Gender differences in portfolio risk across birth cohort and marital status

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Abstract. This paper investigates gender differences in portfolio risk among Canadian men and women and finds that, controlling for a variety of personal and household characteristics, never married men, born post-1966, hold significantly higher risk portfolios relative to single women and married couples. Conversely, observed gender differences among pre-1943 birth cohorts are primarily driven by disparities in characteristics rather than gender or marital status. Previously married women, born 1955–1966, have remarkably high predicted portfolio risk relative to other women and men in the same cohort.

Résumé. *Différences entre genres face aux risques de portefeuille selon la cohorte de naissance et le statut matrimonial.* Ce texte examine les différences face aux risques de portefeuille entre les hommes et les femmes canadiennes, en contrôlant pour diverses caractéristiques personnelles ou des ménages. Les hommes qui ne se sont jamais mariés, nés après 1966, détiennent des portefeuilles au coefficient de risque plus élevé de maniére significative que ceux détenus par les femmes célibataires ou les couples mariés. *A contrario,* les différences entre hommes et femmes, pour les cohortes nées avant 1943, sont co-reliées à des caractéristiques autres que le sexe ou le statut matrimonial. Les femmes mariées antérieurement et nées entre 1955 et 1966 ont des portefeuilles dont le coefficient de risque prédit est plus élevé et de manière marquée que celui des portefeuilles des autres femmes et hommes de la même cohorte.

JEL classification: G11, J12, J16

1. Introduction

Disparities in portfolio risk are a concern for academics and policy-makers alike because low risk portfolios can lead to lower investment income in retirement (Papke 1998, Wolff 2000, Straight 2002, Neelakantan 2010). Straight (2002), therefore, suggests that retirement disparities could be more severe when a greater

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share of funds are self-directed.[1] At the same time, the recent financial crisis reminds us that high risk portfolios have a larger variance and can result in a low-income shock that is difficult to smooth in retirement. However, Coile and Levigne (2010) report that the 2008 financial crisis had the greatest impact on investment income for those in the top third of the income distribution.

A growing body of literature explores financial risk-taking among groups of individuals in the United States. Many of these studies focus on gender differences in portfolio risk and report mixed results. For example, Barber and Odean (2001) find that, relative to women, men are over confident in their common stock portfolio investment behaviour. Dwyer et al. (2002) report that women take significantly less risk than men in mutual fund choices; however, once investor knowledge is included among the covariates, a large portion of this male-female gap disappears. Jianakoplos and Bernasek (1998) use the SCF, which has complete information on all asset types, to show that unmarried women hold lower risk portfolios than unmarried men, after controlling for a variety of characteristics. Neelakantan (2010) reports that older women take less risk in their IRA asset allocation decision. Sunden and Surette (1998) determine that gender and marital status both have significant effects on asset allocation in defined contribution pension plans. Conversely, Papke (1998) finds no significant gender differences on the 401k portfolios of mature individuals of unknown marital status. Likewise, Arano et al. (2010) find that older female faculty at Kansas Regents University do not hold a significantly less risky portfolios than their male colleagues.

Recently, Jianakoplos and Bernasek (2006) and Poterba and Samwick (2001) have investigated the relationship between age, cohort and portfolio allocation. Both studies find a generally hump shaped pattern in observed portfolio risk: investment in risky assets starts out somewhat lower for the youngest observations, rises in middle years and shrinks again among the oldest groups. Poterba and Samwick (2001) note that individuals who are born in a similar time period will face similar experiences in returns and taxes on particular assets. Both Jianakoplos and Bernasek (2006) and Poterba and Samwick (2001) include a control for marital status in their analysis, with Jianakoplos and Bernasek interacting marital status with gender. Neither paper considers gender and marital status interactions across cohort.

However, there is reason to suppose that cohort effects may run deeper than historical rates of return and may include other social and economic conditions that influence the financial risk-taking behaviour of men and women differently. For example, the social sexual revolution of the 1960s is associated with dramatic changes for women, including higher employment rates, higher levels of education, greater career continuity and higher divorce rates, as well as lower fertility rates and more equitable laws in Canada and abroad (Dex et al. 1998, Goldin 2006, Juhn and Potter 2006, Douglas 2008, Percheski 2008). For example, the *Divorce Act*, introduced in 1968 and amended in 1976 and 1985, significantly improved

1 About half the value of Canadian private pensions was in individual directed sources by the end of 2004 (Statistics Canada *The Daily*, Feb 7, 2006).

the ease with which women (in particular) could divorce. And the *Canadian Human Rights Act* of 1976, along with additional legislation coming into force in 1986 (*Employment Equity Act* and *Equal Wage Guidelines*), provided a more equitable labour environment in which these previously married (and single) women could self-support. Moreover, recent evidence suggests that age or cohort effects on risk-taking (more broadly defined) may vary across marital status as well. For example, Roussanov and Savour (2012) find that single CEOs take greater risks than married CEOs, after controlling for CEO and firm characteristics, and that this difference is strongest among the younger CEOs. Ulker (2004) finds that that past marital experience can play a role in elderly couples' asset allocation.

This paper contributes to the portfolio risk literature in two key areas. First, this paper initiates the study of gender differences in portfolio risk in Canada. Second, this study offers insight into which demographic groups exhibit the greatest disparities in portfolio risk. Indeed, the predicted female-male gap in portfolio risk varies considerably across cohort and marital status. One benefit of the Canadian data, employed in this study, is the high number of observations. This large sample size enables analysis on interactions between gender, marital status and cohort at a fairly detailed level.

The remainder of this paper is organized as follows. Section 2 provides a description of the data and key variables. Section 3 reports the theoretical foundation and empirical methodology. Results are presented in section 4 and concluding remarks in section 5.

2. Data, risk measures and variable description

2.1. Data

This study uses the confidential files of the 1999 and 2005 Canadian Survey of Financial Security (SFS).[2] The SFS is drawn from the Labour Force Survey sampling frame with oversampling in high income geographic areas. Survey weights are used for all descriptive and regression analysis to account for this oversampling.[3]

The SFS includes both personal and family characteristics for married couple households as well as unattached individuals. An observation is recorded for each

2 High income and wealth are not top-coded in the confidential files. However, little variation is added by the top end of the wealth distribution because the dependent variables are either binary or ratios and the wealth covariate follows the inverse hyperbolic sine function.

3 Regression results are substantively similar if weights are not used in the analysis. Statistics Canada recommends using the survey weight and an adjusted weight to account for the relative importance of each observation to form combined standard errors. Since standard errors are higher in the latter form of weighting, but are still significant, I use this weighting system alone. Moreover bootstrapped standard errors are similar (and often smaller) than the robust standard errors that I report. Thus, this paper presents conservative estimates of significance. Caution in interpreting results is still necessary as Statistics Canada notes that financial wealth variables may be underestimates. If the underestimation is gender neutral, it should not affect male-female analysis.

individual in the family, including older children[4] and other relatives. However, asset and debt information is collected at the household level only. As such, it is possible to confound financial decisions and characteristics among parents, children and other relatives. To avoid this problem, I drop all individuals in families with more than two income earners (or two adults) if the household is headed by a married couple,[5] and I drop all individuals in families with more than one earner (or one adult) if the household is headed by an unattached individual (with or without children). This restriction implies that the analysis is not generalizable to the entire population. Specifically, estimated results may fail to capture portfolio risk-taking among individuals in families with less common compositions, those with older children and extended family households.

Two further restrictions are imposed on the sample. First, I drop all individuals who have had a recent change in marital status.[6] The recently separated and divorced may take some time to adjust their portfolios. Finally, observations are sparse for married women over age 65; thus for the base sample, which includes married observations, the data are restricted to those under age 65. These sample restrictions have no substantive impact on the key results. The remaining sample is 20,037 observations, of which 10,220 are women and 9,817 are men. There are 4,513 unmarried observations (2,542 singles and 1,971 previously married).[7] It is worth pointing out that this sample is more than twice as large as comparable US data sets (per year), enabling detailed analysis across cohorts, marital status and gender.

2.2. Asset categories and risk ratio descriptions

Risky assets are defined as all medium to high risk financial and non-financial assets. Thus, risky assets include: mutual funds, foreign and Canadian bonds (non-saving), stocks, shares in private companies, trust funds, mortgage backed securities, money owed from others and other non-pension investment assets, real estate (excluding principal residence), art/collectibles and other non-financial assets (excluding vehicles). Non-risky assets include: chequings or savings deposits, government savings bonds, T-bills and value of principal residence, vehicles and home content. The risk ratio is $R = \text{risky}/(\text{risky} + \text{non-risky})$, where risky and non-risky are as defined above. A few issues on the construction of

4 The SFS records any children under the age of 25.

5 Less than 1% of the sample is recategorized from married to previously married because they are living alone.

6 The indicator for recent change in marital status differs across survey year. In 1999, individuals are asked whether they separated or divorced in the past year. In 2005, individuals are asked whether they experienced a change in marital status in the past three years. Note that inconsistencies such as individuals who report that they are single, but also claim to have been recently divorced or separated are dropped under this restriction. However, this restriction does not substantively alter the results.

7 In a sensitivity analysis, I consider a sample which includes the elderly and excludes marrieds. In this sample there are 6,489 unmarried observations: 2,772 are singles and 3,717 are previously married.

R are worth noting. First, R is a ratio of gross assets.[8] Therefore, it is always positive and, by construction, cannot exceed one. Second, work related pensions and registered savings plans are excluded from R because the 1999 SFS does not provide information on the allocation of funds within these plans. Assets might be allocated toward very risky or safe investments. Finally, business equity, typically categorized as a risky asset in portfolio analysis, is excluded from R in this baseline measure. This exclusion is motivated by the fact that business ownership serves a dual function, generating returns on capital as well as returns on labour. I employ five alternative measures of the risk ratio in order to test the sensitivity of results to the chosen definition of portfolio risk. Specifically, R(1) is a ratio which includes business equity as a risky asset. R(2) excludes vehicle assets which may be used for consumption and/or employment. Principal residence is a contested asset, first as to whether it should be included in the portfolio at all (serving as consumption as well as an investment), second as to whether it constitutes a risky or non-risky asset. Bellante and Green (2004) classify principal residence as non-risky, Friend and Blume (1975) list it as a risky asset and Jianakoplos and Bernasek (1998) exclude it altogether. In the baseline R, I incorporate principal residence as a non-risky asset, due to it's dual nature as a consumption and investment good; but in an alternative measure, R(3), principal residence is categorized as a risky asset, and vehicles are excluded. A fourth measure, R(4), is the ratio of gross risky assets to net wealth. Thus, R(4) purports to capture leveraging. For this measure, the sample is restricted to those with positive wealth, consistent with the literature.[9] Finally, I exclude all non-financial assets in the measure R_f. Because R_f focuses purely on financial assets, with no consumption or labour association, and is perhaps the cleanest of all measures, R_f is reported along with R in all key tables.

In addition to risk ratios, I consider binary indicators of portfolio risk: $H = 1$ if the individual holds any risky non-business assets, where risky assets are defined as in R. H_f is an indicator which equals 1 if the individual holds any risky financial assets. For a detailed analysis of portfolio allocation, assets are further sub-divided into nine categories: low risk (all low risk financial assets), principal residence, low risk non-financial (vehicles and home content), medium risk (all "risky" financial assets other than stocks and shares in private companies), medium risk non-financial (all other non-financial assets such as non-principal residence real estate, art and collectibles), high risk (stocks and shares in private companies), business (business related assets), RRSP (RRSPs and LIRAs) and other registered (education and home ownership registered savings plan assets).

8 I focus on gross asset allocation for two reasons. First, because it is difficult to assign debt to the asset for which it is used. Second, because net measures can obscure differences in portfolio risk. For example, someone who borrows heavily to invest in higher risk assets could have the same net risk ratio as someone who borrows nothing and invests in few risky assets.

9 Consider two individuals with equivalent negative net worth. The individual with greater investment in risky assets would have a lower R, thereby generating an inconsistent measure of portfolio risk.

2.3. Observed portfolio risk across birth cohort, by gender and marital status
Figures 1 to 4 present the portfolio risk of men and women by marital status across birth year. In figure 1, portfolio risk is measured by H. Figure 2 presents portfolio risk as measured by H_f. In figures 3 and 4, portfolio risk is measured by R and R_f, respectively. Across all measures, it is apparent that younger cohorts of single women tend to exhibit the lowest risk portfolios. Women born after 1955 are less likely to hold any risky assets, and they hold a smaller fraction of their wealth in risky assets. This result is consistent with the experimental literature (Booth and Nolen 2010), which finds that among young co-ed college students, women are less likely (than men) to choose a risky gamble over a sure bet.

Among the older birth cohorts, however, single women exhibit riskier portfolios, with risk ratios that sometimes exceed those of men. Observed portfolio risk among previously married and single men is fairly consistent across all birth cohorts, diverging marginally for those born around 1944. Likewise, previously married women exhibit a similar pattern as previously married men, diverging somewhat in the oldest and youngest groups, where previously married women tend toward lower risk portfolios with one exception: R is higher for previously married women born post-1955. Relative to all other groups, married men and women are much more likely to hold any risky assets, and in figure 4, married observations exhibit higher risk ratios across most birth cohorts. Several factors may contribute to these observed differences in portfolio risk. For one, men and married observations tend to have higher wealth (positively associated with portfolio risk) than do younger cohorts of single women. Conversely, older cohorts of single women have higher log income and wealth than their male counterparts.[10] It is interesting to note that the hump shape of the risk-cohort profile for single women and married observations is very similar to the age profiles presented by Jianakoplos and Bernasek (2006) and Poterba and Samwick (2001). Thus, much of the observed portfolio allocation pattern across cohorts may be driven by single women and married couples.

2.4. Sample characteristics
Table 1 presents individual and household level characteristics across gender, marital status and birth year. In order to facilitate comparison, and because of the observed shift in behaviour circa 1955, I focus on two birth year categories: pre- and post-1955. For ease of interpretation, total wealth is reported as well as arcsinh(wealth); the latter is used as a covariate.

Note that for married individuals all asset information, including business ownership, is collected at the household level and is therefore identical across husband and wife. Thus, the small gender gap in mean financial variables (for married observations) arises from the fact that some women born after 1955 are married to men born before 1955. Employment and education characteristics

10 While higher mean female income is unusual, it is consistent with the 2005 Public Use Survey of Labour and Income Dynamics: among single (never married) non-elderly individuals born in or before 1955, women have higher average income than men (using the cross-sectional weights).

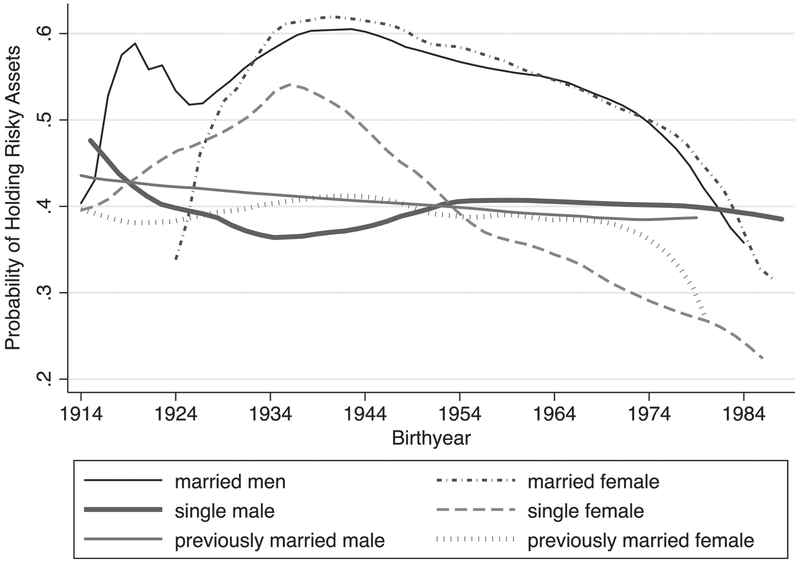

FIGURE 1 Local polynomial smoothed plots of H
SOURCE: Author's estimates using the 1999 and 2005 SFS. These plots are generated using STATA's lpoly command, with local mean smoothing (degree 0), default bandwidth and epanechnikov kernal. Plots look substantively similar with bandwidth measures ranging from 6 to 12.

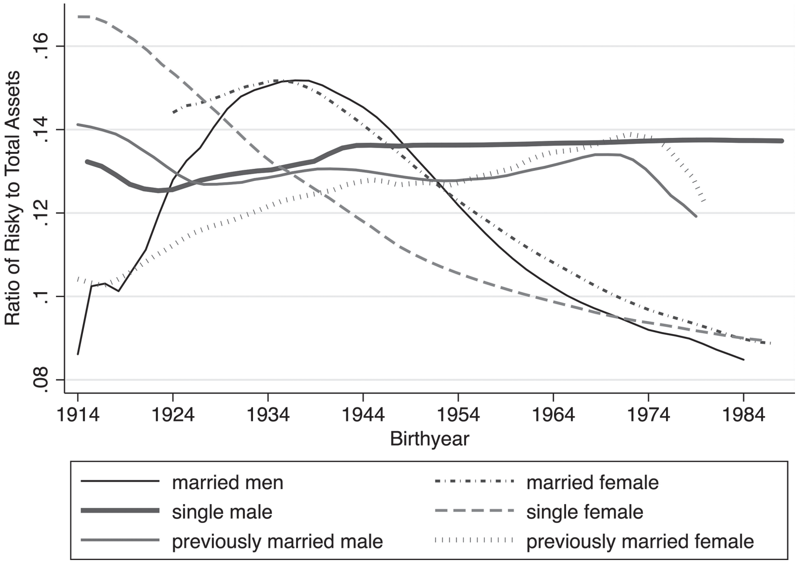

FIGURE 2 Local polynomial smoothed plots of R
SOURCE: See Figure 1.

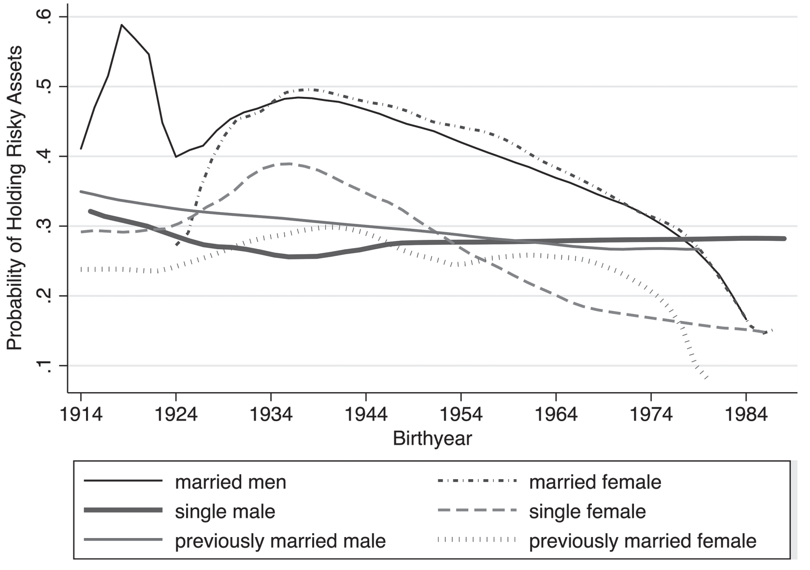

FIGURE 3 Local polynomial smoothed plots of H_f
SOURCE: See Figure 1.

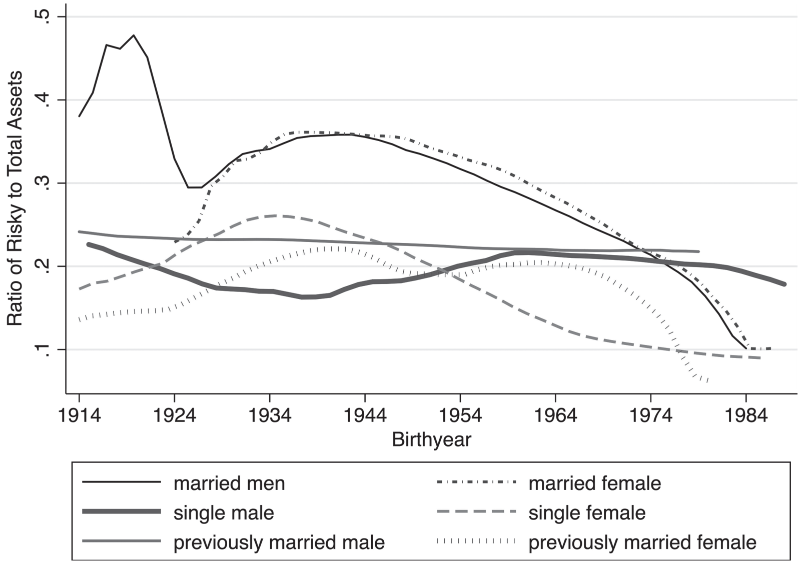

FIGURE 4 Local polynomial smoothed plots of R_f
SOURCE: See Figure 1.

TABLE 1
Sample means by gender and marital status for those born in or before 1955 vs. those born after 1955

Characteristic	BIRTH YEAR > 1955						BIRTH YEAR ⩽ 1955					
	SINGLE		PREV. MARRIED		MARRIED		SINGLE		PREV. MARRIED		MARRIED	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
H-Have risky assets	0.293	0.403§	0.380	0.378	0.527	0.530	0.471	0.341§	0.408	0.387	0.608	0.588
R-Risky/total assets	0.090	0.140§	0.135	0.131	0.099	0.098	0.146	0.103§	0.131	0.129	0.152	0.145
	(0.203)	(0.259)	(0.241)	(0.260)	(0.186)	(0.181)	(0.248)	(0.206)	(0.248)	(0.245)	(0.216)	(0.218)
H_f-Financial assets only	0.174	0.283§	0.245	0.270	0.361	0.354	0.371	0.219§	0.285	0.272	0.472	0.458
R_f-Financial assets only	0.111	0.209§	0.188	0.227	0.260	0.255	0.245	0.144§	0.218	0.219	0.355	0.343
	(0.271)	(0.366)	(0.347)	(0.387)	(0.389)	(0.387)	(0.390)	(0.311)	(0.378)	(0.385)	(0.420)	(0.416)
Urban	0.947	0.902§	0.875	0.879	0.805	0.815	0.890	0.814§	0.861	0.828	0.774	0.771
Employed	0.748	0.753	0.555	0.739§	0.686	0.895§	0.549	0.497	0.501	0.576§	0.585	0.727§
Work full time	0.613	0.689§	0.441	0.694§	0.533	0.868§	0.486	0.449	0.383	0.547§	0.444	0.665§
No. of children	0.302	0.011§	1.093	0.227§	1.429	1.396	0.074	0.022§	0.132	0.075§	0.322	0.575§
	(0.710)	(0.142)	(1.158)	(0.599)	(1.152)	(1.145)	(0.326)	(0.177)	(0.494)	(0.345)	(0.767)	(1.013)
High school	0.242	0.330§	0.277	0.288	0.288	0.272§	0.257	0.257	0.233	0.254	0.291	0.212§
Certificate (non-univ.)	0.320	0.291	0.312	0.400§	0.325	0.331	0.286	0.223	0.297	0.287	0.282	0.278
Degree/cert. (university)	0.278	0.236§	0.141	0.161	0.273	0.265	0.257	0.156§	0.193	0.170	0.180	0.242
Retired							0.230	0.235	0.391	0.216§	0.172	0.239§
Have pension	0.266	0.252	0.178	0.303§	0.306	0.384§	0.300	0.177§	0.242	0.274	0.266	0.320§
Defined benefit	0.150	0.164§	0.143	0.202§	0.198	0.235§	0.504	0.497§	0.433	0.425	0.206	0.221
Log income	10.204	10.349§	10.337	10.732§	11.542	11.545	10.506	10.183§	10.338	10.428	11.285	11.307
	(1.261)	(1.276)	(1.224)	(1.496)	(0.920)	(0.915)	(1.147)	(1.259)	(1.130)	(1.671)	(1.595)	(1.498)
Arcsinh (wealth)	9.539	9.890§	9.732	10.671§	12.224	12.201	11.050	10.127§	10.982	10.409§	12.604	12.536§
	(1.897)	(2.026)	(2.213)	(2.237)	(1.578)	(1.579)	(2.365)	(2.449)	(2.079)	(2.368)	(1.392)	(1.440)

TABLE 1
Continued

Characteristic	BIRTH YEAR > 1955						BIRTH YEAR ⩽ 1955					
	SINGLE		PREV. MARRIED		MARRIED		SINGLE		PREV. MARRIED		MARRIED	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Wealth/10,000	3.519	4.907§	4.839	10.223§	20.478	19.783	16.547	10.024§	13.078	10.115§	30.244	29.329
	(11.25)	(11.02)	(8.364)	(26.37)	(33.74)	(28.67)	(23.99)	(16.78)	(27.59)	(18.07)	(49.93)	(46.85)
Marital age gap					2.768	−1.633§					1.787	−3.481§
					(4.523)	(4.253)					(4.905)	(5.121)
Age	28.982	30.705§	37.357	38.490§	34.930	36.111§	53.430	52.718	55.540	54.076§	53.477	54.250§
	(7.385)	(7.586)	(5.783)	(5.680)	(6.491)	(6.109)	(5.409)	(5.447)	(5.860)	(5.824)	(5.514)	(6.042)
Own home	0.143	0.191§	0.212	0.386§	0.717	0.712	0.489	0.377§	0.492	0.417§	0.857	0.832§
Own business	0.034	0.104§	0.040	0.132§	0.249	0.244	0.067	0.116§	0.099	0.128§	0.291	0.292
Have budget	0.544	0.396§	0.732	0.388§	0.534	0.543	0.510	0.402§	0.568	0.388§	0.459	0.463
No. of observations	1,004	1,061	493	258	5,045	4,483	213	264	744	476	2,721	3,275

SOURCE: Author's estimation using SFS 1999 and SFS 2005.
NOTES: Sample means (weighted using survey weights) presented with standard deviations in brackets underneath. § indicates that the gender difference is significant at the 10% level or better. Dollar amounts are in constant 1999 dollars. Included in regressions but excluded from the table are indicator variables for: region, year, immigrant, whether the income data was drawn from the survey (versus tax files), full-time student, existence of an activity-limiting disability, industry and one-and two-earner household (the latter is applicable only for married households by construction).

can vary substantially, however. For example, among the married observations, women are significantly less likely to be employed or to work full time. A similar employment pattern is exhibited among the previously married women, in both the younger and the older cohorts. Conversely, young single women are equally likely to be employed as their male counterparts and, among those born pre-1955, a greater share of single women are employed than single men. The age gap between married men and women is large and significant. Men are married to women approximately 1.6 years younger and 3.5 years younger in the post- and pre-1955 cohorts, respectively. Single women, both older and younger, are more likely to have a non-university postsecondary certificate or a university degree/certificate than single men. Moreover, single women, particularly those born before 1955, are more likely to have a work related pension. Previously married and married women are significantly less likely to have a work pension.

On the whole, single women born after 1955 exhibit the lowest risk portfolios across all measures. Younger single women hold approximately 9% of total wealth in risky assets compared to 14% for younger single men and close to 13% for previously married men and women. Approximately 29% of younger single women have any risky (non-business) assets, whereas nearly 40% of younger single men hold risky assets. Among all marital status groups, married observations are the most likely to hold risky assets (50–60%), followed by older single women and previously married men and women (38–47%).

2.5. *Portfolio allocation details*

Table 2 presents detailed portfolio allocations, indicating where gender differences in portfolio risk arise. Business assets and registered savings plans are included in table 2 in order to illustrate the significant gender differences therein. For example, unmarried men hold anywhere from 2.4% to 3.5% of total wealth in business assets, whereas unmarried women hold typically less than 1% in business. Among young singles, women hold a greater share of wealth in low risk non-financial and financial assets and non-retirement registered savings plans. Whereas young single men hold a greater share in medium to high risk financial assets, business assets, principal residence and other real estate. Among the previously married, younger men also invest a greater share of their wealth in principal residence and business assets than younger women. Conversely, for those born before 1955, single and previously married women hold a greater share of total assets in principal residence relative to men. Older single women also invest in RRSPs to a greater extent than their male counterparts. This allocation is somewhat surprising since older single women also have higher work related pensions, on average.[11] However, given the greater longevity risk of women, the preponderance of investment in retirement related funds is consistent with consumption smoothing.

11 A larger work pension among older single women is surprising, but it is consistent with their higher employment rates and concentration in the education, health care and social assistance industries.

TABLE 2
Detailed portfolio allocation by gender and marital status for those born in or before 1955 vs. those born after 1955

	BIRTH YEAR > 1955						BIRTH YEAR ⩽ 1955					
	SINGLE		PREV. MARRIED		MARRIED		SINGLE		PREV. MARRIED		MARRIED	
Asset category	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Fraction of total wealth held in each asset category												
Low risk	0.162	0.130§	0.068	0.066	0.056	0.056	0.104	0.150§	0.090	0.082	0.052	0.052
Principal residence	0.103	0.124§	0.149	0.238§	0.439	0.440	0.274	0.216§	0.309	0.243§	0.422	0.419
Low risk non-financial	0.554	0.512§	0.558	0.456§	0.273	0.276	0.299	0.414§	0.350	0.412§	0.193	0.207§
Medium risk	0.023	0.036§	0.028	0.023	0.015	0.015	0.036	0.026	0.033	0.025	0.025	0.024
Medium risk non-fin.	0.033	0.036§	0.028	0.022	0.018	0.020	0.022	0.025	0.022	0.028	0.016	0.014
Other real estate	0.018	0.032§	0.038	0.055	0.043	0.041	0.051	0.027§	0.050	0.039	0.059	0.057
High risk	0.006	0.010§	0.006	0.010	0.007	0.006	0.011	0.006	0.006	0.011§	0.016	0.015
Business	0.002	0.027§	0.008	0.035§	0.053	0.050	0.004	0.024§	0.015	0.026§	0.058	0.062
RRSP	0.090	0.091	0.109	0.091	0.089	0.089	0.199	0.111§	0.124	0.126	0.158	0.148§
Other registered	0.008	0.001§	0.006	0.005	0.008	0.008	0.0002	0.0002	0.001	0.007§	0.002	0.003§
Work Pension Amount/10,000	0.534	0.509	0.636	1.572§	2.859	2.377§	6.682	3.164§	4.265	4.222	12.590	11.352§
	(2.212)	(2.096)	(1.966)	(4.018)	(7.684)	(5.411)	(14.27)	(10.150)	(9.876)	(10.860)	(18.740)	(18.110)
No. of observations	1,004	1,061	493	258	5,045	4,483	213	264	744	476	2,721	3275

SOURCE: Author's calculation using SFS 1999 and SFS 2005.
NOTES: Sample means (weighted using survey weights) presented by category. Category means may not sum to one due to rounding. § indicates that the gender difference is significant at the 10% level or better. For the analysis in this paper, value of work pensions is not included in total wealth and, therefore, does not factor into the proportion of total wealth allocated to specific asset categories.

TABLE 3
Debt allocation by gender and marital status for those born in or before 1955 vs. those born after 1955

Asset category	BIRTH YEAR > 1955						BIRTH YEAR ⩽ 1955					
	SINGLE		PREV. MARRIED		MARRIED		SINGLE		PREV. MARRIED		MARRIED	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Fraction of total debt held in each category (including business)												
Business	0.005	0.022§	0.012	0.038§	0.045	0.040	0.002	0.021	0.024	0.043	0.078	0.077
Principal residence	0.201	0.222	0.251	0.319§	0.548	0.556	0.456	0.196§	0.353	0.326	0.364	0.383
Other real estate	0.014	0.038§	0.045	0.038	0.036	0.038	0.060	0.070	0.042	0.028	0.062	0.055
Credit cards	0.362	0.271§	0.344	0.286	0.113	0.116	0.222	0.361§	0.292	0.240§	0.128	0.122
Line of credit	0.089	0.095	0.043	0.051	0.070	0.068	0.088	0.136	0.098	0.096	0.142	0.133
Vehicle	0.156	0.210§	0.102	0.132	0.123	0.119	0.051	0.106§	0.088	0.142§	0.174	0.170
Other	0.173	0.143§	0.203	0.135§	0.065	0.063	0.121	0.109	0.102	0.125	0.051	0.060
Fraction with no debt	0.422	0.397	0.376	0.245§	0.123	0.113	0.400	0.639§	0.376	0.369	0.266	0.254
Total debt/10,000	1.566	2.270§	2.184	6.190§	9.378	9.484	3.263	1.271§	2.653	2.821	5.827	6.316
	(3.854)	(4.962)	(5.004)	(20.980)	(18.280)	(18.060)	(5.546)	(4.066)	(6.402)	(7.448)	(25.990)	(24.950)
Assets as a	15.326	46.159	12.481	440.250	254.90	270.850	20.605	98.375§	273.978	45.495	675.110	554.090
percent of debt	(113.400)	(874.200)	(95.740)	(5102)	(7432)	(7780)	(85.860)	(316.720)	(5445.000)	(242.390)	(14633)	(13057)
No. of observations	1,004	1,061	493	258	5,045	4,483	213	264	744	476	2,721	3,275

SOURCE: Author's estimation using SFS 1999 and SFS 2005.
NOTES: Sample means (weighted using survey weights) presented by category. Category means may not sum to one due to rounding. § indicates that the gender difference is significant at the 10% level or better.

Debt allocation is an interesting component of portfolio composition, but unlike gross assets, debt is more difficult to assign to risky versus non-risky ventures. For one, an individual may accumulate debt on housing or consumption, freeing up liquidity to invest in other risky or non-risky assets. One might consider debt accumulation itself a risky venture, particularly if that debt is tied to a lien on an asset (i.e., on a home or a vehicle). However, most debt has a fixed rate of interest over a known amortization period and, as such, is much less volatile than returns on high risk assets. Another factor to consider with debt is that men and women may have differential access to loans for personal or business use.[12] As such accumulation and allocation of debt may have as much to do with availability of credit as it does with individual choice. Despite the drawbacks to analysis of debt, it is worthwhile considering whether gender differences in debt are consistent with those of asset allocation. Table 3 presents debt allocation, total debt and asset to debt ratios for men and women across cohort and marital status. As with asset allocation, unmarried men hold a larger fraction of their debt in business than do unmarried women, significantly so in the youngest birth cohorts. Among singles born post-1955, men also hold a greater share of debt in real estate and vehicle loans, whereas women hold a greater share of debt on credit cards and other debt. Conversely, among singles born pre-1955, men hold a greater share of debt on credit cards while women hold the greatest share of debt in principal residence. As such, debt allocation is roughly consistent with asset allocation: young single women tend to hold assets and debt in low risk non-financial, young single man hold a greater share in real estate, whereas older unmarried women dominate real estate and older unmarried men hold greater shares in low risk non-financial.

Although it is clear from tables 1 through 3 that men and women differ substantially in measures of portfolio risk, part or all of this disparity may result from differences in characteristics, such as wealth. Thus, in section 3, I outline the empirical methodology used to predict portfolio risk in the absence of differences in observed characteristics and I present these predictions in section 4.

3. Theory and empirical methodology

3.1. Theoretical background: Factors influencing the choice of portfolio risk

Theory and empirical research suggests that several important factors can influence the level of risk that an individual chooses for her or his portfolio. In this section, I briefly describe the theoretical motivation, and empirical precedence, behind the empirical specifications used in this paper.

12 Recent studies find limited evidence of gender differentiated credit constraints among entrepreneurs (e.g., Coleman 2000). If women are more credit constrained than men, then the disparity in business debt presented in table 3 is an over-estimate of the male-female differences in debt allocation.

3.1.1. Wealth

Friend and Blume (1975) note that a consumer, who wishes to maximize expected utility, will allocate the following portion of their wealth to risky assets:

$$R = \frac{E(\pi_r - \pi_n)}{\sigma_r^2} \frac{1}{C_k} \tag{1}$$

where R is the risk ratio (the ratio of risky to total assets), $E(\pi_r - \pi_n)$ is the expected difference in returns on risky and non-risky assets, σ_r^2 is the variance of the return on the market portfolio of risky assets, and C_k is the Pratt measure of relative risk aversion:

$$C_k = -W \frac{\partial^2 U(W)}{\partial U(W)},$$

where W is wealth.

This result is based on an infinitesimal horizon model which assumes no finite changes in the value of any asset in an infinitesimal period. The model further assumes a frictionless capital market, individuals that maximize expected utility (a concave von Neumann-Morgenstern function that is inter-temporally unchanging) and homogeneous expectations.[13] Given these assumptions, if all investors agree on the market price of risk, equation (1) implies that the risk ratio (R) is inversely related to C_k (relative risk aversion), which in turn may increase, decrease or remain constant as wealth rises.

Earlier solutions to the dynamic portfolio optimization problem (e.g., Merton 1969) were derived under the assumption of constant relative risk aversion (CRRA) or constant absolute risk aversion (CARA),[14] However, Friend and Blume (1975) suggest that there is no reason to exclude the case of decreasing relative risk aversion (DRRA),[15] unless motivated by data. Given equation (1), they investigate the relationship between C_k and wealth, empirically, by regressing R on wealth. While their preferred measure of R supports CRRA (implying R is invariant to wealth), their other measures of R, as well as recent empirical studies on portfolio risk (Jianakoplos and Bernasek 1998, Arano et al. 2010), are consistent with DRRA: a positive association between wealth and the risk ratio.

Although relatively unexplored in the literature, it should be noted that portfolio risk and wealth are endogenous. A higher risk portfolio yields higher returns, on average, thus leading to greater asset holdings (wealth). The relationship

13 Starting with the premise that, in equilibrium, the market price of risk equals the market value of all risky assets times a measure of each individual's absolute risk aversion and a wealth conservation function for each investor, given the stated assumptions, Friend and Blume (1975) use the Taylor expansion to derive the solution presented here.

14 CARA implies increasing relative risk aversion (portfolio risk falling as wealth rises). Note that early theory also assumed complete markets, implying that any other sources of risky income (e.g., wage or business income) could be priced and subsumed into wealth. With incomplete markets, these background risks cannot be priced and can have important effects on portfolio allocation. See Heaton and Lucas (2000) for a useful discussion of these and other advances in the theoretical literature.

15 DRRA was typically excluded because it required use of unbounded utility functions.

between portfolio risk and wealth is noted by Arano et al. (2010), but empirical techniques to address the endogeneity remain unexplored in the literature. This paper is no exception.[16] Future research might shed light on this topic by finding a suitable manner of addressing endogenous wealth.

Finally, as pointed out by a reviewer, the early literature takes risk aversion as a primitive parameter, reflecting underlying risk preferences. For example, Friend and Blume (1975) specifically aim to estimate the direction of relative risk aversion. However, the focus of this paper, like that of most recent empirical studies, is estimating differences in portfolio risk. As such, I control for factors which are associated (theoretically or empirically) with portfolio risk, as well as factors which are associated with other forms of risk-taking or which are thought to influence underlying risk preferences, because these factors may also be predictive of portfolio risk.

3.1.2. Marital status, gender and household demographics

Several personal and household characteristics, such as marital status, gender, race and expected dependents, are found to be strongly correlated with portfolio risk (Sunden and Surette 1998, Jianakoplos and Bernasek 2006, Arano et al. 2010).[17] Thus, in the baseline specifications, I control for number of children, marital status (indicators for married, single, previously married) and whether or not the individual is a recent (post-1990) immigrant. Also, because, because spousal age can differ dramatically, I include a control for the wife-husband age difference.

3.1.3. Cohort, time and age

Men and women who are born in a similar time period will face similar social and economic experiences, including gender roles, market returns and opportunities (see, for example, Poterba and Samwick 2001, Douglas 2008 and Percheski 2008). Risk preferences shaped in a particular birth cohort may endure over the life-course of these individuals, and differ from the risk preferences of those born in other cohorts. That being said, we might expect that risk tolerance also varies with contemporaneous shocks. As such, in addition to controlling for cohorts (which I interact with gender and marital status to capture differential cohort effects therein), I include a year indicator. Age may also influence portfolio risk (Ameriks and Zeldes 2004, Jianakoplos and Bernasek 2006, Arano et al. 2010). As such, I incorporate a quadratic in age in alternative specifications.[18]

16 In previous versions of this paper, I considered a specification using exogenous increases in housing wealth (see Hurst and Lusardi 2004) as an instrument on wealth; however, because expectations on neighbourhood housing values are undoubtedly part of the purchase decision, I cannot think that this exclusion restriction is wholly exogenous to the risk ratio.

17 Occasionally, these correlations are interpreted as reflecting difference in risk preferences. However, such interpretation requires, at minimum, the assumption that all other determinants of portfolio risk have been controlled for (Ameriks and Zeldes 2004).

18 Age is excluded from the baseline specification because it is correlated with cohort and year. Indeed, one reason why estimation is possible with age, cohort and time is that age is entered as

3.1.4. Geographic location
Controls for region (Quebec, Eastern Canada, the Prairies and BC; Ontario is the base category) are incorporated into the paper because there may exist geographic differences in risk tolerance across Canadian regions. Certainly attitudes towards risk (investment or otherwise) have been found to vary across country between the US and Canada (Lipset 1990, Crawford and Curtis 1979). Within Canada, one might expect lower risk portfolios in Quebec due to its history of political unrest.

3.1.5. Education and access to financial knowledge
Location within a region may matter as well. For example, urban dwellers have greater access to a diverse set of financial institutions and advisors. Dwyer et al. (2002) show that financial knowledge is associated with greater risk-taking in mutual fund investment. Financial knowledge may also be gained through education and employment. Whether higher education increases portfolio risk-taking directly, or via a greater financial know-how, Sunden and Surette (1998) and Dwyer et al. (2002) report that higher education is associated with greater financial risk-taking. I control for highest level of education (high school graduate, non-university certificate and university level degree or certificate, with less than high school as the base category) and urban location. In alternative specifications I also control for the industry of employment, since working in finance may influence financial savvy and thus portfolio risk.

3.1.6. Labour flexibility
Jianakoplos and Bernasek (2006) consider labour supply flexibility[19] an important determinant of portfolio risk. For example, retired individuals have poor labour flexibility, whereas households with two earners have greater labour flexibility. Labour flexibility is associated with greater financial risk-taking, and this paper employs the following labour flexibility measures: indicator variables for retired and one- and two-earner households. In alternative specifications, I also include an indicator variable for disability, since workers who have a limiting disability will also experience lower labour flexibility.

3.1.7. Current employment, income and work-related retirement packages
Arano et al. (2010) suggest that higher income earners have expectations of larger retirement wealth (in part due to a greater capacity to compensate for adverse investment outcomes); thus high income earners may be more inclined to conservative investment because they do not require the high returns of risky investment in order to secure a large retirement fund. Likewise, one might expect that those

a quadratic rather than interval dummies. Results are substantively similar with the age quadratic. However, this analysis does not separately identify age, cohort and year effects.

19 This term refers to the ability to choose how much/how long to work. A more flexible labour supply implies a greater ability to smooth negative shocks in portfolio returns. Decreasing flexibility could explain why it may be rational to reduce portfolio risk with age (Jianakoplos and Bernasek 2006).

who are currently employed, and those who work full time, have greater discretionary income with which to compensate for negative investment shocks. These individuals may anticipate a large retirement fund and have little need to invest in risky assets.[20] Similarly, those who have an existing work pension, particularly a defined benefit plan, may have fewer concerns about their retirement fund and, therefore, have low demand for high risk, high return, assets. I control for all five covariates: current log(income), employment, full time, work based pension and defined benefit plan.

3.1.8. External sources of risk and other indicators

Much of the research on portfolio risk includes home ownership and self-employment or business ownership as determinants of portfolio risk (Friend and Blume 1975; Poterba and Samwick 2001; Jianakoplos and Bernasek 1998, 2006). Owning a business (or a home) implies fewer resources available to invest in other assets and, since it affects portfolio risk, may displace demand for other risky assets. However, as principal residence is a component of the risk ratio, R, and business assets are incorporated in an alternative measure of R, home and business ownership are included only in alternative specifications. Likewise, I incorporate controls for full-time student status and "have budget" in alternative specifications. Prior to earning their degree, students have lower income, lower wealth and lower education. But these students expect higher income in the future and may adjust their portfolios accordingly. Individuals with budgets are more personally active in their finances.

3.2. Empirical methodology

Consistent with the literature (Friend and Blume 1975; Jianakoplos and Bernasek 1998, 2006; Arano et al. 2010), I examine the relationship between portfolio risk and wealth by regressing portfolio risk against a function of wealth and other covariates. When the measure of portfolio risk is binary, a probit is employed, whereas a Tobit is employed for the risk ratio measures. Note that Tobit regression analysis is the preferred model when portfolio risk is measured by the risk ratio, R. For one, R falls between one and zero, with significant pooling at zero. Also, among models dealing with censored dependent variables, the Tobit model is most appropriate if the decision to invest in a risky asset and the decision of how much to invest is a joint decision.[21] For all measures of R, except R(4), the Tobit model is truncated at the limits 0 and 1. R(4) is truncated at 0 only. The models are, therefore, specified as:

20 An alternative perspective (with similar predictions) is that those who work full time and earn higher income may be adverse to losing what they have earned. The greater the effort/hours/compensation, the less inclined they are to take financial risks and lose the earnings.

21 There is some discussion in the time-use literature on the relative merits of Tobit, OLS and two-part models. Stewart (2009) finds that only the OLS estimates are unbiased and suggests OLS performs better in time-use data because of measurement errors (on any given day, someone may report 0 time spent on an activity, even though they regularly spend time on the activity other days in the year). Because assets are a stock measure, it is unlikely that portfolio analysis faces the same measurement issues. However, as a precaution, I consider OLS regressions and find substantively similar results.

$$H_i = \beta_0 + \beta_1 F_i + \gamma C_i + \delta S_i + \psi F_i C_i + \phi F_i S_i + \eta C_i S_i + \alpha F_i C_i S_i + \delta X_i + u_i. \qquad (2)$$

$$R_i = \beta_0 + \beta_1 F_i + \gamma C_i + \delta S_i + \psi F_i C_i + \phi F_i S_i + \eta C_i S_i + \alpha F_i C_i S_i + \delta X_i + u_i, \qquad (3)$$

truncated at 0 & 1. H_i is a binary indicator which equals one if the individual holds any risky assets and R_i is the ratio of risky to total assets, as defined in section 2.2. F_i is a binary variable which equals one if individual, i, is female. C_i is an indicator for cohort (defined in section 4.1). And, S_i is an indicator for marital status (single, married, or previously married). The empirical specifications include full interactions between gender, cohort and marital status and also include a vector of individual characteristics X_i. In the baseline specification, X consists of arcsinh(wealth$_i$),[22] number of children,[23] log income, the wife-husband age gap and indicator variables for: living in an urban area, employed, employed full time, retired, recent immigrant, highest level of education (university-level degree or certificate, non-university certificate, high school graduate; lower than high school level is omitted), region of residence (Eastern Canada, Quebec, the Prairies and BC; Ontario is omitted), year 2005, presence of a work-based pension, defined benefit pension, whether the income data source is tax files or survey and one and two earners in the household.[24]

4. Results

4.1. Baseline-predicted portfolio risk

Subsequent to estimation of equations (2) and (3),[25] I generate predicted H and R (also H_f and R_f) for men and women across birth cohort and marital status, holding all other characteristics constant. Specifically, I define a set of characteristics for a representative individual and, holding these characteristics constant, I vary sex, cohort and marital status. The predicted gender gap is calculated as the difference between the predicted male and female outcomes, for each cohort-marital status group. The representative individual (aside from sex, cohort and marital status) is a high school graduate, is employed, works full time, has the

22 The inverse hyperbolic sine function, *arcsinh* $x = \ln(x + \sqrt{(x^2+1)})$, mimics the natural log function but allows for zero and negative values (of wealth, etc.) and is symmetric around zero. The usefulness of this function over the log function is outlined in Burbidge, Magee and Robb (1988).

23 These may or may not be the natural born children of the respondent. However, all children in the household are not employed and therefore assumed to be financially dependent on the respondent and to have no independent portfolio allocation.

24 Because X is not interacted with F, C or S, coefficients on interactions of F, C and S should be viewed as encompassing any gender/cohort/marital status differences in the determinants of portfolio risk.

25 The estimated coefficients are reported in appendix table A1. In addition to showing gender, marital status and cohort effects, the probit and Tobit specifications indicate positive and significant coefficients on arcsinh(wealth) and higher education (high school graduation, non-university certificate, and especially university degree or certificate), consistent with previous studies. Negative significant associations are reported for: more children, full time and 2005.

sample average of arcsinh(wealth), log(income) and number of children, has no work pension, no defined benefit plan, is not retired, is not a recent immigrant, has no age gap with spouse, is in a single income household, is an urban dweller in Ontario in 1999 and has permitted Statistics Canada to use their tax returns to complete the income data. The predicted gender gap is calculated as the predicted female outcome minus the predicted male outcome for each marital and cohort group.

Table 4 presents the predicted gender gaps (for H, H_f, R and R_f) by marital status and cohort. Because figures 1 to 4 show a long transition in single female portfolio risk across the pre-1955 and post-1955 birth cohorts, it is informative to consider more refined cohort categories than those used for the sample statistics. Thus, table 4 presents cohort effects across four broad categories, centred at 1955 (c.1 = birth year > 1966, c.2 = birth year 1955 – 1966, c.3 = birth year 1943 – 1954 and c.4 = birth year < 1943).[26] Consistent with the sample statistics, there is a significant negative female-male gap predicted for the youngest cohort, c.1, across all portfolio risk measures. Younger single women are less likely to hold any risky assets (risky financial assets), by 9.7 (18.8) percentage points, and the fraction of wealth held in risky assets is predicted to be lower (for women) by 0.053 and 0.110 in R and R_f, respectively. Note that the negative female-male gap is smaller and statistically insignificant in the second youngest cohort (those born 1955 to 1966) except when the dependent variable is R (column 3). The predicted gender gap is predominantly positive but insignificant among singles born between 1943 and 1954 and prior to 1943. There is, however, a significantly higher predicted portfolio risk for previously married women in the 1955–1966 cohort when the dependent variable is H. Whereas, for the previously married born in the 1943–1954 cohort, the predicted female-male gap is negative and statistically significant across all measures, and the magnitude of this gap is close to that of the female-male gap for singles born after 1966. Indeed, the predicted gender gap is insignificantly different for these two groups.

In addition to consideration of the predicted female-male differences, it is informative to compare portfolio risk across all population groups. Figures 5 to 9 show the predicted values of H, H_f, R and R_f, by gender, marital status and birth cohort group. Although there is some variation across risk measure, a few basic trends are apparent in the predicted values. First, in figure 5, married men and women, previously married men, and single women all have similar predicted portfolio risk patterns after controlling for personal characteristics. For these groups, the predicted probability of holding risky assets (H) hovers just under 0.5 for those born before 1943 and close to 0.55 for those born after 1966. A similar pattern, somewhat more disperse, is apparent in figure 7, which depicts the

26 These cohort groups are based on sets of 12 years. However, due to the sparsity of observations in the youngest birth cohort (particularly for the previously married), I use a slightly broader set of birth years for the youngest group. Moreover, since the sample is restricted to non-elderly, the earliest birth year becomes 1934, such that the oldest cohort represents less than 12 years. In the sensitivity analysis, when marrieds are omitted and elderly are retained, this cohort group changes slightly, to c.4 = [1931–1942], and an additional group c.5 = [< 1931] is added.

TABLE 4
Gender differences in predicted H, H_f, R and R_f, by marital status and cohort

Marital status	Birth Cohort	H	H_f	R	R_f
Single	c.1 (Birth year >1966)	−0.097 (0.049)**	−0.188 (0.077)**	−0.053 (0.026)**	−0.110 (0.042)***
	c.2 (Birth year 1955–1966)	−0.082 (0.064)	−0.012 (0.061)	−0.046 (0.026)*	−0.014 (0.032)
	c.3 (Birth year 1943–1954)	0.024 (0.088)	0.037 (0.052)	−0.006 (0.031)	0.005 (0.020)
	c.4 (Birth year <1943)	0.071 (0.145)	0.030 (0.065)	0.065 (0.052)	0.035 (0.043)
Previously married	c.1 (Birth year >1966)	0.123 (0.130)	0.165 (0.124)	0.061 (0.062)	0.083 (0.075)
	c.2 (Birth year 1955–1966)	0.164 (0.096)*	0.199 (0.160)	0.072 (0.058)	0.110 (0.084)
	c.3 (Birth year 1943–1954)	−0. 120 (0.061)*	−0.094 (0.047)**	−0.051 (0.024)**	−0.056 (0.025)**
	c.4 (Birth year <1943)	0.074 (0.078)	0.021 (0.060)	0.033 (0.032)	0.008 (0.027)
Married	c.1 (Birth year >1966)	−0.030 (0.013)**	−0.021 (0.009)**	−0.012 (0.004)***	−0.007 (0.004)*
	c.2 (Birth year 1955–1966)	−0.026 (0.013)**	−0.011 (0.008)	−0.008 (0.004)**	−0.004 (0.003)
	c.3 (Birth year 1943–1954)	−0.012 (0.018)	−0.007 (0.009)	−0.008 (0.005)	−0.006 (0.004)
	c.4 (Birth year <1943)	0.054 (0.026)**	0.007 (0.013)	0.008 (0.007)	0.006 (0.005)
	No. of observations	20,037	20,037	20,037	20,037

SOURCE: Author's estimations using SFS 1999 and SFS 2005.
NOTES: These predicted differences are generated by estimating the probit and Tobit regressions; predicting H, H_f, R and R_f for a representative individual (in all factors other than gender, cohort and marital status); and determining the gender gaps across marital status-cohort combinations. All estimates use survey weights and are presented with robust standard errors (clustered on family identifier) in brackets. ***, ** and * indicate that the gender difference is significant at the 1, 5 and 10% levels, respectively. The representative individual is a high school graduate; is employed; works full time; has the sample average of arcsinh(wealth), log(income) and number of children; has no work pension; has no defined benefit plan; is not retired; is not a recent immigrant; has no age gap with spouse; is in a single income household; is an urban dweller living in Ontario in 1999; and permitted Statistics Canada to use their tax returns to complete the income data.

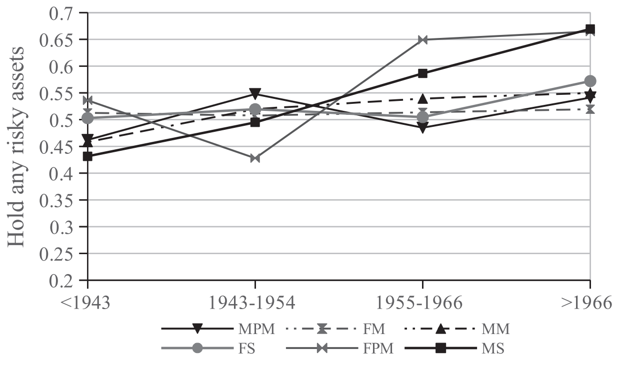

FIGURE 5 Predicted H across marital status, gender and cohort
SOURCE: Author's estimates using the 1999 and 2005 SFS. These plots are generated from the predicted values, reported in appendix table A2.
NOTES: MM=married male, MF=married female, MS=single male, FS=single female, MPM=prev. married male, FPM=prev. married female.

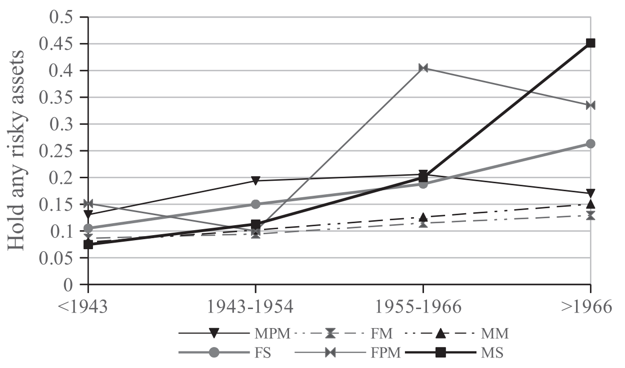

FIGURE 6 Predicted H_f across marital status, gender and cohort
SOURCE: See figure 5.

predicted the ratio of risky to total assets (R). Note that for the 1943–1954 cohort, previously married women exhibit a significantly lower risk ratio than their male counterparts. There is also a small difference between the predicted portfolio risk of single versus married women in the two youngest cohorts (those born 1955 to 1966 and post-1966). While small, this difference is significant at conventional levels for R_f and H_f (figures 6 and 8). There is no significant difference among single and married women born pre-1955.

Across all measures (figures 5 to 8), the most striking deviations in portfolio risk occur among single men born after 1966 and among the 1955–1966 cohort of previously married women. As previously discussed, the predicted difference between single men and single women born after 1966 is both economically and statistically significant, while the predicted gender gap for the 1955–1966 previously married women is insignificant for all but one measure. However, these

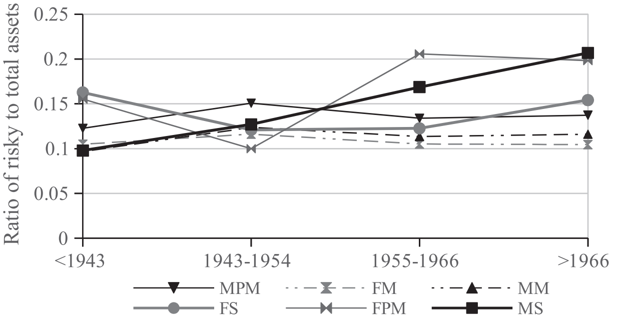

FIGURE 7 Predicted R across marital status, gender and cohort
SOURCE: See figure 5.

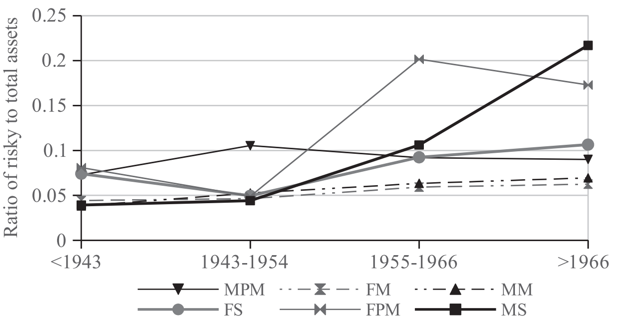

FIGURE 8 Predicted R_f across marital status, gender and cohort
SOURCE: See figure 5.

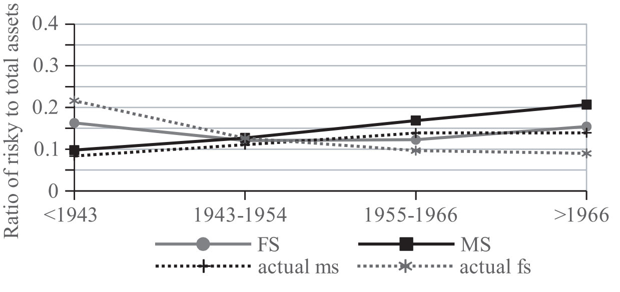

FIGURE 9 Predicted versus actual R, singles
NOTE: MM=married male, MF=married female, MS=single male, FS=single female, MPM=prev. married male, FPM=prev. married female.

divorced-widowed-separated women are predicted to have higher portfolio risk than both single and married *women* in the 1955–1966 cohort; in the latter case, the predicted gap is statistically significant.

It is interesting to note that predicted portfolio risk can differ substantially from the observed portfolio risk, as demonstrated in figures 9 through 14 (table

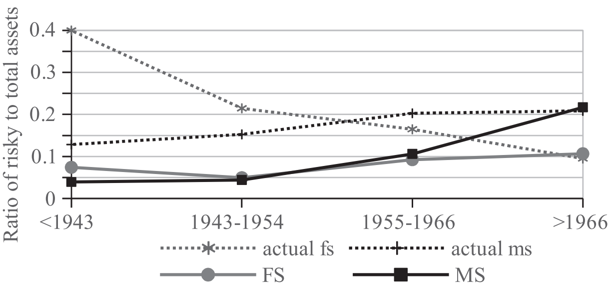

FIGURE 10 Predicted versus actual R_f, singles
NOTE: See figure 9.

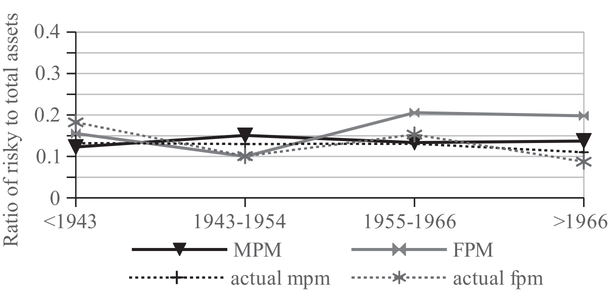

FIGURE 11 Predicted versus actual R, previously married
NOTE: See figure 9.

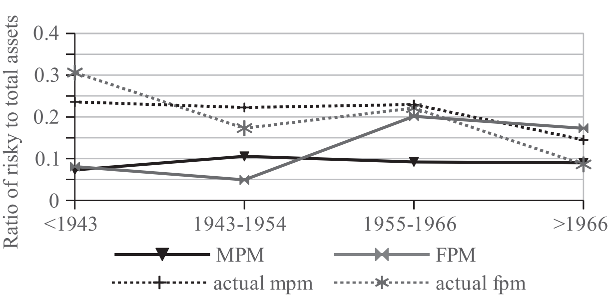

FIGURE 12 Predicted versus actual R_f, previously married
NOTE: See figure 9.

A2). A few items are worth highlighting. First, among singles born pre-1955, the observed gender gap in R_f is almost entirely explained by the covariates. Second, personal characteristics explain virtually none of the observed female-male gap (in R or R_f) for singles born after 1966. Likewise, the predicted gender gap among the previously married born between 1943 and 1954 is relatively unaffected after controlling for personal characteristics. This result is not surprising given that male and female characteristics are relatively similar for this group. For cohorts born post 1955, the observed risk ratios suggest that previously married

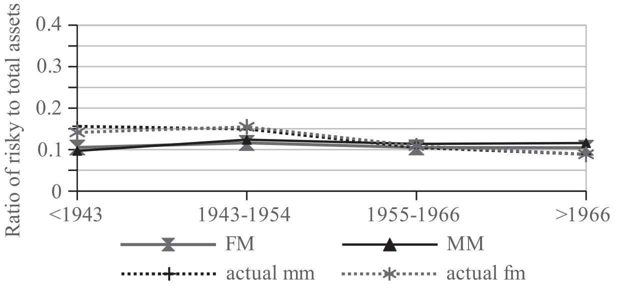

FIGURE 13 Predicted versus actual R, married observations
NOTE: See figure 9.

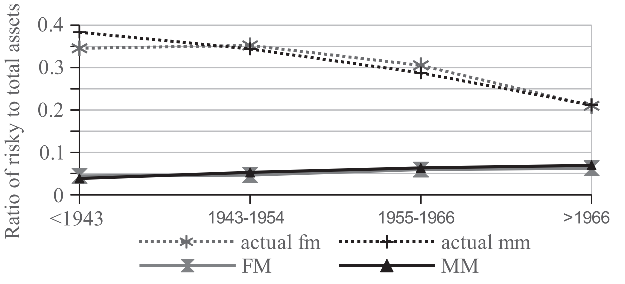

FIGURE 14 Predicted versus actual R_f, married observations
NOTE: See figure 9.

women hold equally or slightly less risky portfolios than previously married men; however, predicted values indicate that these previously married women hold disproportionately more risky assets (after taking into account characteristics such as their exceedingly low levels of wealth). Finally, although the observed risk ratios are highest among older cohorts of married men and women, once I control for characteristics, such as the high wealth of married couples, married men and women are predicted to have portfolio risk at or below that of singles and previously marrieds across almost all cohort groups.

4.2. Sensitivity analysis

Coefficient estimates, particularly on wealth, can be highly sensitive to how R is measured. (see Friend and Blume (1975) and Bellante and Green (2004)). Therefore, it is important to consider whether the predicted results are sensitive to alternative measures of R. Appendix table A3 lists the predicted gender differences across alternative measures of portfolio risk. Note that whether business assets are included, R(1), or vehicles excluded R(2), or principal residence is considered a risky asset R(3), the predicted female-male gap remains large and significant for singles born after 1966. The final measure, R(4) is a ratio of gross risky assets over net worth.[27] R(4) can result in ratios exceeding one, and indeed the predicted

27 Recall that the sample is restricted to those with positive net wealth for this measure, R(4).

gender gap itself, while still negative, is greater than one in absolute value. There is little substantive difference between the predicted gender gaps in R, presented in table A3 versus table 4. If anything, the negative female-male gap is larger and more frequently significant among the second youngest cohort (1955–1966) of singles. Results are also relatively invariant to the addition of further control variables (see appendix table A4), such as a quadratic in age[28] (columns 1 and 2) and additional covariates: home ownership, business ownership, full-time student, having a budget, disability, farm self-employment and industry (columns 3 and 4). The predicted gender gaps are presented for R and R_f only, as results are substantively similar for H and H_f. Note that for the youngest cohort of singles, there is a drop in the unexplained gender gap in R if home ownership is included in the covariates. This reduced gap occurs, in part, because principal residence is in the denominator of R and because men born post-1955 hold a higher share of their wealth in principal residence relative to women of the same cohorts. Thus, home ownership decreases the unexplained gap, by construction.

Although results are omitted for brevity, I find substantively similar predicted gender gaps under the following additional robustness checks: restricting the sample to the bottom 70th percentile of the wealth distribution, excluding all observations under age 24, keeping observations with a recent change in marital status, using unweighted data, including a measure of pension value instead of a binary pension indicator, using a lone-parent indicator instead of a count of the number of children. In a technical appendix,[29] I report gender differences for alternative cohort categories (pre- versus post-1955, refined (six year) cohorts centred at 1955 and generations (X, Boomer, Silent)). For each of these robustness checks, the size and significance of predicted the female-male gap is substantively similar for singles born post-1955. However, for the previously married, born in 1943–1954 or after 1966, the predicted gender difference is smaller and insignificant in some specifications, larger in the refined cohorts. I also conduct sensitivity analysis on a sample restricted to unmarried observations and retain elderly observations. For singles in the youngest cohorts, results are unchanged. The only difference for this sample is that previously married and single women, born before 1931, exhibit a significant negative female-male gap, while singles born between 1931–1942 have a positive predicted female-male gap.

One might consider that among young unmarried individuals, women are more likely than men to be lone parents. As the sole provider for their children, lone parents may have very distinct asset allocation decisions than childless individuals, and since lone parents are predominantly women, this group may drive the gender gaps. However, restricting the sample to exclude lone parents decreases the predicted gender gap for young singles only a little, and the gap remains statistically significant. Likewise, the predicted gender gap remains large and positive for the previously married born post-1955.

28 The coefficients on age and age^2 are insignificant.
29 This appendix is available in the online version of this article, at cje.economics.ca.

Finally, to investigate why predicted portfolio risk is so high among younger previously married women, I consider a specification in which the previously married category is decomposed into divorced, widowed and separated. Because women are more likely to be widowed in the older cohort, and more likely to be divorced in the younger cohort, this different composition might explain the reversal in portfolio risk for previously marrieds born 1955 to1966 versus those born pre-1955. I find that while the predicted trends in risk ratios and the predicted gender gaps are similar for divorcees and widows, the gaps are largest and significant for young divorcees and older widows. Thus, divorcées may be behind the unusually high predicted portfolio risk of previously married women born after 1955.[30]

4.3. Contrast with the US portfolio risk

The observed and predicted risk ratios presented in this paper are generally lower than those reported in US studies. For example, the highest mean risk ratio in the SFS is just over 0.35 (married women born post-1955), whereas, Jianakoplos and Bernasek (2006) report ratios over 0.7 in a similar age-cohort. Lower portfolio risk in Canada is consistent with Lipset (1990), who notes that Americans are more willing to take investment risks than Canadians. While Canadians hold lower risk portfolios than Americans, both countries exhibit similar trends over time. Specifically, Jianakoplos and Bernasek (2006) report a decrease in portfolio risk in the US between 1995–2001. A decline of similar magnitude is apparent for Canadians between 1999 and 2005. Both declines are consistent with the dot com bust and drop in stock market values beginning mid to late 2000. Some caution should be applied in drawing too much from these comparisons, however, as the time frames and risk measures are not identical.

5. Discussion

This paper identifies several interesting trends in female-male portfolio risk across marital status and birth cohort. Predicted risk ratios indicate that single men born after 1966 hold significantly more portfolio risk than single women, even after controlling for a wide range of personal characteristics. However, the predicted male-female difference varies substantially across other cohorts and marital status groups. In particular, previously married women in the youngest cohorts have a substantially higher predicted portfolio risk than their male counterparts. Although the predicted gender gap between previously married men and women is not significant for many of the risk measures, these previously married women do have a significantly higher predicted portfolio risk than married women in the youngest cohorts. Among the older cohorts, especially those born between 1943 and 1954, previously married men hold significantly riskier portfolios than

30 There are very few widows in the youngest cohorts. Thus, it is not surprising that the predicted effect for this group is insignificant. Results for lone-parent and broader marital status categories are available upon request.

previously married women. The predicted female-male gap for younger cohorts of single men and women is consistent with Booth and Nolan (2010), who find gender differences in risk-taking among young co-ed college students. As well, lower predicted portfolio risk among married observations relative to unmarried observations, at the youngest cohorts, is consistent with Roussanov and Savour (2012).

This paper does not purport to further explain the "unexplained" gender differences in portfolio risk, nor does it claim that unexplained gaps must equate to differences in underlying risk preferences. Rather, this study raises several interesting questions for future research. For example, the data provide no insight into *why* marriage is associated with lower predicted portfolio risk among young women and men. Although there exist several plausible hypotheses, such as: individuals who select into marriage are more risk averse (see discussion in Arano et al. 2010), or, marriage dampens the "overconfidence" of young men, or, control of finances among married couples is dominated by the household member with lower portfolio risk. Note that these hypotheses cannot explain the similarity in portfolio risk among single men and married observations born into the pre-1955 cohorts, nor do these they explain the exceedingly high predicted risk ratios among previously married women born post-1955. However, the divorce literature may offer some insight. Brinig and Allen (2000) note that divorce rates and the percent of women initiating divorce in the US are higher with no-fault legislation, ceteris paribus. Women filers already represented the vast majority of filers before no-fault. In Canada, the first federal *Divorce Act* was introduced in 1968, reformed in 1976 to recommend "marriage breakdown" (no fault) be the sole grounds for divorce, and reformed again in 1985 to reduce the separation period from three years to one (Douglas 2008). For the 1955–1966 cohort, the 1968 *Divorce Act* coincides with early childhood, while the latest amendment coincides with ages 20 to 31, and the survey years coincide with ages 33 to 50, at a time when the average age at divorce for Canadian women was close to 40 (HRSDC 2013). If marriage is selected by the risk averse, leaving the relative security of a marriage may be self-selection by the risk-tolerant. Thus, with increasing numbers of risk-tolerant (albeit financially depleted) women initiating divorce, this group could be driving the higher predicted portfolio risk among young previously married women. Exploration of these and other hypotheses on the unexplained portfolio differences is suggested as a rich area for future research.

Appendix

TABLE A1
Association between gender, cohort (broad), marital status and portfolio risk

	Probit: H	Probit: H_f	Tobit: R	Tobit: R_f
Female	−0.077 (0.033)**	−0.096 (0.040)**	−0.026 (0.009)***	−0.037 (0.021)*
Single	0.313 (0.113)***	0.912 (0.160)***	0.162 (0.035)	0.484 (0.088)***
Previously married	−0.022 (0.277)	0.081 (0.313)	0.043 (0.086)	0.096 (0.208)
Female* single	−0.180 (0.135)	−0.415 (0.219)*	−0.061 (0.044)	−0.284 (0.125)**
Female* prev. married	0.398 (0.339)	0.624 (0.406)	0.131 (0.108)	0.313 (0.257)
Broad cohorts (c.1 [>1966] is base)				
c.2 [1955–1966]	−0.026 (0.063)	−0.110 (0.070)	−0.006 (0.015)	−0.033 (0.038)
c.3 [1943–1954]	−0.076 (0.074)	−0.236 (0.082)***	0.016 (0.019)	−0.097 (0.042)**
c.4 [<1943]	−0.230 (0.091)**	−0.376 (0.118)***	−0.044 (0.022)	−0.201 (0.055)***
Female* c.2	0.012 (0.054)	0.041 (0.061)	0.007 (0.013)	0.014 (0.031)
Female* c.3	0.047 (0.055)	0.053 (0.063)	0.010 (0.014)	−0.005 (0.031)
Female* c.4	0.213 (0.073)***	0.143 (0.088)	0.045 (0.018)	0.085 (0.042)**
Single* c.2	−0.193 (0.154)	−0.609 (0.234)***	−0.056 (0.046)	−0.291 (0.134)
Single* c.3	−0.375 (0.186)**	−0.853 (0.252)***	−0.155 (0.058)	−0.543 (0.129)***
Single* c.4	−0.380 (0.294)	−0.944 (0.366)**	−0.159 (0.085)	−0.476 (0.190)**
Prev. married* c.2	−0.115 (0.305)	0.243 (0.356)	−0.001 (0.096)	0.041 (0.221)
Prev. married* c.3	0.093 (0.299)	0.325 (0.345)	0.009 (0.093)	0.159 (0.224)
Prev. married* c.4	0.031 (0.322)	0.206 (0.398)	0.015 (0.099)	0.122 (0.239)
Female* single* c.2	0.038 (0.214)	0.427 (0.313)	−0.007 (0.066)	0.253 (0.177)
Female* single* c.3	0.271 (0.262)	0.633 (0.335)*	0.065 (0.078)	0.365 (0.190)*
Female* single* c.4	0.223 (0.395)	0.557 (0.474)	0.173 (0.115)	0.453 (0.282)
Fem.* prev. married* c.2	0.088 (0.424)	0.012 (0.587)	0.011 (0.143)	0.052 (0.333)
Fem.* prev. married* c.3	−0.669 (0.376)*	−0.998 (0.455)**	−0.220 (0.119)	−0.550(0.280)*
Fem.* prev. married* c.4	−0.348 (0.397)	−0.578 (0.498)	−0.087 (0.126)	−0.322 (0.292)
Arcsinh(wealth)	0.329 (0.015)***	0.657 (0.030)***	0.090 (0.005)	0.341 (0.009)***
Eastern	−0.014 (0.075)	0.123 (0.088)	0.011 (0.019)	0.117 (0.047)**
Prairies	0.004 (0.052)	−0.001 (0.059)	0.018 (0.014)	0.010 (0.029)
British Columbia	0.042 (0.061)	0.000 (0.085)	0.009 (0.016)	0.011 (0.043)
Quebec	−0.266 (0.056)***	−0.100(0. 070)	−0.040 (0.015)***	−0.039 (0.036)
Urban	0.029 (0.053)	0.034 (0.063)	0.017 (0.013)	0.004 (0.031)
Employed	0.020 (0.069)	0.024 (0.100)	0.010 (0.021)	−0.001 (0.054)
Work full time	−0.168 (0.058)***	−0.242 (0.085)***	−0.056 (0.017)***	−0.108 (0.048)**
Survey	−0.090 (0.049)*	−0.071 (0.064)	−0.010 (0.014)	−0.046 (0.031)
Immigrant	−0.002 (0.082)	−0.110 (0.090)	0.056 (0.025)**	−0.037 (0.048)
Female	−0.077 (0.033)**	−0.096 (0.040)**	−0.026 (0.009)***	−0.037 (0.021)*
No. of children	−0.092 (0.020)***	−0.028 (0.024)	0.029 (0.005)***	−0.007 (0.012)
High school graduate	0.196 (0.057)***	0.094 (0.090)	0.046 (0.017)***	0.036 (0.046)
Non-university cert.	0.204 (0.054)***	−0.006 (0.080)	0.038 (0.015)**	−0.012 (0.041)
University degree/cert.	0.360 (0.061)***	0.011 (0.085)	0.092 (0.017)***	−0.035 (0.042)
Log income	−0.011 (0.016)	−0.054 (0.022)**	−0.009 (0.004)**	−0.027 (0.010)***
Work pension	0.091 (0.062)	0.136 (0.070)*	0.012 (0.016)	0.092 (0.036)**

TABLE A1
Continued

	Probit: H	Probit: H_f	Tobit: R	Tobit: R_f
Defined benefit	−0.073 (0.067)	−0.127 (0.073)*	−0.026 (0.017)	−0.065 (0.038)*
Retired	0.075 (0.069)	−0.078 (0.084)	−0.004 (0.018)	−0.054 (0.043)
Year 2005	−0.248 (0.043)***	−0.191 (0.057)***	−0.071 (0.012)***	−0.084 (0.028)***
1 earner	0.034 (0.084)	0.014 (0.115)	−0.006 (0.027)	−0.007 (0.054)
2 earners	0.040 (0.103)	0.056 (0.137)	−0.016 (0.032)	0.009 (0.063)
Spouse age difference	−0.001 (0.001)	−0.003 (0.002)**	0.000 (0.000)	−0.002 (0.001)**
Constant	−3.637 (0.228)***	−6.281 (0.357)***	−0.979 (0.065)***	−3.235 (0.138)***
Sigma sq			0.325 (0.006)	0.633 (0.014)
Log likelihood	−13528459	−8753603	−9952588	−13240183
Pseudo R2	0.154	0.416	0.164	0.327
No. of observations	20,037	20,037	20,037	20,037
Left censored			8,833	11,954
Uncensored			11,204	7,517
Right censored			0	566

SOURCE: Author's estimation using SFS 1999 and SFS 2005.
NOTES: Coefficient estimates presented with robust standard errors (clustered on family identifier) in brackets. All estimates use survey weights. ***, ** and * indicate that the gender difference is significant at the 1, 5 and 10% levels, respectively.

TABLE A2
Actual and predicted H, H_f, R and R_f by gender, marital status and cohort groups

		Probit: H					Probit: H_f				
Group	Cohort	Actual	Predicted (std. errror)		95% CI		Actual	Predicted (std. error)		95% CI	
MM	>1966	0.495	0.550	(0.033)	0.485	0.615	0.308	0.150	(0.024)	0.103	0.198
MM	1955–1966	0.555	0.540	(0.031)	0.479	0.600	0.390	0.126	0.020)	0.086	0.166
MM	1943–1954	0.586	0.520	(0.031)	0.459	0.580	0.448	0.102	(0.019)	0.065	0.139
MM	<1943	0.645	0.458	(0.037)	0.386	0.531	0.517	0.079	(0.020)	0.041	0.118
MS	>1966	0.402	0.669	(0.036)	0.598	0.741	0.296	0.451	(0.060)	0.333	0.570
MS	1955–1966	0.404	0.587	(0.048)	0.493	0.680	0.246	0.200	(0.052)	0.098	0.302
MS	1943–1954	0.351	0.495	(0.062)	0.373	0.617	0.245	0.113	(0.039)	0.036	0.190
MS	<1943	0.268	0.432	(0.109)	0.218	0.645	0.167	0.075	(0.048)	−0.018	0.168
MPM	>1966	0.383	0.541	(0.108)	0.330	0.753	NA	0.170	(0.078)	0.018	0.323
MPM	1955–1966	0.375	0.485	(0.057)	0.374	0.596	0.289	0.206	(0.054)	0.100	0.311
MPM	1943–1954	0.390	0.548	(0.048)	0.453	0.643	0.264	0.194	(0.045)	0.105	0.282
MPM	<1943	0.386	0.462	(0.069)	0.328	0.597	0.299	0.131	(0.054)	0.024	0.237
FM	>1966	0.491	0.520	(0.034)	0.453	0.586	0.303	0.129	(0.022)	0.086	0.172
FM	1955–1966	0.560	0.514	(0.031)	0.454	0.574	0.412	0.115	(0.019)	0.077	0.153
FM	1943–1954	0.601	0.508	(0.033)	0.444	0.572	0.469	0.094	(0.019)	0.058	0.131
FM	<1943	0.594	0.513	(0.038)	0.439	0.587	0.483	0.086	(0.021)	0.046	0.127
FS	>1966	0.280	0.572	(0.043)	0.489	0.656	0.160	0.263	(0.051)	0.164	0.363
FS	1955–1966	0.345	0.505	(0.051)	0.404	0.605	0.223	0.188	(0.042)	0.105	0.271
FS	1943–1954	0.455	0.519	(0.069)	0.384	0.655	0.358	0.150	(0.041)	0.069	0.231
FS	<1943	0.519	0.503	(0.103)	0.300	0.706	NA	0.105	(0.050)	0.006	0.204
FPM	>1966	0.251	0.665	(0.078)	0.512	0.818	NA	0.335	(0.101)	0.138	0.532
FPM	1955–1966	0.420	0.649	(0.084)	0.484	0.814	0.284	0.405	(0.158)	0.094	0.715
FPM	1943–1954	0.362	0.428	(0.047)	0.336	0.520	0.236	0.100	0.027)	0.047	0.153
FPM	<1943	0.501	0.536	(0.054)	0.431	0.641	0.390	0.151	(0.041)	0.072	0.231
		Tobit: R					Tobit: R_f				
MM	>1966	0.089	0.116	(0.010)	0.096	0.136	0.212	0.069	(0.010)	0.050	0.089
MM	1955–1966	0.105	0.113	(0.010)	0.094	0.132	0.287	0.063	(0.009)	0.045	0.081
MM	1943–1954	0.150	0.124	(0.011)	0.103	0.145	0.344	0.053	(0.008)	0.036	0.069
MM	<1943	0.156	0.097	0.010)	0.077	0.116	0.384	0.038	(0.008)	0.023	0.053
MS	>1966	0.139	0.207	(0.021)	0.166	0.248	0.209	0.217	(0.036)	0.146	0.288
MS	1955–1966	0.139	0.169	(0.021)	0.128	0.209	0.203	0.106	(0.029)	0.050	0.162

TABLE A2
Continued

Group	Cohort	Tobit: R			95% CI		Tobit: R_f			95% CI	
		Actual	Predicted (std. errror)				Actual	Predicted (std. error)			
MS	1943–1954	0.111	0.127	(0.024)	0.080	0.174	0.152	0.044	(0.013)	0.018	0.070
MS	<1943	0.084	0.098	(0.033)	0.033	0.163	0.128	0.039	(0.021)	−0.003	0.081
MPM	>1966	0.110	0.137	(0.044)	0.051	0.223	0.145	0.090	(0.048)	−0.004	0.185
MPM	1955–1966	0.131	0.134	(0.024)	0.087	0.180	0.230	0.092	(0.021)	0.052	0.132
MPM	1943–1954	0.130	0.151	(0.020)	0.111	0.191	0.223	0.105	(0.024)	0.058	0.153
MPM	<1943	0.132	0.123	(0.025)	0.073	0.172	0.236	0.073	(0.025)	0.023	0.123
FM	>1966	0.089	0.104	(0.010)	0.085	0.123	0.210	0.062	(0.009)	0.044	0.081
FM	1955–1966	0.109	0.105	(0.009)	0.087	0.123	0.305	0.059	(0.009)	0.042	0.076
FM	1943–1954	0.155	0.116	(0.010)	0.096	0.136	0.352	0.046	0.008)	0.031	0.061
FM	<1943	0.141	0.105	(0.011)	.084	0.126	0.346	0.044	(0.009)	0.027	0.062
FS	>1966	0.090	0.154	(0.019)	0.116	0.192	0.095	0.107	(0.024)	0.059	0.154
FS	1955–1966	0.097	0.123	(0.018)	0.087	0.158	0.165	0.092	(0.020)	0.054	0.131
FS	1943–1954	0.126	0.121	(0.022)	0.077	0.165	0.214	0.049	(0.017)	0.017	0.082
FS	<1943	0.216	0.163	(0.042)	0.080	0.246	0.400	0.074	(0.039)	0.002	0.151
FPM	>1966	0.087	0.198	(0.044)	0.111	0.285	0.086	0.173	(0.058)	0.058	0.287
FPM	1955–1966	0.153	0.206	(0.056)	0.095	0.316	0.221	0.202	(0.086)	0.034	0.369
FPM	1943–1954	0.101	0.100	(0.016)	0.069	0.131	0.173	0.049	(0.012)	0.026	0.072
FPM	<1943	0.182	0.155	(0.024)	0.108	0.202	0.306	0.081	(0.018)	0.046	0.116

SOURCE: Author's estimation using SFS 1999 and SFS 2005.
NOTES: Actual values and predicted values presented with robust standard errors (clustered on family identifier) in brackets and 95% confidence intervals (CI). All estimates are statistically significant at the 10% level except for single men born before 1943 in the probit estimation for H_f. For the predicted values across sex, cohort and marital status, the representative individual is a high school graduate; is employed; works full time; has the sample average of arcsinh(wealth), log(income) and number of children; has no work pension; has no defined benefit plan; is not retired; is not a recent immigrant; has no age gap with spouse; is in a single income household; is an urban dweller in Ontario in 1999; and has permitted Statistics Canada to use their tax returns to complete the income data. MM = married male, MF = married female, MS = single male, FS = single female, MPM = prev. married male, FPM = prev. married female.

TABLE A3
Gender difference in predicted risk ratios, by marital status and cohort, using alternative measures of risk ratio

Marital status	Birth cohort	R (1)	R (2)	R (3)	R (4)
Single	c.1 (Birth year >1966)	−0.065 (0.031)**	−0.065 (0.028)**	−0.100 (0.045)**	−6.798 (2.663)**
	c.2 (Birth year 1955–1966)	−0.068 (0.031)**	−0.057 (0.029)*	−0.067 (0.049)	−3.502 (2.949)
	c.3 (Birth year 1943–1954)	−0.032 (0.038)	−0.011 (0.032)	0.000 (0.043)	5.822 (5.281)
	c.4 (Birth year <1943)	0.058 (0.061)	0.059 (0.052)	0.032 (0.085)	13.533 (7.898)*
Previously married	c.1 (Birth year >1966)	0.082 (0.068)	0.083 (0.072)	0.104 (0.113)	−1.062 (3.279)
	c.2 (Birth year 1955–1966)	0.079 (0.070)	0.069 (0.059)	0.153 (0.072)**	0.434 (1.287)
	c.3 (Birth year 1943–1954)	−0.071 (0.029)**	−0.064 (0.026)**	−0.095 (0.041)**	1.658 (1.704)
	c.4 (Birth year <1943)	0.026 (0.038)	0.025 (0.034)	0.030 (0.045)	3.992 (2.220)*
Married	c.1 (Birth year >1966)	−0.004 (0.005)	−0.012 (0.004)***	−0.013 (0.008)	0.219 (17.024)
	c.2 (Birth year 1955–1966)	−0.009 (0.005)**	−0.008 (0.004)**	−0.017 (0.008)**	0.015 (3.936)
	c.3 (Birth year 1943–1954)	−0.014 (0.007)**	−0.008 (0.006)	−0.013 (0.010)	−1.782 (3.214)
	c.4 (Birth year <1943)	0.014 (0.008)	0.010 (0.007)	0.015 (0.011)	5.982 (4.325)
	No. of observations	20,037	20,037	20,037	18,856

SOURCE: Author's calculations using SFS 1999 and SFS 2005.

NOTES: These predicted differences are generated by estimating the Tobit regressions, predicting the respective Rs for a representative individual (in all factors other than gender, cohort and marital status) and determining the gender gaps across marital status-cohort combinations. All estimates use survey weights and are presented with robust standard errors (clustered on family identifier) in brackets. ***, ** and * indicate that the gender difference is significant at the 1, 5 and 10% levels, respectively. The representative individual is a high school graduate; is employed; works full time; has the sample average of arcsinh(wealth), log(income) and number of children; has no work pension; has no defined benefit plan; is not retired; is not a recent immigrant; has no age gap with spouse; is in a single income household; is an urban dweller living in Ontario in 1999; and permitted Statistics Canada to use their tax returns to complete the income data. R(1) includes business assets; R(2) excludes vehicle assets; R(3) also excludes vehicles, and principal residence is re-classified as a risky asset; R(4) is the ratio of gross risky assets to net worth.

TABLE A4
Sensitivity of gender difference in predicted risk ratios to inclusion of (1) age and (2) additional covariates

Marital status	Birth cohort	(1) R	(1) R_f	(2) R	(2) R_f
Single	c.1 (Birth year >1966)	−0.054 (0.026)**	−0.108 (0.040)***	−0.021 (0.011)*	−0.073 (0.029)**
	c.2 (Birth year 1955–1966)	−0.046 (0.026)*	−0.013 (0.031)	−0.019 (0.010)*	−0.009 (0.020)
	c.3 (Birth year 1943–1954)	−0.007 (0.030)	0.006 (0.018)	−0.005 (0.011)	0.002 (0.011)
	c.4 (Birth year <1943)	0.063 (0.051)	0.031 (0.039)	0.024 (0.020)	0.023 (0.028)
Previously married	c.1 (Birth year >1966)	0.060 (0.061)	0.081 (0.072)	0.018 (0.024)	0.042 (0.046)
	c.2 (Birth year 1955–1966)	0.070 (0.058)	0.104 (0.080)	0.024 (0.027)	0.060 (0.049)
	c.3 (Birth year 1943–1954)	−0.051 (0.024)**	−0.053 (0.024)**	−0.018 (0.009)**	−0.034 (0.017)**
	c.4 (Birth year <1943)	0.032 (0.032)	0.007 (0.026)	0.005 (0.012)	0.002 (0.017)
Married	c.1 (Birth year >1966)	−0.013 (0.004)***	−0.007 (0.004)*	−0.005 (0.002)***	−0.005 (0.003)*
	c.2 (Birth year 1955–1966)	−0.008 (0.004)**	−0.004 (0.003)	−0.004(0.001)**	−0.003 (0.002)
	c.3 (Birth year 1943–1954)	−0.007 (0.005)	−0.006 (0.004)	−0.002 (0.002)	−0.003 (0.003)
	c.4 (Birth year <1943)	0.009 (0.007)	0.006 (0.005)	0.004 (0.003)	0.005 (0.004)

SOURCE: Author's calculations using SFS 1999 and SFS 2005.
NOTES: These predicted differences are generated by estimating the Tobit regressions, predicting R and R_f for a representative individual (in all factors other than gender, cohort and marital status) and determining the gender gaps across marital status-cohort combinations. All estimates use survey weights and are presented with robust standard errors (clustered on family identifier) in brackets. ***, ** and * indicate that the gender difference is significant at the 1, 5 and 10% levels, respectively. The representative individual is a high school graduate; is employed; works full time; has sample average of arcsinh(wealth), log(income) and number of children; has no work pension; has not defined benefit plan; is not retired; is not a recent immigrant; has no age gap with spouse; is in a single income household; is an urban dweller living in Ontario in 1999; and permitted Statistics Canada to use their tax returns to complete the income data. Additional covariates include indicator variables for home ownership, business ownership, have a budget, full-time student, disability, farm self-employment and industry of employment.

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