SECURITY FOR SOCIAL SECURITY:

IS PRE-FUNDING THE ANSWER?

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ABSTRACT

With the potential re-election of George W. Bush, the debate around privatization of Social Security in the United States is sure to be rekindled. The Republicans seem to favor separating a part of OASDI and moving that portion of the scheme into Individual Retirement Accounts. President Clinton had proposed creating larger social security funds and investing a portion of them in the private sector, but leaving the scheme otherwise intact. Others have suggested more radical reforms such as moving OASDI entirely from a Defined Benefit scheme to a Defined Contribution plan based on the Chilean model.

Canada has moved to a system of greater pre-funding for the C/QPP in order to cap contribution rates at 9.9 percent. These proposals are based on the goal of creating higher investment returns, in order to make social security benefits easier to finance in the long run.

The important public policy issues inherent in such proposals are numerous: questions of whether pre-funded social security plans are demographically immune; whether pre-funding social security can increase gross national savings and worker productivity; whether there are better ways to create a healthy economy; whether social security is best offered as a defined-benefit plan or a defined-contribution plan. This paper reviews each of these important public policy issues in the context of recent social security policy initiatives in Canada and the U.S.

After an extensive review of the literature the paper concludes that greater pre-funding of social security will not, of and by itself, create a more secure system.

I. INTRODUCTION

This paper discusses the issues surrounding the manner of financing the social security systems in Canada and the U.S., which is an important public policy agenda item at this time. The paper critiques moves toward greater pre-funding of social security. There are numerous authors now speaking in favor of some form of greater pre-funding (see, for example, Robson, 1995, Slater, 1995, World Bank, 1994, Taverne, 1995, Kotlikoff et al, 1996, Pesando, 1997, and Ferrara and Tanner 1998). At the moment, they appear to have the ear of policymakers and do not require further support. Instead, the purpose of this paper is to pose important questions that need to be answered by policymakers before any move is made toward greater pre-funding of social security.

Actuaries, by their training, have a natural pre-disposal to favor pre-funding. As stated by Miles Dawson (1917):

> ...actuaries approach it as if it were settled in advance that there ought to be a reserve and after a good deal of study and investigation are not so certain they are right.

The reason for this is that actuaries tend to work with private sector pension plans which must be pre-funded, in fact, fully pre-funded. This is because, no matter who the employer is, any company can cease to exist at any moment which would leave an under-funded pension with future promised benefits and no way to pay them. This is not true of a government social security system, however. By definition, the government will always be there (maybe not the same ruling party, but the government) to see that future promised benefits are, in fact, met with actual benefits. Thus, it is very dangerous to try to create analogies between private pensions and public social security schemes. They are remarkably different animals. In fact, this author would go so far as to say:

Proposition 1: Social Security is not a large private sector pension. It is instead, a macroeconomic means of wealth transfer, whereby workers transfer wealth to the elderly through their social security contributions. This is true whether the plan is pre-funded or pay-as-you-go.

For the discussion that follows, the meanings of the words *pay-as-you-go* and *funded* need to be carefully understood. Neither word is taken in its absolute meaning. For example, pay-as-you-go funding does not mean no contingency fund at all. In fact, the paper assumes that any system that carries only a small contingency (for example, one year of benefit expenditures) is a pay-as-you-go system. Similarly, funded does not mean absolutely fully funded; any scheme that creates investable funds measurably larger than a small contingency reserve is included in the category of "pre-funded" schemes.

Until recently, both the Old Age, Survivors and Disability Insurance (OASDI) system in the U.S. and the Canada/Quebec Pension Plans (C/QPP) in Canada would have been labeled as pay-as-you-go. However, that will not remain true. In Canada, 1996 government amendments to the C/QPP raised the contribution rate from 6.0 percent to 9.9 percent (split equally between employer and employee) which will create a fund

worth five years of benefit expenditures. In the U.S., the Intermediate projections of the 'fund' indicate that it is expected to be worth a maximum of 3.64 years of benefits and expenses in 2013. The maximum cash balance according to the Intermediate projections is $4.4 trillion in 2020 (OASDI Trustees Report, 1999). Thus, neither OASDI nor the amended C/QPP would be referred to as pay-as-you-go today or in the near future.

Any social security system will have mandatory worker contributions and a set of promised benefits to today's and future retirees. To determine the key variables in setting the required contribution rate for any retirement system, we outline two equations.

First, we show the equation that would be necessary in an Individual Account system where each worker provides for his or her own benefits and benefits are indexed to the cost of living (e.g. Consumer Price Index). For every dollar of benefit expected at age 65, the required contribution is:

$$C = \frac{\int_{65}^{\infty} e^{-\delta x} \; l_x \; dx}{\int_{20}^{65} e^{-\delta x} \; l_x \; dx} \qquad \text{assuming contributions start at age 20}$$

where: δ is the real rate of interest earned on the invested funds, after inflation (both before and after retirement)

and l_x is the probability of being alive at age x.

Normally, mortality is relatively easy to predict on a macro-economic basis (although it is not for any individual). Thus, if one is attempting to establish guidelines for a social security system defined by Individual Accounts, then one variable is life expectancy, but the most important variable is the rate of return on invested assets.

Now, let us proceed to show the parallel equation that would be required for a pure pay-as-you-go social security system where contributions made by workers in the morning are paid out as benefit dollars to retirees by the end of the working day. No investment income is earned on the social security dollars. Here:

$$C = \frac{\int_{65}^{\infty} e^{-rx} \; L_x \; dx}{\int_{20}^{65} e^{-rx} \; L_x \; dx}$$

where: r is the rate of increase of national wages on which contribution are made

and L_x is the actual number of people in the system aged x.

Thus, we can see that a pay-as-you-go financed social security system is very dependent of the ratio of retirees to workers, and on the rate of increase in covered wages. Covered wages are, in turn, very dependent on the growth rate of the recognized labour force (i.e. there may be an underground or cash economy) and the productivity of the workers. A cash economy can create significant difficulties for a social security system, especially if

such a system guarantees minimum benefits for very little in contributions. This is true in many developing countries. Now, assume the ratio of retirees to workers were to double in one generation (say 25 years). This would normally create a problem for the associated social security system. But assume that workers were to become more productive by 2.8 percent per annum (a high rate of increase). Then, in theory, workers could support this doubling of the Dependency Ratio with the same total contribution and tax rate (all else equal). This is because, at 2.8 percent per annum, productivity would exactly double in 25 years.

Proposition 2: The contribution rate required for a fully-funded social security system is highly dependent on the real rates of return realized on invested assets. The contribution rate required for a pay-as-you-go social security system is highly dependent on the ratio of dependents to workers and the rate of increase in covered wages. The latter, in turn, is dependent on the growth rate of the labour force and the growth rate of worker productivity.

One important goal often stated in favor of reform is the stability of contribution rates. As discussed, the contribution rates for a fully funded scheme are a function of the real rates of return earned by the funds. Thus, a truly fully funded scheme does not create stable contribution rates. Contribution rates rise and fall inversely to real interest rates, as private pension actuaries can attest. In fact, contribution rates fluctuate more than interest rates because each year's contribution must cover both the value of the benefits earned for the year and the actuarial experienced gain or loss on the benefits for all past years.

On the other hand, a pure pay-as-you-go system has contribution rates that rise and fall with the ratio of retirees to workers and the rate of increase of (contributory) national income. Thus, a pure pay-as-you-go system also cannot expect long-term stable contribution rates.

Proposition 3: There is nothing inherent in the mechanisms of a fully-funded social security system to make it any more stable than a pay-as-you-go system.

Both financing extremes would require immediate attention if any variable evolves other than the modeled expectations. However, either a pay-as-you-go system with a small contingency fund or a partially funded system that can use its reserves to soften the immediate need for contribution rate changes can result in achieving level and stable contribution rates for long periods.

There is one extra risk inherent in a pay-as-you-go social security system that does not come through in the actuarial formula, and that is political risk. Any pay-as-you-go system can be financed in its early years with relatively small contributions since there are normally very few full beneficiaries in a new system. As time goes along, pay-as-you-go systems can require significant increases in the contribution rate. This can be met by opposition by workers and voters. One response can be to renege on promised benefits. This can be done by re-designing the social security system (if the voters

support such a move). For example, in the 1996 reform to the Canada/Quebec Pension Plans, the plan benefits were reduced by 10 percent. This was an essential element in achieving a long-term contribution ceiling of 9.9 percent.

So, one must be concerned about the political stability of the sponsoring agency who backs the social security system. In countries like Canada and the United States, this should not be a huge problem, but in countries with corrupt governments, it is. However, this author would offer the following comment:

Proposition 4: In a country with a corrupt government, the only thing riskier to the worker than a pay-as-you-go social security system is a funded social security system.

Certainly, it is terrible if retirees suddenly find that they are not being paid the benefits they were promised. However, I would submit that it is even worse if government officials abscond with workers funds thus leaving retirees with no benefits and workers with no assets.

II ADVANTAGES OF PAY-AS-YOU-GO FINANCING

While pay-as-you-go financing has the disadvantage of being demographically sensitive, there are several advantages of government-sponsored pay-as-you-go schemes.

1. The entire working population can be covered relatively easily. In 1996 in Canada, only 47 percent of workers were covered by employer pension plans--only 33% for private sector workers (Statistics Canada, 1997). In the U. S., the percentage of all workers participating in pension plans declined from 46 percent in 1979 to 44 percent in 1993 (Rejda, 1998, p75).

2. Benefits can be immediately vested and are fully portable, important features for the mobile work force of today. This is not the norm in private plans today.

3. Because contribution income immediately becomes benefit pay-out, no problem exists with indexing benefits to wages. In fact, there exists a source of 'actuarial discounting' for years with real productivity gains if benefits are indexed to cost of living and contributions are indexed to average wages (the norm). Indexation has remained only a future hope for private plans.

4. Administrative costs are usually very low per unit of cash flow, much lower than for private plans. The C/QPP administrative costs are only 1.3 percent of cash flow (OSFI, 1998). For OASDI, the comparable figure is 0.8 percent (OASDI Trustee's Report, 1999). No private plan operates at expense ratios that are this low. Many smaller private plans have expense ratios that are four to five times as large thus negating any potentially higher gross rate of return on assets of a pre-funded plan.

III. WHY THE INTEREST IN GREATER PRE-FUNDING OF SOCIAL SECURITY?

Many industrialized nations are currently considering some form of higher pre-funding of their social security systems; including both Canada and the U.S.. The supporters of these various proposals claim that today's younger workers and tomorrow's working generation will be better off with a changed social security system. But after a half century of relative stability in the philosophical underpinnings of social security, why the apparent sudden interest in change?

One of the driving forces for reform is the impending dramatic shift in the demographics underlying social security. These forces have been widely analyzed and well understood. First, life expectancy has improved substantially and is continuing to improve. Statistics for the U.S. are given in Table 1.

TABLE 1
LIFE EXPECTANCY IN THE UNITED STATES

Year	At Birth		At Age 65	
	Male	Female	Male	Female
1920	55.6	57.6	12.2	12.7
1960	66.8	73.2	12.9	15.8
1990	71.8	78.8	15.1	19.0
1998*(est)	73.4	79.4	15.7	19.2

Source: U. S. Life Tables.
**OASDI Trustees Annual Report, 1999, p62.*

TABLE 2
LIFE EXPECTANCY IN CANADA

Year	At Birth		At Age 65	
	Male	Female	Male	Female
1931	60.0	62.1	13.0	13.7
1951	66.3	70.8	13.3	15.0
1971	69.3	76.4	13.7	17.4
1991	74.6	80.9	15.7	19.9

Source: Statistics Canada, Life Tables, Canada and the Provinces (several).

More important, however, are the well known impending demographic dependency shifts as the baby boom moves out of the labor force and into retirement and is replaced by the baby-bust cohort. This fast approaching force is seen clearly in Figure 1 that follows.

The graphs in Figure 1 are called population pyramids. They are actually sideways population histograms, with males on the left and females on the right. The histograms (bars) represent the number of people (or equivalently the percentage of the population) in each of twenty age groups (i.e. five-year age groups). The last group at the top is the total of all those aged 90 and over.

Figure 1
Changes in the Canadian Age Structure

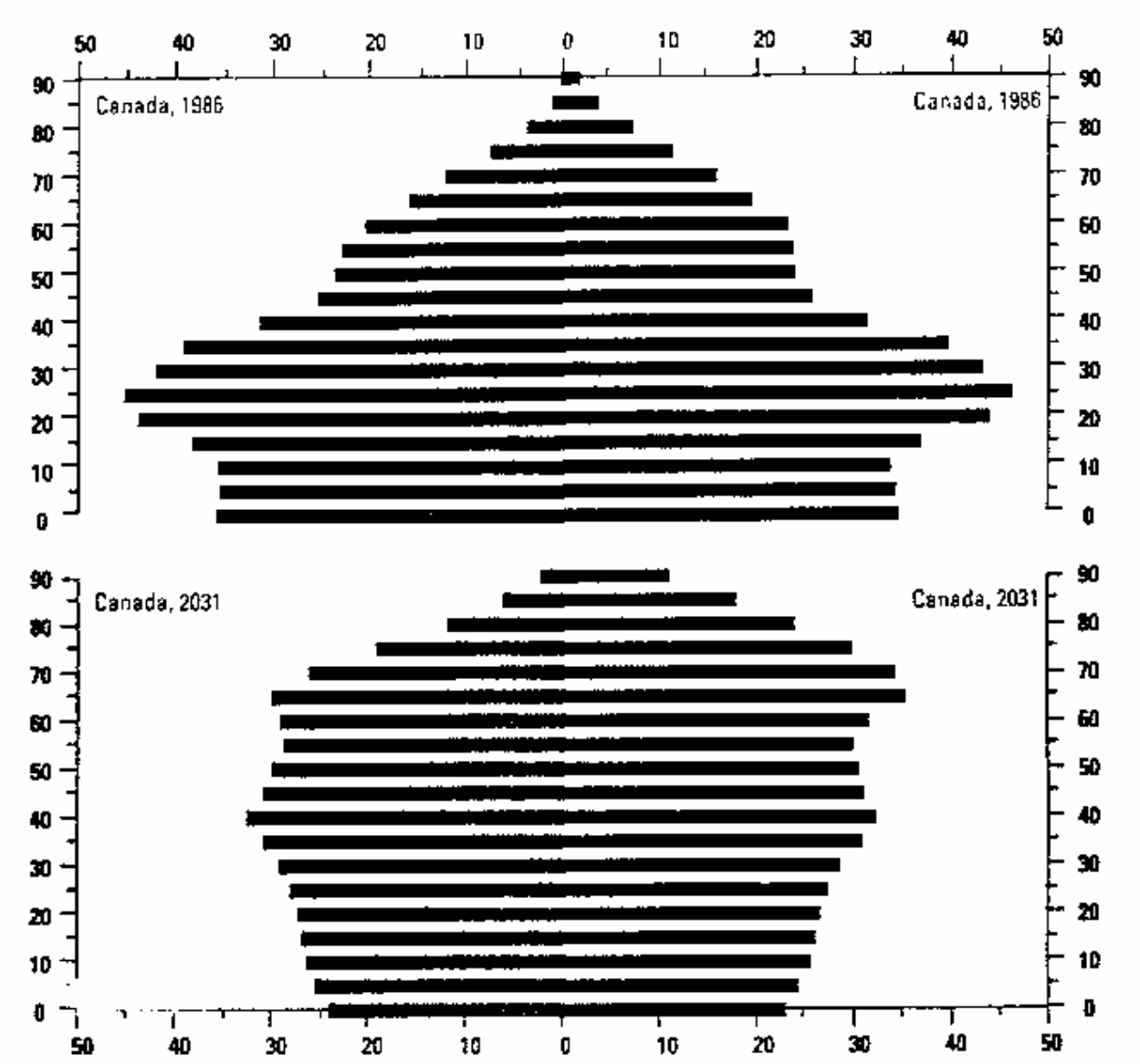
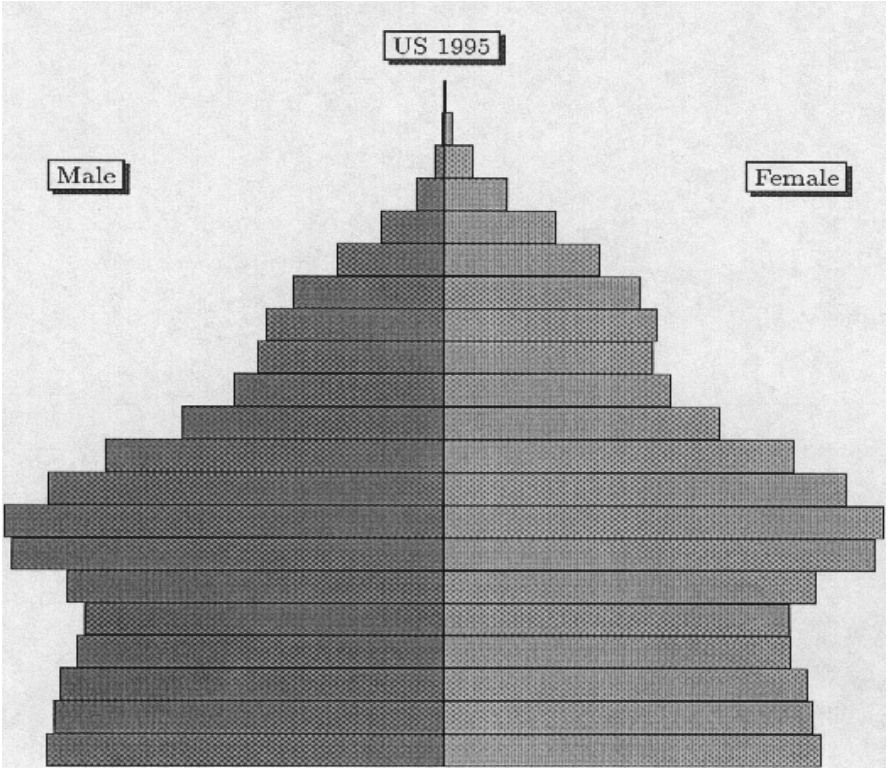
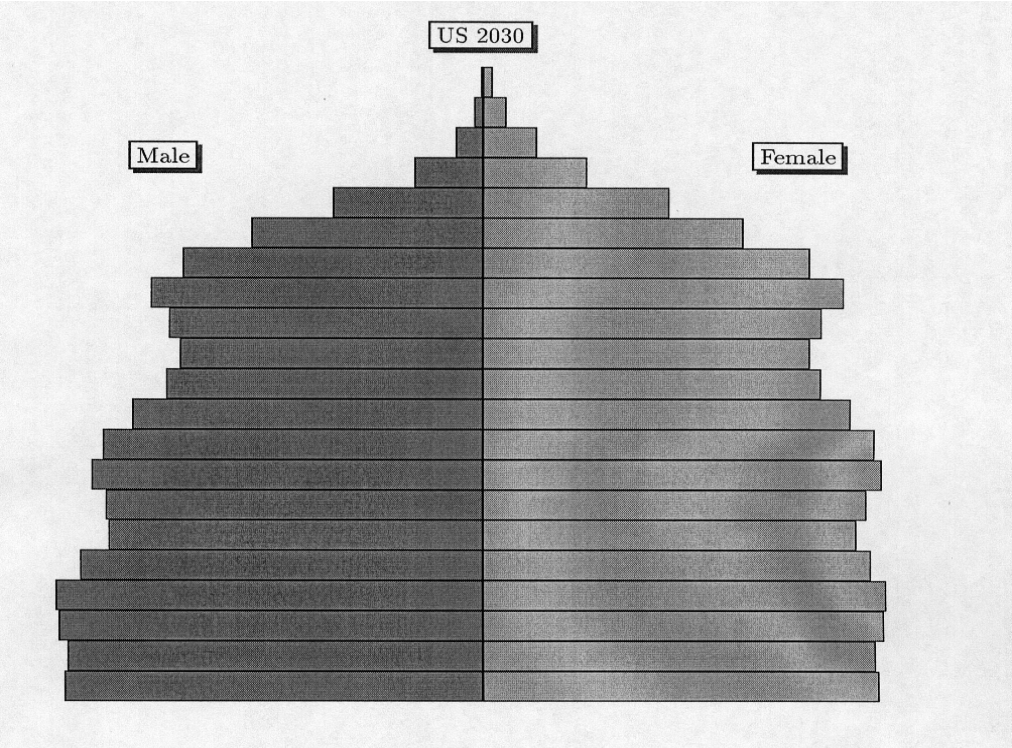


Figure 2
Changes in the U.S. Age Structure





North America has already experienced the economic impact of the baby boom in its youth and in its entry into the labor force. When baby boomers bought homes, house prices and mortgage rates rose measurably. When they entered the workforce, youth unemployment rates skyrocketed. Their entry into the labor force has also been blamed for dampening rates of productivity improvement as business chose to buy cheap labor instead of more expensive capital.

Those who favor pre-funding of social security to some extent argue that the resultant large asset pools can be invested to aid in overcoming the impact of these demographic shifts on pay-as-you-go contribution rates. Through enhanced economic growth, it is said, faster wealth creation makes larger wealth transfers possible. For example, assume that the cost of retirement income security and health care for the aged today costs 12.5% of all wages from all workers. That means that a worker who is paid for a 40-hour week has to work 5 hours to take care of the benefits for the dependent elderly. Assume that over the next 35 years the ratio of elderly to workers doubles. With no change in worker productivity, each worker would have to contribute 25% of wages, or work 10 hours, to fund the benefits for the dependent elderly. However, if every worker were to become twice as productive (which would require only 2% improvement per annum for the 35 years), then each worker would produce enough goods and services to meet the needs of the dependent elderly in the same 5 hours it takes today.

In fact, Emery and Rongve (1999) argue that if you assume economic growth, then every generation is wealthier than the previous generation. Thus, if pay-as-you-go rates rise, we may be asking the future generation to pay a larger percentage of wages to finance Social Security, but this may still leave them with more disposable income than today's workers. Accelerating the rate of increase in social security contributions today, Emery

and Rongve argue, could be intergenerationally regressive. If financing is left as pay-as-you-go, future cohorts may pay higher taxes but still have higher consumption than workers today because of their higher wages.

In terms of the direct funding of social security in Canada and the U.S., the ability of enhanced worker productivity to solve the financing problems as projected is more limited. In both Canada and the U.S., the accrual of social security benefit rights is linked to a wage base that is indexed to national wages. Thus, any productivity improvements that are reflected in national wages prior to retirement automatically create larger social security benefits at retirement. After retirement, again in both Canada and the U.S., benefits are indexed to cost of living as measured by the consumer price index (CPI). Thus, it is only after retirement that increased worker productivity creates a discount rate in terms of the cost of social security. To achieve the full cost benefit of gains in productivity, price-indexed pre-retirement formulas would be necessary. For a full discussion of this matter, see Moorhead and Trowbridge (1977).

If pre-funding social security results in faster wealth creation, then why wasn't social security established on a fully funded basis from the beginning? There are several basic reasons (other reasons are listed later in the paper). First, pay-as-you-go financing allows for significant benefits to citizens already retired at the inception of the plan (or soon to retire). Full benefits under a fully-funded system can take up to 40+ years to accrue. Second, with no assets, there is no danger of the government influencing the economy inappropriately through the use of the social security funds. Similarly there is no chance of "socialism" through the back door as there could be if the government used social security funds to buy private sector assets. [For a more complete discussion of the history of this debate within OASDI, see Derthick (1979, Chapters 10/11).]

If social security is financed on a pay-as-you-go basis, then the implicit 'rate of return' of such a financing arrangement is the rate of increase of employment earnings (subject to social security contributions, Treuil (1981)). This, in turn, is normally highly correlated to the total of the growth rate of the labor force (including part-time work) and the per-worker rate of productivity increase (*ibid.*).

A fully funded social security scheme has an actuarial discount rate equivalent to the real rate of interest (real rates because social security benefits are indexed to inflation).

According to the Canadian Institute of Actuaries (CIA, 1996, p.3), in the 1960s demographic and economic variables, if assumed long-term into the future, favored pay-as-you-go financing on the basis of cost. In particular, in the 1960s in Canada, reasonable actuarial assumptions would have been as follows (*ibid.*):

Senior dependency ratio*	0.33
Annual increase in real wages	2.0%
Real rates of return	2.0%

* The Senior dependency ratio is the ratio of Canadians aged 65+ to the number of Canadians in the Labor Force.

These underlying assumptions would have led to the following projected costs for Canadian social security as a percentage of payroll for pay-as-you-go versus fully funded arrangements.

Funding Arrangement	**Projected Cost as Percentage of Payroll**
Pay-as-you-go (mature plan)	11.0%
Fully funded	16.5%

But times have changed. The future is not what it used to be. Today's long-term assumptions in Canada would be closer to the following (CIA 1996):

Senior dependency ratio	0.40
Annual increase in real wages	1.0%
Real rates of return	4.0%

These factors lead to the following projected costs (*ibid.*):

Funding Arrangement	**Projected Cost as Percentage of Payroll**
Pay-as-you-go (mature plan)	14.5%
Fully funded	7.2%

While factors in the U.S. would not favor pre-funding to the same extent, because real interest rates are lower and annual wage increases higher than in Canada, the same forces now also favor fuller funding in the U.S. as well.

Thus the following statement from Keith Ambachtsheer seems logical (1995):

> Just as pay-go financing makes sense when real interest rates are lower than real GDP growth prospects (i.e. the mid-1960's), so a conversion to pre-funding makes sense when real interest rates are higher than real GDP growth prospects (i.e. the mid-1990's).

Proposition 5: The fact that both of the major North American social security systems were essentially started as pay-as-you-go systems was not a mistake. Further, just as a funded system may make more sense today, it is entirely possible that economic variables could shift and once again favour pay-as-you-go financing.

In fact, the requisite economic relationships that favour fuller funding may be unsustainable. In many countries, national debt is being reduced; inflation remains under control. The result of a lower debt ratio and controlled inflation ultimately should be lower interest rates and higher GDP growth. Further, Fougere and Merette (1998, p19) state that as the Baby Boom retires the capital-labour ratio will increase. This, in turn, will lead to a reduction in the real return on capital and an increase in before-tax real wages. If these scenarios play out, then we are back to an environment that once again favours PAYGO financing (see also Miles, 1999, p19/20).

As the CIA report “Troubled Tomorrows" (CIA, 1995, p. 23) wisely concluded:

> Should Canada abandon the pay-as-you-go approach? We think not. No retirement income system--funded or unfunded, public or private--is free from risk. Any attempt to fund or replace Canada's public pension plans will be expensive in the short term, with no guarantee of a commensurate reduction in long-term cost. Today's environment favours funded retirement savings plans, but tomorrow's environment, like the environment of the 1960's might not.

But is a pre-funded scheme more secure? How long will factors favoring pre-funding last? Can productivity rates be increased by pre-funding social security? Are pre-funded plans demographically immune (i.e. could fully-funded plans provide promised retirement benefits to the baby boom purely from the funds on hand regardless of the size of the labor force in the next generation)? Would switching back and forth between financing arrangements be accepted as good public policy? These are the questions that should be posed by public-policymakers before any switch in funding methods is adopted. The remainder of the paper explores many of these issues.

IV. IS A FUNDED PENSION DEMOGRAPHICALLY IMMUNE?

Clearly the most serious challenge for pay-as-you-go financing of social security is the rapidly shifting ratio of retirees to workers over the next 40 years. Would a fully-funded social security system (e.g., Mandatory Individual Retirement Accounts) be demographically immune?

One of the problems that exists with any discussion around the optimal financing arrangement for social security is confusion between what is true on a micro-economic basis (i.e. for one person or a small group) and what is true on a macro-economic basis (e.g. in an economy as large as the U.S.).

This is sometimes referred to as the *Fallacy of Composition* whereby it is assumed that what is true for an individual will necessarily be true in aggregate. [see Barr (1993) and Krugman (1996)]. For example, if I stand at a concert, I can see better, but if everyone stands, then no one has an improved view. Clearly, for an individual to save for retirement, consumption must be foregone during one's working lifetime, with money set aside in savings. These funds are then used to buy goods and services post-retirement. This system appears to be workable regardless of the ratio of retirees to workers since every worker funds his/her own benefits in full. Thus, it would seem logical for a nation to provide for its citizens’ post-retirement needs by designing a fully-funded social security scheme that accumulates enough money to buy everyone’s full post-retirement consumption needs.

Francisco Bayo (1988, 178) Deputy Chief Actuary of OASDI says this will, in fact, not work:

> For Social Security, you cannot accumulate assets; that is, claims from somebody else's production. If we have a large amount of money in the Social Security trust funds, we have a claim on ourselves, which does not have much meaning. The truth is, whatever is going to be consumed--be it a product that you can get a physical hold of, or services that are very difficult to hold--those products cannot be stockpiled. They have to be provided at the time of consumption. No matter what kind of financing we are going to have in our Social Security program, you will find that the benefits that will be obtained by the beneficiary in the year 2050 will have to be produced by the workers in the year 2050, or just a few years earlier.

Nicholas Barr (1993, 220) says it even more strongly:

> The widely held (but false) view that funded schemes are inherently 'safer' than PAY-AS-YOU-GO is an example of the fallacy of composition. For *individuals* the economic function of a pension scheme is to transfer consumption over time. But (ruling out the case where current output is stored in holes in people's gardens) this is not possible for society as a whole; the consumption of pensioners as a group is produced by the next generation of workers. From an *aggregate* viewpoint, the economic function of pension schemes is to divide total production between workers and pensioners, *i.e.* to reduce the consumption of workers so that sufficient output remains for pensioners. Once this point is understood it becomes clear why PAY-AS-YOU-GO and funded schemes, which are simply ways of dividing output between workers and pensioners, should not fare very differently in the face of demographic change.

Thus, a review of the literature indicates strongly that pre-funded social security systems do not overcome the impact of the impending demographic shifts. (The paper discusses the countervailing impact of foreign investment later). The pension income of any decade must come out of the national income of that decade.

Proposition 6: A fully-funded social security system is not demographically immune. A fully-funded system is as dependent on the next generation of workers and their productivity as a pay-as-you-go system.

However, there may still be reasons to consider a pre-funded scheme as economically advantageous.

V Does Pre-funding Social Security Increase Savings and/or Productivity?

Barr (1993, p.223) admits that declines in the working aged population can be offset by increased productivity amongst the remaining workers or by increased labor force participation rates (for example, among women), so long as output is maintained. It is also, in principle, possible to maintain the consumption of both workers and pensioners with goods produced abroad, provided the country has sufficient overseas assets to do so.

> The crucial variable is output. A decline in the labor force causes problems for any pension scheme only if it causes a fall in output; the problem is solved to the extent that this can be prevented. The choice between PAYGO and funding in the face of demographic change is therefore relevant only to the extent that funding (as is sometimes argued) systematically causes output to be higher (*ibid.*).

Thus, we have arrived at two important truths. First, no pension plan, private or public, pre-funded or pay-as-you-go, is demographically immune (see Schieber and Shoven 1994). Second, the real security behind any pension plan is a healthy economy. Wealth cannot be transferred until it is created. And the more wealth that is created, the easier it is to transfer some to the retired elderly.

Proposition 7: For pre-funding to have any consequence on the security of social security, three requirements must be satisfied (all three); namely:

- **Pre-funding must increase gross national savings**
- **Those increased savings must be invested so as to increase worker productivity**
- **The pre-funding must be the best way to achieve the first two requirements.**

If there is an alternative public policy that can increase savings and worker productivity either more efficiently or with less risk, then (by definition) it should be the preferred route (this assumes that no two alternatives have exactly the same impact).

Given these three criteria, how does the literature grade the pre-funding of social security as the preferred proposal?

Does the pre-funding of social security increase gross national savings (versus, for example, increased hoarding or increased surplus on the current account of the balance of payments)? There is an abundance of literature on this topic [for example, see Ricardo (1817), Daly (1981), Aaron (1982), Barr (1993), Burbidge (1987), Atkinson (1995), Hughes (1996), Feldstein (1996)], but no clear conclusion. This turns out to be a very difficult question if you allow for behavioral response (or Ricardian equivalence).

For example, we would think that the creation of a pay-as-you-go social security system, which creates no assets but does provide real retirement income benefits, would necessarily decrease gross national savings. However, the literature finds that this intuitive impact can easily be offset (and was in the U.S. after the introduction of OASDI) by two behavioral responses. First, if the provision of social security results in earlier possible retirements for workers than would otherwise be possible, those workers will then save as much as before the provision of pay-as-you-go social security to achieve earlier retirement (that is, they still have to save as much privately because they are now providing for a longer period in retirement).

Second, according to the literature, we must factor in the desire of people to create bequests to the next generation before we can know the impact of pay-as-you-go social security on gross national savings. That is, when younger workers provide their parents with retirement income security through pay-as-you-go social security, their parents, in turn, work hard to provide an inheritance for their children. Equivalently, there may be the removal of a negative bequest through the advent of social security in that workers no longer need to directly support their parents in retirement. The game may, therefore, be a zero net sum (see Barro 1974 and Poterba 1994).

Of importance here is the replacement ratio provided by the social security system. In this regard, Canada and the U.S. are very similar. In both countries, a worker consistently earning the average industrial wage will realize a replacement ratio of about 40% from the total social security system (in Canada this includes Old Age Security and perhaps some Guaranteed Income Supplement). Poorer workers realize higher replacement ratios, and wealthier workers less. However, the social security system does not in and of itself, provide full retirement income security—far from it. Thus, other forms of savings are essential. The arguments above about behavioral response may not be as applicable to systems that do provide full retirement income security (for example, some European systems).

Hughes (1996) reviews fourteen time-series papers which attempt to answer the question: "Is there any evidence that social security reduces personal saving?" Six of the papers contend that the answer is "yes", while eight of the papers conclude that the answer is "no". He also reviews eight cross-section studies on the same topic. Four papers conclude that social security does reduce total personal savings, while four find exactly the opposite.

In conclusion, the creation of pay-as-you-go social security did not decrease national savings. However, there is still an intuitive sense that fuller funding of social security would increase national savings. Again, however, a review of the literature is not conclusive.

In Chile, in 1980 when the social security system was financed on a pay-as-you-go basis, the gross national savings rate was 21.0%. In 1981, Chile introduced a mandatory individual retirement savings scheme requiring 10% contributions from all workers (and nothing from the employer). The Chilean gross national savings rate dipped substantially in the early 1980s, and stood at 18.8% until 1991 (Uthoff 1993). In a more recent paper, Holzmann (1997) finds empirical evidence of both increased national savings and enhanced worker productivity in Chile after the 1981 social security reforms. However, Holzmann concludes that:

> The direct impact of the (social security) reform on private saving was low, or perhaps even negative.

According to Holzmann, the increase in national savings and the increase in worker productivity were because of higher growth rates in the economy not social security reform.

Hughes (1999, p50) demonstrates that in 1975, net cash flow to pension funds in Ireland were 0.8 percent of the Irish GNP while the Net National Savings rate was 13.7 percent. By 1994, pension cash flow had grown to 1.6 percent of GNP while Net National Savings had fallen to 11.4 percent of Irish GNP. He states (*ibid,.*) that similar patterns are evident for the United Kingdom and the United States, both of which have well-developed occupational and personal pension schemes.

Hughes (1996) reviews three papers to see if there is any evidence that personal pension plans increase savings. One papers supports the contention, while the other two find no evidence of increased savings. In a later paper, Hughes (1999, p51) lists "Pension Assets/GNP" versus "National Savings/GNP" for sixteen countries, and finds that there is no correlation between pension assets and Net National Savings at all. This is supported by work done by the International Social Security Association (1998, p21) as presented in the following table.

Table 3

Growth in Private Pension Assets
Relative to Gross National Savings
1980-1991

	Gross Saving (% of GDP)		Pension Assets (% of GDP)		
Country	**1980**	**1988**	**1980**	**1991**	**Change 1991-1980**
Canada	23.1	20.3	18.7	35.0	16.3
Denmark	20.3	15.0	26.3	60.0	33.7
France	25.4	19.8	1.0	3.0	2.0
Germany	23.7	22.2	2.6	4.0	1.4
Japan	34.4	31.2	3.2	8.0	4.8
Netherlands	23.9	22.3	46.0	76.0	30.0
Switzerland	28.0	28.4	51.0	70.0	19.0
U.K.	17.7	16.8	28.1	73.0	44.9
U.S.	19.5	16.1	40.7	66.0	25.3

Source: International Social Security Association, 1998, p21

Further, if there are tax incentives for funded pension plans, then the tax costs of pre-funding must be factored in to any estimate of national impact. That is, any increase in national savings may be offset by a drop in government tax revenues (Hughes, 1999, p58).

Even if gross national savings are increased, has the history of such schemes shown that these savings are invested in a manner that increases worker productivity?

Again, the literature is inconclusive. For every plan that seems to create a healthier economy, there are examples where funds are used for purely political purposes, to reward political friends, to prop up failing industries, or even straight fraud on the part of the political masters. According to Rosa (1983, p. 212), the experiences of Sweden and Japan (from whom one might expect above average results in this matter):

> …offer powerful evidence that this option may only invite squandering capital funds in wasteful, low-yield investments [which] should give pause to anyone proposing similar accumulations elsewhere.

Finally, even if the answers to our first two questions were positive, should greater pre-funding of social security be the preferred policy option? Aaron (1982), after lengthy empirical analysis of the U.S. savings rates (personal, plus business, plus government, less depreciation) and labor force participation rates from 1930 to the late 1980s, says no.

> If our objective is to increase the rate of capital accumulation, we should ask which instruments are best for achieving that end. Prominent on the list would be direct assaults on the federal deficit, incentives to business investment, and the withdrawal of incentives that promote inefficient investments...I conclude also that if we wish to increase capital formation, the proper objective is the total saving rate, and that raising social security payroll taxes or cutting social security benefits is a poor device for achieving that objective unless we favor them on other grounds. (Aaron 1982, p. 51-52)

Proposition 8: The best way to increase national savings is not to move to a fully-funded social security system. Rather it is to pay down the national debt.

The International Social Security Association (1998, p42) points out the if the pension reform is to generate additional capital, then transition liabilities should be financed through tax increases or reduced spending. Savings will not increase if the liabilities are financed through increased borrowing. Financing the transition liabilities through borrowing will cause increases to the public debt and the new taxes required to service that debt will offset any contribution savings.

J. D. Brown (1972) provides another reason for not using social security to create investable funds as the preferred public policy alternative. He argues that social security should not become an instrument of fiscal policy. If the plan is pre-funded to any great extent, then contribution rates or benefits might be moved up or down for the impact that would have on the general economy (for example, to dampen inflation). Social security should not be manipulated for such general fiscal motives, according to Brown. This 'fiscal policy' effect was seen in the Singapore National Provident Fund in the early 1980s. When substantial wage awards were made, these were 'mopped up' by concomitant increase in the rate of contribution to the Provident Fund (Deutsch and Zowall 1988, p.72-81).

To conclude, pre-funded social security systems do not overcome the impact of the impending demographic shifts. The pension income of any decade must come out of the national income of that decade. Thus, pre-funded or not, a macro-economic social security system is as dependent on the future generation of workers as is a pay-as-you-go system.

In conclusion, there is no evidence that pre-funded plans increase either national savings or worker productivity. The literature is inconclusive on both points (Feldstein, 1996).

VI. OTHER DESIGN ISSUES

A wide variety of proposals for pre-funding of social security have been put forth. We examine several of these proposals in their broadest aspect (that is, not with any particular proposal in mind) and attempt to outline their advantages and disadvantages. These proposals include both a shift from pay-as-you-go social security to more pre-funding, with assets invested in the private sector (such as is occurring now in Canada), but no benefit structure changes, and the more radical change where a pay-as-you-go system is replaced by a defined contribution individual-account system such as in Chile.

A. Keep Social Security as a Defined-Benefit Plan, with Greater Pre-funding

Keeping social security as a defined-benefit plan, as is now the case in most systems, (including Canada and the U.S.,) has a number of advantages, including low administrative costs. Also, by continuing the defined benefit nature of the program, all participants share in the risks inherent in saving for retirement, including inflation, mortality, selection of investments, and the risk of variable rates of interest at the time when accumulated assets are used to buy a retirement annuity or other retirement income vehicle. Further, it is relatively easy to include important ancillary benefits in a defined-benefit plan, such as disability income and survivor income benefits, without having to take regard for the risk profile of any individual participant.

However, the establishment of a higher level of pre-funding, and the creation of significant investable funds, as is happening in Canada, have many associated problems. First, to the extent that the assets are invested in government bonds, has anything changed over a purely pay-as-you-go system? Workers are both social security contributors and taxpayers, and it is doubtful that they care about the destination of their paycheck deductions, only the total. In this regard, as the social security system builds up pre-funded assets and buys government bonds, governments can use these funds to finance their expenditures while either not raising taxes or actually lowering them. Thus, workers experience higher social security contributions than would be necessary under pure pay-as-you-go financing, but lower general tax rates. The total, however, has not changed as to size or timing.

Similarly, when the baby boomers start to retire, they will demand the return of their government bond IOU. While social security contribution rates will not have to rise when this demographic shift takes place, taxes will have to be raised to pay off the redeemed bonds (unless the government is completely debt free and running on operating surplus). Again, the total burden on workers is exactly the same, in both size and timing, as it would have been under pure pay-as-you-go financing.

Proposition 9: Macro-economically, there is very little difference between a pay-as-you-go social security system and a funded system where the assets are all government bonds.

As an aside, the impact on an individual worker may not be equivalent, however. This is because of the difference in effect between a progressive tax regime versus a flat (some would say regressive) payroll tax for social security. Thus in the lifetime of a worker in the baby-boom generation, the impact of fuller funding would be an increased regressive social security payroll tax but decreased progressive income taxation during the working years, and an increased progressive income tax during retirement.

Thus, except for the important psychological impact that by each generation paying for its social security 'in full', they gain a higher moral level of claim on their prospective benefits, the pre-funding of social security with all assets being government bonds seems rather pointless. In reality, the financing is still pay-as-you-go. The total cost of social security to the workers has not changed in any way. In fact, it may work against the creation of a healthier, more productive economy, if these funds are merely used by the government to finance deficits based on consumption-targeted spending (e.g., welfare payments). This may be especially important in the U.S. where the OASDI annual surplus is included in the unified federal budget and can be used to mask deficits. The only real debate here is whether payroll taxes (which is what social security contributions are seen to be) have a different impact on labor force productivity than other forms of taxation. This matter is discussed later in the paper.

B. What if the Decision is to invest in Private-Sector Assets?

First, we would have to determine whether the macro-economic balance sheet has changed at all. That is, if social security stops buying government bonds and buys corporate debt and equities, but the private sector commensurately decreases its purchase of corporate debt and equities and substitutes government bonds, then nothing has changed in total.

If the result is not a zero-sum game, then presumably governments have to find new financing for their debt. One would expect the government would have to raise its bond interest rates to make this happen. Ultimately, these higher interest charges fall back onto the workers in the form of increased taxes. Even if a zero-sum game is not the outcome, the ability of a pre-funded system to create more savings is highly debatable, as is the ability of such savings (if realized) to create higher productivity (as indicated by the previous literature review).

As an aside, 'increased saving' could have a perverse effect if that inhibits consumer spending. By saving, we could create the 'paradox of thrift', whereby business does not spend on plant and equipment when consumption declines, even with enhanced savings. This is exactly what happened in the Great Depression.

Other issues need to be addressed. Who will decide how these assets are to be invested? Could the funds be used for political purposes, for lemon-aid (that is, to prop up ailing industries), or will they end up producing higher levels of wealth creation? Can

avoidance of political influence be guaranteed? Should the investment of these assets be restricted to the domestic market? If so, will that not mean that the social security funds (and government) will have an undue level of control over domestic capital markets and society? This was discussed in some detail in the U.S. in 1935 (see Derthick 1979).

What if the investment is done passively, to achieve an index rate of return? Can the capital markets remain efficient if the majority of investment funds are passively invested? Such funds follow the market rather than leading it. Private capitalism works because management is forced by stockholders to excel. How do purely passive funds cause such excellence?

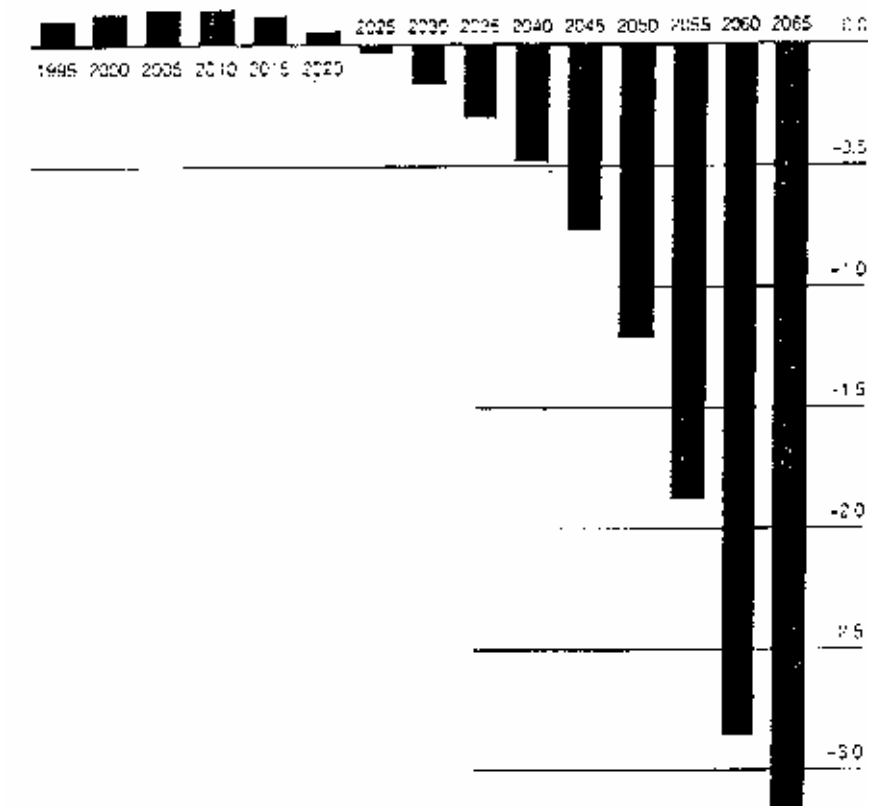
Are there enough high-quality assets available to invest wisely the trillions of dollars that will become available? This is a particularly interesting point. The funds of a pre-funded social security scheme will build up rapidly now as the baby boom pre-funds it benefits. However, the same baby-boomers will also be saving in their own pension plans and individual accounts for the remainder of their retirement needs. In fact, there are many who claim that today's hot stock market is the result of the influx of these new funds (without any increased pre-funding of social security). Thus, it could be argued that the social security system will be buying when asset values are high.

Then, when the baby boom retires, it will force the liquidation of the social security funds to a great extent, again at the same time as the baby-boomers are liquidating their other retirement plan assets. As stated by Schieber and Shoven (1994):

> This could depress asset prices, particularly since the demographic structure of the United States does not differ that greatly from Japan and Europe, which also will have large elderly populations at the time.

Figure 3

Net Flow of Assets Into or Out of Pensions and Retirement Savings 1995 to 2065



Source: Schieber and Shoven, 1996

Thus, it can be logically argued that a pre-funded social security system may be doomed by being in the position of buying high and selling low (relatively speaking). That is, at the very least, the high rates of return now projected by supporters of privatization may not accrue. In other words, the assumptions upon which the arguments for pre-funding social security are based may be unachievable. The move to pre-funding is grounded on the assumption that real rates of return will continue to exceed the growth rate in real wages. If that weren't true, then pay-as-you-go financing would be preferred. However, how can we continue to expect these current high real rates if we create trillions of dollars of new gross national savings and investable funds that are then liquidated over time as the baby boom retires?

Offshore investment might be preferable for at least three reasons. First, as previously stated, the domestic capital market may not be large enough for the prudent investment of such large funds. Second, diversification of risk in any portfolio is generally advised.

Third, by investing in countries that do not share the aging populations of Canada or the U.S. (that excludes all of Europe, Japan, Australia, and New Zealand), or countries where workers do not care to retire at some fixed or early age (presumably developing nations), it might be possible to dampen the impact of the impending retirement of the baby-boom generation in North America. This might be referred to as demographic profile diversification. Interestingly, this might also decrease or eliminate the need for government-sponsored foreign aid.

However, this is not without some significant investment risk, currency exchange risk and political difficulties. One could expect heated debate if it were suggested that social security should build up large investable funds, only to have them invested offshore.

There are other problems associated with pre-funded social security, however, even if invested widely in the private sector. First, pre-funded schemes are exposed to the risk of unforeseen inflation (that is, inflation that decreases real rates of return) because of the length of time between contribution and payment of retirement income. In this regard, inflation nearly destroyed several funded schemes in Europe earlier in this century (for example, France and Germany—see Linton 1935, p. 365). This may be one reason that these schemes now use close to pay-as-you-go financing. Pre-funded provident funds that exist in many developing countries are also experiencing problems with the effects of inflation.

Second, with the creation of these large investment funds, there will be strong and continuous pressure to expand social security benefits in an era when such expansion would be misguided public policy. The history of the C/QPP provides strong evidence for this. Because of low early contribution rates and a healthy contingency fund, politicians steadily increased the benefits of the C/QPP during its first 25 years. Based on previous actuarial projections, of the 14.2% ultimate pay-as-you-go contribution rate required to fund the mature C/QPP, 2.4 percentage points come from the expansion of benefits just mentioned (Canada 1996, p. 46). This argument was also used to defend basic pay-as-you-go financing for OASDI over its early years [see Derthick (1979, Chapter 11)].

Finally, the creation of funds to invest requires that social security contribution rates must be set higher initially, in the short run, than those required under pure pay-as-you-go financing. Is this optimal public policy? There are several reasons why the answer might be no.

First, there is evidence that social security contributions, whose impact is the same as payroll taxes, could hurt job creation.

> [In Canada] These [social security contribution rate] increases have had and will continue to have a negative impact on the labor force. By [between 1986 and] 1993, the rise in contributions by employers and employees had reduced employment and the participation rate by nearly 26,000 jobs and 0.12 percentage points, respectively. By the year 2016, the increase in C/QPP contributions will have reduced the participation rate by approximately 0.5 percentage points (Italianno 1996).

This effect is especially pronounced if social security taxes are levied on only part of the worker's income (for example, in Canada, C/QPP contributions are levied only up to the year's maximum pensionable earnings, $37,400 in 1999, which is roughly the average industrial wage, while in the U.S., contributions to OASDI cease at $72,600 in 1999). Raising social security contribution rates could have the effect of providing an incentive to pay for overtime instead of hiring new staff. Would it not be preferable to assist job creation now, even if it means higher potential contributions when the baby boom retires, but also when there could easily be labor shortages?

Second, social security contributions are a part of total government taxation. There must be a maximum rate of taxation beyond which actual cash tax receipts decline. Prior to this, resistance to increased taxation will be evident in the proportion of the economy that evades taxation (that is, the underground or cash economy). So long as there exists government debt, is it optimal government policy to increase social security funds or would it be preferable to increase some other form of tax and decrease the deficit and the debt? The level of noncompliance in the Chilean system can be partly explained by this taxation-limit phenomenon.

Third, there may be better ways to increase national savings rates and productivity than to pre-fund social security. Any government action that increases saving for retirement could be substituted for pre-funded social security if the goal is to increase savings and productivity. Clearly, the increased (mandatory) contribution rates needed to pre-fund social security will decrease the total dollars that can be saved for retirement in any other vehicle and lessen the amount invested in private alternatives. It is surprising, therefore, not to hear more opposition to the pre-funding of social security from private-sector-retirement professionals.

Mandating employer-sponsored private pensions or even creating stronger incentives (or weaker disincentives) to private pensions and individual savings accounts (RRSPs in Canada) could have the same effect on savings and productivity. In fact, it might be preferable because it does not bring with it the possibility of undue government influence and does not create any pressure for increasing social security benefits (Derthick 1979, Chapter11). Is it not better to concentrate on the economic goals directly, rather than on the attempt to achieve them as a by-product of social security financing?

It seems very strange that in both Canada and the U.S. the government is seriously considering larger pre-funding of social security, while at the same time putting more limits on the ability of employers and workers to save through private pension schemes and individual accounts (see federal budgets in both countries over the past ten years). As long as there is an alternative to pre-funded social security that can have the same probability of enhancing savings and productivity, then, for the reasons just listed, it should be the preferred public policy.

Earlier it was noted that the pre-funding of social security might create a higher moral claim for the generation that paid for the full cost of benefits. This argument is stronger if the assets so created are invested in the private sector, as opposed to buying

government bonds. Through the social security system, workers would become owners of capital and could expect to receive a fair rate of return on the capital after they retire. Although this is a strong argument, it still depends entirely on this capital being new and additional and on the capital being used to enhance worker productivity. Again, the basic truths have not changed.

C. Change Social Security to a Defined-Contribution Plan

Another possibility is to turn the present defined-benefit social security system into a defined-contribution scheme in which participants decide how their individual funds are invested. This is an analogy to the Chilean social security reforms. Several countries have reformed their pension systems along the same lines as Chile did in 1981, including Peru in 1993, Argentina in 1994, Colombia in 1994, and Mexico in 1997.

These proposals have some advantages and some disadvantages.

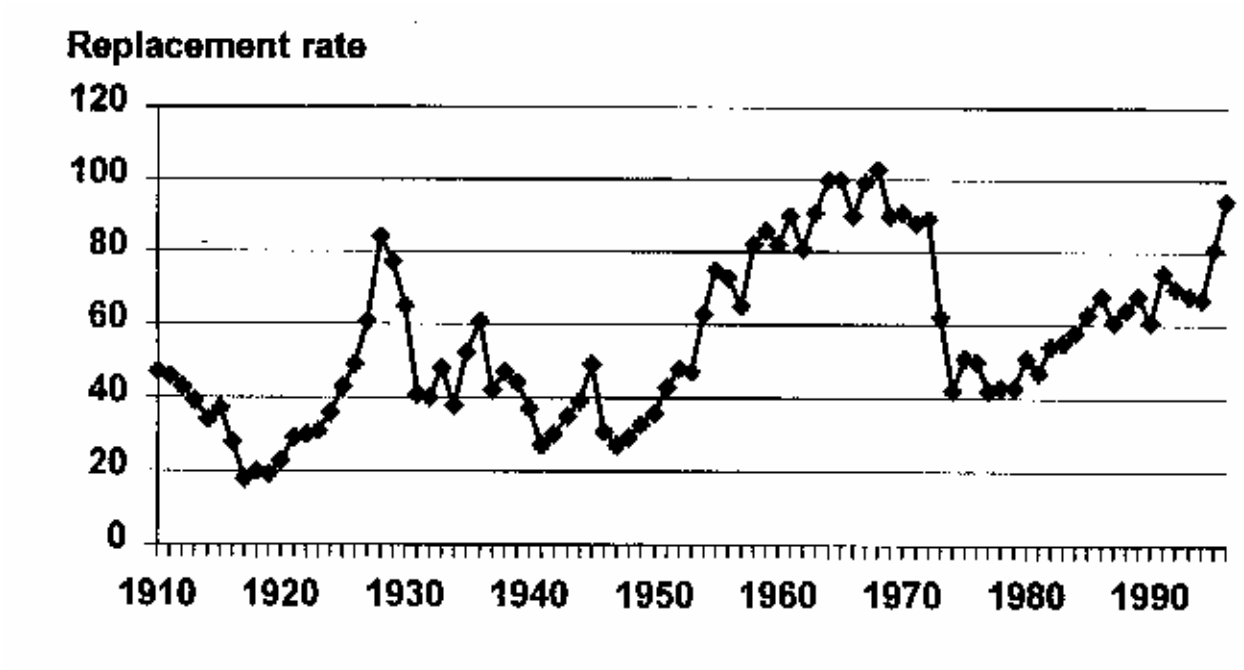
As to advantages, the scheme would allow for universal coverage of workers, immediate vesting, and full portability. It would also, in theory, provide billions of dollars of investable funds, the potential impact of which has been discussed in detail previously. The supporters of Mandatory Retirement Savings Plans replacing defined-benefit Social Security are many (see, for example, World Bank, 1994, Robson, 1995 and Ferrara and Tanner, 1998), and their arguments will not be repeated here.

There are, however, also several disadvantages to defined-contribution MRSPs. First, whereas pay-as-you-go schemes can create immediate benefit payments to the elderly, a defined contribution scheme cannot do so for a very long time (at least thirty years).

Second, all of the risks of a defined contribution plan, including the investment risk, the inflation risk, and the mortality risk fall on the shoulders of the individual worker instead of being shared across the entire working population. As a result one should expect workers to invest in relatively low risk investments which, in turn, will result in lower long-term rates of return than modeled by proponents of these reforms. This is extremely important since every 1 percent of extra return over the lifetime of a worker results in a pension that is about 24 percent larger (Adams, 1967). Schieber (2000) illustrates this well in the diagram that follows. In the diagram, Schieber shows the replacement ratio that a worker could realize if s/he had saved 6 percent of pay each year over a forty-year working lifetime (shown by year of retirement at age 65).

Figure 4

Variation in Benefits due to Market Variations in Stock Values (Assumes a 6% Contribution Rate)



Source: S. Schieber (2000)

Obviously, rates of interest at the time of retirement are of critical importance if the worker is forced to annuitize, as is the case in some countries.

Third, the ancillary benefits of the present OASDI and C/QPP, including Disability Income benefits, Orphans benefits, and Death benefits would be lost or have to be replaced in some new scheme. It must be remembered that these ancillary benefits are about one-third of the total package of coverage. Reformers suggest that participants should buy private insurance to replace these benefits. These costs are not immaterial (e.g., one-third of the OASDI contribution rate). Also, solutions must be provided for those who cannot get private coverage.

Fourth, administrative expenses for such a scheme can be expected to run at 12 to 15 percent of cash flow (as in Chile) versus the 0.8 percent expense ratio for OASDI. Thus

much of the anticipated higher gross rates of investment return would be lost to the higher expense ratios (see, also, Mitchell and Zeldes, 1996, and Emery and McKenzie, 1999). Also, the impact of these additional expenses can be expected to be regressive since smaller account balances of poorer workers will experience larger percentage expenses than larger account balances. This isn't just true in developing nations as can be seen from the following data from Australia.

Table 4

Administrative Costs in Australian Individual Account Plans in 1997

Average Balance	Administrative Costs as a Percent of Assets
$ 1,000	14.820%
$ 5,000	2.964
$10,000	1.482
$20,000	0.741
$30,000	0.494

Sdource: Schieber (2000)

Fifth, as mentioned earlier there may well not be enough high quality assets available to match the investable funds that would now be available. In periods of poor investment returns (which are inevitable) the government may be blamed, and may be asked to provide minimum guarantees (which lead to economic distortions and possible worker selection against the system). At the very least, one can predict that a switch by the government to a defined contribution system at this time will curse the workers with the inevitability of 'buying high' and 'selling low'. This is because these new investment funds will be entering the market place at the same time as the baby-boomers are in their maximum savings years, and then will be liquidated at the same time as the entire baby-boom generation will also be in a liquidation mode.

Sixth, there is no wealth redistribution in the scheme. A worker who is poor throughout his or her working lifetime is guaranteed poverty in retirement. Similarly, the wealthy worker is guaranteed a wealthy retirement, aided by the significant tax advantages that would be provided by the scheme.

Seventh, without special legislation, women would retire with lower retirement income than men of identical work and contribution records, because of the higher female life expectancy.

Eighth, the transition generation will have to pay twice: first to fund the new defined-contribution scheme and second to pay for the massive accrued liability of the present pay-as-you-go scheme. In this regard, it must be remembered that it will be 30 to 40

years before the new defined-contribution scheme can pay out anything close to full benefits.

Ninth, if the Chilean experience is any indication, there will probably be a need for some government guarantees of minimum benefits and/or minimum investment performance under the new system (which, unless designed skillfully, can be open to abuse and anti-selection).

Finally, one might ask if there is political justification for a free government forcing individual saving when there is no wealth redistribution component. As long as there is some income redistribution, then there is a general welfare argument that can be used to defend such systems, but what happens when there is no wealth distribution?

Proposition 10: There is nothing in the history of any country's social security system or in the literature on social security that supports the contention that more funding of social security leads to either:

--higher national savings rates, or
--improved worker productivity.

Thus, one cannot conclude that reform of social security to a more funded system is the best way to achieve these laudable goals.

VII PORTFOLIO DIVERSIFICATION

Any introductory course in risk management will preach the gospel that a primary step toward investment risk management is portfolio diversification. No professional investment counselor would advise putting all of one's eggs in one basket. As this paper has pointed out, there are times when paygo financing can be advantageous and times when fuller funding is the option to be preferred. There are individuals for whom defined contribution plans are best, but also individuals who gain from defined benefit systems. Thus, it is interesting to take the present social security reform proposals being considered in many countries and grade them according to this basic risk management objective.

If we use the United States as an working example, we can compare the diversity of their financial security systems at two points in time. In 1983, as illustrated in the following table, the U.S. had a mix of Defined Benefit and Defined Contribution plans plus a mix

Retirement Income Security United States 1983		
Tier	**Plan Type**	**Financing**
Social Security (OASDI)	Defined Benefit	Paygo
Employer Qualified Plans	Defined Benefit	Fully Funded
Individual Savings	Defined Contribution	Fully Funded

of paygo and full-funding. Clearly this is a diversified system. Depending on external demographic and economic pressures, some of these systems will be advantageous, while others may appear to be disadvantageous at least in the short term.

But times are changing. Since 1983, many Employer-sponsored Defined Benefit Qualified Pension Plans have switched to Defined Contribution plans. In fact, today, the majority of workers get their pension benefits in a Defined Contribution plan. If one were to classify Cash Balance Plans as Defined Contribution (their classification is not easy) then that percentage would be even higher.

There is also discussion about changing the Social Security system, OASDI, from a Defined Benefit plan to a Defined Contribution Individual Retirement Accounts. Depending on the outcome of this public policy debate, as early as 2010, the U.S. Retirement Income Security System could be classified as in the following table.

Retirement Income Security United States 2010		
Tier	**Plan Type**	**Financing**
Social Security (OASDI)	Defined Contribution	Fully Funded
Employer Qualified Plans	Defined Contribution	Fully Funded
Individual Savings	Defined Contribution	Fully Funded

Clearly, there is no diversification in this portfolio. If one believes that there are times that favor DB plans versus DC plans, and times that favor paygo financing over full funding (as this paper has argued), then this system, with “all of the eggs in one basket”, appears to be highly questionable.

VIII CONCLUSION

This paper has explored at some length issues with respect to greater pre-funding of social security. The thesis is that any public policy that purports to enhance the security of social security must satisfy (all) three criteria:

- It must increase gross national savings.
- Those savings must be used in a manner that increases worker productivity.
- There cannot exist a better method of achieving the first two stated goals.

This paper has reviewed a variety of currently proposed alternatives to the financing of social security under these three criteria and has found many unanswered questions and unsatisfied concerns. In fact, there is no conclusive evidence in the literature that greater pre-funding of social security will solve the problems created by rapid population aging.

Proposition 11: In short, proposed moves to higher levels of pre-funding of social security in both Canada and the U.S. require further public policy debate. Society should not rely on fuller funding of social security to solve the problems inherent in providing retirement income security to an aging population.

This will be extremely important if George W. Bush is re-elected in the United States.

Proposition 12: The four ingredients that will provide security for social security are:

1. **Contribution and Benefit rates that are sustainable long term.**
2. **A healthy and growing national economy.**
3. **An efficient and accurate records administration system.**
4. **An honest government.**

These cannot be attained by changing the way you finance social security, In fact, the method of financing social security may be close to irrelevant to its future security.

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