WP/01/97

IMF Working Paper

Can Inheritances Alleviate the Fiscal Burden of an Aging Population?

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INTERNATIONAL MONETARY FUND

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IMF Working Paper

African Department

Can Inheritances Alleviate the Demographic Burden?

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August 2001

Abstract

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With pay-as-you-go schemes in place, population aging will impose a heavy fiscal burden on young and future cohorts. However, these cohorts may also profit from larger inheritances as the number of heirs declines. The aim of this paper is to explore the compensating potential of private intergenerational transfers. A dynamic, computable general equilibrium model is employed allowing for a pay-as-you-go scheme, various bequest motives, and an endogenous labor supply. The findings are twofold. First, the increase in future generations' inheritances is insufficient to make up for the demographic burden. Second, increasing the inheritance tax during the demographic transition may alleviate the fiscal burden of future generations by improving overall efficiency.

JEL Classification Numbers: H55, E62, D58

Keywords: Bequests, Taxation, computable GEM

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I. Introduction

Coping with the fiscal consequences of population aging is generally perceived as one of the central challenges of the decades to come. With generous pay-as-you-go schemes in place in most countries, policymakers, as well as the general public, are particularly concerned about the demographic transition's impact on intergenerational distribution. Most of the programs are of a defined-benefit type. Consequently, an increasing ratio of retirees to workers will impose a formidable fiscal burden on the young and yet unborn. This notion is underpinned by empirical evidence. Recent generational accounting studies find that 19 out of the 22 countries examined exhibit a fiscal imbalance to the detriment of future generations (see Raffelhüschen, 1999; and Kotlikoff and Raffelhüschen, 1999).

However, in addition to public intergenerational transfers in the form of social security, health care, and old-age care programs, generations are linked by a variety of private intergenerational transfers. They include, inter alia, bequests, interest-free loans, or investment in the children's human capital. Alike their public counterpart, these private intergenerational transfers are affected by population aging. Thus, it is possible that the overall resources bequeathed by parents to all of their children stay constant, or that the inheritance per capita received by each offspring remains unchanged; but it is not possible for both of these magnitudes to remain constant during a demographic transition. While the underlying transfer motive determines to which extent heirs profit from a reduction in their number, it will be shown that all of the prominent transfer motives imply an increase in the inheritance per capita. The aim of this paper is to explore the compensatory potential of this increase in inheritances.

While the joint welfare effect of public intergenerational transfers and population aging has been extensively investigated (e.g., Auerbach and Kotlikoff, 1987; and Raffelhüschen and Risa, 1997), so far relatively little has been said about the welfare implications of private intergenerational transfers. Where private transfers have been taken into account, the authors usually confine their analysis to a single transfer motive (Auerbach and others, 1989; and Raffelhüschen, 1989). Lacking empirical evidence in favor of a predominant transfer motive, this approach seems somewhat tenuous. This paper, therefore, investigates the welfare implications of private transfers during a demographic transition by making allowances for different bequest motives.[1]

Of course, intergenerational transfers are not the only way in which the demographic transition affects generations' welfare. In addition, population aging will change factor incomes and entail substantial distortions of labor supply decisions — effects that can be captured only in a general equilibrium setting with optimizing agents. In order to give a comprehensive assessment of the transition's impact on intergenerational distribution, this

[1]For an overview of the empirical literature on private intergenerational transfers refer to Lueth (2001).

study resorts to a computable, dynamic general equilibrium model with overlapping generations in the tradition of Samuelson (1958) and Diamond (1965). The framework permits changes to be made in the representative agent's transfer motive and labor supply decision simply by modifying some parameters in his utility function. Accordingly, the effects of specific transfer motives or distortionary taxes can be isolated by way of comparative static analysis. The main findings are twofold. First, the increase in future generations' inheritances is not sufficient to compensate for the fiscal burden. Second, increasing taxes on bequests during the demographic transition may improve overall efficiency and, in this way, alleviate the demographic burden of future generations.

The paper will proceed as follows. Section II presents the general model, incorporating an endogenous labor supply and a statutory pay-as-you-go scheme, as well as the most prominent transfer motives, namely, joy-of-giving, accidental bequests, and exchange.[2] Note, however, that the following analysis will only consider one motive at a time. Section III starts with a partial equilibrium analysis with exogenous labor supply. Subsequently, it is investigated how the inclusion of factor price movements modifies the distributive outcome. Section IV introduces distortions into the model by allowing for an endogenous labor supply. It is then examined whether the taxation of bequests can improve future generations' welfare on efficiency grounds. Conclusions are drawn in Section V.

II. The Model

Consider an economy that is made up of individuals with identical preferences and a maximum life expectancy of two periods. While everybody lives through the first period of life, the probability of surviving to the end of the second period is π. After the first period of life, each individual has $(1+n_t)$ children, where t is the parent's generation index. Consequently, at any given point in time, the economy comprises two overlapping generations.

It is assumed that the preferences of a representative agent born in t can be described by the following expected utility function with constant elasticities of substitution:

[2]Altruistic bequests are not considered. For one thing, intergenerational transfers have no impact on intergenerational distribution with altruism operational (see Barro, 1974). For another, the effects of taxing altruistic bequests can be approximated perfectly by resorting to the somewhat simpler joy-of-giving motive (see Abel and Warshawsky, 1988).

$$u_t = \left[\left(\left(c_t^1\right)^{1-1/\rho} + \nu\left(l_t\right)^{1-1/\rho} \right)^{\frac{1-1/\lambda}{1-1/\rho}} + \frac{\pi}{(1+\delta)}\left(c_{t+1}^2\right)^{1-1/\lambda} + \frac{\pi\mu}{(1+\delta)}\left(I_{t+1}^j\right)^{1-1/\lambda} \right.$$

$$\left. + \frac{\pi\varphi}{(1+\delta)}\left(A_{t+1}\right)^{1-1/\lambda} \right]^{\frac{1}{1-1/\lambda}} \qquad (1)$$

According to this formulation, the individual derives utility from first- and second-period consumption, c_t^1 and c_{t+1}^2, leisure, l_t, the per capita inheritance left to his children, I_{t+1}^j, and overall attention provided by his children, A_{t+1}. Consumption and inheritances are measured in units of a single commodity, leisure as a fraction of the individual's overall disposable time, and attention as his children's overall disposable time not dedicated to work. Agents value future less than present consumption for two reasons. First, not knowing whether they will still be alive, they weight future consumption with the probability of survival, π. Second, they discount future consumption at the rate of time preference, δ, illustrating the general uncertainty associated with events in the future. The parameters ν, μ, and φ determine the intensity of the desire for leisure, bequeathing, and attention, respectively. While λ stands for the intertemporal elasticity of substitution, ρ denotes the elasticity of substitution between first-period consumption and leisure whenever the labor supply is endogenous. Lacking empirical evidence of the substitutability among consumption, bequests, and attention, there is little reason to resort to a more general and, thus, more complicated functional form.

The agent works in the first period of life. With overall disposable time set to unity, a fraction, l_t, dedicated to leisure, and a fraction, a_t, of the remainder dedicated to his parents, the agent's labor supply equals $(1-l_t)(1-a_t)$. He earns a wage, w_t, per unit of time, which is taxed at rate τ_t. In addition to his earnings, the representative agent receives an inheritance, I_t^a, where the superscript *a* stands for "accidental." This inheritance is left behind by short-lived parents, who, in the absence of corresponding markets, were unable to annuitize the wealth provided for the possibility of longevity. With savings denoted s_t, the agent's first-period budget constraint can be stated as

$$c_t^1 = I_t^a + (1-a_t)(1-l_t)(1-\tau_t)w_t - s_t \ . \qquad (2)$$

If the agent survives to the end of the second period, he gains interest on his savings at rate r_{t+1}. Furthermore, he receives an inheritance, I_t^j, that his parents left behind for joy-of-giving, as well as an inheritance, I_t^x, in exchange for filial attention. Since both inheritances constitute wealth accumulated in the previous period, they too yield interest at the market interest rate. These earnings, together with an old-age benefit, tr_{t+1}, are spent on second-period consumption and bequests. The latter, whether motivated by joy-of giving or in exchange for attention, are taxed at a uniform rate, τ_t^i, and shared equally among the agent's $(1+n_t)$ offspring.[3] The second-period budget constraint is therefore given by the following:

$$c_{t+1}^2 = (s_t + I_t^j + I_t^x)(1+r_{t+1}) + tr_{t+1} - (1+\tau_{t+1}^i)(1+n_t)(I_{t+1}^j + I_{t+1}^x)\,. \tag{3}$$

With respect to bequests in exchange for attention, it is assumed, as in Cox (1987) and Davies (1996), that parents reap all the gains from the exchange. This implies that the agent bequeaths to his children an amount just enough to compensate them for the earnings forgone while spending time with him, that is,

$$I_{t+1}^x = (1-\tau_{t+1})w_{t+1}a_{t+1}\,.^4 \tag{4}$$

It is further assumed that the representative agent derives utility from all of his children's attention. In view of the model's symmetry, overall attention can be stated as

$$A_{t+1} = (1+n_t)a_{t+1}\,. \tag{5}$$

Finally, the accidental bequest received by the agent when young is equal to

$$I_t^a = \frac{(1-\pi)s_{t-1}(1+r_t)}{(1+n_{t-1})(1+\tau_t^i)}, \tag{6}$$

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[3]While in most countries inheritance taxation is progressive in design, the present model employs a proportional tax. The paper will later return to this matter.

[4]To be precise, this inheritance fully offsets the effects of providing attention only in the case where the labor supply is exogenous. To see this, derive the life cycle budget constraint by solving equation (3) for s_t and substituting into equation (2):

$$c_t^1 + (1-a_t)(1-\tau_t)w_t l_t + \frac{c_{t+1}^2}{(1+r_{t+1})} + \frac{(1+n_t)(1+\tau_{t+1}^i)(I_{t+1}^j + I_{t+1}^x)}{(1+r_{t+1})} = I_t^a + I_t^j + I_t^x + (1-\tau_t)(1-a_t)w_t + \frac{tr_{t+1}}{1+r_{t+1}}.$$

Obviously, attention, a_t, enters the constraint in two ways. For one thing, it reduces the endowment of labor income; for another, it reduces the price of leisure. However, only the first effect is neutralized by the inheritance, I_t^x, as formulated in equation (4). Therefore, unless the labor supply is exogenous and, thus, $l_t = 0$, parents more than compensate children for providing attention. The use of equation (4) instead of an explicit expenditure function seems, nevertheless, justifiable, given that the assumption that parents appropriate all gains from exchange is extreme anyway.

where s_{t-1} denotes per capita saving of his parents' cohort, $(1+r_t)$ accrued gross interest, and $(1-\pi)$ the fraction of predecessors dying prematurely. The accidental bequest will be divided equally among the agent and his n_{t-1} siblings and taxed at the uniform rate τ_t^i.

Now consider the specification of the government sector. In the present model, the government is confined to providing a pay-as-you-go social insurance scheme. In order to finance old-age benefits, the government can resort to a proportional labor tax, a proportional inheritance tax, or both. The government is, therefore, constrained by the following equations:

$$(1-\beta_t)\frac{\pi tr_t}{(1+n_{t-1})} = (1-l_t)(1-a_t)w_t\tau_t \text{ , and} \tag{7}$$

$$\beta_t\frac{\pi tr_t}{(1+n_{t-1})} = \pi I_t^j\tau_t^i + \pi I_t^x\tau_t^i + \frac{(1-\pi)s_{t-1}(1+r_t)\tau_t^i}{(1+n_{t-1})(1+\tau_t^i)}. \tag{8}$$

The left-hand sides of equations (7) and (8) denote government expenditure per capita of the period t working population to be financed out of labor and inheritance taxation, respectively. Specifically, tr_t is the benefit per pensioner, π the fraction of surviving individuals, $(1+n_{t-1})$ the pensioner's number of children, and β_t the (exogenously set) proportion of overall government expenditure to be financed by inheritance taxation. Correspondingly, the equations' right-hand sides give the respective tax revenue per capita of the period t working population. In what follows, the analysis is restricted to a defined-benefit, pay-as-you-go program. Consequently, tr is exogenous and constant and, with all other variables determined outside the government sector, τ_t and τ_t^i are governed by the above equations (7) and (8).

The economy's technology is described by means of a Cobb-Douglas production function. Expressed per efficiency unit, it reads $y_t = k_t^\alpha$, where y_t stands for output per unit of labor, k_t for capital intensity, and α for the capital income share. Technical progress is not explicitly modeled, however, labor-augmenting progress is implicitly taken into account in the population growth rate. Furthermore, factor markets are assumed to be perfectly competitive so that factors earn their marginal product:

$$w_t = (1-\alpha)k_t^\alpha . \tag{9}$$

$$r_t = \alpha k_t^{(\alpha-1)} . \tag{10}$$

Finally, the capital market equilibrium condition, expressed in per capita magnitudes,

$$k_{t+1} = \frac{s_t + \pi I_t^j + \pi I_t^x}{(1+n_t)(1-l_{t+1})} \tag{11}$$

states that the capital stock is formed by gross saving of the preceding period. In order to solve the model, the representative individual's utility is maximized subject to his life cycle budget constraint. The latter is obtained by means of equations (2) through (6). This way, the Marshallian demand functions for all arguments included in the utility function are derived. Subsequently, by substituting for the tax rates and factor incomes according to equations (7) through (10), one makes the microeconomic decision conditional on the economy's capital intensity. Finally, after substituting the corresponding demand functions into the capital market equilibrium condition, one ends up with the equation of motion, $k_{t+1} = f(k_t)$. On the basis of this equation, one could solve for the steady state values of all variables. Furthermore, one could determine the trajectories for all variables following a fertility shock. Unfortunately, this nonlinear difference equation is too complex to be solved analytically. For this reason, the model will be calibrated to fit the German circumstances, and the fertility shock will be analyzed by way of numerical simulation.

The model's parameterization requires numerical values for the preference parameters, λ, ρ, δ, ν, μ, and φ, the probability of survival, π, the capital income share, α, the old-age benefit, tr, and the population growth rate, n_t. Of these parameters, only α and n_t are relatively straightforward. The population growth rate falls from initially 1 percent per annum to 0.5 percent, starting with generation t. Remember that this figure reflects both the reproduction of the population and labor-augmenting progress. Likewise clear-cut is the share of capital income in GDP, which is commonly estimated at around 25 percent. Although the parameters λ and ρ have been estimated under slightly different assumptions — none of the studies included a desire for bequests and attention in the utility function — this study, nonetheless, resorts to the values reported by Auerbach and Kotlikoff (1987, p. 50), namely, 0.8 and 0.83, respectively. The remaining parameters are arbitrary, altogether.

In view of these difficulties, the paper will use as a point of reference the most basic model, including as few preference parameters as possible. With most preference parameters set to zero and a relatively reliable estimate for λ — since now the utility function does not include a desire for bequests and attention — the rate of time preference, δ, and the pension, tr, can be chosen so as to generate realistic values for the real interest rate, the capital-output ratio, and the rate of contribution to social insurance. The rate of time preference is set to 1.5 percent per annum, ensuring a capital coefficient and interest rate of 3.4 and 4 percent, respectively. The old-age transfer, tr, is set to bring about a contribution rate, τ_t, of 25 percent in the initial steady state. In Germany, the joint contribution rate to social security, health insurance and old-age care (*Pflegeversicherung*) amounts to 35 percent (see IW, 1999, Table 93). Taking into account the fact that all of these programs entail, albeit not to the full extent, public intergenerational transfers from young to old, this estimate compares fairly well with reality.

Finally, the remaining parameters initially set to zero will be increased, one at a time, to see how the inclusion of a specific bequest motive or an endogenous labor supply changes the outcomes. This is what was earlier referred to as "comparative static analysis" in the context of an intertemporal general equilibrium model. The parameter governing the intensity of the bequest motive is set so as to generate a realistic ratio of bequests to GDP, namely, 5.8 percent. The desire-for-leisure parameter, ν, is set to 0.1, which ensures a realistic rate of contribution social insurance.

III. The Impact of Bequests on Intergenerational Distribution

Before simulating the fall of fertility in a general equilibrium setting, it is helpful to briefly contemplate the partial equilibrium effects. In this case, the capital stock is unaffected by the fertility shock — one could think of a small, open economy with perfect capital mobility — and wages as well as interest rates are constant over time.

A. Partial Equilibrium

No private transfers. To begin with, the implications of an aging population in the most basic model are investigated, featuring a pay-as-you-go social insurance scheme but ignoring private intergenerational transfers. This model serves as a reference for subsequent analysis and is generated by setting ν, μ, φ, and β to zero and φ to unity. Accordingly, equations (2), (3), and (7) boil down to the agent's budget constraint:

$$c_t^1 + \frac{c_{t+1}^2}{(1+r)} = w - \frac{(r-n_{t-1})tr}{(1+n_{t-1})(1+r)} \quad . \tag{12}$$

The first generation to have fewer children is generation t, which, for convenience, is sometimes referred to as the "baby-boomer" generation. Correspondingly, generation $t+1$ is at times referred to as "baby-buster" generation. From equation (12), it follows that a permanent drop in fertility starting with generation t, that is $\ldots n_{t-2} = n_{t-1} > n_t = n_{t+1} = \ldots$, will increase the social insurance liabilities of all subsequent generations.

Joy-of-giving. Next, it is considered how the inclusion of bequests for joy-of-giving might change the outcome. For this purpose ν, φ, and β are set to zero, π to unity, and μ to greater than zero. On the basis of equations (2), (3), and (7), the household budget constraint becomes

$$c_t^1 + \frac{c_{t+1}^2}{(1+r)} + \frac{(1+n_t)I_{t+1}}{(1+r)} = I_t + w - \frac{(r-n_{t-1})tr}{(1+n_{t-1})(1+r)} \quad . \tag{13}$$

Obviously, the life cycle resources of generation t are unchanged by the fertility shock. However, with their number of children decreasing, the "price" of inheritances is reduced. Consequently, baby boomers are better off than previous generations, and inheritances per capita of recipients unambiguously increase. In correspondence with the previous scenario, baby busters are adversely hit by the increase in social insurance contributions. In the present scenario, however, this adverse effect will be cushioned through the receipt of larger inheritances. Whether the increase in private intergenerational transfers is sufficient to offset the increase in public intergenerational transfers is an empirical question, that cannot be answered on merely analytical grounds.

Accidental bequests. In order to analyze the fertility shock in a setting where bequests are accidental, ν, μ, φ, and β are set to zero and π to lower than unity. Based on equations (2), (3), (6), and (7) the life cycle budget constraint changes into

$$c_t^1 + \frac{c_{t+1}^2}{(1+r)} = w + \frac{tr}{(1+r)} - \frac{\pi tr - (1-\pi)s_{t-1}(1+r)}{(1+n_{t-1})}. \tag{14}$$

The last term in equation (14) depicts per capita net transfers between the current and preceding generation, that is, contributions to the pay-as-you-go scheme less received bequests. From equation (14), it follows that generation t, the first to have fewer children, is unaffected by the fertility shock, implying that $\partial s_t / \partial n_t = 0$. With this in mind, one can easily derive whether baby busters will be compensated through larger inheritances for the fiscal burden imposed on them by population aging. Transpose equation (14) by one period and differentiate life cycle resources with respect to n_t: it follows that baby busters will gain through a drop in fertility precisely when $(1-\pi)s_t(1+r) > \pi \mathrm{tr}$. Put differently, when (a) bequests are predominantly accidental and exceed defined benefits of a pay-as-you-go scheme, (b) general equilibrium effects are negligible, and (c) social insurance contributions impose no work disincentives, rather than facing a demographic burden, baby busters will experience a demographic windfall profit.

A glance at the corresponding data for Germany may help to assess whether this scenario is even close to probable. Annual bequests are not obtainable from official statistics. They can, however, be approximated by multiplying age-specific wealth $s_t(1+r)$ by age-specific mortality rates $(1-\pi)$. The age distribution of aggregate private net wealth is derived by means of the 1993 Income and Expenditure Survey (Federal Statistical Office, Germany, 1997). Weighting with the corresponding mortality rates and summing up over all ages yields bequests of DM 183 billion. Social security expenditures in 1993 came to DM 309 billion (see IW, 1999, Table 93). However, according to Börsch-Supan and Reil-Held (1999), only 80 percent of these expenditures constitute intergenerational transfers, while the rest is mere *intra*generational redistribution. For lack of adequate data, it is further assumed that health and old-age insurance contain pay-as-you-go elements of negligible magnitude. Accordingly, an adequate figure for public intergenerational transfers is DM 247 billion.

In view of these figures, it is highly improbable that baby busters are not adversely affected by a demographic transition. This is reinforced when the assumptions are relaxed. For one thing, public health insurance and old-age care certainly include a noteworthy fraction of intergenerational transfers, in which case the figure for public transfers has to be adjusted upward. For another thing, not all bequests observed in 1993 were accidental, implying that at least the fraction motivated by joy-of-giving might be adjusted downward as the number of heirs declines (still maintaining a larger inheritance per heir).

Bequests-as-exchange. Finally, the effects of a fertility shock are explored on the assumption that most private intergenerational transfers are made in exchange for filial attention. This can be done by setting ν, μ, and β to zero, π to unity, and φ to greater than unity. Combining equations (2), (3), (4), (5), and (7), the agent's budget constraint comes to the following:

$$c_t^1 + \frac{c_{t+1}^2}{(1+r)} + \frac{(1-\tau_{t+1})w}{(1+r)} A_{t+1} = w - \frac{[(1+r)-(1+n_{t-1})(1-a_t)]tr}{(1+n_{t-1})(1+r)(1-a_t)} . \tag{15}$$

Recall that the agent "purchases" attention from his offspring by compensating them for earnings forgone while spending time with him. Therefore, the price for attention is the offspring's net wage, discounted to the present. Moreover, owing to the compensation, neither inheritances nor attention — apart from their appearance in net taxes — turn up as supplement or diminution, respectively, of the agent's life cycle earnings. According to equation (4) inheritances received and attention provided just cancel out.

The effects of a drop in fertility can be outlined as follows. According to equation (15), Generation t, the first to have fewer children, does not face any change in life cycle resources. Nonetheless, this generation experiences a welfare gain. Given that their children's net wages will decline — as is detailed below — they pay a lower price for attention. Baby busters also profit from a lower price for attention. In their case, however, the favorable effect is negligible, compared with the adverse effect induced by the pay-as-you-go scheme. Thus, contribution rates increase for two reasons. First, the ratio of workers to pensioners has deteriorated. Second, labor supply has declined, as workers spend more time with their parents — an activity that has become necessary as fewer siblings share the burden of taking care of their parents. Most important, and contrary to the preceding transfer motives, there is no offsetting windfall profit in the form of inheritances. It is, therefore, impossible for future generations to be better off than the present ones.

B. General Equilibrium

The partial equilibrium assumption is adequate only for a small, open economy. Given that all western economies undergo a similar demographic transition, this assumption is certainly inappropriate. The paper, therefore, moves on to the analysis of the general equilibrium setting. Figure 1 summarizes the findings by contrasting the welfare paths of the four models described in Section III.A. While the models underlying the trajectories differ, at the limit they all collapse to the same no-bequest model as depicted by the "diamond" line in Figure 1. Moreover, the endogenous variables that serve to benchmark the models to reality exhibit fairly similar values across the models. All values of capital coefficients and real interest rates, for example, lie within a range of 3.4 to 4.2 and 3.5 percent to 4 percent, respectively. In view of the models' common features, the divergence in welfare paths can be safely attributed to the differences in bequest motives. Generational welfare is measured as the relative equivalent variation in life cycle earnings and generation 0 is the first to exhibit a lower fertility.

Contrary to the partial equilibrium analysis, generation 0 is already adversely affected by the fertility shock in a general equilibrium context. This welfare effect, however, is not transmitted through the pay-as-you-go scheme but is attributable to the transition's direct effect on factor incomes. In particular, the decline in labor relative to capital will lead to a lower interest rate in period $t = 1$, thereby increasing that generation's price of old-age consumption. Generation 1 will face the same price effect but will profit from a higher capital intensity in the form of higher wages. Factor income movements during a demographic transition thus favor baby busters over baby boomers and, in this way, help to mitigate the uneven distribution of fiscal policy.

In combination with the factor price effect, accidental bequests now reverse the distributional impact of the pay-as-you go scheme by putting baby busters ahead of baby boomers in terms of life cycle resources.[5] The same holds for bequests for joy-of-giving, albeit to a lesser extent.[6] In the case of accidental bequests, baby busters even reach the welfare level of generations entirely unaffected by the fertility shock. However, in the no-bequest case, and consequently also in the bequests-as-exchange case, the earlier finding that baby busters suffer a welfare loss relative to baby boomers carries over to the general equilibrium

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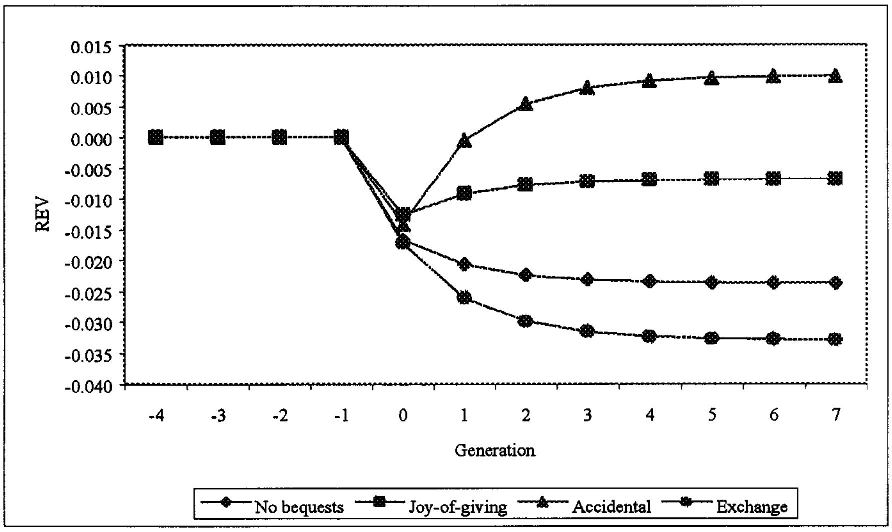
[5]This result is quite robust to alternative specifications of the bequest parameter π. Only if accidental bequests accounted for less than 0.8 percent of GDP would future generations lose more than baby boomers. In this simulation the ratio of bequests to GDP amounts to 5.8 percent, which corresponds to the German circumstances.

[6]This finding is also fairly robust to a variation in the bequest parameter μ. Only if bequests came to less than 3.4 percent of GDP would baby busters experience a lower welfare level than baby boomers.

Figure 1. Comparing Welfare Paths for Various Bequest Motives
(in relative equivalent variation of life cycle resources)



analysis.[7] As indicated in Figure 1, the provision of bequests-as-exchange may even exacerbate the intergenerational imbalance brought about by the pay-as-you-go system because parents pay too low a price for the attention provided by their children. This works as follows: the providing of attention is costly both in terms of forgone working time and lower net wages during working hours. While the first effect is compensated for through inheritances, the second effect goes uncompensated. Thus, parents pay too low a price for attention purchased from their children. One might question why children consent to the exchange when it makes them worse off. The answer is that they simply do not perceive the link, implicit in equation (7), between providing attention and reducing the labor supply, on the one hand, and increasing contributions to social insurance, on the other hand. This is especially likely in Germany, where on a microeconomic level the equivalence between contributions and benefits is far from perfect.

The role of private intergenerational transfers during a demographic transition greatly varies, depending on the underlying motive. With respect to their distributional implications, accidental bequests and exchange-motivated bequests can be regarded as the opposite ends of a spectrum. In the case of accidental bequests, heirs appropriate the complete windfall gain - resulting from the decline in the number of heirs relative to testators. In the case of bequests-as-exchange, the demographic transition does not bring about any windfall profit. However,

[7]Raffelhüschen and Risa (1997) demonstrate that also in the no-bequest model factor price effects can reverse the initial distribution between baby busters and baby boomers. They admit, however, that their calibration was deliberately chosen in order to produce this result. In particular, their assumed contribution rate of 15 percent seems much too low.

when the pay-as-you-go scheme is financed through a flat-rate tax, the demographic transition enables parents to extract resources from their offspring. Bequests for joy-of-giving, finally, take an intermediate position, with the windfall gain shared more or less equally between testators and heirs. From this ranking, it follows that, if accidental bequests do not lead to a compensation — as, for example, seems likely in a partial equilibrium setting — none of the bequest motives will.

In the light of Figure 1, one might argue that the welfare position of generation 1 relative to generation 0 is secondary to the welfare loss suffered by generation 0. This amounts to saying that the effect of a fertility shock on factor incomes is of greater concern than its effect on the pay-as-you-go social insurance scheme. However, in the present model, the adverse welfare effect of increasing contribution rates is highly understated by abstracting from an endogenous labor supply. Making allowances for distortionary taxes will reverse the relative importance of factor price and tax effects. This will be clarified in the following section.

IV. Endogenous Labor Supply and the Taxation of Bequests

This section introduces an endogenous labor supply. In combination with a flat-rate tax, this allows for the distortions hitherto neglected. The paper will then focus on three questions. First, is the excess burden induced by distortionary contributions to social insurance likely to be significant? Second, do the qualitative results of Section III.B carry over to a more realistic setting that includes distortionary taxes? Finally, are inheritance taxes less distortionary than payroll taxes? If so, could the excess burden be reduced by financing part of the social insurance benefits out of inheritance, rather than labor, taxes?

A. The Impact of Distortionary Social Insurance Contributions

Once more, let the analysis begin with the most basic model, abstracting from private intergenerational transfers altogether. This model incorporates an endogenous labor supply and is a natural extension of the reference no-bequest model defined in Section III. In particular, all parameter values correspond to those of the reference model, with the exception of the desire-for-leisure parameter, ν, which is set to a value greater than zero. The present model contains the government budget constraint,

$$\tau_t = \frac{tr}{(1+n_{t-1})(1-l_t)w_t} \tag{16}$$

as well as the household budget constraint,

$$c_t^1 + (1-\tau_t)w_t l_t + \frac{c_{t+1}^2}{(1+r_{t+1})} = w_t - \frac{[(1+r_{t+1})-(1+n_{t-1})(1-l_t)]tr}{(1+n_{t-1})(1+r_{t+1})(1-l_t)}\ , \tag{17}$$

obtained from equations (2), (3), and (7). Again, it is convenient to begin with a partial equilibrium consideration. As is obvious from equation (17), a drop in fertility will not affect the first generation to have fewer children, say generation t. This generation still faces an unchanged dependency ratio during working years and, therefore, experiences neither price nor income shocks. In contrast, generation $t+1$ is hit in various ways. First, as indicated by equation (16), this generation will see its contributions to social insurance increase, owing to a worsened ratio of workers to pensioners. The falling net wage, in turn, will induce baby busters to reduce their labor supply, thereby further boosting contributions to social insurance. Future generations will, therefore, be worse off than those presently living.

The crucial question of this section, however, is whether the welfare loss of future relative to present generations is larger than in Section III.B, where labor disincentive effects were not taken into account. To figure this out, note that agents do not perceive the link between their work effort $(1-l_t)$ and their contribution rate, τ_t, as specified by equation (16), because the insurance scheme lacks equivalence between contributions and benefits. As a consequence, when deciding how much time to spend on leisure, agents disregard their actions' negative effect on net wages. The result is a suboptimal supply of labor.

While an economy incorporating distortions obviously starts from a lower welfare level as compared to an economy without such distortions, it has not yet been established that the relative welfare loss induced by population aging is larger in the former economy. This only holds if the distortion caused by social insurance increases as the population grows older. To examine whether this is the case, the analysis proceeds as follows. All terms of equation (17) are brought onto the left-hand side and differentiated with respect to l_t, while taking into account the dependency $\partial\tau_t/\partial l_t > 0$, as specified by equation (16). This way, one derives the real opportunity cost — measured as resources not available for other uses — of a marginal increase in the demand for leisure:

$$MC_l = (1-\tau_t)w_t + \frac{tr}{(1+n_{t-1})(1-l_t)} \quad . \tag{18}$$

Note that the first term on the right-hand side denotes the marginal cost as perceived by the agent. Consequently, the pay-as-you-go scheme drives a wedge between true and perceived marginal costs and, hence, causes the inefficiency. What is more important, this wedge increases as the population growth rate declines. With this adverse effect coming on top of the income effect, the welfare loss of future relative to presently living generations must be larger in a setting with endogenous labor supply.

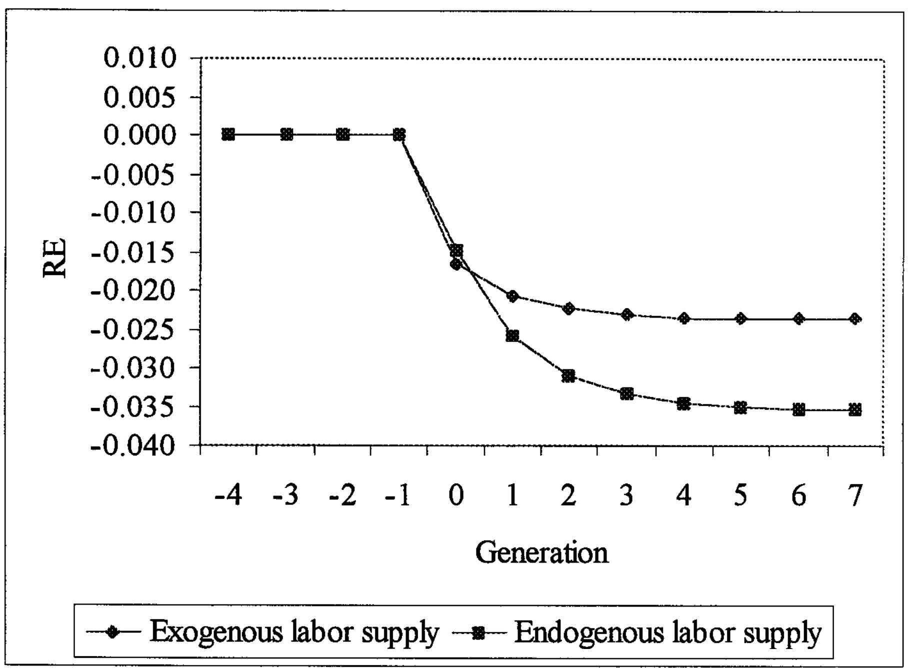
As illustrated by Figure 2, this analysis carries over to a general equilibrium setting. While in a setting of exogenous labor supply, future generations suffer in the long run a welfare loss equivalent to 2.5 percent of life cycle resources, this loss rises to 3.5 percent, when allowing for an endogenous labor supply. Accordingly, the welfare loss due to labor disincentive effects accounts for one-third of the overall welfare loss induced by a fertility shock. Of course, these figures should not be taken too literally. For one reason, the model both in structure and in parameterization is a poor characterization of reality. For another reason, at least the social security component of the German pay-as-you-go scheme does incorporate some equivalence between contributions and benefits. The distortion generated by the model is, therefore, exaggerated. With these caveats in mind, the labor disincentive effect seems, nevertheless, substantial.

From the analysis of this section, it follows that future generations' fiscal burden can be reduced without, at the same time, increasing present generations' net taxes. This can be done by strengthening the link between what people pay into the public coffers and what they get in return. However, this policy measure, while neutral with respect to intergenerational distribution, affects *intra*generational distribution.

Before models that include private intergenerational transfers are examined, a question left open from Section III.B needs to be clarified. Figure 1 made one believe that the real issue to be concerned about during a demographic transition was the drop in baby boomers' interest income. Taking into account labor disincentive effects, this finding is somewhat modified.

Figure 2. Distortionary Contributions in the No-Bequest Model

(in relative equivalent variation of life cycle resources)



Note: The welfare paths correspond to $v = 0$ ("diamond" line) and $v > 0$ ("square" line)

While still amounting to 1.5 percent, the welfare loss of baby boomers seems modest compared to the 3.5 percent suffered by future generations, and even in proportion to the 2.6 percent experienced by baby busters.

B. Joy-of-Giving

This section takes as its basis the model of Section III featuring bequests for joy-of-giving. In contrast to that model, however, the labor supply is endogenized. In addition, the present model permits the tax base of the pay-as-you-go scheme to be switched. By increasing β_t from an initial value of zero, an increasing share of social insurance benefits is financed out of inheritance instead of payroll taxes. The model is, therefore, characterized by the government budget constraints

$$(1-\beta_t)\frac{tr}{(1+n_{t-1})} = (1-l_t)w_t\tau_t \text{ , and} \tag{19}$$

$$\beta_t \frac{tr}{(1+n_{t-1})} = I_t \tau_t^i \text{ ,} \tag{20}$$

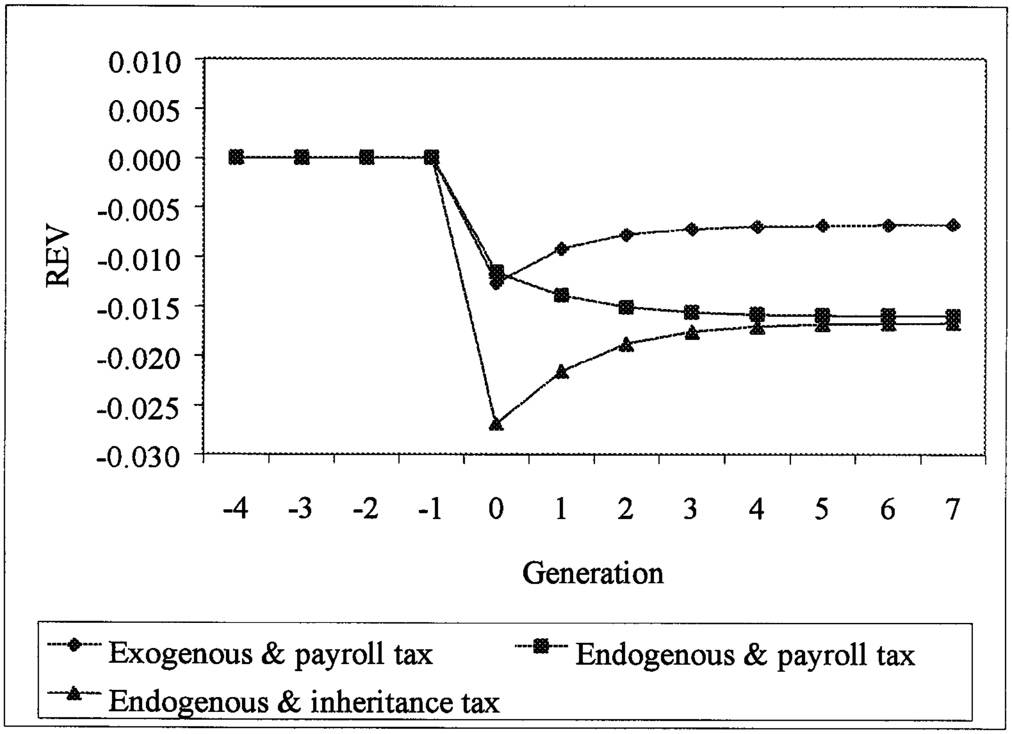
as well as the household budget constraint

$$c_t^1 + (1-\tau_t)w_t l_t + \frac{c_{t+1}^2}{(1+r_{t+1})} + \frac{(1+n_t)(1+\tau_{t+1}^i)I_{t+1}}{(1+r_{t+1})} = I_t + (1-\tau_t)w_t + \frac{tr}{(1+r_{t+1})} \tag{21}$$

based on equations (2), (3), (7), and (8). To begin with, it is investigated whether making allowances for distortionary taxes changes the qualitative outcomes of Section III.B. For this purpose, β_t is set to zero for all t. As illustrated by the "square" line in Figure 3, taking distortionary taxes into account does make a difference. In particular, the increase in inheritances received by baby busters is no longer sufficient to make up for both larger social security contributions and greater distortions relative to baby boomers. Future generations are, therefore, worse off than those presently living.

Next, it is inspected whether the government can, in any efficient way, exploit inheritances to ease the distributional conflict between present and future generations. The government could, for example, tax private transfers and use the proceeds to reduce public transfers. This experiment is depicted by the "triangle" line in Figure 3. Specifically, it is assumed that 10 percent of social insurance expenditures are financed by inheritance taxation, starting with bequests from boomers to busters. Obviously, this policy affects both intergenerational distribution and overall efficiency. Baby boomers share the fiscal burden induced by population aging through a higher price of inheritances. However, the effect on efficiency

Figure 3. The Taxation of Bequests for Joy-of-Giving
(in relative equivalent variation of life cycle resources)



Note: The welfare paths correspond to $\nu = 0$ and $\beta = 0$ ("diamond" line), $\nu > 0$ and $\beta = 0$ ("square" line), and $\nu > 0$ and $\beta_t = 0.1$ for $t \geq 1$ ("triangle" line).

may be adverse, and, with the model's present parameterization, it is.[8] Given that one distortionary tax is substituted for another, the effect on allocation depends on the corresponding elasticities of substitution and, consequently, is an empirical question in the first place. With a slightly different parameterization — for example $\lambda = 0.5$ — the tax switch generates efficiency gains.

In view of the empirical imponderabilities, the case for inheritance taxation does not seem particularly strong. From a dynamic perspective, however, this assessment might change. In contrast to a payroll tax, the distortion of an inheritance tax does not increase in the event of population aging. To see this, proceed as in Section IV.A. Bring all terms of equation (21) onto the left-hand side and differentiate with respect to I_{t+1} while taking into account the

[8]This qualitative finding is robust with respect to timing and magnitude of the inheritance tax.

relation $\partial \tau_{t+1}^{i} / \partial I_{t+1} < 0$, as specified by equation (20). This yields the marginal cost of bequeathing in terms of forgone resources:

$$MC_{I} = \frac{(1+n_{t})(1+\tau_{t+1}^{i})}{(1+r_{t+1})} - \beta_{t+1} \frac{tr}{(1+r_{t+1})I_{t+1}} \ . \tag{22}$$

The agent only perceives the first term on the right-hand side and, therefore, too high a marginal cost if inheritance taxes are in effect, that is, $\beta_{t+1} > 0$. Taxes on bequests for joy-of-giving, consequently, lead to suboptimal inheritances and excessive consumption on the part of the testator. The wedge between true and perceived marginal costs, however, is independent of the population growth rate. To the extent that old-age benefits are financed through inheritance taxation, they no longer constitute intergenerational transfers and, thus, are unaffected by the old-age dependency ratio.

From this reasoning, one might deduce the following proposition. If the mix of payroll and inheritance taxes, as presently observed, is optimal (in the sense that the actual β maximizes agents' utility), the share of old-age benefits that is financed out of inheritance taxes must increase for this policy to remain optimal during a demographic transition. Because the distortion of inheritance relative to payroll taxation declines in the course of population aging, the overall excess burden can be minimized by shifting a larger part of the demographic burden onto inheritance taxation.

C. Accidental Bequests

In the following, an endogenous labor supply is added to the accidental bequest model of Section III. This leads to the government budget constraints,

$$(1-\beta_{t}) \frac{\pi tr}{(1+n_{t-1})} = (1-l_{t}) w_{t} \tau_{t} \ , \text{ and} \tag{23}$$

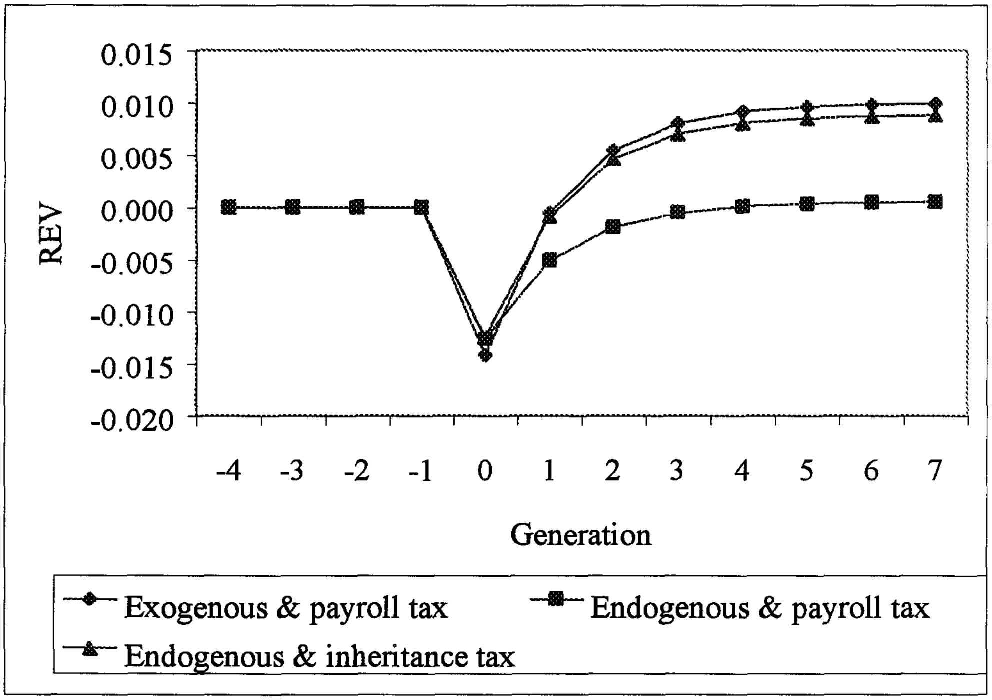
$$\beta_{t} \pi tr = \frac{(1-\pi) s_{t-1} (1+r_{t}) \tau_{t}^{i}}{(1+\tau_{t}^{i})} \ , \tag{24}$$

as well as the household budget constraint,

$$c_{t}^{1} + (1-\tau_{t}) w_{t} l_{t} + \frac{c_{t+1}^{2}}{(1+r_{t+1})} = \frac{(1-\pi) s_{t-1} (1+r_{t})}{(1+n_{t-1})(1+\tau_{t}^{i})} + (1-\tau_{t}) w_{t} + \frac{tr}{(1+r_{t+1})} \ , \tag{25}$$

according to equations (2), (3), (6), (7), and (8). First, it is inspected how robust the qualitative implications of the earlier analysis of accidental bequests are to the inclusion of

Figure 4. The Taxation of Accidental Bequests
(in relative equivalent variation of life cycle resources)



Note: The welfare paths correspond to $\nu = 0$ and $\beta = 0$ ("diamond" line), $\nu > 0$ and $\beta = 0$ ("square" line), and $\nu > 0$ and $\beta_t = 0.6$ for $t \geq 0$ ("triangle" line).

distortionary taxes. It was established that the increase in accidental bequests is sufficient to make up for the negative income effect of social insurance contributions. As recapitulated by the "diamond" line in Figure 4, baby busters are, therefore, better off than baby boomers and even reach the welfare level of their grand parents, who are spared the drop in interest income. If one makes allowances for labor disincentive effects, baby busters are still better off than baby boomers but no longer reach the welfare level of generations entirely unaffected by the fertility shock, as is illustrated by the "square" line.

Next, consider the rationale for shifting part of the tax burden onto inheritances. A glance at the household's budget constraint reveals that the taxation of accidental bequests entails no distortion of relative prices and, as a consequence, no welfare loss. A switch from the distortionary payroll tax to a lump-sum taxation of accidental bequests is, therefore, always and, at any time, recommendable. This is illustrated by the "triangle" line in Figure 4, which depicts generations' welfare on the assumption that, with immediate effect, 60 percent of social insurance benefits are financed through inheritance taxation.[9] The new trajectory at no point moves below the old one and, thus, indicates a Pareto improvement. Furthermore, it does not come as a surprise that, with a large part of the distortion eliminated, the welfare path closely tracks that of Section III.B. While it is always advisable to increase taxes on accidental bequests, the case for such a policy shift is reinforced by the coming demographic transition. As was demonstrated earlier, distortions of payroll taxes will still increase as the population grows older.

D. Bequests-as-Exchange

Finally, the effects and policy implications of bequests-as-exchange are reviewed when labor supply is endogenous. Apart from ν, the model is parameterized as outlined in Section III. Hence, the government is constrained by the equations

$$(1-\beta_t)\frac{tr}{(1+n_{t-1})} = (1-l_t)(1-a_t)w_t\tau_t \text{ , and} \tag{26}$$

$$\beta_t \frac{tr}{(1+n_{t-1})} = \tau_t^i I_t = \tau_t^i(1-\tau_t)w_t a_t \text{ ,} \tag{27}$$

and the representative individual faces the life cycle budget constraint

$$c_t^1 + (1-\tau_t)(1-a_t)w_t l_t + \frac{c_{t+1}^2}{(1+r_{t+1})} + \frac{(1+\tau_{t+1}^i)(1-\tau_{t+1})w_{t+1}}{(1+r_{t+1})}A_{t+1}$$
$$= I_t + (1-\tau_t)(1-a_t)w_t + \frac{tr}{(1+r_{t+1})} \text{ ,} \tag{28}$$

derived from equations (2), (3), (4), (5), (7), and (8). To begin with, β_t is set to 0 for all t, and it is investigated how an increase in ν affects generations' welfare during a demographic transition. This is illustrated in Figure 5, which contrasts the welfare trajectories for an exogenous ("diamond" line) and endogenous labor supply ("square" line). Not surprisingly, future generations are worse off when labor disincentive effects are added to the negative income effect induced by a worsening dependency ratio. Consequently, the noncompensation outcome of the earlier analysis is reinforced in a more realistic setting.

Next, the allocative effects of taxing inheritances are exploited. The "triangle" line in Figure 5 depicts generations' welfare on the assumption that the government, with immediate effect, switches from pure payroll taxation to a hybrid scheme, with 2 percent of tax revenue

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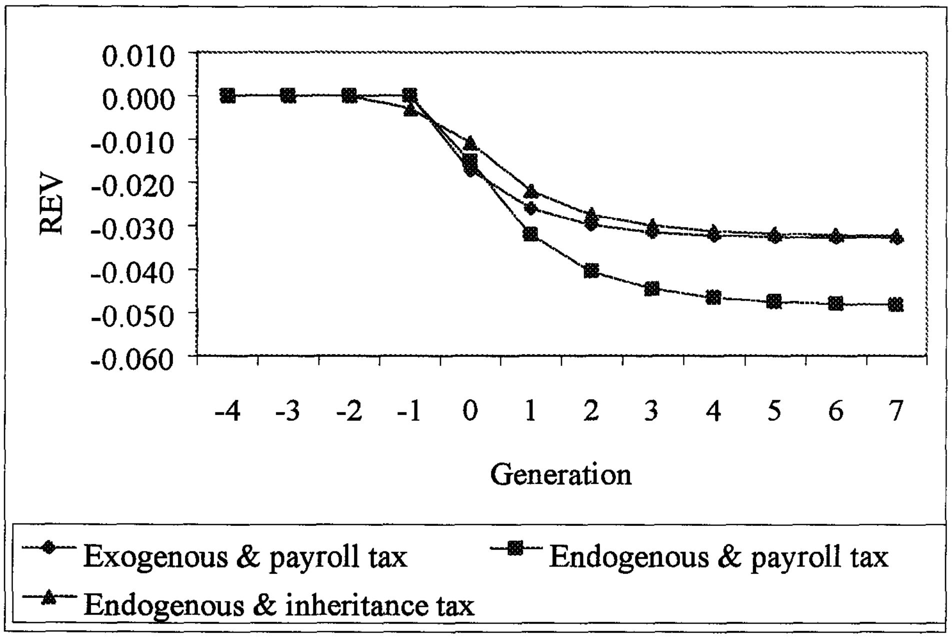
[9]This policy implies that inheritances are completely taxed away. Rather than claiming realism, this scenario illustrates that, given exclusively accidental bequests, the more tax shifting, the better.

Figure 5. The Taxation of Bequests-as-Exchange
(in relative equivalent variation of life cycle resources)



Note: The welfare paths correspond to $\nu = 0$ and $\beta = 0$ ("diamond" line), $\nu > 0$ and $\beta = 0$ ("square" line), and $\nu > 0$ and $\beta_t = 0.6$ for $t \geq 0$ ("triangle" line).

levied by inheritance taxation. While certainly favorable on distributional grounds, the tax switch — whenever enacted — also improves efficiency, as will be established below.

To begin with, the lowering of payroll taxes reduces distortions. This becomes apparent when contrasting true and perceived marginal costs of reducing the labor supply. Once more, proceed by bringing all terms in equation (28) onto the left-hand side and substitute I_t by means of equation (4). Then differentiate with respect to l_t, while making allowances for the relation $\partial\tau_t / \partial l_t > 0$, as given by equation (26). The true opportunity cost of marginally reducing labor supply thus equals

$$\mathrm{MC}_t = (1-\tau_t)(1-a_t)w_t + (1-\beta_t)\frac{(1-(1-a_t)l_t)tr}{(1+n_{t-1})(1-a_t)(1-l_t)^2} . \tag{29}$$

Once more, the social insurance scheme drives a wedge (henceforth, WE_t) between true and perceived marginal costs, as specified by the last term of equation (29). This wedge can be reduced by raising the share of tax revenue, β_t, levied through inheritance taxation. The problem's dynamic dimension becomes obvious when it is taken into account that $\partial WE_t / \partial n_{t-1} < 0$ and $\partial WE_t / \partial a_t > 0$. Thus, while it is always welfare enhancing to increase the share of inheritance tax revenue, it is especially pressing when one is faced with a demographic transition, as it magnifies the initial distortion. Furthermore, in the presence of bequests-as-exchange, the deterioration is greater than in previous models. As was made clear in Section III.A, a baby buster spends more time with his parents, since the burden of taking care of one's parents is shared by fewer siblings. In addition to the direct effect, a drop in fertility therefore magnifies the distortion via $\partial WE_t / \partial a_t > 0$. Given that $\ldots = n_{t-1} > n_t = n_{t+1} = \ldots$ and $\ldots = a_{t-1} = a_t < a_{t+1} \ldots$, inheritances should be taxed in the following period at the latest, that is, when baby boomers die and inheritances increase.

So far, only the beneficial effect of reducing payroll taxes has been considered. What about the welfare effect of increasing the inheritance tax? While in the case of joy-of-giving and accidental bequests, inheritance taxation is harmful or neutral, respectively, it is welfare-enhancing when bequests are motivated by exchange. As shown above, children do not perceive that providing attention to their parents is costly in terms of higher contribution rates, because of the lack of equivalence between contributions and benefits. Consequently, they charge too low a price for attention, thereby spurring excessive demand on the part of the parents. Inheritance taxation, at least partly, corrects for this distortion by raising the price for attention. This mechanism can be illustrated in the usual way. Bring all terms of equation (28) onto the left-hand side and differentiate with respect to a_t, while making allowances for $\partial \tau_t / \partial a_t > 0$, as specified by equation (26). The true opportunity cost of providing a marginal unit of attention comes to

$$\mathrm{MC}_a = -(1-\tau_t) w_t l_t + (1-\tau_t) w_t + \frac{(1-\beta_t) tr}{(1+n_{t-1})(1-a_t)} . \tag{30}$$

The first term on the right-hand side depicts the effect that the provision of attention has in reducing the price of leisure, and the second term stands for the reduction in the endowment of labor income. Strictly speaking, both effects would have to be taken into account by children when pricing attention. Recall, however, that the analysis has abstracted from the former effect in order to keep the model tractable (see footnote 3). The third term gives the cost of higher contribution rates and constitutes a distortion in that it is not passed on in prices. Children charge too low a price, at $(1-\tau_t) w_t$, while parents pay a price of $(1+\tau_t^i)(1-\tau_t) w_t$.[10] Consequently, by approximating prices to marginal costs, the inheritance-tax partially offsets the distortion. As before, the distortion increases in the course of population aging. Although it enhances welfare at any time, the taxation of bequests-as-exchange should, therefore, be increased in the following period at the latest.

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[10]This can be seen when equation (28) is transposed by one period: the fourth term on the left-hand side becomes $\frac{(1+\tau_t^i)(1-\tau_t) w_t}{(1+r_t)} (1+n_{t-1}) a_t$.

Among the three prominent transfer motives, the case for taxing inheritances is strongest for bequests-as-exchange. Under this transfer motive, both the reduction of payroll taxes and the taxing of inheritances diminish distortions. However, it is worthwhile to inquire to what extent this result is driven by the simplifying assumptions. First, consider the simplification just noted (see footnote 3). With children charging parents $(1-l_t)(1-\tau_t)w_t$, instead of $(1-\tau_t)w_t$, the wedge between price and marginal costs would be even greater and the finding of the simulation reinforced. Second, following Cox (1987), it was assumed that parents reap all gains from the exchange. Modeling the exchange as a "Nash bargain" instead would not change the results. Children would still perceive the wrong cost of providing attention, which could be corrected by inheritance taxation.

Finally, following Davies (1996), the cost of providing attention was modeled in terms of forgone time — an assumption that does drive the results. Using a more general formulation as in Cox (1987), the wedge between true and perceived marginal costs as specified by the last term in equation (30) would disappear, and taxing inheritances would introduce, rather than correct for, a distortion. It should be stressed, however, that this distortion is independent of the population growth rate. One can, therefore, resort to the weaker proposition, already stated in the context of bequests for joy-of-giving: if the mix of payroll and inheritance taxation is optimal at present, maintaining this optimal fiscal policy during population aging will necessitate a shift toward inheritance taxation.

V. CONCLUSION

First, the implications of private transfers for intergenerational distribution have been analyzed in the paper. It is shown that the prominent bequest motives can be ranked, with accidental bequests being most favorable for future generations during a demographic transition. Consequently, by showing that accidental bequests are not sufficient to compensate future generations for the fiscal burden, the non-compensation result has been established for all of the prominent bequest motives. This is first done in a partial equilibrium setting with exogenous labor supply. However, the non-compensation result also carries over to a general equilibrium setting with endogenous labor supply. Thus, accidental bequests do not suffice to raise baby busters' welfare to the level experienced by generations entirely unaffected by the fertility shock.

Next it has been investigated whether the fiscal burden of future generations can be alleviated by shifting part of the tax burden from payroll to inheritance taxation. On the one hand, inheritance taxes are very popular because they promote intergenerational mobility and equal opportunity. On the other hand, governments have been very cautious in taxing private intergenerational transfers, lacking adequate evidence on the underlying motives. While it is well understood that accidental bequests can be taxed at no efficiency cost, the taxing of altruistic bequests leads to excessive consumption on the part of testators and, thus, to suboptimal capital accumulation and growth.

While so far the literature has not established a predominant bequest motive and, as a consequence, has been unable to suggest the optimal extent of inheritance taxation, in this paper a somewhat weaker recommendation has been derived. Provided that the mix of inheritance and payroll taxes, as presently observed, is more or less efficient — after all, it is the result of a long trial and error process — the share of inheritance taxes in overall tax revenue must increase for this mix to remain efficient during a demographic transition. With the distortion of inheritance relative to payroll taxes decreasing during a demographic transition, such a policy minimizes overall distortions. Taking into account that tax evasion is much easier under inheritance taxation does not invalidate the basic argument; it only reduces the scope for efficiency gains by tax switching. Also, clear implications with respect to the timing of the tax shift were deduced. In particular, inheritance taxes should be raised as soon as one observes substantially larger inheritances per capita. Since in most countries per capita inheritances are taxed using a progressive tariff, the average tax rate will increase anyway during the demographic transition; still, it might be recommendable to increase the degree of progression.

Of course a myriad of other measures can be undertaken to reduce tax distortions induced by population aging. As stated above, one can strengthen the link between contributions and benefits. Furthermore, one can trim the pay-as-you-go scheme by partially funding pension benefits. While these measures are certainly necessary, they have a limited scope. Strengthening the link between contributions and benefits, for example, conflicts with the objectives of *intra*generational distribution. Funding social security is certainly an option in the long run. In the short run, however, existing pension entitlements must be honored so that public intergenerational transfers will persist for some time. The taxation of inheritances, therefore, should not be viewed as a substitute for other measures; rather, it is a further component in the effort to cope with population aging.

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