Title: **The psychology and policy of overcoming economic inequality**

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Abstract: Economic inequality is associated with myriad negative individual and social outcomes globally. Interventions targeting individual and systemic drivers of inequality have largely failed to significantly reduce economic disparities. Factoring in behaviors of individuals that overcome significant economic disadvantages, known as positive deviants, can generate meaningful policy interventions. To illustrate those behaviors, we use multiple global datasets relating to financial behaviors finding that greater gender equality at the societal level is correlated with higher rates of women overcoming financial disadvantages, that unique patterns of positive deviants may be possible to leverage in behavioral interventions, and those outcomes may themselves protect against major economic shocks that disproportionately harm economically disadvantaged individuals and populations.

One-Sentence Summary: Data from multiple global sources show that individuals overcome economic disadvantages in societies with greater gender equality, and that the behaviors of these individuals can inform more effective policies.

Main Text: The top 10% of global economic distribution accounts for between 50% and 60% of total wealth (*1*). Within countries, societies with greater income inequality tend to have lower life expectancy (*2*), suppressed economic growth (*3*), and greater political polarization (*4*) relative to more equal societies. More than 70% of the global population currently resides in countries where inequality is rising, exacerbating risks of conflict and slowing economic development (*5*). These growing disparities in income have amplified existing wealth differences during the COVID-19 pandemic, raising concerns about long-term global trajectories for population well-being.

Common policies intended to reduce economic disparities directly through redistributive welfare programs or financial incentives (e.g., Conditional Cash Transfer programs) (*6*) have potential value considering that population well-being tends to improve when population income increases, especially for people living in poverty or lower-income countries (*7*). However, such redistributive policies have failed to sufficiently minimize the increasing wealth gap and need to be integrated with other substantive interventions (*8*). Interventions are typically based on the perspectives of economists and legislators, but the vast majority of policies fail to consider true behaviors and challenges faced by those who have successfully overcome significantly disadvantaged circumstances. Known as positive deviants, these individuals should be studied to better equip policies to support sustained and meaningful upward economic movement (*9*).

Policies often emphasize either the individual (i-frame) or systemic (s-frame) aspects of inequality (*10*), but typically not both in coordination. The i-framed Takaful Programme in Egypt gives cash transfers to low-income and middle-income mothers on the condition that they send their children to school. Despite producing short-term benefits, the focus on middle-income families made the program less effective for the most vulnerable (*11*). In contrast, South Korea's 747 Plan, a key feature of Lee Myung-bak's presidency launched in 2008, was an s-framed approach aimed at boosting the economy and increasing income per capita to US$40,000. However, individual disparities were overlooked by architects of the strategy and the approach ultimately failed to reach any of its economic goals, leaving income per capita (US$25,000) on a completely unchanged trajectory from the previous decades (*12*).

In a blend of how the two policy frames intersect, researchers are increasingly interested in how psychological factors also impact inequality. For example, by demonstrating how stronger social ties between poor and high income individuals can facilitate upward economic mobility, recent work by Chetty et al. (*2*) quantify the unique individual factors that contribute to overcoming inequality. But while there are potential policy applications for this, such as better integration of households from different economic classes in schools, these alone are unlikely to impact broad, global inequalities. They also do not identify specific behaviors that could benefit individuals. They also speak more to the result of environmental factors, rather than to deliberate or even unintentional choices.

The COVID-19 pandemic added a new global barrier to overcoming inequality by disproportionately burdening low-income individuals. Incomes of individuals in the bottom 20% of earners in 2021 were estimated to be 6.7% lower than projected before the pandemic (*13*). Using secondary data from a large study (n=12,930) on temporal discounting involving 60 countries (*14*), 12.5% of the total group was classified as being a positive deviant, based on having been born into low-income homes yet showing healthy financial behaviors as adults. This was compared to 16.9% that had been born low-income and did not have such healthy financial habits. As is evident in Fig 1, individuals classified as positive deviants were less likely to have been negatively affected

economically during the pandemic. Such patterns highlight both the benefits of upward movement (i.e., resilience against crises) and the self-perpetuating harms of economic inequalities (i.e., being poor makes you more vulnerable to becoming poorer in a crisis).
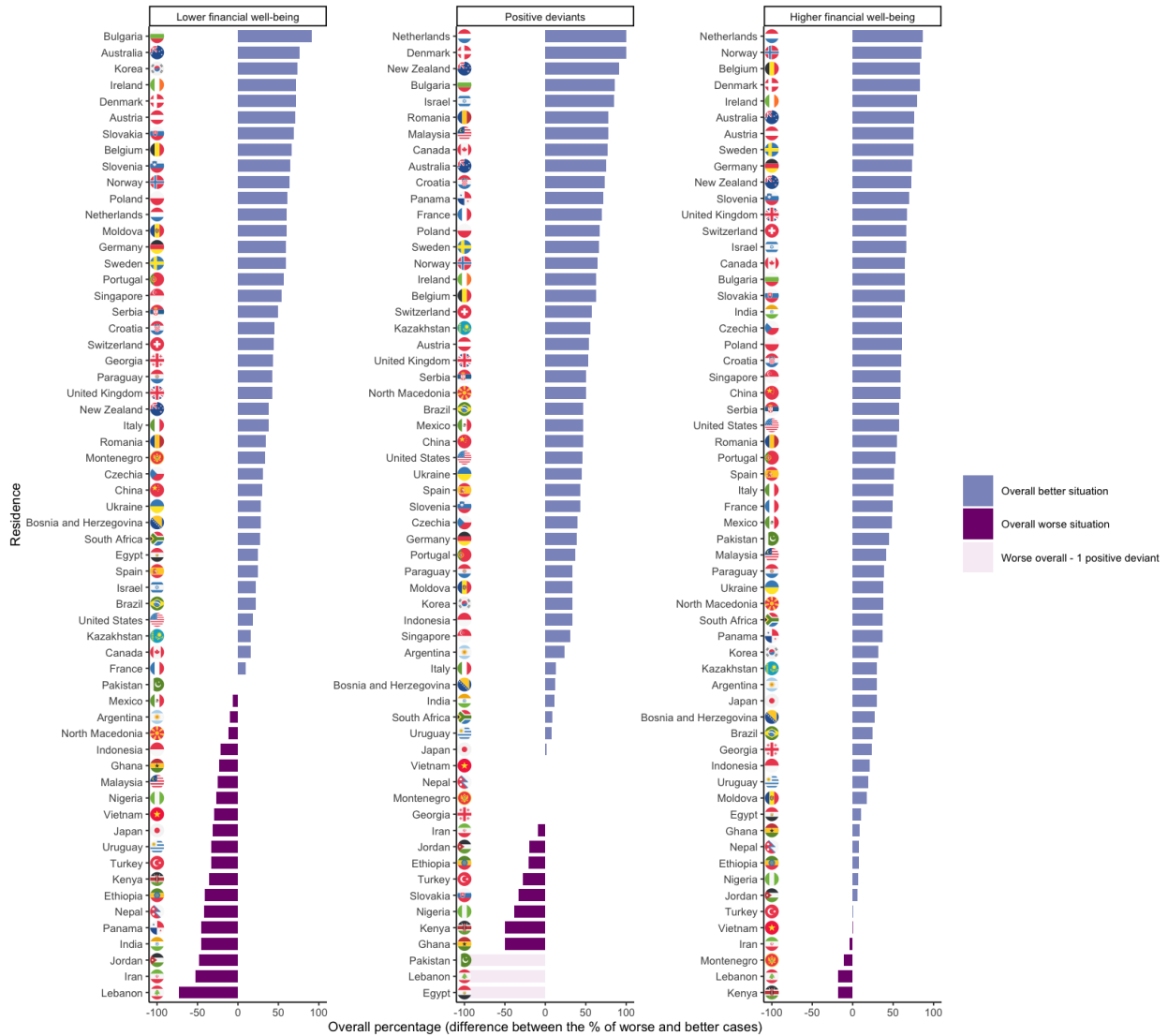

Fig 1. Comparison of financial impacts of the COVID-19 pandemic in 2020 between financial circumstances. Each element is ordered by the rate of difference between those experiencing positive/neutral impacts and those experiencing negative impacts by country within each group. Pakistan, Lebanon, and Egypt had only one positive deviant, so the proportion is shaded to avoid skewing perception.

Major redistributive initiatives were attempted during the pandemic at a scale not previously seen. However, evidence so far has been mixed at best as to whether they had any substantive effect on alleviating the burden of income disparities. These issues are not unique to COVID policies; consider three major policy initiatives from different continents, which each produced anecdotal benefits but had no measurable impact on the trajectory of inequality:

Germany's Supplementary Child Allowance (*15*): monthly payments to support children in low-income households, which increased the financial situation for 81% of recipients, but many eligible families did not apply out of a lack of awareness (*16*); Brazil's Family Grant Program (*17*): a conditional cash transfer requiring certain familial behaviors such as mandatory school attendance for children and health measures to increase economic stability, which led to the lowest 10% of Brazil's household incomes increasing by 23.5% between 2001-2004 (*18*), but has been challenged with claims of increased wages and employment being the main factor of diminishing income inequality (*18*);   and

Moving to Opportunity housing experiment (*19*) in the U.S.: vouchers provided to impoverished families to move to neighborhoods with better quality housing, leading to children under 13 whose families moved to a lower-poverty area having an annual income that was 31% higher on average in their mid-twenties compared to the average income of the control group, while simultaneously producing negative impacts for children over the age of 13 (*20*).

The mixed results of these policies are not a criticism of the attempts themselves, but an indication of the complexity of the problem at hand and an incentive to reevaluate the framework for policy creation. Yet, despite the challenges of reducing inequality, some individuals appear capable of taking advantage of these policies even when they are not universally successful. By searching for the (contextually) optimal behaviors amongst disadvantaged groups and then quantifying the contours of those behaviors, we present a potentially better approach to designing policies aimed at reducing inequality.

Levering the behaviors of those who overcome

Unprecedented levels of direct financial support from governments to lower-income individuals during the pandemic has had mixed effectiveness at stemming, mitigating, or even reducing inequalities. Still, some extremely valuable behaviors were observed. Figure 2 displays spending patterns following the CARES Act Economic Impact Payments in the U.S. in April 2020. For approximately 6,000 low-income individuals that received a payment of exactly $1,200, 94% of the first $1,200 spent after receiving the stimulus check went to discretionary spending and daily living expenses. Yet, within that group, about 4% of individuals allocated around 5% of the check to savings or investing. This trend continued for spending beyond the first $1,200, though slightly lower at 3%. Those patterns are highly consequential: individuals that set aside money will have greater financial well-being over time than individuals that allocated entirely to near-term spending.
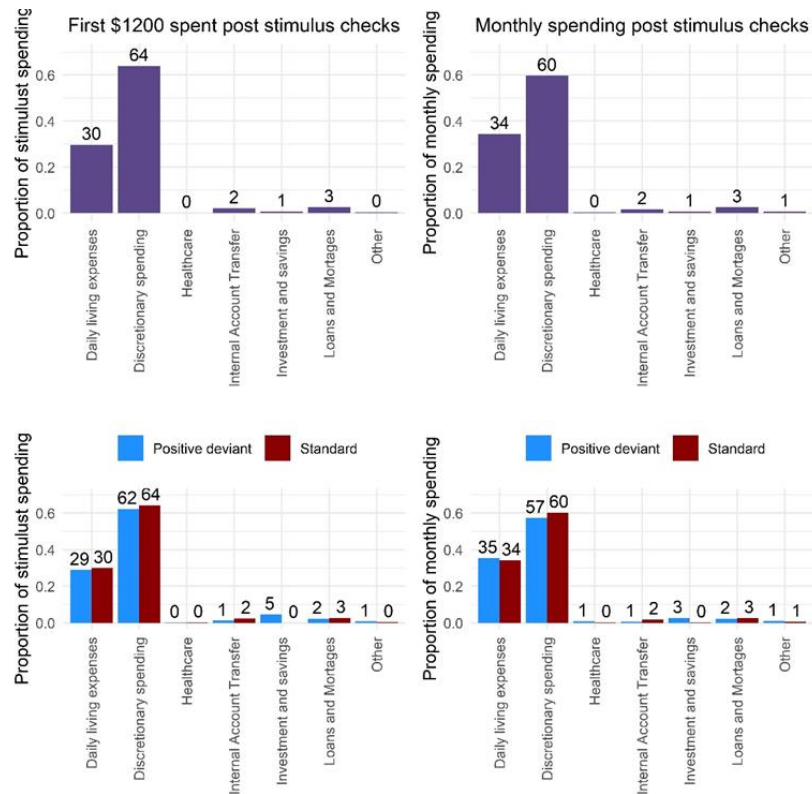
Fig 2. Spending patterns in a low-income ($17,240-$34,480) group in the U.S., split by positive deviants and others, immediate spending post stimulus check and for the first month following the stimulus check.

Finding distinct patterns among positive deviants - such as the precise allocations of savings - presents a potentially meaningful target for policies which encourage better long-term financial management. Misguided approaches might encourage a low-wage individual to save money without addressing cost of living, thereby being superficially effective while also encouraging greater use of high-interest debt such as credit cards (*21*). Encouraging sub-optimal or potentially harmful financial decisions in this way will nullify even well-intentioned choices of low-income individuals seeking to improve their circumstances.

Actionable insights on the behaviors of those who have overcome inequality - rather than assuming or encouraging choices based on what works for people *on average* - may better position policies to reduce economic inequality at the individual level *because* they factor in the context. Therefore, it may be better to leverage specific values (3-5%) saved by positive deviants directly in policies aimed at encouraging increased savings to avoid those negative effects.

Even if effective, that individual behavior cannot alone resolve the wider structural barriers. Consider that between countries, the rates of overcoming inequality are highly varied: in the dataset of 60 countries described earlier, positive deviance rates ranged from 0.8% (Egypt) to 26.2% (Canada). As individuals from countries with the largest income disparities demonstrate greater rates of high-risk behaviors and increased debt accumulation (*22*), policies that aim to influence behavior cannot be presumed to be equally effective in all contexts and choosing intervention approaches is highly consequential. Heterogeneity in rates of overcoming inequality between countries suggest variability in the unique barriers, resources, and opportunities.

At a structural level, consider roadblocks created by gender inequality, which many nations have attempted to target via fiscal policies. However, the World Economic Forum estimates another 170 years before the global gender opportunity and economic participation gap is fully closed (*23*). Global gender disparity is declining, but at different rates between countries, amplifying the need for contextually-adapted policies to make meaningful impact (*23*).

Using data from 59 of the countries in the dataset mentioned earlier along with the UN's Gender Inequality Index (https://hdr.undp.org/data-center/documentation-and-downloads), Fig. 3 shows how rates of positive deviance are directly related to the level of gender equality within a specific country. Greater gender equality is associated with higher rates of women overcoming disadvantaged childhood financial circumstances ($r = -0.31$ $P = 0.017$; for Fig. 3 the *r* value was reversed), with no significant correlation for men. This indicates that greater equality improves the overall circumstance for women without a negative impact on men. Similar patterns have been found in the US healthcare sector, where general wage increases overall were directly associated with decreases in the wage gap (*24*).
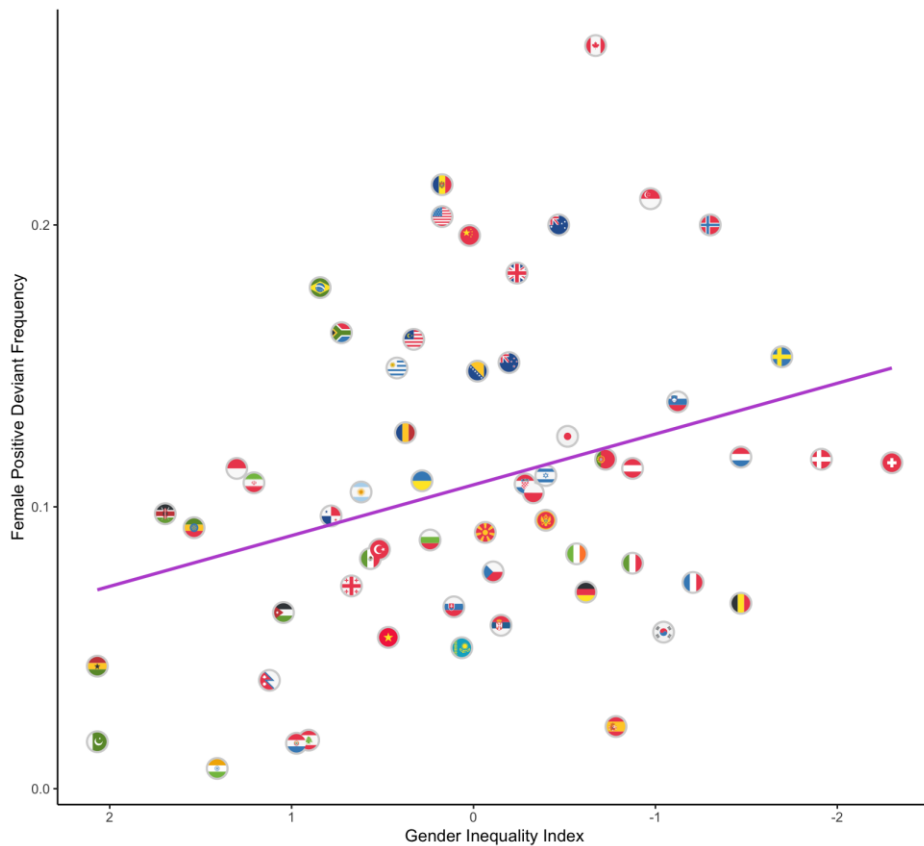

Fig 3. Relationship between gender equality and rates of female positive deviance in 59 countries. Gender inequality scores are reversed for easier understanding in the visual.

These patterns demonstrate clearly the need to address structural elements of inequality. Examples of these types of policies (detailed in Supplemental Materials, Table S4) include programs like

Japan's requirement for large companies to disclose gender pay differences (*25*), the United Kingdom's Pay Transparency Initiative (*26*), or Iceland's Equal Pay Standard (*27*). While the Japanese and Icelandic policies are new and yet to be assessed, the UK approach showed a clear, positive impact on reducing wage disparity. Similarly, the Netherlands require corporate boards to comprise at least one-third women to ensure more equal participation at a level that removes salary ceilings (*28*).

The argument is not to move away from s-framed approaches, but instead to blend together the structural and the individual, taking into account both the psychological and environmental factors impacting outcomes. While many address one or the other, rather than work in combination, failing to factor in potential differences in decision-making based on circumstances is clearly inadequate.

To better incorporate the psychological factors into substantive policy, observe the different patterns indicated in figure 4 between individuals classified as positive deviants and adults that remain financially disadvantaged. Similar to patterns in the original study, global differences in aggregate temporal discounting scales are not significantly different between positive deviants and other disadvantaged adults, which holds true for several of the behaviors tested. These results indicate that the local economic context (e.g., inflation, inequality) has more to do with long-term decisions than simply income or wealth. However, differences emerge clearly between the two groups when parsing out specific temporal choice anomalies such as inconsistency between receiving money versus paying, or when magnitudes shift. Furthermore, clear differences exist in how discretionary income is spent, with large effect sizes for spending on debt as well as investing.
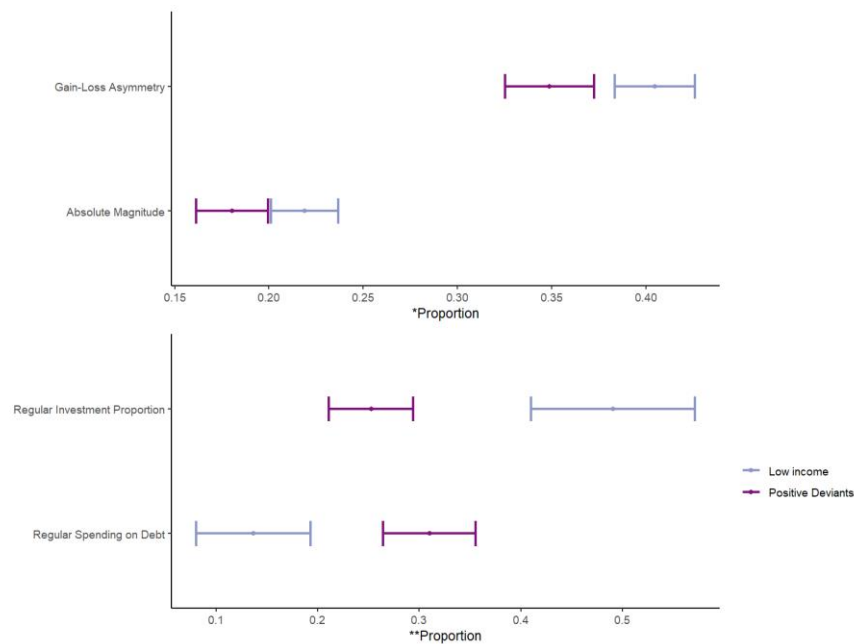

Fig 4. Unique behavioral patterns identified between positive deviants and individuals that remain in bad financial circumstances across *60 countries (top) and in the **United States and Canada (bottom).

However, not all patterns generalize, which is why two of the constructs are only US and Canadian data, which present very similar systems (the exclusion of certain countries are also statistically

motivated, as some countries had too few positive deviants to produce reliable analyses). Other countries can look extremely different, particularly those with substantially different economic systems and opportunities where fewer individuals overcome poverty. In these locations, allocating large portions of income to debt repayments can actually be more closely associated with having overcome poor financial circumstances.

Concurrently with system-level changes such as wage transparency, policies should incorporate features that encourage choices associated with overcoming inequality (such as optimal savings allocations). Although positive deviants were shown to have significant behavioral differences to other disadvantaged people, it is not recommended to force these precise behaviors onto entire populations in all cases. This is for two reasons: the first is that these data are limited to behaviors only after someone has improved their financial circumstances; future work should test those behaviors longitudinally to determine if they develop over time or are evident while individuals are still struggling. The second is that context, as shown, is extremely important. While a 3-5% routine savings target may work well for the group receiving $1,200 stimulus checks, that may not be the appropriate target in all instances.

The data we use here only provide limited insight into human behaviors outside of the context of our measures, which are narrow by design. We strongly encourage future research to invest into observing true behaviors (e.g., from financial institutions, healthcare, schools, tax agencies, and insurance companies) rather than repetitive surveying. Direct observation will also support assessment that incorporates pre-existing financial and legal restrictions and provide a clearer picture of what behavioral patterns may enable or secure upward economic mobility, better informing high impact policies.

Though there is increased interest and investment into systemic and institutional interventions to reduce and alleviate economic inequality, policies have thus far fallen short. Even generous and simple financial incentives are alone ineffective at reducing inequality or even modestly advancing the economic position of those receiving payments (*29*). Rather than continue approaches based on assumptions of normative behaviors, policies must target both the systemic barriers and concurrently the behaviors of individuals facing significant social and economic challenges, perhaps by encouraging the choices of peers that have overcome inequality. That means large-scale investment targeting barriers such as gender pay gaps must also be met with innovative, individually relevant policies that reduce the risk of choices or behaviors that propagate inequality based only on challenging circumstances. As demonstrated, such approaches will directly impact the well-being of individuals and populations.

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Supplementary Materials for

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Materials and Methods
Figs. S1 to S2
Tables S1 to S5

Materials and Methods Data pulled from Ruggeri et al., 2022 (10). The data used for the analysis is from a 2022 30-item temporal discounting international survey (https://osf.io/njd62/). We used R 4.2.1 with RStudio 2022.07.1. List of packages we used: brms v. 2.17.0; dplyr v. 1.0.9; forcats v. 0.501; foreign v. 0.8-82; ggplot2 v. 3.3.6; MASS v. 7.3-57; Matrix v. 1.4-1; matrixStats v. 0.62.0; mediation v. 4.5.0; mvtnorm v. 1.1-3; purrr v. 0.3.4; Rcpp v. 1.0.9; readr v. 2.1.2; RNOmni v. 1.0.0; sandwich v. 3.0-2; stringr v. 1.4.0; tibble v. 3.1.8; tidyr v. 1.2.0; tidyverse v. 1.3.2; zoo v. 1.8-10). All accessed July 28th of 2022.

We conducted a chi-squared test to evaluate whether there was a difference between positive deviance across countries. We found a difference in each category (greater financial well-being, lower financial well-being, and positive deviance) across all 60 countries ($P < 0.001$, $X^2 = 882.55$, $df = 118$).

To test whether gender inequality is correlated to differences in positive deviance patterns, we conducted a Pearson's correlation test between the Gender Inequality Index (29) (GII) and the number or percentages of positive deviants (PDs) in each country. The percentages of PDs across countries were normally distributed while the GII scores were not. This is partly due to one group being clustered around a higher GII score, while more than half of the included countries were clustered around low GII scores. We checked homoscedasticity by running the Breusch-Paganov Non-Constant Variance Score Test. We found that the distribution of residuals given by the linear model were characterized by homoscedasticity, $X^2 = 0.07$ ($df = 1$, N=59); $P = 0.79$. Considering the bimodal nature of the GII distribution, we decided to apply a Rank-Based Inverse Normal transformation (RIN) and run a Pearson's correlation test between the Z-scores and the percentage of PDs in each country; we did not find a significant correlation ($r = -0.20$; $P = 0.13$; 95% CI [-0.435; 0.058] presumably due to the limits of our sample. We conducted a linear model analysis using the Z-scores of the GII and the percentage of PDs. Our findings show that the GII scores do not predict the percentage of PDs (GII estimate: -1.143, $P = 0.127$; $R^2 = 0.024$; 95% CI [-2.619; 0.334].

We excluded Nigeria because the GII score was missing in the database (29), reducing the analysis to include 59 countries. Though the data does not support this, we found a general trend in the data visualization showing that countries with higher gender equality (lower GII scores) had a higher percentage of PDs (Figure 3). Because of this, we tested for gender differences by country between males and females (we excluded 'other' as a gender category because of the low sample size; Egypt was excluded in the female sample due to the absence of positive deviants; Furthermore, we excluded 5 countries from the male sample due to the same reason: Bosnia and Herzegovina, Jordan, Lebanon, Moldova, Pakistan). We found a significant negative correlation between GII (Z-scores) and the percentage of female PDs ($N = 58$) of $r = -0.312$ ($P = 0.017$, 95% CI [-0.528; -0.058]. We did not find a significant correlation for the male PDs ($N = 54$). This could imply that GII has an important impact on the presence of female PDs in a country while the male population is not affected by the GII score.

Next, we investigated two variables: the Gini index coefficient (30) and the inflation in each country. Using a Pearson's correlation test between the Gini index and GII (Z-scores), we found that there is a positive correlation of 0.447 ($P < 0.001$, 95% CI [0.215; 0.631]. Following this, we created two linear models, the first including the Gini index and GII (Z-scores) as independent variables and the percentage of PDs as a dependent variable. The model predicted the percentage of PDs (GII estimate: -2.25, $P = 0.005$, 95% CI [-3.780; -0.727] and Gini index estimate: 0.341, $P = 0.002$, 95% CI [0.131; 0.545], $R^2 = 0.165$ ($P = 0.002$). Before creating the

second linear model, we conducted a Pearson's correlation test between inflation and GII. We found a positive correlation of $r = 0.348$ ($P = 0.007$, 95% CI [0.101; 0.555]). The second linear model we created used inflation and GII, and the percentage of PDs. The results showed that inflation and GII did not significantly predict the percentage of PDs.

We conducted a multinomial logistic regression analysis to evaluate the predictive power of individual differences. We used the *nnet* package version 7.3-17 (5. 8. 2022). We predicted the membership in the positive deviant, greater financial well-being, and lower financial well-being by individual-level variables (gender, optimism, risk preference, education, and employment) and country-level variables (standardized GDP, standardized Gini index, GII, and standardized inflation) (*pseudo-R^2* = 0.047). In this model, the lower financial well-being group was the reference group. At the country level, there was an effect of GII, which was a negative predictor of the membership to the PDs group ($b = -1.657$; $P < .001$), but not for the greater financial well-being group ($b = -0.335$; $P = 0.111$) in comparison to lower financial well-being group. Risk preference was not a significant predictor for any of the membership categories. There was a significant effect of education on predicting the membership to the greater financial well-being group ($b = 0.207$; $P < .001$) and PDs group ($b = 0.096$; $P = 0.002$). There are differences in the effect of different employment categories on predicting the outcome variable. For further details, refer to Fig S1, Table S1.

Then, we used a chi-squared distribution to evaluate the change in predictive power of each predictor by comparing the deviance of the full model to each reduced one. We found that with the exclusion of GDP ($P < 0.001$), GINI ($P < 0.001$), GII ($P < 0.001$), inflation ($P < 0.001$), education ($P < 0.001$), gender ($P < 0.001$), employment ($P < 0.001$) in each step, the fit of the model changed significantly, which indicates an explanatory value of these predictors.

We explored if behavioral differences can predict positive deviance within countries and on an aggregate level by conducting a multinomial logistic regression analysis to estimate the predictive effect of behavioral, individual-level variables (risk preference, time poverty, lump sum preference, debt allocation, and investment ratio) and country-level variables (as in previous analysis) on the categorization of respondents into lower financial well-being, greater financial well-being and positive deviant groups (in which the lower financial well-being group was the reference group). We built a classification table to predict and validate our model and calculated a 100% model accuracy (McFadden's *pseudo-R^2* = .087). To test for statistical significance, we calculated Wald Z-scores for a two-tailed z-test. For further details, refer to Fig S2, Table S2.

At the country level, there was a significant effect of time poverty; choosing a preference of "time poor, money rich" is a positive predictor of the membership to the PD ($b = 0.330$; $P < 0.001$) and greater financial well-being group ($b = 0.193$; $P < 0.001$) groups. We also found a significant effect of lump sum preference; choosing a preference of "lump sum payment" is a negative predictor of the membership to the PD ($b = -0.242$; $P = 0.00118$) and greater financial well-being group ($b = -0.126$; $P = 0.02425$) groups. Risk preference was a significant negative predictor for the membership of the greater financial well-being group ($b = -0.0439$, $P = 0.0176$), but not for PDs. Debt allocation and investment ratio did not show any significant predictive effects.

At the aggregate level, there was a significant predictive effect on the membership to the PD group for GDP ($b = 0.781$; $P < 0.001$), GINI ($b = -0.756$; $P < 0.001$), GII ($b = 9.41$; $P < 0.001$) and inflation (b = -0.280; P < 0.001). There was also a significant predictive effect on the membership to the greater financial well-being group for GDP ($b = 0.619$; $P < 0.001$), GINI ($b = -0.911$; $P < 0.001$), GII ($b = 9.33$; $P < 0.001$) and inflation ($b = 0.147$; $P < 0.001$). To examine

the significance of the predictive power of each individual-level variable, we created reduced multinomial models that include all variables from the full model except for the targeted variable. Then, we used a chi-squared distribution to evaluate the change in predictive power between the full model and each reduced one. We found that GII ($P < 0.001$), risk preference ($P = 0.0455$), time poverty ($P < 0.001$) and lump sum ($P = 0.00487$) were significant predictors of categorical placement relative to the full model.

We used a one-way analysis of variance (ANOVA) to evaluate if the 2020 pandemic financially impacted positive deviants (*Residual SE*: 1.302, *M* = 3.90). This signifies that the average response for the financial 2020 question was between "no impact" and "somewhat better" on finances. We found the differences across means were negligible when utilizing confidence intervals (greater financial well-being: 3.84 ± 0.027, lower financial well-being: 3.64 ± 0.056, positive deviant: 3.75 ± 0.065). Although there were modest numerical differences, positive deviants were less likely to be negatively affected financially. Alternatively, we standardized our financial variable into binary groups ('negative impact' or 'no negative impact' (including the neutral response)). After creating a table to compare means across groups for our positive deviant variable, we found the differences across means were also negligible (greater financial well-being: 1.27, lower financial well-being: 1.40, positive deviant: 1.29). This indicates that the COVID-19 pandemic did not financially affect any groups (greater financial well-being, lower financial well-being, and positive deviants).

Next, we used a McNemar chi-squared test for dependent samples to explore the differences between countries in positive deviants and lower financial well-being populations in their financial outcomes after the pandemic. There were more countries where positive deviants in comparison to lower financial well-being populations felt more financially stable after COVID-19 ($P < 0.001$, $X^2 = 12.37$, $df = 1$). We also calculated the average marginal difference between the rate of difference of positive deviants (between those experiencing positive/neutral impacts and those experiencing negative impacts) and rate of difference in the lower financial well-being population (*M* = 14.06 %, *SD* = 37.65 %). Pakistan, Lebanon, and Egypt had only one positive deviant, so they were excluded from this calculation.

For detailed explanations on methods and other materials, please refer to Ruggeri et al., 2022.

Definition of variables
Individual-level variables

pdevB: Variable representing positive deviants based on behavior, defined through adult debt behavior and childhood income.

Residence: Variable representing the country in that individual respondents are living.

Optimism: A categorical variable of five levels representing an individual's positive anticipation about their future finances. Categories follow, respectively, "Things will be much worse," "Things will be somewhat worse," "Things will be about the same," "Things will be somewhat better," and "Things will be much better."

Risk preference: A categorical variable of five levels representing an individual's tendency to choose an action with a higher variance in potential monetary outcomes relative to another action with a lower variance but equal expected value. Levels 0-4 respectively represent 100% (guaranteed), 75%, 67%, 50% and 25% chances of outcome.

- ○ Level 0: guarantee chance of outcome
- ○ Level 1: 75% chance of outcome
- ○ Level 2: 67% chance of outcome
- ○ Level 3: 50% chance of outcome
- ○ Level 4: 25% chance of outcome

Country income: A numeric value gathered from the World Bank coded to 3 categorical values: "Upper-middle," "High-Income," and "Lower-middle."

GII (Gender Inequality Index): Variable representing the GII, which is composed of three dimensions to reflect gender inequality in a country based on reproductive health, empowerment and the labor market (lower GII means lower inequality). Retrieved from: (*30*)

Disc_debt: a continuous variable representing discretionary spend in debt allocation

Disc_savings: a continuous variable representing discretionary spend in savings allocation

Disc_investment: a continuous variable representing discretionary spend in investment allocation

Time_vs_money/time-poverty: a categorical variable of 2 levels representing time poverty (an individual's preference to choose "rich time and poor money" or "poor time and rich money").

Interval_markup/lump sum: a categorical variable of 2 levels representing an individual's preference for lump sum payment (either immediate or future) or interval payment.

Financial_2020: a categorical variable representing an individual's financial impacts after the 2020 pandemic. A category value of 0-5, respectively, were "My financial situation became much worse," "My financial situation became somewhat worse," "There were no major impacts on my financial situation," "My financial situation became somewhat better," and "My financial situation became much better."

For a list of other variables, refer to Ruggeri et al., 2022 (10).

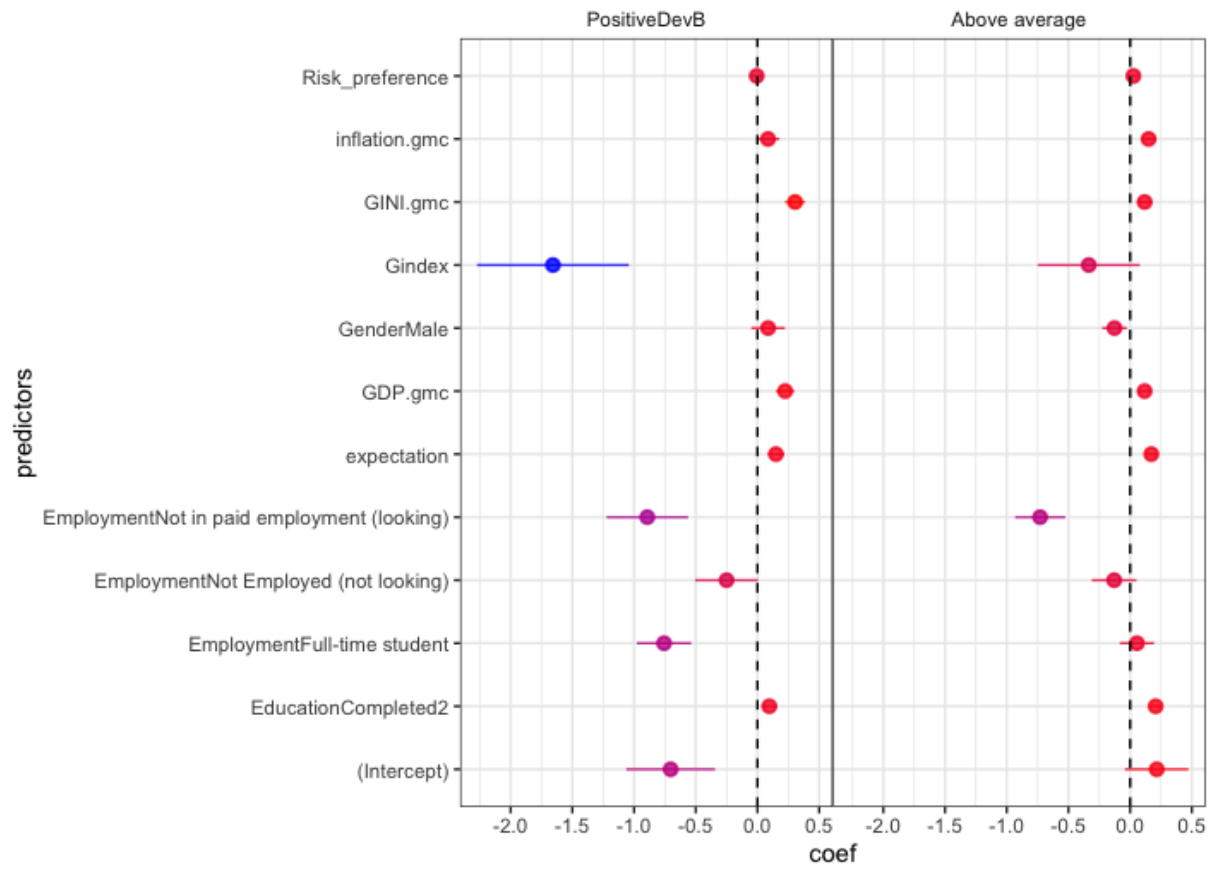**Fig. S1. Individual Differences as Predictors of Positive Deviance Using A Logistic Regression**

Fig. S2. Behavioral Differences as Predictors of Positive Deviance Using A Logistic Regression
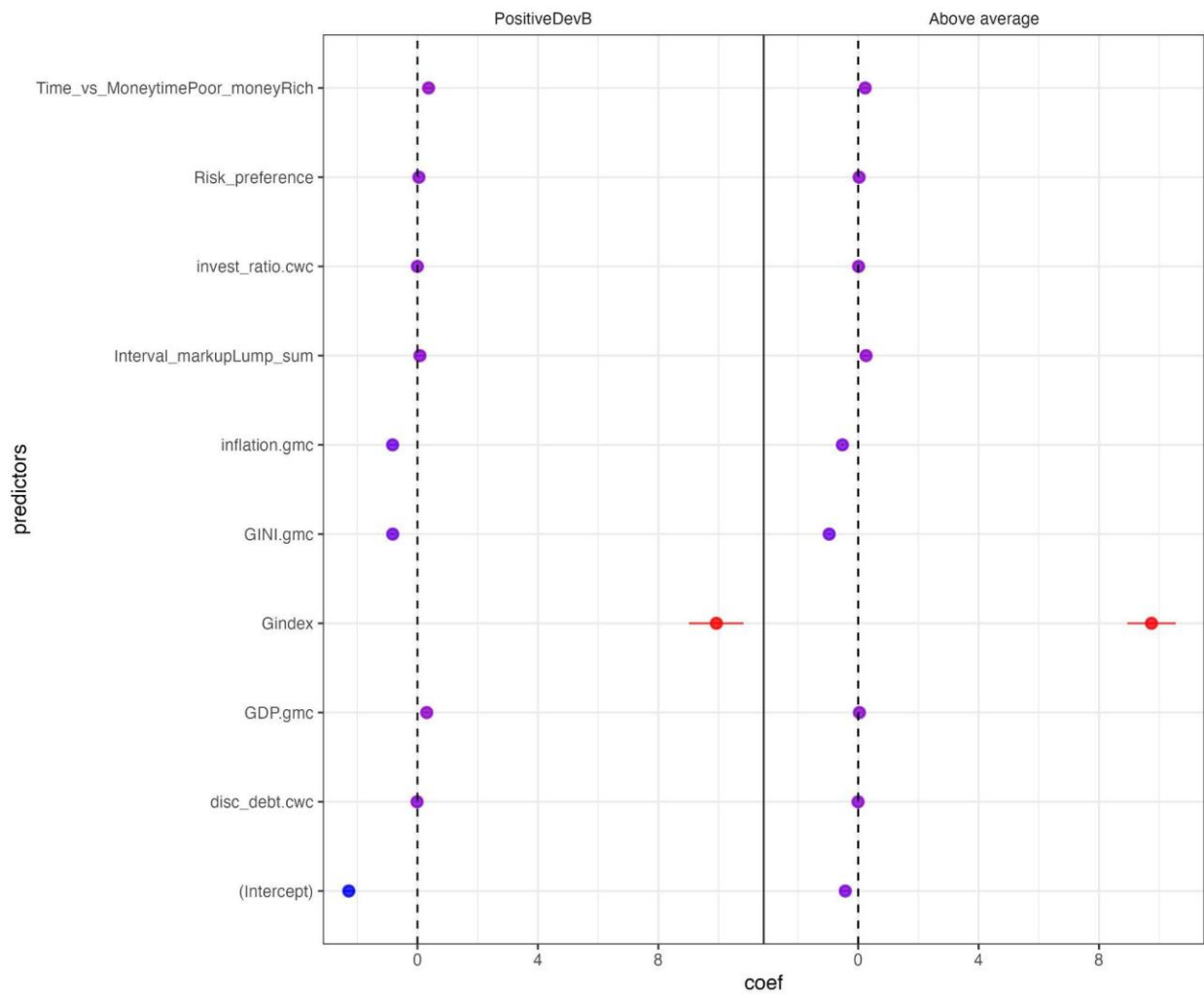
Table S1. Numerical Values of *b*-coefficients Using Individual Differences as Predictors in A Logistic Regression

predictor	*b* greater financial well-being [95 % CI]	*b* positive deviant [95 % CI]
Intercept	0.215 [0.042; 0.473]	–0.703*** [–1.063, –0.344]
Education	0.206*** [0.162; 0.252]	0.096** [0.034; 0.158]
GenderMale	–0.127* [-0.226; -0.028]	0.086 [-0.050; 0.222]
Expectation	0.171*** [0.124; 0.219]	0.150*** [0.083; 0.216]
Risk preference	0.026 [-0.01; 0.063]	–0.006 [–0.057; 0.044]
Not in paid employment (looking)	–0.729 [–0.932; –0.526]	–0.892 [–1.222; –0.563]
Not Employed (not looking)	–0.129*** [–0.310; 0.050]	–0.250*** [–0.506; 0.005]
Full-time student	0.055 [–0.084; 0.194]	–0.757*** [–0.977; –0.537]
GDP	0.117*** [0.0626; 0.171]	0.224*** [0.150; 0.298]
GINI	0.117*** [0.056; 0.179]	0.305*** [0.226; 0.386]
GII	–0.335 [–0.749; 0.078]	–1.657*** [–2.272; –1.042]
inflation	0.150 [0.088; 0.211]	0.085*** [–0.007; 0.178]

Coefficients of multinomial logistic regression predicting membership in groups with greater financial well-being, positive deviant and lower financial well-being.

The value of 0 in the coding of categorical predictors indicates the reference value for interpreting the corresponding b values. The reference values for predictors were set as follows: for Gender Male (reference: female category); for Not In Paid Employment (looking), Not Employed (not looking), Full-time student (reference: Employment) and for the dependent variable the reference category was the lower financial well-being income group.

We calculated Wald *Z*-scores (b / SE_b) and tested for statistical significance with a two tailed *z*-test.

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

Table S2. Numerical Values of *b*-coefficients Using Behavioral Differences as Predictors in A Logistic Regression

predictor	*b* greater financial well-being [95 % CI]	*b* positive deviant [95 % CI]
Risk preference	-0.0439* [-0.006563, 0.0698]	-0.0161 [-0.00251, 0.0981]
Time poverty (poor time, rich money)	0.193 *** [0.128739, 0.3326]	0.330*** [0.22151, 0.4938]
Lump sum (payment)	-0.126* [0.150757, 0.3718]	-0.242** [-0.07632, 0.2183]
Debt allocation	-0.0139 [-0.054839, 0.0463]	-0.0163 [-0.07578, 0.0593]
Investment ratio	-0.000248 [0.000715, 0.0241]	-0.010874 [-0.01534, 0.0138]
GDP	0.619*** [-0.013776, 0.0976]	0.781*** [0.24143, 0.3919]
GINI	-0.911*** [-1.036811, -0.8864]	-0.756*** [-0.91701, -0.7335]
GII	9.33*** [8.970336, 10.5766]	9.41*** [9.09852, 10.9163]
inflation	0.147** [-0.578194, -0.4691]	-0.280*** [-0.97443, -0.7258]

Coefficients of multinomial logistic regression predicting membership in groups with greater financial well-being, positive deviant and lower financial well-being.

The value of 0 in the coding of categorical predictors indicates the reference value for interpreting the corresponding b values. The reference values for predictors were set as follows: for Gender Male (reference: female category); for Not In Paid Employment (looking), Not Employed (not looking), Full-time student (reference: Employment) and for the dependent variable the reference category was the lower financial well-being group.

We calculated Wald *Z*-scores (b / SE_b) and tested for statistical significance with a two tailed *z*-test.

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

Table S3. Economic inequality policy interventions

Strong Negative Impact	Slight Negative Impact	Mixed	Slight Positive Impact	Strong Positive Impact

Type of Intervention	Policy (Year)	Country	Policy Synopsis	Impact	Evidence Rating[1]
Federal Allowances	Supplemental Nutrition Assistance Program (SNAP) (1939, first food stamp program- present)	United States	SNAP (formerly known as "food stamps") is a federal program that provides benefits to eligible low-income families so that they can purchase groceries.	*Economic:* Partially prevented the collapse of the bottom floor as the 2008 financial crisis loomed and helped low-income people at least maintain their living standards, though unideal, during this difficult time. However, there has been a long-term decline in SNAP's effectiveness since the mid-1990s due to its limited coverage of reaching low-income people (Jolliffe et al. 2019). In 2015, SNAP lifted 8.4 million people from poverty, causing the poverty rate to drop from 15.4 percent to 12.8 percent. SNAP also reduced the poverty gap by $35 billion (21 percent) in 2015 (Wheaton & Tran 2018). *Behavioral:* Chicago school children, regardless of whether they received SNAP benefits, tended to receive more disciplinary infractions at the end of the month regardless. These spikes were especially pronounced for students who received SNAP benefits (Gennetial et al. 2016). The marginal propensity to consume SNAP-eligible food using SNAP benefits is 0.5-0.6, and the MPCF using cash is even smaller. This suggests that SNAP benefits are not being completely used to buy food (Hastings & Shapiro 2017). *Although the overall impact was positive, it is critical to address the relevant drawbacks of the program as related to the stigmatization of low-income communities facing poverty and food insecurity (Gaines-Turner, et al., 2019).	★★★★☆

Federal Allowances	[High-Scope Perry Preschool Program](#) (1962-present) and the [Abecedarian Project](#) (1972-2012~)	United States ([Article written](#) in Australia for them to model after)	Early educational intervention programs for children from disadvantaged backgrounds conducted in the United States.	*Economic:* Demonstrated long-term (adult) upward mobility in terms of economic advancement ([HighScope](#), [The Caroline Abecedarian Project](#)). Essentially induced Positive Deviance. *Behavioral:* Shows a positive and long-term effect of early environmental enrichment on school achievement, employment outcomes and social behaviors ([HighScope](#), [The Caroline Abecedarian Project](#)).	★★★★☆
Housing/ Children	[Programa Bolsa Família (Family Grant Program)](#) (2003-present)	Brazil	Conditional cash transfer (CCT) with behavioral-based conditions such as increasing schooling, bettering health, and eliminating child labor; encourages the accumulation of human capital to increase economic stability.	*Economic*: Helped to diminish income inequality within Brazil; between 2001-2004, the lowest 10% of Brazil's household incomes increased by 23.5% ([Hall 2008](#)); one study found that 35% of the decrease in income inequality in Brazil between 2001-2004 is due to Bolsa Família ([IPEA 2006](#)); another study indicated that from 1995-2004, increases in wages and employment were responsible for 78% of the decrease in income inequality ([Soares et al. 2006](#)). *Behavioral*: Positive conditional changes ([Hall 2008](#)).	★★★★☆
Housing/ Children	[Child Support Grant](#) (1998-present)	South Africa	Unconditional cash transfer given to the lowest 30% of South Africa's household incomes; monthly payments allocated to the child through their primary caregiver; encourages the accumulation of human capital.	*Economic*: Lowered half of South Africa's food poverty gap ([Samson et al. 2016](#)). *Behavioral*: Increased early life outcomes for infants and children; increased spending on schooling; reduced risky behavior in adolescents ([Samson et al. 2016](#)); clear behavioral changes occurred after the transfer.	★★★★☆

Housing/Children	[Healthy Homes Initiative](#) (2013-present)	New Zealand	Provides healthy housing, directed at low-income families with children prone to illness; expanded to the whole country July 2022.	*Economic:* Prevented hospitalizations avoided an estimated $6.3 million in medical costs ([Pierse, White, and Riggs 2019](#)). *Behavioral*: Assessment concluded that policy improved the overall quality of the population's homes by improving children's health ([Allen+Clarke 2018](#)).	★★★★
Employment	[Program of helping job seekers](#)* (2013-2014)	Singapore	Helps job seekers find employment and increases the job placement rate of the Workforce Development Authority's of career center** (Ministry of Manpower, Singapore)	*Economic*: Three months after visiting the career centres, 49% of job seekers who had gone through the program found work–compared to 32% of those who had experienced the normal existing employment facilitation process ([OECD, 2017](#)). *Behavioral*: The program motivated job seekers to take greater ownership of their search process, reframing activities in the job search to make the job search manageable, increasing morale, and assisting job seekers to set more realistic job expectations is effective in helping more people to find work ([OECD, 2017](#)). *the organization that implemented the program was reconstructed and a similar program is provided by the the current Workforce Singapore, under Ministry of Manpower, Singapore **In the program, job seekers in the treatment group of program received frequent career advice service and they had to commit to take ownership to work out their job search plan (sample of 777 job seekers are randomly assigned to the treatment group and the control group. Control group experienced normal existing employment facilitation process)	★★★★
Employment	[Year Up programme](#) (2007-present)	United States	Post-secondary education in association with	Financial incentives for employers to create apprenticeship places for disadvantaged youth, to make the school-work transition smoother. $24,562 was invested in each participant, all between 18-	★★★

| | | | | companies for disadvantaged youth. | 24 years old and from low income urban communities. Of the 195 people enrolled in the study, 135 were randomly selected to be in the treatment group and were invited to take part in the program, and 60 were selected to be in the control group.

Economic: 3 years after the program the participants had 30% higher annual revenues. Due to Year Up participants' ability to obtain jobs with higher wages ([Roder & Elliot 2014](#)).

Behavioral: All but one Year Up participants had worked at some time during the four years after random assignment. Year Up participants were also more likely to hold one job during the four-year period ([Roder & Elliot 2014](#)). | |
| Federal Allowances | [World Bank's Japan Social Development Fund (JSDF)](#) (2021) | Japan (through NGO) | This is a partnership between the World Bank and the Japanese government which serves as a grant system to assist vulnerable groups during the Asian financial crisis of the 1990s. These grants are given to fund community-driven development projects as well as poverty reduction projects. | *Economic:* With over 786 projects since its creation in June 2021, the JSDF has become a vessel of support for innovation and for the mitigation of social poverty. 50% of these grants were set in place by Civil Society Organizations and 93 low and lower-middle income World Bank affiliated countries have been positively impacted by this initiative. In addition, the JSDF supported the initiation and overall approach of the National Solidarity Program which successfully improved the quality of life of three large rural communities. ([Special Window for Afghanistan 2007)](#).

Behavioral: This initiative has been claimed to support the improvement of social development and overall livelihood ([Japan Social Development Fund (JSDF) Washington, D.C. : World Bank Group 2008](#)). | ★★★ |

| Federal Allowances | Provincial Growth Fund (2018-present) | New Zealand | Funds approved for projects/businesses to create jobs and increase economic growth in "surge" regions. | *Economic*: 500/1359 projects have been completed, offering over 16,000 jobs and improving the economy (Allen + Clarke 2021).

 Behavioral: Sourced from PDU (Provincial Economic Development & Investment Unit), majority of funded individuals feel that there was collaboration with government committees (active engagement with project). With non-funded, the majority believed there was a lack of communication with said committees (Allen + Clarke 2021). | ★★★★☆ |

| Employment | JobCentrePlus Program (consulted by Behavioural Insights Team (BIT)) (2002-2011) | United Kingdom | Intervention to reduce the number of people dependent on unemployment benefits.

Stepped-wedge trial with 110,838 job seekers randomly selected to receive treatment when visiting JobCentrePlus; control group received 'business as usual' model for JCP. Intervention involved the simplification of job search processes and introduction of a planning aid to encourage people to search for work (Behavioural Insights Team (BIT) UK, 2013-2014). | *Economic and Behavioral*:
JCP processes resulted in a 1.7% increase in the proportion of people flowing off benefits in 13 weeks, relative to the control (business as usual) group.

*Not enough longitudinal evidence on economic-impact, or inequality reduction to support claims that this intervention induces positive deviance. | ★★★★ |
| Federal Allowances | Rotary Service in Action (1905-present) | Rotary International (NGO) | Provides basic financial services, microloans, and | *Economic:* Strengthens local entrepreneurship; gives access to well-paying jobs and financial management institutions (Rotary). | ★★★ |

				training to women (Guatemala as an example) for them to build their own business and gain economic independence. Overall, it is successful in breaking down poverty cycles in rural and urban areas. About 400 women, organized into 22 groups, received financial literacy training (Rotary).	*Behavioral*: Participants have become funders of their own microloans as members pool together their savings to distribute these loans to each other; providing seed funding for profitable businesses (Rotary).	
Housing/ Children	Moving to Opportunity (MTO) (2002-2010, evaluated 2011)	United States	Major randomized housing mobility experiment sponsored by the U.S. Department of Housing and Urban Development in which 4,600 low-income families with children from impoverished urban neighborhoods were randomly assigned to a control group, offered a housing	*Economic*: Children under 13 whose families moved to a lower-poverty area had an annual income that was $3,477 (31%) higher on average in their mid-twenties compared to the average $11,270 income of the control group (Chetty et al. 2015). *Behavioral*: Conferred major benefits (improved college attendance rates and earnings, living in better neighborhoods as adults, being less likely to become single parents) for children 13 and below who moved to better neighborhoods, but children over 13 experienced negative effects due to the disruption of moving (Chetty et al. 2015). *As such, future policy should consider age as a significant factor	★★★

				voucher that could only be used to move to a low-poverty neighborhood, or offered a traditional Section 8 housing voucher.	
Employment	India's National Rural Employment Guarantee Scheme (Mahatma Gandhi National Rural Employment Guarantee Scheme) (2006-Present, evaluated 2006-2008 data)	India	The program guarantees employment for unskilled manual labor work up to 100 days per year for each rural household, with wages equal for men and women. One of its aims is to improve and build up infrastructures around rural areas of India, including canals, roads, bridges, etc. If people who applied failed to receive work assignments within 15 days, they are entitled to receive unemployment allowances.	*Economic:* Two years into the program, participants increased non-financial assets by 16% (Deininger, and Liu, 2019) strengthening their resilience to economic or environmental shock in the future. The policy didn't change the gender wage gap in field labor such as agriculture (agriculture is a representative field of work for lower-income families). (Berg et al., 2012) *Behavioral/Structural:* Participants increased protein intake and energy by 6.9% on average after one-year exposure to the program, improving the nutrition in their diet (Deininger, and Liu, 2019). Helped reduce gender inequality by giving priorities to female employments for public work, and reserving one-third of the jobs in the program for women. The higher income for women in rural areas help increasing their investments in the education of their children.(Afridi et al., 2016) *Problem: However, in Bihar, India's poorest state for example, people are not getting all the work they were looking for and not receiving all the wages they were due to get. Local governments also fail to implement the program effectively due to local complications and incapability of financial management (Puja et al., Worldbank, 2014).	★★★

Federal Allowances	[Supplementary Child Allowance](#) (2005-present)	Germany	Monthly payments for families where parents earn enough money to support themselves but not their children; amount depends on financial situation; parents' wages must lay between a min. and max. value.	*Economic:* Improved financial situation for 81% of the recipients, especially for households with several children; worsened financial situation for 9% ([Bonin et al., 2013](#); [Bundesministerium für Familie, Senioren, Frauen und Jugend, 2009](#)). *Behavioral:* Overall, no change in employment rate. Parents close to the minimum wage limit are motivated to pick up employment, parents close to the maximum wage limit are motivated to decrease employment ([Bonin et al., 2013](#); [Bundesministerium für Familie, Senioren, Frauen und Jugend, 2009](#)). *Problem: Many eligible families did not apply due to lack of awareness and complicated requirements ([Bonin et al., 2013](#); [Bundesministerium für Familie, Senioren, Frauen und Jugend, 2009](#)).	★★
Education/ Child Labor/ Vocational Training	[The Khyber Pakhtunkhwa Free Compulsory Primary and Secondary Education Act, 2017](#) (Act. No XII of 2017).	Pakistan (Khyber Pakhtunkhwa)	Children between 5 and 16 years of age residing in the Pakistan region of Khyber Pakhtunkhwa are provided free mandatory education through the enactment of this Act in an effort to eradicate child labour and improve access to vocational training.	*Economic:* No significant patterns of overall economic improvement have been reported as the Act was locally implemented in Khyber Pakhtunkhwa. *Behavioral:* Overall, no significant change in enrollment rate, except for that of positive trends are reflected in Khyber Pakhtunkhwa. According to the government of Khyber Pakhtunkhwa's *[Annual School Census Report](#)* 2020-2021, overall enrollment of primary and secondary level is at 66.5% and 33.5%, respectively.	★★★
Employment	[Sindh Home-Based Workers Act](#)	Pakistan (Sindh)	In an attempt to legislatively incorporate labour	*Economic*: Sindh home-based workers contribute almost Rs. 400 billion in wages to the economy of which 65% of these workers were women	★★★

(Passed May 9, 2018)		rights for the welfare of the neglected communities, the Sindh government introduced and passed this act to protect the rights of home-based workers who work in informal or unorganized settings.	(UN, 2016). Since this is a provincially passed law, the overall Pakistan economy has not seen much development. *Behavioral*: Other provinces in Pakistan are formulating legislative drafts to replicate similar rights for home-based workers across the country. However, workers remain idle as 100 million home-based workers are still deprived of their legal identity and rights as they wait for policy implementation (FPAR)	

| Employment | [747 Plan][1] (December 2007) | South Korea | Presidential campaign and program led by President Lee Myung-Bak aimed to structurally reform macroeconomic policies from privatization, taxation, and housing markets by opening much of its economy to private enterprise and market forces in order to boost the Korean economy. The primary goal was to boost the annual economic growth rate of 7% in 10 years, raise per capita income to $40,000, and make Korea the seventh in economic ranking. | *Economic:* Corporate tax cuts incentivized the private sector followed by income tax cuts. Ultimately, large corporations were given more power. Increased focus on international exports. (Michell, T. 2011).

 Behavioral: Since the goal was geared towards boosting the overall economy, outcomes across disparate socioeconomic groups differ widely. Individual disparities were overlooked by policy makers and decision makers as government officials and leaders placed importance in the overall growth rate of the Korean economy rather than improving economic disparities. Fostering export-led economic growth created greater division between industry and services, temporary and permanent workers, as well as large and small businesses (Pak, et al., 2022). | ★★★ |

1: 1-star evidence rating (Theoretical) means that a concept has been discussed but lacks empirical validation; 2-star evidence rating (Empirical) means that a concept has been validated but lacks more robust data; 3-star evidence rating (Applicable) means that results are taken from controlled, reasonably powered trials; 4-star evidence rating (Replicable) means that the results have been successfully replicated in terms of setting, procedure and measurement; and 5-star evidence

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[1] 임경석. (2012). 이명박 정부의 747 공약과 그 결과. 역사와 현실, 86, 3-12.

rating (Impact) means that result insights have been implemented and applied at scale" ([THEARI Rating System](#)). An unshaded fifth star indicates the need for further research.

Table of various policies aimed at reducing financial inequality with indications of type of intervention, country where it was performed, a synopsis, impact, and evidence rating. Color reference found above the full table.

Table S4. Gender Gap Policy Interventions

Policy (Year)	Country	Policy Synopsis	Impact/Progress	Evidence Rating[1]
Zakat Poverty Alleviation (2022-present)	West Java, Indonesia	Analyzed the role of zakat in poverty alleviation and income inequality reduction based on the gender of zakat recipients (Zakat is a form of almsgiving). Methodology: Centre of Islamic Economic and Business Studies (CIBEST) model used as a poverty measure. Gini coefficient and Atkinson index used as income inequality measures to analyze 1,300 zakat recipients.	Results: female-headed households had better income distribution 1 year after zakat distribution programmes. Research limitations/implications: used the poverty line standard published by the Central Board of Statistics from the Republic of Indonesia to identify respondents who live under the poverty line.	★★★★
Salary History Ban (August 2016-present)	United States (29 States)	The salary history ban prevents employers from inquiring about applicants' pay history during the hiring process.	Bans reduced the gender pay gap by 4.2 percentage points in hourly wages and by 4.5 percentage points in weekly earnings. However, about 40% of the reduction in the weekly earnings gap is a result of a decrease in the earnings of middle-aged men. While the gender pay gap decreased in the private sector, the gaps in the public sector increased due to an increase in men's earnings.	★★★★
Pay Transparency Initiative	United Kingdom	Enabled public access to mean salaries of men and women in UK	Salaries of female academics increased by around 0.62 percentage points compared to male academics and the gender pay gap was reduced by 4.37%	★★★★

(2007)		universities	The reduction in the pay gap was driven by senior female academics negotiating higher wages and female academics moving to universities with equal opportunity Note that findings on the efficacy of pay transparency policies in decreasing the gender wage gap are not conclusive overall. Pay transparency policies tend to rely on individual workers advocating for pay increases based on newly available information.	
Equal Pay Certification (2020-Present)	Iceland	Institutions/Companies with more than 25 workers must obtain equal pay certification, which requires wages determined irrespective of gender	Preliminary analysis found that the system provides a supportive institutional system for certification bodies, employers, and employees to have transparency in job and task evaluation (Wagner, 2020). This increases not only information for job-seekers and employees, but also accountability for employers; Dobbins et al. argue this will advance gender equality (Dobbins et al., 2015).	★★★
The Labour Code	Brazil	Labor Code Bill (Paragraph 6 of Article 461)- Passed in 2017: gives a financial penalty for 'discrimination against gender or ethnicity' that a victim of it can recieve. (50% of maximum Social Security Pension).	Results: - Increased number of labor disputes - Results could be swayed as a result of the pandemic - Lack of evidence of minimizing the gender pay gap	★★★
Availability of Banking Services on Income Inequality, 2005-2019	Asia Pacific (several countries)	Study estimated impact of the availability of banking services on income inequality. Method: Annual panel data set constructed with a sample of 8 developing countries in the Asia Pacific region during 2005-2019.	Results: greater availability of banking services reduces income inequality across countries + evidence that greater women empowerment and better regulatory quality can reduce income inequality, whereas urbanization and globalization can (somewhat) deteriorate income equality (at least in the short run).	★★★

Positive Action: Promote the the advancement of women (2016 - present)	Japan	The Japanese government evaluates corporations that promote measures to encourage the advancement of women such as increase in managerial positions of women to improve work-life balance.	Started from 2016 and subsidized 1.9 trillion Japanese yen in 2020. (Gender Equality Bureau Cabinet Office, 2022)	★★★
More and Better Jobs for Women: Women's Empowerment through Decent Work in Turkey (2013-2017)	Turkey	http://esitizberaberiz.org/home/ The project aims to develop a comprehensive national policy that will support women's employment, while improving the skills of women workers and raising awareness on gender equality. Within the scope of the project, the following will be realized: Preparing the first National Action Plan on women's employment in Turkey and developing women's employment policies sensitive to gender equality. Effective implementation of active labor market policies for women at local level through İŞKUR and Provincial Employment and Vocational Education Boards. Extending İŞKUR services to include unemployed women with limited access to these services. Creating decent job opportunities for women through improved work balancing.	https://www.eskills4girls.org/more-and-better-jobs-for-women-womens-empowerment-through-decent-work-in-turkey/ 400 women received entrepreneurship training. At the end of the training, micro grant support and mentorship service were given to 30 women who have succeeded and selected.	★★★

		Raising awareness on gender equality and labor standards among women and men.		
Equality Act 2010 (Gender Pay Gap Information) Regulations 2017 (April 2017- present)	United KingdomI	Requires companies with 250+ employees to annually report data to show if there is any difference between males' and females' average pay	The statistics reported lack specificity. They do not differentiate whether employees are full vs part time, or their job role and experience, which are factors that contribute to the wage gap. No proof that companies are seriously enforced to report or be accurate Unclear how effective it is	★★
Equal Employment Opportunity Law (1986)	Japan	Enforced law to give the equal employment opportunity for both men and women (Prohibit gender disrimination)	The law was enforced in 1986. The gender wage gap decreased by 14.6 points from 1986, however the effect is not assessed. Wage index: Men 100 points and Women 74.3 points in 2020 (increased in women from 59.7 in 1986)	★★
Digital Education Action Plan - Action 13 (2021-2027)	European Union	Encourage more women in STEM by making digital and sustainable entrepreneurship skill training available through online learning platform Girls Go Circular, organize girl's and women's E-STEAM festivals in EU Member States, offer higher education programs for STEAM.	Current Expected Deliverables: By 2024 → organize 10 E-STEAM festivals for girls and women By end of 2027 → engage 40,000 women in training Current Effectiveness Unknown	★★
Work-Life-Balance Directive (proposed 2019, to be implemented by	European Union	To be implemented by all Member states; introduced paternity leave, flexible leave, carers' leave to support relatives, extension of	Despite the deadline, many Member states have not yet completed the process. The current progress of Member states can be tracked here.	★

		flexible working arrangement requests to all working parents of children up to 8-years-old. Overall, encourages gender-balanced-use of family-related leaves, ensures protection against discrimination/dismissal of carers, and removes economic disincentives that inhibit women from joining the labour market.		
Beijing Platform for Action (1995)	United Nations	Aimed at removing all barriers for women to freely participate in an equitable society; declares gender equality to be a human right; emphasizes the importance of women's ability to make social, economic, cultural, and political decisions; calls for the commitment of each government.	Although a large portion of governments have created policies that explicitly deal with gender inequality, the factors dedicated to gender mainstreaming are often left behind during implementation. There are also frequent issues with male resistance. The impacts of policies created in line with the Beijing Platform for Action are limited and remain largely unknown (Moser & Moser 2010).	★
The Fifth Basic Plan for Gender Equality (proposed on Dec 25, 2020)	Japan's Council for Gender Equality	Was meant to be implemented in 2020, but was delayed due to failing to achieve it's 30% increase in women leadership goal in 2020. Targets gender equality in leadership positions, society systems (ex: surnames), work-life balance to encourage male focus on family and increasing women working hours, women in STEM, and violence against women.	Recent News: Announcement was made on International Women's Day 2022 (March 8, 2022) on prioritizing specific policies in the new plan. Statement on implementing four pillars. The first piller combats the gender wage gap. The second piller argues for violence against women and provides femtech to raise awareness on women health. The third piller hopes to expand male engagement in families and communities. Lastly, the fourth piller relates to increasing women employment.	★
Wage Transparency policies (2022 - present)	Japan	Large companies with more than 300 employees have to disclose gender wage gaps. The new rules cover roughly 18,000 companies in Japan which aim to	Just started	★

		encourage businesses to reduce the gap and to promote female participation in the workforce.		
Guideline for reducing gender wage gap (2010)	Japan	The Japanese government created the guideline to reduce the gender wage gap in corporations. Main contents Overview of gender wage gap Measures to be taken to reduce gender wage gap Support tools for visual control of gender wage gap	The guideline created in 2010, but the impact in not assessed	★
Women's Labour Force Participation (January 2022-Present)	The Netherlands	Companies listed on Dutch stock exchange should meet a quota of at least ⅓ women and ⅓ men in supervisory boards. 5,000 largest required to set action plan to achieve this target, and show report yearly reports to Social and Economic Council	Current Effectiveness Unknown *Note: California implemented a similar Women on Boards (SB 826) law in 2018 to require all publicly held corporations principally located in California to have at least one female director on their boards by the end of 2019, but this was passed as unconstitutional by state court in 2022.	★

Table of gender-based policy interventions. Includes the policy title, country it was implemented, synopsis of the intervention, impact and progress, as well as an evidence rating[1].

Table S5. COVID-19 Policy Interventions

Table of COVID-19 policy interventions. Includes the policy title, country it was implemented, synopsis of the intervention, impact and progress, as well as an evidence rating[1].

Policy (Year)	Country	Policy Synopsis	Impact/Progress	Evidence Rating (1-5)[1]
"Measures to deal with the COVID-19 pandemic and other urgent provisions"	Greece	Rent Reduction implementing the 40% rent reduction to deal with the coronavirus crisis is the submission of a responsible declaration Traders and professionals : 40% reduction in the rent of their professional premises Employees, dismissed or suspended : 40% reduction in the rent of their main residence, and the student residence of their child studying in another city Co-tenants or spouses : The right to a reduction only exists when the suspended employee is himself declared as a tenant of the residence in the lease and in the TAXISNET Leasing application. In the case of co-tenants (usually spouses) where only one of them is entitled to the reduction, this will be calculated on his own share of the rent, i.e. the reduction will be 20%. When the suspended person is the spouse of the lessee, in which case they are	Although the long-term implications of these policies remain to be assessed, during the Covid-19 crisis, they seemed to offer a protective net to the affected populations.	★★

		typically not entitled to any reduction, POMIDA proposes that a 20% rent reduction apply there as well. Lump Sump Self-employed, freelancers, individual businesses, and private sector workers of firms affected by the lockdown (81% of private sector employees) were offered a lump sum payment of €800, which was consigned to a 45 days-day period (€533/month)		
Synergasia	Greece	In June 2020, Greek authorities introduced the job retention scheme "SYN-ERGASIA" (€2.7 m), allowing employers with significant turnover losses to halve the working time of their employees and pay up to 50% of their wages. Employers also received a 60% subsidy for their payment of social security contributions.	The program, which originally targeted 700,000 workers, covered only 52,000 workers by June 2020. The remarkably low enrollment rate is attributed to employers' reluctance to commit to the restriction of dismissals for the period covered, opting to maintain flexibility in firing workers or replacing existing full-time contracts with part-time or casual labor (Moreira et al., 2020).	★★