Interest Rates, Competition, and Complexity: Demand and Supply of Retail Financial Products

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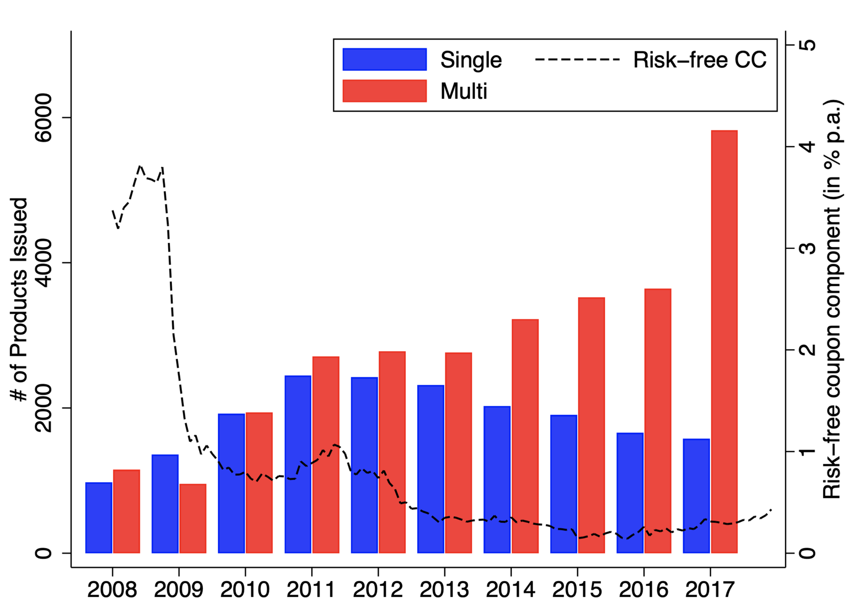
Low Rates and Financial Innovation

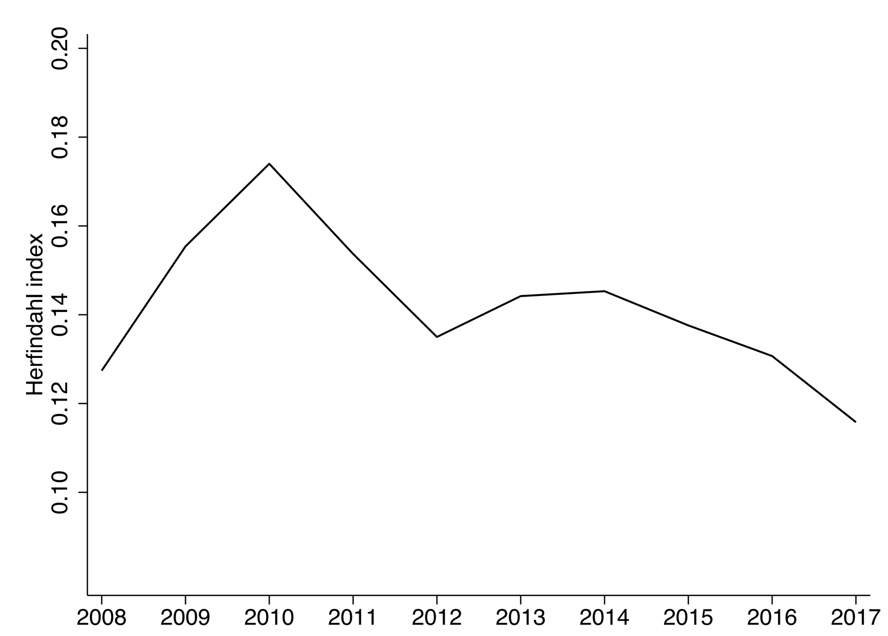
- Low interest rates linked to important demand and supply effects in retail financial markets:
  - Yield-seeking behavior among retail investors (Lian et al., 2019)
  - Increase in complex products catered to households (Célérier and Vallée, 2017)
  - However, interplay between demand and supply largely unexplored
- Opposing views on financial innovation:
  - Beneficial (Ross, 1976; Calvet et al., 2022)
  - Exploitative (Henderson and Pearson, 2011; Li et al., 2018; Vokata, 2021)
  - Risk-generating (Gennaioli et al., 2012)
- Opposing views on interaction between strategic obfuscation and competition:
  - Competition increases complexity to shield rents (Carlin, 2009)
  - Competition decreases gains from obfuscation (Carlin and Manso, 2011)

Barrier Reverse Convertibles in Switzerland

- Sharp increase in outstanding volume of most popular retail investment product, so-called Barrier Reverse Convertibles (BRCs), during times of low interest rates
- Shift from Single-Underlying BRCs (Single) to Multi-Underlying BRCs (Multi) paralleled by decreasing market concentration

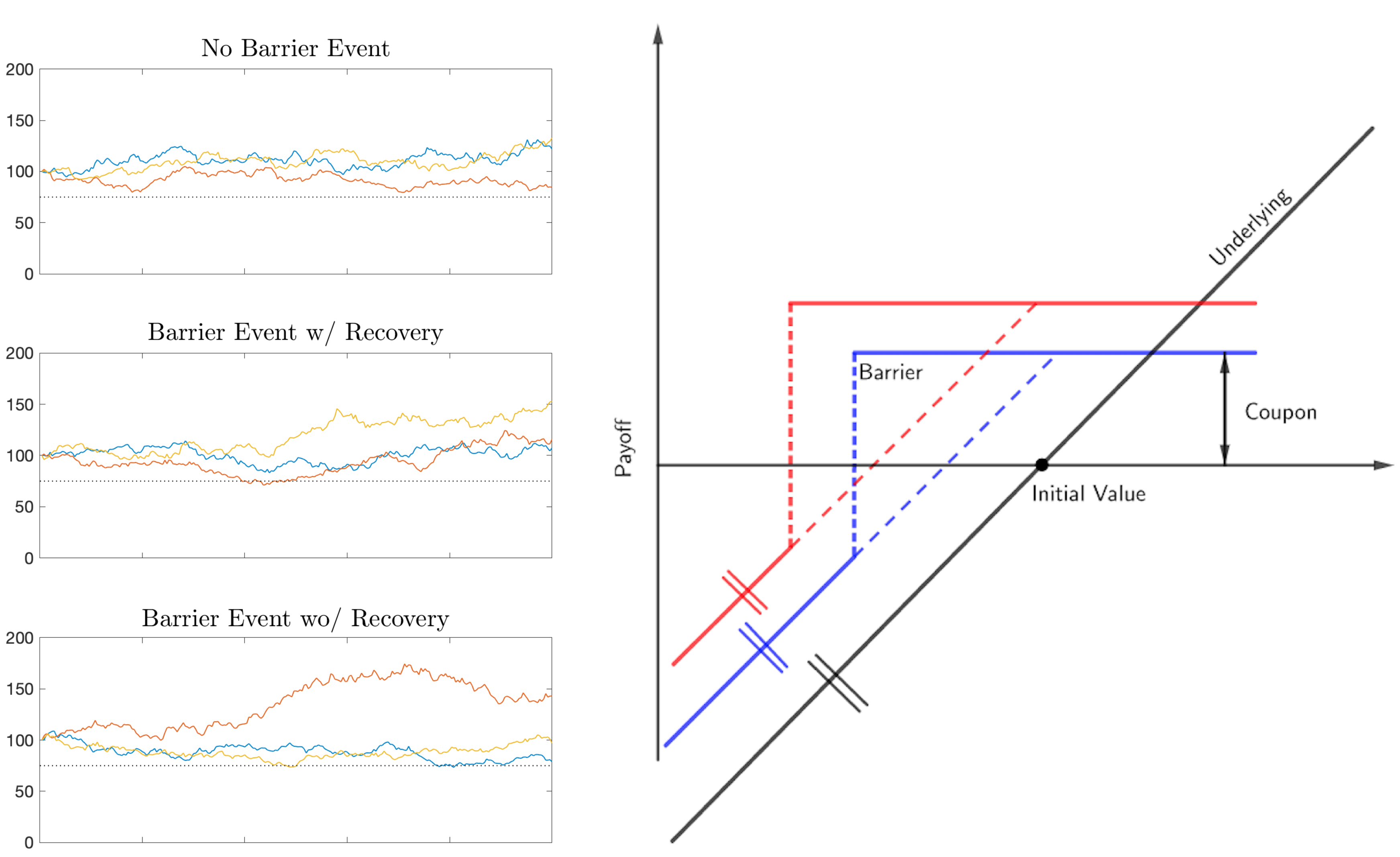


Interest rate and BRC issuance



HH-index BRC market

- Multis are **more complex** than Singles as their **worst-of** payoff profile depends on the worst performing underlying out of multiple rather than just one stock



Single-underlying vs. multi-underlying BRC

- Therefore, Multis generally offer higher coupons & security buffers (lower barriers) than Singles
- This is illustrated here with two exemplary BRCs (issued on May 26, 2011, by same issuer)
- Whether these adjustments are sufficient to compensate for Multis' higher risk is an empirical question

	Single	Multi
ISIN	CH0127927132	CH0125720794
Underlying(s)	Microsoft (MSFT)	Microsoft (MSFT) General Electric (GE) Newmont Mining (NEM)
Coupon (p.a.)	7.57%	10.88%
Barrier	80%	65%
Time to maturity	386 days	358 days
Estimated issuer margin	1.45%	4.97%

Why Switzerland?

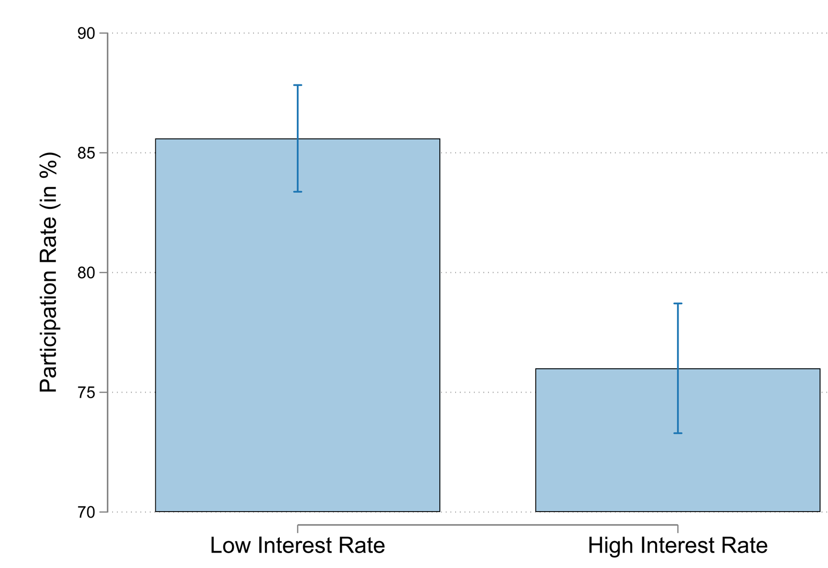
Ideal "sandbox" to study both demand drivers and competitive supply responses:

- Large and established market (considered the "birthplace" of structured products)
- Changing market shares and high degree of competition
- Decade of record-low (negative) interest rates (SNB's devaluation of CHF/EUR)

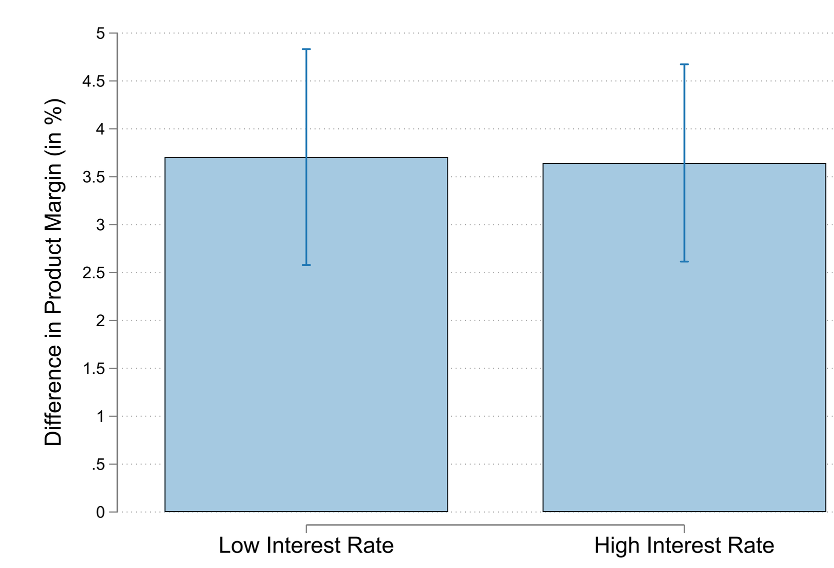
The Role of Interest Rates (Demand Side)

We run an incentivized laboratory experiment with finance students:

- Low interest rates *equally* increase subjects willingness to invest in both Singles and Multis
- Subjects overvalue Multis compared to Singles because they *underestimate* complex, i.e., multi-dimensional down-side risk
- Level of interest rate does *not* affect relative willingness to pay for Multis over Singles, thus demand effects driven by low rates are unable to explain sharp increase in product complexity



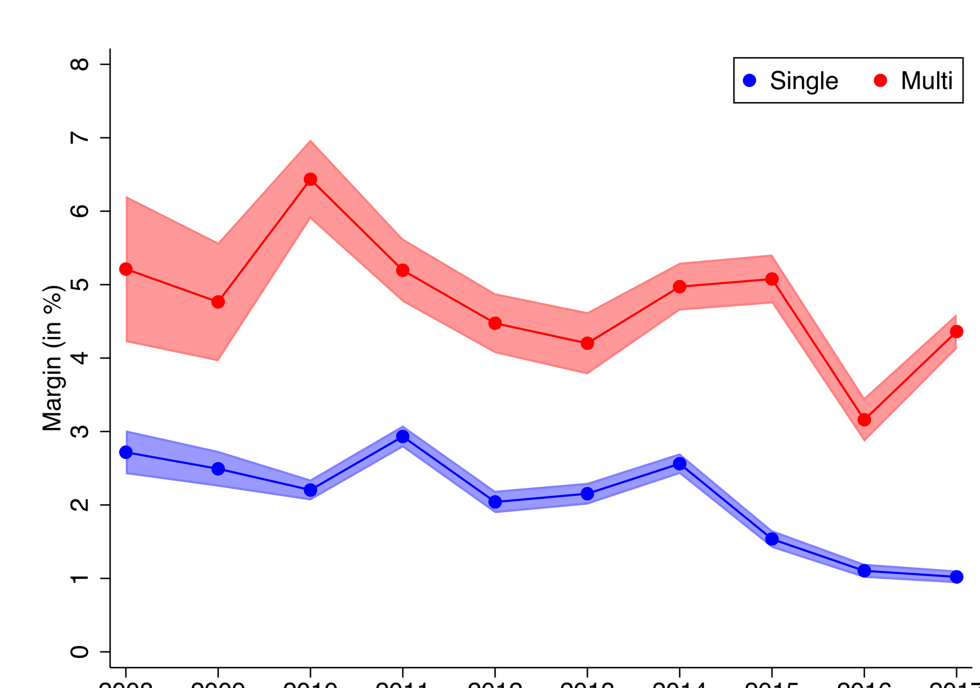
Investment propensity



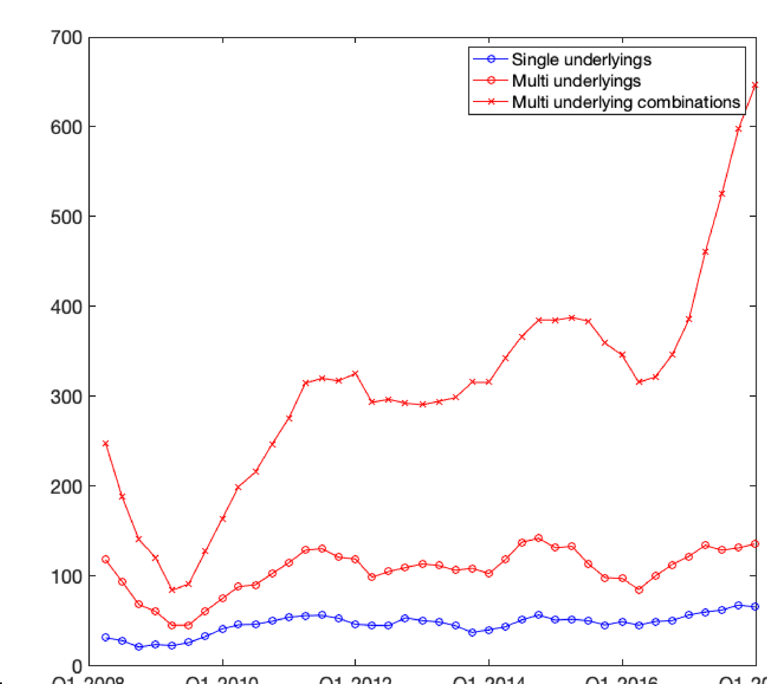
Difference in product margins: Multi−Single

Competition and Complexity (Supply Side)

- We apply option pricing to estimate issuer margins (markups) at product issuance
- Controlling for granular fixed effects, average margins are 3.5 pp. higher for Multis than for Singles
- Margins decrease over time; however, this effect is much stronger for Singles (approx. 22bp per year, p-value < 0.001) than for Multis (approx. 6bp per year, p-value $= 0.611$)



Margins over time

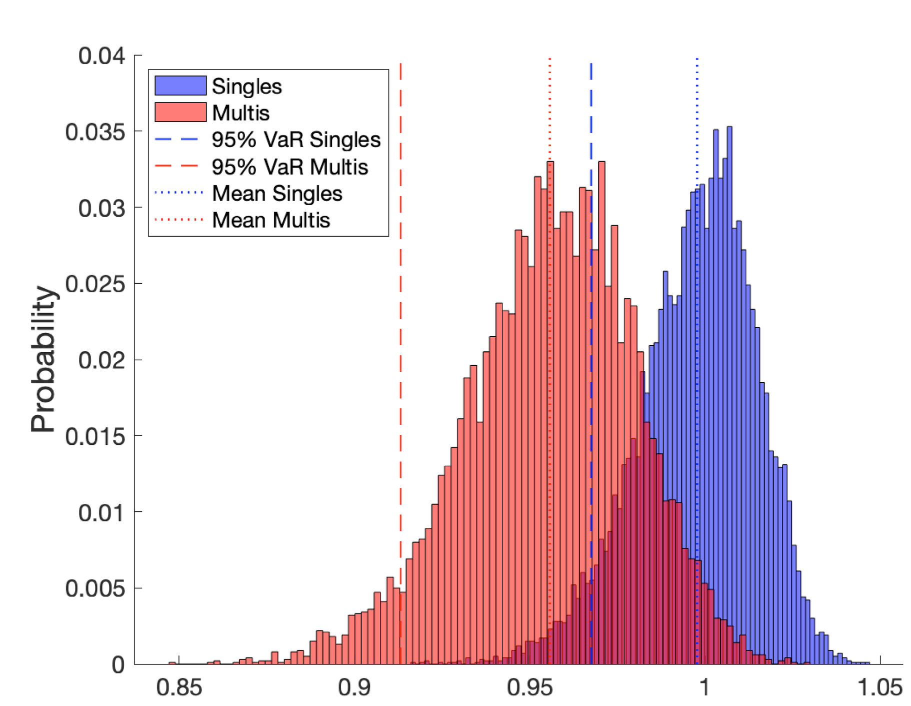


# of new underlyings (combinations)

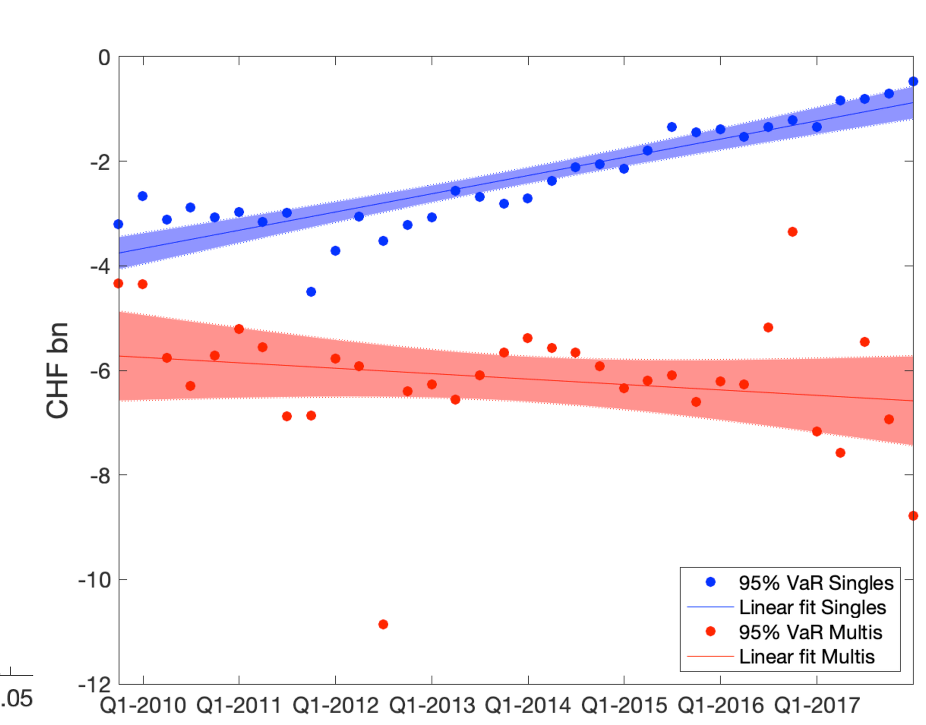
- With sufficient complexity *and* insufficient investor learning, product differentiation increases search costs and reduces price pressure from competition
- Over time, we see a consistent increase in the variety of underlying combinations offered by Multis

Implications: Excessive Risk-Taking

- We simulate product payoffs accounting for underlyings' expected returns (Fama and French, 2015), implied volatilities, and their market correlation: Singles *first-order* (!) dominate Multis
- Volume-weighted Multi VaR (in abs terms) increases over time; in 2017, annualized Multi 95% VaR = CHF 8.78bn ≈ 13.2% of Swiss households' wealth losses during Global Financial Crisis



Portfolio simulations conditional on market



Volume-weighted Value-at-Risk estimates

Summary

- Low (real) interest rates create room for exploitative financial innovation, which, via competition-driven increase in product complexity, leads to uncompensated risk-taking by households
- Reason to be worried? In November 2019, structured investment products received approval of Swiss pension supervisory authority