# Pension Fund Flows, Exchange Rates, and Covered Interest Rate Parity

Felipe Aldunate Universidad de los Andes

Zhi Da University of Notre Dame

Borja Larrain Pontificia Universidad Católica de Chile

> Clemens Sialm University of Texas at Austin

> > May 2024

#### Introduction

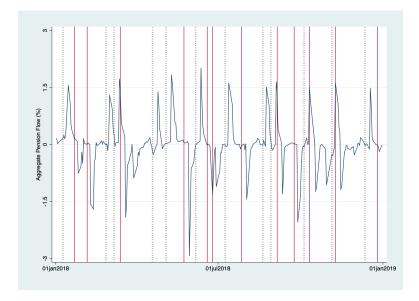
- ▶ In a world with imperfect financial markets, non-fundamental capital flows can have an impact on asset prices, exchange rates, and arbitrage relationships, such as the covered interest rate parity.
- ▶ It is an empirical challenge to disentangle informed from uninformed flows, and to separately identify their effects on asset prices.

Taking advantage of unique features of the Chilean pension system, we aim to understand the impact of non-fundamental shocks on currency markets.

#### Pension Fund Flows in Chile

- ▶ The Chilean pension system allows individual participants to reallocate their investments across funds with different risk levels.
  - ▶ The investment options range from mostly equity to mostly fixed income.
- ► The equity funds are internationally diversified.
  - Thus, reallocations require trading not just in equity and bond markets, but also in currency markets.
- ► A financial advisory firm called "Felices y Forrados" (FyF, "Happy and Loaded") makes frequent market timing recommendations.
  - ▶ Between 2011 and 2020, FyF sent out 82 reallocation recommendations.
  - These recommendations are largely uninformative, as they do not predict future returns.
  - ▶ The financial advisory firm serves as a coordination device among individual investors (Da, Larrain, Sialm, and Tessada (2018)).

# Fund Reallocations Towards Equity in 2018



#### Preview of the Results

- Pension investors make large adjustments to their asset allocations after market timing recommendations.
- ► Foreign exchange rates are very sensitive to these uninformed flows.
  - We estimate a price elasticity of 0.83 for the Chilean exchange rate.
- Using bank balance sheet and trading data, we confirm that bank's hedging demand, regulatory capital requirements and banks' risk bearing constraints generate deviations from covered interest rate parity (Du, Tepper, and Verdelhan (2018)).

#### Related Literature

- ► Inertia of Pension Plan Participants:
  - Benartzi and Thaler (2001), Madrian and Shea (2001), Choi, Laibson, Madrian, and Metrick (2002), Agnew, Balduzzi, and Sunden (2003), Duflo and Saez (2003), Huberman and Jiang (2006), Dahlquist and Martinez (2015), and Sialm, Starks, and Zhang (2015)
- Price Pressure in Different Asset Classes:
  - Hau and Rey (2006); Hau, Massa, and Peress (2010); Gabaix and Maggiori (2015); Da, Larrain, Sialm, and Tessada (2018); Broner, Martin, Pandolfi, and Williams (2021); Pandolfi and Williams (2019); Gabaix and Koijen (2021); Itskhoki and Mukhin (2021); Janson (2021); Bernhardt and Cuevas (2022); Pinto-Avalos, Bowe, and Hyde (2022)
- Deviations from Covered Interest Rate Parity:
  - Borio, McCauley, McGuire, and Sushko (2016 and 2018); Du, Tepper, and Verdelhan (2018); Cenedese, Della Corte, and Wang (2021); Du and Schreger (2021); Du, Hébert, and Huber (2021); Jiang, Krishnamurthy, and Lustig (2021); Wallen (2022); Hertrich and Nathan (2022); Keller (2023)

#### Overview

- ► Institutional Setting
- Data and Summary Statistics
- Pension Plan Flows
- ► Foreign Exchange Changes
- ► Banking Balances
- Covered Interest Rate Parity
- Conclusions

### Chilean Pension Plan System

- Chilean pensions were privatized in the 1980s through the creation of a private Defined Contribution (DC) pension system.
- ▶ 85% of Chilean working-age population participate in the system.
- ► The pension system holds assets worth US\$175 billion, which corresponds to 65% of Chilean GDP.
- ► The Chilean pension system received substantial attention in economics and finance research due to its early adoption of personal retirement accounts.
  - See Diamond and Veldes-Prieto (1994), Diamond (1996), Mitchell and Barreto (1997), Edwards (1998), Benartzi and Thaler (2001), Mitchell, Todd, and Bravo (2009), and Opazo, Raddatz, and Schmukler (2014)

#### Chilean Pension Plan System

- There are seven pension fund companies (AFPs) that offer fairly homogeneous investment funds:
  - Investment limits imposed by pension regulator
  - Relative under-performance is penalized
- Each AFP offers five funds:
  - ► Fund A: Mostly invested in globally-diversified equity

  - Fund E: Mostly invested in Chilean fixed income
- ▶ Investors can switch their entire investments at any time.
  - Fund exchanges are based on the prices two days after the reallocation request has been submitted.
  - Fund exchanges are implemented four days after the request has been submitted.
  - If switching requests exceed 5% of assets, then the exchanges are deferred on a first-come first-serve basis.

### Felices y Forrado (FyF)

- ► Felices y Forrados (FyF; translated as "happy and loaded") gave recommendations to its on-line subscribers about the best pension fund (i.e., A to E) to hold.
- ► After seeing the recommendation investors could request their AFP to implement the switch.
- ► The service was closed in June 2021 after Chilean regulators imposed restrictions and capital requirements for such financial advisory firms.

#### FyF

#### Descubre cómo mejorar tus ahorros en AFP

Te avisamos cuándo cambiarte de fondo para aumentar tus ahorros







Inscríbete ahora

#### Menos pérdida







#### Mejor calidad de vida



#### Data

- Institutional Setting
- **▶** Data and Summary Statistics
- Pension Plan Flows
- Foreign Exchange Changes
- ► Banking Balances
- Covered Interest Rate Parity
- Conclusions

### Data and Summary Statistics

- ▶ Pension Fund Data: Superintendencia de Pensiones (SP)
- ► Asset Allocation Recommendations: Felices y Forrados
- ► Market Data: Bloomberg
- Cross-Currency Basis: Central Bank of Chile
- ▶ Bank Balance Sheet Data: Comision Para el Mercado Financiero
- Trading Volume and Banking Imbalances Data: Central Bank of Chile

#### Characteristics of Chilean Pension Funds

	Fund A	Fund B	Fund C	Fund D	Fund E	Total
AUM average (million US\$)	27,587	29,099	65,187	28,289	24,783	174,945
AUM as % of GDP	10.3	10.9	24.4	10.6	9.2	65.4
AUM as % of total AUM in all funds	16.0	16.7	37.4	16.1	13.8	100.0
Investors total (thousands)	1,320	4,111	3,776	1,232	554	10,992
Investors (in %)	12.1	37.4	34.4	11.2	4.9	100.0
Total equity investment (% of total AUM)	78.4	58.2	37.9	17.8	3.6	39.8
Foreign investment (% of total AUM)	75.2	56.3	40.6	26.0	6.2	41.6
Foreign equity investment (% of total AUM)	61.2	41.2	24.6	12.1	2.3	28.1

### Drivers of FyF Recommendations

Net move		(1)	(2)	(3)	(4)	(5)
Fund A return week -1						
Fund A return week -2 (0.38) (0.25)  Fund E return week -1 (1.03) (0.19)  Fund E return week -2 (0.89) (0.19)  Fund A colatility week -1 (0.75) (0.89)  Fund A volatility week -1 (0.25) (0.25)  Fund A volatility week -2 (0.59) (0.17)  Fund E volatility week -2 (0.89) (0.25)  Fund A volatility week -1 (0.59) (0.89)  Fund E volatility week -2 (0.89) (0.25)  Fund E volatility week -2 (0.89) (0.25)  Fund E volatility week -1 (0.89) (0.89)  Fund E volatility week -1 (0.89) (0.89)  Fund E volatility week -1 (0.89) (0.25)  Fund E volatility week -1 (0.25) (0.29)  Copper price change week -1 (0.10) (0.89)  Copper price change week -2 (0.89) (0.17)  Copper price volatility week -1 (0.11) (0.11)  Copper price volatility week -2 (0.89) (0.89)  Fund Evolatility week -2 (0.89) (0.89)  Copper price volatility week -2 (0.89) (0.89)  Fund Evolatility week -2	F - 1 A - 1 - 1 - 1		Net move A	ivet move A	ivet move A	
Fund A return week -2	rund A return week -1					
Fund E return week -1 1.03 1.146 Fund E return week -2 0.09 1.081 Fund A volatility week -1 0.50 0.17 Fund A volatility week -2 0.50 0.17 Fund E volatility week -2 0.80 0.23 Fund A volatility week -2 0.80 0.23 Fund E volatility week -1 0.55 Fund E volatility week -1 0.05 Fund E volatility week -1 0.07 Fund E volatility week -1 0.09 Fund E volatility	F					
Fund Ereturn week -1  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.79)  (0.77)  (0.74)  (0.77)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)  (0.74)	Fund A return week -2					
Fund E return week -2 0.89 1.21 Fund A volatility week -1 0.59 Fund A volatility week -1 0.59 Fund E volatility week -1 0.55 Fund E volatility week -1 0.65 Fund E volatility week -1 0.60	F-15-1-1					
Fund Er eturn week -2 0.89 1.21	rund E return week -1					
Fund A volatility week -1  Fund A volatility week -2  (1 23)  Fund A volatility week -1  (1 25)  Fund E volatility week -1  (1 25)  (1 25)  (1 25)  (2 25)  (2 25)  (3 22)  FX rate change week -2  (3 22)  (4 22)  (5 25)  (6 22)  FX volatility week -1  (6 29)  FX volatility week -1  (6 29)  FX volatility week -2  (6 29)  FX volatility week -1  (6 29)  FX volatility week -2  (6 29)  (7 4)  (8 2)  (9 2)  FX volatility week -2  (9 2)  (9 3)  Copper price volatility week -1  (9 4)  (9 4)  (9 4)  (9 4)  FX volatility week -2  (9 4)  FX volatility week -2  (9 4)  FX volatility week -2  (9 5)  FX volatility week -2  (9 6)  FX volatility week -2  (9 7)  (9 8)  FX volatility week -2  (9 9)  (9 8)  FX volatility week -2  (9 9)  (9 9)  FX volatility week -1  (9 9)  (9 9)  FX volatility week -2  (9 9)  (9 9)  (9 9)  FX volatility week -2  (9 9)  (9 9)  (9 9)  FX volatility week -2  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)  (9 9)	F-15-1					
Fund A volatility week -1	rund E return week -2					
1.32   (1.46)   (1.47)   (1.48)   (1.48)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.49)   (1.	Front A redesilis, med. 1					
Fund A volatility week - 2 (1.29) (1.43)  Fix at change week - 1 (1.29) (1.43)  Fix at change week - 1 (1.29) (1.23) (1.23)  Fix at change week - 1 (1.29) (1.23) (1.23)  Fix at change week - 1 (1.29) (1.23) (1.29)  Fix at change week - 2 (1.23) (1.29)  Fix volatility week - 2 (1.29) (1.29)  Copper price change week - 2 (1.29) (1.29)  Copper price volatility wee	rulid A volatility week -1					
(1.43)   (1.43)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (1.45)   (	Ford A colores cond. 2					
Fund E volatility week - 1	rund A volatility week -2					
1.52   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.69)   (1.	For the state of the state of					
Fund E volutility week - 2 (0.98) (0.25)  FX rate change week - 1 (0.23) (0.22) (0.29)  FX rate change week - 2 (0.23) (0.22) (0.29)  FX rate change week - 2 (0.23) (0.29)  FX volatility week - 1 (0.05) (0.29)  FX volatility week - 1 (0.05) (0.98)  FX volatility week - 2 (0.99)  Copper price change week - 1 (0.99)  Copper price change week - 2 (0.99)  Copper price volatility week - 2 (0.10) (0.11)  Copper price volatility week - 2 (0.09) (0.10)  Copper price volatility week - 2 (0.09) (0.10)  Copper price volatility week - 2 (0.09) (0.10)  Copper price volatility week - 2 (0.09) (0.01)  Copper price volatility week - 2 (0.09) (0.09)  Copper price volatility week - 2 (0.09)	rund E volatility week -1					
Ry rate change week -1	Front E redstillter most. 2					
FX rate change week -1	rund E volatility week -2					
RY rate change week-2	FV 1	(0.96)	0.21			
FX rate change week -2	FA rate change week -1					
(0.22)	FV					
FX volatility week -1	FA rate change week -2					
R. volatility week -2	EV					
FX volatify week -2 '0.55' -0.58' Copper price change week -1 (0.99) -1.24' Copper price volatify week -2 (0.99) -1.24' Copper price volatify week -2 (0.90) -1.24' Copper price volatify week -2 (0.90) -1.24' Copper price volatify week -2 (0.62) -1.25' Copper price volatify week -1 (0.6	FA volatility week -1					
Copper price change week -1	FM 1.00					
Copper price change week -1	FA volatility week -2					
Copper price change week -2	C		(0.99)	0.17		
Copper price change week - 2	Copper price change week -1					
(0.10) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11) (0.11)	Conner mice change week 3					
Copper price volatility week -1         0.74°         0.93°           Copper price volatility week -2         0.08         0.042           Copper price volatility week -2         0.08         0.03           Log coutput differentials         (0.63)         0.07           Log money differentials         0.06         -0.05           Net foreign assets         0.06         -0.05           Interest rate differentials         (0.09)         (0.09)           Interest rate differentials         (0.04)         (0.04)           Foward discount In         4.03         4.6.7           Foward discount 3         0.02         0.02           Inflation differentials         0.00         0.01         0.03           Constant         -0.00         0.00         -0.01         0.03           Constant         -0.00         0.01         0.03         0.02           Observations         1964         1964         1886         1846         184	Copper price change week -2					
Copper price volatility week - 2	C					
Copper price volatility week-2         .008         .004           Log output differentials         (0.63)         0.07         0.07           Log output differentials         (0.08)         (0.08)         (0.08)           Met foreign assets         (0.09)         (0.09)         (0.09)           Net foreign assets         (0.04)         (0.01)         (0.01)           Interest rate differentials         (0.01)         (0.01)         (0.01)           Forward discount In         (1.09)         (0.01)         (0.01)           Forward discount 3m         (0.42)         (0.02)         (0.01)           Inflation differentials         (0.00)         (0.01)         (0.01)         (0.01)           Constant         (0.00)         (0.01)         (0.01)         (0.01)         (0.01)           Observations         1904         1904         1886         1886         1886         1886	Copper price volatility week -1					
(0.63)	Conner price redetility much 3					
Log output differentials         0.07         0.07           Log money differentials         (0.08)         (0.08)           Log money differentials         -0.06         -0.05           Home of the foreign assets         (0.04)         (0.04)           Interest rate differentials         -0.00         -0.01           Forward discount In         (0.01)         (0.01)           Forward discount 3m         (5.30)         (5.68)           Inflation differentials         -0.00         -0.00           Constant         -0.00         0.01         (0.01)           Constant         -0.00         0.01         (0.01)         (0.01)           Cobervations         1904         1904         1886         1886         1881         1844	copper price volatility week -2					
(0.88) (0.88) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89) (0.89)	Law autout differentials			(0.03)	0.07	
Log money differentials         -0.06         -0.05         -0.05         -0.05         -0.05         -0.05         (0.09)         (0.09)         (0.09)         (0.09)         (0.09)         (0.09)         (0.04)         (0.47)         (0.01)         (0.01)         (0.01)         (0.01)         (0.01)         (0.01)         (0.01)         (0.01)         -0.01         -0.01         -0.01         -0.01         -0.01         -0.01         -0.01         -0.01         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02         -0.02	Log output univerentials					
(0.09) (0.09)	1					
Net foreign assets	Log money differentials					
(0.49) (0.47)	Not foreign access					
Interest rate differentials   -0.00   -0.01	iver ioreign assers					
(01) (01) (01)	Interest rate differentials					
Foward discount Im	muca fate unierentials					
12 99   (12 82)	Convert discount 1m					
Forward discount 3n	rorward discount 1M					
(5.30) (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.98)   (5.	Convert discount 2m					
Inflation differentials	Forward discount 3M					
Constant -0.00 0.00 -0.01 (0.01) (0.01) (0.01) (0.01) (0.01) (0.02) (0.22) Observations 1904 1904 1886 1861 1844	Inflation differentials					
Constant         -0.00         0.00         -0.01         0.03         0.07           (0.01)         (0.01)         (0.01)         (0.01)         (0.21)         (0.22)           Observations         1904         1904         1886         1861         1844	illiation differentials					
(0.01)         (0.01)         (0.01)         (0.01)         (0.21)         (0.22)           Observations         1904         1904         1886         1861         1844	Constant	0.00	0.00	0.01		
Observations 1904 1904 1886 1861 1844	Constant					
	Observations					
	R <sup>2</sup>	0.01	0.00	1000	0.00	0.01

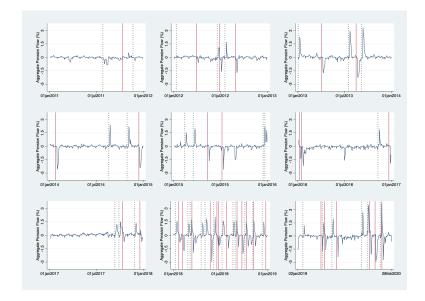
# Performance of FyF Relative to Buy-and-Hold Strategies

	Mean Annualized Return								
	FyF-A	t-stat	FyF-C	t-stat	FyF-E	t-stat	Trading days		
2011	11.44	(1.10)	6.22	(1.10)	0.79	(0.14)	104		
2012	2.60	(0.47)	4.11	(1.13)	5.32	(1.13)	248		
2013	-0.73	(-0.14)	1.52	(0.44)	1.43	(0.34)	249		
2014	-6.48	(-1.57)	-6.51***	(-2.97)	-4.54	(-1.31)	250		
2015	-2.17	(-0.33)	-0.59	(-0.19)	1.45	(0.37)	250		
2016	0.60	(0.09)	-1.77	(-0.60)	-3.62	(-1.61)	251		
2017	-11.47**	(-2.30)	-4.32*	(-1.75)	2.05	(0.84)	247		
2018	7.03	(1.16)	2.16	(0.72)	-1.82	(-0.54)	246		
2019	-0.55	(-0.10)	1.34	(0.32)	6.35	(0.86)	249		
2020	-1.69	(-0.37)	-0.85	(-0.42)	0.02	(0.02)	42		
All years	-0.15	(-0.07)	0.16	(0.12)	0.86	(0.56)	2136		

#### Overview

- Institutional Setting
- Data and Summary Statistics
- Pension Plan Flows
- ► Foreign Exchange Changes
- ► Banking Balances
- Covered Interest Rate Parity
- Conclusions

#### Pension Fund Reallocations from 2011 to 2020



#### Flow-Recommendation Relation

We estimate the impact of FyF on pension fund flows:

$$\textit{Flow}_{\textit{it}} = \sum_{\tau=1}^{10} \beta_{\tau} \textit{RecDay}_{\tau} + \sum_{j=1}^{5} \gamma_{j} \textit{Flow}_{\textit{it}-j} + \sum_{j=1}^{5} \delta_{j} \textit{Return}_{\textit{it}-j} + \epsilon_{\textit{it}}.$$

Flows are defined as:

$$Flow_{it} = \frac{AUM_{it}}{AUM_{it-1}} - \frac{P_{it}}{P_{it-1}}$$

► FyF Recommendations:

$$\textit{RecDay}_{ au} = egin{cases} \sum_{i=A}^{E} \lambda_{i,t-90} \Delta \omega_{i}^{\textit{FyF}} & \text{for days } au \in [1,10] \\ 0 & \text{otherwise} \end{cases}$$

#### Flow-Recommendation Relation

VARIABLES			Flow to	Fund:		
	Α	C	E	Α	C	E
	(1)	(2)	(3)	(4)	(5)	(6)
RecDay 1	-0.11	-0.05**	0.29*	0.08*	0.00	-0.13**
	(0.10)	(0.02)	(0.15)	(0.05)	(0.01)	(0.07)
RecDay 2	0.03	0.01	0.05	0.05	0.03	-0.13*
	(0.05)	(0.02)	(0.09)	(0.04)	(0.02)	(0.07)
RecDay 3	0.10**	0.00	-0.05	0.01	-0.01	-0.07
	(0.05)	(0.02)	(0.10)	(0.04)	(0.02)	(0.07)
RecDay 4	3.58***	0.22***	-6.19***	3.45***	0.21***	-6.14**
	(0.29)	(0.07)	(0.42)	(0.28)	(0.07)	(0.40)
RecDay 5	2.95***	0.18***	-5.36***	0.62***	0.05**	-0.90**
	(0.24)	(0.05)	(0.37)	(0.14)	(0.02)	(0.30)
RecDay 6	1.54***	0.10***	-2.90***	0.04	0.02	0.34
	(0.18)	(0.03)	(0.37)	(0.13)	(0.02)	(0.30)
RecDay 7	0.94***	0.07***	-1.73***	0.04	0.02	0.29
	(0.16)	(0.02)	(0.32)	(0.10)	(0.02)	(0.22)
RecDay 8	0.43***	0.03	-0.89***	-0.05	-0.01	0.17
	(0.12)	(0.02)	(0.26)	(0.08)	(0.02)	(0.15)
RecDay 9	0.20***	0.02	-0.47**	-0.07	0.02	0.30*
	(0.07)	(0.02)	(0.19)	(0.10)	(0.02)	(0.16)
RecDay 10	0.12**	0.01	-0.37**	-0.07	0.01	0.13
	(0.06)	(0.03)	(0.16)	(0.07)	(0.03)	(0.14)
Controls	no	no	no	yes	ves	yes
Observations	2277	2277	2277	2272	2272	2272
R-squared	0.631	0.041	0.597	0.786	0.320	0.810

Cumulative	

Cumulative evidence						
CUM [1-5]	6.54***	0.37***	-11.25***	4.20***	0.29***	-7.74***
p-value	0.00	0.00	0.00	0.00	0.00	0.00
CUM [6-10]	3.23***	0.23***	-6.37***	-0.11	0.05	1.23***
p-value	0.00	0.00	0.00	0.66	0.28	0.01

#### Overview

- Institutional Setting
- ▶ Data and Summary Statistics
- Pension Plan Flows
- ► Foreign Exchange Changes
- ► Banking Balances
- Covered Interest Rate Parity
- Conclusions

#### Foreign Exchange-Recommendation Relation

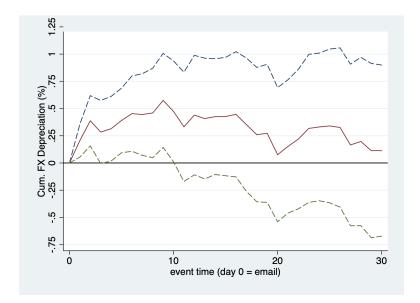
We estimate the relation between exchange rate changes and asset allocation recommendations:

$$\Delta \textit{FX}_t = \sum_{\tau=1}^{10} \beta_\tau \textit{RecDay}_\tau + \sum_{j=1}^{5} \delta_j \Delta \textit{FX}_{t-j} + \Gamma' \textit{X}_t + \xi_t.$$

- $ightharpoonup \Delta FX_t$  is the daily percentage change in the Chilean foreign exchange (CLP/USD).
- ► FyF Recommendations:

$$\mathit{RecDay}_{ au} = egin{cases} \sum_{i=A}^{E} \lambda_{i,t-90} \Delta \omega_{i}^{\mathit{FyF}} & ext{for days } au \in [1,10] \\ 0 & ext{otherwise} \end{cases}$$

# Exchange Rate Changes After Recommendations



# Foreign Exchange Changes After Recommendations

VARIABLES	$\Delta FX$	$\Delta FX$	$\Delta FX$	$\Delta FX$	$\Delta FX$	$\Delta FX$
	(1)	(2)	(3)	(4)	(5)	(6)
RecDay 1	0.45**	0.49***	0.45**	0.49***	0.48**	0.50***
	(0.21)	(0.18)	(0.21)	(0.19)	(0.21)	(0.19)
RecDay 2	0.54***	0.50***	0.52***	0.48***	0.49***	0.47***
	(0.17)	(0.17)	(0.18)	(0.17)	(0.18)	(0.17)
RecDay 3	-0.29	-0.28	-0.22	-0.20	-0.28	-0.24
	(0.17)	(0.17)	(0.18)	(0.17)	(0.19)	(0.18)
RecDay 4	0.09	0.07	0.06	0.05	0.05	0.03
•	(0.18)	(0.16)	(0.20)	(0.17)	(0.19)	(0.17)
RecDay 5	0.06	0.17	0.05	0.14	0.08	0.18
	(0.19)	(0.18)	(0.20)	(0.20)	(0.20)	(0.19)
Sample	All	All	F1m available	F1m available	F1m available	F1m available
Macro Controls	no	yes	no	yes	no	yes
Lagged DV	no	yes	no	no	yes	yes
Observations	2277	2181	2041	2041	2041	2041
R-squared	0.020	0.145	0.020	0.138	0.031	0.142
Cumulative evidence						
CUM [1-5]	0.85**	0.96**	0.87**	0.96**	0.81*	0.94**
p-value	0.04	0.01	0.05	0.02	0.06	0.02
CUM [6-10]	0.28	0.39	0.39	0.42	0.37	0.44
p-value	0.50	0.32	0.38	0.29	0.39	0.28

### Price Elasticity for Chilean Currency

- Average trade size represents 0.49% of Chilean money supply (M2) (i.e., \$27,587M x 0.0451 x 0.69 / \$175,000 M).
  - Average assets of fund A: \$27,587M
  - ► Average flow toward fund A: 4.45%
  - ▶ Average additional foreign currency investment in fund A: 69%
  - Average Chilean money supply (M2): \$175,000 M
- Average currency depreciation is 0.59%.
- Price elasticity is -0.83 (i.e., 0.48%/0.59%).
- ▶ The price elasticity for the Chilean currency is more negative than the price elasticity of Chilean equity securities of -0.45 (Da, Larrain, Sialm, and Tessada (2018)).

#### Overview

- Institutional Setting
- Data and Summary Statistics
- Pension Plan Flows
- Foreign Exchange Changes
- Banking Balances
- Covered Interest Rate Parity
- Conclusions

# Monthly Traded Volume in Spot and Forward Markets by Bank Counterparty in Response to FyF Recommendation

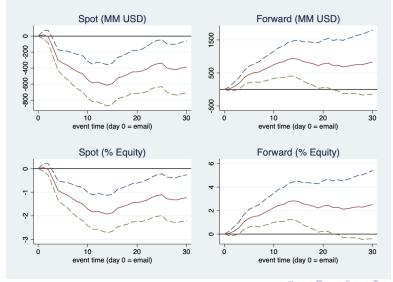




# Flows in the Spot and Forward Markets in Response to FyF Recommendations



# Daily Banking Sector Imbalances after FyF Recommendations



#### Overview

- Institutional Setting
- Data and Summary Statistics
- Pension Plan Flows
- ► Foreign Exchange Changes
- ► Banking Balances
- Covered Interest Rate Parity
- Conclusions

### Covered Interest Rate Parity

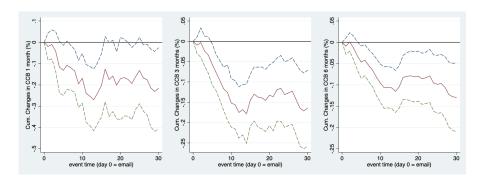
▶ The Covered Interest Rate Parity (CIP) is an arbitrage relation that states an investor should earn the same return if they invest in a risk-free deposit in the U.S. or if they invest in a risk-free deposit abroad and hedge the currency risk with forward contracts:

$$(1+r_{us})=(1+r_{chile}) imesrac{\mathcal{S}}{\mathcal{F}}$$

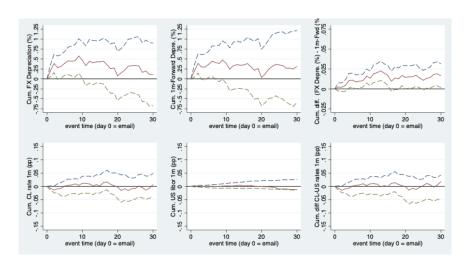
► The cross-currency basis (CCB) is measuring deviations from CIP:

$$CCB = (1 + r_{us}) - (1 + r_{chile}) \times \frac{S}{F}$$

# Cross Currency Basis after FyF Recommendations



## Decomposition of Cross-Currency Basis



# Cross-Currency Basis with Banking Interactions

VARIABLES	Δ <i>CCB</i> 1 <i>m</i> (1)	Δ <i>CCB</i> 3 <i>m</i> (2)	Δ <i>CCB</i> 6 <i>m</i> (3)
RecDay [1-10]	-0.06 (0.31)	-0.16 (0.15)	-0.12 (0.12)
RecDay [1-10] * Decrease in Capital Slack	-1.21** (0.50)	-0.52*** (0.20)	-0.28* (0.17)
Decrease in Capital Slack	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)
Controls	Yes	Yes	Yes
Observations	2004	2004	2004
R-squared	0.132	0.039	0.038

#### Conclusions

- Pension savers in Chile react strongly to market timing recommendations.
- Foreign exchange rates are very sensitive to non-fundamental fund flows.
  - We estimate a price elasticity of 0.83 for the Chilean exchange rate.
- Using bank balance sheet and trading data, we confirm that regulatory capital requirements and banks' risk bearing constraints generate deviations from covered interest rate parity.

#### Overview

- Institutional Setting
- Data and Summary Statistics
- Pension Plan Flows
- Foreign Exchange Changes
- ► Banking Balances
- Covered Interest Rate Parity
- Conclusions
- Appendix

# FyF Recommendations

27-Jul-11 100% E  12-Oct-17 50% A / 50% E  12-Oct-18 100% A  USD 28-Nov-17 100% A  USD 28-Nov-17 100% A  USD 28-Nov-17 100% A  USD 29-Nov-17 50% A / 50% E  11-Jan-12 100% B  USD 3-Jan-18 50% A / 50% E  12-Jan-18 50% A / 50% E  13-Jan-18 50% A / 50% E  13-Jan-18 50% A / 50% E  14-May-18 50% C / 50% E  15-Jan-18 50% A / 50% E  15-Dec-14 100% A  USD 2-Jan-18 50% A / 50% E  USD 2-Jan-18 50% A / 50% E  15-Dec-14 100% A  USD 2-Jan-18 50% A / 50% E  USD	Buying pressur
22-Nov-11 100% E	CLP
11-Jan-12 100% A USD 9-Jan-18 100% A 10% E CLP 22-Jan-18 50% A 150% E 19-Jun-12 100% B USD 5-Feb-18 100% E CLP 25-Feb-18 50% A 150% E 19-Jun-12 100% B USD 7-Mar-18 100% A 150% E 19-Jun-12 100% A USD 7-Mar-18 100% A 150% E 19-Jun-13 100% A USD 23-Mar-18 150% D 18-Mar-18 100% A 150% E 17-Jun-13 100% B USD 23-Mar-18 150% D 18-Mar-18 150% C 150% E 17-Jun-13 100% B USD 23-Mar-18 150% A 150% E 17-Jun-13 100% A USD 4-Mar-18 150% A 150% E 17-Jun-13 100% A USD 4-Mar-18 150% A 150% E 17-Jun-13 100% A USD 4-Mar-18 150% A 150% E 18-Jun-13 100% A USD 4-Mar-18 150% A 150% E 18-Jun-18 100% A 150% E 18-Jun-18 150% B 150% A 150% E 18-Jun-18 150% A 150% E 18-Jun-18 150% B 15	USD
29-Mar-12 100% E	CLP
19-Jun-12   100% A   USD   5-Feb-18   100% E	USD
28-Jun-12 100% E	CLP
19-Jul-12 100% A USD 7-Ma-18 100% A 2-Jan-13 100% E CLP 14-Ma-18 50% C 50% E CLP 14-Ma-18 50% A 50% E 3-Jan-13 100% B USD 23-Ma-18 15% D / 85% E 3-Jan-13 100% B USD 23-Ma-18 15% D / 85% E 17-Jul-13 100% A USD 23-Ma-18 100% A 50% E CLP 24-May-18 50% A 50% E CLP 24-Jan-14 100% E CLP 24-Jan-14 100% E CLP 24-Jan-14 100% E USD 25-Jan-18 60% A / 40% E 25-Jan-18 100% A USD 25-Jan-18 100% E USD 25-Jan-18 100% E USD 25-Jan-18 100% E USD 27-Jul-18 100% E USD 25-Jan-18 50% A / 50% E USD 25-Jan-19 50% A / 50% E USD 25-Jan-19 100% E USD 25-Jan-19	CLP
29-Aug.12 100% E CLP 14-Mar-18 50% C / 50% E 2.Jan-13 100% A USD 23-Mar-18 15% D/ 85% E 17-Jul-13 100% A USD 4-Mar-18 50% A / 50% E 16-Aug-13 100% B CLP 19-Apr-18 50% A / 50% E 16-Aug-13 100% B CLP 24-May-18 50% A / 50% E 6-Sep-13 100% A USD 6-Jul-18 60% A / 40% E CLP 19-Jul-18 20% A / 40% E CLP 19-Jul-18 20% A / 80% E 6-Mar-14 50% C / 50% E USD 25-Jul-18 100% E CLP 9-Jul-18 50% A / 50% E USD 25-Jul-18 100% E CLP 9-Jul-18 50% A / 50% E USD 25-Jul-18 100% E CLP 24-Mag-18 50% A / 50% E USD 25-Jul-18 100% E CLP 24-Mag-18 50% A / 50% E USD 25-Jul-18 100% E CLP 24-Jul-18 50% A / 50% E USD 25-Jul-18 100% E CLP 24-Jul-18 50% A / 50% E USD 25-Jul-18 50% A / 50% E USD 25-Ju	USD
2. Jan-13 100% A USD 23-Mar-18 15% D / 85% E 3-Apr-13 100% E CLP 19-Apr-18 50% A / 50% E 17-Jul-13 100% A USD 4-May-18 100% A 1050 4-May-18 100% A 1050 6-Jun-18 60% A / 40% E 24-Jan-14 100% E CLP 2-Jan-14 100% E CLP 19-Jul-18 20% A / 80% E 19-Aug-14 50% C / 50% E USD 25-Jun-18 100% E CLP 9-Jul-18 50% A / 50% E 19-Aug-14 100% E CLP 9-Jul-18 50% A / 50% E USD 25-Jun-18 100% A 1050 E CLP 9-Jul-18 50% A / 50% E 19-Aug-14 100% E CLP 9-Jul-18 50% A / 50% E 19-Aug-15 50% A / 50% E USD 25-Jun-18 50% A / 50% E USD 35-Sep-18 50% A / 50% E USD 35-Sep-18 50% A / 50% E USD 35-Sep-18 50% A / 50% E USD 28-Jul-15 50% A / 50% E USD 35-Sep-18 50% A / 50% E USD 30-Ct-15 50% A / 50% E USD 35-Sep-18 50% A / 50% E USD	USD
3-Apr.13 100% E	CLP
17-Jul 13 100% A USD 4-May-18 100% A CLP 24-May-18 100% A USD 6-Jun-18 60% A / 40% E 24-Jan-14 100% E CLP 24-Jan-14 100% E CLP 19-Jun-18 20% A / 80% E CLP 19-Jun-18 20% A / 80% E CLP 19-Jun-18 100% E USD 27-Jun-18 100% E USD 27-Jun-18 100% E USD 27-Jun-18 100% A / 50% E USD 27-Jun-18 100% E USD 28-Jun-18 100% A / 50% E USD 58-Jun-18 100% A / 50% E USD 58-Jun-18 100% A / 50% E USD 58-Jun-18 100% A / 50% E USD 8-Jun-18 100% A / 50% E USD 8-Jun-18 100% A / 50% E USD 8-Jun-18 100% B / 50% A / 50% E USD 8-Jun-18 100% E USD 8-Jun-19 100% E USD	CLP
16-Aug.13   100% E   CLP   24-May-18   50% C   50% E	USD
6-Sep-13 100% A USD 6-Jun-18 60% A / 40% E 24-Jan-14 100% E ULP 19-Jun-18 20% A / 80% E 105 25-Jun-18 100% E ULP 19-Jun-18 20% A / 50% E USD 25-Jun-18 100% E ULP 19-Jun-18 20% A / 50% E USD 27-Jun-18 100% E USD 27-Jun-18 100% A / 50% E USD 27-Jun-18 100% A / 50% E USD 27-Jun-18 100% A / 50% E USD 28-Jun-18 100% B / 50% A / 50% E USD 28-Jun-18 100% A / 50% E USD 28-Jun-18 100% B / 50% A / 50% E USD 28-Jun-18 100% B / 50% A / 50% E USD 28-Jun-18 100% B / 50% A / 50% E USD 28-Jun-18 100% B / 50% A / 50% E USD 28-Jun-18 100% B / 50% A / 50% E USD 28-Jun-18 100% E USD 28-Jun-19 100% E U	USD
24-Jan-14 100% E CLP 19-Jun-18 20% A / 80% E 6-Mar-14 50% C / 50% C / 50% E USD 25-Jun-18 100% E 0.50	CLP
24-Jan-14 100% E CLP 19-Jun-18 20% A / 80% E 6-Mar-14 50% C / 50% C / 50% E USD 25-Jun-18 100% E 0.50	USD
1Aug.14 100% E 1Aug.14 100% E 1Aug.14 100% A 1Aug.14 100% A 1Aug.14 100% B 1Bo-c.14 100% A 1Bo-c.14 100% B 1Bo-c.15 100%	CLP
19-Aug-14   50% A   50% E   USD   27-Jul-18   100% E   15-Dec-14   100% E   USD   20-Aug-18   50% A   50% E   15-Dec-14   100% E   USD   20-Aug-18   100% A   15-Dec-14   100% A   USD   20-Aug-18   100% A   15-Dec-18   100% A   15-Dec-18   100% A   15-Dec-18   100% E   15-Dec-18	CLP
30-Oct-14 100% Á USD 20-Aug-18 50% A / 50% E 12-Feb-15 50% A / 50% E USD 5-Sep-18 50% A / 50% E USD 5-Sep-18 50% A / 50% E USD 5-Sep-18 50% A / 50% E 13-May-15 50% A / 50% E USD 24-Sep-18 100% A USD 24-Sep-18 100% E USD 24-Sep-18 100% E USD 24-Sep-18 100% E USD 24-Sep-18 50% A / 50% E 12-Feb-15 50% A / 50% E USD 9-Nov-18 50% A / 50% E USD 9-N	USD
15-Dec.14   100% E   CLP   29-Aug-18   100% A   12-Feb-15   50% A   50% E   USD   5-5ep-18   50% A   50% E   18-Mar-15   100% A   USD   24-5ep-18   100% E   18-Mar-15   100% E   CLP   5-1-Ct-18   50% A   50% E   24-Aug-15   100% E   CLP   11-Oct-18   100% E   CLP   5-Nov-18   100% E   CLP   12-Dec.18   50% A   50% E   USD   29-Aug-16   100% E   CLP   12-Dec.18   50% A   50% E   USD   20-Dec.18   50% A   50% E   USD   25-Dec.18   40% C   60% E   USD   25-Dec.18   20% C   60% E   USD   25-Dec.18   20% C   60% E   25-Dec.18   20% C   20%	CLP
12-Feb.15   50% A   50% E   USD   5-Sep.18   50% A   50% E   13-May-15   50% A   50% E   USD   24-Sep.18   100% E   13-May-15   50% A   50% E   CLP   5-Oct-18   50% A   50% E   24-May-15   100% E   CLP   1-Oct-18   100% E   CLP   1-Oct-18   100% E   CLP   1-Oct-18   100% E   CLP   1-Oct-18   50% A   50% E   100% E   CLP   12-Dec-18   50% A   50% E   10-Dec-15   40% C   60% E   CLP   12-Dec-18   40% C   60% E   CLP   13-Jan-16   100% E   CLP   14-Jan-19   50% A   50% E   15-Jan-16   100% E   CLP   16-Apr-19   100% E   22-Pec-16   100% C   50% C   50% C   50% E   CLP   2-May-19   100% E   22-Pec-16   100% E   CLP   2-May-19	USD
18-Mar-15   100% A   USD   24-Sep-18   100% E	USD
18-Mar-15   100% A   USD   24-Sep-18   100% E	CLP
8-Jul-15 40% C / 60% E CLP 11-Oct-18 100% E 12-Oct-15 50% C / 50% E USD 0-Noc-18 50% A / 50% E 13-Oct-15 50% C / 50% E USD 0-Noc-18 100% E 16-Dec-15 50% A / 50% E USD 0-Noc-18 100% E 16-Dec-15 50% A / 50% E USD 26-Dec-18 40% C / 60% E 22-Dec-15 100% A USD 18-Jan-19 100% E 15-Jan-16 100% E CLP 24-Jan-19 50% A / 50% E 15-Jan-16 100% E CLP 24-Jan-19 50% A / 50% E 25-Reb-16 50% C / 50% E USD 23-Apr-19 50% A / 50% E 23-Apr-16 100% E CLP 24-Jan-19 50% B / 50% E 25-Apr-16 100% E USD 23-Apr-19 50% E 050% E 050 C / 50% E USD 23-Apr-19 50% E 050% E 050 C / 50% E USD 23-Apr-19 50% E 050% E 050 C / 50% E USD 24-Jan-19 50% E 050% E 050 C / 50% E 050 C	CLP
24-Aug.15 100% E	USD
13-Oct.15 50% C / 50% E USD 9-Mov.18 100% E CLP 2-Dec.15 50% A / 50% E USD 26-Dec.18 100% A / 50% E USD 26-Dec.18 50% A / 50% E USD 26-Dec.18 40% C / 60% E 22-Dec.15 100% A / 50% E USD 26-Dec.18 40% C / 60% E 15-Jan-16 100% E CLP 24-Jan-19 100% E CLP 16-Apr.19 100% E USD 23-Apr.10 50% A / 50% E USD 23-Apr.10 50% A / 50% E USD 23-Apr.10 50% A / 50% E USD 23-Apr.10 100% E USD 23-Apr.10 100% E USD 23-Apr.10 50% C / 50% E USD 23-Apr.10 50% A / 50% E	CLP
28-Oct-15 100% E	USD
16-Dec.15   50% A / 50% E   USD   26-Dec.18   40% C / 60% E   22-Dec.15   100% A   USD   18-Jan-19   100% E   15-Jan-16   100% E   CLP   24-Jan-19   100% E   CLP   16-Apr-19   100% E   CLP   27-Reb.16   50% A / 50% E   USD   23-Apr-19   50% A / 50% E   22-Apr-16   100% E   CLP   2-May-19   100% E   CL	CLP
22-Dec-15 100% A	USD
6-Jan-16 50% A / 50% E	CLP
15-Jan-16 100% E CLP 16-Apr-19 100% E 22-Feb-16 50% C / 50% E USD 23-Apr-19 50% A / 50% E 29-Apr-16 100% E CLP 2-May-19 100% E 6-Sep-16 50% C / 50% E USD 4-Jun-19 50% A / 50% E	CLP
22-Feb-16 50% C / 50% E USD 23-Ápr-19 50% A / 50% E 29-Apr-16 100% E CLP 2-May-19 100% E 6-Sep-16 50% C / 50% E USD 4-Jun-19 50% A / 50% E	USD
29-Apr-16 100% E CLP 2-May-19 100% E 6-Sep-16 50% C / 50% E USD 4-Jun-19 50% A / 50% E	CLP
6-Sep-16 50% C / 50% E USD 4-Jun-19 50% A / 50% E	USD
	CLP
	USD
	CLP
9-Nov-16 50% A / 50% E USD 16-Oct-19 50% A / 50% E	USD
22-Dec-16 100% E CLP 11-Nov-19 100% A	USD
13-Jul-17 50% C / 50% E USD 22-Nov-19 50% A / 50% E	CLP
10-Aug-17 100% E CLP 16-Dec-19 100% E	CLP
12-Sep-17 50% A / 50% E USD 9-Jan-20 50% A / 50% E	USD
28-Sep-17 100% A USD 16-Jan-20 100% E	CLP

#### **Example of Trade Pressure**

- The lagged allocations to international securities are as follows:
  - ▶ Fund A: 75% in international securities ( $\lambda_{A,t-90} = 0.75$ ),
  - ▶ Fund E: 5% in international securities ( $\lambda_{E,t-90} = 0.05$ ).
- ► FyF recommends to switch from investing 100% in Fund E to investing 50% Fund A and 50% Fund E:
  - $\Delta \omega_A^{FyF} = 0.5 0 = 0.5$ ,
  - $\Delta \omega_E^{FyF} = 0.5 1 = -0.5.$
- ► The price pressure variable is then as follows:

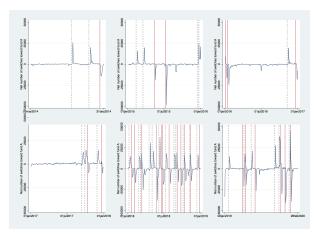
$$RecDay_{\tau} = \sum_{i=A}^{E} \lambda_{i,t-90} \Delta \omega_{i}^{FyF} = 0.75 \times 0.5 + 0.05 \times (-0.5) = 0.35.$$

# Flow-Recommendation Relation for Small AFP (Modelo)

VARIABLES	F	Flow to Fund:			5% Flow to Fund:		
	Α	C	E	Α	C	E	
	(1)	(2)	(3)	(4)	(5)	(6)	
RecDay 1	0.05	0.19	0.66**	0.00	-0.00	0.01	
	(0.24)	(0.26)	(0.33)	(0.00)	(0.00)	(0.01)	
RecDay 2	-0.42	-0.09	-0.73*	-0.00	-0.00	0.01	
	(0.33)	(0.31)	(0.40)	(0.00)	(0.00)	(0.01)	
RecDay 3	0.12	-0.01	-0.32	0.00	-0.00	-0.04	
	(0.30)	(0.24)	(0.39)	(0.00)	(0.00)	(0.05)	
RecDay 4	7.83***	0.29	-8.72***	0.33***	0.01	-0.71***	
	(0.62)	(0.40)	(0.73)	(0.09)	(0.01)	(0.13)	
RecDay 5	3.47***	-0.17	-5.56***	0.02	-0.00	-0.03	
	(0.50)	(0.26)	(0.53)	(0.02)	(0.00)	(0.03)	
RecDay 6	1.87***	0.70*	-3.17***	0.04	0.00	-0.10	
	(0.40)	(0.36)	(0.55)	(0.05)	(0.00)	(0.07)	
RecDay 7	1.28***	-0.06	-2.43***	0.00	0.00	-0.07**	
	(0.39)	(0.38)	(0.62)	(0.01)	(0.00)	(0.03)	
RecDay 8	0.72*	0.01	-1.05**	0.00	0.00	-0.03	
	(0.39)	(0.23)	(0.45)	(0.01)	(0.00)	(0.03)	
RecDay 9	0.35	0.47	-0.00	0.00	-0.00	-0.08**	
	(0.33)	(0.39)	(0.68)	(0.01)	(0.00)	(0.03)	
RecDay 10	0.12	0.10	-0.10	0.00	0.00	-0.06**	
	(0.28)	(0.17)	(0.33)	(0.01)	(0.00)	(0.02)	
Controls	yes	yes	ves	yes	yes	yes	
Observations	2248	2239	2164	2248	2239	2164	
R-squared	0.566	0.061	0.528	0.101	0.008	0.253	

Cumulative evidence						
CUM [1-5]	11.05***	0.20	-14.67***	0.35***	0.01	-0.77***
p-value	0.00	0.77	0.00	0.00	0.75	0.00
CUM [6-10]	4.33***	1.22*	-6.75***	0.05	0.00	-0.33**
p-value	0.00	0.09	0.00	0.35	0.50	0.02

# The FyF followers

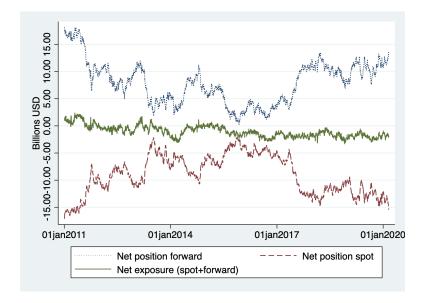


FyF consistent transfer	Number	Age (years)	Male (%)	Amount (USD)
	(1)	(2)	(3)	(4)
No	4,335,830	44.9	63.5	39,508
Yes	3,591,657	40.1	70.6	22,476
p-value		0.000	0.000	0.000

# Foreign Exchange Changes After Recommendations – Sample Splits

Sample	Buy Emails (1)	Sell Emails (2)	2011-15 (3)	2016-20 (4)	Q-end (5)	Not Q-end (6)	Free Float (7)
RecDay 1	0.84***	0.16	0.26	0.87**	0.66*	0.46**	0.50**
*	(0.30)	(0.22)	(0.20)	(0.34)	(0.39)	(0.21)	(0.20)
RecDay 2	0.27	0.64***	0.37*	0.64*	0.65**	0.42**	0.56***
	(0.28)	(0.20)	(0.20)	(0.34)	(0.32)	(0.19)	(0.18)
RecDay 3	-0.18	-0.32	-0.25	-0.22	-0.57**	-0.19	-0.27
	(0.28)	(0.23)	(0.17)	(0.38)	(0.29)	(0.20)	(0.20)
RecDay 4	-0.03	0.05	0.17	-0.25	0.28	-0.02	-0.05
	(0.31)	(0.15)	(0.15)	(0.36)	(0.53)	(0.18)	(0.18)
RecDay 5	-0.06	0.35	-0.06	0.63	0.07	0.17	0.13
,	(0.27)	(0.29)	(0.20)	(0.39)	(0.27)	(0.23)	(0.20)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1715	1741	1189	852	268	1773	1749
R-squared	0.145	0.149	0.199	0.107	0.198	0.140	0.125
Cumulative evidence							
CUM [1-5]	0.84	0.89*	0.48	1.68**	1.09	0.84*	0.87**
p-value	0.20	0.09	0.25	0.04	0.23	0.07	0.04
CUM [6-10]	0.60	0.17	0.18	1.11	0.17	0.43	0.48
p-value	0.30	0.77	0.70	0.18	0.94	0.30	0.23

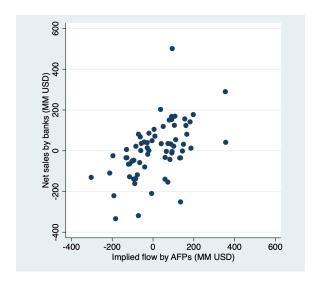
## Banks' Net Position in Forward and Spot Markets



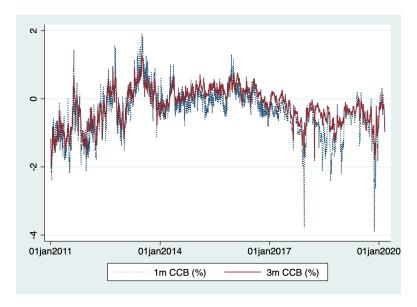
## Daily Banking Imbalances and Trading Volumes

		Banking Imbalances			Trading Volume		
	Spot	Deriv.	Spot + Deriv.	$\Delta$ Net Position	Spot	Deriv.	Spot + Deriv.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RecDay 1	0.31	0.09	0.39*	0.50**			
	(0.24)	(0.26)	(0.22)	(0.23)			
RecDay 2	-0.36*	0.37	0.10	0.11			
	(0.20)	(0.39)	(0.40)	(0.23)			
RecDay 3	-0.88***	0.54*	-0.31	0.41			
	(0.27)	(0.30)	(0.32)	(0.25)			
RecDay 4	-1.13***	1.06***	-0.16	0.19			
	(0.25)	(0.38)	(0.30)	(0.27)			
RecDay 5	-0.26	0.37	0.00	0.14			
	(0.30)	(0.35)	(0.33)	(0.26)			
abs(RecDay 1)					0.03	0.05	0.04
					(0.05)	(0.05)	(0.04)
abs(RecDay 2)					0.04	-0.03	-0.00
					(0.05)	(0.06)	(0.05)
abs(RecDay 3)					0.15**	0.02	0.06
					(0.07)	(0.07)	(0.05)
abs(RecDay 4)					0.16**	0.00	0.06
					(0.06)	(0.06)	(0.05)
abs(RecDay 5)					0.15**	0.08	0.11**
					(0.06)	(0.05)	(0.05)
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2029	2029	2029	2028	2041	2041	2041
R <sup>2</sup>	0.117	0.082	0.057	0.143	0.260	0.222	0.278
Cumulative evidence							
CUM [1-5]	-2.32***	2.43***	0.02	1.34**	0.54***	0.12	0.27**
p-value	0.00	0.0	0.98	0.02	0.00	0.38	0.02
CUM [6-10]	-1.40***	1.34	0.15	-0.13	-0.09	0.18	0.06
p-value ,	0.01	0.12	0.85	0.85	0.60	0.28	0.64

# Daily Spot Trading by the Banking Sector and 10-Day Implied Pension Flows



# Cross-Currency Basis for Chile



# Cross-Currency Basis – Sample Splits

Sample	Buy Emails	Sell Emails	2011-15	2016-20	Q-end	Not Q-end	Free Float
Sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RecDay 1	-0.09	-0.04	0.08	-0.28**	-0.04	-0.07	-0.07
	(0.15)	(80.0)	(0.09)	(0.14)	(0.15)	(0.10)	(0.09)
RecDay 2	-0.16*	0.12	-0.03	0.04	0.05	-0.04	-0.01
•	(0.09)	(80.0)	(0.09)	(0.08)	(0.18)	(0.06)	(0.07)
RecDay 3	-0.10	0.05	-0.02	-0.07	-0.00	-0.04	-0.10
	(0.13)	(0.09)	(0.11)	(0.12)	(0.21)	(80.0)	(0.08)
RecDay 4	-0.27*	-0.07	-0.06	-0.38**	-0.65***	-0.09	-0.20**
	(0.15)	(0.09)	(0.09)	(0.15)	(0.16)	(0.09)	(0.09)
RecDay 5	-0.22**	-0.08	-0.20***	-0.01	-0.28**	-0.12*	-0.16**
	(0.11)	(0.05)	(0.07)	(0.10)	(0.13)	(0.06)	(0.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1715	1741	1189	852	268	1773	1749
R-squared	0.141	0.155	0.206	0.077	0.211	0.138	0.157
Cumulative evidence							
CUM [1-5]	-0.85***	-0.03	-0.22	-0.70**	-0.92**	-0.36**	-0.54***
p-value	0.00	0.89	0.26	0.01	0.03	0.04	0.00
CUM [6-10]	0.20	-0.73***	-0.25	-0.27	0.70	-0.25	-0.16
p-value	0.46	0.01	0.23	0.36	0.22	0.20	0.38

# Decomposition of Cross-Currency Basis

VARIABLES	∆CCB1m	∆CCB1m	ΔFwdPremium	ΔFwdPremium	∆Rates	ΔRates
	(1)	(2)	(3)	(4)	(5)	(6)
RecDay 1	-0.05	-0.07	-0.07	-0.10	0.02**	0.02**
	(0.09)	(80.0)	(0.09)	(0.08)	(0.01)	(0.01)
RecDay 2	0.04	-0.02	0.02	-0.05	0.02	0.02
	(0.06)	(0.06)	(0.07)	(0.06)	(0.01)	(0.01)
RecDay 3	-0.03	-0.04	-0.02	-0.03	-0.02	-0.01
	(0.07)	(0.08)	(0.07)	(0.08)	(0.01)	(0.02)
RecDay 4	-0.18**	-0.18**	-0.18**	-0.19**	0.01	0.01
	(80.0)	(0.09)	(80.0)	(80.0)	(0.02)	(0.02)
RecDay 5	-0.12**	-0.14**	-0.12**	-0.14**	-0.00	-0.01
	(0.06)	(0.06)	(0.06)	(0.06)	(0.02)	(0.02)
Sample	F 1m available					
Controls	No	Yes	No	Yes	No	Yes
Observations	2041	2041	2041	2041	2041	2041
R-squared	0.056	0.131	0.057	0.146	0.009	0.024
Cumulative evidence						
CUM [1-5]	-0.34**	-0.44***	-0.37**	-0.51***	0.03	0.03
p-value	0.04	0.01	0.02	0.00	0.32	0.38
CUM [6-10]	-0.21	-0.31	-0.17	-0.27	-0.03	-0.03
p-value	0.28	0.09	0.33	0.12	0.38	0.43