correlation of this indicator with "percent home ownership". This is reasonable evidence that Jews in Canada have access to mortgage markets. However, the finding that "percent Aboriginal" was inversely correlated with percent ownership says nothing conclusive about mortgage markets. Indians do not own homes for many reasons more important than discrimination in mortgage markets.

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31 One simply allows A_0, and the B_i to be non-zero.

32 The adjusted R^2 rises only if the t value on the included variable is greater than 1.

33 This is a standard result of linear statistical models that has tended to make a number of researchers skeptical of academic, especially econometric research, into the study of discrimination.

34 This is an important point. The three standard conditions for establishing causality between X (e.g. race) and Y (holding a mortgage) are: correlation between X and Y; temporal precedence (X precedes Y); and, coincidence (Y never occurs without the presence of X). The lack of correlation requires the researcher to show that cause and effect proceeds through a more complex route, where factors interact and negate the direct influence of X on Y.

The result of these inferential weaknesses has been the disavowal of this data and their analysis by academic researchers. These studies are still being issued by community groups who argue that mortgage and housing market discrimination is merely part of the continuum of discrimination that exists in modern society. Therefore, these models capture the "total" effects of discrimination in education, housing, labour as well as mortgage markets. Academics argue that non-whites hold proportionately fewer mortgages for a myriad of reasons beyond access to capital -- census data can only function in the negative sense of indicating where discrimination is not likely to be a problem.

The census questionnaires in Canada do not contain enough detail on the mortgage application, in particular the attributes of the home and key economic attributes of the individual borrower. Therefore, we strongly suggest care be taken when using mortgage discrimination tests based on census data, or any administrative files where the unit of analysis is a spatial or geographic area.

Census data can be used to increase the case that mortgage market discrimination does not exist. If the spatial pattern of ethnicity and the spacial pattern of mortgage holding are similar, then one may conclude that the access to mortgages is not based on ethnicity. Census data cannot be used to prove discrimination exists, but it can be useful as an indication that specific groups are not denied access to housing finance. This is admittedly a weak and inconclusive test.

4.2 Sample Surveys

A sample survey offers two important enhancements over the census for studying mortgage market discrimination. First, the questionnaire may be expanded to include a broader range of questions. Second, the unit of analysis can be defined unambiguously as the individual and household. The term "sample survey" can include:

- a random extract of a census to produce files with individuals as households;
- an add-on to an existing survey such as the Labour Force Survey (LFS) of Statistics Canada;
- a specialized survey of individuals/households, such as the Survey of Family Expenditures (FAMEX), that may contain some questions pertinent to mortgages;
- a survey (mail, telephone, in-person, or some hybrid) of randomly selected individuals from the general population, with a questionnaire tailored to examining mortgage market discrimination; and,

- a survey of mortgage applicants and lenders (bilateral survey).

The first three types of survey are of limited usefulness in studying mortgage discrimination. The census has a far too restricted question set. The ability to conduct the analysis at the individual level by using a random extract (public use sample tape) is an improvement, but critical details on the mortgage transaction are missing. Further, most respondents would not have applied for a mortgage recently so the data are essentially "stale".

Adding a module to the LFS also has the benefit of focusing on individuals, and questions can be tailored specifically to mortgage applications. However, the sample would be inefficient as most respondents to the LFS would not have recently applied for a mortgage. The most useful respondents would be those who had been refused a mortgage at some point in the recent past. Since the LFS is also selected to measure employment market attributes, this is an inefficient sample (i.e. expensive) for studying mortgage market discrimination.[35]

FAMEX has a well defined unit of analysis with a reference person reporting in detail on all aspects of household expenditure. But, the information on mortgages is very sparse, and there are few questions pertaining to the personal attributes of the individual or household members that might have engendered discrimination.

The remaining two survey alternatives offer good potential for application in studying mortgage markets.

4.2.1 Survey of the General Population

This is a very common form of socio-economic research and many variations exist in both mode (mail, phone, in-person) and sample (general population to recent mortgage applicants). The important advantages of this type of survey over the census and other surveys cited is that the questionnaire can be refined to collect a broad range of information on the applicant, mortgage, and home being financed. Further, by screening respondents for only those who have recently applied for a mortgage, the survey can focus on relevant respondents.

The main value of this approach in Canada is that it can identify whether mortgage discrimination is *perceived* to be a problem. Using a large sample, several subsets can be identified, such as those recently approved, those denied for clearly economic reasons

35 The LFS is a stratified sample designed to produce very precise estimates of labour market attributes. The add-on modules require complex "weighting" to render them useful for secondary analysis. This increases the time between interview and analysis. Further, the LFS is a comparatively expensive survey vehicle compared to a stand-alone survey.

(income, wealth etc.), those whose applications were marginal but were accepted, and those whose applications were marginal and were denied.[36]

Some drawbacks of this method include the fact that locating the correct respondents from a general population sample (such as random selection from phone directories) is time-consuming (expensive). Refusal rates are tending to climb in survey research, and many otherwise applicable respondents refuse to participate. This increases cost. The more stringently one defines "recent" (e.g. last six months versus last 5 years), the more difficult it is to develop a sample.

Finally, and most important is that any survey, whether it uses mail, telephone or in-person suffers from self-report effects. Important facts are not corroborated. A telephone survey must rely on the respondent to faithfully report income, wealth, etc. Issues such as ethnicity and race can be sensitive and increase non-response to specific items on the questionnaire.

Questionnaires to collect all the information on the mortgage application and personal attributes will be long and complex. In-person interviews are the best mode to collect the data, but these are expensive. Telephone surveys can be a useful technique for developing the sample since published directories are an effective base from which to start.[37] However, phone surveys often do not obtain carefully considered information. Mailed questionnaires offer the opportunity for respondents to reflect and consult their records. The information is correspondingly improved. But, mailed surveys do not assure the researcher that the correct respondent is answering the questionnaire. An attractive alternative is the hybrid survey where a telephone interview selects the eligible respondent, obtains some information and the current address. A mailed questionnaire is then sent as a follow-up.

This paper is not the place to explore survey methodology in depth.[38] Surveys of the general population to identify and interview mortgage applicants have been sparingly used in the United States to study mortgage market discrimination, largely because the civil rights movement has spawned comprehensive legislation and better data. Financial institutions

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36 The notion of a marginal application can be defined in consultation with mortgage lenders. Generally, it means an application that is deficient only in one or two respects (e.g. insufficient down-payment, inability to pay more than a certain amount per month, the need to finance over the longest possible period, the need for a second mortgage to complete the transaction). Therefore the survey approach can segment mortgage market applicants and allow the research to compare the experiences of each group.

37 Using random digit dialling, telephone surveys can access at least 95% of the population and overcome unlisted and unpublished numbers.

38 A useful overview is found in Fink et. al (1995).

have been active in their own right in researching discrimination. This is largely a preventive strategy to avoid prosecution under the legislation. However, since the magnitude of the problem is not known in Canada, both government and lenders have a *prima facie* case for determining whether the problem exists, and if so, its nature and extent. A sample survey offers a good starting point for scoping the problem in a relatively unobtrusive way for both government and lenders. Since lenders have ready access to mortgage applicants, it is simple for them to investigate this issue as part of their customer satisfaction research. Such an approach would represent one-half of a bilateral survey.

4.2.2 Surveys of Applicants and Lenders (Bilateral Survey)

This approach to studying mortgage markets has seen limited application in the US. Rather than just interviewing mortgage applicants one could also interview loans officers in an attempt to view each application bilaterally. Such dyadic research is common in many social science areas. To take an example, a husband and wife usually have different views of a marriage and both are interviewed to obtain a comprehensive view of the relationship.

A typical application would see a lender using a standard survey questionnaire (usually a mailed instrument with telephone follow-up) with mortgage applicants, accepted, rejected and those who had elected to go with another lender. Simultaneously, surveys would be sent to the loans officer directly dealing with the application. The objective of the research would be to explore how the applicant and the lender view the application process and outcome. A significant advantage of the bilateral survey is that the information supplied by the applicant can be complemented by lender data. As mentioned above, the weakness of self-report applicant data is that it is not verified and some respondents may believe their application is stronger than warranted. The researcher has access to both applicant and lender opinion as well as verified information on the background of the applicant.

One could confine these bilateral surveys only to those applications that had been rejected. This restriction may make loans officers defensive and could also encourage clearly unqualified applicants to press their case. An ever present danger in this research is that it could lead applicants with weak cases to believe they had been unfairly treated. Most who are rejected for a loan tend to believe that the lender has not taken all factors into account. This potential needs to be evaluated by each lender contemplating this approach to client satisfaction measurement.[39]

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[39] A number of directions could be taken with this research. One is to use the survey to ensure that rejected applicants understood the reason for the rejection. Another is to encourage the applicant to consider that lender and reapply when their personal circumstances change.

4.2.3 Summary on Surveys

Lenders are becoming increasingly attentive to client satisfaction. Many use call centres to follow-up on client transactions. Typically, these calls are made to clients who have been approved for a loan or clients using other services. Some risk exists for a lender that surveys individuals rejected for a loan.

The remaining methods, paired audits and statistical analysis of lenders data are the most widely used techniques in the US and have the most potential for both lenders and government to analyse Canadian mortgage markets. We also discus experimental tests of applications -- a method that has not been used, but has interesting features.

4.3 Paired Audits

This is the classic design used in housing discrimination studies and involves a trial "shopping" process. Trained interviewers pose as mortgage applicants and complete detailed protocols after their initial interview with the loans officer. These protocols focus on the amount of information provided by the officer, the encouragement provided to pursue the loan, and the range of terms offered. Pairs of interviewers are selected to highlight the discrimination of interest. For example, a man and woman, black and white, married and single applicants, might comprise pairs of interviewers. Each member of the pair must be able to support identical background information. Sometimes, one of the pair (the one assumed to encounter discrimination) is given a stronger economic "resume."

Common to testing for discrimination in rental housing, paired audits have only recently been applied to mortgage markets. The method can be used up to the point where the test pair must supply verifiable information. To create "air-tight" false backgrounds, such as a credit history, for the interviewers can be very difficult and may be illegal since that would involve creating false histories -- if the background could be installed on databases such as the credit bureaus.

The method is very useful in detecting the discrimination occurring during the preapplication process. Such interactions would never be recorded by a lender and involve discretionary actions by a loans officer. Typical findings from the US research is that blacks are offered higher interest rates, receive less encouragement to apply, and typically are discouraged from pursuing the loan.

To keep the test simple, only one discrimination dimension is tested. Thus two males, one black, the other white might be used as testers, or two single females, one white the other black could be used. Only in a large sample test might one use four testers where race and gender were included.[40] However, expanding the study to look at more than one characteristic requires a substantial increase in the number of tests conducted if statistical power is to be maintained during the analysis stage. Further, since this approach tests the treatment of potential applicants by lender staff, the testing must be for the areas with the highest likelihood of triggering discriminatory behaviour.

Paired audits face some challenges. This procedure requires highly trained investigators and loan scenarios presented must withstand lender and loans officer scrutiny. If the test were detected, behaviour will alter and invalidate the results.

Paired testing is also expensive. It is relatively easy to document the terms offered by the lender. It is less easy to document attitudes and encouragement. For this reason, the training of testers must be meticulous and the research needs to be monitored at each step. A conservative estimate is that each test will require 4 hours to perform and write-up, and a paired test will require 8 person hours. Add to that the training and monitoring, and a paired test of 100 lenders could easily require over 1000 hours of professional time. This is a modest sample if one considers that it is split between the treatment and control group. Samples of 400 would be more typical for statistical validity. Of course, 400 trials would require dispersal to ensure that the same loans officer were not trialed more than once. This usually means that the testing should be undertaken in several cities, which also raises costs.

There are associated ethical issues as well, although the use of paired audits is not illegal. As discussed in the previous section, SSHRCC guidelines on deception cover this type of research. The ethical issues emerge if an agency other than the lenders conducts the audit: relations between the lender and research sponsor could become strained. An industry association such as the Canadian Bankers Association is one potential industry sponsor, but such trials should not include credit unions, insurance companies, or trust companies. The ideal, is a joint financial industry study. This is yet another reason that this research should either be carried out by lenders or with their cooperation and direct knowledge. Government agencies would be well advised not to proceed with such research without close liaison with the lenders.

In reality, there is nothing to prevent such research from proceeding in Canada legally or ethically. The first reaction of many is that paired auditing has ethical problems, but in fact

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40 A four-way test would include two genders and two races, for example.

both government and private industry regularly test their staff in such a way.[41] The real issue for Canada is that distance and a sparse population dictate that the bulk of the work must be carried out in larger centres such as Toronto, Montreal and Vancouver. As with most methods for testing discrimination in mortgage markets, our small population with many racial and ethnic groups requires national samples to generate sufficient information within treatment and comparison groups.

4.4 Review of Lender Files

Legislation in the US has created large complex databases of the mortgage application. Applications include information provided by the applicant (income, wealth, occupation, etc.) and information acquired by the lender (credit history, current debts, credit rating, etc.). Socio-demographic information such as marital status, number of children, ethnicity, age, etc. will also be present, but may vary in content and depth among lenders. Often this is the weakest element of these data sets, but also they are the most important for studying discrimination.

In addition to standardized information, mortgage applications often provide space for notes by those involved in the application process. Unlike other parts of the application, the notes are freeform and textual. Lender documents, such as training manuals, policies, and procedures, can also provide important insights into intentional and unintentional practices which may result in bias against certain groups.

Lender files in US discrimination studies are typically used in one of four ways:

- To collect accurate information on borrower variables such as income, wealth, credit ratings, etc. for use in statistical analyses of discrimination. Survey data are based on reports by respondents and are subject to well-known biases;

41 At the time this report was written, Revenue Canada had issued a request for proposals to conduct trials of the answers their staff provide to the tax-paying public. The research company's interviewers are to pose as tax-payers (clients) with questions, to assess their accuracy. This is a typical sample of what has become routine market research involving deception. Clearly, paired auditing presents no unusual ethical problems. In the current drive to total quality management and global competition, corporations and government are using research procedures that would have been criticized ten years ago. Now employees are more accepting of this review process.

- To collect information on the lender by examining such issues as training policies, credit standards, and hiring practices;

- To create administrative databases on general lender activity and borrower profiles (e.g. the HMDA database); and,

- To support regulatory analysis about compliance with fair lending or other laws.

These latter two uses are the most common source of data for mortgage discrimination studies in the United States, but are not available in Canada.

Clearly, summarizing lender files into databases suitable for systematic analysis is a labour intensive process. Most US lenders have computerized their mortgage applications and included information on the borrower such as race, gender and marital status. If the files are not computerized, a research protocol is needed to support data collection including notes and margin comments. Despite the computerization, file formats, data content, and data quality may vary among lenders.

The analytical models used in analysing lender files range from simple graphical/tabular presentation through to regression (see discussion of census data above) and on to multiple systems and logit/probit models. The structure of the data, the time over which information is maintained, and the unit of analysis all determine the types of statistical models available for analysis. Because lender data are more accurate, there is less variability than exists in survey and census information. This increases the scope for more sophisticated statistical analysis methods, each of which produces varying levels of reliability and validity based on sample size, the number and nature of control variables, and the definition of the dependent variable.[42]

The research into mortgage market discrimination in the US emanates from the civil rights movement and is primarily focussed on the differential access of black Americans to housing. Canada has not experienced this sharply defined racial feature and accordingly there has been no perceived need to develop such regulation.[43] Publicly available data on mortgage applications are not available in Canada. Individual lenders certainly have much

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42 A dependent variable that defines merely whether an applicant was granted a mortgage or not offers more limited modelling opportunities than variables that measure the range of mortgage options offered to different applicants. Many statistical models are available.

43 Some may argue that Aboriginal Peoples in Canada represent a population that has been segregated from economic benefits in the same way as American blacks. However, the status of the two groups is completely different in law and their rights are defined in totally different ways.

of the key information on each mortgage application, but it is likely that few maintain a complete set of borrower attributes. Indeed, simply by not collecting information on race, marital status and other personal features, the feasibility of studying this issue is eliminated.

This method is open to any individual lender. Some may wish to examine their own lending policies with the rationale that discrimination lowers profits by eliminating otherwise qualified borrowers who would not produce non-performing loans. An important barrier exists in that the sample size available to any individual lender may be too small. Even the largest lenders many have too few marginal applicants falling into specified groups. Again the findings from the US data must be emphasized. Clearly qualified minority applicants generally do not encounter discrimination. It is those applicants with a weaker application by virtue of lower income, insufficient wealth, etc. where a lender exercises discretionary decisions. Discrimination exists where this discretion tends to be against those of a particular race, gender or marital status. A sufficient number of these marginal applications is needed so that statistical analysis can proceed.

The final point about using lender files to research discrimination is fundamental. Applicants present marginal files for reasons beyond the housing market. A single mother may not have a long work career, and certain racial groups have experienced systemic discrimination. A finding that their applications for mortgages are rejected more frequently than "mainstream" applicants may say more about discrimination in education, employment and other areas of the economy than in mortgage markets. Therefore, while a statistical analysis of lender files is a marked improvement over census-based data, it cannot eliminate the influence of other sources of discrimination.[44]

4.4.1 Experiments With Applications

This approach to assessing discrimination in mortgage markets is more hypothetical than real. It represents the most involvement by lenders in testing for discrimination bias within their firms. Under this method, loans officers are randomly assigned to control or protected groups. Sets of almost identical mortgage applications are prepared and sent to each officer. The only difference between pairs of applications is the race, gender, or marital status, etc. of the applicant. Each officer is asked to rate the application in terms of risk potential and to provide a "best" mortgage offer. Usually a questionnaire is provided to guide this assessment. The risk ratings and offers are compared between the control and protected groups to determine the existence of systemic, non-economic bias.

44 This point has been made by Galster (1992). This leads to the basic point that no one "best" method exists for studying this issue.

This technique has never been used in mortgage markets, but it is used to study discrimination in other instances such as employment applications. The technique offers many of the advantages of a paired testing procedure without the costs or ethical questions. Officers can be told that the intent is to discover how fairness is balanced with financially sound management. The process is flexible and allows one to test for more subtle forms of bias such as varying the terms of a loan by borrower characteristic. One caution is that test applications may include additional and uncommon borrower attributes such as ethnicity. This can alert the officer as to the "true" nature of the test.

A number of important design features are required for this method. As with all experimental randomization, a degree of double blindedness is essential throughout. The officer and the researcher should not know whether a file belongs to the treatment or the control group. Files must be randomly allocated to loans officers, and among lenders. An officer must not rate the control and experimental version of the same file -- an alert officer might detect the two "identical files." This implies that experimental design methods must be developed to ensure that the allocation of files to loans officers does not introduce statistical artifacts which are mistaken for discrimination.

The file review process will not resemble the normal process in the firm. Care is needed to introduce the experiment and the application as part of a general quality control initiative. Again, the officer needs to be able to make judgements between fairness and fiscal prudence. Especially important is to stress to loans officers that they must make decisions and recommendations based on their normal practice. A high proportion of the files need to be "marginal" to ensure that the discretionary nature of the lending decision in these cases is highlighted.

As with all methods discussed, a single lender could conceivably introduce such research as part of a review of its own procedures. No special ethical or legal constraints prevent the application of this data collection approach in Canada.[45] If the firm wishes to ensure that its loans officers are not engaging in discrimination, and if the method does isolate personnel who appear to be involved in such actions, a process of training can ensue to redirect the decisions. Often the firm may find that an employee is exercising caution in the face of marginal applications and this behaviour is mistaken for discrimination.

45 The ethical issues are the same as for paired auditing.

4.5 Summary of Feasibility Issues and Implications for a Research Program

We use this section to conclude the review of alternative methods for studying mortgage market discrimination in a Canadian context. The Terms of Reference ask that different approaches be compared as if one could be selected as providing the best combination of insight and cost. In fact this is not the case. There is certainly a general relationship between statistical/inferential validity and cost, but the notion that Method A is better than Method B is not consistent with the idea that increased insight in social research is obtained using multiple lines of evidence and multiple methods. Although using all lender's files to produce a large database on mortgage applications for statistical analysis would represent a "state-of-the-art" study, as discussed above, all that research may conclude is that certain groups have suffered systematic disadvantages in education, labour, housing and financial markets.

4.5.1 Type of Discrimination

Our research has shown, however, that research methods are not really affected by the target of discrimination under study. This is especially clear for the multivariate inference techniques using census, survey or lender data. For example, regression models are based on the principle that a set of independent variables can "explain" the dependent variable. To test for discrimination, these models check to see if demographic variables are statistically significant when it comes to explaining the probability of loan denial. If they are, then demographic variables "explain" denial rates, and discrimination is indicated. Using race, gender, or age as the demographic variable (or even all three for that matter) does not affect the method in a substantive way.

From a technical perspective, the statistical techniques are also unaffected by the number of discrimination variables included in a model specification. A more important consideration here, however, is that the sample size be sufficiently large to protect the statistical power of the test. Increasing the number of demographic variables in any regression model, however, increases the random variation present in the data and introduces more confounding factors. This tended to mute the effect of the borrower attributes thought to provoke discrimination. Increases in sample size are needed to balance the systematic and random variation.

There are two limitations on the kind of discrimination that can be studied using the methods presented here. First, not all of the data collection techniques can capture information about all kinds of discriminatory behaviour. In particular, the methods that collect information based on people's perceptions (paired testing and some survey approaches) are challenged to address discrimination on characteristics (such as occupation or sexual orientation) that are not readily observable. The rationale is simple: if a loans officer is unaware a borrower belongs to a specific group, he/she cannot use it to discriminate. This limits the search for discrimination to the overt demographic characteristics like ethnicity, gender, marital status, and age.

Second, we doubt that any method will successfully examine discrimination based on occupation. Since occupation is highly correlated with income, deriving a pure occupation effect independent of that attributable to income will probably be impossible. The rejection would not be because someone was a welder, but because income was low, job history was sporadic and/or future employment was risky. However, self-employment may also cause lenders to be wary and this could be a basis for refusing a loan. In this case if a self-employed person has more variability in his/her income, perhaps he/she is a riskier borrower and an interest premium is warranted. Officers may use occupation as a sign of future earning power and income security in determining how much credit to extend. It is not clear how this calculation would be discriminatory against certain occupations independent of other economic factors. None of the US literature considered occupation as an "independent" variable.

Third, the incidence of a phenomenon affects the required sample size needed to detect whether or not discrimination has occurred. Recall that the acceptance/denial decision is apparent only in applications that are marginal from an economic perspective. Clearly eligible and clearly ineligible cases are accepted and rejected without question. The problems occur with two marginal applications differing only with respect to one borrower attribute. For relatively uncommon attributes, such as sexual orientation, a large number of marginal cases need to be examined. For easily observed and common differences such as gender, sample sizes needed to generate sufficient marginal cases are smaller. This problem is magnified when one considers discrimination that alters the terms of a mortgage against a specific group. The range of variation in the dependent variable and the subtlety of measuring the discriminatory variable (sexual orientation) would mandate a data collection exercise far in excess of what has ever been attempted in this area.

Therefore, we recommend that "type of discrimination" be confined only to those applicant attributes that a loans officer might reasonably know, such as race, marital status, gender, and possibly ethnicity.

4.5.2 Trade-offs Among Research Methods

The Terms of Reference also ask us to examine the extent to which trade-offs exist between the type of methodology chosen and the types of discrimination being studied. This question is not really relevant. It comes about primarily because many decisions in designing mortgage discrimination research are discrete. For example, no methods study discrimination based on unobservable characteristics. Analytic techniques can only investigate forms of discrimination accounted for in the data. If data on a given attribute have not been collected, then that practice cannot be studied. Therefore, research on discrimination against same sex couples is likely to be unviable since this may not be apparent to the officer. Very few would ask about the relationship between two men or women seeking to purchase a home. Even if this information were available, the incidence of this type of borrower and the incidence of marginal applications would be low. Insufficient information would exist with which to come to any conclusion.

Many trade-offs exist in the selection of a research design for studying mortgage discrimination. These trade-offs are linked more to the desired statistical validity and available budget than they are to the type of discrimination under study. If one chooses to study two discrimination dimensions simultaneously, such as gender and marital status, then the number of observations must rise commensurately.

Our approach has been to use six of the most common designs to illustrate how mortgage discrimination may be detected. No single method captures the totality of possible entry points for discrimination in the mortgage lending decision. The notion of a trade-off among methods is not viable. Paired audits are useful for examining the attitudes of lenders. Multivariate methods examine outcomes of the process. These are quite distinct points in the mortgage approval process and there is no trade-off.

4.5.3 Geographic Perspectives

Except for discredited redlining studies, geography is poorly integrated into the US literature. The results of the US research suggest that discrimination may exist in some markets but not in others. At the same time, several researchers have used data from national surveys without reference to any conceptual or methodological differences that might exist because of differences in geographic location within the country. From the US experience it is clear that the sample size needed to conduct any discrimination study generally rules out looking at a specific rural area.

It is difficult to determine whether it is more appropriate to conduct a series of regional studies or a single national project. Again, this decision may rest on why the study is being done. If discrimination is believed to be a national problem, a national study makes the most sense. If it is believed that discrimination is restricted to certain markets or a specific lender, then selected regional studies make the most sense. From a purely strategic perspective, the more localized the area under study, the more likely the research findings are to promote action by lenders within that area.

The geographic element inherent in mortgage discrimination raises an intriguing issue in the Canadian context. Many ethnically concentrated areas have developed within Canada in which the predominant ethnic group has assumed a degree of social and economic strength. The Chinese in Vancouver, German Mennonites in Southern Manitoba, and Jews in Toronto provide examples of these. All have developed their own financial institutions or have other means of financing mortgages. An interesting question about mortgage discrimination is whether those who are not members of the dominant ethnic community have equal access to mortgage financing from the financial institutions within the community. Further, if those denied access can obtain financing from other, non-ethnically controlled institutions, does this form of discrimination matter?

4.5.4 Appropriateness to Canada

The question "Does the approach make sense in Canada?" is designed to ensure that research techniques used elsewhere are not simply applied in a cookie-cutter fashion to this country. In reality, however, the appropriateness of any of these methods relates more strongly to *why* the research is being conducted than to *how* it is being done. In the US, mortgage discrimination research has been central to supporting an ongoing regulatory effort directed at enforcing the fair lending laws. As a result, many research studies have targeted specific markets to expose discriminatory practices violating the law. As well, the political nature of mortgage discrimination research has been very prominent, and researchers and community groups are often at odds over the results.

Mortgage discrimination research in this country will therefore have a much different focus than that used in the United States. In particular, research by government agencies and academics is likely to be more exploratory and directed at informing or canvassing public opinion than testing for compliance to legislation.

Lenders and the housing industry may have a special interest in researching discrimination. As Canada becomes more ethnically diverse, lenders operating in a competitive environment could well be interested in testing whether their processes are fair and do not exclude qualified applicants. There is a strong rationale for a lender to include the question of discrimination as part of its review of client satisfaction and service.

Once the research methods are considered out of the context of their use in the United States, there is little to suggest why some methods would be less appropriate in Canada than others. Of the techniques discussed in this report, paired testing and the experimental application are likely to be the most controversial in the Canadian setting. The popularity of paired audits is growing, however, and variations are now commonly used in customer satisfaction work by both government and the private sector. Further, guidelines do exist to constrain this research from violating the rights of the individual. It is important to stress that a number of researchers do object to secret shopping and other deceptive techniques used in social research. However, the weight of practice appears to be in a direction of greater acceptance.

4.5.5 Effects Based Testing - An Aside

To this point, we have only considered discrimination in the context of differential treatment of two individuals based on reasons that cannot be explained by economic disadvantages. Recently, US regulators appear dissatisfied with existing definitions of discrimination and wish to shift the emphasis from discriminatory *treatment* to discriminatory *effect* (Barefoot 1994). The "effects test"implies that some objective lending standards may result in unequal credit distributions that are not based solely on disadvantage, *even if bank personnel treat all applicants evenhandedly*[46]. Because blacks are poorer on average, the effect of applying the standard rules for mortgage lending means that fewer will get a loan proportionately compared to whites. For discrimination researchers, effects-based testing for discrimination reverses the research emphasis from the application of lending policies to the policies themselves.

The effects-test was first developed as a legal standard for proving discrimination in employment equity cases. The key feature of this standard is that it shifts the burden of proof from researchers to defendants (reverse onus). Instead of requiring researchers to prove that discrimination exists, lenders are required to justify practices shown to lead to adverse impacts for certain population groups. This makes it much easier for researchers to "find" discrimination since they can focus on readily observable socioeconomic trends. Under the effects test, researchers are also no longer required to pinpoint where discrimination occurs in the lending process. Instead, they can focus (as many already have) on outcomes of that process. This implies that lenders are responsible for discrimination and its redress, whether this can be proven or not.

This concept is most premature in Canada. Since there is no agenda for regulation similar to that used in the United States, effects based testing in Canada is even less likely. Indeed,

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46 A rigid debt-to-income ratio is a common lending standard which is cited as having a discriminatory effect. Civil rights advocates argue that minority groups often pay a higher share of their income for housing than do non-minorities. For such applicants who can demonstrate a successful record of rent payments which exceed their mortgage payments, rigid debt-to-income ratios effectively deny them access to credit for reasons which have nothing to do with their repayment risk. As a result, they can be seen as discriminatory.

with the election of a Republican Congress, it is quite possible that this latest regulatory thrust will be abandoned in the near future.

4.6 Summary and Conclusions

Four key points emerge from our review of methods in this section:

- First, despite 20 years of research on this issue in the US, no single combination of research strategy, data collection activities, and statistical techniques has gained prominence as the "correct" way to study mortgage discrimination. Although some methods have been discredited, no consensus has emerged on whether a given combination of methods is any more successful at detecting or measuring mortgage discrimination than any other. Furthermore, the conflicting evidence suggests that single method studies should be viewed cautiously, even if they are carefully constructed.

- Second, few technical considerations make one set of research methods more feasible than another, or even limit the application of a given set. The use of census data has been criticized, but even these can play a useful role in identifying whether there are groups unlikely to be affected by mortgage market discrimination. Cost and logistical considerations have a much greater impact on the feasibility of a given combination of research methods. The relative lack of technical constraints in undertaking mortgage discrimination studies gives researchers a great deal of flexibility to approach the problem from different perspectives.

- Ethical issues are important. Lenders can probably undertake research among their own customers (those accepted and rejected for a loan) and test their own staff. Considerable movement has occurred in the market research industry and research considered unthinkable a decade ago is now accepted as routine. When government undertakes this research there are diplomatic considerations since industry is often a key partner in delivering housing and housing finance. Special care is needed to ensure that this relationship is not damaged by research that is perceived to be unnecessary and undesirable.

- Rather than defining a set of discrete research methods, we suggest that those interested in conducting research into mortgage discrimination (lenders or government) develop a research program. In Canada, because a regulatory environment does not exist to produce the detailed information available in the US, it is essential that preliminary work be undertaken to establish whether discrimination may be a problem. Sample surveys of the general public or lenders' clients are a good start. Once the phenomenon has been "scoped", other methods can be developed. However, no one method is "best."

However, the most insight into this problem will be provided by a program that lenders support. For this reason, we emphasize that the financial sector is in a position to both assist public policy as well as enhance their own economic viability by undertaking a research program to detect mortgage market discrimination.

5.0 TOWARD A RESEARCH PROGRAM FOR CANADA

Despite the conflicting nature of US findings, the essence of the research effort shows that discrimination may exist in some mortgage markets. Since the features used as the basis for discrimination (ethnicity, gender, age, etc.) tend *on average* to be correlated with socioeconomic disadvantage, mortgage discrimination may exacerbate these disparities and contribute to increased differences in the standard of living for selected population groups in that country. Considering the similarities between the two countries, the presence of mortgage discrimination in the US suggests at a minimum that it might exist in Canada.

The methods we have suggested in the previous section, if used with a view to their limitations scientifically and ethically, will provide increasing insight into whether discrimination exists, what groups experience discrimination, and to what extent. Several points discussed above deserve emphasis:

- No evidence exists that mortgage market discrimination is a problem in Canada. Of course, mortgage market discrimination is embedded within a complex chain of choices and opportunities that allow a household to own a home on the most favourable terms. It is certain that analysis of census data across Canada would show that certain groups own homes and have mortgages proportionately less than on average. As we have emphasized there is no strong evidence in the US that failure in mortgage markets is the sole or even important reason for this, even after 25 years of intensive research.

- In Canada the issue of mortgage market discrimination has not emerged for a simple reason. Without the major black/white fault-line existing in the US to expose the dichotomy in home-ownership and access to mortgages, the evidence of mortgage market discrimination for Canada is muted. The white/non-white distinction is much more complex for a multi-racial, multi-ethnic society. In much of the US, the white/non-white distinction is really a white/black distinction, although in the last decade, this has changed with Asian and Hispanic populations increasing.

  In Canada, the white/non-white distinction may mean white/black (parts of Halifax, Montreal and Toronto), white/Asian (of several origins), etc. Systematic under-representation of non-white populations in mortgage markets is hard to detect. It is not credible to expect that the Chinese in Vancouver are under-represented in mortgage markets. This means that detecting a significant pattern of mortgage holding and race is much harder as one under-represented group is offset by another that is over-represented. Certainly, one might expect that blacks in Halifax may be under-represented along with recent immigrants from the Caribbean in Toronto and Montreal. But this represents a few census tracts out of hundreds. This small sample is lost in the larger pool.

Because Canada has a much more heterogenous population, detecting discrimination is difficult. Patterns of under-representation are not going to "leap off the page." A lender wishing to examine its operations needs to test for the problem carefully and with discipline. A government wishing to examine the issue needs to start with exploration, and then, once systematic patterns of disadvantages have been detected, it can move to more inferentially powerful procedures.

- Although we present several methods to research mortgage market discrimination, it is wrong to believe that a single method will provide conclusive insight within the Canadian context. Carefully used, analysis on census tracts provides a glimpse of groups that might *not* be encountering discrimination in their access to mortgage financing. Paired audits are a powerful method to examine the first stages of the application and experimentation with applications can detect subtle (and not so subtle) biases by loans officers. Even the statistical analysis of lender files, arguably the strongest method for inferring cause and effect, provides no insight into potential for pre-application discouragement caused by Realtors and friends. It also is limited to those variables that lenders collect in the course of the mortgage approval process. The conclusion is that the trade-off among methods does not really exist. A sensible research program for lenders and for government will consist of multiple methods to produce successive and deeper understanding of the dynamics of discrimination.

- The interest in mortgage market discrimination derives from two main perspectives. First, lenders operate in an increasingly competitive environment. Economists are clear that approving mortgages on any basis other than ability to repay foregoes revenues. Therefore, lenders should have a primary interest in determining whether their procedures, deliberate and inadvertent, discriminate against qualified borrowers. Governments actively involved in aspects of the mortgage market, either through subsidies or insurance, are included in this group.

  Second, and equally important, society in general has an interest in fairness and equity. Therefore, government will be interested in such research. Of course, as citizens members of community groups, non-profit organizations, and the housing industry also share in this interest.

- Finally, discrimination research should be confined only to those dimensions that are visible and not functionally correlated to the economic determinants of mortgage holding. This means that race, gender, and marital status are the primary dimensions along which to understand this problem. Age is closely related to income -- young people tend to have less access to mortgages because they have lower incomes and do not have the down payment. It is hard to see the need to save for a down payment as discrimination. Occupation is also closely related to income. Labourers have fewer mortgages than lawyers because their income is low and uncertain. This is not discrimination, and it makes little sense to try to detect for an "occupation" effect that is distinct from an "income effect." The US literature has not arrived at a conclusion on mortgage market discrimination with a much more obvious racial dimension. To cast the problem in a more complex fashion for Canada is pointless.

5.1 The Scope and Rationale for a Canadian Research Program

The shortage of data in Canada, such as the US's HMDA files, also makes it more difficult for mortgage discrimination problems to become publicly apparent, explaining in part why community and rights groups have granted this issue less attention than their counterparts in the United States. Mortgage discrimination may well exist in the Canadian market, but its impact is spread out, and "buried" among other factors that affect access to housing. The problem facing us is to measure if it exists, and if so, its extent, and then to decide how public policy should address the problem.

The US experience provides compelling reasons why research should proceed in Canada. Serious negative consequences are associated with unequal access to mortgage credit for specific population groups. From a public policy standpoint, identifying the presence and consequences of mortgage market discrimination is the first step to developing approaches to address the problem. Basic exploratory research is needed to support the development of informed policy, which in turn is an important element to ensuring greater equality in society generally. From a commercial perspective, lenders should be very interested to ensure that policies and practices support maximum revenue by not excluding qualified borrowers. It is most likely that discrimination by lenders is not by design, but the result of conservative lending policies in the face of inexperience with the repayment performance of the "protected" groups.

5.1.1 Research Focus

While the rationale for studying mortgage discrimination may be the same in Canada as it is in the US, Canada's culture, history, and racial composition suggest that researchers will need a considerably different focus than that used in the United States. As we have pointed out, an important step for Canada is to conduct exploratory research, with a focus on essential questions of incidence and awareness. A significant criticism can be directed at the US research program for moving beyond these simple questions without fully understanding them. Even the question, "Does discrimination in mortgage lending occur?" cannot yet be adequately addressed in the United States. Basic questions such as this must focus a Canadian research program by both the private sector and government.

5.1.2 The Need for Multiple Methods

Conceptually, the problems associated with detecting mortgage discrimination are similar to those involved in program evaluation, where a range of confounding factors may obscure the causal link between intervention and impact. Evaluators typically deal with the attribution problem by relying on multiple lines of evidence to "triangulate" program impacts. The notion is not that errors in one measure offset another, but that if an outcome is truly related to the phenomenon under study, this relationship should emerge in many different contexts. Combining several measures compensates for the short-comings of any individual indicator in detecting this relationship.

Because of the contradictory evidence generated in the United States, a single method for researching mortgage discrimination in Canada will lead to unreliable research results. That being stated, multiple lines of evidence does not guarantee validity and reliability, especially since it raises the possibility that individual results will contradict. Contradictory evidence is to be expected, but this can be managed by careful and wide consultation throughout the process. Using multiple methods minimizes validity and reliability problems in the research and is highly desirable for a Canadian research program.

5.2 Research Programs

The research program pursued by a lender will differ from that adopted by government.

5.2.1 A Suggested Research Program for Lenders

Lenders could pursue the issue of mortgage market discrimination in the context of client satisfaction studies as well as reviews of the effectiveness of policies and procedures to identify the optimal risk/return portfolios for mortgage loans. Table 5-1 presents some questions a lender might pose to anchor this research.

TABLE 5-1

Suggested Research Questions for Lenders
What proportion of mortgage applicants have been accepted or denied in the last five years?
How many were refused outright, offered less than the best terms, or believe they were offered less favourable terms than other borrowers?
Is the pattern of acceptance/refusal/less than best terms a function of non-economic variables (race, gender, marital status)?
Do loans officers provide different information to clients of different races, genders, etc? Are male and female applicants treated differently or provided with different mortgage offers?
Is the reality of risk and repayment performance affected by the race, gender, or marital status of the applicant?
Are we eliminating applicants who could service the loans on competitive terms?

A comprehensive research program a lender might define would consist of the following methods:

- sample survey (i.e. client satisfaction survey of mortgage applicants, including those accepted and refused);
- bilateral survey;
- paired audits in the context of a mystery shopping exercise;
- experiments with applications to review compliance of loans officer performance with corporate policy; and,
- statistical analysis of applications files.

Lenders are in a favoured position to review the mortgage loan process from application to approval and from all perspectives. Some lenders may have too few files to properly analyse the outcomes (statistical analysis of applications) encountered by certain protected groups such as single women. They will be able to test for discrimination by loans officers and other staff against such groups through paired audits and experimental applications.

5.2.2 A Suggested Research Program for Government/NGO[47]

In reviewing the state of mortgage discrimination research, Galster (1992a) and Wienk (1992) develop a number of research questions that they believe need to be addressed before government and non-profit researchers can speak authoritatively about the causes, consequences, and prevention of discrimination in mortgage lending. These questions (identified as fundamental for the US) are outlined in Table 5-2 and present a reasonable framework for an initial study of mortgage discrimination in Canada.

47 A prime candidate NGO for this research would be an industry association such as the Canadian Bankers Association, the Credit Union Central, etc.

TABLE 5-2

Suggested Research Questions for Government/NGO
The Extent of Mortgage Market Discrimination What proportion of the population have shopped for a mortgage in the last five years? How many were refused or believed they were offered less favourable terms than other borrowers? How are perceptions of unfairness related to race, ethnicity and gender? (i.e. protected classes) Do the perceptions of protected classes about mortgage markets influence their borrowing activity? How does the housing search behaviour of protected classes affect their access to mortgage loans? Do lenders treat protected classes differently at the preapplication stage? Do lenders discriminate against the loan applications of protected classes, all other things held constant? To what extent do other agents (real estate agents, home appraisers, home insurers, etc.) contribute to discrimination in mortgage lending?
The Consequences of Discrimination What are the main consequences of mortgage market discrimination for protected classes? More frequent loan denials? Credit on less favourable terms? Greater search costs for adequate credit?
Identifying and Preventing Discrimination Which research methodologies are most effective and reliable for detecting discrimination in mortgage lending? What data are required to detect mortgage market discrimination? To what extent can public education and regulatory enforcement prevent mortgage market discrimination?
Adapted from Galster (1992a) and Wienk (1992).

Remember, our conclusion, shared by prominent researchers is that after 20 years of study, US researchers can neither confirm not deny the existence of mortgage market discrimination. They merely have strong suspicions that the practice exists.

We recommend that the first steps consist of a review using census tract data[48] and a sample survey of recent mortgage applicants. If respondents who are members of protected groups report a perception of unfairness and if the analysis of census tract data shows systematic variations in mortgage holding by race and other variables, then more sophisticated research can be justified. If a higher proportion of those in protected groups who were denied mortgages do not perceive unfairness compared to rejected "mainstream" applicants, the case for proceeding with more sophisticated research is considerably weakened.

Government, such as Canada Mortgage and Housing Corporation or any of the provincial housing departments, would be advised to consult closely with the financial and housing industry before defining a research thrust. Because researching discrimination is so clearly in the interest of profit maximization for a lender, these public agencies are in a good position to offer methodological advice to assist a lender to review their own practices. A coincidence of public and private interests exists in the elimination of mortgage market discrimination.

We suggest a three point research program that government and NGOs may wish to define:

- statistical analysis of census tract data;
- national public opinion survey (perception of the problem); and,
- paired testing (process of inquiry and pre-application stage).

Based on consultations with lenders and financial industry associations, the following methods may become available.

- experiments with applications (review of systemic biases in approval process);
- bilateral survey (review of perceptions and disposition of applications); and,
- statistical analysis of applications files.

48 The caveats we mentioned about this form of research must be maintained prominently.

5.3 Estimates for Lender-Based Research

A lender can execute a mailed questionnaire of 1000 recent mortgage applicants for less than $25,000. If this is integrated with its on-going client satisfaction studies, the cost of the discrimination component is modest indeed. Similarly, although it has important limitations noted above, a multivariate analysis of census tract data is useful. It can be executed for less than $50,000 (depending on the charges imposed by Statistics Canada).[49] Both these methods can be completed in less than six months.

A national sample survey of recent mortgage applicants would require a qualified sample of at least 3000 to ensure representation of some protected groups such as "non-whites." It is likely that other applicants, such as single women would be too infrequent to emerge and the sample might have to increase to 5000 (qualified respondents). To obtain a single qualified respondent might require more than 20 attempts. To get a sample of 5000 may require over 100,000 numbers be tried. Canada's small and diverse population makes any form of discrimination research, not using lenders' files, formidably expensive.

The remaining methods are complex and expensive for those outside a private firm. Even for a lender the training for paired auditing or experimental applications is costly and time-consuming. The barrier a lender might face is small samples, spread across the country.

The paired testing program shows why this is the case: to carry out the study requires an initial period in which interview protocols, loan scenarios, applicant profiles, training materials, and so on are prepared and revised. Because of the dangers inherent in the detection of a testing program, such materials must be perfected well before investigators hit the field. Once these materials are prepared, however, they can be used repeatedly with little additional cost. The same point holds for the bilateral survey approach that requires the prior design of the data collection instrument. Once these instruments are designed, they can be widely distributed at low cost.

The variable costs associated with each research method are also straightforward, although for all methods it will depend on the final sample size. For a paired testing study, these are likely to consist primarily of training and field costs associated with maintaining a team of investigators. For the survey and experimental approaches, variable costs consist primarily of the actual materials, mailing, and follow-up costs. Of course data processing, analysis,

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49 At the risk of repetition, analysis of census data needs to be conducted in a highly disciplined way. The search should be to identify those "protected" groups that do better than average as a way of potentially eliminating them from prima facie consideration as suffering from discrimination. Any specification of this study needs to be careful to ensure that claims of discrimination are not made when certain groups are found to be under-represented as mortgage holders. However, as mentioned above, this analysis has a role in exploring the pattern of mortgage holding.

and final report write-up will be required for all methods, although this element is not likely to fluctuate dramatically with the sample size.

The design period is the most time-consuming element of any of these methods. Once the design work is completed, duration of the study is really dependent on the sample size required. (A larger sample size requires more tests, for example, which will extend the length of the study.) We believe the design period should include a series of consultations with lenders and with community groups, and this will stretch out the length of time needed to complete the pre-study materials. Besides this, however, the design period should take between six and nine months to complete. Depending on the sample size, data collection should take another four to six months. Data analysis and report write-up will require a further two to three months. From start to finish, these methods will take between 12 and 18 months.

Table 5-3 provides an overview and summary of the suggested methods. The parameters are for minimum sample sizes. For some lenders there may be too few applicants in the protected groups to infer any discrimination. Most lenders would need to use external consulting assistance for many of these methods.

TABLE 5-3

Overview of Recommended Approaches - Lenders

Characteristic	**Surveys**	**Paired Testing**	**Experiments of Applications**	**Bilateral Surveys**	**Statistical Analysis - Lender Files**
Coverage	National	Major Centres	National	National	National
Sample	1000	400	1000	400	3000+
Design Time (Months)	2-3	3-6	3-6	4-8	3
Execution Time (Months)	2	12	6	6	4
Reporting Time (Months)	1	2	1.5	1.5	2
Cost (Approx)	\$20 - \$30K	\$200K	\$50K	\$40K	\$50K

5.4 Estimates for Government/NGO Research

The research program for government/NGOs is considerably more expensive than for a lender, assuming that direct access to applicants is not possible. Most lenders would be understandably reluctant to release their applicants' files, simply to protect against the strategic threat that competitors might access their client lists. Some techniques will require lender support, most desirably through an industry association.

TABLE 5-4

Overview of Recommended Approaches - Government/NGOs			
Characteristic	**Sample Surveys**	**Census Tract Analysis**	**Paired Auditing**
Coverage	National	National	Major Centres
Sample/Cases	1000		400
Design Time (Months)	2-3		3-6
Execution Time (Months)	2		12
Reporting Time (Months)	1		2
Cost (Approx)	\$20 - \$30K	\$50,000	\$300 - \$600K

The first two methods can be executed without requiring the assistance of lenders. Before any government or NGO undertakes paired auditing of the private sector they should heed the caution of the Federal Reserve's Consumer Advisory Panel that management of lending institutions be consulted about these tests (without alerting loans officers).

The more advanced methods not outlined in Table 5-4 (experiments with applications, bilateral surveys, and analysis of lender files) require lender cooperation. We suggest that there is no legislative or regulatory basis for accessing these files without the full cooperation of the industry. Further, presenting the industry with "proof" of discrimination from sample surveys of rejected mortgage applicants, census tract analysis, and paired audits done without their knowledge could seriously breach the public/private partnership underlying housing in Canada.

Therefore, we suggest that government and NGOs move to a consultative role. A central theme of this paper is that competitive lenders seeking to maximize profits will wish to ensure that their procedures, including staff responses to applicants, do not consciously or unconsciously exclude qualified borrowers. The role of government can be to act as a consultant or advisor and invite lenders to consider these research methods as part of a portfolio to deal with increasing diversity in their clientele. Lenders can also be encouraged in this direction by pointing out that, just as Canadian financial institutions are entering foreign markets, lenders from other countries are creating banks to serve Canadian customers.

If after the census tract based research, sample survey studies, and individual lender studies there is evidence that mortgage market discrimination may be an issue, then government and the lending industry can define a joint venture response to define additional research. Once the problem is "scoped" and shown to have potential, such a joint venture would be required to pool lender files for increased statistical power. At this time the dimensions of such a research program is speculative.

5.5 Conclusion

This final section has presented a research program for investigating mortgage discrimination in Canada by individual lenders and by governments/NGOs. Access to housing is a basic aspect of economic welfare. Distortions to the mortgage market, such as racial-, ethnic-, or gender-based discrimination magnify problems faced by disadvantaged prospective homeowners. Canadians like to believe that we all have equal access to housing, but since discrimination exists in labour markets it is possible that the mortgage loan approval process may also be tainted. Lenders also have a compelling reason to review their methods to eliminate decisions based on factors other than those that have been verified as affecting the ability to repay a loan or to allow the best terms possible.

That being said, detecting discrimination is very difficult. In mortgage lending, discrimination can hide behind objective decisions. Equally important is that many reasonable rules designed to protect the financial integrity of our mortgage lenders may effectively limit those of modest income from buying a home. Since economic disadvantage is often correlated with racial, ethnic, and gender attributes, the effect of these rules will appear discriminatory. If the problem is that people are poor, removing mortgage discrimination will really not provide them with better access to housing. Further, the mortgage market is well down the economic "commodity chain." Before a prospective homeowner can access the mortgage market, education and labour markets have exerted their profound influence over an individual's economic opportunities. Improving the mortgage market may not have any benefit if distortion remains in other areas of the economy and society.

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