

# Integration of Pension and Housing Savings

## A conceptual discussion

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## Abbreviations

ALM	Asset-liability management
CSH	Contract Savings for Housing
IRA	Individual Retirement Accounts (United States)
LHS	Left-hand side
LTV	Loan-to-value (ratio)
PTI	Payment-to-income (ratio)
RHS	Right-hand side
TEE	Taxed (contribution), exempt (accumulation), exempt (with-drawal); taxation scheme for contractual savings
TFSA	Tax free savings account (Canada)

## Terminology convention

The terms 'Bausparen' and 'Bausparkasse' are used as synonymous to 'Contract Savings for Housing' and 'Contract Savings for Housing Institution' throughout this study.

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## Integration of Pension and Housing Savings

Note: even though this is a conceptual note, some of the discussion is motivated through simulations, where some calculations are undertaken in the Armenian currency Dram (AMD).

### A. Introduction

The approach taken in this note is to recognize savings for the purpose of housing equity accumulation<sup>1</sup> as a parallel savings process to building up pension accounts that begs for an integrated policy concept or at least a level playing field regarding subsidies and taxation.

Dealing with housing at the same awareness level as with cash pensions is empirically justified by the observation that homeownership at retirement age in OECD ranges typically between 70 and 90%<sup>2</sup> and by simple calculations, as presented in the subsequent sections, that show that the value of housing equity accumulated at retirement age will broadly match the value of cash pension accounts.

Under the life cycle theory of savings, both processes can be seen to generate cash streams during retirement in the form of reduced or zero cash expenditures for rents paid to landlords and income substitution bought by reduced consumption today.

### B. Status Quo or Do Nothing

In the status quo households generate down-payment capital from a variety of sources such as asset sales, irregular cash savings, family cash savings, family loans or other borrowings.

- Taking up housing finance to purchase the remainder of the property creates an additional cash expenditure process to pension savings and comes with a significant increase in the combined payment to income (PTI) ratio. Typically, both processes are financed out of after-tax income while accumulation and withdrawal is largely tax exempt.<sup>3</sup>
- However, the PTI profiles differ. Pension fund contributions are formulated in proportion to nominal income, thus rising with inflation and real income growth. As a result, the PTI profile for pension payments is flat. For the stylized descriptive presented here, the figure of 10% is used

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<sup>1</sup> During the loan phase it is the amortization of housing loans that constitutes savings, i.e. build-up of equity in the house. Bearing this in mind, the author uses annuity payments of housing loans in the following payment to income simulations and thus focuses the analysis on the cash flow dimension. Cash flow is a key determinant of credit risk in addition to the value of the equity.

<sup>2</sup> See Andrews and Sanchez (2011). Germany with its large rental sector is a notable outlier.

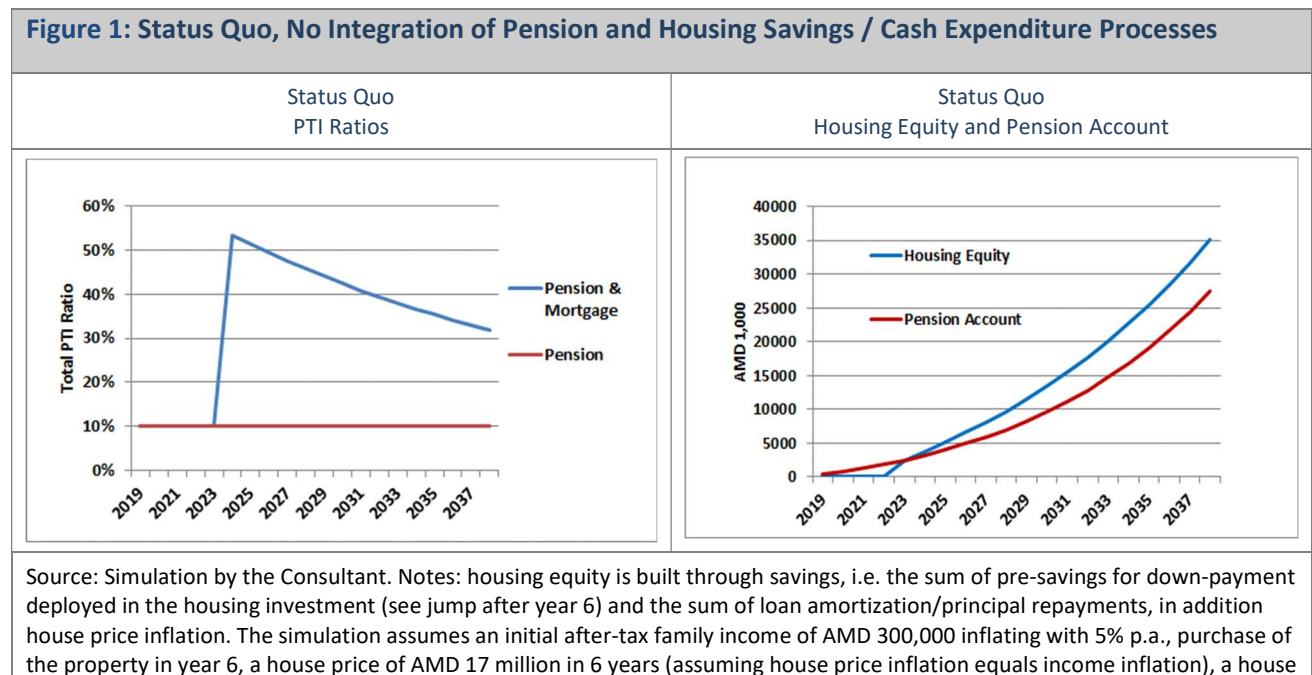
<sup>3</sup> Savings in housing finance are created through a) savings prior to the purchase, the subject this study, and b) amortization of a housing loan after purchase. Regarding the latter, accumulation takes place through saved interest payments on repaid portions of loans, establishing a return on the equity invested in amortization, and withdrawal through continued housing services provided by the property, including beyond the life of the mortgage. The Mortgage Interest Tax relief program calculated on average interest payments of the loan creates an implicit tax on housing savings though (see housing policy discussion below). Also capital gains and property sales taxes apply in case of house sales.

even though the Armenian government has agreed in 2018 to fund for the time being 7,5%, i.e. three quarters, through subsidies.<sup>4</sup>

- In contrast, the typical mortgage product features a steeply declining PTI profile as a result of fixed nominal installments that erode with inflation and real income growth. This is the so-called Tilt effect. The profile is the steeper, the higher the nominal income growth is, i.e. especially if the mortgage is provided in the local currency.
- Exacerbating the payment shock upon housing purchase will be that in particular young households will rarely be able to accumulate more than 10-15% of a house price in down-payment capital and thus be forced to take out higher-LTV loans.

Figure 1 shows a numerical example of the Status Quo with household income, inflation and loan condition assumptions as detailed in the notes. In particular an LTV of 85% is assumed to approximate a realistic assessment of debt levels for young households.<sup>5</sup> Moreover, a house price income (HPI) relation of 3.5 is assumed, in the middle of where ratios are seen in the regions of Armenia (ca 2-3) and Yerevan (4-5) according to CBA assessment. The PTI ratio of cumulative pension and mortgage payments peaks at 53.4%, a precariously high level.

The desired house price to income ratio and the loan maturity are central determinants for both the accumulation process of housing equity and the payment to income (PTI) level. Assuming an initial AMD 300,000 monthly income invested partly in both processes, the household will have financed an AMD 35 million house (AMD 17 million in the purchase year 6) and an AMD 28 million cash pension account within 20 years. As shown on the RHS of Figure 1 in this portfolio allocation, housing outpaces pension savings.<sup>6</sup>



<sup>4</sup> Legislation is under way that will reduce that figure to 5% in the near future.

<sup>5</sup> 85% also matches the assumption for NMCs internal calculations for a mortgage insurance product.

<sup>6</sup> This is also intuitively clear if one considers the differences in space under the two curve in the LHS of Figure 1, with the caveat that in standard annuity mortgage finance as described here larger scale amortizations kicks in only in later stages of the financing.

price income relation of 3.5, an LTV of 85%, a mortgage refinancing rate of 8.5%, a bank spread of 2.5%, a mortgage loan maturity of 15 years and mandatory pension contributions of 10%. Funds in the pension account accumulate with contributions and their reinvested returns and yield the mortgage refinancing rate.

There are options to flatten the PTI profile of mortgage loans inside the loan instrument itself, for example through deferred payments (see below). Nevertheless, it is quite clear that two non-synchronized de-jure/de-facto mandatory savings processes will lead to a high payment spike when a house is purchased. The scale of the spike also depends on how much true equity the household brings up at time of purchase. Hidden loans will increase the payment spike further. Since no empirical analysis of housing loan down-payments in Armenia exists there are open questions in this regard. Moreover, buying a home in Armenia for young households will typically coincide with the family building phase, which brings additional entitlement burdens to family income. This cumulation maximizes credit risk and should be dealt with.

## C. Mandatory Defined Contribution Schemes

### 1. Subordinated Loans from and Pledging of Pension Accounts

In order to mitigate the payment spike of the two combined savings processes, a number of countries worldwide practice mandatory defined contribution schemes with direct benefits for a future home acquisition.

The first variant discussed makes use of accumulated financial assets in pension accounts, and is practiced in Switzerland. *The Consultant realizes that current Armenian second pillar contributions are currently insufficiently calibrated in order to realize either options as practiced. However, he considers for this study modifications that reduce the cash needs and preserve pension account returns. A realization nevertheless may require some or all of the financial room for maneuver needed to be generated through additional voluntary pension savings.*

In Switzerland two housing finance options are provided to pension savers, advance withdrawal and pledging.<sup>7</sup>

- Advance withdrawal: the pension fund will disburse equity funds to the saver under a restriction placed into the land registry which prohibits a sale or use other than for owner-occupied residential purposes without the consent of the pension fund. A second condition is that at least 15% of cash equity has been accumulated for financing the house purchase. In the standard variant practiced in Switzerland, no repayments are made and a pension gap will occur unless savers voluntarily refill the pension account.<sup>8</sup>

*The Consultant considers the advance withdrawal from mandatory accounts as unrealistic for Armenia due to their already low calibrations. Withdrawal on the basis of voluntary savings is discussed below.*

<sup>7</sup> <https://www.credit-suisse.com/ch/en/articles/private-banking/vorbezug-oder-verpfaendung-201610.html>

<sup>8</sup> In this case, in Switzerland the tax preferences for making new contributions to the pension account are proportionally voided in order to avoid double subsidization.

- Subordinated loan as a modification: Instead, an alternative is discussed that preserves, and potentially as will be shown even dynamizes, the pension account in the long-term would be to make repayment to the pension account mandatory via a second mortgage fully registered as debt to the pension fund in the land registry. This would mean splitting the financing in the previous example into two parts: a 70% first mortgage and a 70 to 85% second mortgage or, more generally termed, subordinated loan.

The first mortgage in this constellation has now a lower LTV and can be assumed to carry lower interest rates and remain eligible under the NMCs current 70% LTV funding limits. An interest rate reduction vs the Status Quo of 1% is assumed. This is consistent with current interest rate policies of banks.

The second mortgage could be priced at risk-based (mark-to-model) conditions as follows: the pension fund will charge the refinancing rate (8.5%), the typical bank spread (2.5%), as well as a risk premium from the household in order to be compensated for his riskier funding position (2%). Moreover, maturity will be required to be shorter than for the first mortgage, in the simulation 12 instead of 15 years.

However, the pension fund could in addition make an important concession on the subordinated loan: the funds could permit savers to make deferred principal and interest payments on the second mortgage loan in order to smoothen his PTI profile and improve affordability. This measure increases the subordinated loan, in our case by an additional 1.5%, without increasing credit risk by tapping future increases in income.<sup>9</sup>

Figure 2 in the upper row shows the results for same numerical example as in the status quo scenario. Using deferred payments, the peak PTI level can be significantly reduced through a suitably structured subordinated loan. In the simulation, the peak reduction is by 5.9% to 47.5%, which will bring significantly lower credit risk and space for consumption, e.g. of young families. The pension fund receives cash flows from the saver that will be structured through payment graduation in a way that delivers an internal return of the subordinated loan that is equivalent to a market investment – plus the risk premium.

The chart also shows that due to the higher volume of interest paid in a back-loaded investment, the deferred payment mortgage, compared to standard instruments a higher final pension account can be reached. This argument assumes that the accumulated interest surpluses will be returned partially or fully as a bonus to the saver when the subordinated loan has been partially or fully amortized.

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<sup>9</sup> For detail see the Excel attachment to this study.

**Figure 2: Subordinated Loan and Pledging Model for the Integration of Pension and Housing Savings / Cash Expenditure Processes**



Source: Consultant computations. Notes: upper LHS - subordinated loans are backloaded through deferred principal and interest (graduated payment mortgage) in order to smoothen the PTI ratio, 12-year maturity. Upper RHS – backloading of principal payments (meaning more interest payments) and risk premium (2%) may lead to excess performance of the pension account (higher interest volume and interest on interest effects). Lower LHS – assumes reduction of 85% LTV loan spread by 1% and a guarantee profit of the pension fund of 1.75% (2.5% minus expected loss of 0.75%) over all mortgage outstanding minus 70% of the initial housing value. Lower RHS –pension account profit from guarantees will lead to small outperformance. Numbers are illustrative only.

- Pledging the pension account for a higher LTV mortgage loan is a second model of interest that is practiced in Switzerland. Here Armenian lenders, and NMC as their refinancing agency, would agree to the lend / fund a larger first mortgage loan - to stay within the example, a 85% loan-to-value ratio is assumed. The main benefit of this insurance product would be a lower interest rate due to the protection of the additional loan volume by a cash-backed guarantee of the pension fund.<sup>10</sup>

<sup>10</sup> The maximum LTV in the Swiss case must not exceed 85%.

In the case of pledging, the steep PTI profile of the higher LTV standard mortgage loan instrument remains an issue, depending on the pricing of the guarantee by the pension fund. Mortgage insurance generally leads to a front-loading of costs for the borrower. The peak PTI reduction in the example is only 1.4%.

If lenders and NMC were to agree on splitting first and second mortgage, and structuring the second mortgage along the lines of the subordinated loan proposal made before, a similar smoothing of the PTI as in the previous example could be reached. A key difference is that the subordinated loan is funded by deposits, not pension contributions. Again, the risk pricing mechanism leads to excess return being accumulated in the pension account and to a higher final account value, depending on the internal distribution mechanism of the pension fund.

A key problem with these options in the Armenian case is that current second pillar contribution numbers do not add up to permit either option, even if credit risk is taken care of through the pricing mechanism.

- A full 10% contribution by the household, to stay within the example, leads to a pension account after 6 years that can barely finance 13% of a modest house (loan-to-income ratio of 3.5), even if almost depleted in the process. In particular lower-income households would have to make additional contributions, either contributing higher amounts or saving for longer terms, in order to avoid the pension account falling to dangerously low levels.
- The 7.5% subsidy by the government means that the self-financing ratio through private contributions falls to below 5% at house purchase date, a value that may not be worth the transactions costs to set up a separate program. If the government decided to permit the accumulated 7.5% to be lent or pledged against, she would directly fund the high-LTV mortgage market raising questions of opportunity costs and benefits (e.g. vs funding corporations or SMEs that contribute to export income generation). The planned reduction of government subsidy to 5% would change arguments, *mutatis mutandem*, but not fundamentally address the shortage of funds in the pension account.

## 2. Related Alternative Schemes

In many emerging markets (e.g. Mexico, Brazil, Philippines, China), *separate mandatory provident funds for housing* exist on the national or regional level that collect a fixed percentage of income and promise to deliver low-cost housing loans to savers. The Consultant would hesitate to recommend separate mandatory mechanisms since these institutions created have historically have been fraught with problems, such as inability to keep their loan promises and high default rates, and legislated ratios in combination with specialization tend to compartmentalize the capital market.<sup>11</sup>

Pension accounts in Armenia could provide *withdrawal options* to the extent that voluntary savings beyond the mandatory minimum are made, a point also strongly communicated by CBA to the Consultant. An example is the Australian model.<sup>12</sup> Possibly Armenia could take a middle road in permitting in addition withdrawals up to the level of private mandatory contribution (2.5%, or 5% if subsidies are reduced)

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<sup>11</sup> See numerous World Bank housing finance technical assistance work programs since the 1990s, e.g. with Infonavit in Mexico, Caixa Economica Federal in Brazil and Pag-Ibig fund in the Philippines

<sup>12</sup> Interaction between housing and pension savings processes in Australia goes both ways: the Government also offers the reverse mortgage option, i.e. a supplementary pension for elderly against a(n additional) mortgage



if at least matching voluntary savings have been made in the system. The key incentive for savers then would consist of the combination of the tax incentive, as the voluntary Pillar II a saving process could be likely dealt with the same as the mandatory pillar (TEE).<sup>13</sup> The calibration of that policy should be subject to fiscal policy debate and encompass the subsequent option for voluntary contractual savings.

This option is tantamount to proposing a tax preference on an arbitrary and essentially unrestricted voluntary savings process in the three pension funds. This raises the question why not insurance companies or investment funds, or banks – see discussion in the next section, should be permitted to attract retirement savings in the same way. A number of countries enable voluntary retirement savings in this way, e.g. the United States with Section 401k tax preferred individual retirement accounts (IRA) where savers only are required to follow a wide investment class bracket approach in their allocations.

Additionally, due to the hard to predict duration of funds earmarked for withdrawal, unless term withdrawal restrictions are imposed, their investments would have to be in liquid or short-term assets and thus be managed separately from the long-term mandatory accounts of the pension funds.

Due to unclarity over the specifics of the concept and its mainly fiscal policy nature, the option is not further calibrated and substantiated throughout this study, even though it remains a possibility for the integration of pension and housing savings and is dealt with when considering the recommendations. The Consultant proposes that once further clarification is reached on this proposal. An approximative calibration is provided in the subsequent section that also covers bank-based voluntary savings, see in addition Figure 4 and Table 1 in the annex. Peak PTI reduction is entirely proportional to voluntary savings, in the example chosen 3.9%.

## **D. Voluntary Contractual Savings for Housing**

### **1. Contract Savings for Housing**

Contract Savings for Housing (CSH) creates a contractual process for saving to accumulate housing equity as well as providing housing loans to savers, without mixing it with Pillar II pensions. Savings are made on a voluntary basis and stimulated by incentives. The process is mid-term, usually 2-5 years. Under strict actuarial safeguards, savers in the most popular variant of a closed CSH scheme, without additional capital market funding, are offered a proportional loan to their savings if they complete a minimum savings period. In this way, a part of the financing of a new home, equivalent to the ca 15% discussed above, and the totality of smaller housing investments, can be financed.

In closed schemes, because of the isolation from capital markets interest rates for deposits and loans can be fixed and thus savers in addition to engaging in systematic capital accumulation purchase an interest rate option on a future loan. In open schemes interest rates must be variable, unless hedging is available, and hence the saver is exposed to future interest rate risk on the loan.

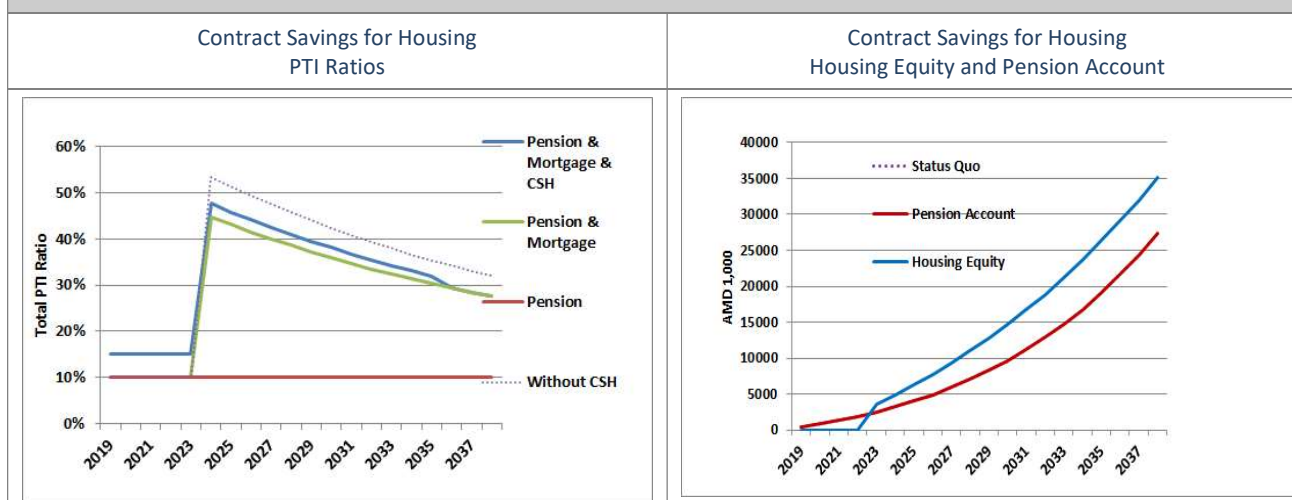
Both types of schemes also provide the saver with a credit risk option, i.e. enable him through signaling his creditworthiness in the savings process to lock in, or at least sizably reduce, his individual risk spread. This can be a particularly valuable product option for young and low-income households.

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registered on their house. <https://www.humanservices.gov.au/individuals/services/centrelink/pension-loans-scheme>

<sup>13</sup> TEE: Taxed on contributions, tax-exempt on returns and tax-exempt on withdrawals.

**Figure 3: Contract Savings for Housing, Integration with Pension Savings / Cash Expenditure Process**



Source: Consultant computations. Notes: CSH contract sum and first mortgage calibrated as in subordinated loan example. The first mortgage discount is assumed to be 1%, an additional discount may be warranted compared to the case of pension fund subordinated loan due to the reduced leverage (lower combined LTV). CSH deposit rate 3.5%. CSH loan rate 6% (same spread as assumed for mortgage market). CSH loan maturity 12 years.

Finally, usually CSH enjoy some form of government subsidy, usually a premium paid upon successful completion of the savings period. Today, CSH subsidies tend to be integrated into a broader pension and housing subsidy menu (see international case studies below). The premium formulation of the subsidy, as opposed to tax exemptions, ensures targeting to young and lower-income households.

Figure 3 simulates the combination of CSH with pillar II pensions within the context of our previous example. CSH contract sum and first mortgage volume are calibrated as in subordinated loan example. The CSH contract covers 15% of the financing above the 70% first mortgage LTV, i.e. from 70-85% LTV, and in itself is split into a portion of 7.5% loan and 7.5% accumulated savings, i.e. additional equity.<sup>14</sup> In this constellation, the combined LTV is reduced from 85% in the status quo, subordinated loan or pledging scenario to 77.5%. The first mortgage loan rate can as a result reasonably be assumed to be at least the same, if not lower than in the case of the subordinated loan provided by the pension fund as a result of lower probability of default.

The CSH contract will have a PTI smoothing impact due to the already accumulated equity prior to the purchase of the home. Pre-purchase savings in the example will rise from 10 to 15% while the peak PTI level will decline by 5.9%, i.e. almost identically with the PTI reduction of the pension fund subordinated loan, even though the CSH loan is typically not structured. A part of the reduction is due to the accumulated savings that reduces leverage and another part due to the below-market interest rate that a closed scheme CSH contract can offer. The latter advantage will disappear in an open scheme CSH contract that is priced at market rates on both sides, savings and lending. Nevertheless, the CSH loan itself will typically be standard annuity and thus still be subject to a, now milder, Tilt effect. Other PTI benefits relate to the tax and subsidy treatment of CSH, which should be synchronized with the treatment of cash pensions.

<sup>14</sup> In CSH, the deposits and possible premium payments (not considered in the simulation) accumulate to an equity position that broadly matches the loan volume that is provided once minimum eligibility criteria are reached. Loan to accumulated savings / equity multiples range in practice between 1 and 1.2.

CSH finally has important special characteristics as a loan product, which distinguishes it from a subordinated loan or pledge of a standard mortgage loan by a pension fund. Regarding the pledging alternative, in the closed variant CSH offers the fixed-rate lending option where banks may due to lack of funding may not, non-withstanding a pension fund intervention. Secondly, due to the pre-savings process and the associated signaling of credit worthiness, CSH may serve as a credit option controlling future spread for young, lower-income, low-documentation groups and even non-collateralized loans. While pension funds can do all this in theory, too, a separate risk management center will be beneficial in order to optimally mitigate and manage these risks. Related to this, finally, pension fund regulations will tend to tightly control for credit risk while CSH is designed to expand the envelope on credit risk.

## 2. Related Alternative Schemes

It is possible to design a contractual savings process benefiting housing equity that is both run outside the pension account management system and de-linked from housing finance (loans, guarantees). In this case a banks and other financial firms, possibly also a housing finance agency, offers the accounts which come with tax or subsidy benefits. Such free savings accounts are generally not tied to housing uses, however, their withdrawal penalty system may be.

The Canadian Tax Free Savings Account (TFSA) is income-taxed as TEE, i.e. contributions are made from after-tax income while savings income accumulation is tax-free, up to an annual maximum amount of contributions, as are withdrawals. Withdrawals can be made for any use. Also, no minimum savings period is required. If the replenishment of the account is desired it is subject to the annual contribution limits again. The TFSA is managed by Canada's general fiscal revenue agency which focuses on the tax accounting and not the use of funds.

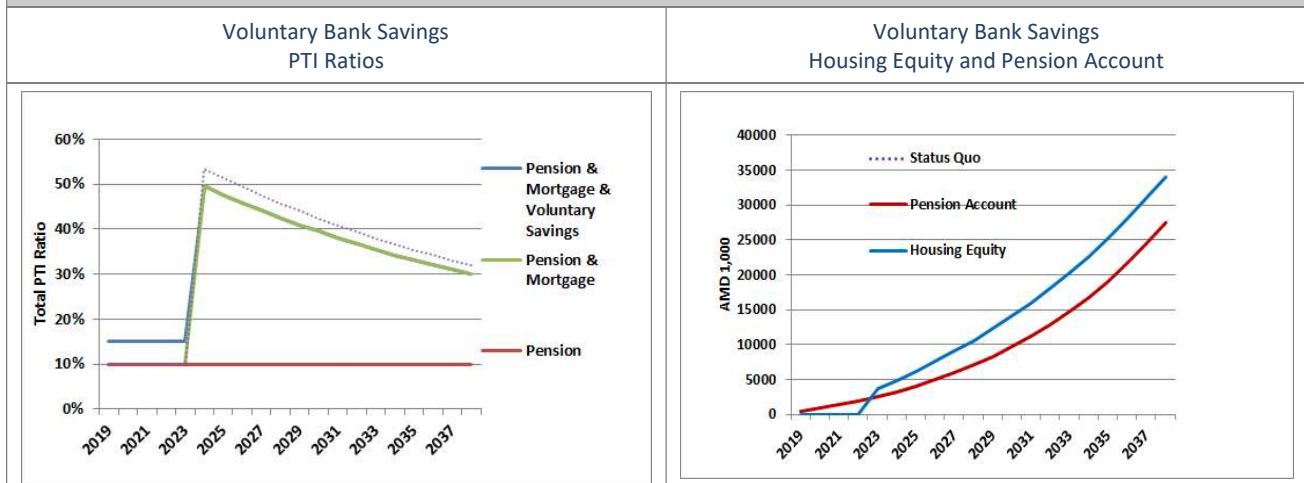
U.S. individual retirement accounts (IRA) are twitters in that they technically are retirement (pension) accounts that can, however, be operated by banks and other financial firms. In the least-cost IRA version ("Roth-IRA") for the purpose of housing down-payments, contributions can be withdrawn at any time and tax-preferred investment income can be withdrawn after a minimum savings period of five years. Penalties apply if the funds are not used within 120 days for housing purposes. In this case, therefore both minimum savings period and housing use criteria are monitored by the U.S. inland revenue service.

While a number of housing finance agencies worldwide offer voluntary contract savings for housing accounts with housing loan promise, to the knowledge of the Consultant they do generally not offer free savings accounts. Nevertheless, agency-run housing loan or guarantee programs frequently come with incentives for beneficiaries that can present prior bank-accumulated savings, including matching down-payment subsidies.

Of particular note is that a tying of free bank savings accounts with a housing loan promise should be pre-empted by regulation due to the risk of generating a snowball system. For this reason, the German general banking act ('Kreditwesengesetz') reserves the right of tying a loan promise to previous savings efforts to the contract savings for housing system.

Figure 4 models a voluntary savings process of 5% of after-tax income that is de-linked from housing loans or guarantees. If we assume market returns on these savings, the peak PTI can be reduced through the pre-savings process by 3.9%.

**Figure 4: Voluntary Bank Savings**



Source: Consultant computations. Notes: assumes market interest rates on accumulated investments (8.5%). Voluntary savings amount to 5% of nominal income, are completely withdrawn for housing purposes upon house purchase and not resumed thereafter.

Table 1 provides a summary of all simulation assumptions made as well as the results for peak PTI reduction.

**Table 1 Summary of Simulation Assumptions**

	Status Quo / Do Nothing		Pension Fund Subordinated Loan		Pledging of Pension Assets		Contract Savings for Housing		Voluntary Pension Account / Bank Savings	
	CU 1000	%	CU 1000	%	CU 1000	%	CU 1000	%	CU 1000	%
<b>Housing Finance</b>										
House price at purchase date	16,885	100.0%	16,885	100.0%	16,885	100.0%	16,885	100.0%	16,885	100.0%
First mortgage loan	14,352	85.0%	12,181	72.1%	14,352	85.0%	12,152	72.0%	13,242	78.4%
Second mortgage loan		0.0%	2,171	12.9%		0.0%	1,100	6.5%	-	0.0%
Contractual savings		0.0%		0.0%		0.0%	1,100	6.5%	1,111	6.6%
Other savings	2,533	15.0%	2,533	15.0%	2,533	15.0%	2,533	15.0%	2,533	15.0%
Total finance	16885	100.0%	16,885	100.0%	16,885	100.0%	16,885	100.0%	16,885	100.0%
Housing equity	2533	15.0%	2,533	15.0%	2,533	15.0%	3,633	21.5%	3,643	21.6%
Housing loans	14352	85.0%	14,352	85.0%	14,352	85.0%	13,252	78.5%	13,242	78.4%
<b>Financial Parameters</b>										
First mortgage rate		11.00%		10.50%		10.50%		10.50%		10.75%
First mortgage rate discount		0%		-0.50%		-0.50%		-0.50%		-0.25%
Second mortgage rate				13.00%				6.00%		
Marginal cost of funds						13.33%				13.58%
Savings phase PTI		10.0%		10.0%		10.0%		15.0%		15.0%
Peak PTI		53.4%		48.5%		53.2%		48.6%		49.5%
Peak PTI reduction		0%		-4.9%		-0.2%		-4.8%		-3.9%

Source: Consultant computations.

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