Do the Rich Save More in Canada?

Sule Alan Kadir Atalay Thomas F. Crossley*

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Abstract

This paper is an attempt to answer the long standing question of whether households with higher *lifetime* income save a larger fraction of their income. The major difficulty in empirically assessing the relationship between lifetime incomes and saving rates is to construct a credible proxy for lifetime income. The Canadian Family Expenditure Survey (FAMEX) provides us with both unusually good data on savings rates and potential instruments with which we can construct reliable lifetime income proxies. Our empirical analysis suggests that the estimated relationship between saving rates and lifetime incomes is sensitive to the instrument used to proxy lifetime income. Nevertheless, our preferred estimates indicate that, except for poorest households (who simply do not save), saving rates do not differ substantially across lifetime income groups.

Keywords: saving rates; lifetime income; permanent income;

JEL Classification: C81, D12

*Alan: Assistant Professor, Department of Economics, York University. Atalay: PhD Student, Department of Economics, McMaster University. Crossley: Associate Professor, Department of Economics, McMaster University. Author order is alphabetical. We gratefully acknowledge the support of the Social and Economic Dimensions of an Aging Population (SEDAP) Research Program at McMaster University and the Social Sciences and Humanities Research Council of Canada (SSHRC). SEDAP is primarily funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and also receives substantial additional support from Statistics Canada. We are also grateful to Kevin Milligan for helpful comments. Any remaining errors are our own. Please check http://socserv.mcmaster.ca/crossley/research.htm for updates. Correspondence: Thomas Crossley, Department of Economics, McMaster University, Kenneth Taylor Hall, Hamilton, Canada, L8S 4M4, crossle@mcmaster.ca, phone: 905-525-9140 x 26095, fax: 905-521-8232.

1 Introduction

Do the rich save more? This is an important question for a myriad of policy issues, including: Is a switch from income taxation to consumption taxation regressive? What are the consequences of income inequality for economic growth? What is the effect of a tax cut on aggregate demand? What is the incidence of the tax expenditures associated with tax favoured saving accounts?

As Dynan et al. (2004) have recently pointed out, most non-economists would find the proposition that the rich save more to be obvious. Economists are more sceptical, for at least three reasons. First, since Friedman (1957), economists have emphasized that if agents are forward looking and try to smooth transitory income fluctuations, then a strong correlation between *current* income and saving rates is to be expected, but tells us little about the relationship between saving rates and permanent or *lifetime* income. Second, is the logic of budget constraints: in the absence of (intended or unintended) bequests, a lifetime budget constraint implies that if a lifetime income groups saves more rapidly at some ages, the same group must dissave more rapidly at other ages. Third, most of our standard models assume features (for example, intertemporally additive, Constant Relative Risk Aversion preferences) that are analytically convenient exactly because of the homotheticity they deliver. So many of our theoretical models "scale" (so that a rich household is identical to several poor households) that the idea that world also scales has become part of our intuition.

Adding idiosyncratic uncertainty to standard saving models can deliver differences in saving rates across lifetime income groups but usually in the opposite direction to the non-economists' intuition: the poor save *more*. Of course, it is theoretically possible to generate saving rates that increase with lifetime income. Introducing wealth into the utility function in an appropriate way will do this, though such mechanism are sometimes regarded as artificial. A bequest motive can deliver increasing saving rates with lifetime income, if bequests are a luxury good, or if the lifetime earning capacities of successive generations in a dynasty are mean reverting (so that a rich household will expect their children to have lower lifetime earnings and a poor household with have the opposite expectation.) However, direct empirical evidence suggests that desired bequests are small (Hurd, 1987). Finally, in a model with idiosyncratic income uncertainty and asset-tested social insurance programs, asset testing can distort saving incentives and lead poor households save less (as in Hubbard et al., 1994).

The relationship between lifetime incomes and saving rates remains, then, an important empirical question. This question was in fact the subject of substantial, if inconclusive, empirical work in the years after Friedman's seminal contribution. For example, Friedman himself found evidence for the "proportionality hypothesis". In contrast, Mayer (1972) found an elasticity of consumption with respect to lifetime income that was less than one. After a period in which the empirical literature on consumption and saving pursued other issues, attention has returned to the issue of lifetime incomes and saving rates. Bernheim and Scholz (1993) and Hubbard et al (1994) demonstrated that wealth levels are disproportionately high among households with high lifetime income. Wealth levels, of course, reflect both past rates of (active) saving and past rates of return. Most recently, Dynan et al. (2004) use three different U.S. data sets and several different instruments (including the ones we use in this paper) to estimate the relationship between saving rates and permanent income. They conclude that the evidence supports a positive relationship between saving rates and permanent (or lifetime) income.

The goal of this paper is use provide some new evidence on this question using Canadian data and methods similar to those employed by Dynan et al. (2004). This analysis is obviously an important input into Canadian policy making, and a useful replication of the Dynan et al. study on data drawn from a different, but similar economic environment. However, additional value flows from particular and unique features of the Canadian data. Saving can be studied using household expenditure surveys (to construct measures of income minus consumption, or active saving) or from panel data on household wealth (possibly with a correction for capital gains to give a measure of active saving). Canadian survey data on household wealth does not have a panel component. However, the Canadian Family Expenditure Survey (FAMEX) has several features that have lead researchers to believe that it can be the basis for a very good measure of active saving. First, in contrast to the U.S. Consumer Expenditure Survey, the FAMEX was particularly designed to capture good quality income information that refers to the same (annual) period as the expenditure information. Second, the FAMEX, in addition to annual income and expenditures, reports net changes in assets and debts over the year, excluding capital gains (by tracking additions to, and withdrawals from, financial assets, as well as changes in debt). This represents a second measure of active saving for the same households. Partly for these reasons, the FAMEX has formed the basis of a number of studies of saving behavior by both Canadian and U.S. authors.[1]

Davies and Burbidge (1994) report a strong correlation between saving rates and current income in these data. However, to the best our knowledge, this is the first analysis of the relationship between saving rates and lifetime or permanent income to employ these data. Our empirical analysis suggests that the estimated relationship between saving rates and lifetime incomes is sensitive to the instrument used to proxy lifetime income. Nevertheless, our preferred estimates indicate that, except for poorest quintile of households (who simply do not save), saving rates do not differ substantially across lifetime income groups.

The next section describes our data in greater detail. Section 3 outlines our empirical methodology. Our results are presented in Section 4, and Section 5 concludes.

2 Data and Sample

The FAMEX is a full household expenditure survey (collecting information on all categories of expenditure). Unlike most national expenditure surveys, the FAMEX does not have a diary component. Instead, face-to-face interviews are conducted in the first quarter of the year to collect income and expenditure information for the previous year. Thus the 1996 data were collected in January, February and March of 1997 but refer to the 1996 calendar year. Respondents are asked to consult bills and receipts and if necessary, multiple visits are made to a household. The FAMEX is therefore an unusual kind of recall survey in which a considerable effort is made to ensure the quality of the data.

Our analysis is based on public use files from the 1996 survey. The 1996 survey was chosen because it is the last year in which the principal and interest components of mortgage payments are reported separately. We treat the former as saving and the latter as expenditure.

In studying the relationship between saving rates and lifetime incomes, the appropriate saving concept is active saving (or the "true" saving intention.) An important feature of the FAMEX is that it contains two measures of household active saving. The first is simply after-tax current income minus total expenditure. (This measure is also used in Dynan et al (2004) for CEX and PSID; in the case of the latter total expenditure must be imputed). As noted above, this measure may be of higher quality in the FAMEX than CEX because of the nature of the data collection exercise.

[1] See for example: Burbidge and Davies, 1994; Carroll et al., 1994; Davies and Burbidge, 1994; Engelhardt, 1996; Burbidge et al., 1998; Lin, 2000; Veall and Fretz, 2000; Milligan, 2002;

The second measure of active saving in the FAMEX is net changes in assets and debts excluding capital gains. This measure is unique (not directly available in any of the American Surveys used by Dynan et al.) It includes changes in accounts at banks and trust and loan companies; changes in money owed; money deposited as a pledge against future purchases of goods and services; net contributions to and withdrawals from Registered Retirement saving Plans (a kind of tax-favoured individual retirement account); net purchases less sales of financial assets; sales of personal property.

In the conduct of the survey these two measures are partially reconciled in that household in which the two measure show an excessive disparity are asked to review their reports of incomes and expenditures. Consequently, measurement errors are unlikely to be independent across the two measures. At the same time, the second measure appears to contain additional information. Following Dynan et al., we divide our saving measures by current income to derive saving rates. The correlation between the two saving rate measures in our data is 0.77. In summary there are reasons to believe that the "income minus consumption" measure in the FAMEX is superior to those in the CEX (where the income data is not ideally suited to this purpose) and PSID (in which total expenditure must be imputed), and the FAMEX contains a second measure of annual active saving that can be exploited in a number of ways (which we outline below).[2]

There are 10085 respondent households in the 1996 FAMEX. Our estimation sample is restricted in a number of ways. For comparability, we follow the sample selection rules of Dynan et al. as closely as possible. The first restriction is to households whose head is between 30 and 59 years of age. The reason for this is to abstract as much as possible from the issues regarding educational choice and dissaving in retirement. We also exclude households that reported less than $1000 of income and households that did not report their education level. Finally, we delete multiple family units (more than 1 family living in the same dwelling), which are a small fraction of the sample.[3] The resulting sample contains 6061 households. For some of the analysis below we focus on the subset of these households that contain couples (with and without children), which is 4204 households.

As described above, active saving (S) is defined as either after-tax net income minus total con-

[2] Against this, unlike Dynan et al., we do not have panel data on wealth. Although the Survey of Consumer Finances is a very detailed wealth survey, the sample size for the panel component Dynan et al. use is very small and subject to a serious attrition problem. The structure of the attrition is documented by Kennickell and Woodburn (1997). The limitations of the PSID wealth data are well known. Change in stock of wealth can be only be calculated with 5 year intervals (PSID wealth supplements are 5 year apart panel surveys conducted in 1984, 1989, 1994, 1999 and 2003). In both cases, changes in wealth must be purged of capital gains to construct a measure of active savings.

[3] 3% of the full sample and 1% of the couples only sample.

sumption $(Y - C)$ or as the net changes in assets and debts excluding capital gains (ΔA) and then we divide by current income to give the saving rate $\left(\frac{S}{Y}\right)$. Income is net household income after taxes and includes wages and salaries, investment income, self employment earnings, government transfers (Canada or Quebec pension plan benefits, employment insurance benefits, child tax benefits, workers' compensation benefits, goods and services tax credit, provincial tax credits, veterans pension an civil war pensions and allowances) and income from other sources (alimony, RRSP annuities received and RRIF withdrawals, child support). Total consumption is constructed based on total expenditure and includes expenditures for housing, food, clothing, household operations, personal care, transportation, recreation, education, tobacco and alcoholic beverages, reading materials and miscellaneous expenses. We treat gifts, contributions and the interest portion of mortgage payments as consumption. The portion of mortgage payments that is principal repayment is treated as saving. Note that individual contributions to tax sheltered savings plans (RRSPs) are counted as saving, while contributions to public and employer sponsored pensions are not (neither employee nor employer contributions to these plans are counted in net income.)

Descriptive statistics for these measures are given n Table 1. The first thing to note is that the $(Y - C)$ measure of saving suggests higher levels and rates of saving. This is consistent with the under-reporting of consumption or the under-reporting of contributions to financial assets and/or retirement of debt. The second thing that we note is that sample of couples has, on average, higher incomes and higher total consumption than the full sample. This reflects the fact that many of the poorest households in our full sample are singles, or households headed by a single adult. When comparing results across the two samples, it will be important to remember that the couples are, in this sense, on average richer than the full sample. Thus the lowest quintile of the full sample has lower incomes than the lowest quintile of the sample of couples.[4]

3 Empirical Methodology

We wish to estimate the relationship between saving rates and lifetime income:

$$\frac{S}{Y} = f(Y^P) + X\beta + e \tag{1}$$

[4]Following Dynan et al., we have not made any adjustments for household size or compositions to income or consumption (for example, converting to per capita amounts or dividing by an equivalence scale).

Where Y^P is lifetime income, X is a set of other determinants of saving behavior (including age) and e is a disturbance that captures both unmeasured determinants of saving and measurement error in the saving rate. To allow for nonlinearities in the relationship between lifetime incomes and saving rates, we parameterize $f()$ by a set of five dummies capturing the age-conditional quintile of lifetime income to which a each household belongs (X does not include a constant).

The key empirical problem we face is that we do not observe lifetime income (Y^P). Moreover, for our purposes current income, (Y) is a poor proxy for lifetime income because the smoothing of transitory income fluctuations will generate a positive relationship between saving and current income and even when there is no relationship with lifetime incomes. Our solution, which follows Dynan et al. (2004) is a two stage estimation procedure. In the first stage we construct lifetime income proxies by regressing current income on instruments (Z) and age group dummies:

$$Y = Z\alpha + X\gamma + u \tag{2}$$

Predicted values from this regression are then used as our proxy for lifetime income.

$$\widehat{Y^P} = Z\widehat{\alpha} + X\widehat{\gamma} \tag{3}$$

We then assign households to age-conditional lifetime income quintiles, and construct the quintile dummies that were described above. In the second stage we estimate Equation (1) by quantile regression. Since lifetime income is estimated in the first stage we bootstrap the standard errors.[5]

One way that we can exploit the two measures of active saving available for each household is to pool the data and treat it as a panel with two observations on each household (these are repeated measures, but not temporarily separated - they refer to the same year.) In principle this could increase the precision of our estimates, and so we report estimates based on pooling the data below, along with estimates based on each measure separately. When we pool the data we allow for a common mean shift between the two measures, and we take care in our bootstrapping to resample households (pairs of observations) in order to preserve the correlation structure in the data (as in panel data bootstrapping). In practice, this does not lead to much increase in precision. However, a second way in which we can exploit the second measure of active saving in the data is to strengthen our strategy for proxying lifetime income, as is discussed below.

[5] Bootstrap standard errors are based on 999 replications.

The key to our empirical strategy is obviously the instruments for lifetime income. These must be (i) strongly correlated with life-time income, but not with the transitory components of current income, and (ii) excludable from the saving equation (uncorrelated with unmeasured determinants of saving and with measurement error in the saving rate). We consider two instruments for lifetime income that are also employed by Dynan et al.: education and nondurable consumption (or components of nondurable consumption.)[6] There is not much doubt that both these instruments are strongly correlated with lifetime income. However, the second condition may be violated for reasons specific to each instrument.

Although it is highly correlated with lifetime income, education may also be correlated with unobserved taste variables that, in turn, influence saving behavior. For example, it is plausible to think that educational choices are associated with individuals' discount rates; impatience is also associated with lower lifetime saving.[7] If education is related to preference heterogeneity that is important for saving behavior, then it is an invalid instrument (because it is correlated with the error term in Equation (1)) The likely consequence of this is an upward bias in the estimated relationship between lifetime income and saving rates (the patient accumulate more education and save more). The information on education in the FAMEX is categorical (less than 9 years education; some or completed secondary education; less than post secondary; post secondary education; college degree or higher) and is available for heads and spouses. To maximize the variation in lifetime household income that we capture with education, we construct a set of dummies capturing different combinations of head and spouse education observed in households. Consequently, our results using education as an instrument are for the sample of couples only.

We define nondurable consumption as total consumption minus spending on shelter, vehicles and household furnishings.[8] If we use nondurable consumption (C^n) to proxy lifetime income, and total consumption in the calculation of saving rates, then any measurement error that is common to both

[6] In the parts of their analysis that are based on panel data, Dynan et al. have two additional instruments that are not available to us: lagged and future earnings.

[7] Similarly, it might be argued that educational choices and savings are both driven in part by heterogeniety in risk aversion.

[8] Thus it contains spending on food, household operations, cloth, health care, personal care, tobacco & alcoholic beverages, reading materials and miscellaneous expenses, plus transportation and recreation minus purchases of cars and recreational vehicles.

will enter on both the left side and right side of our estimating equation, and bias our estimates.

$$\frac{Y-C}{Y} = f(C^n\widehat{\alpha} + X\widehat{\gamma}) + X\beta + e \qquad (4)$$

Lifetime income is positively correlated with nondurable consumption, and consumption enters the saving rate negatively. If the true relationship between saving rates and lifetime income is positive, then measurement error common to nondurable and total consumption will impart a negative bias to our estimates, biasing them towards zero. The same problem arises if consumption has a "transitory component" (for example, if some households are liquidity constrained, or because of purchase infrequency).

Fortunately, the data afford us ways of addressing this problem. First, and uniquely with the FAMEX, we can replace $(Y-C)$ by our second measure of saving, (ΔA) in our estimating equation. To the extent that measurement errors in (ΔA) are not perfectly correlated with measurement errors in consumption, this should reduce the bias. Second, rather than use (all) nondurable consumption as our instrument, we can use well-measured components of nondurable consumption. Food is one possibility. Other possibilities are items that are regularly billed (as bills can be consulted during the survey) but are lifetime income elastic. Discretionary telecommunications expenses (phone bills) are one example. Again this strategy reduces bias by minimizing the potential correlation between measurement errors in our saving rate and our instrument.

Of course, it is unlikely that we can eliminate all bias. What we can do, however, is assess how serious the bias may be by observing how the estimated relationship between saving rates and lifetime incomes changes as we make these substitutions. If measurement error in total and nondurable consumption imparts a significant negative bias to our estimated relationship between saving rates and lifetime incomes, then we would expect the estimated relationship to become steeper as we replace $(Y-C)$ by (ΔA), and replace nondurable consumption by well-measured components. We lean heavily on this idea in assessing our results, which are presented in the next section.

4 Results

Recall that in all our median regressions we suppress the constant and include dummies for all five lifetime income quintiles. Among the (household head's) age dummies we exclude the 40-49 year old group. Thus, the estimated coefficient on a given income quintile dummy corresponds to the median saving rate of households in that lifetime income quantile whose head is between 40 and 49 years old.

We begin our analysis by documenting the estimated relationship between saving rates and current incomes. Table 2 presents the results for both the full sample and the sample of couples (with and without children). Results are presented for both saving rate measures, and from pooling the two measures (but allowing for an intercept shift.) These results are also summarized in Figure 1. Here, for each set of results, we plot the estimated median saving rate for each current income quintile, against the median income within the quintile. Thus there are two panels (full sample and couples), each with three lines (corresponding to estimates based on $(Y-C)/Y$, $(\Delta A)/Y$ and pooling the two) and five points on each line (corresponding to the five income quintiles).

The results confirm that savings rates are strongly increasing in *current* income. For example, focusing on the full sample and the $(\Delta A)/Y$ saving measure, median saving rates for 40 to 49 year old households range from 0 percent in the lowest income quintile to 16 percent in the highest quintile; the corresponding numbers are -6.3 percent to 27.4 % when the $(Y-C)/Y$ measure of saving is used. Using similar methods, Dynan et al. report a wider range of estimated savings rates by current income quintiles in the U.S. CEX (-23% to 46%); of course, current incomes are more disperse in the U.S. data. The stars on quantile 2 through 5 coefficients in Table 2 indicate that each coefficient is statistically significantly different from the coefficient for the quantile below it (at the 5% level.)

We now turn to the relationship between saving rates and lifetime incomes, which is our primary interest. Table 3 reports estimated saving rates by life-time income quintiles (from median regressions.) All the estimates in this Table are based on the couples sample. The first three columns of Table 3 (on the left) give results using the education of the head and spouse as instruments for lifetime income. The three columns report estimates based on $(Y-C)/Y$, $(\Delta A)/Y$ and pooling the two (moving from left to right). These results are summarized in Figure 2. The format of Figure 2 (and subsequent Figures) is the same as Figure 1 except that each point represents a quintile of lifetime income. The last three columns of Table 3 (on the right) give results using nondurable consumption as the instrument (with saving measures based on $(Y-C)/Y$, $(\Delta A)/Y$ and pooling the two.) These results are summarized in the right panel of Figure 3. The left panel of Figure 3 also summarizes results using nondurable consumption as the instrument, but for the full sample. (The estimates underlying the $(\Delta A)/Y$ line in this graph are given in the fourth column of Table 4; full results are available from the authors.)

The first aspect of these results to note is that the choice of saving measure ($(Y-C)/Y$ or $(\Delta A)/Y$) makes little difference. Estimates based on $(Y-C)/Y$ give higher saving rates in each quintile than those based on $(\Delta A)/Y$, and estimates based on pooling the two lie in between. However, the pattern across quintiles is quite similar regardless of choice of measure. In what follows, we focus on the estimates based on $(\Delta A)/Y$.

Using education as the instrument for lifetime income results in a strong positive relationship between saving rates and lifetime incomes. The estimated median saving rate for a 40-49 year old household rises monotonically from 5.6 percent in the bottom quintile of lifetime incomes to 13.6 percent in the top quintile (2nd column of Table 3 and Figure 2). While no quantile coefficient is statistically different from one just below it, the coefficient on the top quantile dummy is strongly statistically different from cofficient on the bottom quantile dummy.

In contrast, when we use nondurable consumption as an instrument, the estimated relationship between saving rates and lifetime incomes is essentially flat. The estimated median saving rate for a 40-49 year old household is 6.3 percent in the bottom quintile of lifetime incomes and 7.3 percent in the top quintile. It actually peaks (at 10.1 percent) in the 2nd quintile.

Figure 3 illustrates an important distinction between the sample of couples (with and without children) and the full sample. For the couple sample, the median estimated lifetime income in the bottom quintile is 33,785 1996 Canadian dollars. For the full sample, the corresponding number is 24,075. This is because the many of the additional households in the full sample (singles, and single adult headed households) are poorer than those in the couples sample. When we included these poorer households in our estimates, we see a much lower saving rate in the lowest quintile of the lifetime income distribution. Using the $(\Delta A)/Y$ measure, the estimated median saving rate for a 40-49 year old household in the bottom quintile of lifetime incomes in the full sample is 0 (Figure 3 and Column 4 of Table 4.) Above the first quantile however, the estimated relationship is flat in this sample as well.

The flatness of the relationship between saving rates and lifetime incomes when we use nondurable consumption as an instrument for lifetime incomes is consistent with the US evidence based on CEX reported by Dynan et al . Although it may be attributed to a downward bias (resulting from measurement error in consumption) in the US study, this seems a less plausible here (given the quality of our data and the fact that we obtained the same result when we use the $(\Delta A)/Y$ measure.) To push this further, we replace nondurable consumption as our instrument with components of nondurable consumption. As described in the previous section, this should further reduce potential correlation between measurement errors on the left and right sides of our estimating equation. The results are presented in Table 4 (for both couples and the full sample) and summarized in Figure 4 (for the full sample) and Figure 5 (couples). All of these estimates use $(\Delta A)/Y$ as the measure of the saving rate. In Figure 4 we also include the estimated relationship between saving rates and current incomes for comparison. In Figure 5 we include, for comparison, the estimated relationship between saving rates and current incomes, and the estimated relationship between saving rates and lifetime incomes when education is used as the instrument.

The main message of these results is that estimated relationship between saving rates and lifetime incomes is not sensitive to whether we use nondurable consumption as an instrument or a component of nondurable consumption.[9] If we use the sample of couples (with and without children) the estimated relationship is essentially flat. If we use the full sample, so that the bottom quintile is poorer, we see low saving in the bottom quintile, and then a flat relationship in the next four quintiles. Using any consumption measure as an instrument for lifetime income results in an estimated relationship between saving rates and lifetime incomes that is much flatter than the estimated relationship between saving rates and current incomes. In contrast, when we use education as an instrument for lifetime incomes, the estimated relationship between saving rates and lifetime incomes that is as steep as the estimated relationship between saving rates and current incomes. This can be seen clearly in Figure 5.

5 Conclusion

To summarize, when we use education as an instrument for lifetime income, we find a strong positive relationship between saving rates and lifetime income. Indeed, these results suggest that relationship

[9] In fact, we tried a number of components of nondurable consumption beyond those reported here and they also led to similar results.

between saving rates and lifetime income is as steep as the relationship between saving rates and current income. This would be surprising, as it is likely that part of correlation between saving rates and current incomes reflects the smoothing of transitory income shocks.

In contrast, when we use consumption as an instrument for lifetime income, we find that above the bottom lifetime income quintile, saving rates are fairly flat. A concern with these results is that measurement error in consumption imparts a negative bias to the estimated relationship. However, when we take steps to mitigate this bias (constructing saving from net changes in assets in debts rather than income minus consumption; and using well measured components of nondurable consumption as instruments) we observe very little change in the estimated relationship. This is inconsistent with the view that measurement error in consumption imparts a substantial negative bias to the estimates.

Consequently, we believe that the most reasonable interpretation of the data is that education is a poor instrument, probably because it is correlated with unobserved tastes for saving. The best guide to the relationship between saving rates and lifetimes incomes are the estimates which use consumption as an instrument for lifetime income. We therefore conclude that the rich do not save more - at least compared to those in the middle of the lifetime income distribution. saving rates are very flat above the bottom quantile of lifetime incomes. However, the poor - those in the bottom quintile - save very little.

This conclusion differs somewhat from that reached by Dynan et al. (2004), largely because we put much greater weight on the results that use nondurable consumption as an instrument. We are able to do so because of the quality and unique features of the FAMEX data.

Our bottom line then is that standard economic models of saving (which by and large imply constant saving rates by lifetime income) might provide reasonable guidance to the types of policy questions raised in the introduction - except for their failure to replicate the saving behavior of the poorest quintile. Our results confirm that those that are poor in a lifetime sense do not save: it is not just the case that those with transitorily low income dissave. This provides a useful guide for future research priorities.

Are the low savings rates of the poor a rational response to disincentives in social insurance programs (as suggested by Hubbard et al., 1994)? Social insurance programs may discourage the saving of poorer households in two ways. First, the insurance provided by these programs may diminish the precautionary saving motive ("crowding out" self-insurance.) Second, the means-testing and clawbacks in such programs may mean that the poor face very low after-tax returns on saving. Shillington (2003) has pointed out that the combination of the of the reduction rate in the Guaranteed Income Supplement (GIS) and income taxes mean that many seniors of modest means will face tax rates of 100 percent or more on income from RRSPs (tax-favoured retirement saving accounts). Thus, these households may have very little retirement saving motive. Alternatively, do the very low savings rates of the poor reflect something about preferences (such as a "consumption floor") or about behaviour (such as a limited capacity to plan or optimize)? The policy implications of these alternative explanations are very different and hence further research to fully establish the role of each in shaping the saving behaviour of lower income households remains important.

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TABLE 1: DESCRIPTIVE STATISTICS – 1996 FAMEX

Variable	Median	Mean	Std Dev.	Minimum	Maximum
Full Sample - 6061 Households					
Gross Income	51,000	56,491	35,291	500	292,400
Net Income	38,715	42,201	23,786	1,888	237,016
Total Consumption	32,242	34,918	18,121	-2,019[1]	185,484
Savings	3,897	5,762	15,239	-214,775	154,859
Change in Assets	2,040	3,700	14,848	-209,692	182,247
(Y-C)/Y	11.63	6.05	34.70	-200	101.54
ΔA/Y	6.28	3.27	32.86	-200	200
Couples – 4204 Households					
Gross Income	61000	66,202	35014	2700	292,400
Net Income	45325	49,085	23,216	2360	237,016
Total Consumption	36953	39,925	17673	4454	185,484
Savings	6231	7623	16140	-114,868	154,859
Change in Assets	3777	4815	15630	-125,118	170,288
(Y-C)/Y	14.86	9.73	31.54	-200	83.99
ΔA/Y	8.69	5.36	30.39	-200	200

Notes:

1. The data contain a single observation with negative total consumption. This arises because the household sold a vehicle. Reported results include this household in all calculations, but all of our results are robust to the exclusion of this household from the sample

TABLE 2: MEDIAN REGRESSION OF SAVING RATES ON AGE AND CURRENT INCOME QUINTILE DUMMIES

Sample	Couples (4204 households)			Full (6061 households)		
Saving Measure	(Y-C)/Y	(ΔA)/Y	Pooled	(Y-C)/Y	(ΔA)/Y	Pooled
Quintile 1	-3.33	-.15	-3.25	-6.30	0	-3.78
	(1.25)	(.51)	(.93)	(.91)	(.22)	(.74)
Quintile 2	11.23*	5.51*	5.64*	7.82*	2.94*	3.19*
	(1.07)	(.91)	(.87)	(.94)	(.62)	(.74)
Quintile 3	14.54*	9.15	9.17*	13.66*	7.51*	8.43*
	(1.07)	(.77)	(.78)	(.90)	(.71)	(.71)
Quintile 4	20.40*	12.67*	13.65*	18.84*	10.51*	12.32*
	(.86)	(.86)	(.69)	(.87)	(.62)	(.74)
Quintile 5	27.86*	17.10*	19.17*	27.40*	16.36*	19.22*
	(.96)	(.86)	(.90)	(.88)	(.62)	(.68)
Age 30 -39	-.65	.15	-.24	-1.87	0	-.33
	(.97)	(.56)	(.74)	(.87)	(.24)	(.64)
Age 50 –59	2.83	.21	1.70	1.28	0	.86
	(1.12)	(.74)	(.91)	(.96)	(.26)	(.77)
(Y-C)/Y (dummy)	-	-	5.43	-	-	3.69
			(.37)			(.33)

Notes:

1. Standard errors based on 999 bootstrap replications
2. For the pooled estimates, the sample size is doubled and the (panel) bootstrap involves resampling pairs of observations
3. * denotes that the coefficient on this quintile is statistically different than the coefficient on the preceding quintile at the 5% level

TABLE 3 MEDIAN REGRESSION OF SAVING RATES ON AGE AND LIFETIME INCOME QUINTILE DUMMIES (COUPLES)

Instrument(s) for Lifetime Income	Education of Head and Spouse			Nondurable Consumption		
First Stage R^2	0.15			0.49		
Saving Measure	(Y-C)/Y	(ΔA)/Y	Pooled	(Y-C)/Y	(ΔA)/Y	Pooled
Quintile 1	11.01	5.59	4.86	14.20	6.34	6.95
	(.95)	(.94)	(.83)	(1.20)	(.92)	(.94)
Quintile 2	13.23	6.69	6.57	18.06	10.11*	10.58*
	(1.26)	(.98)	(.96)	(1.31)	(.87)	(.92)
Quintile 3	15.38	8.75	8.60	14.81	8.89	8.77
	(1.13)	(1.00)	(.89)	(1.26)	(.91)	(.90)
Quintile 4	19.73	11.33	12.03	16.42	9.35	9.49
	(1.23)	(.96)	(.98)	(1.15)	(.92)	(.84)
Quintile 5	22.29	13.60	14.14	11.32	7.32	6.10
	(1.39)	(91)	(.94)	(1.23)	(.95)	(.95)
Dummy	-	-	6.63	-	-	6.26
			(.37)			(.38)
Age 30 -39	-1.38	.07	-.41	-1.76	-.04	-.62
	(.96)	(.86)	(.80)	(1.13)	(.80)	(.82)
Age 50 –59	2.14	.17	1.41	2.57	.69	1.81
	(1.11)	(.95)	(.93)	(1.19)	(.91)	(.89)

Notes:

1. Sample size: 4204 households
2. Standard errors based on 999 bootstrap replications
3. For the pooled estimates, the sample size is doubled and the (panel) bootstrap involves resampling pairs of observations
4. * denotes that the coefficient on this quintile is statistically different than the coefficient on the preceding quintile at the 5% level

TABLE 4: MEDIAN REGRESSION OF SAVING RATES ON AGE AND LIFETIME INCOME QUINTILE DUMMIES

((ΔA)/Y Saving Measure)

Sample	Couples (4204 households)			Full (6061 households)		
Instrument(s) for Lifetime Income	Nondurable Consumption	Food	Food and Telephone	Nondurable Consumption	Food	Food and Telephone
First Stage R^2	0.49	0.25	0.27	0.59	0.38	0.39
Quintile 1	6.34	7.61	7.25	0	0	0
	(.92)	(.88)	(.81)	(.15)	(.21)	(.19)
Quintile 2	10.11*	9.32	10.06	6.67*	5.66*	6.41*
	(.87)	(.99)	(.96)	(.74)	(.78)	(.75)
Quintile 3	8.89	9.61	9.77	9.02	9.25	8.78
	(.91)	(.77)	(.77)	(.68)	(.72)	(.80)
Quintile 4	9.35	7.61	7.55	8.69	8.78	8.92
	(.92)	(1.03)	(.88)	(.61)	(.63)	(.59)
Quintile 5	7.32	6.98	6.45	7.31	6.89	6.78
	(.95)	(.89)	(.97)	(.63)	(.70)	(.74)
Age 30 -39	-.04	.61	.67	0	0	0
	(.80)	(.83)	(.80)	(.27)	(.36)	(.34)
Age 50 –59	.69	1.18	1.36	0	.02	0
	(.91)	(.90)	(.83)	(.33)	(.47)	(.40)

Notes:

1. Standard errors based on 999 bootstrap replications
2. For the pooled estimates, the sample size is doubled and the (panel) bootstrap involves resampling pairs of observations
3. * denotes that the coefficient on this quintile is statistically different than the coefficient on the preceding quintile at the 5% level

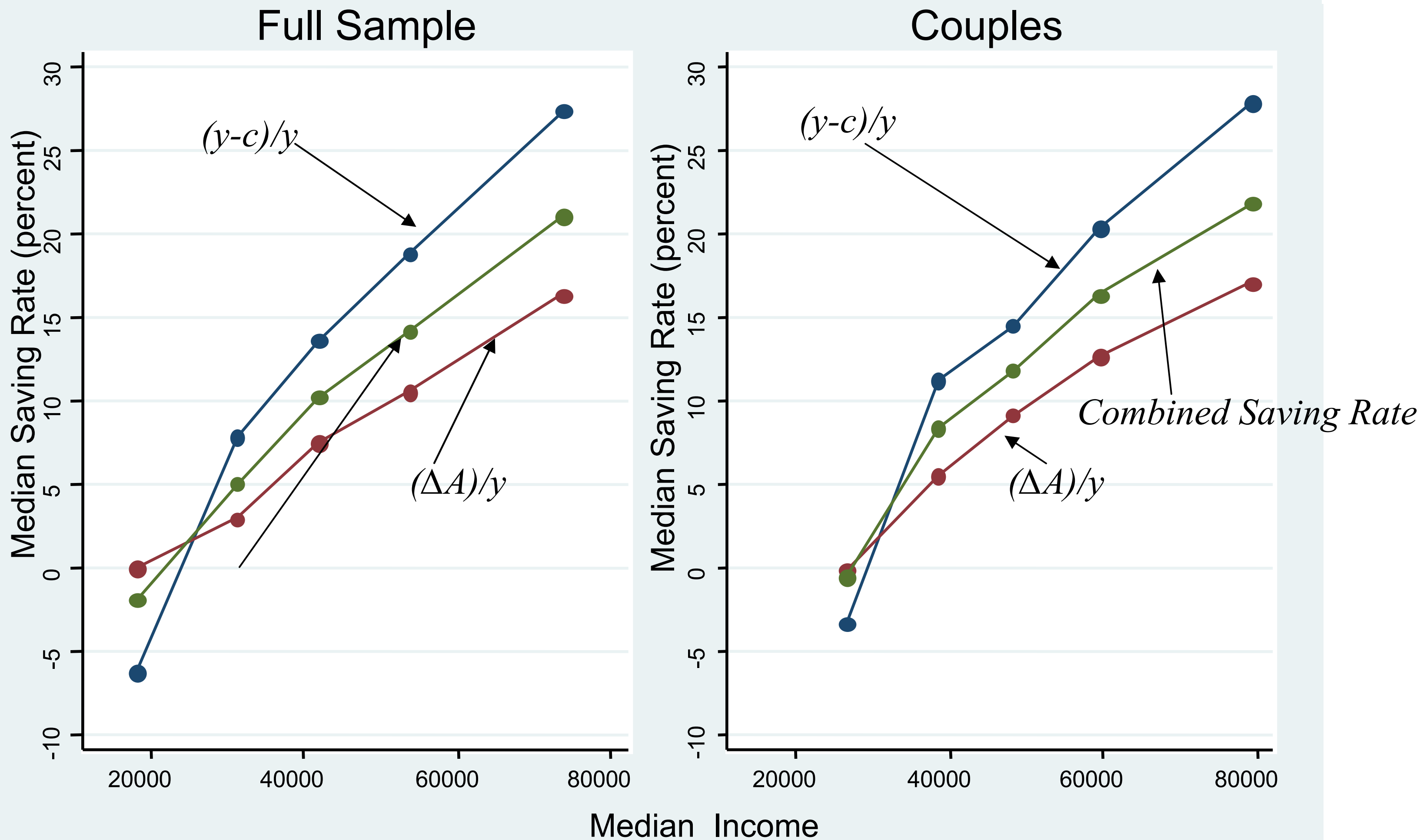

Figure 1: Current Income Quintiles and Median Saving Rates

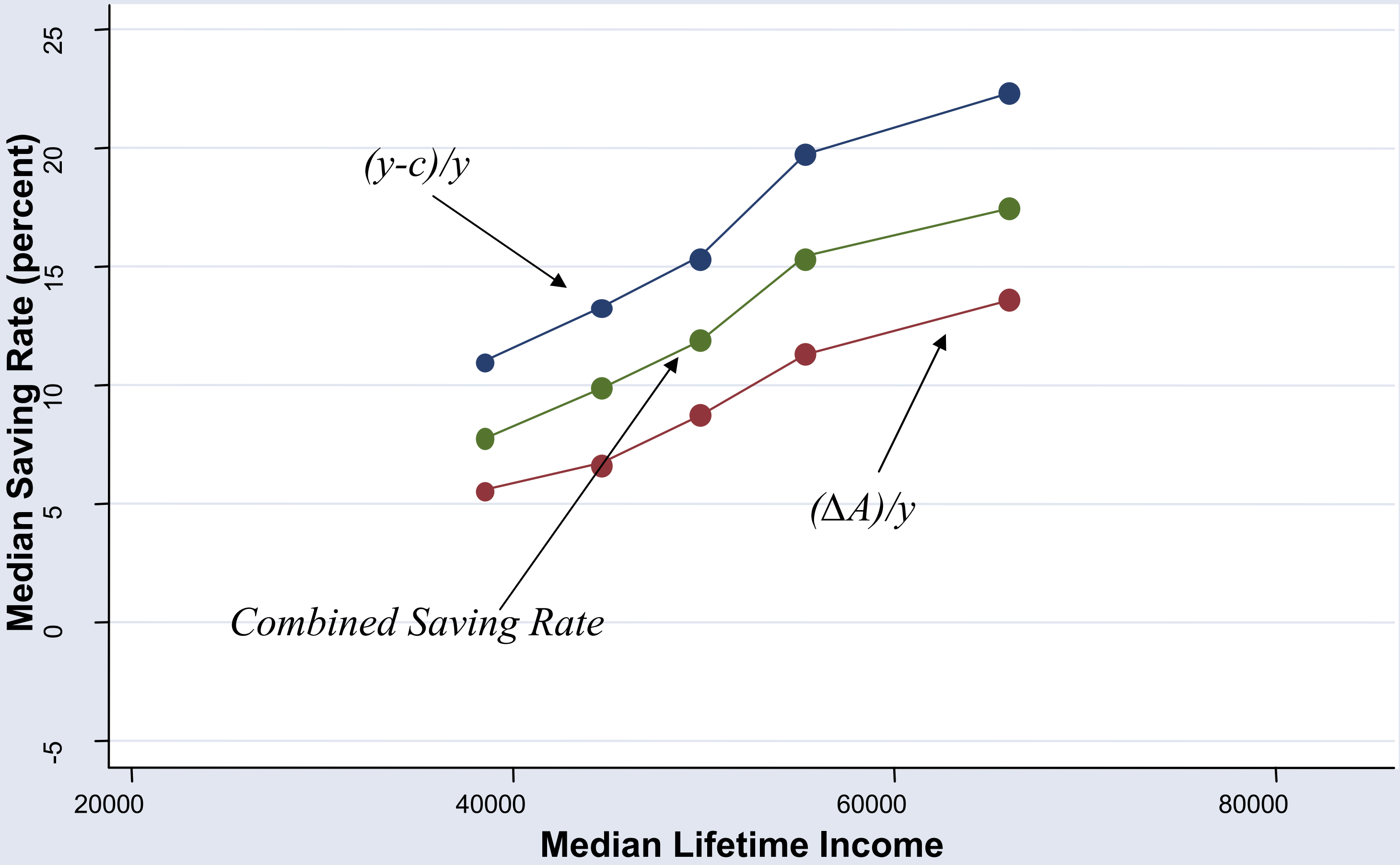

Figure 2: Median Savings Rates and Lifetime Income Quantiles

Couples, Education Instrument

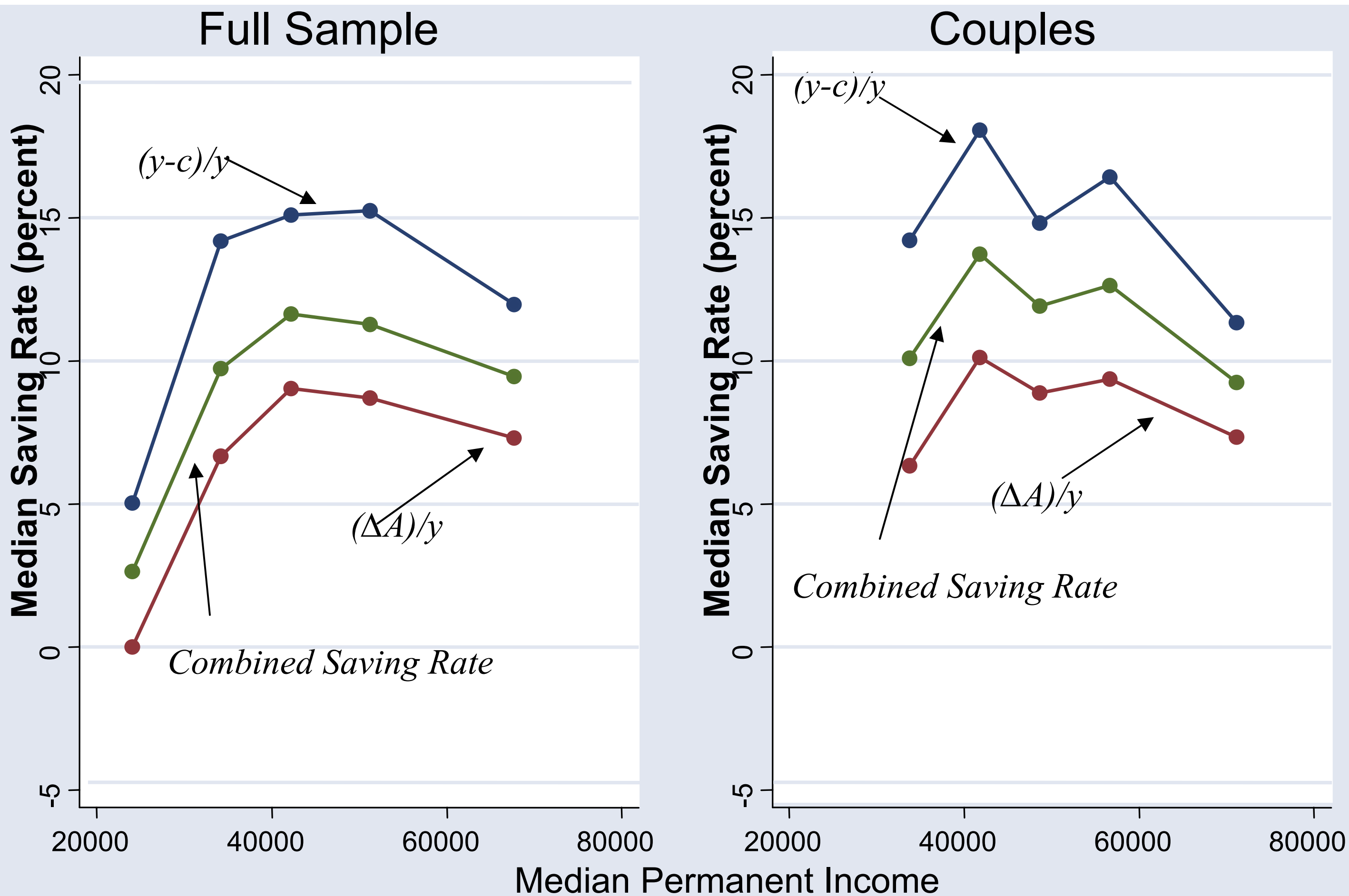

Figure 3: Median Savings Rates and Lifetime Income Quantiles

Nondurable Consumption Instrument

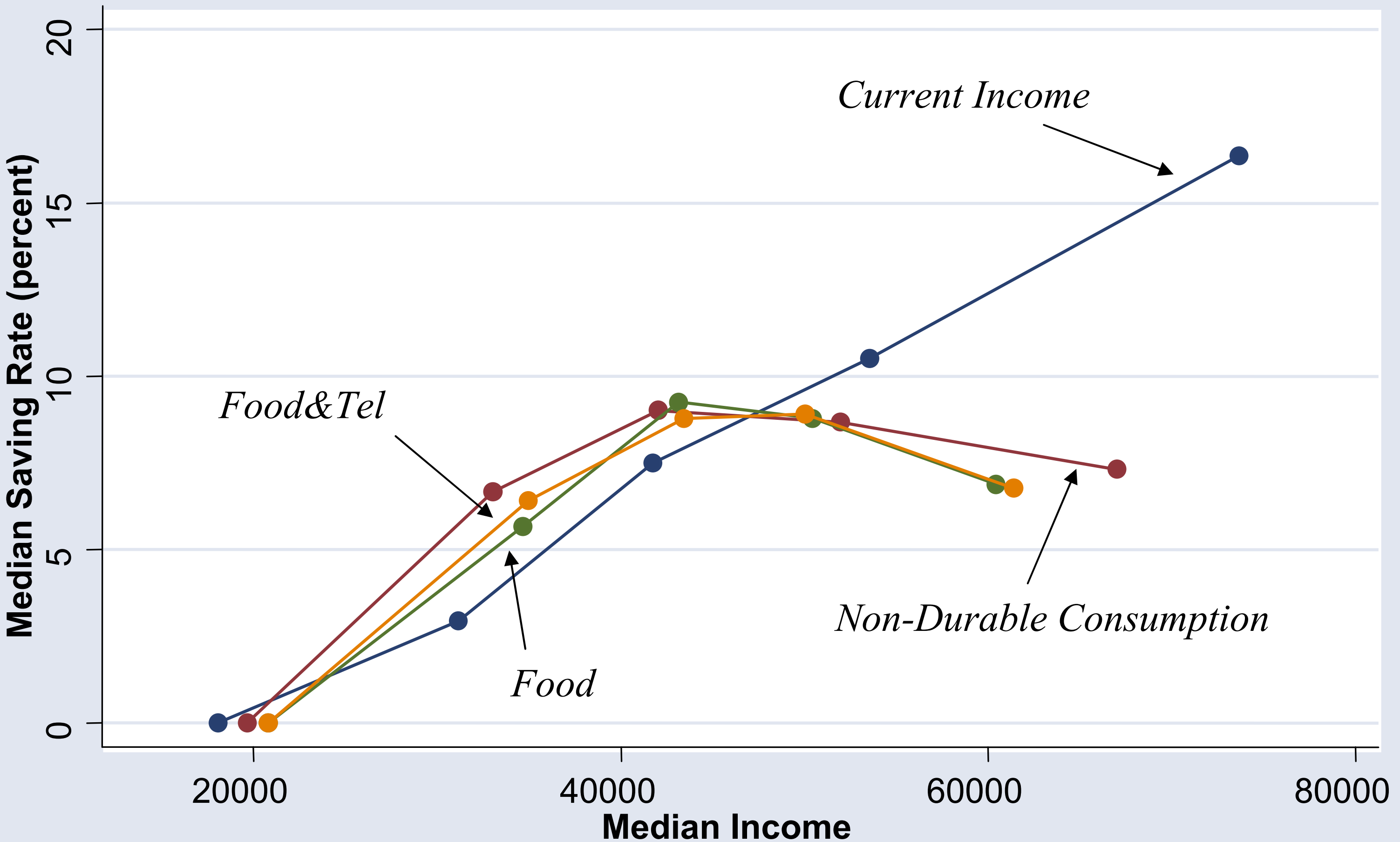

Figure 4: Median Savings Rates and Lifetime Income Quantiles

Full Sample, (ΔA)/y Saving Measure, Alternative Instruments

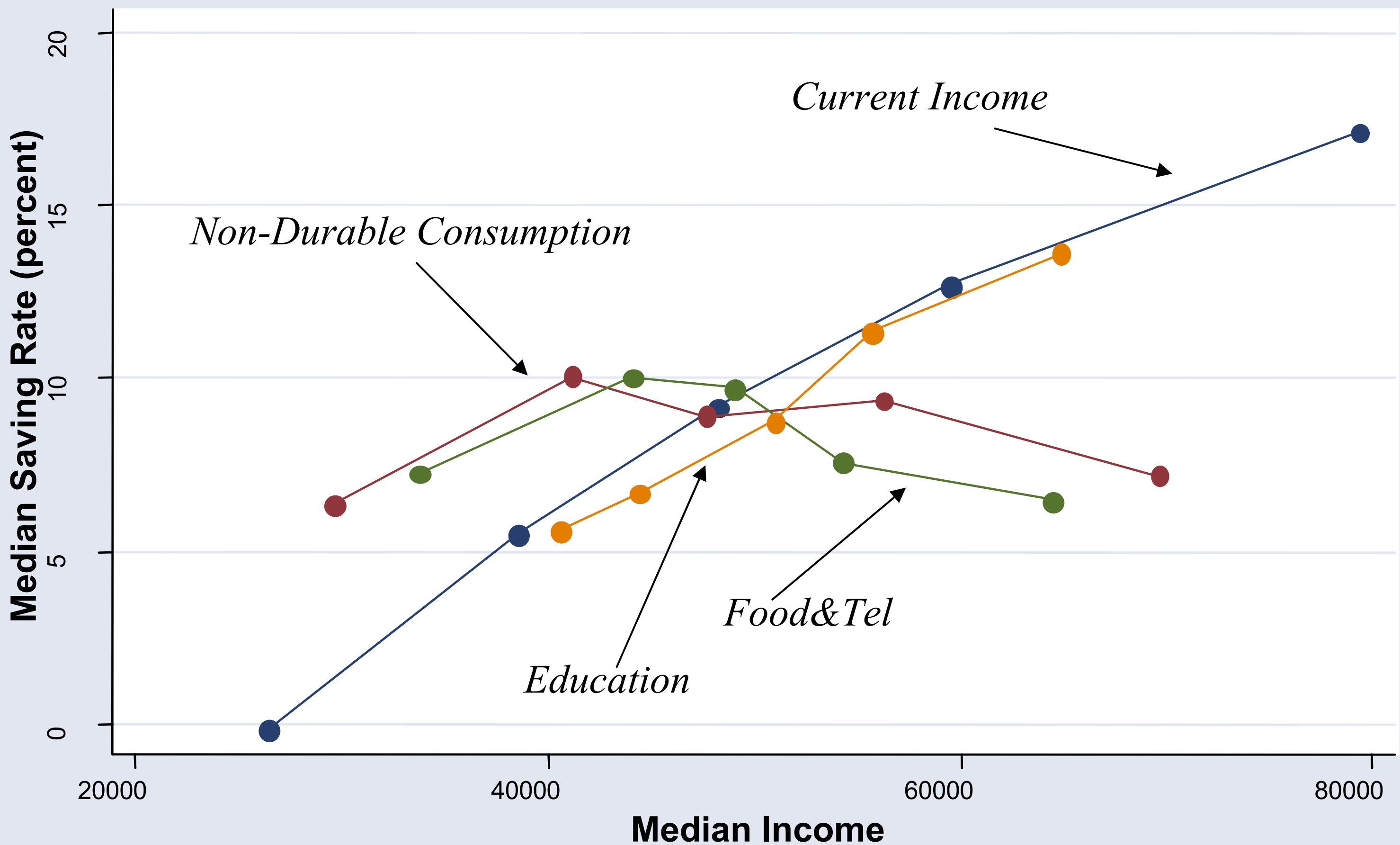

Figure 5: Median Savings Rates and Lifetime Income Quantiles

Couples, (ΔA)/y Saving Measure, Alternative Instruments