Online Appendix

Inequality of Opportunity and Income Redistribution

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A Additional Figures and Tables

Figure A1: Spectator Redistribution Screens for Lucky Outcomes and Lucky Opportunities with Information about π

Worker ID:	sao9rqhr	qeha27vh
Coin-Flip Chance:	46%	
Result:	won	lost
Unadjusted Earnings:	$5.00	$0.00

There was a 46% chance that the winner and the loser in this pair were determined by a coin flip instead of the number of correct encryptions each worker completed.

▷ This means that there is a 77% chance that the winner above completed more transcriptions than the loser.

Worker ID:	ga2c8k8x	nkqqjd0n
Multiplier:	2.9	2.4
Result:	won	lost
Unadjusted Earnings:	$5.00	$0.00

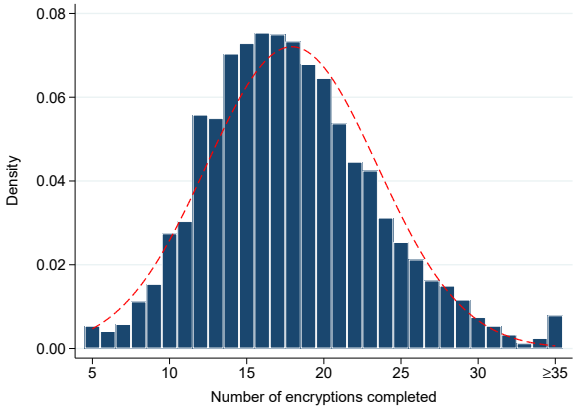
The winner had a higher score than the loser in this pair. Each worker's score is the number of correct encryptions they completed *times* their multiplier.

▷ Based on historical data for these multipliers, there is a 77% chance that the winner above completed more transcriptions than the loser.

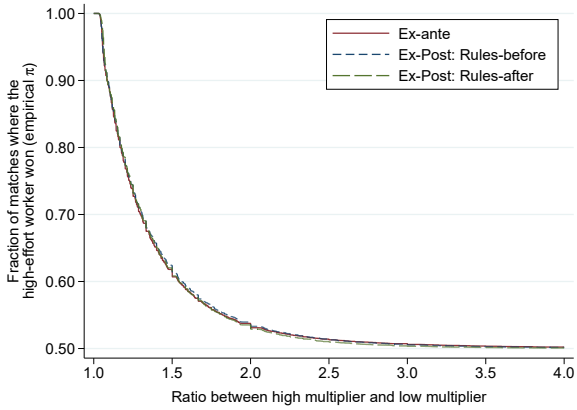
Notes: This figure shows the information for redistribution choices displayed to spectators under the lucky outcomes (top) and lucky opportunities (bottom) conditions. Included directly below the outcomes table is additional text to remind spectators how to interpret the form of luck involved in determining the winner and loser of the pair. The information provision converting the influence of luck as the likelihood that the winner performed better than the loser is only included for information condition spectators (see text next to ▷ symbol).

Figure A2: Distribution of effort and probability of exerting more effort

Panel A. Distribution of encryptions completed in worker task

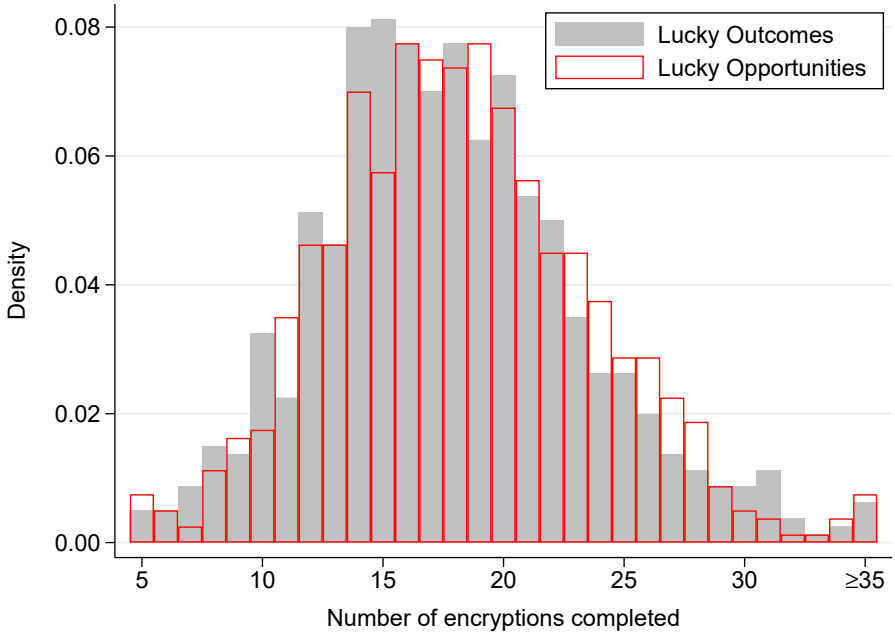


Panel B. Probability that the winner exerted more effort as a function of multiplier ratio



Notes: Panel A shows the distribution of the total number of correct three-word encryptions. The mean number of encryptions completed is 18 and the standard deviation is 5.5. The red dashed line shows the density of a normal random variable that has the same mean and standard deviation as the distribution of tasks completed. In Panel B, the $y-$axis depicts the fraction of all possible worker pair combinations in which the worker who wins (who has the higher score, i.e., correct encryptions times productivity multiplier) is also the worker who solved more encryptions. The $x-$axis depicts the ratio of the winning worker's to the losing worker's productivity multiplier. Thus, Panel B depicts the empirical relationship between m and π. At $\pi = 0.5$, there is a 50% chance that the winner of the pair is the worker who solved more encryptions so that the outcome is purely luck-based. The three different lines reflect data from different subtreatments, which we explain in Section 3.2.3 and Section 3.2.5, respectively.

Figure A3: Histogram of tasks completed by condition



Notes: This figure shows the distribution of tasks completed by workers in the lucky outcomes and baseline lucky opportunities conditions. A Kolmogorov–Smirnov test for equality of distribution cannot reject the hypothesis that the distributions of worker effort in the two conditions are equal ($p = 0.914$).

Table A1: Summary of Treatments and Key Features

Treatment	Name	Source of Luck	Timing of Luck	Workers' Knowledge	Spectators' Info
1	Lucky Outcomes (rules before)	Coin Flips	After Workers Complete Task	Before Task	Partial
2	Lucky Outcomes (rules before)	Coin Flips	After Workers Complete Task	Before Task	Full
3	Lucky Outcomes (rules after)	Coin Flips	After Workers Complete Task	After Task	Partial
4	Lucky Outcomes (rules after)	Coin Flips	After Workers Complete Task	After Task	Full
5	Baseline Lucky Opportunities (rules before)	Multipliers	Before Workers Start Task	Before Task	Partial
6	Baseline Lucky Opportunities (rules before)	Multipliers	Before Workers Start Task	Before Task	Full
7	Ex-Post Lucky Opportunities (rules before)	Multipliers	After Workers Complete Task	Before Task	Partial
8	Ex-Post Lucky Opportunities (rules before)	Multipliers	After Workers Complete Task	Before Task	Full
9	Ex-Post Lucky Opportunities (rules after)	Multipliers	After Workers Complete Task	After Task	Partial
10	Ex-Post Lucky Opportunities (rules after)	Multipliers	After Workers Complete Task	After Task	Full

Notes: This table summarizes the experimental treatments and their key features. Treatments vary based on the source of luck (coin flips for lucky outcomes versus multipliers for lucky opportunities), the timing of when luck is applied (before or after workers complete the task), workers' knowledge about the role of luck (informed before or after the task), and the level of information provided to spectators (partial or full information about the probability that performance determined the winner).

Table A2: Average worker characteristics by treatment condition

	Lucky Outcomes		Lucky Opportunities	Ex-Post Lucky Opportunities	
Worker characteristics	Rules-Before	Rules-After		Rules-Before	Rules-After
Age	39.08	37.87	38.18	37.95	38.53
Male	0.56	0.56	0.61	0.57	0.58
Married	0.62	0.70	0.67	0.58	0.73
White	0.76	0.76	0.79	0.70	0.76
Completed college	0.79	0.85	0.83	0.79	0.84
Income > 75,000	0.34	0.31	0.31	0.35	0.31
Has masters certification	0.33	0.42	0.34	0.28	0.40
Encryptions attempted	18.11	18.17	18.59	18.43	17.54
Encryptions completed	17.82	17.84	18.27	18.17	17.20
Average multiplier	–	–	2.58	2.56	2.53
Time spent in instructions	121.10	143.52	142.99	153.94	138.93
Time spent in comprehension screen	110.85	127.50	124.49	125.14	150.82
Average time spent in each round	17.43	17.29	17.03	17.10	17.76
Total time in experiment	817.84	841.46	875.63	913.38	879.16
N (Workers)	400	400	800	400	400

Notes: This table shows summary statistics on our sample of workers. We exclude workers who completed fewer than five encryptions. The time spent in the experiment is measured in seconds.

Table A3: Heterogeneity in redistribution

	Lucky Outcomes		Lucky Opportunities	
	Mean Redist. (1)	Elasticity w.r.t. $1-\pi$ (2)	Mean Redist. (3)	Elasticity w.r.t. $1-\pi$ (4)
Panel A. Demographic characteristics, education, and income				
Female	0.045*	−0.015	0.054*	−0.001
	(0.020)	(0.009)	(0.025)	(0.007)
Under 50−years old	−0.017	0.007	−0.040	0.003
	(0.021)	(0.009)	(0.025)	(0.007)
Married	−0.036	0.016	−0.028	0.004
	(0.021)	(0.009)	(0.025)	(0.008)
White	0.014	0.010	0.027	−0.020
	(0.025)	(0.011)	(0.040)	(0.011)
Completed college	−0.015	0.014	0.023	0.011
	(0.022)	(0.009)	(0.027)	(0.008)
HH income above 100k	−0.050*	0.013	−0.046	0.004
	(0.024)	(0.009)	(0.026)	(0.007)
Panel B. Political and Social preferences				
Tend to side with republicans	−0.041	0.005	−0.056*	0.007
	(0.023)	(0.010)	(0.025)	(0.008)
Oppose gov't interventions	−0.067**	−0.008	−0.048	0.003
	(0.026)	(0.011)	(0.027)	(0.008)
Conservative on social issues	−0.019	0.016	−0.033	−0.005
	(0.025)	(0.010)	(0.026)	(0.008)
Influece of hard work is fair	−0.032	0.047***	−0.004	0.028*
	(0.031)	(0.011)	(0.026)	(0.012)
Influece of talent is fair	−0.009	0.045***	−0.035	0.005
	(0.028)	(0.010)	(0.031)	(0.010)
Influece of luck is fair	−0.018	0.013	−0.028	0.005
	(0.023)	(0.010)	(0.026)	(0.008)
Influece of connections is fair	−0.012	0.016	−0.053	−0.000
	(0.027)	(0.012)	(0.031)	(0.009)
Key to success own hands	−0.061**	−0.012	−0.090***	0.002
	(0.020)	(0.009)	(0.024)	(0.008)
Gov't should never redistribute	−0.027	0.001	−0.056*	−0.003
	(0.021)	(0.010)	(0.025)	(0.008)
Gov't redistribute to correct luck	0.017	−0.002	0.056	0.021*
	(0.031)	(0.013)	(0.031)	(0.011)
Income dist. in the US is fair	−0.006	−0.008	−0.081**	0.007
	(0.028)	(0.015)	(0.026)	(0.009)

Notes: This table shows the difference in mean redistribution and the slope of redistribution across various participant characteristics and stated preferences. Each row shows the result of an independent regression where the coefficient corresponds to the difference between the stated characteristic and the omitted category. All variables in Panel A are indicator variables. All variables in Panel B are indicators equal to one if the participant "agrees" or "strongly agrees" and zero otherwise. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A4: Fraction redistributed as a function of $1-\pi$ and information treatment

	Outcome: Fraction of earnings redistributed		
	Lucky Outcomes (1)	Lucky Opportunities (2)	Difference (3)
Panel A. Average Redistribution			
Info π	-0.045^{**}	-0.027	-0.018
	(0.014)	(0.017)	(0.022)
Constant	0.276^{***}	0.234^{***}	0.042^{**}
	(0.010)	(0.013)	(0.016)
N (Redistributive decisions)	4,728	4,680	9,408
Panel B. Linear slope			
$1-\pi$	0.037^{***}	0.020^{***}	0.017^{**}
	(0.005)	(0.004)	(0.006)
Info π	-0.023	-0.003	-0.021
	(0.017)	(0.019)	(0.026)
$1-\pi\times$ Info π	0.015^{*}	0.017^{**}	-0.002
	(0.006)	(0.005)	(0.008)
Constant	0.331^{***}	0.263^{***}	0.068^{***}
	(0.013)	(0.014)	(0.019)
N (Redistributive decisions)	4,728	4,680	9,408

Notes: Column 1 includes only spectators in the lucky outcomes condition and column 2 includes only spectators in the lucky opportunities condition. Column 3 is the difference in spectator responses between columns 1 and 2. Panel A shows average redistribution. We include a dummy variable indicating whether the spectators were assigned to know π (our information intervention). Panel B shows a linear approximation between the fraction of earnings redistributed and the likelihood that the winning worker performed better than the losing worker (π). We include variables that indicate whether spectators were assigned to know π and the interaction of π and its provision to spectators. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Additional Remarks: The elasticity of redistribution with respect to changes in the likelihood that the inequality is due to luck as reported in the main text can be calculated using the estimates in Panel B. Specifically, when spectators have information about π, the elasticity for each luck environment is given by the sum of the first row "$1-\pi$" and the third row "$(1-\pi)\times$ Info π."

The average difference in redistribution between the lucky outcomes treatment and the lucky opportunities treatment, conditional on receiving information about π, can be calculated using the estimates in Panel A, Column 3. Subtracting the effect of providing information (0.018) from the constant (0.042), we arrive at a difference of just 2.4 percentage points.

Table A5: Gap in mean redistribution between lucky outcomes and lucky opportunities as a function of $1-\pi$ and information treatment

	Outcome: Redistributive Gap		
	No Info	Info	Difference
	(1)	(2)	(3)
Lucky Opportunities $\times$ $1-\pi = 0.00$	-0.048	-0.018	0.031
	(0.025)	(0.022)	(0.034)
Lucky Opportunities $\times$ $1-\pi \in (0.00, 0.05]$	-0.024	-0.016	0.008
	(0.024)	(0.022)	(0.032)
Lucky Opportunities $\times$ $1-\pi \in (0.05, 0.10]$	-0.000	-0.022	-0.022
	(0.022)	(0.021)	(0.031)
Lucky Opportunities $\times$ $1-\pi \in (0.10, 0.15]$	0.014	0.022	0.007
	(0.023)	(0.021)	(0.031)
Lucky Opportunities $\times$ $1-\pi \in (0.15, 0.20]$	0.062^{**}	0.017	-0.045
	(0.023)	(0.020)	(0.030)
Lucky Opportunities $\times$ $1-\pi \in (0.20, 0.25]$	0.090^{***}	0.042	-0.048
	(0.022)	(0.021)	(0.031)
Lucky Opportunities $\times$ $1-\pi \in (0.25, 0.30]$	0.117^{***}	0.038	-0.079^{*}
	(0.023)	(0.020)	(0.031)
Lucky Opportunities $\times$ $1-\pi \in (0.30, 0.35]$	0.082^{***}	0.021	-0.061^{*}
	(0.023)	(0.021)	(0.031)
Lucky Opportunities $\times$ $1-\pi \in (0.35, 0.40]$	0.066^{**}	0.032	-0.034
	(0.023)	(0.021)	(0.031)
Lucky Opportunities $\times$ $1-\pi \in (0.40, 0.45]$	0.076^{**}	0.060^{**}	-0.016
	(0.025)	(0.022)	(0.033)
Lucky Opportunities $\times$ $1-\pi \in (0.45, 0.50)$	0.037	0.033	-0.003
	(0.026)	(0.023)	(0.035)
Lucky Opportunities $\times$ $1-\pi = 0.50$	0.038	0.087^{***}	0.049
	(0.028)	(0.023)	(0.036)
N (Redistributive decisions)	4,692	4,716	9,408

Notes: This table shows the gap in mean redistribution between the lucky opportunities and the lucky outcomes conditions across different $1-\pi$ bins. Each column shows a different treatment. Column 1 shows the redistributive gap when spectators do not receive information about π. Column 2 shows the redistributive gap when spectators receive information about π. Column 3 shows the difference between columns 1 and 2. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A6: Correlation between redistribution behavior and political and social preferences

	Fraction of earnings redistributed		
Correlation with...	Lucky Outcomes (1)	Lucky Opportunities (2)	Difference (3)
Panel A. Political and social preferences			
Tend to side with democrats	0.081	0.138*	−0.057
	(0.042)	(0.055)	(0.069)
Tend to side with republicans (−)	0.078	0.154**	−0.076
	(0.045)	(0.050)	(0.067)
Oppose gov't interventions (−)	0.124**	0.159**	−0.035
	(0.044)	(0.058)	(0.072)
Conservative on social issues (−)	0.026	0.111*	−0.085
	(0.041)	(0.050)	(0.065)
Influece of hard work is fair (−)	0.078*	0.116**	−0.038
	(0.039)	(0.039)	(0.056)
Influece of talent is fair (−)	0.039	0.124**	−0.084
	(0.042)	(0.044)	(0.061)
Influece of luck is fair (−)	0.102*	0.059	0.043
	(0.043)	(0.055)	(0.070)
Influece of connections is fair (−)	0.044	0.099	−0.055
	(0.042)	(0.058)	(0.072)
Hard work brings a better life (−)	0.115**	0.101	0.014
	(0.039)	(0.058)	(0.070)
Key to success own hands (−)	0.117**	0.177***	−0.060
	(0.043)	(0.051)	(0.067)
Gov't should never redistribute (−)	0.076	0.139*	−0.063
	(0.043)	(0.053)	(0.068)
Gov't redistribute to correct luck	0.040	0.156**	−0.116
	(0.043)	(0.052)	(0.068)
Gov't eliminate income differences	0.047	0.117*	−0.070
	(0.045)	(0.050)	(0.067)
Income dist. in the US is fair (−)	0.033	0.117*	−0.084
	(0.040)	(0.052)	(0.065)
Panel B. Summary indices			
z−score (−)	0.064**	0.110***	−0.047
	(0.021)	(0.027)	(0.034)
R−squared	0.016	0.043	0.030
PCA first component (−)	0.118**	0.201***	−0.083
	(0.043)	(0.050)	(0.066)
R−squared	0.014	0.040	0.027
N (Redistributive decisions)	2,364	2,328	4,692

Notes: This table shows the relationship between redistribution behavior in each treatment condition and political and social preferences. Each cell shows the result from a bivariate OLS regression. We normalize variables by their standard deviation so that the coefficients of the regressions can be interpreted as the linear correlation coefficients. (−) denotes reverse coded. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A7: Number of encryptions completed and worker multiplier

	Outcome: Number of encryptions completed by workers	
	Linear function (1)	Non-parametric (2)
Multiplier	0.147	
	(0.198)	
Multiplier $\in [1.0, 1.5)$		-1.082
		(0.589)
Multiplier $\in [1.5, 2.0)$		0.256
		(0.704)
Multiplier $\in [2.0, 2.5)$		-0.506
		(0.613)
Multiplier $\in [2.5, 3.0)$		-1.162
		(0.647)
Multiplier $\in [3.0, 3.5)$		-0.526
		(0.634)
Constant	17.889^{***}	18.754^{***}
	(0.544)	(0.386)
N (Wokers)	800	800

Notes: This table shows the number of encryptions completed by workers in the baseline lucky opportunities condition. Workers are randomly assigned a productivity multiplier $\in [1, 4]$ as a rate of return on the number of correct encryptions completed in five minutes. The omitted category in column 2 is multiplier $\in [3.5, 4.0]$. Heteroskedasticity-robust standard errors clustered at the worker level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A8: Fraction redistributed as a function of π in baseline and ex-post lucky opportunities

	Outcome: Fraction of earnings redistributed		
	Baseline Lucky Opportunities (1)	Ex-Post Lucky Opportunities (2)	Difference (3)
Panel A. Average redistribution			
Constant	0.234^{***}	0.243^{***}	-0.010
	(0.013)	(0.014)	(0.019)
N (Redistributive decisions)	2,328	2,316	4,644
Panel B. Linear slope			
$1-\pi$	0.020^{***}	0.021^{***}	-0.001
	(0.004)	(0.004)	(0.005)
Constant	0.263^{***}	0.274^{***}	-0.012
	(0.014)	(0.016)	(0.021)
N (Redistributive decisions)	2,328	2,316	4,644
Panel C. Non-parametric estimation			
$1-\pi = 0.00$	0.179^{***}	0.184^{***}	-0.005
	(0.018)	(0.018)	(0.025)
$1-\pi \in (0.00, 0.05]$	0.198^{***}	0.218^{***}	-0.019
	(0.016)	(0.018)	(0.024)
$1-\pi \in (0.05, 0.10]$	0.202^{***}	0.215^{***}	-0.013
	(0.016)	(0.018)	(0.024)
$1-\pi \in (0.10, 0.15]$	0.226^{***}	0.217^{***}	0.009
	(0.017)	(0.016)	(0.023)
$1-\pi \in (0.15, 0.20]$	0.208^{***}	0.212^{***}	-0.004
	(0.015)	(0.016)	(0.022)
$1-\pi \in (0.20, 0.25]$	0.226^{***}	0.236^{***}	-0.009
	(0.015)	(0.017)	(0.023)
$1-\pi \in (0.25, 0.30]$	0.228^{***}	0.243^{***}	-0.015
	(0.016)	(0.017)	(0.024)
$1-\pi \in (0.30, 0.35]$	0.240^{***}	0.252^{***}	-0.012
	(0.016)	(0.017)	(0.023)
$1-\pi \in (0.35, 0.40]$	0.249^{***}	0.247^{***}	0.002
	(0.016)	(0.017)	(0.024)
$1-\pi \in (0.40, 0.45]$	0.260^{***}	0.283^{***}	-0.023
	(0.017)	(0.018)	(0.025)
$1-\pi \in (0.45, 0.50)$	0.291^{***}	0.289^{***}	0.002
	(0.018)	(0.019)	(0.026)
$1-\pi = 0.50$	0.298^{***}	0.325^{***}	-0.026
	(0.019)	(0.021)	(0.028)
N (Redistributive decisions)	2,328	2,316	4,644

Notes: Column 1 includes only spectators in the baseline lucky opportunities condition and column 2 includes only spectators under the ex-post lucky opportunities condition. Column 3 is the difference in spectator responses between columns 1 and 2. Panel A shows average redistribution. Panel B shows the linear approximation between the fraction of earnings redistributed and the likelihood that the winning worker performed better than the losing worker (π). Panel C shows the relationship between redistribution and the likelihood that the winning worker performed better (π) split into 11 bins. The omitted category is $\pi = 0.50$. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A9: Perceived worker effort and worker multiplier

	Outcome: Spectator beliefs about encryptions completed	
	Linear function	Non-parametric
	(1)	(2)
Multiplier	1.248	
	(1.489)	
Multiplier $\in [1.0, 1.5)$		-5.599
		(4.532)
Multiplier $\in [1.5, 2.0)$		-1.195
		(4.559)
Multiplier $\in [2.0, 2.5)$		-1.740
		(4.266)
Multiplier $\in [2.5, 3.0)$		3.162
		(4.450)
Multiplier $\in [3.0, 3.5)$		-4.195
		(4.252)
Constant	25.833^{***}	30.478^{***}
	(4.000)	(2.974)
N (Spectators)	390	390

Notes: This table shows spectators' perceived effort of workers assigned to each spectator for the luck opportunities condition. Recall that workers are randomly assigned an effort multiplier $\in [1, 4]$ as a rate of return on the number of correct encryptions completed in 5 minutes. The omitted category in column (2) is multiplier $\in [3.5, 4.0]$. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A10: Fraction redistributed on polynomials of the multiplier difference

	Outcome: Fraction of earnings redistributed				
	(1)	(2)	(3)	(4)	(5)
(Multiplier difference)^1	0.041***	0.038***	0.042***	0.037*	0.036*
	(0.007)	(0.010)	(0.011)	(0.015)	(0.015)
(Multiplier difference)^2		0.001	0.009	0.012	0.004
		(0.003)	(0.006)	(0.009)	(0.015)
(Multiplier difference)^3			−0.003	−0.002	0.002
			(0.002)	(0.004)	(0.009)
(Multiplier difference)^4				−0.001	0.001
				(0.002)	(0.002)
(Multiplier difference)^5					−0.001
					(0.001)
N (Redistributive decisions)	2,328	2,328	2,328	2,328	2,328

Notes: This figure shows the average redistribution (from the winner's earnings to the loser) as a function of polynomials of the difference between the multiplier of the winner and the loser ($m_1 - m_2$) in the lucky opportunities environment. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

Table A11: Determinants of redistribution

	Outcome: Fraction of earnings redistributed		
	(1)	(2)	(3)
Panel A. Baseline Lucky Opportunities Condition			
Multiplier difference	0.041^{***}		0.028^{**}
	(0.007)		(0.010)
Prob. best performer lost		0.020^{***}	0.007
		(0.004)	(0.005)
Constant	0.202^{***}	0.263^{***}	0.223^{***}
	(0.014)	(0.014)	(0.020)
N (Redistributive decisions)	2,328	2,328	2,328
Panel B. Information Treatment			
Multiplier difference	0.041^{***}		0.028^{**}
	(0.007)		(0.010)
Prob. best performer lost		0.020^{***}	0.007
		(0.004)	(0.005)
Constant	0.202^{***}	0.263^{***}	0.223^{***}
	(0.014)	(0.014)	(0.020)
N (Redistributive decisions)	2,328	2,328	2,328

Notes: This figure shows the average redistribution (from the winner's earnings to the loser) as a function of the difference between the multiplier of the winner and the loser ($m_1 - m_2$) and the probability that the best performer lost ($1 - \pi$) in the lucky opportunities environment. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

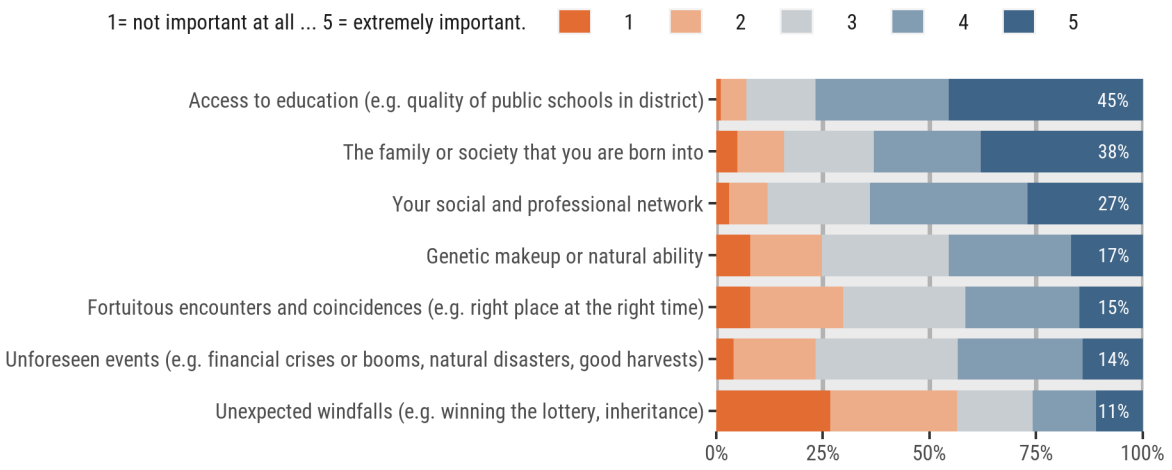
B Additional Results and Analysis

B.1 Luck Perceptions Survey

We surveyed over 1,000 panelists from the NY Fed's *Survey of Consumer Expectations* in February 2023 about the most important types of luck in determining people's life earnings. We conducted this survey by asking panelists to rank the importance of various luck events that occur in people's lives, including a balanced number of items exemplifying opportunity luck (e.g., access to education, the family or society someone is born into) and outcome luck (e.g., unforeseen events such as financial booms or busts, unexpected windfalls such as winning the lottery).

Most respondents agree that access to education, the family or society a person is born into, and their social or professional network are important in determining people's lifetime earnings (Figure B1). These are all examples of luck as an opportunity, whereby luck confers an individual with a relative advantage. Around 50 percent of people state that unexpected windfalls are unimportant in determining life outcomes—an example of outcome luck, which is independent of effort. Other forms of outcome luck, such as fortuitous encounters and unforeseen events, are rated as less important.

Figure B1: Important Factors for Determining People's Life Earnings



Notes: Likert-type responses from the *Survey of Consumer Expecations* ($N = 1013$): "Circumstances beyond a person's control—or, their luck—can impact their life earnings. Please indicate on a scale from 1 to 5 how important you think the following factors are for determining people's life earnings . . . 1 = not important at all . . . 5 = extremely important." The order of factors displayed to the survey respondent is randomized. This question is revealed *before* the open-ended question eliciting important examples of luck in life.

To support these survey responses, we also elicited open-text responses for the most important examples of luck in an individual's life.[1] Overall, 70.4 percent of respondents listed at least one

[1]The exact question text was as follows: "It is often said that luck is important for success in life. In your view, what are the three most important examples of luck in an individual's life?". We asked this question before presenting panelists with the Likert-scale question to avoid priming them about certain factors.

example of lucky opportunities. In contrast, only 26.3 percent of respondents mentioned at least one luck factor that is independent of an individual's effort, such as winning the lottery, being at the right place at the right time, or adverse weather events. A topic analysis of the text largely supports our main survey findings. Panelists indicated examples of opportunity luck in greater frequency. Using a Latent Dirichlet Allocation (LDA) analysis, we find that a majority of topics are related to luck that is non-separable from effort in determining life earnings (e.g., "family," "education," "birth," "health," "location," and "wealth").

B.2 Formal Derivation of the Properties of π

In this section, we derive the properties of how opportunity luck maps to the likelihood that the winner was based on merit. Recall that $\pi = 1$ if the disadvantaged (i.e., lower-multiplier) worker wins. Therefore, we restrict attention here to the more interesting case in which the advantaged worker won. Without loss of generality, suppose the winner is worker 1 so that $m_1 \geq m_2$. As before, we write $m = m_1/m_2$ to denote the relative advantage of worker 1.

Let $x(e_1, e_2)$ denote a systematic measure of relative effort comparing the disadvantaged worker to the advantaged worker and denote the distribution of x by F. Let $\hat{x} = x(e, e)$ be the equal effort cutoff. Further, let $x^*(m)$ denote the relative effort threshold that $x(e_1, e_2)$ needs to exceed so that worker 2 wins. In our experiment, $x(e_1, e_2) = e_2/e_1$, $x^*(m) = m$ and $\hat{x} = 1$.

Using this notation, we can rewrite the expression for π given in the main text as follows:

$$\pi(m) = \Pr\left(x < \hat{x} | x \leq x^*(m)\right) = \frac{F\left(\hat{x}\right)}{F\left(x^*(m)\right)} = \frac{1/2}{F(m)}. \tag{B1}$$

Taking the derivative yields $d\pi(m)/dm = -f(m)/F(m)^2 < 0$, which shows that π decreases in m as stated in the main text. Next, consider the second derivative:

$$\frac{d^2\pi(m)}{dm^2} = \frac{-f'(m)F(m)^2 - 2F(m)f(m)(-f(m))}{F(m)^4}. \tag{B2}$$

Thus, convexity of π follows if

$$-f'(m)F(m) + 2f(m)^2 \geq 0 \qquad \Leftrightarrow \qquad 2f(m)^2 \geq f'(m)F(m). \tag{B3}$$

The second inequality is implied by log-concavity of F. Thus, to prove that π is convex in m, it is sufficient to show that F is log-concave. Notably, F is log-concave if $x = e_2/e_1$ is log-normally distributed (see Table 3 in Bagnoli and Bergstrom, 2006, for example). Since both e_1 and e_2 are log-normal, it follows that $\log(e_2/e_1) = \log(e_2) - \log(e_1)$ is the difference of two normally distributed variables ($\log(e_2)$ and $\log(e_1)$), which is itself normally distributed. That is, $x = e_2/e_1$ is log-normally distributed and as a result, π is convex.

Expression (B3) permits a straightforward assessment of the properties of $\pi(m)$ for other effort

distributions. For example, for a uniform distribution over $[0, 1]$, notice that the CDF F for $x = e_2/e_1 \geq 1$ is given by $1/2 + 1/2(1 - 1/x)$. Based on that expression, it is easy to verify that (B3) holds, implying convexity of π. In fact, the result readily extends to any uniform distribution over $[0, c]$. To see this, simply multiply any relative advantage m by c so that the effective relative advantage $c \cdot m$ is uniformly distributed over $[0, c]$. To replicate the analysis above, note that f does not change since the c term cancels out when taking the ratio. The only change is that $x^*(m) = cm$ now. However, the constant c does not alter the necessary condition (B3) for π to be convex. Therefore, even in situations in which effort is uniformly dispersed in the population, there is a convex mapping from relative opportunities to the likelihood of success.

Similar conclusions emerge if we instead consider additive lucky headstarts instead of multipliers. Suppose the advantaged worker 1 receives a relative headstart $b > 0$. To analyze this case, we can simply redefine $x(e_1, e_2) = e_2 - e_1$, and therefore the equal-effort threshold becomes $\hat{x} = 0$. Since the effort threshold required to win is still a linear function of the relative advantage, i.e., $x^*(b) = b$, we can simply substitute m with b in the analysis above. If worker effort is normally distributed, then $x(e_1, e_2)$ is also normally distributed, and therefore log-concavity holds via equation B2.[2] As in the case above, we obtain the same prediction when effort is uniformly distributed over any interval $[0, c]$. To see why, notice that $e_2 - e_1$ follows a triangular distribution in this case, whose density is concave and thus log-concave. By Bagnoli and Bergstrom (2006), log-concavity of the density implies log-concavity of the distribution function F, which is sufficient for π being convex by the above arguments. Hence, convexity is also an inherent feature of lucky headstarts under reasonable assumptions about the effort distribution. While the exact properties of π will depend on the exact distribution of worker effort, we confirm in the following section that convexity holds for both additive and multiplicative opportunities for the empirical distribution of effort we observe.

B.3 Alternative Experiment with Additive Opportunities or "Headstarts"

The critical feature of opportunity luck that we emphasize is that it induces a convex relationship between opportunities and how impactful merit is on individual outcomes. Intuitively, this relationship implies that relatively small differences in opportunities can substantially impact outcomes. Our theoretical framework and experimental design consider the case of productivity multipliers that amplify or dampen the returns to exerting effort. Panel B of Figure A2 shows that this type of opportunity luck indeed generates a convex association between the relative opportunities (the ratio of multipliers, m) and the likelihood that the winner was due to effort rather than luck, π.

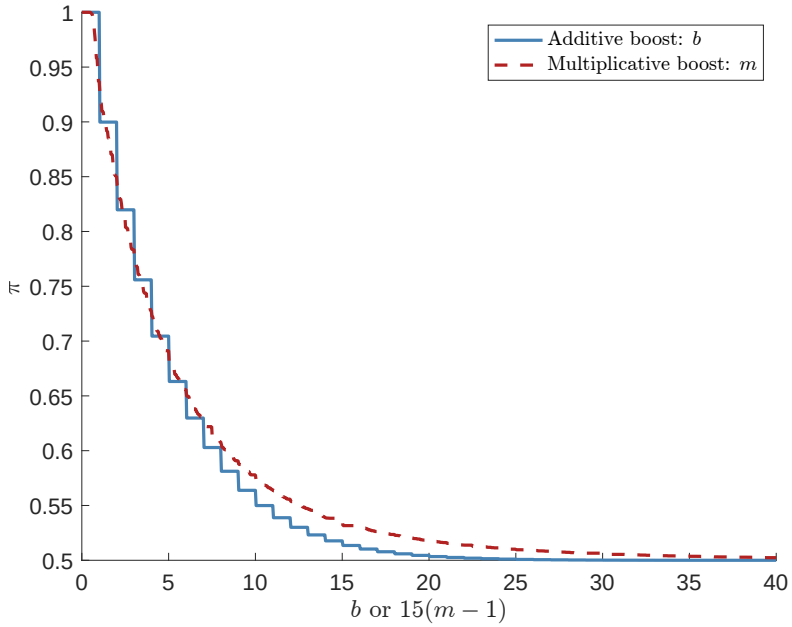
Alternative forms of opportunity luck are similarly convex in terms of their impact on the outcome. At the end of Section B.2, we described a hypothetical "lucky headstarts" treatment in which opportunity luck instead takes an additive form. Formally, suppose that workers i and j receive additive boosts, b_1, $b_2 \in [0, 1, ...B]$. The final score for each worker is simply the sum

[2] While assuming a log-normal distribution of effort may be preferred to assuming normal, the distribution of $e_2 - e_1$ is analytically intractable if e_1 and e_2 are log-normally distributed.

of their headstart and the number of solved encryptions: $b_j + e_j$ for $j \in \{1, 2\}$. Without loss of generality, suppose that worker 1 is the winner of the pair and define relative boost as $b \equiv b_1 - b_2$.

We can map the relative headstart, b, to the likelihood that the winner solved more encryptions, π, using the same procedure that we used for the relative multiplier ratio m in the main text. Specifically, for a given b, we can take the empirical effort distribution from our worker task and consider all possible pairings. For each pairing, we can assign a relative boost of b to either worker and then compute the empirical likelihood that the winner was the worker who solved more encryptions. The solid blue line in Figure B2 plots the empirical π as a function of the relative boost b. It depicts a highly convex relationship between the relative headstart and its impact on the outcome. A single-point headstart leads to a drop in π from 100 to 90 percent. A two-score advantage leads to an additional eight percentage point drop in π, while a three-score advantage leads to an additional six percentage point drop. In contrast, moving from a ten-score advantage to an 11-score advantage only leads to a one percentage point change in π.

Figure B2: Additive vs. Multiplicative Opportunities



Notes: This figure shows the fraction of paired workers in which the worker who won the match completed more encryptions. We determine the winner by comparing the final scores and selecting the worker with the higher score. The solid blue line depicts the case with additive score boosts in which the final score is the number of correct encryptions plus an additive boost. The dashed red line depicts the case with multiplicative score boosts which the final score is the number of correct encryptions times a score multiplier. Values near 0.5 are worker matches in which luck has a greater influence on the final outcome. Values near 1.0 are worker matches in which luck has little influence on the final outcome.

The dashed red line in Figure B2 reproduces the relationship between the relative multiplier ratio m and π from our lucky opportunities treatment. The additive and multiplicative forms of opportunity luck are similar in their relationship with π. If anything, the additive headstart case is slightly more convex in π than the multiplicative one. More broadly, this highlights that the

convex relationship between opportunities and the importance of luck for the outcome is not due to the multiplicative nature of our lucky opportunities environment.

B.4 Extensive vs. Intensive Margin of Redistribution

To further understand changes in redistributive behavior under unequal opportunities, we distinguish between the intensive and extensive margins of redistribution. The extensive margin refers to whether or not spectators redistribute any earnings. The intensive margin refers to how much spectators redistribute, conditional on redistributing anything. Each of these channels has a mechanical effect on the aggregate level of redistribution and how responsive redistribution is to changes in the likelihood that the best performer lost. For example, a higher share of spectators who never redistribute shifts the average level of redistribution down and makes redistribution less responsive to $1 - \pi$.

We first explore whether the likelihood of redistributing a positive amount differs across luck environments. In Table B1, we estimate regressions where the outcome is a binary variable equal to one if a spectator never redistributes anything across all 12 decisions. Column (1) shows that 9.6 percent of spectators never redistribute when there are lucky outcomes. In contrast, 15.9 percent of spectators do not redistribute when there are lucky opportunities. The difference of 6.3 percentage points is statistically significant ($p < 0.01$) and equates to a 66 percent increase in the share of spectators who never redistribute. Thus, the extensive margin of redistribution is substantially lower when there are unequal opportunities than when chance directly influences outcomes.

Table B1: Fraction of spectators who do not redistribute across conditions

	Outcome: = 1 if spectator does not redistribute in any round			
	(1)	(2)	(3)	(4)
Lucky Opportunities	0.063**	0.063**	0.063	0.068
	(0.024)	(0.024)	(0.034)	(0.035)
Info π		−0.011	−0.010	−0.014
		(0.024)	(0.030)	(0.031)
Lucky Opportunities × Info π			−0.002	−0.004
			(0.048)	(0.049)
Constant	0.096***	0.102***	0.102***	0.115
	(0.015)	(0.019)	(0.022)	(0.109)
N (Redistributive decisions)	9,408	9,408	9,408	9,396
Spectator-level controls	No	No	No	Yes

Notes: The dependent variable is the fraction of spectators who do not redistribute in any round. In column 4, we control for age, gender, marital status, number of children in the household, educational attainment, numerical literacy, race, indicators for working part-time and full-time, homeownership, income, region, the time spectators spent on the experiment, indicators for passing the comprehension and attention checks, an indicator that equals one if the spectator completed the survey on a mobile device, the probability that the winner exerted more effort on each worker-pair, and round number fixed effects (to control for possible fatigue effects). Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1% and, 5% level, respectively.

Next, we analyze differences in redistribution decisions among spectators that redistribute some amount in at least one of their 12 decisions. Table B2 reproduces the analysis in Panels A–B of Table 2 but excludes spectators who do not redistribute anything in all 12 decisions. We continue to find differences in the average level of redistribution across the lucky outcomes and lucky opportunities conditions for this sub-sample: On average, spectators redistribute 30.7 percent when luck emerges through coin flips (column 1) and 28.0 percent when luck arises through productivity multipliers (column 2). This difference is statistically significant at the ten percent level (column 3).

We also continue to find that spectators are less sensitive to changes in the probability that the best performer lost in the lucky opportunities condition. In Panel B, columns (1) and (2) show that a ten percentage point increase in $1-\pi$ increases redistribution by 4.1 percentage points in the lucky outcomes condition and 2.4 percentage points in the lucky opportunities condition. This difference in slope is statistically significant ($p < 0.01$, column 3). Notably, the magnitude of this difference is similar to the baseline estimates in Table 2. Thus, the diminished overall sensitivity to luck that we observe when luck stems from unequal opportunities is not merely due to more spectators deciding to redistribute nothing. Instead, changes in the responsiveness to the importance of luck in determining workers' outcomes among spectators who redistribute drive the result.

Table B2: Fraction redistributed as a function of π for spectators who redistribute something

	Outcome: Fraction of earnings redistributed		
	Lucky Outcomes (1)	Lucky Opportunities (2)	Difference (3)
Panel A. Average redistribution			
Constant	0.307***	0.280***	0.027
	(0.009)	(0.012)	(0.015)
N (Redistributive decisions)	2,124	1,944	4,068
Panel B. Linear slope			
$1-\pi$	0.041***	0.024***	0.018**
	(0.005)	(0.004)	(0.007)
Constant	0.368***	0.315***	0.053**
	(0.011)	(0.014)	(0.018)
N (Redistributive decisions)	2,124	1,944	4,068

Notes: Panel A shows the mean share of earnings redistributed under lucky outcomes (column 1), lucky opportunities (column 2), and the difference (column 3). Panel B shows estimates of redistribution as a linear function of the probability that the winner was the best performer lost $(1 - \pi)$ on each treatment. The sample is restricted to spectators who redistributed a strictly positive amount in at least one of their 12 decisions. Heteroskedasticity-robust standard errors clustered at the spectator level in parentheses. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

B.5 Anticipatory Effort Responses

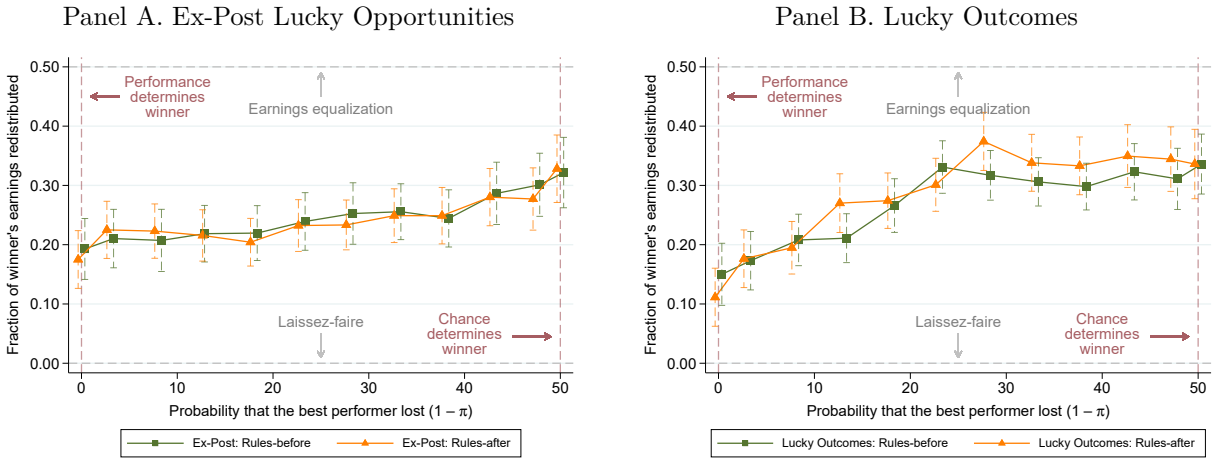
In the main text, we show that whether workers learn their multipliers before or after working on the task has no impact on spectators' redistribution decisions. While this removes much of the

scope for different beliefs about workers' effort responses, spectators might still expect the distribution of effort levels under lucky opportunities to be meaningfully different from lucky outcomes environments. In particular, spectators may believe that a worker who learns the rules of how effort multipliers determine outcomes may be motivated to exert different levels of effort independent of their knowledge about their assigned multiplier (i.e., under the ex-post opportunities condition) than a worker who learns how a coin flip impacts outcomes. For example, workers in the ex-post lucky opportunities environment might work harder to insure against the possibility of drawing a bad multiplier, which, in turn, could shape redistribution preferences if spectators anticipate such behavior. Alternatively, spectators might suspect that workers believe their efforts matter less and, thus, become less motivated to exert effort when there are lucky outcomes.

To control for and test this mechanism experimentally, we vary the timing of when workers learn how luck plays a role in determining outcomes in subtreatments. In the "rules-before" condition, we inform workers that effort multipliers or a coin flip will influence the outcome *before* they start the task. In the "rules-after" condition, we inform workers that multipliers or a coin flip will influence the outcome *after* they complete the task. Crucially, spectators in the rules-after treatments in both the lucky outcomes and ex-post lucky opportunities conditions knew that workers had identical information before beginning the task. Between these two conditions, there is thus no scope for differences in beliefs about the distribution of worker effort.

Figure B3 plots the average redistribution for each π bin separately for our rules-before and rules-after subtreatments. Panel A shows that the redistribution decisions of spectators in the ex-post lucky opportunities condition are very similar and do not depend on workers learning about how luck matters before or after working. Similarly, Panel B shows that whether the rules are revealed before or after working has no impact on the overall pattern of redistribution in the lucky outcomes environment.

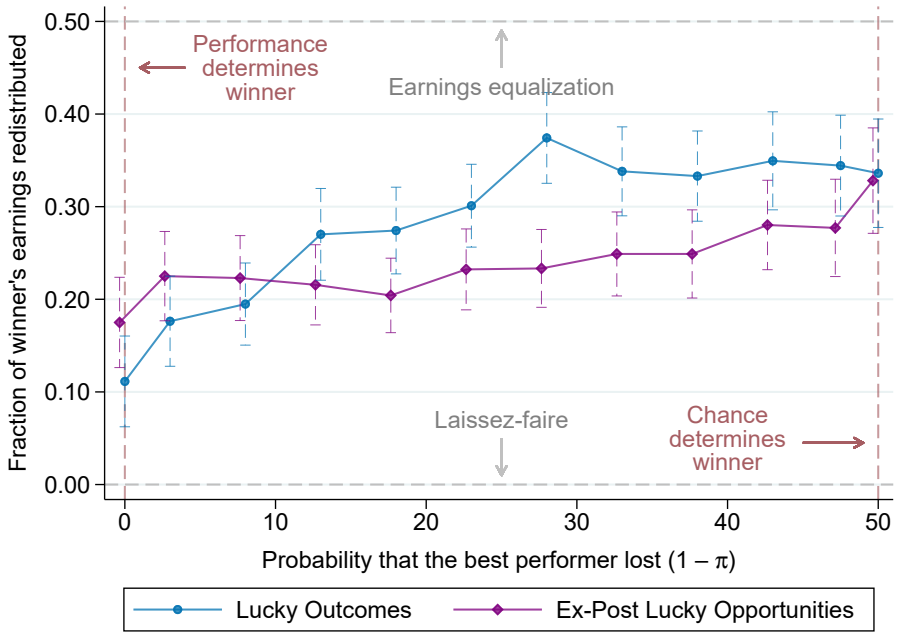
Figure B3: Redistribution and awareness of rules in the ex-post lucky opportunities and lucky outcomes conditions



Notes: This figure shows the average share of earnings redistributed between workers as a function of the likelihood that the better performer lost, split by our rules-before and rules-after subtreatments. In rules-before, workers are aware of their multiplier prior to their encryption task, and in rules-after, workers are aware of their multiplier after completing their encryption task. Panel A depicts data from the ex-post lucky opportunities condition, and Panel B depicts data from the lucky outcomes condition.

Figure B4 compares average redistribution in the lucky outcomes and ex-post lucky opportunities environments for only the rules-after subtreatments. Even when workers faced identical information prior to exerting effort, spectators redistribute less when luck manifests itself through unequal opportunities than directly via a coin flip. Moreover, spectators continue to be less responsive to changes in the importance of luck. Table B3 re-estimates our main specifications in Table 2 from the main text but only compares lucky outcomes and ex-post lucky opportunities for the rules-after scenario. We continue to find significant differences in the level and slope of redistribution. The estimated coefficients are similar in magnitude to the baseline results.

Figure B4: Redistribution in the rules-after treatments: lucky outcomes vs ex-post lucky opportunities



Notes: This figure shows the average share of earnings redistributed between workers as a function of the likelihood that the winner exerted more effort for the rules-after subtreatments for lucky outcomes and ex-post lucky opportunity luck. Note that these conditions are observationally identical to workers until after they perform their tasks.

Finally, we compare spectators' stated beliefs about average worker effort across the ex-post lucky opportunities and lucky outcomes conditions. We find no differences across these conditions: The median number of tasks spectators believe workers completed is 20 encryptions in both the lucky opportunities and lucky outcomes environment. We also find no differences based on whether workers learned about the tournament rules before or after completing the task: the median number of tasks spectators believe workers completed is 20 in both rules-before variant of lucky outcomes and ex-post lucky opportunities. Overall, we find no evidence that differences in spectators' beliefs about the distribution of effort can explain the differences in redistribution across luck environments.

Table B3: Fraction redistributed as a function of π in ex-post lucky opportunities and lucky outcomes conditions (only rules-after)

	Outcome: Fraction of earnings redistributed		
	Lucky Outcomes (1)	Ex-Post Lucky Opportunities (2)	Difference (3)
Panel A. Average redistribution			
Constant	0.284^{***}	0.241^{***}	0.043
	(0.016)	(0.018)	(0.024)
N (Redistributive decisions)	1,164	1,152	2,316
Panel B. Linear slope			
π	0.041^{***}	0.020^{***}	0.020^{*}
	(0.006)	(0.005)	(0.008)
Constant	0.344^{***}	0.271^{***}	0.073^{*}
	(0.020)	(0.021)	(0.029)
N (Redistributive decisions)	1,164	1,152	2,316
Panel C. Non-parametric estimation			
$1-\pi = 0.00$	0.111^{***}	0.175^{***}	-0.064
	(0.025)	(0.025)	(0.035)
$1-\pi \in (0.00, 0.05]$	0.176^{***}	0.225^{***}	-0.049
	(0.025)	(0.025)	(0.035)
$1-\pi \in (0.05, 0.10]$	0.195^{***}	0.223^{***}	-0.028
	(0.023)	(0.024)	(0.033)
$1-\pi \in (0.10, 0.15]$	0.270^{***}	0.216^{***}	0.054
	(0.025)	(0.022)	(0.034)
$1-\pi \in (0.15, 0.20]$	0.274^{***}	0.204^{***}	0.070^{*}
	(0.024)	(0.021)	(0.032)
$1-\pi \in (0.20, 0.25]$	0.301^{***}	0.232^{***}	0.069^{*}
	(0.023)	(0.022)	(0.032)
$1-\pi \in (0.25, 0.30]$	0.374^{***}	0.233^{***}	0.141^{***}
	(0.025)	(0.022)	(0.033)
$1-\pi \in (0.30, 0.35]$	0.338^{***}	0.249^{***}	0.089^{**}
	(0.025)	(0.023)	(0.034)
$1-\pi \in (0.35, 0.40]$	0.333^{***}	0.249^{***}	0.084^{*}
	(0.025)	(0.024)	(0.035)
$1-\pi \in (0.40, 0.45]$	0.349^{***}	0.280^{***}	0.069
	(0.027)	(0.025)	(0.037)
$1-\pi \in (0.45, 0.50)$	0.344^{***}	0.277^{***}	0.067
	(0.028)	(0.027)	(0.039)
$1-\pi = 0.50$	0.336^{***}	0.328^{***}	0.008
	(0.030)	(0.029)	(0.042)
N (Redistributive decisions)	1,164	1,152	2,316

Notes: This table includes only spectators in the rules-after condition. Column 1 includes only spectators in the lucky outcomes condition. Column 2 includes only spectators under the ex-post lucky opportunities condition. Column 3 shows the difference between columns 1 and 2. Panel A shows average redistribution. Panel B shows a linear approximation between the fraction of earnings redistributed and the likelihood that the winning worker performed better than the losing worker (π). Panel C shows the relationship between redistribution and the likelihood that the winning worker performed better (π) split into 11 bins. The omitted category is $\pi = 0.50$. ***, ** and * denote significance at the 0.1%, 1%, and 5% level, respectively.

B.6 Effort Differences Across the π Distribution

The ex-post lucky opportunities treatment shows that spectators' expectations about workers' potential effort responses do not drive our main treatment effect. Nonetheless, the performance levels of winners and losers conditional on π could differ across our luck treatments. This difference might arise because only worker pairs with certain performance levels can be selected for a particular π in the lucky opportunities condition. In contrast, workers with any performance level can be selected for a particular π in the lucky outcomes condition. For example, when a coin flip determines the winner independently of worker effort, a worker could have won with despite an extremely low performance. Conversely, winning always requires some minimum performance in the lucky opportunities environment. Sophisticated spectators may be aware of these possible differences in the winner-loser performance gap, which could explain their greater propensity to redistribute in the lucky outcomes condition relative to the lucky opportunities condition.[3]

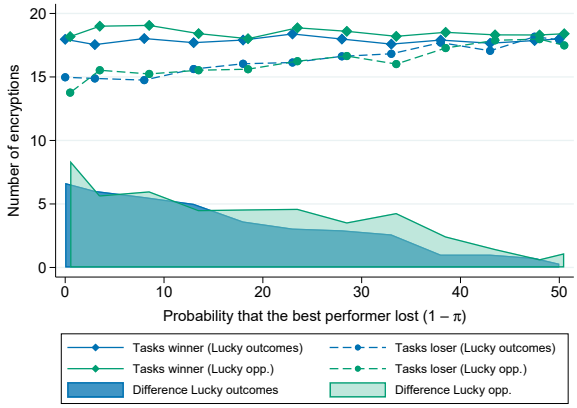
We provide several pieces of evidence against this explanation. First, across all values of $(1-\pi)$, the winner-loser performance gap is quantitatively similar in the two conditions (Figure B5). Panel A of Figure B5 depicts the average number of encryptions completed by winners and losers in each luck treatment as a function of π, as well as the difference between the number of tasks completed by the winners and losers in each condition or, equivalently, the "winner-loser effort/ performance gap." Panel B of Figure B5 shows the difference between the winner-loser effort gap in the lucky opportunities condition and the lucky outcomes condition.

There are no meaningful differences in the number of encryptions completed by winners and losers across luck treatments. On average, winners in the lucky outcomes condition completed a similar number of encryptions as winners in the lucky opportunities condition across the entire range of π bins. For example, in the lucky outcomes condition, the average number of encryptions completed by winners ranges from 17.5 to 18.3 (depending on the value of π), whereas, in the lucky opportunities condition, the corresponding value ranges from 18.0 to 19.1. Similarly, losers in the two conditions completed a similar number of encryptions. As π increases, the winner-loser effort gap increases in both luck environments. Crucially, these effort differences are similar between our luck environments. For all values of π, the difference in the winner-loser effort gap between the two conditions is smaller than two encryptions (Figure B5, Panel B).

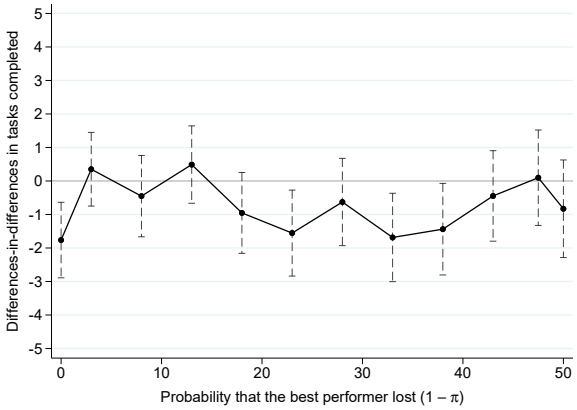
[3]Note that small differences in the winner-loser performance gap for certain values of π across luck environments are the result of the inherent features of outcome luck and opportunity luck, regardless of whether the latter is realized as additive boosters or multipliers. This is because the expected effort gap shrinks linearly in π under lucky outcomes. Under lucky opportunities, by contrast, the convex relationship between the winning worker's relative advantage and π leads to a convex relationship between π and the expected winner-loser effort gap.

Figure B5: Number of encryptions completed by workers across values of π

Panel A. Tasks completed by winners and losers and winner-loser effort gap



Panel B. Difference in winner-loser effort gap across conditions



Notes: Panel A shows the average number of encryptions completed across all worker pairs as a function of the luck treatment and the value of π. Shaded areas denote the average winner-loser effort gap, as measured by the difference between the number of encryptions completed by the winner and the loser. Panel B shows the difference between the winner-loser effort gap in the lucky outcomes condition and the lucky opportunities condition. Dashed lines denote 95 percent confidence intervals.

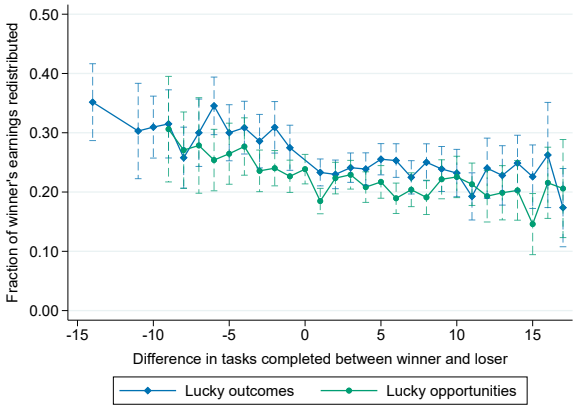
Next, we empirically show that the slight differences in the winner-loser effort gap across conditions cannot quantitatively account for the stark differences in redistribution observed across conditions (even if spectators correctly foresee those differences). First, we measure the elasticity of redistribution with respect to the winner-loser effort gap. Panel A of Figure B6 depicts the relationship between the fraction of earnings redistributed (y-axis) and the difference in tasks completed by the winner and loser (x-axis), separately by luck treatment. To measure the elasticity of redistribution with respect to the winner-loser effort gap, we estimate equation (7) replacing $1-\pi_{ip}$ with the difference in tasks completed between the winner and the loser. We estimate that a one-encryption increase in the winner-loser effort gap decreases the share of earnings redistributed by 0.3 percentage points ($p < 0.01$). This means that increasing the winner-loser effort gap by three encryptions decreases redistribution by approximately one percent.

To assess how much of the observed differences in redistribution across conditions can be attributed to winner-loser gap differences, we multiply this elasticity by the actual winner-loser effort gaps we find in our data (Figure B5, Panel B). We find that the winner-loser performance gap can account for only 0.2 percentage points of the difference in redistribution between the conditions on average across all values of π. This contribution is negligible compared to the average overall redistribution difference, which equals 4.2 percentage points. The small influence of the winner-loser effort gap primarily stems from the fact that empirically this gap is too small to impact redistributive behavior substantially, given the spectators' limited sensitivity to this gap. Panel B

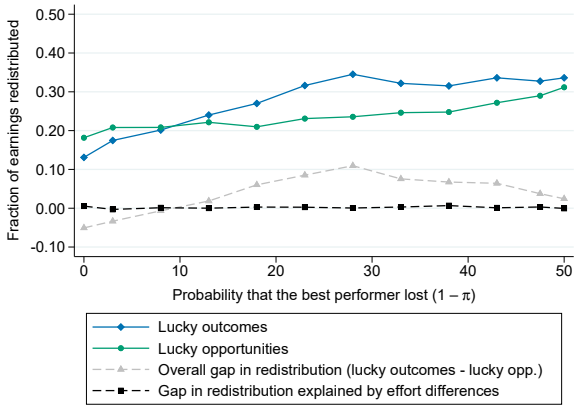
of Figure B6 visually compares these estimates along with the observed difference in redistribution. We conclude that differences in the winner-loser effort gap across our luck environments cannot explain our results.

Figure B6: Redistribution and differences in the winner-loser effort gap

Panel A. Earnings redistributed and differences in encryptions completed by winners and losers



Panel B. Redistributive gap predicted by differences in winner-loser effort gap



Notes: Panel A shows the average share of earnings redistributed between workers (from the higher-earning winner to the lower-earning loser) relative to the difference in encryptions completed between the winner and the loser. Panel B shows the average share of earnings redistributed between workers relative to the likelihood that the winner exerted more effort across the two luck conditions, as well as the difference between the fraction of earnings redistributed in the two conditions. This panel also shows estimates of how much of the difference in redistribution can be attributed to differences in the winner-loser effort gap across conditions.

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