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A Solution for the Aged Turkish Social Security System: Private Pension Funds

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ABSTRACT

Turkish social security system with its mandatory, state-owned, and *pay-as-you-go* nature exerts an additional burden on the ailing Turkish economy. The current pension system generates a deficit about 4% of GNP. The Turkish Parliament approved a new private pension plan in April, 2001 allowing Turkish citizens to accumulate their pension benefits in private investment funds. Private pension funds in Turkey are expected not only help to establish a financially sound pension system and provide benefits for the Turkish workforce but also stimulate and deepen the capital markets, thereby lowering volatility in Turkish asset prices. This study aims to compare key parameters of major pension systems in both developed and developing countries and then provide forecasts about the future of the infant Turkish private pension system by overlooking the historical pension performances of Latin countries.

Keywords: private pension funds, retirement plans

ÖZET

Türk Emeklilik Sigorta Kurumlarının devlete ait olması ve "elde edilen sigorta prim gelirlerinden emekli maaşı ödenmesi" yapısı nedeniyle, hızla büyüyen Türk ekonomisi üzerinde önemli bir baskı yaratmaktadır. Mevcut emeklilik sistemi, Ulusal Milli Gelir'in %4'ü kadar bir bütçe açığı yaratmaktadır. Türkiye Büyük Millet Meclisi, Türkiye vatandaşlarının emeklilik primlerini yatırabileceği özel emeklilik planları yasasını Nisan 2001'de onaylamıştır. Adı geçen yasanın sadece sağlıklı bir sosyal güvenlik sistemi yaratmak ve çalışanlara sağlayacağı faydaların ötesinde, Türk sermaye piyasalarındaki oynaklığı azaltarak piyasaların derinleşmesine de katkıda bulunması beklenmektedir. Bu çalışma, gelişmiş ve gelişmekte olan ülkelerin sosyal güvenlik sistemlerinin karşılaştırmalı bir analizini yaparak, anahtar parametreleri belirlemekte ve Latin ülkelerini referans alarak gelişmekte olan Türk özel emeklilik sistemin geleceğine ait öngörülerde bulunmaktadır.

Anahtar Kelimler: özel emeklilik fonları, emeklilik planları

1. Introduction

Public sector fiscal deficits have been signaling the need for structural reforms in the Turkish social security system for a number of years. With an average age of 26, Turkey is, actually, not supposed to expect troubles in its pension system. However, politically stimulated early retirement schemes have caused the system to generate cash deficits since late 1980s. The problem even worsened when another early retirement wave come in 1990s. In 1999 the Turkish Government initiated a pension reform plan to smooth the worsening *pay-as-you-go* (PAYG) social security system but the approval of the pension law has been delayed until April 2001 due to the August-1999 earthquake.

The Turkish Government and regulatory bodies published key legislation to establish the fundamental framework for the system in the last two years and the system was launched in October 2003. This study first describes the basic structure of social security systems under the well-known three-pillar scheme and then draws attention to international comparisons on key parameters of pension systems. Finally, it provides estimations for the infant Turkish private pension system by using key statistical figures experienced in Latin American countries throughout their early years of private pension plan implementations.

Private Pension Plans (PPPs) in Chile and Mexico are chosen to outline simple models for the local pension system. These two countries are categorized in the same "Emerging Markets League" along with Turkey, and also have adequate historical data in pension plan implementations, providing an adequate time series for our projections. Particularly, asset sizes and number of contributors in these Latin countries, establish an ideal forecasting base for our estimations regarding the pension fund implementations in Turkey.

2. The Three Pillar Scheme

The three-pillar framework provides an easier methodology to comprehend the international pension schemes. This three-pillar scheme may lead to minor misunderstandings as they might be interpreted differently in various countries. The World Bank defines the first pillar as the basic state insurance scheme; the second pillar is an earnings-related defined benefit (DB)[1] plan which augments the first pillar and is usually mandatory. The second pillar comprises public, individual and employer based pension schemes. The third pillar, on the other hand, is characterized by its

[1] Defined Benefit Scheme: Value of pension is guaranteed and defined beforehand.

voluntary nature (Borsch-Supan, A. H. and Miegel M., 2001). A basic breakdown of the three-pillar framework in some countries is shown below.

Table 1: The Three Pillars

	US	UK	Germany	Netherlands	Switzerland	Chile
First Pillar	Social Security	Public Base Pension	Public Retirement Insurance (GRV)	Public Base Pension (AOW)	Public Base Pension (AHV/IV)	Public Minimum Pension
Second Pillar	Firm Pensions (DB and DC plans; 401(k) plans)	State Earnings-Related Pension Scheme (SERPS); Firm Pensions; Private Pensions; Stakeholder Pensions	Firm Pensions (mostly reserve accounts)	Employer-Related Pensions (mostly DB-plans)	Employer-Related Pensions (BVG)	Pension Funds (AFP)
Third Pillar	Own Savings (mainly IRA - and Keogh), other income	Own Savings (mainly pension funds, supplements to firm pensions), other income	Own Savings (mainly whole life insurance), other income	Own Savings (mainly pension funds and whole life insurance), other income	Own Savings (mainly pension funds and whole life insurance), other income	Own Savings (mainly pension funds, supplements to firm pensions), other income

Source: Borsch-Supan, Miegel (2001)

There are a few evident distinctions among institutions that are grouped in a three-pillar scheme. There are two dimensions, namely financing method and form of contract, underlining the differences among pension schemes. PAYG (Pay-As-You-Go) and fully-funded schemes are the two basic financing methods in pension practices. In the former case, contributions of those employed are used exclusively to finance the benefits of those currently drawing their salaries from the system whereas in the latter scheme, current contributions include savings for future pension payments. Similarly, the Defined Benefit (DB) and the Defined Contribution (DC) schemes provide another categorization. DB plans are characterized by fixed benefits in which the pensioner guarantees a fixed income. Therefore, the pension company or the insurer carries the risk of financing the benefits in an event of either a swing in capital market or changes in demographical and employment characteristics. The other mechanism (DC), on the other hand, transfers the capital market risks to the pensioner and partly to the reinsurance company. In this second scheme, insurer receives fixed and regular contributions and pays back the invested amount plus the return on asset less the administration costs. There is clear evidence that international trend is to transform DB schemes into DC schemes in order to grant a healthier pension framework.

Two dimensions, financing method and the form of contract, emphasize the key differences among these three pillar schemes. In the first pillar, PAYG financing with DB plans dominates whereas the third pillar is characterized by fully-funded DC plans.

Shares of income from each pillar vary widely among the countries as shown on Table 2. In Germany, for example, the major stake of the retirement income comes from the first pillar. However, the weight of third pillar is significantly high in the US, which may be attributable to the popularity of Individual Retirement Accounts (IRAs) and to the income from workforce. The employment rate among age of 65-69 is higher in the US than most other EU countries. In other developed countries such as the UK, Netherlands and Switzerland, income from the first pillar dominates those from the other two pillars.

Table 2: Share of Income after Retirement

	US	UK	Germany	Netherlands	Switzerland
First Pillar	45%	65%	85%	50%	42%
Second Pillar	13%	25%	5%	40%	32%
Third Pillar	42%	10%	10%	10%	26%

Source: Borsch-Supan, Miegel (2001)

3. International Overview on Key Parameters

Before proceeding with the evaluation of the Turkish pension scheme, examining the systems of more experienced countries' pension schemes may give a useful insight for future projections on the Turkish system. Of the wide spectrum of pension scheme statistics, total asset sizes, allocations in pension funds, fund performances and management fees are the most crucial ones.

3.1. Pension Asset Sizes

A key parameter to assess a country's public interest to the pension system is the total pension asset accumulation. One should also keep in mind that the relative asset sizes are dependent on the capital market performances. However, it would not cause a significant inaccuracy to ignore the capital market gains/losses as pension asset accumulations are driven more by additional contributions rather than capital market gains. Table 3 lists the growth in total asset sizes for the most advanced pension practices. Accordingly, in developed countries like US, Japan, UK, Netherlands and Switzerland total pension assets exceed Turkey's national income ($239 billion), and compounded annual growth rate (CAGR) of the pension assets in these countries varies from 6.2% (Netherlands) to 11.2% (US) in the last decade. Chile, however, stands as a more extreme case where the total pension accumulations tripled in a ten-year period from $10 million to $36 million, indicating a superior CAGR of 15%.

Table 3: Total Pension Assets Growth

($ billion)	US	Japan	UK	Netherlands	Switzerland	Chile
1991	2,980	1,209	644	243	176	10
2000	7,773	2,303	1,128	417	321	36

Source: UBS Asset Management

Considering the disparities in these countries' national incomes, we believe, benchmarking total asset sizes with the GDP of each country would provide a better insight on pension asset accumulations (see Table 4). In relatively smaller economies, such as those in Netherlands and Switzerland, total pension assets amounted to $417 million and $327 million, respectively, which were considerably small compared to those in other developed countries. Taking into account the size of the economic activities, however, it is clear that these countries have achieved a superior pension asset build-up.

Table 4: Asset Sizes relative to GDP

	US	Japan	UK	Netherlands	Switzerland	Chile
GDP ($ bil)	9,963	4,491	1,396	378	251	66
Pension Assets ($ bil)	7,773	2,303	1,128	417	321	36
Pension Assets / GDP	78%	51%	81%	110%	128%	54%

Source: UBS Asset Management

3.2. Asset Allocations

Particularly in the earlier stages of pension plans, governments are keen on applying investment regulations on the pension fund management, mostly favoring investing domestic fixed income products. However, as the pension schemes mature and capital markets develop, the range of investable universe widens and portfolio compositions begin to diverse from domestic T-bill dominance (Vives A., 1999). At the same time, regulators gradually begin to feel more comfortable in loosening investment restrictions when the system gains its self-confidence. Eventually, these systems turn out to adopt the *prudent man rule*.

Chile, with its longest pension history among emerging markets, provides another example indicating how the portfolio compositions evolve as fund management business matures. As can be seen from the table below, fund managers were initially favoring fixed income assets investing only in government securities, term deposits and mortgage bonds. However, in the early 1990s equities increased their weights at the expense of term deposits. The trend, however, seems to be reversed in

the late 1990s. One another remarkable point is the sharp increase in foreign assets particularly after 1998.

Table 5: Pension Fund Composition in Chile

(%)	Gov. Sec.	Term Dep.	Mortgage Bonds	Fin. Inst. Bonds	Equities	Corp. Bonds	Invst. Funds	Foreign Inst.	Cash
1981	28.1	61.9	9.4	0.0	0.0	0.6	0.0	0.0	0.0
1982	26.0	26.6	46.8	0.0	0.0	0.6	0.0	0.0	0.0
1983	44.5	2.7	50.7	0.0	0.0	2.2	0.0	0.0	0.0
1984	42.1	12.2	42.9	0.6	0.0	1.8	0.0	0.0	0.5
1985	42.4	20.4	35.2	0.4	0.0	1.1	0.0	0.0	0.5
1986	46.6	22.9	25.5	0.3	3.8	0.8	0.0	0.0	0.1
1987	41.4	27.4	21.3	0.7	6.2	2.6	0.0	0.0	0.4
1988	35.4	28.5	20.6	1.0	8.1	6.4	0.0	0.0	0.0
1989	41.6	20.8	17.7	0.7	10.1	9.1	0.0	0.0	0.0
1990	44.1	16.3	16.1	1.1	11.3	11.1	0.0	0.0	0.1
1991	38.3	11.7	13.4	1.5	23.8	11.1	0.0	0.0	1.1
1992	40.9	9.4	14.2	1.6	24.0	9.6	0.2	0.0	0.1
1993	39.3	6.1	13.1	1.4	31.8	7.3	0.3	0.6	0.1
1994	39.7	4.8	13.7	1.5	32.1	6.3	0.9	0.9	0.0
1995	39.4	5.3	15.8	2.0	29.4	5.3	2.6	0.2	0.1
1996	42.1	4.2	17.9	1.6	26.0	4.7	3.0	0.5	0.0
1997	38.2	9.8	16.8	1.7	25.7	3.6	3.0	1.2	0.1
1998	41.0	13.6	16.6	1.5	14.9	3.8	2.9	5.7	0.1
1999	34.6	16.1	15.1	2.0	12.4	3.8	2.6	13.4	0.0
2000	36.4	16.9	14.5	2.0	12.3	4.0	2.5	11.3	0.2

Source: SAFP - Superintendencia de AFP

Monitoring the portfolio compositions in some mature pension markets may signal how the asset allocation in less developed schemes may evolve going forward. Among the developed pension systems those in the US and the UK are worth mentioning. The main characteristic of pension asset allocation in US is the continuity in dominance of domestic investments. Although there has been an increase from 3% to 10% in foreign investment, it is still the lowest among advanced country schemes. Given the substantial size of its capital markets and the high selection of financial instruments, this limited foreign investment would not be surprising. Also note that the weight of the equity investment has increased from 43% to 62%, making the US pension funds as the most equity oriented funds in the world.

Equities definitely dominate the UK pension asset allocation. International stake also has a noticeable weight and remains at a constant range of 20-24%. It may be argued that this large international investment was fuelled by the abolition of exchange controls in 1979.

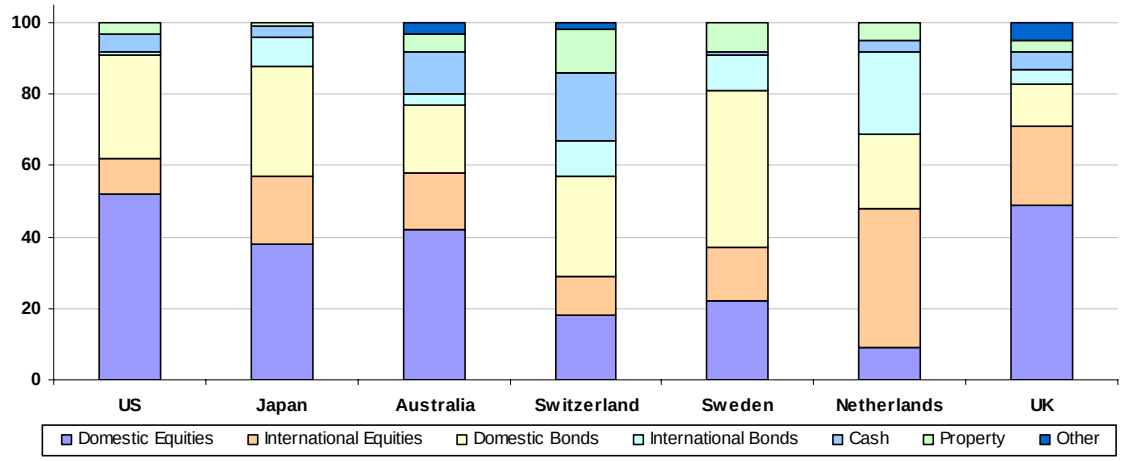
Table 6: Asset Allocation Trend

Year-end (%)	Domestic Equities		Intern. Equities		Domestic Bonds		Intern. Bonds		Index-Linked Bonds		Cash		Property	
	US	UK	US	UK	US	UK	US	UK	US	UK	US	UK	US	UK
1991	40	55	3	20	45	7	1	3	0	3	8	4	3	8
1992	43	56	3	21	43	6	1	3	0	3	7	4	3	7
1993	43	57	6	24	41	4	1	3	0	3	6	4	3	5
1994	41	54	7	23	42	5	1	4	0	4	6	4	3	6
1995	44	55	9	22	38	6	1	3	0	5	5	4	3	5
1996	47	53	10	22	35	6	1	3	0	5	4	6	3	5
1997	51	53	11	20	31	7	1	3	0	5	3	7	3	5
1998	52	51	12	20	29	9	1	4	0	6	3	5	3	5
1999	55	51	10	24	27	9	1	4	0	4	4	4	3	4
2000	52	49	10	22	29	12	1	4	0	5	5	5	3	3

Source: UBS Asset Management

The chart below provides a better insight comparing the recent asset allocations in number of pension markets.

Chart 1: Asset Allocation - 2000 (%)



Source: UBS Asset Management, FIAP

3.3. Investment Regulations

In order to ensure the stability and uniformity of the pension system, regulators do not hesitate to set certain restrictions on pension fund managers. These regulations are typically stricter in the early years of system implementation. In following years, when the system starts to gain self-confidence, regulators tend to ease these restrictions (Vives A., 1999). In the US and the UK, for instance, there are no specific investment constraints on pension fund managers other than being prudent in their investment decisions *(prudent person rule)*. A set of regulations for the pension asset managers is given in Table 7.

Table 7: Comparison of Investment Regulations

	Gov. Sec.	Non-Gov. Debt Sec.	Stocks	Mutual Funds	Foreign Invst.	Details
Argentina	Max 65%	-	Max 35%	Max 14%	Max 17%	- Max 7% in an entity - Max 1% in a mutual fund and/or 10% of the capital of the mutual fund.
Brazil	-	Max 80%	Max 50%	Max 15%	-	- Max 5% in the capital of a company - Max 10% in an entity/group and max 20% in a financial institution and/or group -Max 20% in the capital of a real estate mutual fund
Chile	Max 50%	-	Max 37%	Max 15%	Max 16%	- Max. 7% in an entity, max 15% in a group - Max. 5% per diversification factor on mutual factors that invest in real estate, development of enterprises and securitisation and/or 20% of its capital - Max 3% in debt of new companies and/or 20% of the issue - Max 5% in real estate companies and/or 20% of the capital of the company - Max 1% per foreign investment fund
Colombia	Max 50%	-	Max 30%	-	Max 10%	- Max 5% per issuer including group. (If the issuer is supervised by the bank superintendency limit is 10%) - Max 10% in the capital of a company and max 20% of an issue(except Govnt and Central Bank issues)
Mexico	-	Max 35%	-	-	-	- Max 10% in an entity and max 15% by a group - Max 15% of an issue
Peru	Max 40%	-	Max 35%	Max 15%	Max 10%	- Max 15% in an entity, max 25% in a group
Germany			Max 30%		Max 20%	- Equities: Max 30% in EU equities, max 6% in non-EU equities - Max 25% in real estate
Netherlands	-					- Prudent Person Rule
Spain						- Min 90% in listed assets, real estate and bank deposits. - Max 15% in bank deposits - Max 5% in an entity and max 10% by a group
UK						Prudent Person Rule
US						Prudent Person Rule
Turkey				Max 10% (Max. 2% in one MF)		- Max 10% in an entity, max 20% in a group - Only in listed assets - Max. 5% in venture capital investment funds - Max 10% in bank deposits - Max. 5% in the capital of a company

Source: Vives (2000)

Investment regulators are alert with two topics to secure a safe pension environment. First, they require the pension funds to ensure an acceptable degree of diversification among investment vehicles. Given that various financial instruments do not move in complete correlation, product diversification reduces the long-term investment risks. Another subject, which the regulators are watchful for, is the issuer diversification, meaning that regulators do not allow investing more than a certain portion of the pension fund in bonds or equities of a single company or group.

Pension investment regulations may cover a wider perspective. Some impose restrictions on liquidity, valuation and risk characteristics and still some others call for a minimum return. Regulations may also oversee the pension company management, authorizing the regulators to switch fund managers, to redesign total number of portfolios offered by a pension company.

3.4. Fund Returns

Pension fund returns in the US and the UK posted annual real returns of 10.2% and 10.6% per year, respectively, over the last decade (see Table 8). However, one should bear in mind that the named countries do not impose strict constraints on pension portfolio compositions. Consequently, portfolio managers in these countries have the chance to enjoy higher returns by investing in riskier assets. In other countries, where pension fund managers are required to comply with certain investment regulations, fund returns tend to be less volatile at the expense of more moderate annual returns. In Switzerland, for example, pension fund investments are more strictly regulated and pension assets in these countries recorded an average 7.4% return in the last 10 years, lower than its US and UK-based counterparts (UBS Asset Management, 2001).

Table 8: Pension Fund Returns

Year (%)	Avr. Pension Fund Nom. Return		Inflation		Real Return	
	US	**UK**	**US**	**UK**	**US**	**UK**
1991	20.5	17.7	4.3	4.5	15.5	12.6
1992	6.2	17.5	3.0	2.6	3.1	14.5
1993	11.6	25.5	2.9	1.9	8.5	23.2
1994	0.6	-3.0	2.6	2.9	-1.9	-5.7
1995	25.5	19.6	2.8	3.2	22.1	15.9
1996	13.6	10.4	2.9	2.5	10.4	7.7
1997	21.2	16.8	2.4	3.6	18.4	12.7
1998	21.9	14.9	1.5	2.8	20.1	11.8
1999	15.1	20.4	2.2	1.8	12.6	18.3
2000	-3.4	-2.7	3.4	2.9	-6.6	-5.4
10-year average	**13.3**	**13.7**	**2.8**	**2.9**	**10.2**	**10.6**

Source: UBS Asset Management

3.5. Management Charges

Countries have taken many different approaches to fund management charges. Generally, richer countries such as Australia, Hong Kong, the UK and the US impose very few, if any, restrictions to the pension management charges. In other countries, where regulators intervene to management charge policies, pension companies are allowed to charge only one or two types of management fees over a wider range of charge types (Whitehouse E., 2001).

Basically, a pension company requires an annual fee to meet its managerial and headquarter costs. Charges on regular contributions, on the other hand, account for the transaction costs which are incurred when the pensioner's cash contributions are transferred to a financial instrument.

Finally, a pension company may also require a further for custodian expenses and cuts a certain amount from pensioner's total pension assets.

Measuring Charges. Charges on long-term financial products can be levied in many different ways. Some are one-off fees, which are paid up-front as a proportion of first-year of contributions. Other fees are ongoing. Ongoing fees can be a fixed-fee per period, a percentage of contributions or a percentage of assets in the fund.

There are four main measures of charges (Whitehouse E., 2001). *Reduction in yield* shows the effect of charges on the rate of return of the invested amount. *Reduction in premiums* shows the charge as a proportion of contributions. *MP1* is the price of a managed portfolio that yields the market return, excluding charges, on £1. This method was developed by Kevin James of Financial Services Authority in the UK in 2000[2].

Charge ratio. The most common way of measuring the management costs is defined as one minus the ratio of the asset accumulation net of charges to the accumulation without charges[3].

Table 9: Pension Charges in Latin America

	Number of Funds	Unweighted Mean Charge (%)		Weighted Mean Charge (%)		Range of Charges (%)	
		Reduction in yield	Charge Ratio	By Assets	By Members	Lowest	Highest
Colombia	8	0.65	13.50	14.00	14.10	11.90	16.70
Uruguay	6	0.72	14.70	14.40	14.60	13.20	15.80
El Salvador	5	0.85	17.10	17.00	17.00	16.10	18.40
Chile	8	0.88	17.70	16.20	16.10	14.50	20.40
Peru	5	0.96	19.10	19.00	19.10	18.60	20.00
Argentina	13	1.20	23.10	24.40	24.60	17.40	27.90
Mexico	13	1.39	26.00	24.50	26.20	19.30	35.40

Source: Whitehouse (2000), FIAP

In the UK, where all of the above-mentioned three types of management charges are available, almost half of the pension companies (42%) do not charge for an annual fixed fee where the bulk of the remaining entities collect up to £15 per year. Similarly, majority (88%) of UK-based pension companies cut 5-10% of regular pension contributions as management fees. In addition, pension companies collect an average of 0.92% of total pension assets as custodian costs from each pensioner.

[2] Assume that market returns 6% and management charges lower this market return to 3%, then MP1 should be £2 since an investor should invest £2 at 3% to get a market return on £1 (£0.06).
[3] See Appendix-A.

Table 10: Frequency Distribution of Personal Pension Charges in the UK

Fixed Annual Fee		Charges on Contributions		Charge on Assets	
Charge (£)	% of Funds	Charge (%)	% of Funds	Charge (%)	% of Funds
Zero	42	**0**	4	**<0.5**	2
1-5	4	**1**	0	**0.5**	7
6-10	9	**2**	2	**0.51-0.74**	4
11-15	20	**3**	2	**0.75**	27
16-20	4	**4**	2	**0.76-0.99**	5
21-25	5	**5**	49	**1.0**	34
26-30	5	**6**	9	**1.01-1.25**	9
31-35	4	**7**	5	**1.26-1.5**	12
>35	7	**8**	9		
		9	7		
		10	9		
		11	0		
		12	2		

Source: Whitehouse (2000)

4. Turkish Pension Plan

The deficit of the Turkish social security system amounted to 0.9% of the GNP in 1992 and the ratio rose to 4% in 2003. IMF estimates the deficit to reach 7.4% of GNP by 2010 and 11.2% by 2020.

Pension benefits are currently provided by three separate state entities: SSK, Emekli Sandigi and Bag-Kur. *SSK* covers private workers and non-civil servant public sector workers. *Emekli Sandigi* covers civil servants and *Bag-Kur* covers the self-employed, permanent agricultural workers, elected local government officials, and unemployed. In 1992, total payment deficit in SSK, Emekli Sandigi and Bagkur amounted to 0.9% of the GNP. Social security deficit received a helping hand from increasing employment rate (i.e. higher contributor premiums) in 2000 when the deficit as a percentage of GNP declined to 2.6% from 3.8% in 1999. The threatening upward trend however resumed in 2001 and the ratio rose consistently to 3.9% in 2003[4].

Moreover, the ratio of contributors to pensioners (Active-Passive Ratio) is consistently declining in all of state-run social security entities[5]. In 1999, approximately 2.1 contributors were paying for the social security expenditures of a single state-pensioner whereas the same costs were shared by an average 1.8 contributors in 2003. Since Turkey has a relatively young population with

[4] See Appendix-B
[5] See Appendix-B

almost one quarter of the population is below age 12, we expect the active-passive ratio to maintain its downward momentum. Consequently, with a worsening active-passive ratio, it is more likely that the state-run social security system will deteriorate even at a faster pace going forward.

The deteriorated balance in the social security system inspired a more detailed study on pensions. The Treasury and Ministry of Labor have been working on a draft since September, 1999. Although the initial plan was to get approved the pension bill by December, 1999, the earthquake in August, 1999 and ongoing debates on the political front delayed the approval of the bill until April, 2001. While the state has set up the legal framework, insurance companies have converted their life insurance departments into private pension companies since the new law prohibits operation of two different insurance segments under one roof.

5. Key Factors for Success

Key factors are recognized below helping the infant Turkish private pension system to survive and grow.

Income growth. An increase in GDP and hence in the disposable income can generate more funds flowing into the system.

Public view about the pension system. Countries set mandatory second pillar pension schemes evidently achieved higher participation. However, in countries where contributions to the system is set voluntary (as in the case of Turkey), public view to the pension is vital. Therefore, both the state and insurance companies should provide adequate insight to the public on this new business.

Tax incentives. Tax issue is best defined in terms of taxes on contributions, investment returns and benefit payments. Turkish pension law allows for deduction of contributions made by employees from their taxable income. However, the amount deductable is capped by 10% of total gross pay. Employers, on the other hand, can book contributions as an expense not exceeding either 10% firms' capital or the country's minimum wage. Investment returns of pension funds will be fully exempt from income tax. The same communique also rules that 25% of the pension benefits will be tax exempt.

Life expectancy. An increase in life expectancy of the Turkish people may jeopardize the profitability of pension businesses. Therefore, more capital or reinsurance may be required for the market players.

Demographics. Given that around half of the Turkish population is below an age of 25, the young Turkish people may be a vigorous source for the whole pension system.

Management fees. The Turkish Treasury defined caps on management charges in its Private Pension Communique. Accordingly, pension companies would bill the pensioners for three items; first every pensioner will pay an entrance fee not exceeding the minimum contribution amount. Another 8% at maximum will be paid as the fund management charge over regular contributions. The pension company will also be able to charge an additional 1/10,000 of the Net Asset Value at maximum per day as the fund's operational cost. The communique also rules that the fee structure should be stated in the pension contract of each individual pensioner.

Retirement requirements. A healthy social security calls for a long enough contribution payment period to secure adequate income after the retirement. The Turkish Legislation rules a minimum age of 56 and a minimum contribution period of 10 years to be entitled for retirement.

6. The Take-off Performance of the New System

Six Turkish insurance companies began to sell private pension plans on October 27th, 2003 and the number has risen to eleven since then. Due to the tough competition in the sector, each company likes to offer as many different types of investment funds as possible. Accordingly, private pension companies offer five-to-thirteen types of funds to tap the diversified risk preferences of contributors. Note that the pensioner himself decides how to distribute his monthly contribution among these portfolios.

Almost all pension fund companies include liquid and domestic fixed income funds mostly investing in money market securities. This is, in fact, in line with our earlier expectations such that fund managers as well as regulators inevitably prefer less volatile fixed income investments until the system gains its self-confidence. The conservative approach is further evidenced by the latest fund breakdown statistics (see Table 11). Accordingly, equities have the largest weight in equity growth funds while their dominance is balanced with repo investments in flexible growth funds. Note that Turkish regulators require that minimum 30% of a pensioner's assets be invested in low-risk fixed income funds and 15% of the contributions at most could be invested in foreign financial instruments. Therefore, most of the Turkish pension assets are kept in domestic fixed-income funds, which typically invest in T-Bills, repos and corporate or treasury bonds.

Table 11: An Asset Allocation

	Repo	FX T-Bill	T-Bill	Eurobond	FX Bank Deposit	Private Sector FX Bond	Foreign T-Bill	Domestic Equity	Foreign Equity
Domestic Fixed Income Fund (TL)	21.9%		78.1%						
Domestic Fixed Income Fund (FX)	13.2%	86.8%							
International Fixed Income Fund	8.4%	17.1%		41.7%	3.7%	29.1%			
International Balanced Growth Fund	6.4%						68.0%		25.6%
Liquid Fund	9.9%		90.1%						
Flexible Growth Fund	41.5%							58.5%	
Equity - Growth Fund	13.8%							86.2%	

Source: Yapı Kredi Emeklilik

Total number of contributors in the Turkish private pension system has reached to 133,934 since the launch of the system in October 2003. Historical observations suggest that approximately 5,000 new contributors are included in the system in every week. Assuming that the current penetration rate sustain throughout the year, it is estimated that total number of contributors will reach 227,896 by the end of the first year of the implementation (October 2004). According to the State Institute of Statistics, the total workforce of Turkey is 23.2 million as of year 2003. Therefore, a short-term growth forecasts also indicate that approximately 0.8% of the current workforce will be enrolled in the private pension system in the first year.

Table 12: Number of Contributors in the Turkish Private Pension Plans

Date	Number of Contributors	As a % of workforce
January 2004	27,403	0.12%
February 2004	42,059	0.18%
March 2004	71,015	0.31%
April 2004	97,319	0.42%
May 2004	124,900	0.54%
June 2004E	143,825	0.62%
July 2004E	163,606	0.71%
August 2004E	188,333	0.81%
September 2004E	208,115	0.90%
October 2004E	227,896	0.98%
November 2004E	252,623	1.09%
December 2004E	272,405	1.17%

Source: Pension Monitoring Center

In Chile, on the other hand, one million contributors were accumulated in the pension system within the first year of implementation representing 24% of the total workforce. Note that superior penetration rate in Chile is mostly attributable to the compulsory nature of the Chilean pension system.

It should be noted however that these official contributor figures do not, actually, reflect the factual system penetration. In some cases, an employer may simply make a lump-sum registration

for all employees whereas only a portion of work-team continues to make contributions to the system. The pension companies naturally hesitate to publicize the number of passive accounts, however sector statistics indicate that an average 18% of the current contracts are actually non-paying insurance policies.

If short-term growth scenario under an assumption that passive registries will continue to make up 18% of the entire pension accounts is assumed, our forecast of number of contributors by the end of the first year (October 2004) declines from 227,896 to 186,875.

Table 13: Number of Contributors under a more Realistic Assumption

Date	Number of Contributors	As a % of workforce
January 2004	22,470	0.10%
February 2004	34,488	0.15%
March 2004	58,232	0.25%
April 2004	79,802	0.34%
May 2004	102,418	0.44%
June 2004	117,936	0.51%
July 2004E	134,157	0.58%
August 2004E	154,433	0.67%
September 2004E	170,654	0.74%
October 2004E	186,875	0.81%
November 2004E	207,151	0.89%
December 2004E	223,372	0.96%

Source: Pension Monitoring Center

Considering the misleading passive contracts, the amount of total pension assets under management may provide a better insight regarding the success of the system's take-off period. By the data for pension funds, a total of $44 million has been accumulated so far in the infant Turkish pension system. Taking into account the non-paying contributors, historical data also point out that the average monthly contribution from a policyholder amounts to $88. Based on the contributor growth model and assuming a conservative 10% of annual investment return on these assets, it is estimated that the Turkish pension assets will add up to $106 million by the end of its first year (October 2004). Note that this amount is equal to 0.04% of Turkey's estimated 2004 GDP.

Table 14: Short Term Pension Fund Growth Forecasts

Date	Number of Effective Contributors	Assets Under Management ($)
January 2004	22,470	6,960,563
February 2004	34,488	11,254,460
March 2004	58,232	18,034,509
April 2004	79,802	25,424,068
May 2004	102,418	36,371,130
June 2004	117,936	46,607,700
July 2004E	134,157	58,077,455
August 2004E	154,433	74,551,204
September 2004E	170,654	89,453,740
October 2004E	186,875	105,901,112
November 2004E	207,151	128,650,919
December 2004E	223,372	148,617,889

Source: Pension Monitoring Center

In order to draw a comparison on the Latin counterparts, Chilean pension assets amounted to $306 million in the first year of implementation and represented 0.84% of the country's GDP. Chile's superior pension assets-to-GDP ratio can be again explained by its compulsory implementation.

7. Long Term Forecasts and Scenarios

Track records of Latin American counterparts in their earlier years of pension plan implementation may be used to draw initial projections for Turkey's pension system. The methodology used in this paper is; first, take the snapshot of Latin countries' historical pension statistics and then modify them with the current Turkish demographic and financial data. Chile and Mexico are the two Latin countries used to assist drawing pension forecasts.

Chile, as the pioneer pension plan implementer in emerging markets, replaced its inefficient, nearly bankrupt, state-owned pay-as-you-go system with a privately administrated national program of mandatory retirement savings. Chile is believed to be the only country in Latin America that reached maturity in its pension system. Despite its novelty and lack of similar experiences in other countries, the system experienced success from its inception primarily due to its compulsory nature. Since the Turkish system is a voluntary one, it would be optimistic to anticipate a similar penetration rate as Chile experienced 20 years ago. Nevertheless, it may serve as a maximum ceiling for the Turkish system's performance.

Chile's pension assets recorded $306 million in its first year of operation, representing a less than 1% of its GDP. However, Chilean success story brought this figure to more than 50% over 20

years. Applying this penetration pattern to Turkey's forecasted GDP for the next several years yields that Turkey may accumulate about $46 billion pension assets by the year 2010.

Table 15: Forecast of Turkish Pension Asset Size (Chilean Scenario)

Year of Implementation	Year	Chile Assets/GDP (%)	Turkey GDP (bil. $)	Turkish Pension Assets (bil. $)
1	**2004**	0.84%	239	2.0
2	**2005**	3.29%	253	8.3
3	**2006**	5.86%	269	15.7
4	**2007**	7.73%	282	21.8
5	**2008**	10.03%	296	29.7
6	**2009**	12.67%	311	39.4
7	**2010**	14.20%	323	45.9
8	**2011**	14.97%	336	50.3
9	**2012**	17.65%	350	61.7
10	**2013**	24.21%	364	88.0
11	**2014**	31.37%	378	118.6
12	**2015**	30.56%	390	119.1
13	**2016**	37.02%	401	148.5
14	**2017**	40.99%	413	169.4
15	**2018**	38.76%	426	165.0
16	**2019**	39.45%	438	173.0
17	**2020**	40.60%	452	183.4
18	**2021**	42.00%	465	195.4
19	**2022**	46.36%	479	222.1
20	**2023**	50.72%	493	250.3
21	**2024**	53.68%	508	272.9

Similarly, projecting the contributor/population ratio of the Chilean system in its initial years on Turkish population forecast generates a contributor trend given in Table 16.

Table 16: Forecast of Turkish Pension System Contributors

Year of Implementation	Year	Chile Contr./Popul. (%)	Turkey Population (mil.)	Turkey Contributors (mil.)
1	**2004**	0.00%	67.3	0.0
2	**2005**	5.83%	68.3	4.0
3	**2006**	6.60%	69.3	4.6
4	**2007**	7.13%	70.4	5.0
5	**2008**	7.99%	71.4	5.7
6	**2009**	8.91%	72.5	6.5
7	**2010**	9.95%	73.5	7.3
8	**2011**	10.45%	74.6	7.8
9	**2012**	10.72%	75.8	8.1
10	**2013**	10.61%	76.9	8.2
11	**2014**	11.31%	78.0	8.8
12	**2015**	12.06%	79.2	9.6
13	**2016**	12.28%	80.4	9.9
14	**2017**	12.45%	81.6	10.2
15	**2018**	12.59%	82.8	10.4
16	**2019**	13.03%	84.0	11.0
17	**2020**	13.52%	85.3	11.5
18	**2021**	12.70%	86.5	11.0
19	**2022**	12.90%	87.8	11.3
20	**2023**	12.39%	89.1	11.0
21	**2024**	12.22%	90.5	11.1

Mexico, on the other hand, reformed its pension plan in 1997 and made it compulsory contributing the new private pension scheme since then. Relating Mexico's pension assets/GDP ratio to Turkey's forecasted GDP results another set of projections:

Table 17: Forecast of Turkish Pension Asset Size (Mexican Scenario)

Year of Implementation	Year	Mexico Assets/GDP (%)	Turkey GDP (bil. $)	Turkey Pension Assets (mil. $)
1	**2004**	0.15%	239	349
2	**2005**	1.21%	253	3,059
3	**2006**	1.98%	269	5,328
4	**2007**	2.76%	282	7,769
5	**2008**	3.59%	296	10,641

5. Concluding Remarks

Following years of social security deficits, Turkey has finally initiated a restructuring plan to ease the public-sector burden financing these deficits. Since the implementation of the new system has been kicked off only recently, the penetration rate of the system is a big question.

The lack of previous pension experience motivates researches to investigate past international pension practices and project these findings on the track of the emerging Turkish pension system.

Chile and Mexico are two models ahead of Turkey for a private pension plan implementation. Although Mexico reformed its pension scheme in 1997 and accumulated a relatively short history, Chile took steps much earlier (in 1981). Chile, therefore, is known as one of the earliest emerging market countries that reached the saturation stage in the pension business. From an initial $306 million in its first year of implementation, Chilean pension asset size reached $35 billion at the end of year 2001. The significant amount of savings managed by the private pension administrators has reduced the volatility of economic cycles by reinforcing Chile's capital markets and providing a source of long-term funding. As a result, the private pension fund system has been considered a key element in the success of country in the recent years.

Applying Chile's pension system performance to Turkish economic and demographical size yields that Turkey may accumulate $119 billion of assets by year 2014. Adopting the Mexican case provides a more conservative scenario: $11 billion of assets under management by year 2008. Moreover, Chile's contributor versus population statistics points out 8.8 million of contributors in Turkey by year 2014.

These figures may sound highly optimistic as the estimations are based on Latin countries' mandatory pension plans. They, nevertheless, may provide an estimation ceiling for the Turkish system.

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APPENDIX - A

Various types of management charges call for a methodology to represent them all with a single number or ratio. Whitehouse E., (2001) suggested a simple formulation to show the relationship between different measures of charges. Accordingly,

When individual earnings grow at a rate of g, earnings at a given period of t in continuous time, w_t, will be a multiple of earnings in period 0, w_0 :

$$w_t = w_0 e^{gt} \qquad (1)$$

Assuming c as the pension contribution rate as a proportion of earnings, and a_1 as the management fee proportional to the contribution rate, the net inflow to the pension fund at time t will be:

$$c(1-a_1)w_0 e^{gt} \qquad (2)$$

These contributions will earn an investment return of r. Management, on the other hand, will charge another a_2 over the fund's assets as an annual management fee. Therefore, net accumulation at the end of period T from contributions made at time t will be

(3)

Integrating (3) from $t=0$ to $t=T$, when accumulated funds are withdrawn, gives the total fund as

$$c(1-a_1)w_0 e^{(r-a_2)T}\,\frac{e^{(g+a_2-r)T}-1}{g+a_2-r} \qquad (4)$$

Any one-off charge, a_0, payable up-front would have earned an investment return up to pension withdrawal. The pension benefit will therefore be reduced by,

$$a_0 e^{(r-a_2)T} \qquad (5)$$

Finally, the pension company may levy an exit charge a_3, proportional to the final amount at the time of withdrawal. Accounting for all these charges final net amount accumulated in the fund will be:

$$\left(c(1-a_1)w_0 e^{(r-a_2)T} \frac{e^{(g+a_2-r)T}-1}{g+a_2-r} - a_0 e^{(r-a_2)T} \right)(1-a_3) \qquad (6)$$

To find out the impact of various management charges, one should set all the charge items (a's) in the formula above to zero:

$$cw_0 e^{rT} \frac{e^{(g-r)T}-1}{g-r} \qquad (7)$$

Then, the Charge Ratio may be written as,

$$Charge\ Ratio = 1 - \frac{\left(c(1-a_1)w_0 e^{(r-a_2)T} \frac{e^{(g+a_2-r)T}-1}{g+a_2-r} - a_0 e^{(r-a_2)T} \right)(1-a_3)}{(cw_0 e^{rT} \frac{e^{(g-r)T}-1}{g-r})} \qquad (8)$$

APPENDIX – B: Social Security Deficit in Turkey

	1999	2000	2001	2002	2003
Sosyal Sigortalar Kurumu (SSK)					
Number of contributors ('000)	6,356	6,565	6,136	6,563	6,750
% growth		3.3	-6.5	7.0	2.9
Number of pensioners ('000)	3,149	3,339	3,561	3,748	3,936
% growth		6.0	6.6	5.3	5.0
Contributors/pensioners	2.02	1.97	1.72	1.75	1.72
Balance of Payments (trl TL)	-1,111	-400	-1,108	-2,386	-2,866
in mn US$	-2,626	-640	-902	-1,583	-1,916
Emekli Sandigi (ES)	**1999**	**2000**	**2001**	**2002**	**2003**
Number of contributors ('000)	2,118	2,164	2,236	2,373	2,408
% growth		2.2	3.3	6.1	1.5
Number of pensioners ('000)	1,239	1,297	1,356	1,409	1,467
% growth		4.7	4.5	3.9	4.1
Contributors/pensioners	1.71	1.67	1.65	1.68	1.64
Balance of Payments (trl TL)	-1,035	-1,775	-2,675	-4,676	-6,145
in mn. US$	-2,447	-2,839	-2,177	-3,103	-4,108
Bag-Kur (BK)	**1999**	**2000**	**2001**	**2002**	**2003**
Number of contributors ('000)	2,981	3,256	3,308	3,321	3,378
% growth		9.2	1.6	0.4	1.7
Number of pensioners ('000)	1,125	1,257	1,334	1,394	1,450
% growth		11.7	6.1	4.5	4.0
Contributors/pensioners	2.65	2.59	2.48	2.38	2.33
Balance of Payments (trl TL)	-796	-1,051	-1,740	-2,622	-4,930
in mn. US$	-1,882	-1,682	-1,416	-1,740	-3,296
Total of Pension Funds	**1999**	**2000**	**2001**	**2002**	**2003**
Number of contributors ('000)	11,455	11,985	11,680	12,257	12,536
% growth		4.6	-2.5	4.9	2.3
Number of pensioners ('000)	5,513	5,893	6,250	6,551	6,852
% growth		6.9	6.1	4.8	4.6
Contributors/pensioners	**2.1**	**2.0**	**1.9**	**1.9**	**1.8**
Overall Balance of Payments (trl TL)	-2,942	-3,226	-5,523	-9,684	-13,941
in mn. US$	-6,955	-5,160	-4,495	-6,426	-9,320
% of GNP	**-3.8**	**-2.6**	**-3.1**	**-3.5**	**-3.9**

Source: SSK, Emekli Sandigi, The Ministry of Labour and Social Security