In victory or defeat: Consumption responses to wealth shocks

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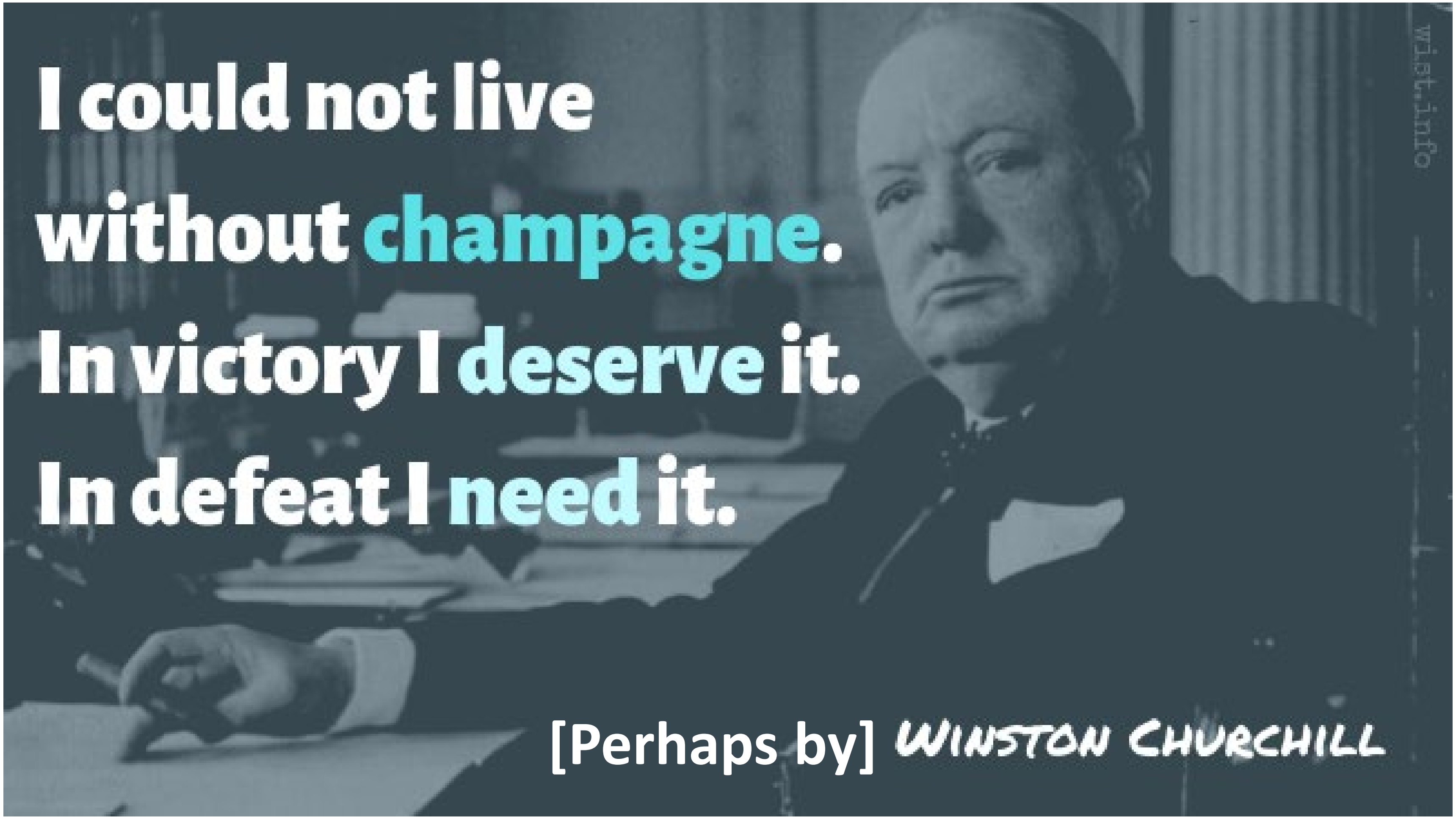
ABFER 2024 Singapore

The title

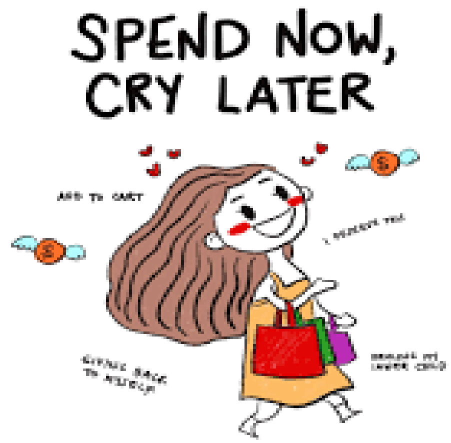

I could not live
without champagne.
In victory I deserve it.
In defeat I need it.
[Perhaps by] WINSTON CHURCHILL
wist.info

The question

- How do households adjust consumption shortly after experiencing large **negative** financial wealth shocks?

※**cut** unnecessary consumption to make up for losses?

※**increase** (hedonic) consumption to improve mood?



The challenge

- Existing studies have tried to estimate individuals' marginal propensity to consume (MPC) from wealth shocks.

- Challenge: lack of exact data on individuals' **consumption** linked with **wealth shocks**:
  - ※ survey (e.g., Dynan and Maki, 2001; Baker, Nagel, and Wurgler; 2007; Aaronson, Agarwal, and French, 2012; Paiella and Pistaferri, 2017)
  - ※ use administrative data to impute consumption as a residual of disposable income net of other transactions

  (e.g., Di Maggio, Kermani, and Majlesi, 2020; Koijen, Van Nieuwerburgh, and Vestman, 2015; Kolsrud, Landais, and Spinnewijn, 2019)

The challenge



Maggio, Marco Di, Amir Kermani, and Kaveh Majlesi, (2020 JF)

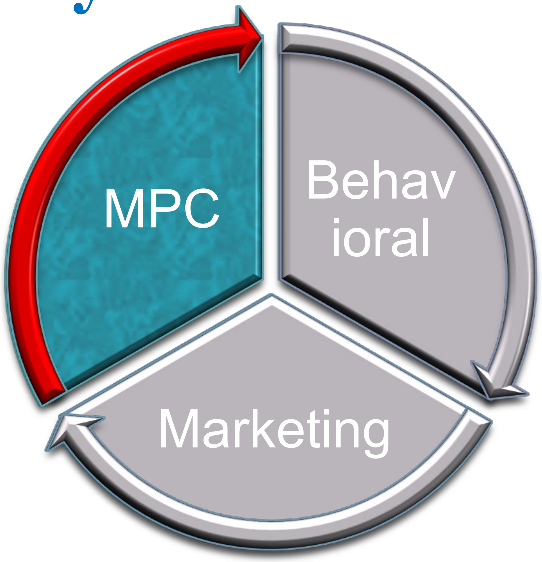
Swedish Household Administrative data

- **annual** frequency
- reckon consumption from income and transactions

- Estimate MPC separately for capital gains & dividend
- Wealth shocks from both sources affect consumption but to different degrees

The literature

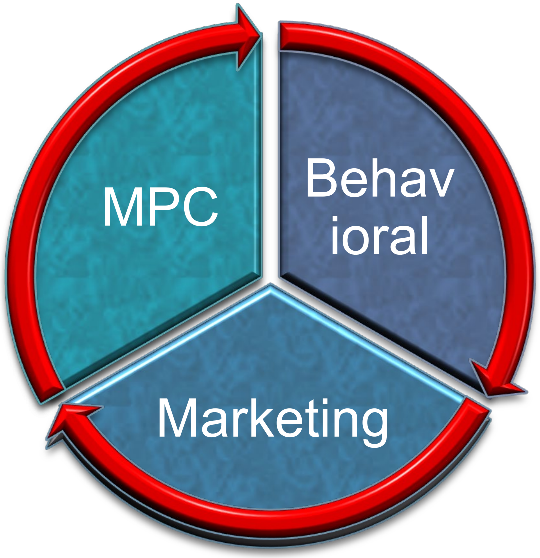
- MPC literature: wealth shocks **positively** affect consumption in general



  - ※ implicitly assuming a **linear** relation
    - ∗ dividend income (Baker et al., 2007)
    - ∗ stock market (Maggio et al., 2020)
    - ∗ housing market (Mian et al., 2013; Aladangady, 2017; Paiella and Pistaferri, 2017; Di Maggio et al., 2020)
    - ∗ CARES Act (Baker et al., 2021)

The literature

- Behavioral literature: negative financial shocks induce **anxiety**, **sadness**, and **distress**
  - ※ hospitalization (Engelberg and Parsons, 2016)
  - ※ labor productivity (Bernstein et al., 2021)
  - ※ domestic violence (Lin and Pursiainen, 2023)



- Marketing literature: "hedonic" consumption allows individuals to psychologically recover from distress
  - ※ **retail therapy**: distress-motivated consumption to repair bad moods (Atalay and Meloy, 2011; Rick, Pereira, and Burson, 2014).

The hypotheses

- **Financial retail therapy**: increase hedonic consumption after experiencing negative financial wealth shocks to alleviate distress

H1: *in response to negative financial wealth shocks, individuals tend to temporarily increase their consumption as a retail therapy.*

H2: *in response to negative financial wealth shocks, the increase in consumption is more pronounced for that with a "hedonic" nature.*

The details

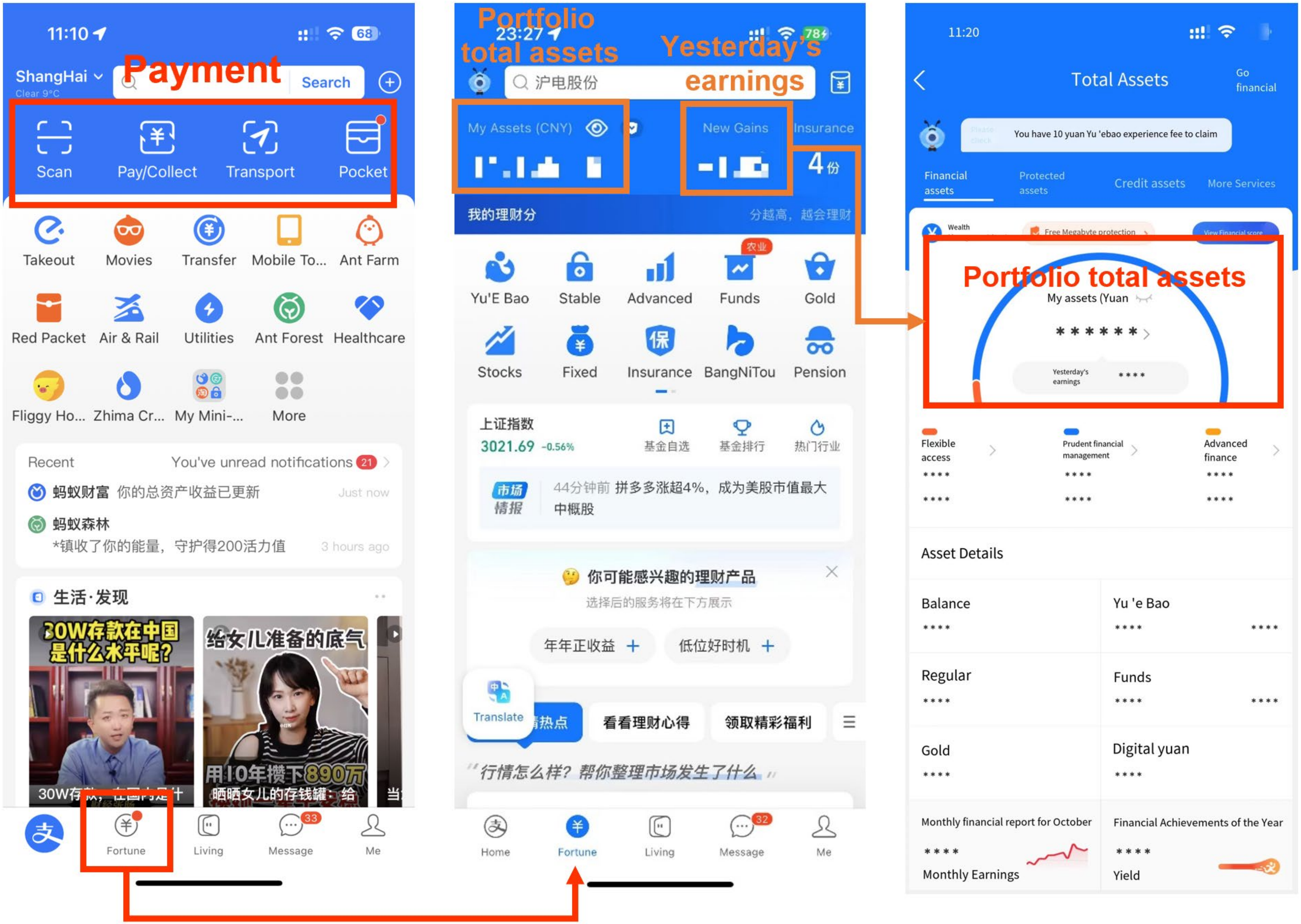
- A lab experiment:

※ decisions on consumption of "leisure" after experiencing positive and negative wealth shocks

- Tests on observational data:

※ weekly/monthly consumption via Alipay

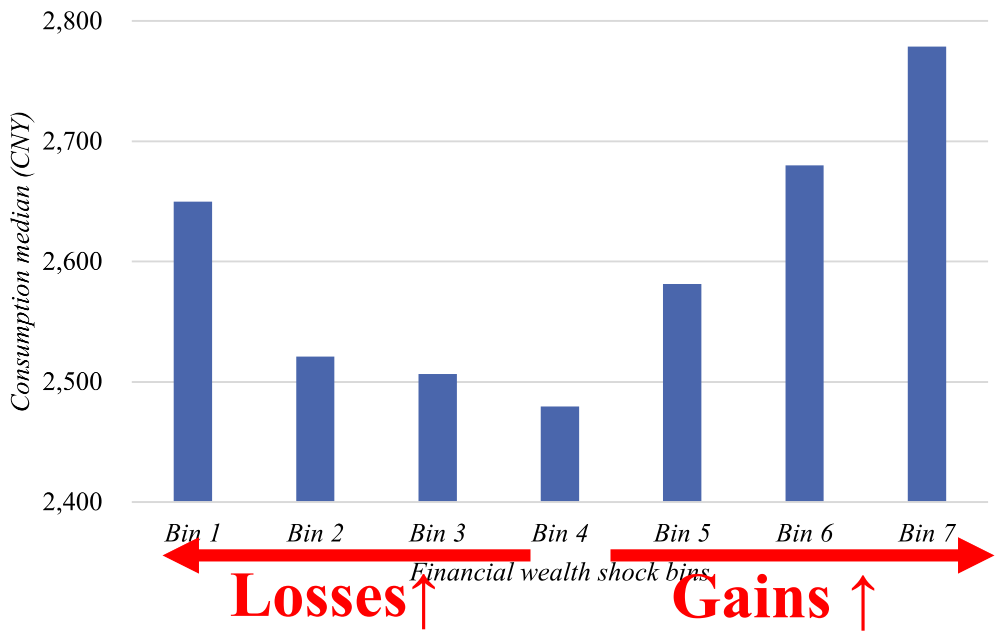
※ investment returns on Ant Fortune via Alipay



11:10
ShangHai
Clear 9°C
Payment
Search
Scan
Pay/Collect
Transport
Pocket
Takeout
Movies
Transfer
Mobile To...
Ant Farm
Red Packet
Air & Rail
Utilities
Ant Forest
Healthcare
Fliggy Ho...
Zhima Cr...
My Mini-...
More
Recent
You've unread notifications 21
蚂蚁财富 你的总资产收益已更新
Just now
蚂蚁森林
*镇收了你的能量，守护得200活力值
3 hours ago
生活·发现
30W存款在中国是什么水平呢?
给女儿准备的底气
用10年攒下890万
晒晒女儿的存钱罐：给
Fortune
Living
Message
Me
Portfolio total assets
23:27
Yesterday's earnings
沪电股份
My Assets (CNY)
New Gains
Insurance
4份
我的理财分
分越高，越会理财
农业
Yu'E Bao
Stable
Advanced
Funds
Gold
Stocks
Fixed
Insurance
BangNiTou
Pension
上证指数
3021.69 -0.56%
基金自选
基金排行
热门行业
市场情报
44分钟前 拼多多涨超4%，成为美股市值最大中概股
你可能感兴趣的理财产品
选择后的服务将在下方展示
年年正收益 +
低位好时机 +
Translate
看看理财心得
领取精彩福利
行情怎么样？帮你整理市场发生了什么
Home
Fortune
Living
Message
Me
11:20
Total Assets
Go financial
You have 10 yuan Yu 'ebao experience fee to claim
Financial assets
Protected assets
Credit assets
More Services
Wealth
Free Megabyte protection
View Financial score
Portfolio total assets
My assets (Yuan
******
Yesterday's earnings
****
Flexible access
Prudent financial management
Advanced finance
Asset Details
Balance
Yu 'e Bao
Regular
Funds
Gold
Digital yuan
Monthly financial report for October
Financial Achievements of the Year
Monthly Earnings
Yield

The findings

- A ***U*-shaped** relation btw financial wealth shocks and total consumption



- More evident for **entertainment-related** consumption, relative to living- & development-related consumption
  - ※ strongest for **cosmetics**, **accessories**, **recreation**
- Robust to control of liquidity constraints, income effect

The contribution

- Add to the MPC literature
  - ※ individuals' **observed** data, focus on short-term relation
  - ※ document a novel **U-shaped** relationship

- Add to the psychological and behavioral literature on the consequences of distress triggered by negative wealth shocks
  - ※ existing studies: the consequences (hospitalization, productivity, domestic violence, …)
  - ※ our study: how individuals **deal** with the distress

The experiment

- 283 participants from Prolific, an online crowdsourcing platform.
- $1.00 base fee for completing the study

Neutral
$1 endowment

Gain-or-Loss
$1 to invest

- The neutral group is asked to solve a series of anagrams for two minutes.

The investment

- Gain-or-Loss group needs to make **four** successive rounds of investment decisions.
- In each round, participants could choose any amount between $0 and $0.25 to invest.
- “Succeed” with a chance of 1/6 (17%) to make 6 times the amount invested.
- Participants’ prior payoff did not affect the amount they could invest in each round.

The consumption (of leisure)

- Afterward, participants could choose to rate pictures of various irksome images on their level of unpleasantness for up to 60 minutes.

- Participants decided how to allocate 60 minutes between **working on unpleasant tasks for money** or **more enjoyable activities**.

- If the allocation of work is larger than random number P, complete the task and receive \$12, otherwise complete no task and receive \$0.

The result

- Our hypothesis predicts fewer minutes of working (consuming more leisure) after experiencing both gains and losses:
  - ※ Participants in the gain-or-loss condition allocated nearly 20% less time to unpleasant activities than those in the neutral condition (29.8 vs. 36.2 minutes; p=0.01).
  - ※ Regressing the number of allocated minutes on the size of the **absolute return** indeed reveals a significant effect (β=−8.91; p=0.018)

The observational

- Four datasets from the Ant Group, all of which were randomly sampled
- Each dataset has its strengths and limitations in terms of data frequency, sample size, length of sample period, or variable availability

=> Use these four datasets in separate tests to utilize their strengths

The four datasets – strengths and limitations

Dataset	Features	
D1	Data frequency	Weekly
	Fund investment info.	Yes
	Total consumption info.	Yes
	Consumption category info.	No
	Consumption subcategory info.	No
	Income info.	No
	• No. of unique individuals: 20,000. • Sample period: 4 years 209 weeks, from August 2017 to July 2021. • Observations: 3,614,861.	

Dataset	Features	
D2	Data frequency	Monthly
	Fund investment info.	Yes
	Total consumption info.	Yes
	Consumption category info.	Yes
	Consumption subcategory info.	No
	Income info.	No
	• No. of unique individuals: 100,000. • Sample period: 4 years 48 months, from August 2017 to July 2021. • Observations: 4,696,077.	

The four datasets – strengths and limitations

Dataset	Features	
D3	Data frequency	Monthly
	Fund investment info.	No
	Total consumption info.	Yes
	Consumption category info.	Yes
	Consumption subcategory info.	Yes
	Income info.	No

- No. of unique individuals: 40,000.
- Sample period: 2 years 24 months, from August 2017 to July 2019.
- Observations: 739,168.

Dataset	Features	
D4	Data frequency	Monthly
	Fund investment info.	No
	Total consumption info.	Yes
	Consumption category info.	No
	Consumption subcategory info.	No
	Income info.	Yes

- No. of unique individuals: 160,000.
- Sample period: 2 years 24 months, from August 2017 to July 2019.
- Observations: 2,931,714.

The regressions

$$Ln(csmp)_{i,t+1} = \alpha + \boxed{\beta_1} \cdot Positive\ invest\ ret_{i,t} + \boxed{\beta_2} \cdot Negative\ invest\ ret_{i,t} + controls_{t+1} + \varepsilon_{i,t+1}$$

D1 → **D2** → **D3**

D1: Total consumption

D2: Entertainment (E); Living, Development

D3: Typical E; Other E; Living, Development

Short-term influence of financial wealth shocks on consumption – testing H1

D1: weekly, investment return linked with total consumption

	(1)	(2)	(3)	(4)
	$Ln(total\_csmp)_{i,t+1}$	$Ln(total\_csmp)_{i,t+1}$	$Ln(total\_csmp)_{i,t+1}$	$Ln(total\_csmp)_{i,t+1}$
Positive invest $ret_{i,t}$	0.753***	0.617***	1.170***	1.015***
	(0.096)	(0.085)	(0.093)	(0.083)
Negative invest $ret_{i,t}$	–0.497***	–0.424***	–0.645***	–0.711***
	(0.101)	(0.094)	(0.098)	(0.092)
$Ln(total\_csmp)_{i,t}$		0.183***		1.174***
		(0.001)		(0.001)
Positive mkt ret_t			1.883***	1.477***
			(0.065)	(0.067)
Negative mkt ret_t			–0.645***	–0.505***
			(0.098)	(0.070)
Const	5.854***	4.855***	5.826***	4.883***
	(0.001)	(0.007)	(0.001)	(0.001)
Year-month FE	NO	NO	YES	YES
Year-week FE	YES	YES	N.A.	N.A.
Individual FE	YES	YES	YES	YES
Cluster by individual	YES	YES	YES	YES
No. Observations	3,614,861	3,293,284	3,614,861	3,293,284
Adj. R^2	0.000	0.034	0.001	0.031

Consumption breakdowns: Entertainment-, living-, and development-related consumption – testing H2

D2: monthly, investment return linked with E/L/D consumption

	(4)	(5)	(6)
	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$
		Online	
	Entertainment	*Living*	*Development*
Positive invest ret$_{i,t}$	0.100**	0.141***	0.081
	(0.040)	(0.033)	(0.051)
Negative invest ret$_{i,t}$	–0.197***	–0.111**	–0.002
	(0.057)	(0.046)	(0.075)
Const	4.943***	5.474***	4.508***
	(0.001)	(0.001)	(0.001)
Year-month FE	YES	YES	YES
Individual FE	YES	YES	YES
Cluster by individual	YES	YES	YES
No. Observations:	2,852,495	3,326,181	1,818,935
Adj. R^2	0.000	0.000	0.000

Typical vs. other entertainment-related consumption – testing H2

D3: monthly, investment return linked with typical/other entertainment-related consumption

	(1)	(2)	(3)
	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$
		Entertainment consumption	
	Entertainment	*Accessories, cosmetics, and cultural recreation*	*All other entertainment-related consumption*
Positive mkt ret$_t$	1.203**	1.730***	0.480***
	(0.070)	(0.095)	(0.078)
Negative mkt ret$_t$	–1.482***	–1.933***	–0.721***
	(0.072)	(0.096)	(0.082)
Const	4.919***	4.459***	4.674***
	(0.002)	(0.003)	(0.003)
Month-of-the-year FE	YES	YES	YES
Year-month FE	N.A.	N.A.	N.A.
Individual FE	YES	YES	YES
Cluster by individual	YES	YES	YES
No. Observations:	739,168	287,150	631,532
Adj. R^2	0.001	0.003	0.001

The concerns

1. How could consumption ↑ as financial constraints are tightened?
   - high household saving rate in China (45%-50%, CEIC)
   - the level of consumption is moderate: 200-300 USD p.m.

2. Changing liquidity conditions? (sell losing funds=>liquidity ↑)
   - disposition effect: reluctant to sell losing positions
     = > liquidity condition should not change much after losses
   - subsample test: exclude obs. that have sold position in *t*-1.

3. The income effect?
   - short-term effect, income is less likely to change frequently
   - control for income using dataset 4 with income data

Filter out the influence of changing liquidity constraints

D1: weekly, investment return linked with total consumption

	(1)	(2)	(3)
	$Ln(total\_csmp)_{i,t+1}$	$Ln(total\_csmp)_{i,t+1}$	$Ln(total\_csmp)_{i,t+1}$
	Exclude investors who have sold losing funds in *t*	Exclude investors who have sold winning funds in *t*	Exclude investors who have sold any fund in *t*
Positive invest ret$_t$	0.754***	0.776***	0.757***
	(0.096)	(0.097)	(0.097)
Negative invest ret$_t$	–0.493***	–0.496***	–0.491***
	(0.102)	(0.102)	(0.102)
Const	5.854***	5.852***	5.853***
	(0.001)	(0.001)	(0.001)
Year-week FE	YES	YES	YES
Individual FE	YES	YES	YES
Cluster by individual	YES	YES	YES
No. Observations	3,585,540	3,548,826	3,530,725
Adj. R^2	0.000	0.000	0.000

Control for the income effect

D4: monthly, income linked with total consumption

Financial wealth shocks captured by market returns

	(1)	(2)	(3)
	$Ln(total\_csmp)_{i,t+1}$	$Ln(total\_csmp)_{i,t+1}$	$Total\ csmp_{i,t}$
Positive mkt ret$_t$	1.742***	1.407***	17.830***
	(0.031)	(0.029)	(0.454)
Negative mkt ret$_t$	−1.341***	−1.112***	−15.207***
	(0.029)	(0.029)	(0.416)
$Ln(income)_{i,t}$	0.139***	0.124***	1.468***
	(0.001)	(0.001)	(0.012)
$Ln(total\_csmp)_{i,t}$		0.221***	
		(0.001)	
Const	7.052***	5.372***	−2.311***
	(0.006)	(0.011)	(0.102)
Month-of-the-year FE	YES	YES	YES
Year-month FE	N.A.	N.A.	N.A.
Individual FE	YES	YES	YES
Cluster by individual	YES	YES	YES
No. Observations	2,931,714	2,771,714	2,931,714
Adj. R^2	0.042	0.090	0.024

The robustness

- The dependent variable in baseline tests: the natural logarithm of consumption, zero obs. are dropped
  - use the raw value of consumption as an alternative dependent variable
  - use the Poisson regression analysis recommended by Cohn et al., (2022) and Chen and Roth (2023).

- Use a quadratic model specification

$$Ln(csmp)_{i,t+1} = \alpha + \boxed{\beta_1} \cdot Invest\ ret^2_{i,t} + \beta_2 \cdot Invest\ ret_{i,t} + controls_{i,t+1} + \varepsilon_{i,t+1}$$

+

Conclusion

Conclusion

- We show that individuals tend to increase hedonic consumption after experiencing both positive and negative investment shocks via:
  - ※ A stylized dynamic prospect theory model
  - ※ A experiment study based on the model with leisure as the hedonic consumption
  - ※ Proprietary Alipay consumption data

- The welfare implications of such a financial retail therapy can and should be further explored.

Thanks!

Table 2: Summary statistics

Panel A: Dataset 1 (weekly data with individual-level investment and consumption information)

	N	Mean	Std	1%	25%	50%	75%	99%
Ln(total_csmp)$_{i,t}$	3,614,861	5.861	1.555	1.792	4.898	5.903	6.861	9.685
Total csmp$_{i,t}$	3,614,861	1091.359	2292.652	6.000	134.000	366.000	954.000	106069.000
Invest ret$_{i,t}$	3,614,861	0.002	0.019	–0.065	0.000	10.000	0.004	0.062
Positive invest ret$_{i,t}$	3,614,861	0.006	0.013	0.000	0.000	0.000	0.004	0.062
Negative invest ret$_{i,t}$	3,614,861	–0.005	0.012	–0.065	0.000	0.000	0.000	0.000
Positive mkt ret$_{i,t}$	3,614,861	0.011	0.015	0.000	0.000	0.002	0.019	0.063
Negative mkt ret$_{i,t}$	3,614,861	–0.009	0.015	–0.059	–0.011	0.000	0.000	0.000

Panel B: Dataset 2 (monthly data with individual-level investment, total consumption, and consumption category information)

	N	Mean	Std	1%	25%	50%	75%	99%
Total csmp$_{i,t}$	4,696,077	5678.886	9467.878	71.808	1118.960	2555.640	5831.220	62672.580
Offline csmp$_{i,t}$	4,612,512	4196.952	8143.837	0.010	580.180	1553.730	3927.360	54910.770
Online csmp$_{i,t}$	4,118,602	1594.526	2786.338	0.010	195.640	590.705	1647.690	17147.150
Entertainment csmp$_{i,t}$	2,852,495	454.839	897.444	0.010	48.600	137.730	390.000	5080.519
Living csmp$_{i,t}$	3,326,181	617.411	1031.210	0.010	89.000	251.410	648.950	6024.886
Development csmp$_{i,t}$	1,818,935	350.396	806.185	0.010	29.940	81.410	215.800	4091.476
Invest ret$_{i,t}$	4,696,077	0.006	0.037	–0.097	0.000	0.000	0.011	0.142
Positive invest ret$_{i,t}$	4,696,077	0.013	0.028	0.000	0.000	0.000	0.011	0.142
Negative invest ret$_{i,t}$	4,696,077	–0.008	0.019	–0.097	0.000	0.000	0.000	0.000

Table 2: Summary statistics

Panel C: Dataset 3 (monthly data with individual-level consumption category and subcategory information)								
	N	Mean	Std	1%	25%	50%	75%	99%
Entertainment csmp$_{i,t}$	739,168	404.098	819.590	6.000	55.000	141.000	358.000	5597.044
Typical entertainment csmp$_{i,t}$	287,150	223.420	404.337	5.900	37.900	89.900	225.118	2803.092
Other entertainment csmp$_{i,t}$	631,532	342.582	763.973	4.900	38.900	101.100	273.000	5260.490

Panel D: Dataset 4 (monthly data with individual-level total consumption and income information)								
	N	Mean	Std	1%	25%	50%	75%	99%
Total csmp$_{i,t}$	2,931,714	10188.180	19240.800	46.803	1523.840	3781.290	9740.540	130587.800
Income$_{i,t}$	2,931,714	23698.060	63053.810	1.150	858.000	3916.000	15432.000	450020.000
Positive mkt ret$_{i,t}$	2,931,714	0.021	0.037	0.000	0.000	0.001	0.032	0.155
Negative mkt ret$_{i,t}$	2,931,714	–0.020	0.029	–0.087	–0.043	0.000	0.000	0.000

H2: Consumption breakdowns: Entertainment-, living-, and development-related consumption

Dataset 2: weekly linked inv. ret. and csmp breakdowns

	(1)	(2)	(3)
	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$
	Total	*Total*	
		Offline	*Online*
$Positive\ invest\ ret_{i,t}$	0.470***	0.588***	0.206***
	(0.026)	(0.032)	(0.031)
$Negative\ invest\ ret_{i,t}$	–0.452***	–0.535***	–0.274***
	(0.035)	(0.045)	(0.043)
Const	7.822***	7.253***	6.296***
	(0.001)	(0.001)	(0.001)
Year-month FE	YES	YES	YES
Individual FE	YES	YES	YES
Cluster by individual	YES	YES	YES
No. Observations:	4,696,077	4,612,512	4,118,602
Adj. R^2	0.000	0.000	0.000

Table 8: Transformation of the dependent variable

Panel A: OLS regressions

	(1)	(2)	(3)	(4)	(5)
	Total consumption	*Online consumption*	*Online consumption*		
			Entertainment	*Living*	*Development*
Positive invest ret$_t$	7.128***	3.354***	0.521*	0.872***	0.758***
	(1.420)	(0.604)	(0.274)	(0.272)	(0.357)
Negative invest ret$_t$	–2.725*	–5.047***	–1.064***	–0.730*	–0.640
	(1.397)	(0.854)	(0.396)	(0.386)	(0.534)
Const	10.858***	16.007***	4.788***	6.329***	4.005***
	(0.015)	(0.012)	(0.005)	(0.006)	(0.007)
Dataset used	Dataset 1	Dataset 2	Dataset 2	Dataset 2	Dataset 2
Data frequency	Weekly	Monthly	Monthly	Monthly	Monthly
Year-week FE	YES	N.A.	N.A.	N.A.	N.A.
Year-month FE	N.A.	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES
Cluster by individual	YES	YES	YES	YES	YES
No. Observations:	4,159,158	4,118,602	2,852,495	3,326,181	1,818,935
Adj. R^2	0.000	0.000	0.000	0.000	0.000

Table 8: Transformation of the dependent variable

Panel B: Poisson regressions					
	(1)	(2)	(3)	(4)	(5)
			Online consumption		
	Total consumption	*Online consumption*	*Entertainment*	*Living*	*Development*
Positive invest ret$_t$	2.820***	0.953***	0.870***	0.679***	–0.067***
	(0.001)	(0.004)	(0.010)	(0.008)	(0.014)
Negative invest ret$_t$	–0.041***	–0.378***	–0.116***	–0.040***	0.136***
	(0.001)	(0.006)	(0.014)	(0.011)	(0.202)
Const	6.972***	2.777***	1.456***	1.902***	1.235***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Dataset used	Dataset 1	Dataset 2	Dataset 2	Dataset 2	Dataset 2
Data frequency	Weekly	Monthly	Monthly	Monthly	Monthly
Month-of-the-year FE	YES	YES	YES	YES	YES
No. Observations:	3,614,861	4,118,602	2,852,495	3,326,181	1,818,935
Pseudo. R^2	0.999	0.518	0.161	0.252	0.072

Table 9: Quadratic specification

	(1)	(2)	(3)	(4)	(5)
	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$	$Ln(csmp)_{i,t+1}$
	Total consumption	*Online consumption*	*Online consumption*		
			Entertainment	*Living*	*Development*
$Invest\ ret^2_t$	6.838***	1.267***	0.610*	0.720**	0.059
	(1.395)	(0.266)	(0.356)	(0.284)	(0.455)
$Invest\ ret_t$	0.162***	–0.013	–0.029	0.024	0.050
	(0.045)	(0.022)	(0.031)	(0.024)	(0.041)
Const	5.858**	6.300***	4.945***	5.475***	4.508***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Dataset used	Dataset 1	Dataset 2	Dataset 2	Dataset 2	Dataset 2
Data frequency	Weekly	Monthly	Monthly	Monthly	Monthly
Year-week FE	YES	N.A.	N.A.	N.A.	N.A.
Year-month FE	N.A.	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES
Cluster by individual	YES	YES	YES	YES	YES
No. Observations:	3,614,861	4,118,602	2,852,495	3,326,181	1,818,935
Adj. R^2	0.000	0.000	0.000	0.000	0.000