On the design and performance of the Chilean pension auction model[*]

R. Harrison, M. Parada and M.Villena

UAI, UdeC and UAI

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Contenidos

Motivation

- It is well known that the continuing aging of the population represents a major threat of bankruptcy for many pay-as-you-go social security systems around the world.
- In this context, the Chilean system, which relies on funded contribution individual accounts, has been of great interest to the world since it began to be implemented in 1981.
- By the beginning of the 2000s, this industry **experienced a high level of concentration** and relatively high fees.

Motivation

- To address these issues, the **2008 pension fund reform introduced an auction mechanism** for new enrollees with the clear aim of introducing more competition into the system.
- In this work, we **analyze** the design and performance of the Chilean pension auction model from a **theoretical** and **empirical** perspective.
- Is is a **market design problem.**

Introduction

- Although in its **original design** the Chilean pension fund management industry was **expected to work competitively**,
    - free entry, free exit, and
    - management fees close to the marginal cost,

... the administration of pension funds in Chile experienced a remarkable **degree of concentration.**

Introduction

- Indeed, AFPs' market concentration **had increased markedly** since the mid-1990s as a result of mergers and acquisitions.
  - ...In fact, the number of AFPs declined **from 21 to only six** from 1994 to 2003

- This also generated a **debate** on whether the AFPs' **fees were too high because of low competition**, which was contrasted with the **significant profits** of the companies involved.

2008 Refom: The Auction

- As a result of the 2008 reform, Chile's pension system incorporates a **biennial bidding process for monopoly rights over new enrollees**
  - ... all workers who enter the labor force for the first time are enrolled in the AFP that wins the auction for that period.
- The introduction of auctions of groups of workers relies on the idea that competition for monopoly rights should substantially decrease costs and therefore market fees

2008 Refom: The Auction

- The Chilean government implemented the bidding process to increase competition among a small number of AFPs (also encouraging new entrants in the market), to reduce fees and to improve results for enrollees.
- The bidding rules ensure that the winner's fees are lower than the current lowest fee and cannot be increased in relation to the previous bid.

Auction and Some Market Design Elements
Object Design

1. Set of new enrollees.
2. Two years monopoly rights over these enrollees.
3. *i.e.* all workers who enter the labor force for the first time are enrolled in the AFP that wins the auction for that period of time. Exceptions apply.

Auction and Some Market Design Elements
Rules

1. The AFP that offers the lowest fee wins the auction.
2. The winning firm must charge the same fee to all its enrollees.
   - new auctioned enrollees and
   - current enrollees, stock, of the firm.
3. Any offer should be lower than the lowest current market fee.
4. In case of absence of offers, the set of new enrollees is assigned to the firm with the current lowest fee in the market.
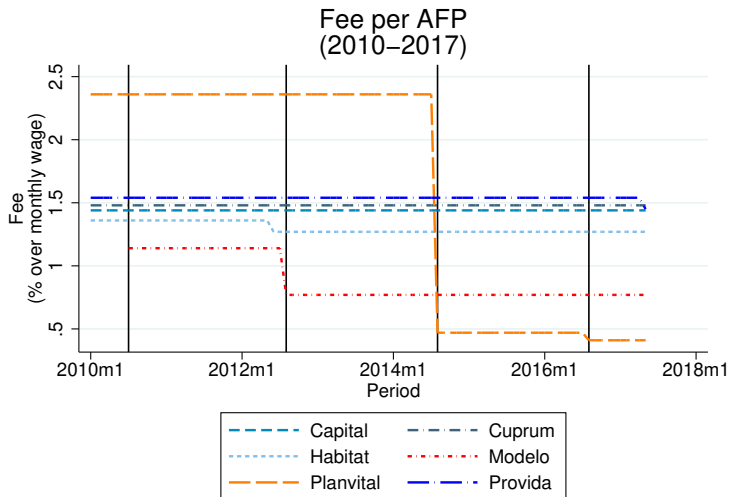
Auction Implementation: Stylized facts

Table 1: Auction processes, bidders, and bids

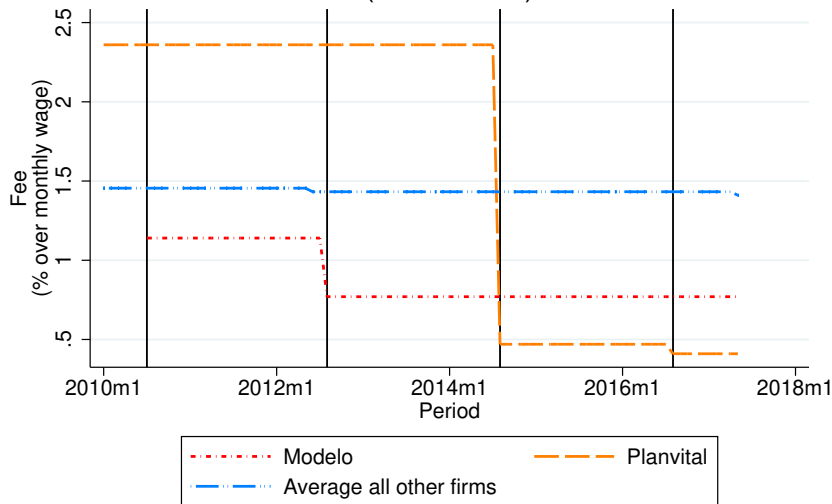| Auction	Adjudication date	Bidders	Bid
Auction 1	January 2010	Cuprum	1.32%
		Habitat	1.21%
		Modelo*	1.14%
		Planvital	1.19%
Auction 2	January 2012	Modelo*	0.77%
		Planvital	0.85%
		Regional	1.04%
Auction 3	January 2014	Modelo	0.72%
		Planvital*	0.47%
Auction 4	January 2016	Planvital*	0.41%
Auction 5	January 2018	No bids	0.41%

Note: (a) * indicates winning-auction firm. (b) The 24-month period starts in August of the year in which the auction was adjudicated. (c) When there are no bids, new enrollees are assigned to the cheapest AFP at the time they enter the market.
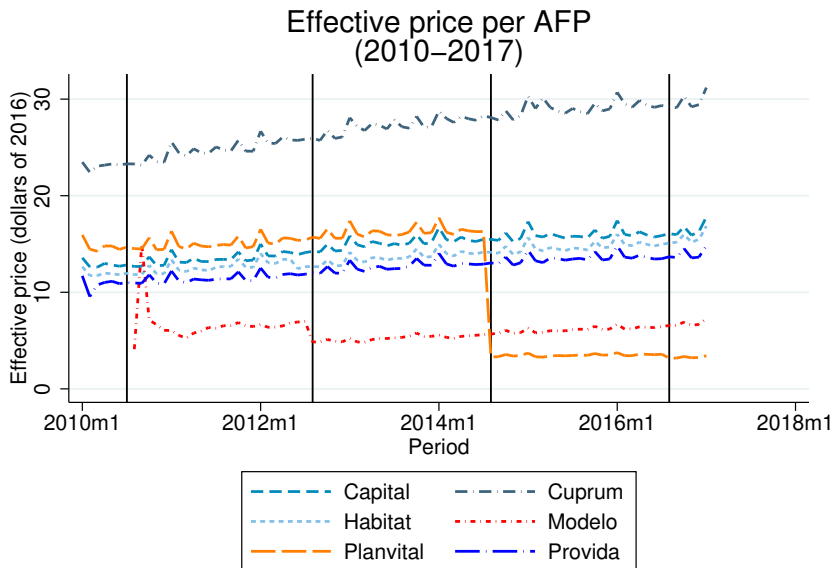
Auction Implementation: Stylized facts

Fee per AFP
(2010–2017)

Auction Implementation: Stylized facts

Auction–winning firms v/s average all other firms (2003–2017)

Auction Implementation: Stylized facts

Effective price per AFP
(2010–2017)
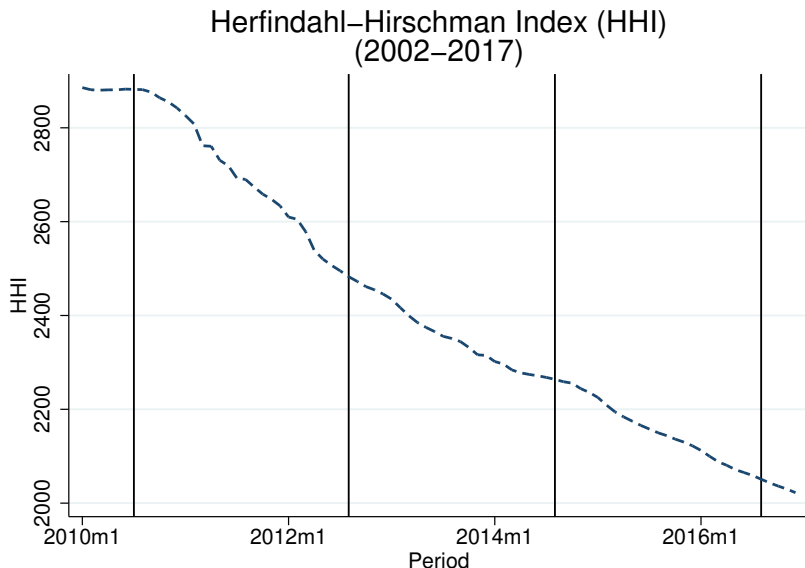
Auction Implementation: Stylized facts

Enrollee's market share per AFP
(2010–2017)

Auction Implementation: Stylized facts

Herfindahl–Hirschman Index (HHI)
(2002–2017)

Auction Implementation: Stylized facts

Annual costumer turnover over enrollment (%)
(2010−2016)
(at December of each year)
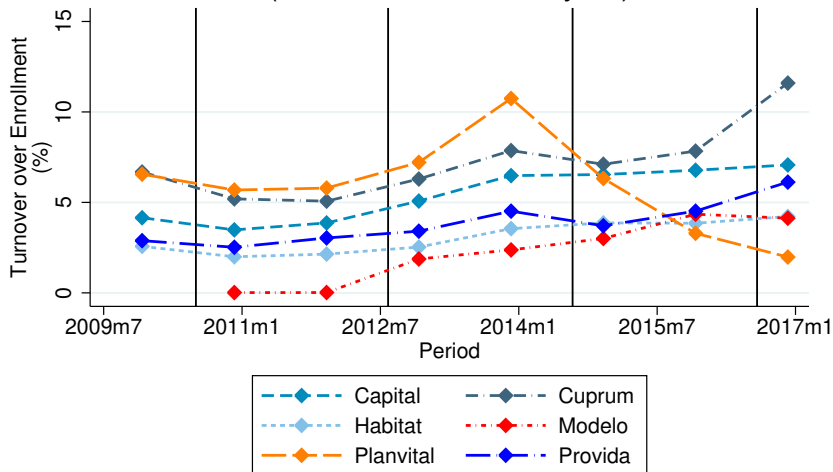
Theoretical evaluation of the auction model

- We will analyze the economic incentives of the different players to participate in auctions for monopoly rights over new enrollees.
- For simplicity, let us assume that the industry consists of an incumbent monopolist denoted by the subscript I.
- The incumbent is characterized by having a capacity sufficiently large (such that it can absorb any number of new enrollees) and constant marginal costs, $c_I > 0$, described as follows:

$$c_I = \begin{cases} c_S > 0, \text{ for the } \textit{stock} \text{ of enrollees} \\ c_N > 0 \text{ for } \textit{new} \text{ enrollees} \end{cases}$$

Theoretical evaluation of the auction model

The incumbent's profit function is represented by:

$$\Pi_I = \begin{cases} \pi_I = (p_I - c_S) \cdot D(p_I) + (p_I - c_N) \cdot \Delta D & \text{if } f_I < f_E \leq f^* \\ \hat{\pi}_I = (\hat{p}_I - c_S) \cdot D(\hat{p}_I) & \text{if } f_I > f_E \geq f^* \end{cases} \quad (1)$$

The entrant's bidding fee, the profit function of the entrant is:

$$\Pi_E = \begin{cases} \pi_E = (p_E - c_N) \cdot \Delta D & \text{if } f_E < f_I \leq f^* \\ 0 & \text{if } f_E > f_I \geq f^* \end{cases} \quad (2)$$

Then, the auction participation constraints for the incumbent and the entrant are, respectively:

$$\pi_I \geq \hat{\pi}_I \quad (3)$$

and

$$\pi_E \geq k \quad (4)$$

Theoretical evaluation of the auction model

$\rightarrow$ Some implications of above model:

- if entry barriers are low (meaning a small entry cost, k), the entrant always wins.
- this type of market design promotes segmentation, at least in the short run (*low cost AFP*)
- AFP Modelo and AFP Uno in the Chilean case.
- Low interest of incumbents participation $N \downarrow$

Empirical evaluation of the auction performance

$\rightarrow$ We find

- No significant effect of auctions on the fees charged by non-auction-winning firms.
- As expected, the most important effect driving lower market fees is explained by the new pricing mechanism for the disability and survival insurance introduced in July of 2009.
- Consumer's price-elasticity increased after the implementation of auctions.

Empirical evaluation of the auction performance

- From the analysis we corroborate that the fee transmission in the market has been small.
- This means that lowering fees to win monopoly rights over new enrollees has not affected the stock enrollees surplus.
- We also find that mark-ups have indeed decreased after the implementation of auctions meaning that competition have increased.
- Importantly, we find that consumers do care about other product characteristics and that they do not solely respond to prices.

Policy Recommendations

- An important conclusion of the theoretical and empirical analysis is the necessity to recognize the fact that stock and new enrollees are two different segments that should be treated differently in the auction design.

- In this context, a way to incentivize participation would be to allow fee discrimination between new and stock enrollees.

- This enables the incumbent to lower the fee to the stock enrollees but not at the same level than for new enrollees.

Policy Recommendations

- Policy Recommendation 1: To extend the horizon length of monopoly rights
- Policy Recommendation 2: To consider more than one winner per auction.
- Policy Recommendation 3: Price (fee) discrimination between new and old enrollees.

Conclusion

- We evaluated the design and performance of the Chilean pension system auction model for monopoly rights over new enrollees implemented in 2010.

- The design partially achieved its goals. In particular, one new firm enter into the market (AFP Modelo) and in general, a decrease in average fees were observed.

- We have found several shortcomings with respect to the participation and effects of the system. The odds of an incumbent bidding are extremely low.

- We propose a new auction (re) design, and asymmtric auction.