

**DISCUSSION COMMENTS RELATED TO
"SOCIAL SECURITY: HOW SOCIAL AND HOW SECURE SHOULD IT BE?"
by STEVEN SASS AND ROBERT TRIEST¹**

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June 1997
(revised July 1997)

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¹Prepared for *Social Security Reform: Links to Saving, Investment, and Growth*, Federal Reserve Bank of Boston Conference No.41, June 16-18, 1997, Chatham, MA.

There is certainly no shortage of reading material on Social Security these days. But there *has* been a dearth of reading for those searching for a balanced discussion of the issues which is more detailed (and accurate) than the typical journalistic piece, but less focused on -- and biased regarding -- particular reform proposals.

This paper very nicely fills that gap. It sets out, for the uninitiated, all of the necessary "basics":

- the current goals of the system (emphasizing the desire to provide a secure and broad-based source of old-age income, and pointing out that a new goal appears to have developed in recent years -- that of increasing national savings)
- its achievements to date (most notably its contribution to the dramatic decline in poverty among over-65s, even during periods like the early 1980s when poverty rates in other age groups were rising)
- the coming demographic crisis (as low fertility and increasing life expectancy lead us inexorably toward a worker:beneficiary ratio of 2.0 -- or even as low as 1.3)
- the financial implications of this demographic crisis (with 30% -- or even 50% -- of payroll needed to support Social Security and Medicare)
- a discussion of different concepts of "funding" when people speak of a "fully-funded" system (emphasizing that the system has only been truly "pay-as-you-go" in the brief period from 1972 to 1983)
- a discussion of the arguments in favor of some form of privatization (with increased national savings and higher returns at the top of the list)
- an explanation of the "deadweight loss" associated with an OASDI payroll tax when workers perceive it as simply a tax, rather than a contribution toward their own retirement security
- a discussion and comparison of advantages and drawbacks in "defined benefit" (DB) and "defined contribution" (DC) pension plans (identifying SS as a DB, and pointing out that in the private sector DBs are rapidly succumbing to DCs)

With that base firmly established, the authors develop and discuss their own position: that many of the perceived differences between DBs and DCs are more apparent than real, with "the devil

in the detail" of specific reform proposals, so that the gains from a move toward privatization (and DCs) are variable and uncertain, while a significant cost -- the increased exposure of individuals to asset and rate of return risk -- is unavoidable. This is a position I find hard to fault, so that rather than refute it I will simply highlight a few aspects of their argument, and then attempt to buttress it regarding uncertainty and risk exposure.

Sass and Triest refer often to the issue of national savings -- understandably, given the increasing emphasis which seems to be placed on this newly-identified goal for Social Security. They mention the economic argument that moving to a fully-funded system should increase savings, thereby increasing economic output. But they stress that, to the extent that the trust fund represents a move in the direction of full funding, it appears not to have increased national savings to date, but rather made it easier for the government to expand its operating deficit. On the other hand "If the social security system shifts its financial base toward equities, and this lowers stock returns and raises yields on 'safe' securities, private plan sponsors and participants might well seek more security, unwinding the government's shift toward higher expected returns in the nation's retirement income system (p.12)." Most important, it seems to me, is their argument that the goal of increasing national savings would be much better served with policy changes in areas other than Social Security.

I am drawn inexorably, however, back to that issue of exposure to risk: the fact that many of the reform proposals achieve their goal of "fixing" Social Security simply by taking on more risk -- but shifting that risk from the system, which can spread risk over individuals and generations, to individuals: in effect, changing "Social Security" to "Social Insecurity". But given the uncertainty regarding benefits to be derived from any privatization of Social Security -- so well presented by Sass and Triest -- and the certainty that with privatization some individuals will experience a considerable welfare loss in the form of increased exposure to risk, I think it's important that we be sure we're really facing a crisis before taking such an important step.

In that regard, I find it impossible to discuss these issues without making reference to some highly unorthodox findings which have greatly influenced my own thinking in this area in recent months. I think you will find them intriguing, and they may lead you to reconsider the future prospects of Social Security, and to focus more on that issue of market risk.

The perceived need to "fix" Social Security arises largely from two factors: the aging baby

boom's dependence on the baby bust for support in retirement, and our fairly pessimistic prognostications regarding the future performance of the economy. The first is inevitable (although an intermediate rise in the birth rate could ameliorate even that dilemma), but the second much less so. Our forecasts of slow growth over the next *seventy-five years* (and I emphasize this because it represents such a sweeping generalization over a very long timespan) derive from the seemingly enshrined belief that we entered a "new era" in 1973 and can no longer anticipate periods of growth like that of the fifties. But an increase in the assumed rate of growth of real wages over the next seventy-five years would effectively eliminate the funding crisis.

So the question about what happened in -- and since -- 1973 is crucial in any considerations here. My findings -- only preliminary, and highly unorthodox as I mentioned earlier -- suggest that our "new era" has been largely a function of the changing age structure of our population. And because of the highly nonlinear pattern of past -- and future -- population changes, we err greatly in relying on linear economic forecasts for projecting Social Security over a seventy-five year period.

With that in mind, let me take you very quickly through an exercise in which we test for a relationship between age structure and various economic indicators over the last century. I present in Figures 1-3 the results of a few simple regressions, comparing actual and fitted values, using as independent variables in each case a set of (logged) population variables.²

Figure 1 presents results for a three-year moving average of the annual percentage change in GDP, Figure 2 presents the personal savings rate -- the ratio of personal savings to disposable income each year, and Figure 3 presents results for the annual change in the CPI. In each case, a model based on data through 1985 has been used to predict values for the years 1986-1994.

It can be seen that the population variables do a fairly respectable job of fitting the long-run values in each of these series. Why would this be the case? To explore possible connections, we need to consider the pattern of age changes which have occurred during this century: Figure 4 is meant to help with this.

Presented in Figure 4 is an indication of years when various age groups experienced a decline in the U.S., and we can clearly see the "waves" of decline created by the aging of the baby busts of

²These variables are described in the Appendix, where the regression results are presented in Tables A-1 and A-2.

the Depression, the post-1959 fertility decline, and even the 1945 and 1949 fertility troughs associated with WWII.

We can see that apart from a "blip" in 1918 the economy enjoyed virtually uninterrupted growth in all age groups until about 1928/29, and that beginning in the late 1950s it entered into a prolonged period of declines in several age groups. By far the worst period for such declines (in terms of both the number of age groups in decline, and the severity of declines in each group) occurred in the period following 1972.

It seems to me more than coincidence that these periods of age group decline coincide with notably weak periods for the economy. Changing age structure in the economy can affect overall consumer demand in two ways. The first is a straightforward *compositional* effect: population decline implies a decline in consumer demand, with the severity of the decline dependent on a cohort's stage in the Modigliani life cycle. The second is perhaps more controversial in that it involves *changes in age-specific behavior* brought about "relative income" effects of changing age structure. That is, as postulated by Richard Easterlin (1980), changing relative supplies of workers by age/experience will tend to reduce the earning potential of larger cohorts relative to that of smaller cohorts because of imperfect substitutability among workers with different levels of work experience. When the earning potential of young people declines relative to their parents', young people will tend to alter their behavior in ways designed to improve per capita disposable income: for example, by delaying/postponing marriage and childbearing and increasing female labor force participation. These demographic adjustments will in turn affect age-specific patterns of consumption. An economy as finely-tuned to market demand fluctuations as ours could easily be tripped into a downward spiral by this combination of compositional and age-specific demand fluctuations, as producers cut back in response to reduced consumer demand.

Work reported elsewhere has documented instances of changing demographic behavior resulting from changing age structure.³ Here, I have made use of two data sources in order to

³ See, for example, the following articles by this author:
"An Impending Boom in the Demand for U.S. Higher Education Among 18-24 Year Olds?" *Change*, May/June 1997.
"Relative Income and Price of Time: Exploring Their Effects on U.S. Fertility and Female Labor Force Participation, 1963-93," in *Fertility in the United States: New Patterns, New Theories, Population and*

approximate the magnitude of the more straightforward compositional age-driven demand fluctuations:

- estimates prepared by Edward Lazear and Robert Michael⁴, regarding the variations in parental expenditures -- holding income constant -- induced as children age;
- 1972 and 1992 Consumer Expenditure Survey data on the variation in household expenditures by size and age of head.

By combining these data with actual age distributions in the population each year, it has been possible to estimate the changes in consumer demand which would have occurred *solely as a result of compositional demographic changes* over the past thirty-five years -- that is, holding income and expenditure patterns constant at their 1972 levels. The results are presented in Figure 5 for households generally (where data on households by size were available only back to 1963), and in Figure 6 for the additional "kick" provided by the aging of young children in these households.⁵

In both of these figures we see the strong growth in expenditures triggered by demographic changes in the 1950s and 1960s -- but even more notable is the sharp change which occurred in 1973. In Figure 5 we can see a clear correspondence between these demographically-induced changes in consumer demand, and the three strong recessions we've experienced in the last twenty-five years. (These graphs, while providing an indication of relative fluctuations, must be interpreted as only the lower bound of age structure effects, since no "multiplier effects" -- on business or government spending -- are included).

And the changes in consumer demand pictured here are *not* the result of worsening economic

Development Review, supplement to Volume 22(1996):223-257.

"Echoes of the Baby Boom and Bust: Recent and Prospective Changes in Intergenerational Living Arrangements of Elderly Widows in the United States," (with R.A.Easterlin, E.M.Crimmins and C.Macdonald), *Demography*, February 1995, 32(1):17-28.

"How Parents Have Coped: The Effect of Life Cycle Demographic Decisions on the Economic Status of Pre-School Age Children, 1964-1987," *Population and Development Review*, June 1990, 16(2):299-323, with Richard A. Easterlin.

⁴Edward P.Lazear and Robert T. Michael (1988). *Allocation of Income Within the Household*, Chicago:University of Chicago Press.

⁵Note that this is not double-counting, since CES expenditure figures are averages over all households by size. And as Lazear and Michael point out, the between-group expenditure variations among households by size are remarkably small, and dominated by the within-group variations by age of children.

conditions, since they hold both household incomes and expenditure patterns and levels at constant 1972 values: any demographic response to worsening economic conditions would simply have made these declines even more dramatic. The only thing changing in these graphs is the demographic composition.

And Figures 7 and 8 demonstrate that the age structure effects depicted in Figures 1-3 appear to have even wider implications. Figure 7 suggests a close correspondence between financial markets and these demographic effects: a model fitted on age structure variables for the period 1934-1976 does an excellent job of predicting the actual pattern of the Dow Jones Industrial Average (a three year moving average of annual percentage changes in the DJIA) from 1977-1994. And Figure 8 suggests a similar close correspondence between age structure and the level of total annual births in the U.S.: presumably these age structure variables affect economic performance, which in turn affects demographic behavior such as household formation and the fertility rate.

So, after this long digression, how does all this relate to the Sass-Triest paper? These results suggest that we as a population have effectively shaped our own economic destiny -- that we should take more account of past effects of changing age structure in contemplating those in the future. We need to consider seriously the possibility that the economic slowdown since 1973 was caused largely by changing demographics, and incorporate this relationship when we try to extrapolate from the last twenty-five years. A "new era" of continuing slow growth over the next century is not inevitable. In fact, in the preliminary regression results underlying the graphs presented here, increases in retirement age groups appear to have benefitted, rather than detracted from growth in the past. We need a great deal more work in understanding these effects, before we make dramatic changes based on current pessimistic forecasts.

The progressing "waves" of age group decline pictured in Figure 4 suggest that our biggest problem in the next few decades will arise from the *baby bust* as it causes declines in the ages of peak household expenditure. If the economy continues to over-react to demographically-induced declines, we could face another serious recession in about ten years' time -- which would produce yet another baby bust, which would in time generate its own recessions. But surely this is a vicious cycle which could -- with knowledge -- be made virtuous.

And the results presented here have implications not just for longer-term economic forecasts,

but for the short term: implications which are directly relevant to the issue of exposure to asset and rate of return risk. To the extent that financial markets actually respond to age-structure-induced changes, as suggested in Figure 7, the already-generated waves of decline shown in Figure 4 promise considerable volatility in markets over the next few decades. Do we really want Social Security reforms which would expose retirees to that amount of market volatility?

APPENDIX

Five different models have been estimated here, using population variables as regressors, in some cases together with dummy variables for wartime and the oil price shock. The population data were used in 3- and 6-year age intervals, in order to be consistent with analyses of consumption patterns by age of children presented in Lazear and Michael's (1988) *Allocation of Income Within the Home*, where data were presented for the age groups 0-5, 6-11, 12-17 and 18-23. The following notes describe the variables presented in Table A-2:

- a) the war dummy was set equal to 1 for the years 1950-52 (Korea) and 1964-65 (Vietnam)
- b) the oil shock dummy was set equal to 1 for the years 1974-75
- c) the age structure variables represent the (logged) annual change in each age group, where for example the logged change in the 6-11 age group in a given year was calculated as $\log(\text{population aged } 6) - \log(\text{population aged } 12)$; that is, the number just entering an age group minus the number who have just left it.
- d) the "prime age females" variable used in the total births regression was calculated as (the log of) the number aged 20-24 relative to the number aged 40-44.
- e) the "relative cohort size" variable is one which I have used in numerous other studies to represent the aggregate demand effects of changing relative cohort size. It is defined as $\log(RCS_{t+2}) - \log(RCS_{t-2})$, where "RCS" is defined as the size of the population aged 20-24 relative to the size of the population aged 45-49, and is thus positive on the "leading edge" of the baby boom and negative on its "trailing edge".

The regression results for Figure 7 (the three-year moving average of the annual change in the Dow Jones Industrial Average) are presented in Table A-1 below.

Data Sources:

Annual population (including armed forces overseas), by single year of age: *Current Population Reports* --
 1990-94: PPL-21 Appendix B
 1988-89: P-25 #1057
 1986-87: P-25 #1022
 1980-85: P-25 #1000
 1970-79: P-25 #917
 1960-69: P-25 #519
 1900-1959: P-25 #311

GNP/GDP, personal disposable income and savings, CPI: *Statistical Abstract of the United States*, various years, and *Historical Statistics of the United States, Colonial Period to 1970*.

Total Births and GFR:

Vital Statistics: Natality,
 "Annual Summary of Births, Marriages, Divorces and Deaths: United States, 1994", *NCHS Monthly Vital Statistics Report*, 43(13): 10/23/95,
 "Births and Deaths: United States, July 1995-June 1996", *NCHS Monthly Vital Statistics Report*, 45(10, Supplement 2): 4/30/97

Dow Jones Industrial Average, 1930-92:

http://www.geom.umn.edu/docs/snell/chance/teaching_aids/Dow_Jones_averages/average.html

TABLE A-1: REGRESSION RESULTS FOR FIGURE 7 (t-statistics in parentheses)		
<i>period:</i>	<i>1934-94</i>	<i>1934-76</i>
WWII (=1 for 1944)	.152 (2.7)	.152 (2.3)
Vietnam (=1 for 1969)	-.131 (2.4)	-.133 (2.1)
Oil Shock (=1 for 1976)	.112 (2.0)	.097 (1.4)
(logged) population aged 6	.480 (3.7)	.531 (2.3)
(logged) population aged 9	-.470 (3.7)	-.469 (2.0)
(logged) population aged 18	-.370 (4.6)	-.323 (2.0)
(logged) population aged 27	.516 (5.3)	.530 (3.7)
(logged) population aged 45	-.364 (3.5)	-.346 (0.8)
(logged) population aged 66	-1.350 (5.5)	-1.249 (1.9)
(logged) total population	2.126 (4.0)	1.881 (1.4)
intercept	-13.888 (4.9)	-12.744 (1.5)
No. of observations	61	43
F-statistic	10.85 (10,50)	5.65 (10,32)
Adj. R-square	0.621	0.526

TABLE A-2: REGRESSION RESULTS FOR FIGURES 1-3 & 8
(t-statistics in parentheses, notes in text of Appendix)

<i>period:</i>	Figure 1: real GDP 3-year moving average of ($GDP_t/GDP_{t-1} - 1$)		Figure 2: savings rate personal savings/ disposable income		Figure 3: CPI $CPI_t/CPI_{t-1} - 1$		Figure 8: annual total births (in 000's, logged)	
	1949- 94	1949- 85	1947- 95	1947- 85	1949- 96	1949- 85	1900- 94	1900- 76
war dummy ^a	.019 (4.4)	.019 (4.1)	.006 (1.5)	.006 (1.3)				
oil shock ^b	-.014 (1.9)	-.016 (2.1)			.034 (2.5)	.036 (2.2)		
age 1-2 ^c							-.119 (2.6)	-.103 (1.7)
age 3-5 ^c	.057 (3.7)	.058 (3.6)					-.144 (2.4)	-.127 (1.7)
age 6-11 ^c	-.054 (4.3)	-.059 (4.0)	.085 (6.1)	.077 (4.2)	.072 (2.2)	.071 (1.7)	.627 (9.7)	.590 (7.5)
age 12-17 ^c							.271 (4.1)	.355 (4.4)
age 24-29 ^c			.083 (6.0)	.081 (5.1)	.068 (2.1)	.065 (1.6)		
age 27-32 ^c	-.049 (3.0)	-.048 (2.6)						
age 30-35 ^c			.058 (4.5)	.050 (2.8)	.119 (4.3)	.109 (3.1)		
age 48-53 ^c			.052 (2.6)	.044 (1.7)	-.059 (1.4)	-.076 (1.3)		
age 60-65 ^c	.085 (3.0)	.108 (2.9)			-.182 (4.2)	-.172 (2.1)		
prime age females ^d							.119 (2.6)	.103 (1.7)
relative cohort size ^e	.019 (1.7)	.021 (1.2)	.048 (4.2)	.037 (1.3)	.065 (2.8)	.067 (1.6)	.144 (2.4)	.127 (1.1)
total population (in 000's logged)			.009 (1.0)	.011 (0.6)			.496 (25.2)	.472 (12.9)
intercept	.021 (4.1)	.017 (2.4)	-.060 (0.6)	-.089 (0.4)	.055 (6.5)	.056 (6.5)	2.301 (10.4)	2.562 (6.3)
No. of observations	45	37	48	39	48	37	94	75
F-statistic	14.70 (7,37)	12.89 (7,29)	16.35 (7,40)	5.61 (7,31)	15.42 (7,40)	11.44 (7,29)	181.30 (7,86)	123.09 (7,67)
Adj. R-square	0.685	0.698	0.696	0.459	0.682	0.670	0.931	0.920





