

Schweizerisches Institut  
für Banken und Finanzen



Universität St.Gallen



# **Birth order and fund manager's trading behavior: Role of sibling rivalry**

**Vikas Agarwal**, Georgia State University, J. Mack Robinson College of Business

**Alexander Cochardt**, University of St. Gallen

**Stephan Heller**, University of St. Gallen

\***Vitaly Orlov**, University of St. Gallen and Swiss Finance Institute

# Introduction

- There exists little understanding of the potential impact of family domain experiences on adult labor market outcomes
  - family is often perceived as the most important and enduring of all social groupings (Smith, 2009)
- Over a century of research on family structure effects on personality and outcomes
- Pre-employment experiences are important determinants of managerial decision-making

In this paper, we:

- (i) exploit the variation in fund managers' familial background
- (ii) investigate the **role of family domain experiences** on managerial behavior
- (iii) establish a link between manager **birth order and risk attitudes (sensation seeking)**

## Results in a nutshell (I/II)

- Risk-taking tendencies established in childhood continue into the adult labor market, such that **manager birth order is positively related to risk-taking**
  - the later a manager is born in the sibling hierarchy, greater investment risk she undertakes, without being compensated with higher returns
  - birth order is positively related to a fund's total risk, idiosyncratic risk, and active risk
- **Sibling rivalry** for parental resources is the **key mechanism** behind the birth order effects on risk taking
  - moderators of the relationship between manager birth order and risk-taking are:
    - age spacing
    - limited parental financial resources
    - limited parental attention
  - the more sibling rivalry is present during childhood, the more birth order-related niche differentiation behaviors become engrained

## Results in a nutshell (II/II)

- Long-lived effects of **birth order shape the trading behavior** of fund managers. Later-born managers tend to:
  - have more extreme investment style positions, which converges into large factor bets that generate large volatility
  - trade more frequently
  - hold more in lottery stocks
- The incremental risk-taking by later-born managers **extends beyond portfolio management**
  - they are also more likely to report violations of expected standards of managerial conduct
- Greater incremental risk taking of later-born managers **does not** result in better performance
- Our findings are consistent with the predictions from evolutionary psychology theory that later-born individuals are more rebellious, daring, and untraditional and essentially are **sensation seekers**

# Evolutionary theory. A case of birth order (I/II)

- Alfred Adler (1927) is the first to suggest that **personality differences are related to birth order**
- Numerous studies focusing on testing birth order effects on common personality traits and subsequent outcomes (Sulloway, 1995; Paulhus, Trapnell, and Chen, 1999; Healey and Ellis, 2007; etc)
- Birth order influences an individual's **propensity to take risks across contexts**, such that later-born individuals (relative to firstborns) have been associated with:
  - relatively risky adolescent behaviors (Averett, Argys, and Rees, 2011)
  - internal sensation novelty seeking behavior (Eisenman, Grossman, and Goldstein, 1980)
  - experiencing greater enjoyment during risk taking behavior (Claxton, 1994)
  - greater desire to have more sexual partners (Michalski and Shackelford, 2002)
  - tendency to participate in risky sports (Sulloway and Zweigenhaft, 2010)
  - engaging in self-employment (Black, Grönqvist and Öckert, 2018)
- Overwhelming support for suggesting that **laterborns are more risk-oriented**, engage in **dangerous activities** and are associated more with **sensation seeking behavior** than firstborns.

## Evolutionary theory. A case of birth order (II/II)

- To elucidate the birth order-induced differences in personalities and outcomes **evolutionary theory** has been proposed (Sulloway, 1995; 1996)

Building blocks:

- I. This theory views **family as a set of niches** with **limited parental resources**
  - II. This causes **siblings** to **compete** for the most resource-rich niche
  - III. Growing up subject to such competitive dynamics influences the **development of siblings' personalities**, particularly **risk tolerance and sensation seeking inclinations**.
  - IV. Later-born managers develop a **more pronounced propensity to take risks** and eventually become more risk tolerant than first-born children (Sulloway, 2001; Sulloway and Zweigenhaft, 2010; and Brown and Grable, 2015)
- Birth order-induced behavioral tendencies are long-lived and are even observed in samples of individuals in their 90s (Jefferson, Herbst, and McCrae, 1998).



# Relation to prior literature (I/II)

Determinants of later life economic outcomes

Family size

- Old consensus: **Family size has negative effect on child outcomes**, like educational attainment and future earnings (Leibowitz, 1974; Blake, 1986; Hanushek, 1992; Sandefur and Wells, 1999; etc)
- **Quantity-quality trade-off**: finite parental resources exist, and each additional sibling dilutes resources available in the family (Becker and Lewis 1973; Blake 1981; Downey, 1995)

Birth order

- New consensus: **family size effects are confounded with those of the birth order** (Black, Devereux, and Salvanes, 2005, QJE)
- **Important role of birth order** in explaining the differences across a range of outcomes including performance in cognitive exams, wages, and employment, with children of higher birth orders being associated with worse outcomes (Kantarevic and Mechoulan, 2006; Conley and Glauber, 2006; Black, Grönqvist and Öckert, 2018; etc)

Our paper is the first to investigate the effects of birth order in a large sample of real-world data from a professional business setting

## Relation to prior literature (II/II)

Nature vs  
Nurture

- The debate on the relative importance of environmental factors as the origins of differences in investment behavior (Barnea, Cronqvist, and Siegel, 2010, JFE; Cronqvist, Siegel, and Yu, 2015, JFE )

Determinants of mutual fund  
performance and risk

Childhood  
events

- Growing up in a wealthy family (Chuprinin and Sosyura, 2018, RFS)
- Being relatively older in the kindergarten (Bai, Ma, Mullally, and Solomon, 2019, JFE)
- Living through early-life family disruption (Betzer, Limbach, Rau, and Schürmann, 2021, JBF)

Later life  
events

- Attending selective educational institutions (Chevalier and Ellison, 1999, JF; Li, Zhang, and Zhao, 2011, JFQA)
- Starting career during a recession (Schoar and Zuo, 2017, RFS)
- Living through the market downturns (Malmendier and Nagel, 2011, QJE)
- Marriage (Roussanov and Savor, 2014, MS)
- Being exposed to natural disasters (Bernile, Bhagwat, and Rau, 2016, JF)
- Having prior professional experience (Dittmar and Duchin, 2016, RFS; Cici, Gehde-Trapp, Goericke, & Kempf, 2018, RFS)



# Our setting is unique in several respects

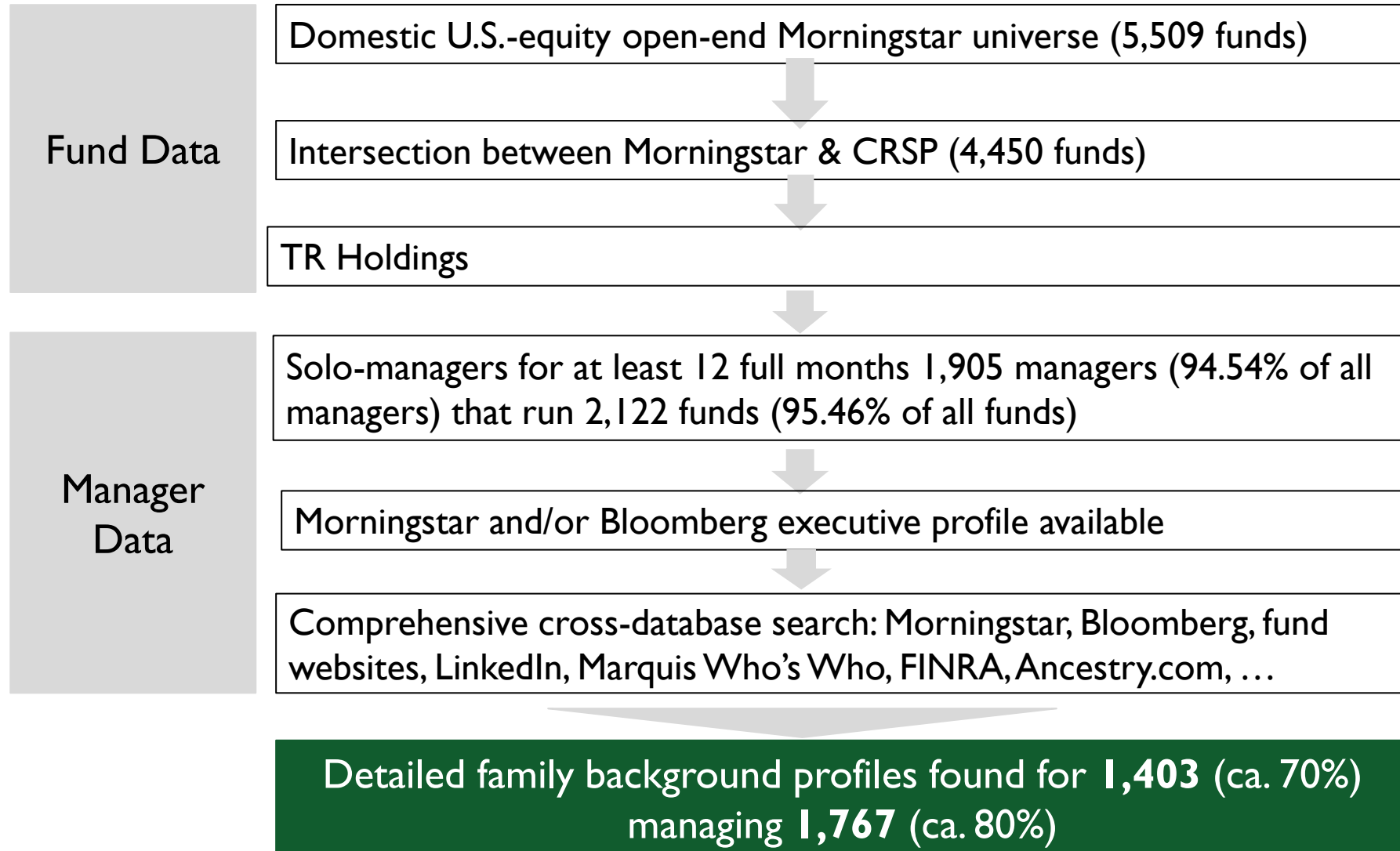
- Observable, measurable, and multidimensional actions of mutual fund managers. We capture risk choices in terms of
  - portfolio composition
  - trading decisions
  - return volatility
  - violations of professional business conduct
- Fund managers are likely to be solely responsible for these risk choices for their funds
- Fund managers are a relatively homogenous group of individuals and allows for comparable counterfactuals

- The distribution is very similar to that of the United States population in recent decades.
- The distribution is also similar to other studies that use data on developed countries (Black, Devereux, and Salvanes, 2005, QJE)
- Thus, it is unlikely that firms select managers based on these characteristics

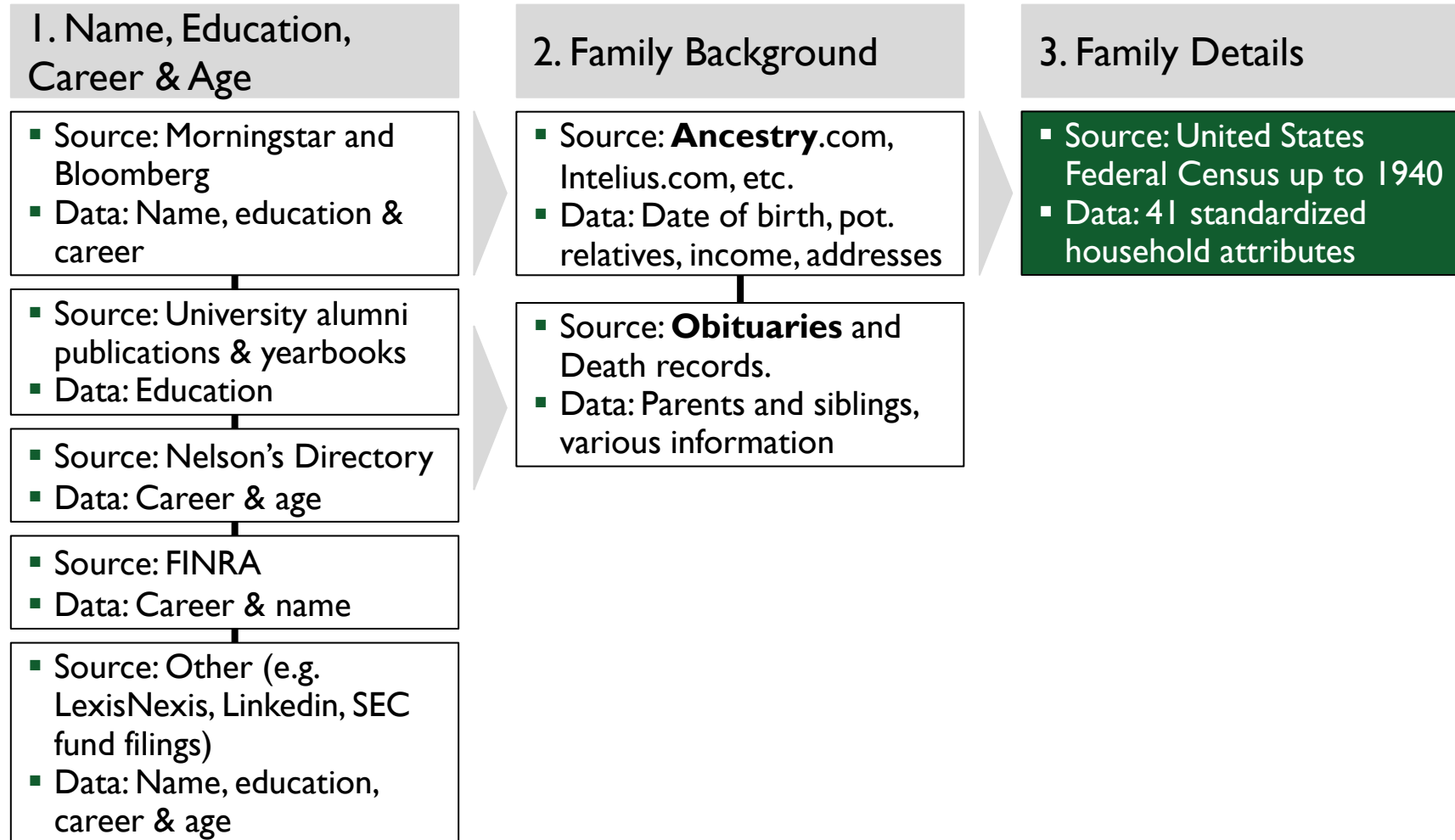
Panel A: Distribution of birth order and family size

	Birth order (2+ children)		Family size	
	Frequency	Percentage	Frequency	Percentage
1	304	40	102	12
2	261	34	277	31
3	113	15	236	27
4	48	6	141	16
5+	34	4	126	14
Total	760	100	882	100

# Dataset



# Identifying managers' family background information



# Family background: Birth records (an example)

- Manager's full name + date of birth → state birth record → identify parents

**Ohio**

Name	Geoffrey Atkinson Brod	Mother's Maiden Name	Ruth Atkinson
Birth Date	July 25, 1942	Mother's Birth Place	Pennsylvania
Birth State	Ohio	Father's Name	Robert William Brod
		Father's Birth Place	Ohio

Ohio Department of Health  
File date: August 10, 1942  
Certificate Number: 1942076773

**Texas**

TEXAS DEPARTMENT OF HEALTH  
BUREAU OF VITAL STATISTICS  
CYCLE: 01 THROUGH 99 1941 BIRTHS. PAGE 1736

NAME	COUNTY	DATE	SEX	MOTHER	FATHER
PENNARTZ, JEANETTE HELEN	243	OCT 02	F	BEREND, CLARA MARIE	PENNARTZ, WILLIAM EWALD
PENNARTZ, SAMUEL JOHN	247	DEC 29	M	PUNDT, FRIEDA ANNA	PENNARTZ, JOE JOHN
PENNEGRAPH, ISREAL INF OF	057	MAR 29	F	WASHINGTON, JESSIE ELMA	PENNEGRAPH, ISREAL
PENNELL, ALACE ELIZABETH	177	MAR 21	F	PAC, MOZELL	PENNELL, R. W.
PENNELL, ARY ESTELLA	101	SEP 28	F	STEARR, MARTHA	PENNELL, JOHN HENRY
PENNELL, BETTY CARLENE	209	AUG 27	F	HEATLEY, ILENE IDA	PENNELL, CARL BURNS
PENNELL, IRA SHELDON	054	MAR 05	M	SWIFT, MARTHA MANDE	PENNELL, ELA SHELDON
PENNELL, THERESA ANN	123	OCT 03	F	HUVAL, MARIE ANITA	PENNELL, BENJAMIN BUTLER
PENNER, JOSEPH STEPHEN JR.	084	AUG 25	M	DONNELL, CATHERINE LOUISE	PENNA, JOSEPH STEPHEN


# Family background: Death records (main sources)

Manager's full name + relative's full name → state death record → obituaries

**George L. Kirk**  
in the U.S., Obituary Collection, 1930

Name:	George L. Kirk
Gender:	Male
Death Age:	75
Birth Date:	20 Aug 1938
Birth Place:	West Falmouth, MA
Residence Place:	Newport
Death Date:	13 Mar 2014
Burial Date:	17 Mar 2014
Obituary Date:	14 Mar 2014
Father:	William J. Kirk
Mother:	Alice Kirk
Spouse:	Pamela N. Kirk
Child:	Skip Kirk Jane OConnor John Tom Peter
Siblings:	William J. Kirk David G. Kirk Joseph P. Kirk Silver Beach Anne K. Shea Mary K. Smith

**FUNERAL HOME** Russell & Pica Funeral Home  
165 Belmont St  
Brockton, MA



**RECORDS**  
[View more records for Kirk on Ancestry.com®](#)  
Sponsored

**G**eorge L. Kirk, 75, of Portsmouth, RI and Silver Beach, MA died peacefully Thursday, March 13, 2014 surrounded by his wife and family. George was the husband of Pamela N. Kirk for 54 years. Born in Cambridge, MA on August 20, 1938, he was the son of the late William J. Kirk and Alice (Guertin) Kirk of Newtonville, MA and West Falmouth, MA. George was a graduate of Newton High School, class of 1956, MIT, class of 1960 and Harvard Business School, class of 1964. He served in the US Navy aboard the USS Saratoga from 1960-1962, retiring as a Lieutenant. Mr. Kirk moved his young family to Newport and began working at Th Eppley Laboratory, eventually settling in Portsmouth, RI. Mr. Kirk was an avid sailor. His love



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▲ Report issue

Name:	George L. Kirk
Birth Date:	20 aug 1938
Birth Place:	Cambridge, Middlesex County (Middlesex), Massachusetts, United States of America
Death Date:	13 mar 2014
Cemetery:	North Falmouth Burying Ground
Burial or Cremation Place:	North Falmouth, Barnstable County (Barnstable), Massachusetts, United States of America
Has Bio?:	Y
URL:	<a href="https://www.findagrave.com/m...">https://www.findagrave.com/m...</a>

of sailing began as a teenager at Wild Harbor in his principal vessel, Cygnet. It fostered through college racing at MIT then continued into small keelboat classes including the J-24, Etchells and Shields. As an offshore sailor, he participated in many regattas, highlighted with a victory in the 1982 Newport to Bermuda Race aboard Brigadoon. He was the father of Skip Kirk of Portsmouth, RI, John and his wife Jill of Millbury, MA, Tom and his wife Kathy of Portsmouth, RI, Jane and her husband Mike OConnor of Foxboro, MA and Peter and his wife Melissa of Canton, MA. He was the grandfather of Jack, Ryan, Liam, Julia, Drew, Lauren, Caitlin, Griffin, Abigail and Rebecca. The entire family summered together at Silver Beach, MA. He is survived by his brothers and sisters: William J. Kirk, Jr. and his wife Joyce of North Falmouth, MA, David G. Kirk and his wife Ann of Sudbury, MA and Silver Beach, Mary K. Smith and her husband Robert of North Falmouth, MA, Anne K. Shea of West Falmouth, MA and his sister-in-law Susan C. Kirk, and brother-in-law John T. Shea preceded him in death. A Funeral Mass was celebrated on Monday, March 17, 2014 at 10 am at St. Elizabeth Seton Parish, 481 Quaker Road, North Falmouth, MA with interment in North Falmouth Cemetery. Donations may be made to The Potter League For Animals, 87 Oliphant Lane, Middletown, RI 02842 or Portsmouth Volunteer Fire Department, 2300 East Main Road, Portsmouth, RI 02871. Arrangements by the Russell & Pica Funeral Home, Brockton. For guestbook , visit [www.Russellpicafuneralhome.com](http://www.Russellpicafuneralhome.com)

# Family background: Census records

State Penn Incorporated place Phila Ward of city 46 Unincorporated place \_\_\_\_\_  
County Phila Township or other division of county \_\_\_\_\_ Block No. 21 Enumeration \_\_\_\_\_  
DEPARTMENT OF COMMERCE—BUREAU OF THE CENSUS SIXTEENTH CENSUS OF THE UNITED STATES: 1940 POPULATION SCHEDULE  
E. D. No. 6 E. D. No. 51-1957 Sheet No. 6 B  
Enumerated by me on April 5, 1940. Ronald J. Bills Enumerator.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	SEX, AGE, MARRIAGE, AND SERVICE, APRIL 1, 1940										PERIODS 14 YEARS OLD AND OVER—EMPLOYMENT STATUS									
															16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
41	1919	40	3	Jaffe-Morris	head	M	W	48	M	Mar	1	Penn	Same Place	No	0	0	0	0	0	0	0	0	0	48	Postal Clerk	P.O.	GW	52	2300	20				
42				— Kate	wife	F	W	48	M	Mar	5	Penn	Same Place	No	0	0	0	0	0	0	0	0	0	48				0	0	20				
43				— Rose	daughter	F	W	21	3	Mar	0	Penn	Same Place	No	0	0	0	0	0	0	0	0	48	Stenographer	Furniture	Pu	51	1700	20					
44	1919	20	15	Hellman, William	head	M	W	34	5	Mar	1	Germany	Same Place	No	0	0	0	0	0	0	0	0	40	Officer	Collins Co.	PA	51	0	1500					
45				Roth, David	head	M	W	40	5	Mar	1	Penn	Same Place	No	0	0	0	0	0	0	0	0	48	Officer	Collins Co.	PA	52	0	1500					
46				— [unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]			
47	1919	55	4	Morgenthaun, David	Head	M	W	51	M	Mar	5	Mass.	Same Place	No	0	0	0	0	0	0	0	0	48	Salesman	Bakery	Pu	51	2000	20					
48				— Anna	Wife	F	W	50	M	Mar	5	Penn	Same Place	No	0	0	0	0	0	0	0	0	48				0	0	20					
49				[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]			
50				[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]			
51				[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]			
52	1919	40	10	Cashman, David	head	M	W	39	M	Mar	2	Penn	Same Place	No	0	0	0	0	0	0	0	0	48	Butcher	Restaurant	PA	52	1350	20					
53				— Elsie	wife	F	W	33	M	Mar	1	Penn	Same Place	No	0	0	0	0	0	0	0	0	48				0	0	20					
54				— Daniel	son	M	W	6	5	Mar	0	Penn	Same Place	No	0	0	0	0	0	0	0	0	48				0	0	20					
55	1919	2	15	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]			
56	1919			[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]	[unclear]			
57	1919	40	11	Lewis, Murray	head	M	W	38	M	Mar	0	Virginia	Same Place	No	0	0	0	0	0	0	0	0	44	Stenographer	Dept. Store	PA	52	2000	20					
58				— Hilda	wife	F	W	30	M	Mar	0	Virginia	Same Place	No	0	0	0	0	0	0	0	0	44	Doctor	Dept. Store	PA	52	0	2000					
59	1919	30	11	McGuire, Kathryn	head	F	W	35	S	Mar	1	Penn	Same Place	No	0	0	0	0	0	0	0	0	44	Secretary	Dept. Store	PA	52	1000	20					
60				— Mary	sister	F	W	24	S	Mar	0	Penn	Same Place	No	0	0	0	0	0	0	0	0	44	Stenographer	Dept. Store	PA	56	1000	20					
61	1919	40	10	Park, Elizabeth	head	F	W	58	DA	Mar	0	Maryland	Same Place	No	0	0	0	0	0	0	0	0	07				0	0	20					
62				— Mary	sister	F	W	40	S	Mar	0	Maryland	Same Place	No	0	0	0	0	0	0	0	0	H				0	0	20					
63	1919	30		Spangler, Albert	head	M	W	30	M	Mar	1	Penn	Same Place	No	0	0	0	0	0	0	0	0	40	Electrician	Building	PA	52	1500	20					
64				— Mary	wife	F	W	30	M	Mar	1	Penn	Same Place	No	0	0	0	0	0	0	0	0	H				0	0	20					
65	1919	32	11	Ford, Julia B.	head	F	W	34	D	Mar	0	Penn	Same Place	No	0	0	0	0	0	0	0	0	42	Operator	Dept. Store	PA	52	1900	20					
66				— Katherine	daughter	F	W	20	M	Mar	0	Penn	Same Place	No	0	0	0	0	0	0	0	0	30	Saleswoman	Dept. Store	PA	52	500	20					

Household where the fund manager grew up

Parents and siblings info

Place of birth

Employment

Income

# Sample composition and summary statistics

Fund managers' personal and family characteristics				
Variable	Mean	Median	Std. Dev.	N of obs.
<i>Manager's personal characteristics</i>				
Age	48.38	47.45	9.79	13644
Manager female (0/1)	0.07	0	0.26	16783
Industry tenure (years)	11.41	8.17	12.12	16783
Fund tenure (years)	6.59	4.67	6.44	16783
Marital status (0/1)	0.96	1	0.18	11882
Graduate degree (0/1)	0.69	1	0.46	15729
<i>Manager's family background</i>				
Birth order (2+ children)	1.97	2.00	1.10	7112
Laterborn (0/1)	0.52	1	0.50	8432
Family size	2.91	3.00	1.49	8370
Age gap	3.65	3.00	2.02	5355
Father's year of Birth	1921.40	1923	15.17	10611
Father's age at Birth	31.56	30.92	6.55	10368
Mother's year of Birth	1923.63	1925	14.08	8609
Mother's age at Birth	28.65	28.33	4.86	8441
Parents' college degree (0/1)	0.63	1	0.48	7910
Parents' graduate degree (0/1)	0.23	0	0.42	7910
Father's military service (0/1)	0.77	1	0.42	8041
Father at war during childhood (0/1)	0.19	0	0.39	6103
Parents executive job (0/1)	0.17	0	0.38	8811
Parents low paid job (0/1)	0.17	0	0.38	8811
Parents' monthly income (\$)	2244.88	1800.00	1733.71	2307
<i>Fund risk and performance characteristics</i>				
Total risk, %	16.20	14.58	7.62	16783
Idiosyncratic risk, %	3.97	3.34	2.62	16783
Active risk, %	18.23	16.35	8.93	16325
Gross 4-factor alpha, %	0.48	0.34	9.24	16783
Net 4-factor alpha, %	-0.62	-0.69	9.28	16783

- Median solo-manager is 47 years old, served at the fund for almost 5 years and has industry experience of 8 years
- Average birth order by fund style category is around 2 for all style categories
- Later-born managers have similar length of tenure compared to earlier-born individual

- Average fund has total risk of 16% p.a.,
- Average fund delivers negative net alpha of -0.62

# The effect of birth order on managerial risk-taking

Regression results: *Total risk*

Variable	<i>Total risk</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Birth order	0.371*** (2.99)	0.476** (2.19)	0.358*** (2.99)	0.312* (1.87)				
Laterborn					0.836*** (2.82)	0.742*** (2.72)	0.802*** (3.02)	0.510** (2.39)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seg. & Year	Yes	No	No	No	Yes	No	No	No
Fund & Year	No	Yes	No	No	No	Yes	No	No
Seg. x Year	No	No	Yes	No	No	No	Yes	No
Firm x Year	No	No	No	Yes	No	No	No	Yes

Regression results: *Active risk*

Variable	<i>Active risk</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Birth order	0.650*** (3.02)	0.826*** (3.49)	0.670*** (3.31)	0.549** (2.02)				
Laterborn					1.129*** (2.75)	1.307** (2.24)	1.067*** (2.71)	1.650** (2.51)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seg. & Year	Yes	No	No	No	Yes	No	No	No
Fund & Year	No	Yes	No	No	No	Yes	No	No
Seg. x Year	No	No	Yes	No	No	No	Yes	No
Firm x Year	No	No	No	Yes	No	No	No	Yes

Regression results: *Idiosyncratic risk*

Variable	<i>Idiosyncratic risk</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Birth order	0.154*** (3.05)	0.170** (2.55)	0.144*** (2.86)	0.144*** (2.60)				
Laterborn					0.255** (2.00)	0.320** (2.73)	0.249** (2.01)	0.316** (2.17)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seg. & Year	Yes	No	No	No	Yes	No	No	No
Fund & Year	No	Yes	No	No	No	Yes	No	No
Seg. x Year	No	No	Yes	No	No	No	Yes	No
Firm x Year	No	No	No	Yes	No	No	No	Yes

- Birth order is a manager's rank by age among siblings, while Laterborn is a dummy
- Birth order is positively related to a fund's total risk, idiosyncratic risk, and active risk.
- Neither time-invariant unobserved heterogeneity at the segment or fund firm level, nor time-varying heterogeneous trends drive these results

- Fund controls (lagged):
  - Fund size
  - Fund family size
  - Fund age
  - Turnover ratio
  - Expense ratio
  - Fund flows
- Manager controls:
  - Manager age
  - Gender
  - Fund tenure
  - Industry tenure



# Controlling for family size

Variable	Total risk		Idiosyncratic risk		Active risk	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Controlling for family size</i>						
Birth order	0.329**	0.290**	0.120**	0.111*	0.641**	0.625***
	(2.02)	(2.10)	(1.96)	(1.85)	(2.44)	(2.67)
Family size	-0.014	0.133	0.025	0.072	-0.138	0.04
	(-0.09)	(1.32)	(0.43)	(1.29)	(-0.83)	(0.39)

- Negligible effect of family size in contrast to the predominant role of birth order among other family background characteristics
- **family size effects are confounded with those of the birth order** (Black, Devereux, and Salvanes, 2005, QJE)

# Controlling for demographics

Variable	Total risk		Idiosyncratic risk		Active risk	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel B: Controlling for demographics</i>						
Birth order	0.295**	0.297*	0.126**	0.115*	0.719***	0.774***
	(2.30)	(1.93)	(2.03)	(1.66)	(2.87)	(2.96)
Family size		-0.003		0.107		-0.078
		(-0.02)		(0.26)		(-0.77)

- Demographic controls:
  - Family size (next slide)
  - mother's age
  - father's age
  - parental education
  - parental employment
  - parental household wealth

# Additional results and robustness checks

## Adding additional controls

- Bereavement effects (Liu, Shu, Sulaeman, and Yeung, 2020)
- Marital status (Roussanov and Savor, 2014)
- Relative age (Bai, Ma, Mullally, and Solomon, 2018)
- Depression babies (Malmendier and Nagel, 2011)
- Educational degree and university selectiveness
- *Cultural origin effects*
- *State of birth effects*

## Alternative estimation window and methods

- Rolling window of 24 months (minimum 20 observations)
- Rolling window 36 months (minimum 30 observations)
- Fama and MacBeth (1973)

## Alternative measure and sample

- Alternative birth order specification (including one-child families)
- Placebo test using a subset of index funds

- No evidence that family gender composition affects the results. No evidence that supports role-assimilation theory
- No interaction effects between birth order and indicators for growing up with gender-diverse siblings or having younger/older sister/brother

Our findings support Sulloway's (1996) perspective that birth order effect stems from sibling competition

## Mechanism: Age gap and birth order effects

	<i>Total risk</i>	<i>Idiosyncratic risk</i>	<i>Active risk</i>
Birth order	0.694*** (2.88)	0.278*** (3.02)	1.183*** (2.66)
Birth order x Age gap	-0.132** (-2.31)	-0.042** (-1.96)	-0.221*** (-2.70)
Age gap	-0.334** (-2.47)	-0.205*** (-3.90)	-0.156 (-1.09)

- Age spacing between siblings may cause less dilution of parental resources, resulting in a less competition for resource-rich niches (Sulloway 1999; 2001)
- Age spacing negatively influences the relationship between manager birth order and risk taking
- Age spacing is measured by the number of full years to the closest sibling based on their birthdates. In total, 552 managers (870 funds)

**Sibling rivalry – is the key mechanism behind the birth order effects**

# Mechanism: Limited parental resources (I/II)

## Parental **financial resources** and birth order effects

	<i>Total risk</i>		<i>Idiosyncratic risk</i>		<i>Active risk</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Birth order	0.156 (0.71)	0.192 (1.30)	0.238*** (3.01)	0.081** (2.43)	0.441 (1.52)	0.357 (1.63)
Birth order x Low income	1.201*** (3.01)		0.404*** (3.60)		1.957*** (2.84)	
Birth order x Low-paid parents		0.798** (2.09)		0.250*** (3.62)		1.442** (2.33)
Low income	-1.968*** (-2.52)		-0.470* (-1.89)		-2.928** (-2.45)	
Low-paid father		-0.649 (-0.84)		0.245 (1.54)		-1.586 (-1.57)

- Growing up in the presence of financial constraints positively moderates the relationship between birth order and risk taking
- On the contrary, managers-descendants of wealthy families show almost no evidence that later-born mutual fund managers take on more risk relative to their first-born counterparts

Parents' income is based on 1940 census records (median split). In total, 234 managers (356 funds). Parent's employment information is from obituaries. In total, 867 managers (1,274 funds)

# Mechanism: Limited parental resources (II/II)

## Limited parental attention and birth order effects

	<i>Total risk</i>		<i>Idiosyncratic risk</i>		<i>Active risk</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Birth order	0.169 (0.95)	0.110 (0.56)	0.154* (1.75)	0.062 (0.76)	0.660** (2.21)	0.438 (1.39)
Birth order x Both work	1.109*** (3.57)		0.309** (2.06)		0.905** (1.98)	
Birth order x Father war		0.776** (2.34)		0.346*** (2.25)		1.573** (2.00)
Both work	-1.807*** (-2.65)		-0.445 (-1.30)		-1.609* (-1.79)	
Father war		-2.132*** (-3.05)		-1.117*** (-3.44)		-3.001** (-2.40)

- Birth order effects are stronger among managers that grew up in families with limited parental attention
- Managers who grew up in a less constrained environment display less pronounced propensity to take risks

Father's military service records are from Department of Veteran Affairs and US military registries. In total, 827 managers (1,203 funds). Parent's employment information is from obituaries. In total, 416 managers (603 funds)

## Additional evidence on risk taking: Trading Behavior

Style Extremity								
	<i>Market</i>		<i>Size</i>		<i>Value</i>		<i>Momentum</i>	
Birth order	0.043***	0.033*	0.039***	0.041**	0.044***	0.040**	0.038**	0.049**
	(2.94)	(1.88)	(2.59)	(2.02)	(3.16)	(2.37)	(2.10)	(2.06)
Family size		0.017		-0.002		0.006		-0.018
		(0.98)		(-0.14)		(0.31)		(-1.00)
Measures of turnover and lottery holdings								
	<i>Turnover</i>		<i>MAX5</i>		<i>MAX5top</i>		<i>LTRY</i>	
Birth order	0.140*	0.140**	0.082**	0.068*	0.087***	0.071**	1.277**	1.131*
	(1.85)	(1.97)	(2.43)	(1.98)	(2.71)	(2.15)	(2.16)	(1.90)
Family size		0.001		0.024*		0.026		0.233
		(0.04)		(1.72)		(1.59)		(0.91)

Later-born managers behave in ways that are consistent with greater risk tolerance, such that they:

- are more likely to take **extreme style** bets
- **trade more frequently**
- hold more **lottery stocks**

## Additional evidence on risk taking: Managerial violations

	Dependent Variable:				
	<i>Violations</i>	<i>Regulatory</i>	<i>Customer disputes</i>	<i>Number of violations</i>	<i>Fines paid (USD)</i>
Birth order	0.547*** (2.89)	0.174 (0.68)	0.791*** (3.44)	0.057** (2.49)	14677.43*** (3.51)
Manager controls	Yes	Yes	Yes	Yes	Yes
Pseudo/Adj. R-squared	0.12	0.09	0.15	0.03	0.03
Managers	303	303	303	303	303

- Non-pecuniary **risk-taking extend beyond mutual fund portfolio management**

Relative to first-born individuals, later-born managers, all else equal, are more likely to:

- have records of past violations
- lose disputes with customers
- have greater number of violations
- end up paying more in total fines and compensations

Data on managerial violations is from FINRA BrokerCheck. In total, we have collected data for 303 fund managers

\*No manager in our sample has criminal records

## Performance and birth order

Variable	<i>Sharpe ratio</i>			<i>Information ratio</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
Birth order	-0.056*** (-3.88)	-0.053*** (-3.95)	-0.013 (-0.53)	-0.068*** (-4.23)	-0.058*** (-3.88)	-0.040*** (-1.82)
Fund controls	Yes	Yes	Yes	Yes	Yes	Yes
Manager controls	Yes	Yes	Yes	Yes	Yes	Yes
Segment FE	Yes	No	No	Yes	No	No
Year FE	Yes	No	No	Yes	No	No
Segment FE x Year FE	No	Yes	No	No	Yes	No
Fund firm FE x Year FE	No	No	Yes	No	No	Yes
Adj. R-squared	0.7	0.76	0.79	0.12	0.32	0.29
N of funds	1,009	1,009	775	1,009	1,009	775
Observations	6,316	6,264	4,038	6,316	6,264	4,038

- Greater incremental risk taking of later-born managers **does not** result in better performance
- Being born by one birth order rank younger reduces average annualized Sharpe ratio and information ratio by 0.06 and 0.07, respectively

Later-born managers exhibit behavioral patterns that are associated with **sensation seeking**



# Results Summary

- **Birth order is positively related to sensation seeking**
  - Managerial **sensation seeking behavior is intricately linked to birth order**
  - The later a manager is born in the sibling hierarchy, greater investment risk she undertakes, without being compensated with higher returns
- **Sibling rivalry** for parental resources **is the key mechanism** behind the birth order effects
  - The more sibling rivalry is present during childhood, the more birth order-related niche differentiation behaviors become engrained
- Long-lived effects of **birth order shape the trading behavior** of fund managers
  - Later-born managers exhibit trading patterns that are associated with sensation seeking, e.g. take extreme style bets, hold more lottery stocks, and trade more frequently.
- The **incremental risk-taking** by later-born managers **extends beyond portfolio management**

Thank you for your attention!