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The tax benefit of income smoothing

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ABSTRACT

A worker can reduce tax liability by contributing to a private pension plan when marginal tax rates are high and withdraw pension benefits when marginal tax rates are low. We quantify the tax benefit of income smoothing through the private retirement system and find that it is negligible. This conclusion is important to households, investment advisers, tax policymakers, and scholars engaged in financial retirement planning.

1. Introduction

The United States Congress provides citizens with incentives to save for their own retirement. The two pillars of the private retirement system are tax-exemption of pension plan income and income smoothing. The smoothing benefit is a consequence of tax progressivity. By contributing before-tax income during work years when infra-marginal tax rates are high, and withdrawing funds at retirement when they tend to be low, lifetime tax liability is reduced. Using data from 1979, Ippolito (1986) reaches the conclusion that the two tax benefits are approximately equal and allow a worker to cut lifetime tax liability by as much as 40% together. That the tax-exemption of pension plan income remains large is obvious.[3] However, the tax benefit of income smoothing is not equally clear as it depends on lifetime consumption and savings decisions and all the complications that arise from long-term planning. Many scholars cite the relevance of the smoothing effect, but nobody has updated its measurement since Ippolito (1986).[4] The objective of our paper is to quantify the tax benefit of income smoothing in recent years. Ascertaining the value of the smoothing benefit should be of interest to both households managing their own retirement accounts, investment advisors and union leaders designing retirement plans and scholars engaged in research on savings and consumption decisions.

Relative to the attention paid to the smoothing benefit in textbooks, articles, by investment advisers, and by Ippolito (1986), our estimate of the maximum smoothing benefit is surprisingly small. The average worker cannot reduce the average tax rate by more than 3.2 percentage points. The main reason is that the United States income tax system as of 2010 is not sufficiently progressive. With Social Security income, the tax rate reduction resulting from lifetime income smoothing decreases to 1.7 percentage points. Reasonable parameter estimates of real interest and income growth bring down the smoothing benefit measure even further.

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[3] Suppose the tax rate is 40%, the before-tax interest rate 5%, and the investment horizon 30 years. The after-tax balance of $1 continuously compounded inside a pension plan account equals $4.48 × (1 − 40%) = $2.69. This can be compared to regular savings with income taxes paid upfront. The after-tax balance of $1 before-tax income continuously compounded at the 3% after-tax interest rate equals $1 × (1 − 40%) × $2.46 = $1.48. In this example, the net proceeds from saving inside the pension plan are about 80% higher.

[4] E.g., Munnell (1982), Ozanne and Lindeman (1987), Feenberg and Skinner (1989), Ragan (1994), Burmann et al. (2001), Horan (2005), Turner (2005), Lankford (2008), Horan (2009), Nishiyama (2010). See also the tax treatment of pensions in the Encyclopedia of Taxation and Tax Policy.

For example, a real interest rate and an income growth rate of 1% each reduces the smoothing benefit to 1.4%. We believe that such a small magnitude is unlikely to motivate the type of disciplined savings necessary to obtain the maximum smoothing benefit.

As an example of the potential smoothing benefit, consider a worker with annual taxable income $300,000.[5] Using the 2010 federal income tax table, the standard deduction, and two exemptions, the average tax rate on this income is 23.3%. If the worker could split his income equally between work years and retirement years, the taxable income would decrease to $150,000 and the average tax rate drops to 16.4%. Accordingly, the smoothing benefit equals the 6.9 percentage point reduction in the average tax rate. This is a considerable tax benefit worth paying attention to, but many real-world features reduce it. (i) Time spent in the work force tends to exceed the number of retirement years, so annual before-tax income cannot be cut in half. (ii) Social Security income fills up lower-income brackets with non-labor income. (iii) Additional realism including real interest on retirement funds, income growth, uncertainty, bounded rationality, contribution limits, and borrowing restrictions reduce the estimate further. Within a life-cycle model extended to include Social Security, we derive an upper boundary of the smoothing benefit under *extreme behavioral assumptions* that entail lifetime planning from the time the worker enters the job market until death. Even under our extreme assumptions the smoothing benefit decreases from 6.9% in the example to 1.4%. Adding further realism such as contribution limits and postponed contributions reduces the smoothing benefit to negligible levels.

Historical smoothing benefit calculations from 1950 conclude our analysis. Ippolito (1986) provides his estimate of the smoothing benefit using 1979 data right before the tax law changes in the 1980s that reduce progressivity and make Social Security income taxable.[6] He argues that the smoothing benefit is one of the reasons for the growth of the private pension system in the United States. As the smoothing benefit is quite small for middle-income earners throughout most of the post-war period with the exception of a brief period around the time of Ippolito's study, we doubt that the tax benefit of income smoothing is a significant factor in the growth of union led retirement plans. This conclusion does not rules out Ippolito's other assertion that tax exemption of investment income has played a major role in the creation of the private retirement system.[7]

The income smoothing problem in our paper adds to the literature on tax shifting within a progressive system. There are papers studying the tax implications of shifting income across spouses, unmarried couples, from parents to children, and across households.[8] The tax code itself permits income smoothing. There are carry back and carry forward provisions for corporations (operating losses) and households (capital losses). Farmers and fishermen can pay tax on income averaged over the current year and the three past years and, during a twenty-year period before TRA 1986, income averaging was available to the general tax payer.

The rest of the paper is organized as follows: Section 2 provides the reader with a short summary of the main features of the private and public pension systems in the United States. In the next Section 3, we derive the tax implications of income smoothing using a tax table with only three income brackets and large tax rate jumps. In Section 4, we apply the baseline model to personal income taxation in the United States 2010. The section ends with the analysis of the historical United States time-series. Section 5 concludes the paper. In Appendix A, we analyze two examples of income smoothing and uncertainty. In one example, uncertainty is irrelevant and, in the other example, uncertainty slightly decreases the smoothing benefit. We conclude from these examples that uncertainty is largely irrelevant to income smoothing. When uncertainty matters, it unambiguously decreases the smoothing benefit.

2. Institutional background

In the United States, there is an array of retirement savings options. We describe the most relevant options to our study. We classify options according to the tax provisions that attach to them. Other important attributes include the sponsor, the party who bears the risk of investment performance, and the option of not participating.

A large class of retirement savings options allows for pre-tax contributions to savings, tax-free growth, and taxed withdrawals. Options in this class include 401(k), 403(b), 414(h), and 457(b) employer-sponsored retirement savings plans. Qualifying contributions to traditional Individual Retirement Accounts (IRAs) are also included. The difference between IRAs and the other options is that IRAs are self-initiated, while 401(k) products must be provided by employers. Also, the statutory limits on IRA contributions are relatively small. Defined benefit pension plans also belong to this class. Although workers may not have to contribute explicitly to their pension plan it is often the case that pension benefits are granted in lieu of wage increases (Lowenstein, 2008). Hence defined benefit pension plans offer implicit pre-tax retirement savings. The important distinction between defined contribution plans such as 401(k)s and defined benefit plans is the party that bears the risk of investment performance. In the former it is the worker, in the latter it is the employer.

A second option for retirement savings is an after-tax contribution that offers tax free growth and withdrawal of earnings. Options in this class are employer-sponsored Roth 401(k)s and self-initiated Roth IRAs. As in the pre-tax case, the Roth 401(k) allows for significantly higher statutory limits on contributions than the Roth IRA. It is also possible to convert traditional IRAs and 401(k)s to Roth plans. Under a flat-tax system, Roth and traditional plans yield identical tax savings. The Roth account also has the advantage of higher effective contribution limits (see Burmann et al., 2001).

A third option, that is generally not of great importance, are after tax contributions that offer tax free earnings growth but not tax free withdrawal. Most notable in this class are contributions to traditional IRAs that do not qualify for pre-tax treatment. For individuals covered by a retirement plan by their employers, the income limit excludes many individuals who would have the financial resources for savings from qualifying for pre-tax treatment of contributions. For individuals without an employer-sponsored plan there is no income limit, however there are significant limits on the size of contributions relative to 401(k) plans. United States Savings Bonds have similar provisions in that they are after-tax savings vehicles that accrue earnings tax free but are taxed upon withdrawal. One difference between savings bonds and IRAs is that savings bond income is not taxable at the state and local level.

By far the most important source of retirement income in the United States is Social Security. Unlike all of the options described above, Social Security is mandatory for most workers in the United States. Overall Social Security accounts for about 40% of retirees'

[5] This example is inspired by the example of income shifting between spouses and children from Stiglitz (1988a).

[6] The Economic Recovery Tax Act of 1981 (ERTA 1981), The Social Security Amendments of 1983 (SSA 1983), and The Tax Reform Act of 1986 (TRA 1986).

[7] See Rydqvist et al. (2013) for a statistical test of this hypothesis in a cross-country and time-series panel data set.

[8] Stephens and Ward-Batts (2004) analyze spouses, Eissa and Hoynes (2000) study unmarried couples, and Stiglitz (1988b) discusses shifting income from parents to children. Green and Rydqvist (1999) study interpersonal netting of stock market gains and losses through trading in lottery bonds.