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The Value of Financial Knowledge

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Research Questions

SUBJECTIVE VALUE OF FK: WILLINGNESS TO PAY

- What determines demand for financial education?
- Who is willing to pay (more) for financial education?

OBJECTIVE VALUE OF FK: EFFECTIVENESS

- Do individuals improve their financial decision-making when they acquire financial education?
- Who benefits most from financial education?

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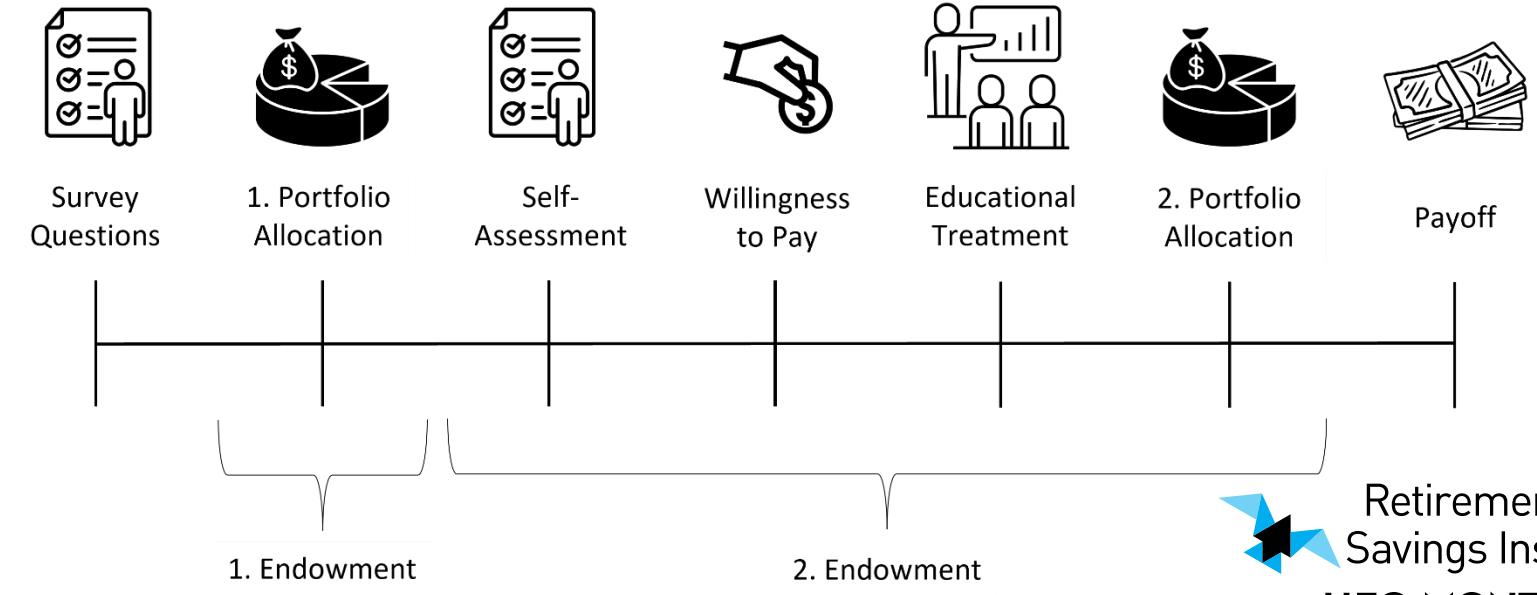
Experimental Setup

- Survey experiment with Asking Canadians in Fall 2021
- 2,005 subjects aged 25 to 80
- Rewards: Participation fee & Return from Allocation Task 2 with a 30$ endowment



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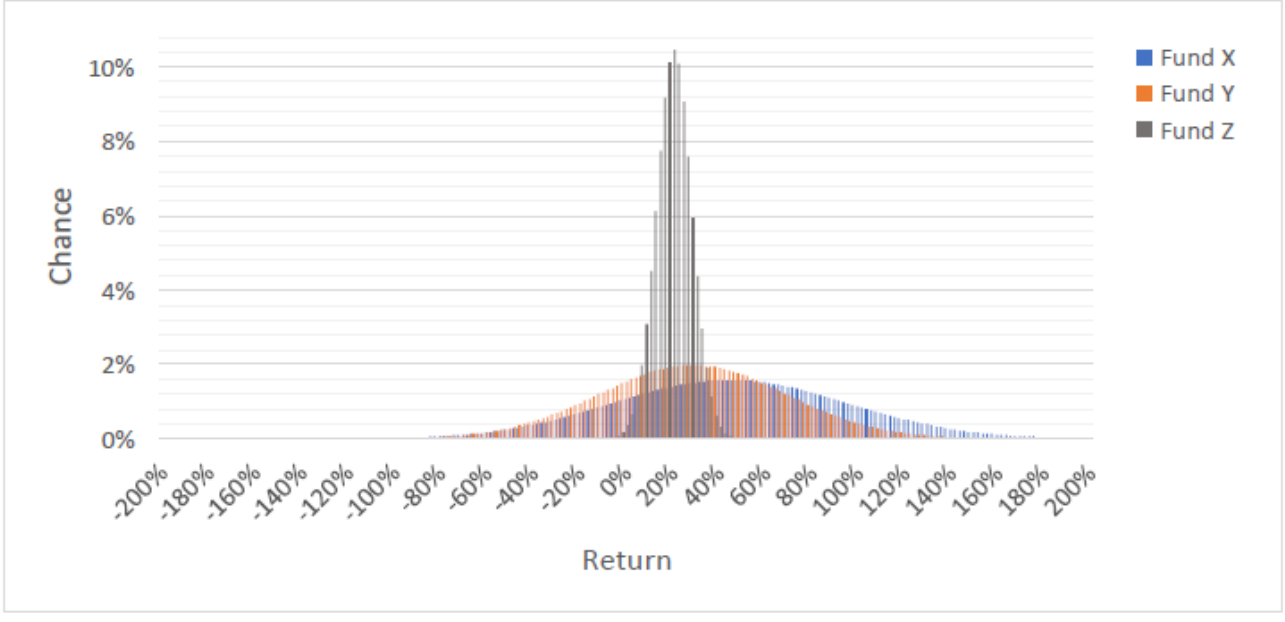
Portfolio Allocation Task 1



Funds	Expected 5-year Return (%)	5-year Variability (%)
Fund X	44.4	50.2
Fund Y	27.5	40.3
Fund Z	18.9	7.6

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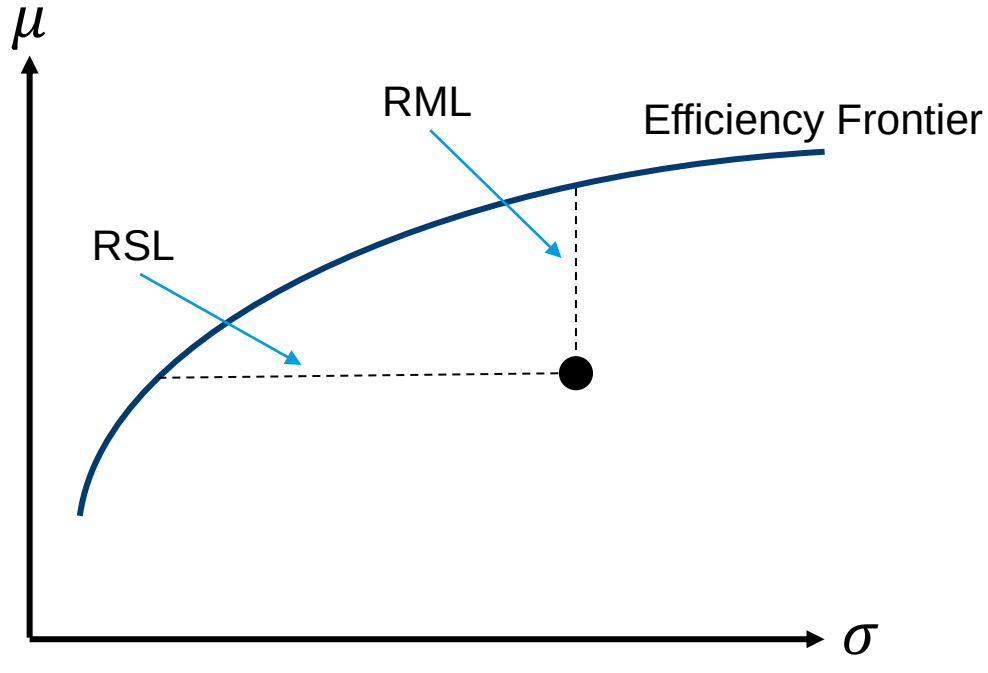
Task 1: Efficiency Measures



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Task 1: Determinants of Performance

	(1) Mean$_1$	(2) Standard Deviation$_1$	(3) Sharpe Ratio$_1$	(4) RML$_1$	(5) RSL$_1$	(6) 1/K$_1$	(7) Return Chasing$_1$
Female	0.002	0.332	0.014	0.359	0.286	-0.022	0.026
	(0.311)	(0.552)	(0.020)	(0.284)	(0.558)	(0.020)	(0.015)
College or some university	-0.218	0.023	0.002	0.530	0.979	-0.059*	-0.005
	(0.462)	(0.821)	(0.029)	(0.423)	(0.830)	(0.028)	(0.022)
Bachelor degree or more	-0.781	-0.575	0.039	1.097**	1.631*	-0.034	0.004
	(0.463)	(0.822)	(0.029)	(0.423)	(0.830)	(0.028)	(0.022)
Financial Literacy Score	0.006	0.163	0.001	0.229	0.484	-0.065***	-0.001
	(0.217)	(0.385)	(0.014)	(0.198)	(0.389)	(0.013)	(0.010)
Cognitive Ability Score	-0.570***	-0.909**	0.042***	0.136	0.102	-0.006	-0.001
	(0.171)	(0.303)	(0.011)	(0.156)	(0.307)	(0.011)	(0.008)
Numeracy Score	-0.324	-0.606	0.027*	0.046	-0.074	-0.021	-0.000
	(0.201)	(0.357)	(0.013)	(0.184)	(0.361)	(0.014)	(0.010)
Financial knowledge: high	0.684	1.334	-0.003	0.010	-0.564	-0.053	0.053*
	(0.523)	(0.928)	(0.033)	(0.478)	(0.938)	(0.037)	(0.023)
Financial knowledge: very high	0.525	1.041	-0.047	0.098	0.210	-0.023	0.004
	(0.837)	(1.487)	(0.053)	(0.766)	(1.503)	(0.056)	(0.041)
Has traded stocks	0.712*	1.243*	-0.010	-0.161	-0.559	-0.052*	0.045**
	(0.346)	(0.615)	(0.022)	(0.317)	(0.621)	(0.023)	(0.016)
_cons	34.083***	27.873***	1.299***	0.203	0.935		
	(1.172)	(2.081)	(0.074)	(1.071)	(2.102)		
Mean	31.679	26.056	1.374	3.883	7.628	0.244	0.108
N	1993	1993	1993	1993	1993	1993	1993
r2	0.055	0.045	0.054	0.029	0.024		
chi2						177.675	54.232

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Willingness to Pay for Education

- Real trade-off between paying for educational or spending money on Allocation Task 2
- **24.5%** of participants **do not want an educational intervention**, even if it is provided at no cost
- The average willingness to pay of the other participants is $2.90 (~10% of the endowment)
- 43.1% received the “treatment”

	(1) Reject treatment		(2) Willingness to pay (>= 0)	
Ability to apply treatment: yes	-0.067**	(0.025)	0.399***	(0.111)
Ability to apply treatment: dk	0.045	(0.026)	0.091	(0.149)
Exp. higher return in task 2: yes	-0.129***	(0.026)	0.338**	(0.119)
Exp. higher return in task 2: dk	0.017	(0.025)	0.056	(0.142)
Female	-0.029	(0.020)	0.073	(0.094)
College or some university	0.042	(0.030)	-0.112	(0.142)
Bachelor degree or more	0.059	(0.030)	-0.221	(0.141)
ln(Household income)	0.020**	(0.006)	-0.017	(0.021)
Financial Literacy Score	-0.045***	(0.013)	-0.029	(0.073)
Cognitive Ability Score	0.017	(0.011)	0.046	(0.051)
Numeracy Score	-0.055***	(0.015)	-0.066	(0.058)
Financial knowledge: high	0.010	(0.037)	-0.499**	(0.154)
Financial knowledge: very high	0.038	(0.051)	-0.519*	(0.247)
_cons			3.112	(4.379)
Mean	0.245		2.909	
N	1592		1202	
chi2	426.906			
r2			0.080	

Standard errors in parentheses

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The Educational Treatment

The value of diversification

- Verbal and graphical illustration of hypothetical 3-fund allocation task, where funds have same expected return and standard deviation
- Portfolio's standard deviation decreases when endowment is spread equally across all funds (relative to investing everything in a single fund) while expected return is unchanged

The value of high risk adjusted portfolio returns

- Illustration and example of a 3-fund allocation task
- Treatment suggests first to build a portfolio by using 1/K, and then shows how to increase the expected return while keeping standard deviation unchanged:
  - Calculate risk-adjusted returns of each fund: $\frac{Expected\ Return}{Standard\ Deviation}$
  - Allocate more money to funds with higher risk-adjusted returns.

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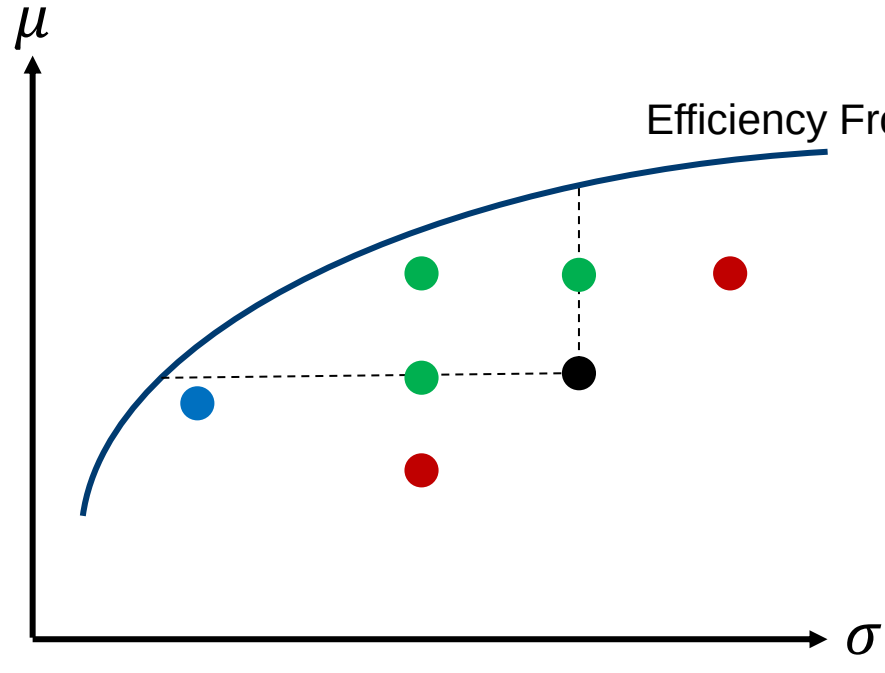
Task 2: Efficiency & Welfare Measures



- First Allocation
- No Improvement
- Efficiency Improvement
- Efficiency & Welfare Improvement

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Task 2: Treatment Effect on Portfolio Allocation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Δ Sharpe Ratio	Δ RML	Δ RSL	Δ 1/K	Δ Return chasing	Δ Efficiency	Δ Welfare
Received treatment	-0.007	-0.842	-1.101	0.496***	0.271*	0.196***	0.029*
	(0.021)	(0.456)	(0.910)	(0.059)	(0.115)	(0.032)	(0.014)
_cons	-0.021	-0.209	-0.894				
	(0.060)	(1.294)	(2.581)				
Controls	X	X	X	X	X	X	X
Mean	0.039	-0.410	-0.517	0.489	0.473	0.342	0.035
N	1592	1592	1592	395	163	1592	1592
r2	0.027	0.024	0.019				
chi2				213.890	68.560	168.536	55.810

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Summary of Results / Conclusion

WILLINGNESS TO PAY

- **One quarter** of participants **does not want to receive** the educational **treatment**, even if it was free of charge
- **WTP is driven by expectations** about ability to transform financial information from intervention into a higher return
- Higher **revealed sophistication** (e.g., financial literacy) **increases the willingness** to receive the educational treatment
- Higher **self-reported financial knowledge decreases** the willingness to pay for it

EFFECTIVENESS

- **Treatment increases heterogeneity** in portfolio allocations
- Standard performance measures can miss the treatment effect of financial education on portfolio decisions → **We develop two novel measures** of 1) Pareto improvement of portfolio efficiency 2) preference-independent welfare improvement
- **Treatment increases likelihood** to achieve these types **of performance improvement** by almost 20 and 3 p.p., respectively