Backing into the Future: Canada's Declining RRSP Contribution Rates

Highlights

There has been considerable discussion of, and concern about, falling RRSP contributions and the potential risks that this presents to Canadians of the "baby boom"[1] generation that is increasingly entering into its retirement years. Previous analysis within RBC Economics[2] indicated that this downward trend is not on its own indicative of inadequate saving for retirement as it largely results from demographic factors. This largely reflected the baby-boom generation reaching age cohorts in which RRSP contributions are typically lower. This earlier analysis (released in January 2010) suggested that these demographic factors were likely to keep RRSP contributions as a percent of disposable income trending lower through 2020. This current paper updates this analysis and confirms that the downward trend has continued with the release of subsequent RRSP contribution data over the last two years. As well this analysis includes a re-estimated model that includes the impact of housing prices representing a competing asset to RRSP investments. The re-specified model did indicate that rising house prices had a negative impact on RRSP contribution; however it continued to project a downward trend in RRSP contributions through 2020 largely reflecting the impact of demographic factors.

Analysis

In our earlier analysis, conducted with data from 1968[3] through 2008, we constructed an econometric model to determine the main drivers of inflation-adjusted RRSP contributions. The main conclusion of the analysis was that demographic factors and the distinct savings patterns associated with the different age cohorts were the main drivers of both the run-up in RRSP contributions as a share of personal disposable income (PDI) from 1968 to 1997 and the subsequent drop off through 2008. The paper made the point that "as the aging of the population becomes more pronounced over the next decade, particularly with respect to the baby boom generation, this research suggests that RRSP contributions will likely continue to trend lower over the next decade." This largely reflected the fact that the population was becoming more skewed towards age cohorts that historically have made smaller RRSP contributions.

Since the earlier model was estimated, two additional years worth of data have become available and have supported our earlier conclusions. In 2009, total RRSP contributions fell by 0.9% to $33.0 billion while PDI increased by 1.3% to $966 billion, resulting in the contributions-to-PDI ratio declining to 3.4%. Total contributions increased by 2.6% in 2010 but this growth was outpaced by the 4.9% rise in PDI leading to a further decline in the contributions-to-PDI ratio to 3.3%. Our model predicted a falloff in RRSP contributions in 2009

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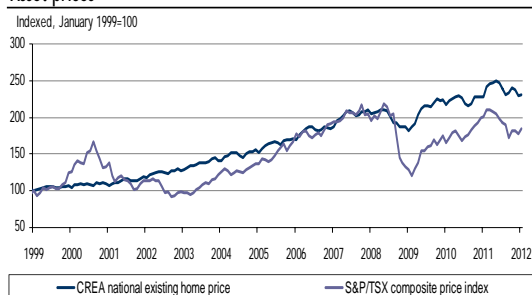paul.ferley@rbc.com

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Chart 1

Asset prices

Indexed, January 1999=100

Source: Bank of Canada, Canadian Real Estate Association, RBC Economics Research

reflecting the impact of the recession on equity returns followed by a modest increase in 2010. On balance, the continued downward trend in the contributions-to-PDI ratio over the last two years was in line with our projected reading of 3.3% for 2010.

The original modeling of RRSP contributions assumed that along with demographics, and incomes, equity prices were the other major driver in RRSP contributions. Movements in stock prices were essentially acting as a proxy for equity market returns. Given that RRSP investments tend to be skewed to equities, rising stock markets were associated with increased RRSP contributions. This model had the deficiency that alternative investment options were not specified.

A potentially competing investment asset to RRSPs is residential real estate. The significance of this alternative asset was made clear by an examination of household balance sheets as surveyed by Ipsos Reid. Table 1 provides a compilation of this data calculating the share of household assets from 1999 to 2010. As this data indicates, the share of real estate assets increased 2.7 percentage points comparing the period 2008-2010 to 1999 to 2001. The main offset was the share of RRSP investments dropped 2.4 percentage points. Various breakdowns of this survey data by household income and by province of residence seemed to reinforce this pattern of a rising share of real estate assets being offset by lower RRSP allocations.

Table 1

	Bank balances	Vehicles	Real estate	RRSP investments	Non-RRSP investments	TFSA	Total
	Household asset types as a % of total - All Canadian households						
1999	1.1	7.2	60.8	16.2	14.6	0.0	100.0
2000	1.2	7.0	60.6	16.2	15.0	0.0	100.0
2001	1.3	7.1	62.8	15.5	13.4	0.0	100.0
2002	1.4	7.6	64.8	14.4	11.8	0.0	100.0
2003	1.6	7.3	64.9	14.5	11.7	0.0	100.0
2004	1.8	7.0	62.5	15.3	13.3	0.0	100.0
2005	1.8	6.5	62.7	15.2	13.8	0.0	100.0
2006	1.6	5.9	63.1	15.3	14.1	0.0	100.0
2007	1.5	6.3	59.5	14.2	18.5	0.0	100.0
2008	1.6	6.9	62.9	13.2	15.5	0.0	100.0
2009	1.6	6.4	64.6	13.4	13.6	0.3	100.0
2010	1.4	6.2	64.8	14.1	12.8	0.6	100.0
1999-2001	1.2	7.1	61.4	16.0	14.3	0.0	100.0
2008-2010	1.5	6.5	64.1	13.6	14.0	0.3	100.0
	0.3	-0.6	2.7	-2.4	-0.4	0.3	0.0

Source: Ipsos Reid *Canadian Financial Monitor*, RBC Economics Research

Notes:
Bank balances are those that are not in TFSA, RRSP, RESP, RDSP.
Non-RRSP investments include unsheltered investments as well as those in RRIF, RESP, RDSP, LIR/LRIF and LIRA.

One possible explanation for a growing preference for real estate assets could be that housing prices have outperformed those of equities (which generally encompass a significant share of RRSP investments either through direct holdings or indirect holdings via mutual funds), creating a rational financial incentive for households to direct their savings dollars toward residential real estate (Chart 1). This is particularly plausible given that, like RRSPs, investment in housing is subject to preferential tax treatment in Canada. Contributions to RRSPs are deductible from income to calculate income tax and capital gains and investment income earned under the plans are

exempt from taxes. Subsequent withdrawals from registered plans are taxed at the personal income tax rate at the time of withdrawal.

Owner-occupied housing is also treated in the Canadian tax code as a tax-sheltered investment in which no imputed rental income or capital gains are taxed and no tax is applied upon disposal, although, unlike with RRSPs, there are no income tax deductions available for housing investments at the time of purchase. In terms of a supportive factor in favour of real estate investments, there is no limit regarding how much "tax-sheltered" investment in real estate can be made, which is in contrast to upper limits imposed on RRSP investments.

Another factor supportive of real estate investments could be the favourable affordability conditions in the housing market seen throughout the last decade, which have been supported by an environment of generally declining interest rates. This relative affordability made purchasing a home more attractive to households, prompting an increase in homeownership rates across the country.

Though an examination of the share of various assets with a household's balance sheet presents some noteworthy trends, there is the risk that it is stronger gains in housing prices that is explaining the rising share of real estate. In other words, the increased share of real estate does not reflect a decision to increase the holdings of this asset category but rather reflects a more rapid increase in the value of this asset relative to the average price of assets in the overall portfolio.

To try and determine the extent to which households' investment decisions are responding to underlying housing market fundamentals, we built on previous analysis by adding real house price increases as an additional explanatory variable. Rising house prices can affect the decision to contribute to RRSPs in a number of ways that will have a bearing on the sign, and the size, of the estimated coefficient. Rising house prices increase the cost of housing, particularly for first time buyers. Higher prices could reduce the demand for housing and thus increase purchases of alternative investments such as RRSPs. This would imply a positive relationship, and coefficient, between house prices and RRSP contributions. Alternatively, as discussed above purchasing a home is also an investment that can serve as a substitute savings vehicle to RRSPs, particularly given that, like RRSPs, capital gains (and imputed rents) on a primary residence are sheltered from the capital gains tax. Rising house prices, and the expectation that prices will continue to rise in the future, serve to increase expected capital gains from housing investment. A greater capital gain for housing could result in a relative increase in demand for housing, potentially at the expense of alternative saving vehicles like RRSPs. This would imply a negative relationship, and coefficient, between house prices and RRSP contributions. The Ipsos Reid survey data provide reason to expect that this is likely the more dominant relationship.

Modelling Saving Patterns

In our earlier analysis of RRSP contributions we argued that demographics, particularly the aging of the baby boom generation, can explain much of the trend in RRSP contributions over the last 40 years. To show this, we estimated the change in inflation-adjusted annual RRSP contributions according to Equation 1 below.

Equation 1

$$\Delta rrsp_t = \alpha rrsp_{t-1} - \gamma_i \Delta age_{i,t-1} - \delta rpdi_{t-1} + \beta_1 \Delta rpdi_t + \beta_2 \Delta tsx_t\ \beta_3 \Delta pcy_t + \varepsilon_t$$

Where:

$rrsp$ = the natural log of annual RRSP contributions deflated by the Consumer Price Index (CPI)

age_i = the share of the population aged i

rpdi = the natural log of real disposable income

tsx = the natural log of the TSX composite index deflated by the CPI

pcy = policy variable generated by interacting the maximum contribution limit with the maximum percentage of earned income that is tax deductible and deflating by the CPI

ε = error term

This model includes variables to explain both the longer-term trend in RRSP contributions as well as short-run components to explain near-term volatility around this trend. In the longer-term, the level of inflation-adjusted RRSP contributions is determined by the age composition of the Canadian population along with the level of real household income. In the short-run, the model allows deviations around this trend in response to changes in policy and short-run fluctuations in income and equity market gains. The *pcy* variable is included to control for changes in RRSP contributions induced by changes in contribution limits over time.

To test whether the return on investment in real estate, as reflected in price gains, may have a significant impact on short-run fluctuations in RRSP contributions, we modified Equation 1 above to include a housing price variable as in Equation 2 below. The variable *hret* added in Equation 2 is the natural log of a five-year moving average of the ratio of the average Canadian house price and the TSX composite price index. The variable θ is a dummy variable equal to 0 until 1983 and 1 after. This period generally reflects one of falling mortgage rates with the five-year rate peaking in 1981 and 1982 at 18%.

Equation 2

$$\Delta rrsp_t = \alpha rrsp_{t-1} - \gamma_i \Delta age_{i,t-1} - \delta rpdi_{t-1} + \beta_1 \Delta rpdi_t + \beta_2 \Delta tsx_t\ \beta_3 \Delta pcy_t + \beta_4 \theta \Delta hret_t + \varepsilon_t$$

A five-year moving average of house prices relative to the TSX composite price index is used to proxy for the expected return on housing relative to equity market returns. In effect, we assume that household expectations of future price movements are influenced largely by current and past price movements. As such, an increase in the growth rate of house prices relative

the future. We use the return on housing relative to equity market returns since a sizeable proportion of RRSP contributions are in the form of investments in mutual funds, much of which are exposed to equity markets. A short-term interest rate was also initially included in Equation 2, to essentially proxy for holding "risk-free cash"; however it failed to be significant in the estimation.

Table 2 provides a summary of the results obtained from both a re-estimation of our previous model (which includes an additional two years of data relative to our previous estimation) and an estimation of our new specification including house prices. The estimation suggests that house prices are negatively related to RRSP contributions. In particular, an increase in the growth rate of house prices relative to equity markets tends to coincide with relatively weaker RRSP contributions. This is consistent with the view that a higher expected real gain in housing prices leads households to allocate more saving to housing and less to alternative tax-sheltered saving vehicles like RRSPs.

We have combined our relative house price measure with a dummy variable, θ, equal to 0 up to 1983 and 1 after since, interestingly, the negative relationship between house price growth and RRSP contributions is evident only since the early 1980s. This latter period does coincide with mortgage rates starting to ratchet lower after peaking in the 1981/82 period. As well, it may reflect a shift in household attitudes towards housing around this time with greater emphasis placed on the role of housing as an investment as opposed to simply providing shelter services. An alternative specification using unpublished historical house price data from CREA suggested that, prior to the early 1980s, house prices played little, if any, role in determining RRSP contributions.

As in our previous analysis, higher contribution limits result in an increase in RRSP contributions, as evidenced by the positive relationship with our policy variable. The impact of the age composition of the population and income growth are broadly consistent with our previous analysis. In particular, while fluctuations in house prices appear to have an impact on short-run changes in RRSP contributions, we expect the underlying longer-term trend will continue to be largely dominated by the shifting age composition of the Canadian population, along with income growth.

Projections

Chart 2 below indicates that, historically, both our original and house-price modified specifications have done a reasonably good job at explaining the trend in RRSP contributions over time. This chart also shows projections going forward for both of our model specifications. Both models suggest that the longer-term trend in RRSP contributions has been largely dominated by shifts in the age composition of the Canadian population, along with growth in real incomes. In particular, the run-up in RRSP contributions as a share of income through the 1980s and early 1990s appears to coincide well with the passing of the baby boom generation through its peak saving years

Table 2

Summary of Results				
Dependent Variable: $\Delta rrsp_t$				
	Model 1		Model 2	
	coeff	s.e.	coeff	s.e.
$rrsp_{t-1}$	-0.31	(0.04)	-0.31	(0.04)
$\Delta age_{3544,t-1}$	26.56	(8.95)	22.28	(9.01)
$\Delta age_{4554,t-1}$	63.34	(14.07)	57.00	(14.11)
$\Delta age_{5574,t-1}$	56.13	(20.92)	50.58	(20.51)
$rpdi_{t-1}$	0.16	(0.02)	0.16	(0.02)
$\Delta rpdi_t$	0.74	(0.46)	0.50	(0.47)
Δtsx_t	0.12	(0.05)	0.09	(0.05)
Δpcy_t	0.02	(0.00)	0.02	(0.00)
$\delta \Delta hret_t$	-	-	-0.31	(0.18)
R-squared	0.79		0.81	
Adjusted R-squared	0.74		0.76	

Chart 2

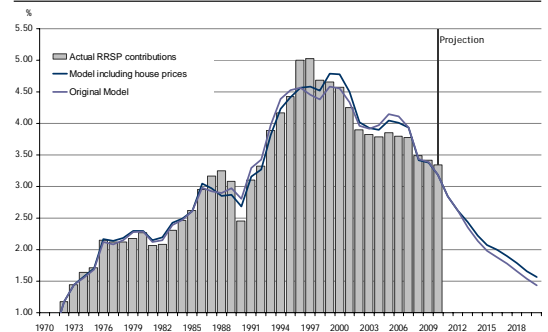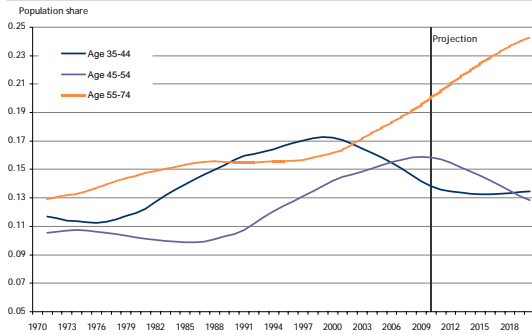Model Simulations: RRSP Contributions as Share of PDI

Chart 3
Age Composition of the Canadian Population

(Chart 3). To project forward we have assumed that housing prices will generally rise 3.5% on average per year through 2020. In our view, this projected 3.5% growth in housing prices represents the most likely outcome from moderate growth in both demand and supply for housing that would maintain market conditions in balance for an extended period of time. This would follow exceptionally strong increases during the 2002-2008 interval brought about in part by significant financial innovations and which have since been partly reversed. Though continued gain in housing prices abets the downward trend in RRSP contributions over the forecast, the demographics are the more dominant driver. For example a 10% rise in housing prices would only lower the share by 2020 to 1.48% from 1.57% using a 3.5% annual increase.

It is of note that the earlier version of the model suggested a moderately stronger downward trend in RRSP contributions. This may reflect the fact that in the absence of the housing price variable, the (absolute value of the) coefficient on the demographic variables was overstated. The new model corrects for this which, along with a slowing in house price increases over the forecast period to 2020, results in a marginally less steep fall-off in RRSP contributions. With that said, the new model still suggests that RRSP contributions will continue to decline through the next decade to a level (as a share of income) that is comparable to that last seen in the 1970s. This trend shows no signs of stabilizing by the end of the projection period in 2020.

Conclusion

Our originally specified model had suggested that RRSP contributions as a share of personal disposable income would likely continue to trend lower, as it had from 1997 to 2008, through 2020. The recent downward trend in the share, and its persistence through the end of this decade, is not necessarily an indication of reduced savings by households for retirement years. Rather it reflects more the overall population becoming skewed more towards age cohorts that have historically exhibited lower RRSP contributions. The subsequent release of 2009 and 2010 data on RRSP contributions confirmed the persistence of this downward trend of RRSP contributions as a share of PDI.
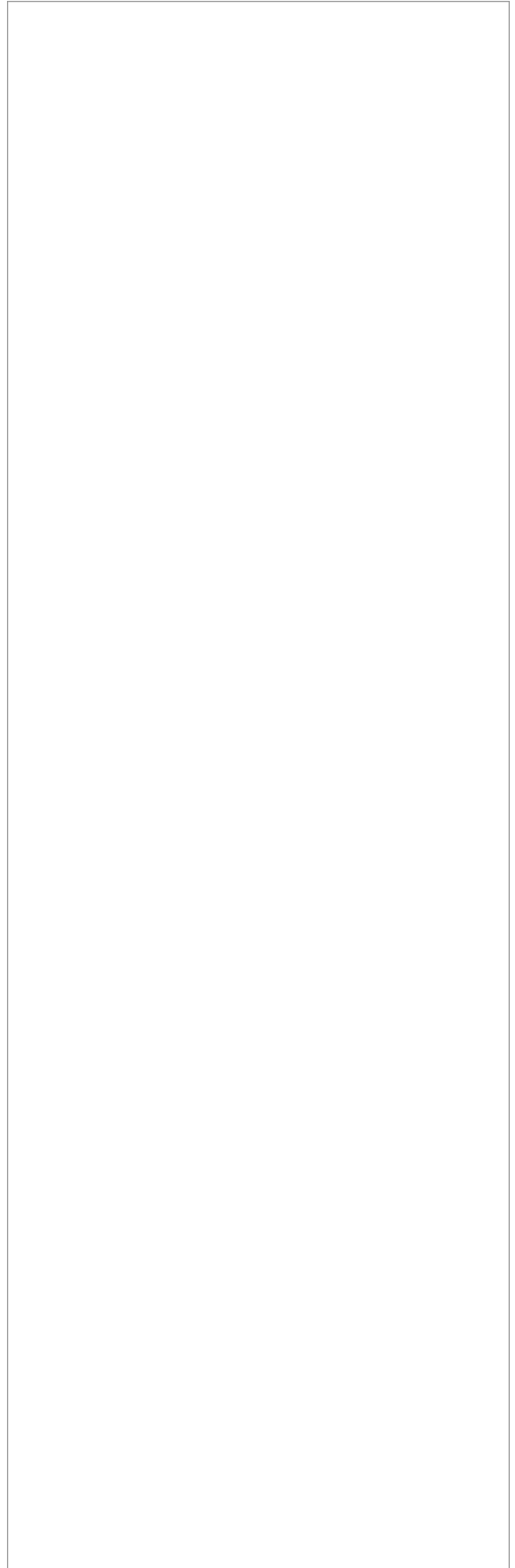
An examination of household balance sheet survey data implied that investments in real estate may be acting, at least in part, as an alternative to RRSP investments. Specifically, coinciding with solid house price increases, a sizeable increase in real estate assets as a share of total household assets through the last decade has been largely offset by a reduced share allocated to RRSPs. These observations prompted us to re-specify our original model by including an implicit real return for housing. This variable estimated with a negative coefficient that implied as housing prices increase there is a reduction in RRSP investments.

Although the re-specified model and the addition of two extra years of data supports the claim that the use of real estate as an alternative investment can play a role in determining household RRSP contributions, it remains the case that demographic factors will dominate. Our expectation that house prices will continue to rise going forward abets a projected decline in RRSP contri-

butions that is marginally less steep relative to the previous model. However, it is the influence of demographics that dominate and is thus still expected to result in RRSP contributions as a share of personal disposable income trending lower through 2020 to rates not seen since the 1970s with no signs of stabilizing.

NOTES:

1. The baby boom generation represents those individuals born between the years 1947 to 1966. In 2008, this age cohort represented a significant 30% of the total population.

2. RBC Economics (January 2010). *RRSP contributions 1968 to 2008 ... and beyond to 2020.*

3. Data related to RRSP contributions is not available prior to 1968 despite the program being first introduced in 1957.

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