Swing pricing and flow dynamics in light of the Covid-19 crisis

Antoine Baena[1,2] Thomas Garcia [1]

[1]Banque de France [2]Paris-Dauphine University PSL

Our focus: swing pricing

Funds are exposed to a liquidity risk:

- Open-end investment funds engage in a liquidity transformation as they offer shares that are more liquid than their assets. This liquidity gap could lead to a dilution of portfolios.

A solution: swing pricing?

- **Objective:** to reduce the risk of dilution by adjusting the net asset value (NAV) in order to reallocate the liquidity cost from remaining to transacting investors.
- **Context:** Swing pricing was authorized in France in 2014. Its use is promoted by the major financial institutions to strengthen the financial stability of this sector.
- **Different types:** the activation and intensity of swing pricing depend on conditions set by funds' managers.
- **Potential drawback**: perverse effects due to negative reaction of investors (stigma effect)?

Our study

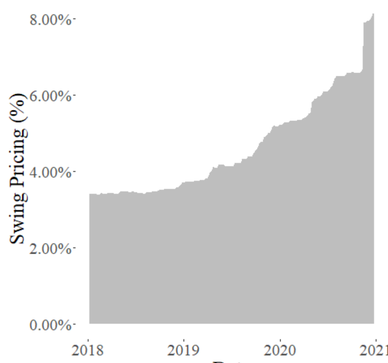
Research question: What is the impact of swing pricing implementation on funds' flow dynamics in light of the COVID-19 crisis?

- First study to analyze swing pricing implementation on an exhaustive sample (3000+ funds, 80% of all French OEFs) by using a natural language processing algorithm on prospectuses.
- We evaluate the impact of swing pricing on flow dynamics during a very severe market stress, the COVID-19 crisis.
- We identify the implementation of swing pricing (ability to use this tool): analysis of the impact of the implementation modalities + capacity to identify a potential stigma effect.

Data description

Swing pricing: identified by mandatory disclosure in prospectuses.

Acceleration of swing pricing implementation from 3.4% to 8.1% in three years.



Two constraints impact the activation and intensity of swing pricing:

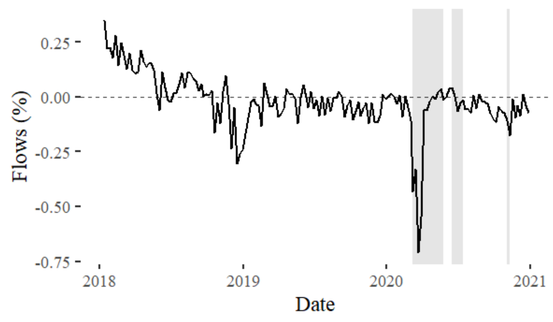
- **Partial swing pricing**: NAV adjustment only if flows exceed a threshold.
- **Swing factor cap**: upper bond on the NAV adjustment.

		Partial swing pricing	
		No	Yes
Swing factor cap	No	6.6% (0)	60.4% (1)
	Yes	1.1% (1)	31.9% (2)

Continuous variable **"Constraints"**: number of constraints on the swing pricing mechanism.

Flows and systemic stress:

- **Main dependent variable**: weekly flows per fund share divided by previous total net assets (black line).
- **Systemic stress**: VIX CAC40 > 90th percentile (grey area).



Immediate impact of swing pricing introduction on flows level

Motivation:

Investors could react to swing pricing introduction through different channels, e.g.:

- Belief updating on ex-ante liquidity risk (signal of higher vulnerability) that can cause outflows.
- Fund structure change can cause inflows from investors seeking stable funds or outflows due to a potential increase of the total redemption cost.

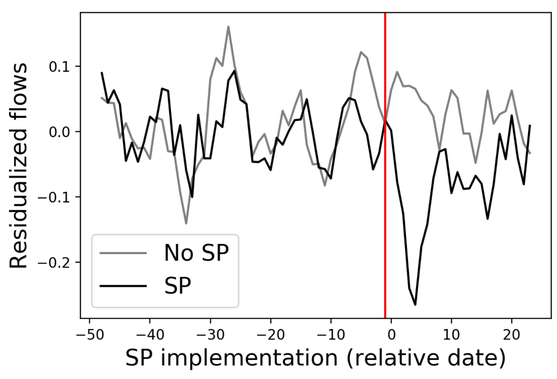
Methodology:

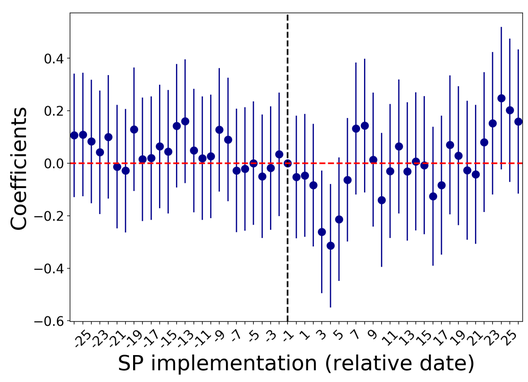
- Matching: each fund implementing swing pricing (treated group) is matched with a comparable fund without swing pricing (control group) on granular portfolio and investors characteristics.
- Event-study staggered differences-in-difference following two steps:

Step 1 : $Flows_{i,t} \sim \beta_0 + \beta_1 Controls_{i,t-1} + \beta_2 \phi_t + \epsilon_{i,t}$ (Computation of residualized flows)

Step 2 : $\tilde{\epsilon}_{i,t} \sim \beta_0 + \beta_1 Treated_i + \sum_{t=-26}^{26} (\beta_{2t} RelativeDate_t + \boldsymbol{\beta_{3t} RelativeDate_t \times Treated_i}) + \epsilon_{i,t}$

Results: flight of investors following swing pricing pricing introduction $\Longrightarrow$ Stigma-effect.





Impact of swing pricing on flows volatility during systemic stress

Motivation:

- More stable flows decrease portfolio restructuring costs and thus potential dilution, especially during systemic stress.
- Swing pricing provides an incentive for investors to limit transaction costs and thus to spread large redemptions and subscriptions over multiple NAV.

Methodology:

- Specification 1: differentiation of effects under systemic stress and standard conditions:

$$Vol_{i,t} \sim \beta_0 + \beta_1 Stress_t + \boldsymbol{\beta_2 SP_{i,t}} + \boldsymbol{\beta_3 (SP_{i,t} \times Stress_t)} + \beta_4 Controls_{i,t-1} + \beta_5 \gamma_i + \beta_6 \phi_t + \epsilon_{i,t}$$

- Specification 2: Influence of constraints on the sensitivity of flow volatility to swing pricing estimated with a triple interaction term ($SP_{i,t} \times Stress_t \times Constraints_{i,t}$).

Results:

- Weak evidence that swing pricing decreases flow volatility.
- However, without constraints, we find a stabilizing impact of swing pricing.

	Volatility			
	(1)	(2)	(3)	(4)
(selected coefficients)				
SP x Stress	−0.005	−0.151*	−0.299**	−0.432***
	(0.057)	(0.081)	(0.121)	(0.131)
SP x Stress x Constraints	-	-	0.241**	0.247**
			(0.098)	(0.098)
Matching	No	Yes	No	Yes

Impact of swing pricing and flows level during systemic stress

Motivation:

- Swing pricing ability to address redemption pressures during stress market conditions could limit potential dilutions.

Methodology:

- Same specifications as for volatility with consecutively $Flows$, $Negative\ Flows$ (i.e. $Flows \times \mathbb{1}_{Flows<0}$) and $Positive\ Flows$ (i.e. $Flows \times \mathbb{1}_{Flows>0}$) as explained variables.

Results:

- Swing pricing decreases net flows during systemic stress ... by reducing inflows.
- However, without constraints, swing pricing has a stabilizing impact by reducing redemptions ... but also reducing subscriptions $\Longrightarrow$ stigma effect.

	Flows	Neg. flows	Pos. flows	Flows	Neg. flows	Pos. flows
	(1)	(2)	(3)	(4)	(5)	(6)
(selected coefficients)						
SP x Stress	−0.126**	0.011	−0.137***	0.100	0.207**	−0.106*
	(0.061)	(0.048)	(0.036)	(0.108)	(0.087)	(0.064)
SP x Stress x Constraints	-	-	-	−0.186**	−0.161**	−0.025
				(0.085)	(0.069)	(0.048)
Note:						matched dataset

Impact of swing pricing on flows level during idiosyncratic stress

Motivation:

- Idiosyncratic stress: periods of previous large outflows and liquidity strain $\Longrightarrow$ high restructuring cost.
- Funds are vulnerable during these periods: large unexpected outflows faced in situations of a deteriorated liquidity generate a dilution risk.
- How swing pricing reduces the sensitivity of net flows to idiosyncratic stress?
- High restructuring cost $\Longrightarrow$ partial swing pricing activated and high expected swing factor.

Methodology:

- Triple interaction model to explain $Flows$: $Outflows_{i,t-1} \times Illiquidity_{i,t-1} \times SP_{i,t}$
- Constraints: we isolate the impact of implementing a capped swing pricing as partial swing pricing is supposed to be activated.

Results:

- Swing pricing increases flows during idiosyncratic stress.
  - The effect strengthens for swing pricing without cap.
  - The effect vanishes for capped swing pricing.

	Flows		
	(1)	(2)	(3)
(selected coefficient)			
SP × Outflows × Illiquidity	0.200**	0.305***	−0.094
	(0.098)	(0.098)	(0.162)
Type of SP	All	W/O cap	W/ cap

Conclusions

As currently implemented in France, swing pricing does not improve financial stability, as:

- Constraints on the activation and intensity of swing pricing decrease its stabilizing effect.
- Swing pricing is associated with a stigma effect that reduce inflows during turmoil and generate immediate outflows.

However, we highlight a strong stabilizing effect in the absence of constraints or when the portfolio restructuring cost is high.

$\Longrightarrow$ The calibration of swing pricing thus appears crucial to enable the stabilizing effect to offset the stigma effect.

Policy recommendations:

- Favor the implementation of unconstrained swing pricing.
- Mandatory implementation of swing pricing to avoid the stigma effect.

References

[1] Agostino Capponi, Paul Glasserman, and Marko Weber. Swing pricing for mutual funds: Breaking the feedback loop between fire sales and fund redemptions. *Management Science*, 2020.

[2] Dunhong Jin, Marcin Kacperczyk, Bige Kahraman, and Felix Suntheim. Swing pricing and fragility in open-end mutual funds. *The Review of Financial Studies*, 35(1):1–50, 2022.

[3] Ulf Lewrick and Jochen F Schanz. Is the price right? swing pricing and investor redemptions. *BIS Working Papers*, 664, 2017.

Working paper

thomas.garcia@banque-france.fr; antoine.baena@banque-france.fr