HOUSEHOLD DEBT AMONG SENIORS IN CANADA: THE ROLE OF FINANCIAL KNOWLEDGE

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Abstract

This research attempts to explain the factors influencing the variation in debt levels among Canada`s senior population with a focus on the role of financial knowledge. This empirical research makes use of an ordered probit model to analyse the factors thought to influence debt levels of seniors in Canada with survey data from the 2014 Canadian Survey of Financial Capabilities. Interestingly, the results reveal that financial literacy has a positive impact on household debt suggesting Canadians aged 55 and over with higher levels of financial knowledge are more likely to have higher levels of debt. Other significant variables include household income, asset levels, budget practices, marital status, and having persons in the household under age 18.

INTRODUCTION

In the fall of 2015, household debt in Canada increased by 4.9% to a record $1.9 trillion. Canadian households ended 2015 with a record-high debt burden reflected by more than $1.65 of debt for every dollar of annual disposable income (Statistics Canada, 2016). While Canadian seniors carry less debt than the rest of Canadians, an increasing number are holding debt in retirement. It has been estimated that 50 to 60% of Canadian retirees have debt or plan to have debt in retirement (Friend, 2014). Research shows that many indebted seniors plan to deal with their debt by means such as working part-time, selling assets or using home equity, all of which imply that many Canadian seniors struggle to balance retirement with paying down debt (Manulife, 2014). At the same time, when asked to describe the characteristics of a successful retirement, Canadians rank being debt free only second to good health (Manulife, 2014), suggesting that Canadians are not comfortable with possibility of debt in retirement.

Economic theory predicts much different behaviour for seniors. Modern consumption theory focuses on decision making over a lifetime with the life-cycle hypothesis describing how individuals make choices in order to maintain a stable standard of living while changes in income occur over the course of life

(Dornbusch, Fisher, Startz, Atkins, and Sparks, 2005). In accordance with modern consumption theory, largely credited to Franco Modigliani and Milton Friedman, those in younger age groups are most likely to hold debt and higher levels of debt compared to older age groups due to such factors as the high costs of post-secondary education, home purchases with large mortgages and the expense of raising children. As student loans and mortgages get paid off, children grow up and people advance in their careers, the level of debt is thought to fall with age. Further, the life-cycle hypothesis contends that saving allows people to transfer income from times when income is high to times when it is low, such as in retirement (Mankiw and Scarth, 2011). Given the statistics and trends highlighting suggesting rising debt among Canadian seniors, it appears that senior debt levels remain lower than younger age groups, but many seniors are either not saving enough during their working years or are spending too much during retirement years since they hold debt.

It appears that Canadian seniors are far from a homogeneous group in terms of their level of debt. Uppal and Chawla (2012) calculate GINI coefficients to assess debt dispersion with a larger value indicating a greater concentration reflecting a relatively small proportion of borrowers holding most of the debt and a smaller value indicating less concentration and more evenly distributed debt (see Appendix A). They found the GINI coefficient for the age group 65 and over (0.739) to be larger than the two younger age groups, under 45 (0.585) and 45 to 64 (0.614). The research results suggest that there is a large variation in debt levels among Canadians 65 and over.

This research attempts to identify the factors influencing the variation in debt levels among Canada`s senior population. One of the factors to be examined is financial knowledge, as it has been suggested that many seniors suffer from weak financial literacy skills (Friend, 2014). For instance, a financial survey reported that 25% of seniors surveyed didn't consider either mortgage or automobile loans to be part of their debt (Manulife, 2014). In this research financial knowledge is measured with a financial literacy quiz and self-assessed level of financial knowledge. Given the belief that debt in senior years has a negative impact on well-being, the results of this research are expected to be relevant to policy makers concerned with the financial security and general well-being of seniors in Canada.

Past research suggests a relationship between age and financial literacy skills. Brown, and Graf (2013) report an inverted U-shaped relationship between financial literacy and age with data from Switzerland. Similar relationships were found by Crossan, Feslier and Hurnard (2011) for New Zealand, Fornero and Monticone (2011) for Italy, and Lusardi and Mitchell (2011) for the U.S. The highest financial literacy levels are found for those between 41 and 50 years of age for data collected in Switzerland (Brown and Graf, 2013). It may also be the case that the type of financial literacy skills required has changed over time

leading to a decline in an appropriate level of financial literacy. For instance, the increasing variety of products and the instability of the recent global economy has resulted in the need to make complex financial decisions (Taft, Hosein, and Mehrizi, 2013).

Agarwal, Driscoll, Gabaix and Laison (2009) found that U.S. seniors tend to be vulnerable to financial choice errors in areas such as suboptimal use of credit card balance transfer offers, excess interest rates, and fees payments. They find a U-shaped pattern between age and financial mistakes with cost minimizing at around age 53. These results are supported by evidence of cognitive decline with age showing that fluid intelligence declines 1 percentile per year starting at age 20 to age 80. Gamble, Boyle, Yu, and Bennett (2015) assessed the effect of cognitive decline on financial decision making and found that declining cognition is associated with a significant decrease in financial literacy.

The body of literature on debt reveals that a lack of financial literacy plays a role in explaining high levels of consumer debt and use of high cost credit (Gathergood, 2012, Lusardo and Tufano, 2009). An OECD report (2005) states that a minimum level of financial literacy skills are required to distinguish between different loan products and to choose among the variety of credit instruments and to identify predatory lending services. Lusardo and Tufano (2009) measure debt literacy with U.S. data and find that illiteracy is evident in all segments of the population, but particularly among the elderly.

The remainder of this paper is organized as follows. The methodology is described in the next section which includes a description of the model, econometric techniques for analysis, the data and variables. Then the results of the empirical analysis are explained, followed by the discussion and conclusion in the last section.

METHODOLOGY

Model

The empirical analysis uses an ordered probit model to analyse the factors thought to influence debt levels of seniors in Canada with the dependent variable of total household debt level, measured as an ordinal categorical variable (Greene 2000).[i]

Total household debt is grouped into the following four levels: (1) zero debt; (2) $1 to $49,999; (3) $50,000 to $149,999, and (4) $150,000 and greater. Let Y_i, the dependent variable, be the level of household debt for respondent i, where

$$Yi \begin{cases} 1\ if\ respondent\ has\ a\ debt\ level\ equal\ to\ 0 \\ 2\ if\ respondent\ has\ a\ debt\ level\ in\ the\ range\ of\ \$1.\ to\ \$49{,}999. \\ 3\ if\ respondent\ has\ a\ debt\ level\ in\ the\ range\ of\ \$50{,}000.\ to\ \$149{,}999. \\ 4\ if\ respondent\ has\ a\ debt\ level\ of\ \$150{,}000.\ or\ greater \end{cases} \quad (1)$$

The level of household debt is related to the observed explanatory variables through a relationship between a latent variable and the explanatory variables defined as follows:

$$Y_i^* = \mathrm{X}'\beta + \varepsilon \quad (2)$$

Where Y_i^* is a latent variable representing the unobserved household debt level, X is the vector of explanatory variables, β is the vector of parameters to be estimated, and ε is a standard normal residual. The latent variable, Y_i^* relates to the observed level of debt Y_i as follows:

$$Y_i = \begin{cases} 1\ if Y_i^* \le k_1 \\ 2\ if\ k_1 < Y_i^* \le k_2 \\ 3\ if\ k_2 < Y_I^* \le k_3 \\ 4\ if\ k_3 < Y_i^* \le \infty \end{cases} \quad (3)$$

where, k_1, k_2, k_3 are the estimated threshold points. The probability that a respondent falls into a particular debt level category is given by:

$$\text{Prob}\ (Y_i = j) = \begin{cases} Prob(X'\beta + \varepsilon \le k_1)\ if\ j = 1 \\ Prob(k_1 < X'\beta + \varepsilon \le k_2)\ if\ j = 2 \\ Prob(k_2 < X'\beta + \varepsilon \le k_3\ if\ j = 3 \\ Prob(k_3 \le X'\beta + \varepsilon \le \infty\ if\ j = 4 \end{cases} \quad (4)$$

The maximum likelihood approach is used in which all observations are weighted to correct for different sampling probabilities.

Data and Variables

The analysis uses data from the 2014 Canadian Survey of Financial Capabilities (CSFC), conducted by Statistics Canada in the spring of 2014 with assistance from the Financial Consumer Agency of Canada. The survey is a cross-sectional design and covers all provinces. The purpose of the CSFC is to provide data on knowledge, abilities, and behavior related to financial decision-making of Canadians. Only the data for those in the age group 55 and older are used for the current analysis. After the variables for the model are identified, 1,493 observations are used in the analysis. (Statistics Canada, 2015 a, b)

The objective of the study is to examine the role of financial knowledge and other characteristics on household debt levels of Canadian seniors in the age group 55 and older. Financial knowledge is measured in two ways. First,

objective financial literacy is measured with the score on a 14 question quiz included in the 2014 CSFC. Second, self-assessed financial knowledge is measured with a two indicator variables, Fin1 and Fin2. Fin2 represents those who rate their level of financial knowledge as either knowledgeable or very knowledgeable, while Fin1 represents a self-assessment of fairly knowledgeable with the default being not very knowledgeable.

Socio-demographic characteristics that might influence debt levels include gender, marital status, the presence of people in the household under age 18, education, household income, value of net assets, budget behaviour, retirement status and geographical region of residence. The measurement and description of these variables are presented in Table 1.

Frequency distributions of the variables are illustrated in Table 2. The frequency distribution of the total sample of respondents age 55 and older shows that 52% have outstanding debt, with 32% having debt between $1 and $49,999, 12% with debt between $50,000 and $149,999 and 8% with debt greater than $150,000. The proportion of the sample who rate themselves as being knowledgeable and very knowledgeable decreases as the debt level increases, from 49% with zero debt to 6.7% with debt greater than $150,000. Interestingly, the proportion of the sample who rates themselves as not very knowledgeable also decreases as the debt level rises. A different trend is observed for the second measure of financial knowledge, the quiz. The mean scores on the objective financial literacy quiz increases with debt levels, from 56% for those with zero debt to 72% for those with debt levels of $150,000 and greater.

The largest proportion of those who have a budget have no debt (42%) with the proportion consistently decreasing to 34% for those with debt between $1 and $49,999, to 14% for those with debt between $50,000 and $149,999, to 9.3% for those with debt over $150,000. A trend is observed that as the income level increases the proportion of those with household debt rises for the two highest debt levels. For instance, 10.4% of those with household income level Hi2 ($32000-$54,999) have debt between $50,000 and $150,000, with the proportion consistently rising up to 15.8% of those with Hi5 ($120,000 and greater). Similar trends are observed for assets, such that the proportion of respondents with debt levels of $50,000 and higher rises with asset values.

The largest proportion of those with at least one child in their home (27%) have debt levels of $150,000 or higher. The frequency data on gender reveals that 52% of women are debt free compared to 44% of men. A larger proportion of those without life partners are debt free compared to those married or living common law (41%). Among the Canadian regions, the highest proportion of those living in the Prairies have no debt (52%), while the highest proportion of those with debt levels of $150,000 and higher live in B.C. (13%). Retired seniors hold less

debt with 60% not having any debt, 28% holding debt between $1 and $49,000,

TABLE 1
Description and Specification of Explanatory Variables

Variable Name	Measurement and Description
Quiz	Percentage score based on 14 objective questions on financial capability.
Fin1	If the respondent self-assesses as fairly knowledgeable then 1, otherwise 0. (default is not very knowledgeable)
Fin2	If the respondent self-assesses as knowledgeable or very knowledgeable then 1, otherwise 0.
Hi2	If the respondent has household income between $32,000 and $54,999 then 1, otherwise 0. (default is less than $32,000)
Hi3	If the respondent has household income between $55,000 and $79,999 then 1, otherwise 0.
Hi4	If the respondent has household income between $80,000 and $119,999 then 1, otherwise 0.
Hi5	If the respondent has household income of $120,000 or greater then 1, otherwise 0.
Ed2	If the respondent has some post-secondary then 1, otherwise 0. (default is maximum complete high school)
Ed3	If the respondent has some college, trade, vocational or technical diploma then 1 otherwise 0.
Ed4	If the respondent has completed a university degree then 1, otherwise 0.
HH18	If respondent has at least one person under 18 years of age in the household then 1, otherwise 0.
Retired	If respondent is retired then 1, otherwise 0.
Atlantic	If respondent is a resident of the Atlantic region then 1, otherwise 0. (default is British Columbia)
Que	If respondent is a resident of Quebec then 1, otherwise 0.
Ont	If respondent is a resident of Ontario then 1, otherwise 0.
Prairie	If respondent is a resident of either Manitoba, Saskatchewan or Alberta then 1, otherwise 0.
Budget	If respondent has a household budget then 1, otherwise 0.
Vas1	If the respondent's estimated value of household assets is in the range of $100,000 to $299,999 then 1, otherwise 0. (default is less than $100,000)
Vas2	If the respondent's estimated value of household assets is in the range of $300,000 to $499,999 then 1, otherwise 0.
Vas3	If the respondent's estimated value of household assets is $500,000 or greater then 1, otherwise 0.
Sex	If the respondent is male then 1; if female then 0.
Marital	If the respondent is married or common law then 1; otherwise 0.

8% between $50,000 and $149,999, and 3% $150,000 or higher.

TABLE 2
Percentage Distribution Of Frequencies For Household Debt Levels (%)
(n=1493)

	No Debt	$1 - $49,999	$50,000 - $149,999	≥ $150,000	Total
Total Sample	47.60	32.44	12.15	7.81	100
Financial Knowledge:					
Fin(not very knowledgeable)	51.11	23.70	13.33	11.85	100
Fin1	47.70	33.22	11.93	7.16	100
Fin2	49.08	33.33	10.87	6.72	100
Quiz score (mean score)	55.95	62.79	66.48	72.47	n/a
Education:					
Ed1: High School	54.52	31.03	9.36	5.09	100
Ed2: Some post-sec	38.03	42.25	11.27	8.45	100
Ed3: Diploma	44.52	33.99	13.82	7.68	100
Ed 4: Degree	41.85	30.34	15.17	12.64	100
Household Income:					
Hi:<$32,000 (default)	67.51	26.18	5.05	1.26	100
Hi2 $32,000 - $54,999	49.11	36.90	10.42	3.57	100
Hi3 $55,000 - $79,999	41.94	37.54	13.49	7.04	100
Hi4 $80,000 - $119,999	37.88	32.95	17.80	11.36	100
Hi5 ≥$120,000	37.92	26.67	15.83	19.58	100
Budget	42.49	34.19	14.06	9.27	100
Value of Assets:					
Vas (<$100,000)	51.42	42.33	3.69	2.56	100
Vas1 ($100,000-$299,999)	39.00	40.67	16.00	4.33	100
Vas2 ($300,000-$499,999)	45.67	28.74	17.72	7.87	100
Vas3 ($500,000 & greater)	44.54	25.94	14.67	14.85	100
HH18:yes	21.15	42.31	9.62	26.92	100
no	48.55	32.09	12.24	7.12	100
Sex: male	43.92	33.80	13.57	8.71	100
female	51.60	30.96	10.60	6.83	100
Marital status:					
married/common law	41.27	33.50	14.90	10.32	100
single	54.63	31.18	9.13	5.06	100
Retired	60.14	28.23	8.29	3.34	100
Region:					
Atlantic	44.10	38.21	11.28	6.41	100
Ontario	51.75	31.12	12.94	4.20	100
Quebec	46.38	30.92	14.14	8.55	100
Prairie	52.08	27.34	11.20	9.38	100
BC	38.81	36.57	11.19	13.43	100

TABLE 3
Type of Debt Held

	55+	55+ and retired
Mortgage debt	24%	14%
Other Loan debt	17%	14%
Credit Card debt	23%	18%
Line of Credit debt	22%	14%

The types of debt held by Canadian seniors is described in Table 3. For clarification, a line of credit is essentially a flexible loan from a financial institution offering a limited amount of funds that an individual can access as needed. While a credit card is a form of a line of credit in that it is a source of credit issued by a financial institution, there are a few key differences. Lines of credit typically have lower interest rates, do not have grace periods, do not charge for cash advances, and allow transfers between accounts. Lines of credit are often used for larger purchases. For example, an individual is more likely to use a line of credit than a credit card for a car purchase. Among the survey sample, mortgage debt is the most prevalent with 24% of the sample holding a mortgage, followed by 23% with credit card debt, 22% with line of credit debt, and 17% with other loans such a car loans. For the subsample of retired Canadians, credit card debt is the most common (18%) type of debt held with the other three types held in equal proportion.

RESULTS

Overall, the specifications of the model are robust, as evidenced by the Wald statistic. The ordered probit estimates, reported in Table 4, suggest that financial knowledge measured by an objective quiz is statistically significant at the 5% level, however, self-assessed financial knowledge is not. Having a budget and the first two levels of assets are significant, as well as the two higher income groups and marital status. Neither education nor geographic region appear to affect debt levels. The estimated threshold values, k1-k3, indicate the probabilities of having a debt level in each of the four categories approximately matches the percentage distribution of frequencies in Table 2.

The marginal effects of the variables in the ordered probit estimation are presented in Table 5. The results suggest that household debt levels of Canadian seniors is affected by household income (H4 and H5), having a budget, total assets (Vas1 and Vas2), financial literacy as assessed by the quiz score, marital status, and children under the age of 18 in the household.

Financial literacy, as assessed with the quiz score has a statistically significant ($p<0.05$) positive effect on household debt suggesting that Canadian seniors with higher levels of financial literacy are more likely to have higher levels of debt, although the size of the marginal effects is very small. This positive association

is counterintuitive and not expected given the negative association between financial literacy and consumer debt reported by Gathergood (2012) and Lusardo and Tufano (2009). However, Marshall (2011) and Chawla and Uppal (2012) both found a positive association between financial literacy and household debt levels in Canada using 2009 data from the Canadian Financial Capabilities Survey. It has been suggested that a higher level of financial literacy may be associated with borrowing to finance investments or to smooth consumption (Marshall, 2011). The marginal effects of self-assessed financial knowledge are negative, indicating that more knowledge is associated with lower debt levels, although the effects are not statistically significant.

TABLE 4
Ordered Probit Estimates

Variables	Coefficient	Robust St. Error	P |Z|
Fin1	-0.126	0.129	0.33
Fin2	0.047	0.133	0.722
Quiz	0.004	0.002	0.032
Ed2	0.247	0.208	0.235
Ed3	0.012	0.111	0.913
Ed4	0.094	0.126	0.457
Hi2	0.081	0.142	0.566
Hi3	0.154	0.145	0.290
Hi4	0.112	0.160	0.482
Hi5	0.047	0.181	0.079
HH18	0.473	0.260	0.069
Sex	0.058	0.096	0.546
Retired	-0.773	0.092	0.000
Marital	0.281	0.100	0.005
Atlantic	-0.130	0.136	0.340
Quebec	-0.265	0.157	0.092
Ontario	-0.186	0.150	0.216
Prairie	-0.224	0.148	0.130
Budget	0.188	0.093	0.044
Vas1	0.624	0.130	0.000
Vas2	0.531	0.150	0.000
Vas3	0.271	0.148	0.067
Thresholds			
k 1	0.228	0.220	
k 2	1.227	0.223	
k 3	1.907	0.228	
Summary Statistics			
Log likelihood at zero	-5310838.8		
Log likelihood at conv.	-4829691		
Wald Statistic	158.35		

The value of total assets also appears to have a significant marginal effect on the level of household debt for those with assets valued at less than $500,000. The results indicate that Canadian seniors with total assets in the range of $100,000 to $299,999 (Vas1) are 4.7% more likely to have debt in the range of $1 to $49,999, 7.5% more likely to have debt between $50,000 and $149,999, and 9.2% more likely to have debt of $150,000 and greater, than those with assets less than $100,000. The results illustrate a very similar trend for those with assets between $300,000 and $499,999 (Vas2). These results appear reasonable given that those with more highly valued assets have easier access to credit and consequently debt.

The results imply that the probability of having more debt increases as household income increases. Canadian seniors with household income in the range of $80,000 to $119,999 (Hi4) are 3% more likely to have debt of $50,000 or higher compared to those with income less than $32,000. Similarly, those with income over $120,000 (Hi5) are 1.3% more likely to have debt of 50,000 or higher compared to those with income less than $32,000. The marginal effects of income are much lower than for assets, not surprising given that over 50% of the sample is retired.

Unexpectedly, the results imply that those with a budget are more likely to have higher levels of debt than those without a budget. For instance, respondents with a budget are 4% less likely to have zero debt and 2.7% more likely to have debt of $150,000 and greater than those without a budget. Retired is statistically significant implying that those retired are 26% more likely to not have debt and 9.3% more likely to have debt in the range of $50,000 to $149,999 and 11.4% more likely to have debt of $150,000 or higher. There may be reverse causation with retirement such that those with less or no debt are more likely to be retired than those with higher levels of debt[ii].

As expected, it was found that households with persons under the age of 18 are 16.2% less likely to have zero debt and 7% more likely to have debt of $150,000 and higher as compared to those without children in the household. The marginal effects of marital status suggest that an individual who is married or living common law is 3.4% more likely to have debt between $50,000 and $149,999, and 4.1% more likely to have a debt level of $150,000 or greater as compared to someone who is not. It may be the case that those with life partners are more comfortable with debt given the greater likelihood of having two incomes.

In sum, the value of total assets, household income, having a budget, and financial literacy are all positively associated, while being retired is negative associated with debt levels of Canadian seniors. The value of total assets and being retired have the largest marginal impacts on debt levels of Canadians aged 55 and older.

TABLE 5
Marginal effects of the Ordered Probit of Debt Levels among Seniors in Canada

Variable	Zero Debt	$1 - $49,999	$50,000 -$149,999	≥$150,000
Fin1	0.043	-0.009	-0.015	-0.019
	(0.044)	(0.010)	(0.016)	(0.020)
Fin2	-0.016	0.004	-0.006	-0.007
	(0.046)	(0.010)	(0.016)	(0.020)
Quiz	-0.001**	0.0003**	0.0005**	0.0006**
	(0.001)	(0.0001)	(0.0002)	(0.0003)
Ed2	-0.085	0.018	0.030	0.036
	(0.071)	(0.016)	(0.025)	(0.031)
Ed3	-0.004	0.001	0.001	0.002
	(0.038)	(0.008)	(0.013)	(0.016)
Ed4	-0.032	0.007	0.011	0.014
	(0.043)	(0.009)	(0.013)	(0.019)
Hi2	-0.028	0.006	0.010	0.012
	(0.049)	(0.011)	(0.017)	(0.021)
Hi3	-0.053	0.012	0.019	0.023
	(0.050)	(0.011)	(0.016)	(0.021)
Hi4	-0.038**	0.008*	0.013*	0.017**
	(0.055)	(0.012)	(0.019)	(0.023)
Hi5	-0.016*	0.004*	0.006*	0.007*
	(0.062)	(0.014)	(0.022)	(0.027)
Budget	-0.064**	0.014*	0.023**	0.027*
	(0.032)	(0.007)	(0.011)	(0.031)
Vas1	-0.214***	0.047***	0.075***	0.092***
	(0.044)	(0.012)	(0.017)	(0.021)
Vas2	-0.182***	0.040***	0.064***	0.078**
	(0.051)	(0.012)	(0.019)	(0.024)
Vas3	-0.093	0.020	0.034	0.040
	(0.050)	(0.011)	(0.018)	(0.022)
HH18	-0.162**	0.035**	0.057**	0.070**
	(0.089)	(0.020)	(0.031)	(0.039)
Sex	-0.020	0.004	0.007	0.009
	(0.033)	(0.007)	(0.012)	(0.014)
Retired	0.265***	-0.058***	-0.093***	-0.114***
	(0.028)	(0.010)	(0.013)	(0.017)
Marital	-0.096***	0.021***	0.034**	0.041**
	(0.038)	(0.007)	(0.013)	(0.014)
Atlantic	0.045	-0.010	-0.016	-0.020
	(0.047)	(0.010)	(0.016)	(0.020)
Quebec	0.091	-0.020	-0.032	-0.040
	(0.054)	(0.012)	(0.019)	(0.023)
Ontario	0.064	-0.014	-0.022	-0.027
	(0.052)	(0.012)	(0.018)	(0.022)
Prairie	0.077	-0.017	-0.027	-0.033
	(0.050)	(0.011)	(0.018)	(0.022)

DISCUSSION AND CONCLUSIONS

The empirical results show some support for the contention that financial knowledge affects household debt levels of Canadian seniors, although the positive direction of association is unexpected. While previous studies found that seniors tend to be vulnerable to financial choice errors (Agarwal et al, 2009), susceptible to cognitive decline (Gamble et al, 2015) and more likely to have relatively low levels of debt literacy (Lusardo and Tufano, 2009), the present findings imply that seniors with more knowledge about financial concepts are more likely to hold debt. As has been suggested by Chawla and Uppal (2012), "higher levels of debt may be associated with a greater interest in finances" (11). The positive relationship found between the value of total assets and debt level supports this argument suggesting that those with more assets may be using debt to smooth consumption or to leverage as an investment strategy. For instance, given the relatively low mortgage interest rates in recent times, Canadian seniors may not be motivated to pay off their mortgages but will instead make financial investments to increase the value of their total assets. It may be the case that those with greater financial knowledge have a greater ability to manage debt and those with lesser financial knowledge choose to keep it simple by minimizing or avoiding debt.

It is important to note a few limitations of this research. First, the data for household debt, income and total assets is only available in ranges, thus it is not possible to calculate net assets, debt to asset or debt to income ratios which would be useful for descriptive statistics and additional dependent variables. Secondly, given the lack of a universally accepted measure of financial knowledge, it is acknowledged that the quiz used in this research may have biases. There does exist controversy over the use of standardized objective financial literacy quizzes such as the one in the CFCS. It has been argued that people from different socio-economic backgrounds require different types of financial knowledge and capabilities (Buckland, 2012). For instance, most low-income people would not have any use for knowledge about the stock market which is the topic of one of the questions. In addition, national surveys, such as the CFCS tend to under-represent low income groups, thus calling for additional research on this topic with different data sources (Buckland, 2012).

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[i] The ordered logit model is also suitable for analysing ordered categorical dependent variable. The ordered logit and probit models differ in their assumptions about the distribution of errors, such that the ordered logit model uses a logistic distribution while the ordered probit uses a standard normal distribution.

[ii] The possible reverse causation between retirement status and debt level may result in the econometric issue of endogeneity associated with inconsistent estimates of the model. A sensitivity test conducted by running the model without the retirement variable reveals no change to the significance of variables and only extremely small changes to the marginal effects of the explanatory variables.

APPENDIX A

A GINI coefficient is used to measure the inequality or dispersion of a distribution such as income or in the case of this research household debt. The value of the coefficient ranges from 0 to 1 with a higher value indicating greater dispersion of debt. With reference to Figure 1, the Lorenz Curve, the GINI coefficient is calculated by dividing the area marked A by the sum of the areas marked A and B.

FIGURE 1
Lorenz Curve