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Optimal savings with taxable and tax-deferred accounts

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ABSTRACT

We solve and estimate a life-cycle model with earnings risk and liquidity constraints in the presence of tax-deferred retirement accounts (TDAs). We explicitly consider two very different types of households (with TDAs): direct and indirect stockholders. The latter hold stocks only through TDAs and, consistent with the data, save considerably less than the former, who hold stocks both inside and outside these accounts. We find that TDAs promote higher wealth accumulation but only marginally higher net savings. Consumption increases mostly during retirement, as desired, but the effect is largest for those households with higher savings rates already.

1. Introduction

Individual tax-deferred retirement accounts in the U.S. pension system have grown considerably during the last two decades. According to the Investment Companies Institute 2007 Fact Book (http://www.icifactbook.org), as of December 2006, the retirement plans with individually-directed asset allocation decisions accounted for $8.3 trillion (that is, more than 50% of all retirement assets of $16.4 trillion).[3] As more households rely on defined contribution plans to finance their retirement expenditures, understanding the influence of such tax-deferred accounts (TDAs) on their individual decisions, and on aggregate economic activity becomes increasingly important.

In the last two decades there has been substantial work devoted to the understanding of the role of tax-deferred accounts in individual saving over the life cycle. Tax-deferred accounts provide investors with a higher effective after-tax return than (standard) taxable accounts (TAs) since taxes are only paid upon withdrawal of the funds. More precisely, the initial investment is exempt from labor income taxes, and the investments accumulate tax free. Consequently, for a given consumption (and savings) path, households will accumulate more wealth by investing in TDAs rather than TAs. As well

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[3] These plans include IRAs and employer-sponsored defined contribution plans such as 401(k), 403(b), and 457 deferred compensation plans.

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understood by economists, this creates two opposing incentives for households: a substitution and an income effect. Therefore, the impact on the optimal savings decision is ambiguous. Empirically, the impact has been hard to measure, due to the endogeneity of the TDA participation decision (TDA-holders may have stronger saving motives). For instance, eligibility for a TDA, which is often used as an instrument, can also be endogenously related to savings motives since workers with higher savings motives may opt into the jobs with 401(k) retirement plans (see, for example, Bernheim, 2002 for a discussion).

As a complement to this approach, here instead we estimate a structural life cycle model to shed light on this very important question. Our motivation is that, while ambiguous in general, the effect of TDAs on savings may become more precise in a relatively rich model parameterized consistently with empirical observations. We therefore build a structural life-cycle model with both taxable and tax-deferred accounts, designed to capture some key features of household-level data by integrating two main motives previously identified as quantitatively important in explaining individual and aggregate savings: a precautionary and a retirement motive. These motives vary in importance among two distinct household groups: *indirect* and *direct* stockholders. Indirect stockholders only own stocks in their tax-deferred accounts, while direct stockholders hold equities in their taxable accounts (and may also own stocks in tax-deferred accounts). This categorization is motivated by empirical evidence from the Survey of Consumer Finances (SCF) which shows that these two groups have substantially different wealth accumulation profiles. Specifically, indirect stockholders accumulate less wealth, especially in their taxable accounts.

To generate the empirical differences in wealth accumulation between direct and indirect stockholders, we allow them to have different preference parameters in the estimation, more precisely, we allow for heterogeneity in the elasticity of intertemporal substitution, and in the discount factor. The estimation results confirm that there is indeed a significant difference in these parameters across the two groups. Moreover, we assume that there is a small fixed cost of becoming a direct stockholder, and making the decision of direct stock market participation endogenous. We estimate the two preference parameters for the two different groups to match their respective median TA and TDA wealth accumulation over the working lifecycle. With a fixed cost of around 5% of mean annual labor income, the model can replicate limited direct stock market participation and reasonable wealth accumulation profiles over the life cycle.

The estimated structural model is then used as a benchmark to study the impact of TDAs along a number of different dimensions. We find that, in the presence of tax-deferred accounts, wealth accumulation increases but household net savings (total income minus consumption) are only marginally affected. The income effect from the tax shelter offsets the substitution effect for a large range of preference parameters based on the previously estimated values. The tax savings from the TDA generate higher wealth accumulation for a very similar savings rate and therefore households can enjoy a higher wealth-to-earnings ratio at retirement without having to decrease their working-life consumption. As a result, early in life the consumption patterns are essentially the same with and without the TDA, and at mid-life households already start to increase their consumption. Therefore, the TDA wealth accumulation comes mostly from the combination of a crowding-out effect in the TAs, and the income effect from the tax savings. This conclusion is very important since, if TDAs generate higher total wealth accumulation mostly due to the tax savings effect, then this might not carry over in general equilibrium, where those tax deductions have to be financed. The analysis in the paper is partial equilibrium in nature, and therefore we do not make claims about overall increases in wealth or savings.

Our main focus is instead on the differential impact of these accounts on the individual life-cycle profiles, as all households will face the same potential changes in rates of return and wages (or even tax rates) that might arise in a general equilibrium analysis.[4] First, we find that the increase in consumption occurs mostly during retirement. This is important because it shows that TDAs are effective in promoting a transfer of resources from working life to the retirement period, which is what they are designed to do. So, even though they do not promote significant additional household savings, the tax benefits are used to finance extra retirement consumption. However, we also find that the households that are most responsive to these incentives are those that would already save more in their absence. More precisely, while the households with the highest savings motive (thus the highest saving rates in the absence of a TDA), increase their net wealth accumulation when offered the opportunity to invest in these accounts, those with the weaker savings incentives keep their consumption levels unchanged and simply transfer (part of) their previous savings to the new account. Therefore, TDAs will have a smaller impact on the households that save less for retirement in the first place. In addition, for these households, the higher consumption is almost exclusively concentrated in the years just before retirement and in the first 15 years of retirement, so that they are still left with very little wealth to finance their old age expenditures.

The contribution of this paper complements the findings of the empirical literature studying the role of tax-deferred accounts in individual savings. Some of the earlier papers highlighted the difficulties in identifying empirically the impact of TDAs and reached conflicting conclusions. For example, Poterba et al. (1995, 1996) argue that 401(k) participants have increased savings, while Engen et al. (1996) conclude that no new savings were created. Bernheim (2002) provides an excellent survey of the literature on this and related topics. More recently, Engen and Gale (2000) find that for higher income 401(k)-plan participants, TDA savings represent a substitution of other savings. On the other hand, lower income participants appear to have increased their savings after becoming eligible to participate in 401(k) plans. Gale (2005) surveys the literature and argues that there is a mismatch between those who take advantage of the pension subsidies and those who need to save more for retirement. This is consistent with our results.

[4] We acknowledge that there is still potential for some differences, for example due to the progressivity of personal income tax rates.