Title: The Impact of Shocks and Uncertainty on Consumption, Savings, and Labour Supply: Do Immigrants Behave Differently than the Native-born?

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C1 Project title

The Impact of Shocks and Uncertainty on Consumption, Savings, and Labour Supply: Do Immigrants Behave Differently than the Native-born?

C2 Aims and Background

The study will examine the impact of idiosyncratic and aggregate shocks/uncertainty on household consumption, savings and labour supply. It will also examine whether immigrants respond differently than native born to such shocks/uncertainty. Potential reasons for differential responses include underlying differences in: 1) culture (Carroll, Rhee and Rhee 1994; 1999), 2) attitudes towards risk (Amuedo-Dorantes and Pozo 2002; Galor and Stark 1991), and 3) preferences (Browning and Crossley 2001). Further, within a dynamic context labour supply, consumption and savings behaviour are not constant but change over time (Browning and Crossley 2001), and over the life cycle. Other factors that influence the relative responses include the immigrant assimilation process in the host country, labour market characteristics and other institutional mechanisms. We, therefore, will examine how migrant households of comparable characteristics in similar host countries respond compared to native households, and whether these responses differ with the type of shock/uncertainty and with the time period or stage in life cycle.

Income uncertainty and the presence of credit constraints – which are likely to be particularly relevant for immigrant households - imply that shocks experienced at the household may have an important role in the determination of savings and consumption behaviour (Cobb-Clark and Hildebrand 2006b). Differential access of migrant and native-born households to formal and informal insurance arrangements to protect against cyclical and secular shocks may affect the relative savings behaviour of these two groups (Bonin *et al.* 2007). For example, immigrants may have a higher propensity to save compared to natives because of the higher degree of uncertainty they face regarding their employment status (perhaps because of their skill level, residency status, etc.). According to the buffer-stock model of savings, as income uncertainty rises households will accumulate more wealth in order to maintain their desired wealth-to-permanent income target. The probability of return migration provides an incentive for immigrants to carry out more precautionary saving than natives (Dustmann 1997; Gador and Stark 1991).

This study will produce a number of papers, each focusing on a different but related issue proposed here. In the first paper, we investigate the role of idiosyncratic shocks on consumption and savings of immigrant and native households. Idiosyncratic shocks are a common feature of everyday life. Shocks that affect earnings can also impact on labour supply, education and occupational choices, job search and many other economic decisions (Guiso, Jappelli and Pistaferri 2002). If particular individuals or households face more uncertainty, they may save more or work harder for "rainy days", that is to protect against the potentially dire consequences of negative shocks, such as job loss, health problems or even deaths in the family. For example, someone working as a stockbroker, may have a higher savings rate than someone working is a tenured professor because the stockbroker is more concerned about the prospect of a dramatic drop in future income. In a similar vein, different levels of uncertainty and, hence, different consumption and savings behaviour are also likely to be observed for immigrants compared with non-immigrants in any country. This may occur because immigrants typically work in different occupations from natives, because they typically have weaker job and social networks which can serve as protection against adverse shocks and because in certain circumstance their residency status may depend on their ability to maintain employment and/or a particular level of savings.

In analogy with models of precautionary saving, a more uncertain income profile is likely to delay the consumption of leisure. In particular, members of a household may work longer hours when they are exposed to shocks, rather than sacrificing consumption, as in the standard model (Cameron and Worswick 2003; Islam and Maitra 2008). Thus, identifying whether households respond by reducing leisure, and whether that response differs systematically between immigrants and natives, is important because this may lead adverse shocks to have other dynamic consequences through its effects on the process of human capital accumulation (Pijoan-Mas 2006). For example, Low, Meghir and Pistaferri (2009) find that an increase in risk imposes a considerable welfare loss on individuals and induces changes in their labour supply.

Accordingly, in our second paper, we propose to examine whether and to what extent household labour supply responds to different types of income uncertainty that increases the variability of income.

Attanasio, Low, and Sanchez-Marcos (2005) study the labour supply behaviour of females as insurance against risk using Panel Study of Income Dynamics (PSID) data. Pistaferri (2003) examines anticipated and unanticipated wage changes and their effects on labour supply in Italy. The results of these studies suggest that both permanent and transitory shocks have impacts on labour supply behaviour. They also indicate that female labour supply is an important vehicle through which consumption smoothing takes place at the household level. Consistent with this strand of the literature, in the second paper, we also intend to explore the specific role of female labour supply as an insurance mechanism against idiosyncratic income risk within immigrant and native households.

Business cycle shocks have been found be other researchers to have a larger impact on the earnings of immigrants than on the earnings of the native born (McDonald and Worswick 1999b). Aggregate shocks can also have a substantial impact on the distribution of income and create significant welfare costs (Stillman 2001). For example, Fallon and Lucas (2002) find that employment and real wages fell by much less than production in countries hit by the Asian financial crisis, and that families smoothed their incomes through increased participation in the labour market and private transfers. Frankenberg, Smith, and Thomas (2003) find that Indonesian household reduced spending on semi-durables, used wealth to smooth consumption, and increased labour supply in response to Asian crisis. Hence, in the third paper, we examine the impact of aggregate business cycle shocks on consumption and savings.

In examining consumption smoothing behaviour, we will distinguish between durable and non-durable consumption spending as households are likely to change the composition of their overall consumption in response to shocks. For example, household may sacrifice on purchases of new durables goods such as clothing or cars, in order to maintain their consumption of essential goods like food and housing. Overall, our research will answer important questions about how individuals and households respond to changes in their economic environment and what impacts these changes have on their short-term consumption and long-term welfare.

C3 Significance and Innovation

This study focuses on Australia and Canada—two major immigrant receiving countries with similar immigrant populations. Australian and Canadian immigrants have similar skill levels, English proficiency, education, and income (Antecol, Cobb-Clark and Trejo 2003). Unlike the USA, where family sponsored immigration is favoured, both Australian and Canadian immigration policies work on a points basis and favour immigrants with skills (Islam 2007). A well developed literature examines how labour market outcomes changes as migrants spend more time in Australia (Addison and Worswick 2002; Islam and Fausten 2008; Chiswick and Miller 2008) and in Canada (Baker and Benjamin 1994; McDonald, and Worswick 1998b; Islam 2009). A smaller more recent literature examines wealth differences between immigrants and non-immigrants in these countries (see Cobb-Clark and Hildebrand 2009; Islam, Paranis and Fausten 2009). The goals of both these literatures is to examine how wellbeing among immigrants compares to similar non-immigrants and to understand whether wellbeing is likely to improve with time spent in the home country.

However, individuals and households gain utility not be having wealth or being employed, but by purchasing goods and enjoying their leisure time. Hence, in order to truly evaluate how the wellbeing of immigrants compares to that of non-immigrants in the same country we need to jointly model consumption and labour supply behavior. This is what this research project intends to do. Furthermore, as opposed to taking a static approach to asking whether wellbeing differs at a particular point in time, we will also the dynamic impacts that idiosyncratic shocks/uncertainty and business cycle events have on the consumption and saving behaviour of immigrants and natives. This will allow us to evaluate how immigrant wellbeing is likely to evolve over time.

Previous research that examines differences in the wealth accumulation of immigrants and natives suggest that immigrants save considerably less than the native-born (for example, Amuedo-Dorantes and Pozo 2002; Doiron and Guttmann 2009; and Cobb-Clark and Hildebrand 2009). This study, for the first time, addresses the origin of that observed difference by investigating the potential influence on household behaviour of differences in shocks/uncertainty experienced by the two types of households. It also investigates the mechanism through which households smooth consumption against shocks, in particular the role of variations in labour supply. Household with low levels of wealth may be particularly vulnerable to aggregate and idiosyncratic shocks, especially if there are not additional household members who can change their labour supply in response to these shocks. As immigrants in Australia and Canada typically has developed job network and have smaller extended families living in close proximity to perhaps provide childcare, it may be more difficult for them to respond to shocks by changing their labour supply.

In a separate paper, this study also investigates the impact on households of macroeconomic shocks. By focusing on outcomes for immigrants and non-immigrants in both Canada and Australia, we can use differences in business cycle patterns to help identify this relationship. Furthermore, any systematic differences between Australian and Canadian households in the relationship between shocks/uncertainty and responses in terms of labour supply, consumption and saving patterns will create insights into how differences in industrial structure and particular policies impact on these relationships.

Our overall focus on the impact of both aggregate and idiosyncratic shocks on consumption and labour supply allows us to examine their relative importance in impacting wellbeing. Such an investigation also provides an opportunity to examine how micro and macro shocks interact. Idiosyncratic shocks may become more frequent during aggregate downturns. There are important distributional consequences associated with macroeconomic variation and these distributional effects lie at the heart of contemporary analytical and practical concern with business cycles. Idiosyncratic earnings shocks and aggregate shocks may interact in a way that may amplify the costs associated with cyclical variation in idiosyncratic risks. Idiosyncratic risk varies over the cycle but that its welfare costs are worse in the downturn than during the upswing.

The study will also develop a new regression decomposition method that integrates the unconditional quantile regression (UQR) method of Firpo, Fortin and Lemieux (2009) and the non-parametric propensity score matching (PSM) method of Rosenbaum and Rubin (1983). This refined decomposition will enable us to identify the extent to which savings gaps can be attributed to differences in shocks experienced by migrant and native households and to observable differences between the two types of households. If the distribution displays the typical skewness then the conventional Blinder-Oaxaca (BO) decomposition procedure would yield biased results since it focuses only on the mean. Further, BO decomposition cannot identify the extent to which changes in the distribution of shocks have contributed to the growth in savings inequality. Our new refined decomposition method can answer this and related questions. We expect that improved approach to judging how different potential characteristics relate to a particular outcome measures will be used by other researchers examining a whole host of important questions. For example, the closely related DFL (DiNardo, Fortin, Lemieux 1996) decomposition has been used to examine inequality and explain outcomes over the entire distribution (see, for example, Cobb-Clark and Hildrenbrand 2006a; Schirle 2008; Kambayashi, Kawaguchi and Yokoyama 2008). The core decomposition methodology will be developed in a separate paper to be submitted for publication in a top-ranked econometrics journal. The other papers, mentioned above, will adopt the methodology in the respective context.

To summarise, our study will make three important contributions. First, it will be the first study to our knowledge to examine whether the relationship between aggregate and idiosyncratic shocks, labour supply, and consumption differs for immigrants and non-immigrants. By combining two well developed literatures, we will provide better evidence on how migrant wellbeing changes with time spent in the host country. Second, by examining these relationships in both Australia and Canada, we will be able to evaluate how differences in industrial structure and particular policies impact on the wellbeing of both immigrants and non-immigrants in these countries. Third, we will make a more general, but equal important contribution, by developing a new regression decomposition method that improves on the currently available methods and can be used by researchers examining a whole host of important questions.

C4 Approach and Methodology

Data

The study will use several datasets from Australia and Canada. In addition, it will also explore the potential usefulness of data from both the U.S. (Panel Study of Income Dynamics (PSID) and Consumer Expenditure Survey (CEX)) and the U.K (British Household Panel Survey (BHPS)). The Australian data include, but may not be limited to, Household Income and Labour Dynamics in Australia (HILDA) data and the Household Expenditure Survey (HES). The relevant sources of data from Canada are the Survey of Labor and Income Dynamics (SLID), the family expenditure survey (FAMEX) (for 1969-92) and confidential files of the Survey of Financial Security (1999 and 2005). Using different datasets not only allows for different measures of consumption and saving but also ensures that our conclusions are not unduly influenced by the idiosyncrasies of a single data source. Also, the various datasets complement each other. For example, although HILDA is a household-based panel study, it is available only from 2000 onwards. In order to extend the time period of analysis we also use the HES which starts in the mid-1980s. This extension provides a sufficiently long time horizon to examine the role of shocks and uncertainty.

Since the HES survey is cross-sectional, we will conduct cohort level analysis to construct a quasi-panel. In a quasi-panel we follow a given cohort over time by taking means of variables. For example, the means for 35 year olds in one year and 36 year olds in the next year are treated as panel data observations on the same individual (Browning and Lusardi 1996). Such quasi-panel data enable us to follow given groups of immigrants and natives over time. This improves our ability to separate out changes in consumption, savings, and labour supply attributable to changing economic conditions from those attributable to household-specific heterogeneity. It also allows us to construct time-varying, conditional measures of income uncertainty for the entire period under consideration.

The SLID is an on-going Canadian household panel survey which was introduced in 1993. For each sampled household in SLID, interviews are conducted for a period of six consecutive years and a new panel is introduced every three years. Consequently, there are always two overlapping panels. Each panel consists of roughly 15,000 households. The Survey provides information on a broad selection of human capital variables, labour force experience and demographic characteristics, and information on household, family and personal income, pensions, spending, and wealth. However, SLID does not have consumption data. This requires that we also use the Canadian FAMEX and Survey of Financial Security data.

A Simple Model of Uncertainty, Immigrants and Saving Behaviour:

This study's focus is on estimating the relationship between uncertainty and a number of outcomes, such as expenditure and savings. Our empirical model is derived from a simple theoretical model of household expenditure which incorporating shocks/uncertainty that differ between immigrants and natives and may exert different impacts on immigrant and native households. In particular, we consider a two-period model in which the households know with certainty their current income. The degree of uncertainty about future household income, comprising a "good" state or a "bad" state, differs between immigrants and natives. We follow Dustmann (1997), Galor and Stark (1990), and Amuedo-Dorantes and Pozo (2006). Consistent with Dustmann (1997) we allow for risk in host- and home-country labour markets, but we introduce labour market shocks in the host country. Accordingly, there is no variance of income in the home country but potentially large difference in earnings between host and home countries. The objective is to obtain a set of characteristic results regarding the role of shocks/uncertainty when international migration takes place by using simple and testable functional form assumptions. Our approach here is to focus on qualitative insights that are conducive to empirical estimation and testing.

Empirical Strategy

Since the study examines a number of issues and deals with different datasets the estimation methods will vary with the particular context and dataset used. By way of illustration, we briefly indicate some basic empirical issues by focusing on savings. We first consider a relationship between savings, permanent

income and uncertainty (Lusardi 1997) and estimate household savings behaviour using the reduced form equation:

(1) $$S_{it} = \alpha_i + X_{it}\beta + \sum_{j=1}^{T} \gamma_j year_j + Y_{it}^p \lambda + w\delta + \varepsilon_{it}$$

where S_{it} is household i's saving in year t. X_{it} is a vector of time-varying regressors including age that represent the household's preference for saving.. The $year_j$ term is intended to capture macro-level year-specific effect, w is the measure of uncertainty, and ε_{it} represents the measurement error in saving. Y^p is permanent income, representing the component of income that the household would earn in the absence of idiosyncratic shocks/uncertainty. We also estimate an equation of the following form:

(2) $$S_{it} = \alpha_i + X_{it}\beta + \sum_{j=1}^{T} \gamma_j year_j + Y_{it}^p \lambda + \sigma^n \mu + \sigma^\tau + \varepsilon_{it}$$

where σ^n and σ^τ are the variances of permanent and transitory income shocks (defined below). The presence of household-specific effects in equations (1) and (2) requires the use of fixed-effects, or within estimators. In addition, the error term for a given household is likely to be serially correlated over time. We adjust standard errors in order to account for arbitrary forms of serial correlation as well as heteroskedasticity across households.

Instrumental Variable/GMM Methods

We need to consider measurement errors and endogeneity problems in the estimation of shocks/uncertainty and income. First, uncertainty is measured with significant error because of the quality of information on household-level income, wealth, and job loss. Second, splitting observed income into permanent and temporary components obviously introduces measurement error. Third, individuals may choose a particular job depending on the perceived level of risk. While some of the uncertainty (e.g., arising from health shocks) is exogenous other elements of uncertainty could be endogenous.

To address the problem of measurement error and endogeneity in income and uncertainty we use an instrumental variable (IV) strategy. An IV for income in the savings equation should be highly correlated with income but uncorrelated with the error term which includes the measurement error (and transitory income). It also should affect savings only through permanent income. While the set of IVs to be used might differ in individual cases, we will follow Dynan et al. (2004) by using lagged labour income, consumption, education, and future labour income, interaction terms of education with age and age squared as instruments. These instruments are likely to satisfy the first requirement - correlation - but satisfying the exclusion restriction is a concern. We include most variables that have previously been used as excluded instruments for income (such as occupation, industry) as independent controls in the econometric model. We implement the IV strategy for uncertainty in a similar way. Following Carroll et al (2003) we use region in which the household resides as the instrument for uncertainty. We will also search for other instruments in the literature. Since we use panel data in most part of the analysis, we will employ the generalized method of Moments (GMM) to take into account the potential endogeneity of permanent income and uncertainty (transitory or permanent income shocks). We also adopt the general Hausman test of endogeneity (Durbin-Wu-Hausman test), and check the relevance of instruments (see, Baum, Schaffer and Stillman 2007).

Identification and Estimation of Shocks and Uncertainty

Decomposing Shocks into Permanent and transitory Components

We identify separately the transitory and permanent income shocks in order to determine their respective effects on consumption and saving. We follow Carroll and Samwick (1997) to isolate the transitory and permanent components of total uncertainty. They show that if permanent shocks n and transitory shocks τ are independently and identically distributed (*i.i.d*) and uncorrelated, then the variance of d-year's income difference is

(3) $$Var(r_d) = var(\ln Y_{it+d} - \ln Y_{it}) = d\sigma_n^2 + 2\sigma_\tau^2$$

where Y is earnings or income. Intuitively, this expression indicates that permanent shocks are cumulative for the d-year interval, whereas transitory shocks are not. Current income in any year Y_{it+d} consists of permanent income in year t, all past permanent income shocks, growth, and the current transitory shock. Carroll and Samwick show that when no individual-specific growth rate for Y_{it} exists, then r_{id}-squared is an unbiased estimate of $Var(r_d)$ (i.e., $Y(r_{id}^2)=Var(r_{id})$). In this study, we construct an unbiased estimate of $Var(r_{id})$ after removing individual-specific income growth. For each household, we can use any two $V_d's$ of different lengths to solve for σ_n^2 and σ_τ^2.

Measuring Shocks

Aggregate Shocks are to be measured by business cycle events. Measuring idiosyncratic shocks (also called uncertainty) is more difficult. There are a number of empirical measures of uncertainty in the literature, and it is not yet clear which one is the most appropriate. Shocks differ in their available insurance opportunities. For example, layoffs are usually partially insured by the unemployment insurance system, while individual productivity shocks, other than major observable health shocks, are rarely insured in any formal way because of moral hazard and limited enforcement and commitment reasons (Low, Meghir and Pistaferri 2009). Many previous studies have proxied uncertainty with the variability of a household's income (Carroll 1994; Carroll and Samwick 1997; 1998), job loss (Carroll, Dynan and Kane 2003) or occupation (Skinner 1988). The results can be sensitive with respect to the particular measure of uncertainty used (Lusardi 1997). In order to ensure that our results are not driven by any particular measure of uncertainty we construct several measures of uncertainty.

First, we define income uncertainty as the standard deviation of residuals from a household income regression (Kazarosian 1997). Our second measure of uncertainty is the probability of job loss, specifically the estimated probability that an individual who is currently employed will be unemployed one year hence (Carroll, Dynan and Kane 2003). For estimation of the unemployment risk or job loss, we estimate the probability that a currently employed person will continue to be employed next year. A related but different measure of uncertainty is the major shock observed at the individual and household level that can have far-reaching impacts. In particular, we use disability or health related shocks (Islam and Maitra 2008). Next we use the variance of income, and the variance of the log of income as measures of uncertainty. These measures are relatively easy to calculate and perhaps the most familiar measure of variability.

A New Decomposition Approach

One objective of the study is to explore the extent to which the nativity gap in consumption and savings can be explained by different types of shocks (permanent, transitory, aggregate) and by demographic variables. That is, we address the following question: "what would the savings differential between natives and immigrants have been if immigrants experienced the same permanent/transitory shocks as natives and had the same characteristics?" To answer that question we develop a decomposition methodology proposed by Firpo, Fortin and Lemieux (2009) [FFL from here on].

The basic idea of the FFL approach is to estimate the impact of explanatory variables on quantiles of the unconditional (marginal) distribution of an outcome variable. In the first stage, distributional changes are divided into a "structure effect" and a "composition effect" using a reweighting method. In the second stage, the two components are further divided into the contribution of each explanatory variable to the distributional statistic of interest such as quantile using (recentred) influence function (RIF). RIF is based on an *unconditional* quantile regression method which is of frequent interest in economics. Thus, the method enables us, for example, to estimate the overall impact of shocks/uncertainty on the savings differential between immigrants and natives, rather than only the conditional impact as is the case with other methods (e.g., Blinder-Oaxaca method).

Like the OLS regression, the RIF regression function typically assumes a linear specification

(5) $\qquad\qquad\qquad E[RIF(S;q_k)\,|\,X]=X\beta$

where β represents the marginal effect of X on the distributional statistic, quantile q. Firpo et al. (2007, 2009) have provided mathematical proof of the unconditional property of the RIF regression. The decomposition relies on the RIF unconditional quantile estimates. For each year, the RIF unconditional regressions are estimated for immigrants, natives, and counterfactual ($j=m, a, c$) earnings distributions:

$$(6) \qquad \hat{RIF}(S_j; q_k) = X_j \hat{\beta}_j, \qquad j = m, a, c$$

$\hat{RIF}(S_j; \hat{q}_k)$ represents the RIF estimate of the kth quantile and $\hat{\beta}$ denotes the estimate of the unconditional quantile partial effect. We can now obtain the decomposition in the spirit of BO using equation (6) as:

$$(7) \qquad q_k(S_m) - q_k(S_a) = \{\overline{X}_a(\hat{\beta}_c - \hat{\beta}_a) + \hat{R}_k^s\} + \{(\overline{X}_m \hat{\beta}_m - \overline{X}_a \hat{\beta}_c) + \hat{R}_k^o\}$$

where $q_k(S_m) - q_k(S_a)$ is the raw savings differential between immigrants and natives at the k-th quantile. $\hat{\beta}_c$ is the counterfactual distribution of savings, $(\hat{\beta}_c - \hat{\beta}_a)$ measures the immigrant-native difference in saving behaviour. Thus $\overline{X}_a(\hat{\beta}_c - \hat{\beta}_a)$ represents the structure effect at the k-th quantile due to differences in saving behaviour. $(\overline{X}_m \hat{\beta}_m - \overline{X}_a \hat{\beta}_c)$ represents the composition effect, i.e., the savings differential at the k-th quantile due to differences in shocks/uncertainty and observable characteristics. $\hat{R}_k^s$ and $\hat{R}_k^o$ are the estimates of the approximation errors corresponding to the "structure" and "composition" effects. These approximation errors result from the linear specification assumed by the RIF regression function.

In our decomposition method, we modify the reweighting procedure suggested by FFL, and instead use the non-parametric PSM method to balance the covariates. The weighting procedure in FFL does not tell us how good the matching is after reweighting. Moreover, it does not discard any observation (e.g., outlier) that could potentially invalidate the results. PSM provides an intuitively appealing method for estimating the missing counterfactuals such as the savings an immigrant individual would have if he were treated as a native-born Australian. Our method of decomposition combines both PSM and RIF. It has advantages over the FFL method as it balances the covariates before weighting the sample. For example, Islam et al. (2009) show that most of the households with high saving levels are Australian-born, and that immigrant households are over-represented in the group with a very low level of savings. Barsky et al. (2002) demonstrate that in this case typical parametric approaches such as BO would lead to serious errors in estimating the immigrant-native savings differential that is due to differences in earnings.

Timeline

- January–March 2011: Preparation of Australian Data, and dataset construction.
- April–June 2011: Preparation of Canadian Data and dataset construction.
- July–December 2011: Theory Modelling, Preliminary Analysis of Data and Estimation, presenting theoretical model and preliminary findings at conferences.
- January–June 2012: Developing Decomposition Methods and Identifying empirical Strategy, Estimation of econometric results, and finding suitable datasets from other countries.
- July–December 2012: Writing up of the results based on Australian datasets, presentation at conferences, and submission of first paper to journal.
- January 2013 – May 2013: Writing up of the results based on Canadian datasets, writing up results based on other countries' datasets.
- June 2013 – December 2013: Comparison of results using datasets from different countries, writing up of results, presentation at conferences and journal submission.

C5 National benefit

The aim of immigration policy is not only to attract migrants to Australia but also to ensure their economic and social assimilation after arrival. Through the latter channel it contributes to the larger policy objectives of stability and growth of the Australian economy. Clarification of the differences in shocks/uncertainty experienced by immigrants and natives, and their respective impact on consumption, savings and labour supply behaviour provides useful information for Australian labour market policies. This type of knowledge

is also instrumental for the formulation of effective tax/transfer and macroeconomic policies in promoting migrant assimilation and supporting Australia's macroeconomic management. This is particularly important in light of the demographic composition of Australia's population, the need for skilled manpower, Australia's openness and her growing susceptibility to developments in the international economic environment. By understanding how households cope with large aggregate and idiosyncratic shocks, the study will help government and policy makers to formulate policies that are better targeted and, hence, more effective. This research thus helps understanding and strengthening key elements of Australia's social and economic fabric to help families and individuals live healthy, productive, and fulfilling lives and falls under National Research Priority 2.

This research involves investigators from Australia, Canada and New Zealand who have already worked and published extensively in the proposed area. The interactions between researchers of Monash University and foreign universities/research organization will help increase reputation of Monash University. The project is expected to generate publications in leading international academic journals, which will enhance the reputation of the Monash University in particular and Australian academic community in general.

An important aspect of this research project is its contribution to capacity building in the area of labour economics/econometrics. The CI is an early career researcher, and his collaboration with PIs will help establishing his reputation in the international arena. The project will also employ RAs, and it is also expected to encourage some PhD students to do their research in this area. This will contribute to alleviating the current shortage of labour economists/econometrician in Australia.

C6 Communication of Results

The results of this project will be reported in a series of papers that will be submitted for publication to high ranking (A* in the ERA list) international economics journals such as *Journal of Human Resources, Journal of Public Economics* and *Journal of Labour Economics*. We anticipate that the first article will be submitted not later than December 2012. Initially, the findings will appear as discussion/working papers from Monash University, Carleton University, and Motu Economic and Public Policy Research Institute. We also plan to present the research findings at leading international conferences such as the annual meetings of the *American Economic Association, European Economic Association, Econometric Society, and Australian Conference of Economists*. We also expect to present the results in prestigious specialist workshops and conferences that focus on labour, population and demographic economics such as the Society of Labour Economists (SOLE) annual meeting, European Society for Population Economics annual conference and the Australasian Labour Econometrics Workshop (LEW). In addition, we will present the results at seminars in economics departments in Australia, Canada, the U.S, and Europe. The project findings will be disseminated to research and policy networks, both in Australia and internationally. We also intend to write essays for the popular media and attract the attention of policy makers by presenting the results in relevant forums. We will explore the latter options further when the CI will be teaching graduate level labour economics to Treasury officials and other APS staff in Canberra in the first semester of 2010.

C7 Role of Personnel

The proposed research project is based on all the investigators' current and previous research. CI Islam is an early career researcher. His MA and PhD theses explored issues concerning immigrants and native-born in Australia and Canada. It forms a natural extension of the CI's interest in this area. Despite his short career as an academic economist, he has already established an internationally recognised track record through publications in highly ranked economics journals. The CI has developed extensive knowledge of economic modelling and econometric techniques in the course of his graduate studies. He has worked with both Australian and Canadian microdata, and household level panel datasets which deal with shocks and uncertainty. He will work entirely on Australian dataset.

Dr. Worswick has extensive research experience both on the economics of immigration both for the case of Australia and Canada. He has also made important contributions to the proposed area (see, for example, McDonald and Worswick 1999a; Cameron and Worswick 2003) and worked topics related to idiosyncratic shocks, aggregate risks and consumption. Worswick is currently working with a number of the confidential

data files for Canada. These in-confidence data cannot be taken off site as there is no remote access option. He will access the data through the secure Research Data Centre (RDC) in Ottawa.

Dr. Stillman is an outstanding researcher and has published in several top-ranked economics journal in the proposed area. He has made numerous contributions to proposed area. He is currently working on two closely related projects: 1) examining the relationship between income and consumption 2) examining the impact of shocks on household labour supply and wealth using the HILDA data. He is also working on and has worked on a number of papers examining differences in outcomes between immigrants and non-immigrants in both Australia and New Zealand. The proposed research lies at the intersection of these three areas of his previous research. Given his experience in this research area, Dr Stillman will also help supervise the RAs, as well as provide guidance and advice to CI Islam on various aspects of the project.

All the researchers in the project will be actively involved. Dr. Islam will be responsible for the management and completion of the project. He will work with other investigators to finalise the research design, assist in interpreting analyses, and lead the dissemination of results. Dr. Worswick jointly shares responsibility with Dr Islam for the empirical analysis. He will also obtain and manage the relevant data sets from Canada, work with Dr Islam on the analysis and to interpret the results. Dr. Stillman and Dr. Islam will work closely for building theoretical model and developing decomposition analysis. Dr. Stillman will also help to build the STATA code for decomposition analysis. Dr. Stillman has previously written several STATA codes for estimation purposes. Dr. Worswick and Dr. Islam will both work on datasets from other countries.

The project will employ two RAs. They will work on literature review, organize the datasets and implement statistical and econometric methodology. One RA will be supervised by Dr. Islam and Dr. Worswick, and other by Dr. Stillman and Dr. Islam. This will be an excellent source of building capacity in the area of labour econometrics as both the RAs will be either PhD students or just completed PhD. They will be trained both in theory and using computational software to apply the theory.

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