Lesson 23

Arbitrage betting

Arbitrage: General idea

Buy low in one market.

Sell high in another market.

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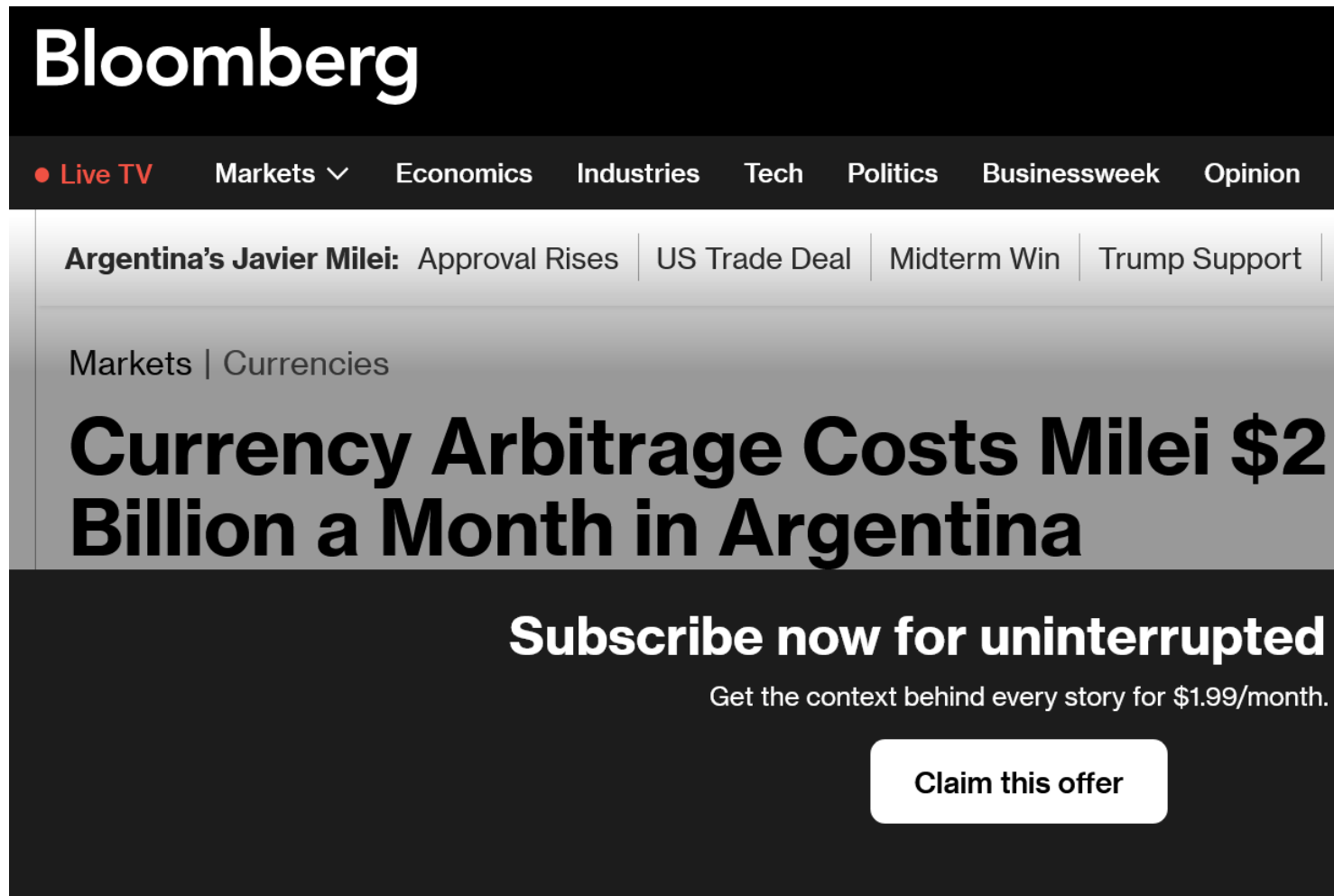**Example 1.** Argentina peso historically has high inflation.

United States Dollar / Argentine Peso
1,456.50 ⬆ +24,750.73% (+1,450.64) MAX
Dec 3 6:41:09 AM UTC

Arbitrage: General idea

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Sell high in another market.

Example 1. To stop this, Milei artificially props up the peso:

https://archive.ph/7RHMG

Bloomberg

● Live TV Markets ∨ Economics Industries Tech Politics Businessweek Opinion

Argentina's Javier Milei: Approval Rises | US Trade Deal | Midterm Win | Trump Support

Markets | Currencies

Currency Arbitrage Costs Milei $2 Billion a Month in Argentina

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Step 2. Sell the still "worthy" peso at banks to buy dollars.

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Step 3: ???

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Step 3: ???

Step 4: Profit

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Example 2. Sports Betting: Eagles vs Chargers Game.

- Betting Site 1 underestimates Eagles and gives too-good-to-be-true payout. → You bet on this.

- Betting Site 2 underestimates Chargers and gives too-good-to-be-true payout. → You bet on this.

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Example 2. Sports Betting: Eagles vs Chargers Game.

- Betting Site 1 underestimates Eagles and gives too-good-to-be-true payout. → You bet on this.

- Betting Site 2 underestimates Chargers and gives too-good-to-be-true payout. → You bet on this.

- Either Eagles or Chargers win ➔ You win more than you pay in.

Sports betting: Decimal Odds

Payout (includes your stake) = Decimal Odds × Bet

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Example. If you bet $100 on a game with decimal odds of 3.00, then your payout is

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Example. If you bet $100 on a game with decimal odds of 3.00, then your payout is

$$\text{Payout} = 3.00 \times \$100 = \$300$$

$$\text{Your gain:} \quad \$300 - \$100 = \$200$$

Arbitrage: Math

	Eagles to Win	Chargers to Win	Best Odds	Implied Probability
Betting Site 1	1.20	6.00		
Betting Site 2	1.50	2.80		

Step 1. Find big odd & take both sides.

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Step 2. Invert odds to get probability the site thinks the outcome happens.

Arbitrage: Math

	Eagles to Win	Chargers to Win	Best Odds	Implied Probability
Betting Site 1	1.20	**6.00**	**6.00**	**1/6.00**
Betting Site 2	**1.50**	2.80	**1.50**	**1/1.50**

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Arbitrage: Math

	Eagles to Win	Chargers to Win	Best Odds	Implied Probability
Betting Site 1	1.20	**6.00**	**6.00**	**0.167**
Betting Site 2	**1.50**	2.80	**1.50**	**0.667**

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Step 3. Arbitrage if probabilities add to < 1 (Betting Sites collectively underestimate & undervalue chosen outcomes). Otherwise, don't bet.

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				0.834 < 1

Step 1. Find big odd & take both sides.

Step 2. Invert odds to get probability the site thinks the outcome happens.

Step 3. Arbitrage if probabilities add to < 1.

Step 4. Bet:

$\frac{0.167}{0.834}$ = 20% of wealth on Chargers to Win on Betting Site 1, and

80% of wealth on Eagles to Win on Betting Site 2.

Arbitrage Risks

- Sports betting websites ("sportsbooks") limit your account if you are too successful. Your effective salary will then be less than minimum wage.

- Odds change before you respond.

Other logistics for today

Next meeting (December 8 or 9)

- Review for final exam aka quiz make-ups/retakes
- Go over more homework questions.

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Three assignments will be dropped.

This meeting (now)

Course survey (15 minutes) first, then homework questions

https://rowan.campuslabs.com/eval-home/