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A TANGO TALE: ON THE CLOSURE OF THE ARGENTINE FULLY FUNDED SYSTEM

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ABSTRACT

With an early welfare system, Argentina's demography is more similar to the South European countries than to the majority of Latin American ones. The country reformed its old fashioned Pay-As-You-Go system in the 1990s, introducing a Fully Funded scheme, which was intended to solve the financial stress of the social security, as well as to yield positive externalities on the financial system, the savings rate and economic growth. After 15 years of functioning, the system was closed, their affiliates sent to Pay-As-You-Go again, and the accumulated savings went to the public social security administration, which is in charge of future benefits. The official explanation for such an ending was that the international financial crisis was a peril for future pensioners, and also that the (private) pension funds administrators were not the proper managers of the funds. In the Congress, the political majorities for this reform were remarkable strong in both chambers. Protests of the saving accounts owners were not loud, in a country with a tradition of mass demonstrations.

How it happened? Why? Did pension fund administrators work properly for their affiliates, given the constraints they faced? Can we learn some lessons, relevant to other countries with similar characteristics (i.e., Latin American, Eastern European or Central Asian), besides the uniqueness of the local circumstances? We think so, and we worked on developing the lessons of this experience.

We debate on the process and we asked if it could occur in some other place. We conclude that it can, since weak political consensus on the reform is built. It also could happen when the objectives and the instruments are not properly differentiated. Are we in search of fixing the social security or of promoting national savings? Also, the marketing and the counter marketing of the reform could polarize the debate, and to difficult the *per se* complex consensus. Finally, the counter reform has unexpected pay-offs, since making implicit the public debt due to the social security system, and the sudden disposal of a source of resources to finance the State budget increases the appeal of eliminating the Fully Funded scheme. The long run responses of the ageing process and the short run political horizon add up to the counter reform coalition.

Key words: Pension Funds, Argentina, Reform, and Portfolio regulation

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I. Introduction

Argentina reformed an old-fashioned Pay-As-You-Go system in 1994, creating a parallel system comprised by a new Pay-As-You-Go scheme and a Fully-Funded one, based on individual accounts run by pension fund administrators (PFA). The fully funded scheme introduced in 1994 suffered a shock since the 2002 Argentine macroeconomic crisis. Half of its portfolio was formed by public debt (mainly denominated in American Dollars). The assets were property of 9 million affiliates, and the whole portfolio value rose to 20000 million dollars. Argentine government defaulted its debt during year 2001 and four years latter it issued new bonds in replacement of the defaulted ones. This implied a 40% haircut on average and also a modification of currency and terms for pension fund portfolios. However, the government allowed a new valuation system that hid the losses. During 2007 important changes were introduced to the system: maximum commissions were set by law; disability and death benefits were modified; those older, lower income affiliates with small balances in their accounts were automatically transferred into the Pay-As-You-Go Regime, and the other affiliates were allowed to switch from one pension system to the other. Two on eleven million affiliates transferred their balances to the state and moved to the Pay-As-You Go system. The figure includes voluntary as compulsory shifts. Finally, during the third quarter of 2008, the fully funded system was eliminated, and both its assets and affiliates were transferred to the Pay-As-You-Go regime.

The official explanation for such an ending was that the international financial crisis was a peril for future pensioners, and the PFA were questioned as the proper managers of the funds, which went to the public social security administration. In the Congress, the political majorities

for this reform were remarkable strong in both chambers. Protests of the saving accounts owners were not loud, in a country with a tradition of mass demonstrations.

How it happened? Why? Did PFA work properly for their constituents, given the constraints they faced? Can we learn some lessons, relevant to other countries with similar characteristics (i.e., Latin American, Eastern European or Central Asian), besides the uniqueness of the local circumstances? We think so, and we worked on developing the lessons of this experience.

This paper reviews how the system was eroded, modified and eliminated starting from year 2002. It is also analysed by means of a Markowitz Efficiency frontier, how PFA behaved, given their regulation and the market stimulus they received. The third objective of this paper has been to understand why this system was abandoned after one and a half decade, returning to a system with better initial parameters than in 1994 (retirement age, demanded years of contribution, benefit determining formula), but with demographic problems that can only worse with time (more beneficiaries, and less contributors).

After this introduction, the next section describes the system at the moment of its elimination. Afterwards, the 2002 crisis together with the system modifications are analysed. The third section summarises the reforms implemented in 2007. The fifth section resumes the legal instrument that removed the fully funded system. In the sixth section the efficiency frontier is constructed, arriving to the conclusion that the portfolio regulations (intended to assess individual risk of each instrument) leaded to a sub optimum group of portfolios. In addition, it is shown that given the regulation on portfolios, PFA portfolios were located in the efficient sector of the frontier. The last section closes with some final reflections.

II. The system which was eliminated

Although the system had reached almost 11 millions affiliates, after the 2007 reform it was left with 9.5 millions, of whom only 3.6 millions (38%) were regular contributors in June 2008. The 10 PFA (after the last merge in July 2008) controlled almost 99000 million pesos (approximately 30000 million dollars).

Table 1: Dimension of the fully funded regime in Argentina (Amounts at June of each year)

Period	Affiliates (Thousands)	Contributors (Thousands)	Contributors/ Affiliates %	Funds (Millions of AR $)
1995	3843	2033	52.91%	1364
1996	5245	2586	49.30%	3838
1997	5820	2987	51.32%	7345
1998	6696	3275	48.91%	10102
1999	7475	3366	45.03%	13861
2000	8104	3349	41.33%	18714
2001	8624	3332	38.63%	22166
2002	8977	2859	31.85%	35142
2003	9275	3108	33.51%	42918
2004	9712	3620	37.27%	47660
2005	10317	3995	38.73%	58447
2006	10959	4341	39.61%	74874
2007	11670	4669	40.01%	95872
2008	9488	3600	37.94%	98808

Source: Superintendencia de AFJP (PFA Regulator)

Table 2: Market of each PFA (Affiliates, Contributors and Fund)

	Affiliates		Contributors		Funds	
	(Thousands)	(Share)	(Thousands)	(Share)	(Millions of AR $)	(Share)
Arauca Bit	1153	12.20%	482	13.40%	10294	10.40%
Consolidar	1316	13.90%	535	14.90%	17968	18.20%
Futura	401	4.20%	126	3.50%	1325	1.30%
Máxima	1017	10.70%	375	10.40%	11609	11.70%
Met AFJP	1359	14.30%	524	14.50%	18322	18.50%
Nación	920	9.70%	422	11.70%	14864	15.00%
Orígenes	1805	19.00%	628	17.40%	17968	18.20%
Previsol	326	3.40%	131	3.70%	2447	2.50%
Profesión + Auge	659	6.90%	213	5.90%	1332	1.30%
Prorenta (30/6)	319	3.40%	87	2.40%	1705	1.70%
Unidos (30/6)	213	2.20%	78	2.20%	975	1.00%
Unidos (since 1/7)	532	5.60%	165	4.60%	2680	2.70%
All PFA	9488		3600		98808	

Source: Superintendencia de AFJP (PFA Regulator)

Since January 1st of 2008, the historical contribution of 11% was restored. This contribution has been lowered to 5% at endings of 2001 and later augmented transitorily to 7%. The wage ceiling considered for contributions was also raised.

The system's average commission was limited to a maximum of 1% of the salary subject to contributions since the fees accrued in April 2007, being the Executive Power able to reduce it.

The Table 3 reproduces the evolution of the pension funds, expressed in current Argentine pesos and American dollars, and also the returns evolution. In current pesos it represented 98.8 billions and in current dollars it reached 32,6 billions. Its return in dollars reached 0,8% during the last year, against a nominal return of –0,2% in pesos.

Below it is shown the system's global portfolio composition, and each item evolution, at endings of June of 2008.

Table 3: Time Evolution of Pension Funds and its Rate of Return (at June of each year)

Date	Accumulated fund (In current million Pesos)	Accumulated fund (In current million Dollars)	Nominal Annual Return (In pesos)	Nominal Annual Return (in Dollars)
1995	1364	1366	0.00%	0.00%
1996	3838	3842	21.50%	21.50%
1997	7345	7352	22.20%	22.20%
1998	10102	10112	0.70%	0.70%
1999	13861	13861	4.80%	4.70%
2000	18714	18714	10.90%	10.90%
2001	22166	22166	4.70%	4.70%
2002	35142	9762	41.10%	-60.80%
2003	42918	15552	21.60%	58.60%
2004	47660	16211	6.40%	-0.10%
2005	58447	20407	16.70%	19.80%
2006	74874	24456	20.00%	12.30%
2007	95872	31337	28.30%	28.40%
2008	98808	32651	-0.20%	0.80%

Source: Own elaboration on Superintendencia de AFJP (PFA Regulator)

Table 4: Portfolio Composition (June 2008)

Instrument	Percentage over total (June 2008)
Availabilities	0.77%
National Debt	51.96%
Fixed Time Deposits	5.50%
Stocks (Domestic)	12.20%
Stocks (Foreign)	8.97%
Others	21.37%

Source: Superintendencia de AFJP (PFA Regulator)

III. The 2002 crisis and the changes to the system

III.1. Crisis, public debt "haircut", and regulatory changes

Several regulatory changes were introduced to the regime since it was created in 1994. At the end of 2001, Argentinean government defaulted its debt due to a strong financial crisis. This default had a significant impact in PFA portfolios, which had a 50% exposure on public debt, mainly denominated in American dollars. A debt swap was implemented since June 2005. This process implied a 40% "haircut" in the value of the debt held by the PFA. Nevertheless, a special accounting treatment allowed them to keep national debt in its portfolios without loosing its nominal value if those bonds were maintained until to maturity. In this way, the portfolios did not reflect the haircut. This process is detailed in Ferro and Romero (2008).

III.2. Regulatory changes before and during the crisis

Following Ferro (2004b), this section describes the most important changes in the period 2000-2001. The first modification implemented referred to the way that the undecided affiliates were assigned among the PFA. Before this changes, the new workers who do not choose between Pay-As-You-Go and Fully Funded, went to the latter, and if they do not choose between PFA they were assigned to one of them by an administrative procedure. Additionally, a minimum number of contributions were needed in order to shift between PFA. By contrast, after the regulatory changes, those undecided affiliates were assigned to the PFA that charged the lower commission, in the geographical affiliate's residency area; giving incentives to the system's efficiency.

Furthermore, personal contributions were transitorily reduced from 11% to 5% of the wage in December of 2001. In March 2003 they were raised to 7% and returned to 11% at the beginning of 2008. The mentioned reduction had a macroeconomic purpose in a context of depression. The reduction in contributions, created a financial distress to the regime, and raised the participation of commissions in the contribution, worsening the public perception on this system.

During the crisis, the required ratings for the instruments allowed in the portfolios were relaxed, being this one logical consequence of the general downgrade in the credit quality of local financial instruments.

III.3. Portfolio changes due to crisis (2001-2005)

During Argentinean default, national debt in the PFA portfolios, expressed in Dollars, Euros and Pesos for an equivalent of USD 17,330 millions was replaced by new issued debt valuated in USD 10,126 millions. This operation implied a nominal reduction of 41.57%, but the loss was not registered thanks to the new accounting treatment allowed for these instruments.

Of the new debt issued in replacement of the old, 60.13% were bonds that were valued without reflecting any nominal loss if they were maintained until maturity, 21.45% were non negotiable bonds, valued mark to market and the other 10.08% were guaranteed non negotiable loans to the National Government.

Table 5: National debt swap and PFA portfolios as of June 2005

Expressed in millions, except when mentioned.		
Instrument	**Previous**	**New**
Bonds in Dollars	US$ 15400	
Bonds in Euros	€ 1400	
Bonds in Pesos	AR $ 700	
"Cuasi Par" in Pesos		AR $ 23010
"Boden 2014" in Pesos		AR $ 3540
"Discount" in Pesos		AR $ 2655
"Discount" in Dollars		US$ 295
Value in Pesos	AR $ 51464	AR $ 30075
Value in Dollars	US$ 17330	US$ 10126
Value in Euros	€ 14322	€ 8378
Percentage of loss		41.56%
Exchange rate at the time of the swap 1 ARS=0.337 USD = 0.279 EUR, USD 1.21 = EUR 1		

Source: Ferro and Romero (2008).

IV. 2007's Reforms

On February 1st, 2007, the executive Power sent to the Congress a project to reform the social security regime. That reform was enacted as law 26222. The project set as its objectives:

1. To improve the system's coverage.
2. To ensure freedom of choice between pay-as-you-go and fully funded schemes.
3. To strengthen equity and transparency
4. To rise the replacement rate (pension/salary)

5. To assure the financing of the system.
6. To lower PFA administrative fees.
7. To increase the participation of the State in the system.
8. To guarantee a minimum pension to both regimes beneficiaries

In order to achieve those objectives, the following changes were introduced:

1) New workers had 90 days, (since they start to be employed or registered as independent workers) to choose between the Pay-As-You-Go and the Fully Funded Scheme. In case they have not chosen once that time has passed, it would be assumed that they preferred the Pay-As-You-Go regime; as has been said, previously the default option was the fully funded regime
2) Choosing the public system would imply that the affiliate's contributions would be assigned to finance this regime. Public system's benefit was raised by 76.5% (as its estimation changed from 0.85% to 1.5% multiplied by the years of contribution, times the last ten working year's average salary)
3) Affiliates could change the regime they have chosen once in every five years.
4) Those men older than 55 or women older than 50, who were affiliated to the Fully Funded regime, and whose individual capitalization account did not reach $20000 (approximately USD 6000), would be compulsory transferred to the public regime. Their savings would also be transferred to the public regimen. Only those affiliates who expressed their will to continue in the private regime could remain in it.
5) The PFA commissions would have a cap of 1% of the salary subject to contributions. The Executive Power reserved the option to lower that percentage.
6) A minimum, since 5% to 20% of the PFA portfolios would have to be formed by securities whose objective were to finance "productive or infrastructure medium or

long-term projects". This fund would be gradually accumulated, following a five-year chronogram, established by the Executive Power.

7) Contributions for disability and life coverage were changed in the fully funded regime. Every PFA would form a special fund, financed with the balances of the affiliates. Before the reform, commissions charged to the wages of the beneficiaries financed those benefits.
8) Affiliates not included in 4), that is with higher balances in their accounts, could also shift to the pay-as-you-go on a voluntary basis within a six months period.

The Fully funded regime reduced its size after the reform. Between January 2007 and June 2008, this regime lost 16.09% of its affiliates and 21.12% of its contributors. The proportion of affiliates older than 45 years reduced in one third. Furthermore, the regime suffered a qualitative change; since it lost low salary affiliates with small-accumulated balances and relatively advanced ages. This modification implied an increase in the ratio fund to affiliate, which grew at the same rate than the official salary index ("CVS"). By contrast, the collections per affiliate and per contributor rose well above that value. This phenomenon implies that the remaining affiliates had greater incomes, also that the limit of contribution was raised and that formal job continued to recover after its collapse in 2002.

V. The end of the fully funded scheme

Argentinean Fully Funded regime was eliminated by law 26425 and decree 2099, both of 2008. The reform of the previous year was enacted on the premise that a massive shift of affiliates was going to take place, since the public perception of the system was not good. But just two on eleven million affiliates shifted, and one million were the compulsive shifts due to small balances in the accounts (under AR $ 20000). The 2008 new reform simply absorbed and

substituted the fully funded scheme by the public Pay-As-You–Go regime. The working time computed when the affiliates were part of the private regime was considered, in order to obtain the individual benefit, as if they had contributed to the public regime. Pension for all workers was unified at 1.5% of the average salary of the last ten working years, multiplied by the years of contribution (minimum thirty). The actuarial consequences of the reform were not publicized, and to the best knowledge of the authors, if they do exist, they are not public until current times.

The public regime started to pay benefits under phased withdrawal agreements between affiliates and the PFA. Annuities already contracted remain in hands of the insurance companies where the policies were issued.

The assets that formed the individual capitalization accounts of affiliates and beneficiaries of the private regime, were transferred to the Social Security National Administrator (ANSES by its acronym in Spanish), and converted into the "Sustainability Guaranty Fund" of the public regime. Those assets could only be used to pay the benefits of the new public system.

The law stated that Fund's assets would be invested *"following security and return criteria, contributing to the sustainable development of the real economy, in order to guarantee the virtuous circle between economic growth and increase of social security resources"*. Additionally, the new public Fund has to be invested domestically.

The PFA would be compensated with bonds of the national debt up to their net worth. Meanwhile, PFA employees could join public sector institutions, such as ANSES, and the Federal Public Revenue Administration (AFIP).

VI. Have the PFA done well their jobs?

Following closely Castagnolo (2008), in this section we test the job the PFA have done. Firstly, we know that financial theory suggests that it is possible to obtain an optimal portfolio frontier, in terms of mean and variance of its return. Secondly, every restriction, which does not allow portfolio managers to reach that frontier, leads to sub optimal results. With those considerations, this section tries to find out if the portfolio restrictions imposed by law at the time of the reform worked when the Argentinean Fully Funded System existed were efficient, and if the PFA portfolios were placed at the efficient section of the restricted frontier. Markowitz's Mean Variance Model is used to analyse how this restrictions altered the feasible frontier, and how efficient were the PFA given the regulatory regime they faced.

VI.1. The data

Monthly data, from January 1998 to June 2008, has been used to analyse the performance of the PFA. In order to develop the model, it was necessary to create two different databases; one included the weights of each instrument of the different PFA, and the other referred to the returns of each of those instruments

Along the period of analysis, the average portfolio was strongly concentrated in four instruments: Public Debt (54.56%), Time Deposits (12.01%), Domestic Shares (13.52%) and Mutual Funds (5.53%).

The behaviour of the different funds were strongly correlated, bringing up a correlation coefficient greater than 0.9 in nearly all cases. Given this behaviour, it is possible to analyse the system as a whole.

The Law 24241, which introduced the fully funded in 1994, limited the weights that 17 different financial instruments could represent in the portfolios of the PFA. Although it would be better to have one price and return series per each instrument listed in that law, it was only possible to elaborate one data base form by nine instruments (all the more important included, but excluding some of the instruments with low individual weights or discontinuous quotations).

Since many national Public Debt securities have defaulted and were valued at their accounting value, we used indexes elaborated by the Argentinean Capital Markets Institute (IAMC per its acronyms in Spanish) to consider their returns.

For Time Deposits, we have used the reference rate for deposits of more than a million pesos, and a term shorter than 60 days, published by the Argentinean Central Bank.

When considering Mutual Funds, we have noticed that PFA invested mainly in Money Market Mutual Funds (which are not traded at Capital Markets), that is why we have used a benchmark provided by Itaú Capital Asset Management, adjusting it by the real return obtained in the last period by the most important Funds.

Foreign financial instruments (Shares and Public debt) were analysed since the S&P index and T-bonds, as they were the most representative securities of these categories during the period of analysis. Additionally, the index “Merval Argentino” was used to represent the behaviour of domestic shares. The use of indexes above mentioned follows two objectives; first simplifies the analysis to a more reduced group of variables, and second, it addresses not only the rigidities of investing in foreign markets, but also the risk qualification floor, assuming that PFA would invest only in leading instruments of each market.

Finally, we have chosen YPF shares (formerly the national petroleum company, which control package was sold to Spaniard Repsol in the 1990s) to represent shares of Privatised National Companies. This election obeyed to the fact that the mentioned instrument presented high liquidity and was traded regularly (though we could obtain regular quotations). This fact did not happen with other species of the same instrument.

VI.2. The model

The Markowitz's Mean Variance Model (1959) is used as a benchmark in order to address if the PFA did well their job. According to that model, a portfolio is efficient if it maximizes its return given a determined risk level (measured by the variance of the portfolio's return), or when the variance is minimized given a determined return. We used the variance minimization approach, which can be expressed as follows:

Minimize:

$$\sigma_m^2 = \sum_{i=1}^{n}\sum_{j=1}^{n} x_i x_j \sigma_{ij} \qquad (1)$$

Subject to:

$$\sum_{i=1}^{n} x_i E_i = E_m \qquad (2)$$

$$\sum_{i=1}^{n} x_i = 1 \qquad (3)$$

Where σ_m^2 is the portfolio's market variance; x_i the weight of each asset in the portfolio; E_i the expected return of asset i; E_m the expected return of the portfolio and $\sigma_{i\,j}$ the covariance between assets i and j.

In order to obtain a standard measure which magnitudes adopted values between 1 and –1, we use the correlation coefficient $\rho_{ij} = \frac{\sigma_{ij}}{\sigma_i \sigma_j}$, instead of co variances. The Lagrangean function remains:

$$\ell = \sum_{i=1}^{n} \sigma_i^2 x_i + \sum_{i=1}^{n} \sum_{j \neq i}^{n} \sigma_i \sigma_j \rho_{ij} x_i x_j + \lambda \left[\sum_{i=1}^{n} x_i E_i - E_m \right] + \upsilon \left[\sum_{i=1}^{n} x_i - 1 \right] \quad (4)$$

Afterwards, differentiating the Lagrangean by the n weights of individual assets invested in the portfolio, the next first order conditions are obtained.

$$2 x_i \sigma_i^{\,2} + 2 \sum_{j=1\, j \neq i}^{n-1} \sigma_i \sigma_j x_j \rho_{ij} + \lambda E_i + \upsilon = 0 \quad \forall i = 1,..., n-1 \qquad (5)$$

Given that the n-th derivative refers to the risk free asset.

$$\lambda E_n + \upsilon = 0 \qquad (6)$$

Those n equations and the two constraints, form a system of n+2 equations with the same number of unknowns. Although the weights of each instrument of the portfolio that solve the minimization problem can be obtained from the system, those weights are observed in the market, and the real unknowns are the returns of each asset.

This system is solved replacing equation (6) in the n-1 equations (5), obtaining:

$$2 x_i \sigma_i^{\,2} + 2 \sum_{j=1\, j \neq i}^{n-1} \sigma_i \sigma_j x_j \rho_{ij} + \lambda \left(E_i - E_m \right) = 0 \qquad (7)$$

$$\sum_{i=1}^{n} x_i E_i - E_m = 0 \qquad (8)$$

Solving the system of n equations and n unknowns, the solution yields the returns needed to have a market in equilibrium at level $E_{m.}$

VI.3. Results

The quantitative restrictions imposed by the regulations, had generated portfolios with lower returns and higher risk levels than those that could be obtained if PFA were allowed to invest without restrictions. Using the returns and covariance of the different instruments, we have calculated Markowitz frontiers with and without restrictions, Figure I shows that the regulated portfolio with quantitative limits is inferior to the minimum variance portfolios that could be obtained if the restrictions were not imposed. Only the restrictions on Foreign Financial Instruments, Mutual Funds -highly correlated with Time Deposits-, and Time Deposits itself, were binding within the period of analysis. With regards to Foreign Financial Instruments, it is an expected result, because PFA could have been able to reduce Argentinean market risk due to international diversification, by investing more in those instruments. Mutual Funds and Time Deposits had a low volatility in the period of analysis.

When analysing the restriction about Mutual Funds and Time deposits, the result is more surprisingly, but it is mainly because those were the only options that PFA had to invest in non-risky instruments. Mutual funds risk is strongly correlated to Time deposit's, which due to its nature have limited volatility. The Figure also shows the Markowitz frontier, lifting the Foreign Financial Instruments constraint. It is shown that if the restrictions on International Financial Instruments were relaxed, PFA would have been able to reach portfolios with considerably higher returns than the actual returns.

The average portfolio composition, return and variance of the system during the 10 years under analyses have been calculated in order to analyse if the PFA behaved efficiently given the regulated constraints on portfolios.

Figure II shows that the average system's portfolio located in the efficient part of the frontier. This result indicates that PFA have behaved efficiently even when the regulation they faced was not efficient. PFA obtained the best results they were allowed to.

Additionally, the same analysis has been done for the average portfolio of three of the most important PFA (Consolidar, Met and Arauca Bit). As Figure II shows, all of them search a portfolio allocation, which placed in the efficient part of the frontier, and at a small distance one from another and to the system 's average portfolio. During all the period of analysis, the portfolios were highly correlated between PFA, given the incentives the regulation set.

Finally, the system's average portfolio was efficient given the imposed restrictions, and yielded a monthly deviation of 5.29% and a monthly return of 0.92%.

Without the quantitative restrictions, PFA would have been able to obtain a monthly return of 2.35% facing the system's average portfolio risk level, or they would have been capable to maintain the historic return of 0.92%, but facing a deviation near to 1%, or less than one fifth the risk they actually assumed since the regulation.

In the hypothetic situation that an agent realized monthly contributions of $ 100 in 40 years, facing a deviation of 5.29%, he would have $ 57,993 in his personal account if his PFA had to face law's 24241 restrictions. By contrast, if the PFA were restricted just to an upper risk limit of 5.29%, the agent's personal capitalization account would reach an amount of $ 79,237 (37% higher than if the quantitative restrictions by instruments were imposed).

Figure I
Markowitz Frontiers, with binding constraints, lifting Foreign Financial Instruments restriction, and unconstrained

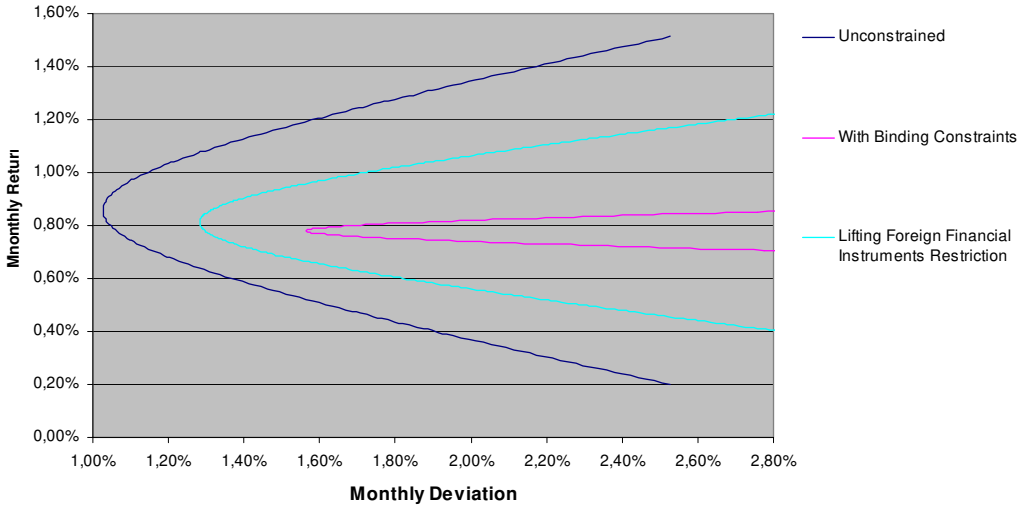


Figure II
The PFA Actual Portfolios in the Markowitz Constrained Frontier

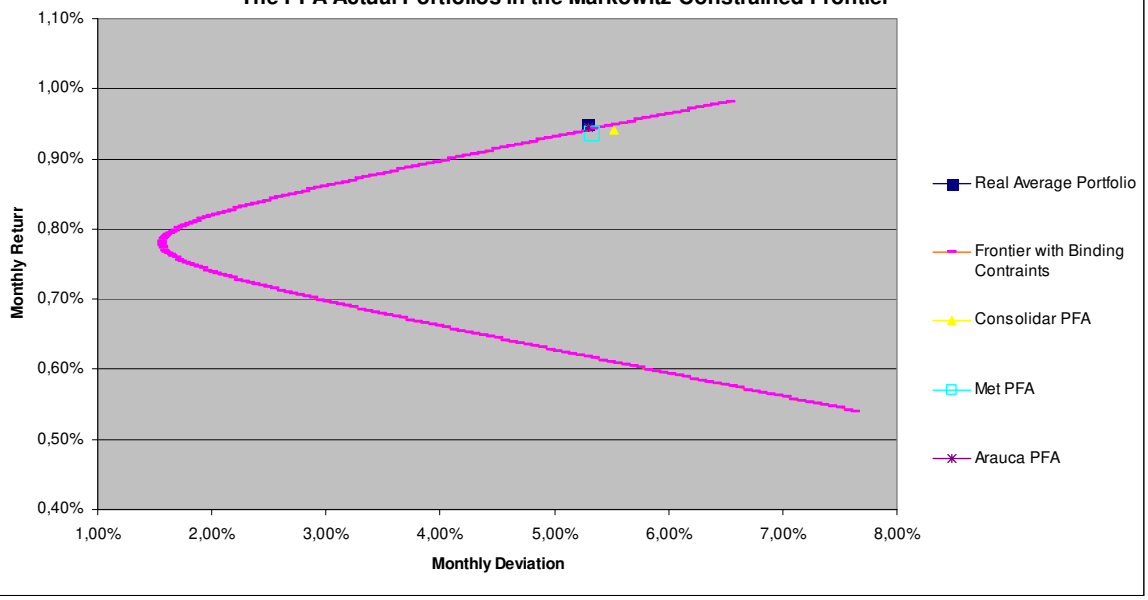
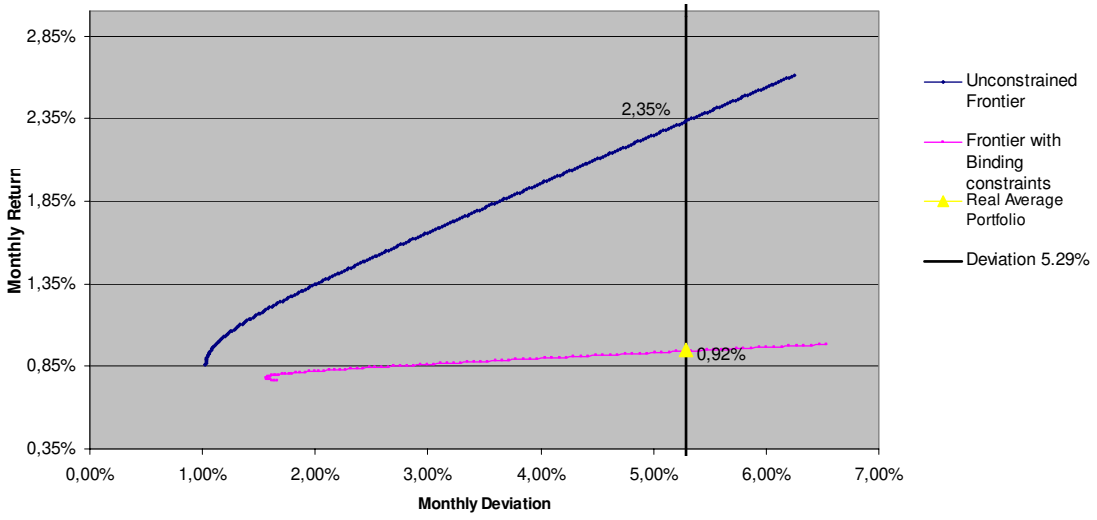


Figure III

The effect on the PFA returns lifting regulatory constraints (same risk)



VII. Final considerations.

The reform was launched fifteen years ago with the expectations of:

1. Mending bad vices of the previous Pay-As-You-Go regime (lax rules to qualify to benefits, low retirement age, few years of contribution demanded, several redistributions, benefit erosion due to manipulation of indexation formulas).
2. Solving the old system's deficit (which firstly required to consolidate pending debt with the pensioners, and to allocate tributary resources to finance the system).
3. Gaining efficiency and transparency.
4. Promoting savings, finance development and economic growth.

The goal 1 was partially addressed with some parametric reforms that remain (the age of retirement was delayed in five years, the minimum of year of contributions was risen from twenty to thirty, and the benefit formula in the pay-as-you-go-system is less generous than before, even that it was reformed in 2007, and that its actuarial basis is not clear). An index formula was recently approved. The redistributive potential of the system clearly fell, being bounded initially to a universal benefit and more recently to a minimum pension. Achieving the goal 2 was ever a matter of time, since necessarily it was a transition since the old pay-as-you-go remained with obligations but some resources were capitalized in the individual accounts of the fully funded scheme. The goal 3 was partially achieved. On transparency there are less controversies; the efficiency of the system is another issue, since it was expensive. The goal 4 is difficult to be judged in the context of this work. Since the long transition needed, it is not clear the promotion

of savings and its consequence, the economic growth. On finance development, the local market did not achieve the complexity and development than the Chilean market did. That phenomenon could be explained by the different maturity of the systems, and also by the fiscal developments in each country: Chile virtually eliminated its public debt during the last two decades, meanwhile Argentinean public debt went from US$ 60 billion in 1994 to US$ 140 billion in 2001. The crowding out was unavoidable.

During its life, the system accumulated resources and critics, but scarce beneficiaries since it was formed by young population, with an average age of around 40 years at the moment of its closure.

Critics could be classified in two strands: one more technical stated that the system was expensive in terms of commissions and much of its costs were seen as a waste of resources in a mimic of competition between PFAs; also the system exhibited low coverage since it demanded strict requirements in order to access to benefits when the labour market faced both strong unemployment and informal market growth in the 1990s[3]. The other strand is perhaps more ideological. It was supported by who always opposed to the regime: left wing politicians, labour unions, state bureaucracy and some intellectual circles. They criticised it by stating that the regime lacked of solidarity and reduced strongly the intra generational redistributions. This critics also argument about the low coverage the new system yielded.

The system was affected by different shocks before, during and after the 2002 default. Its portfolios were flooded with public debt securities whose valuations were manipulated by public policies. Although loses were dissimulated by the accountancy treatment, the system was strongly affected by the debt swap of 2005.

[3] In 2007 a generous contribution amnesty allowed more than one million new benefits (or a 25% growth in the number of pensioners).

A voluntary regime shift was attempted with the 2007 reform, but only 2 on 11 million workers have chosen to return to the public regime. Both financial markets and PFA portfolios were hit by 2008 financial crisis. Argentinean financial markets have been declining since the beginning of 2007 due in part to the politic interference in the National Institute of Statistics and Census. That organisation computes the Consumer Price Index, which indexes an important part of the public debt. When the private system was eliminated, the PFA portfolios had had already lost an important percentage of the value they had at the beginning of 2008. The elimination of the regime was argued to be a way to protect future pensioners of greater looses.

Can this happen in other regions? There are countries in Latin America, Eastern Europe and Central Asia with similar reforms. Those reforms can share some of the characteristics that made possible the events in Argentina. The possible reforms can have scant consensus in the population, they can also be cast in doubt and later reverted. The counter reform can include clauses that guarantee benefits as good as the private system's ones, or even better. Those clauses prevent legal actions that could stop the counter reforms, as it is hard to prove detriment to affiliate interest.

Since the facts we referred, we have four broad reflections. The first reflection of this investigation has to do with the achievement of political consensus and with the content of rational discussions. In a recent document of the Word Bank, Holzmann and Hinz (2005), emphasized the three stages sequence of construction of political consensus: commitment to the reforms, coalition development and implementation. The sequence is logical, but it has a dynamic arithmetic. The coalition support can weaken and could generate the reversion of commitment, coalition and implementation. The winners and losers balance generates a coalition. The classical rejection of these reforms come from the left wing politicians, labour unions and some groups of workers that may have a privileged treatment in the status quo (Huber and Stephens, 2000). A

wide consensus could be however hard to construct. Maybe the balance could be reached by a correct determination of winners and losers and the logical minimization of the latter ones. Since many winners are about to be born, and many losers still have lots of years to live, maybe the most reasonable solution (in order to obtain a durable agreement) would be to have a rational discussion evaluating efficiently and without exaggerations, the gains and loses. Afterwards, a reform where gains and loses take place in the margin is more likely to succeed. In Mexico, for instance, an option mechanism for the workers that were most affected by the reform, was implemented, letting them to choose between pre and post reform benefits, at the moment they retired. That mechanism removes any non-ideological opposition. New entrants to the labour market are mandated to register under the new rules. The transition is prolonged, there exist potentially undetermined future compromises, but they will still be in place, unless there existed a recognition bond that established them at the moment of the reform, and that would not suffer a future revision, as in Chile.

A reform with majority of abstract losers would more easily receive wide and permanent consensus. Parametric changes, as the raise in contribution years and retirement age have many potential losers, but those loses may be fairly shared in time, and that would augment the possibility of establishing a consensus. The rationality of the discussion has to do with reasonable demographic projections and objective financial simulations that satisfy different potential observers. Not casually it has been so difficult to obtain consensus in democratically mature and prosperous societies, with an extended old population. And when the consensus was obtained, it only referred to system parameters (Fox and Palmer, 2001)

The second reflection has to do with the objectives and instruments of the reform. During the reform some important but subordinated objectives were emphasized. To promote national

savings is not the principal function of a social security system[4], especially when the reform would generate public budget deficit for decades. In a *tabula rasa* context, that argument would have sense, but it does not when a Pay-As-You-Go system with millions of beneficiaries already exists (some of whom would continue to be so for several decades ahead) (Barr, 2006). Again, the Mexican solution seems reasonable. If the public regime is going to be underfinanced, then the private system has to cover 100% of the financial gap during its beginnings. This means that PFA portfolios should be allowed to be formed by 100% of public debt during its first years. That financial gap would shrink as the closed old system matures and eventually disappears. This is confirmed by Chile's experience. The financial market's growth would be achieved, as the state needs for debt issuing is reduced. Besides, a limit in the amount of debt that the State can place in the portfolios would produce a potential crowding out of the financial markets out of the system. That potential crowding out leaves two choices; or the system is mostly based in public debt during its first years, or the public sector would have to finance itself raising the interest rate of public debt and afterwards the specific risk as the debt increases and is each time harder to finance. It has been mentioned that foreign investment is an option to protect private savings of domestic risk. When the case of an emergent country is analysed, foreign assets are less volatile, but they would probably offer a lower rate return. During 2007 PFA were called to repatriate the money invested in foreign assets, in order to protect their portfolios of international volatility.

A third reflection has to do with the marketing and counter marketing of the reform. The reforms in Latin America were executed in a period of pro market thoughts, with right wing governments and with the support of credits given by international organisms that financed and

[4] The system could promote the *individual* savings, which also could be influenced by the tax system. The gross savings are a global result, which can be addressed by means of a stabilizing macroeconomic management. In fact, the transition period almost ensured that for many years there could not be expected net savings arising from the reform.

took part of the reform with technical aid (Holzmann and Hinz, 2005). Efficiency was mentioned as the *leit motiv* of the reform. Those strengths became weaknesses when left wing governments, with political anti market thoughts had taken place and when the international organisms which supported the reforms were questioned. Equity became the most important premise, over efficiency. An equilibrated vision should not associate the reform with certain political party, fraction or group, because it would be reversed when the opposition party, fraction or group take office.

The fourth reflection is related with some curious effects of the counter reform. The reform promised to make explicit public debt, to stop the sometimes hidden and abusive redistributions, to take more into account the importance of demography and the fiscal equilibrium. The reform moved towards an improvement in the system financing, to limit and to individualize benefits by means of more restrictive conditions to achieve them. The counter reform returns to solidarity rhetorical, where financial compromises attainment disappear from the radar, because the liabilities of the system are spaced in time. The average age of the private regime was near 40 years. Women will retire at 60 and men at 65, and their benefit in the public regime will be determined as the average of their last ten working years salary. It is important to notice that for this group, the benefit determination will start to be defined in an average time of 10 to 15 years ahead, and will end to define in an average time of 20 to 25 years ahead. As the reform made explicit the liabilities of the system, the counter reform hides them.

The previous reflections can be synthesized by stating that the problems are still there, they have never disappeared, but now there is one less instrument (i.e. a fully funded scheme) to face them.

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