Do Consumers Care about Pay Inequality? Evidence from Household Purchase Data

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Anecdotal evidence:
CEO-worker pay disparity

PAY AT THE TOP EXECUTIVE COMPENSATION IN GEORGIA

CEO, worker pay gap huge

Top boss makes 120 times more than average employee.

Clothes maker Carter's has gulf of 674 times.

By Russell Grantham

CEOs at large Georgia companies typically earned 120 times more than the average worker in their industries in

Does AMC's CEO deserve 1,000 times his workers' pay?

PAY AT THE TOP: EXECUTIVE COMPENSATION IN GEORGIA

Union: Pay gap widest in world

Average CEO pay

tunities for advancement and

BUSINESS

Colorado CEOs earn in three days what the typical worker earns in a year, new disclosures show

New CEO pay ratio now part of company disclosures

MURPHY'S LAW
CEOs Paid 1,000 Times More Than Average Workers
Study finds local companies Manpower and Kohl's near the top of obscene U.S.

Robert Reich ✓ @RBReich · Feb 1, 2024

The **CEO**-to-**worker pay gap** at America's largest companies was 344-to-1 last year. In 1965, the ratio was 20-to-1.

This explosion in **CEO pay** relative to the **pay** of **workers** isn't because CEOs have become so much more valuable.

They've just gamed the system to line their pockets.

McDonald's CEO was paid $17.8 million in 2022. It would take a typical McDonald's worker more than 1,200 years to make that amount. This is what I mean when I say the system is rigged.

○ 84   ⟲ 950   ♡ 1.9K   ᴸᴸᴸ 44K

Anecdotal evidence:
Consumers' reaction to high CEO-worker pay disparity

HARVARD BUSINESS REVIEW

Executive Compensation

Is Your CEO's High Salary Scaring Away Customers?

by Gretchen Gavett

From the Magazine (September 2015)

THE WALL STREET JOURNAL.

Consumers Care About CEO-Employee Pay Ratios

Companies with big pay gaps could see their business affected as new SEC disclosure requirement takes effect

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Large CEO-worker wage gaps are a major consumer turnoff

- Most public firms listed in the U.S. are required to disclose their CEO-worker pay ratio from the first fiscal year that began on or after *January 1, 2017*.
  - Thus, *the first pay ratio disclosures* were made *in calendar year 2018*, based on fiscal year 2017 data, typically reported in the proxy statement (SEC Form DEF 14A).

- Under the new rule, firms must disclose:
  1. Median annual total compensation of all employees (excluding the CEO)
  2. Annual total compensation of the CEO
  3. Ratio between these two numbers

- *The first rule* in the history of the SEC disclosure regime to require firms to disclose any information about how they pay their workers (Bank and Georgiev, 2019).

We examine consumer responses to the first disclosure of CEO-worker pay ratios.

Changes in customer behavior after disclosure

Concern about pay disparities

Awareness of disclosures

- ❑ *Social preferences channel: consumers care about pay inequality, and they are reluctant to purchase from firms with high pay ratios.*

- ❑ *Consumer trust channel: High pay ratios can signal to consumers that the firm is using its resources in a self-serving manner.*

- ❑ *Media coverage of the firm's pay ratios*

- ❑ *Firm visibility*

- ❑ *Consumer access to information*

## *CEO-worker pay ratio disclosure and treatment definition*

- Sample: 2,285 U.S. firms disclosing pay ratios *for the first time* in 2018 proxy statements (SEC filings)

- Disclosure month t: First proxy filing date per firm (Pan et al., 2022)

- Treatment timing: Staggered, based on *month t*

- High pay ratio: *Top quartile* among all disclosures *up to month t*

  - Rationale: Consumers assess pay disparities using cumulative information available at time of disclosure.

Consumer purchase data: NielsenIQ consumer panel (NCP)

- NCP records detailed trip-level purchases and store visits.

- Product hierarchy consists of *three levels of aggregation*: 10 departments → 120 groups → 1,500 modules.

- Sample period: Sept 2017–Apr 2019 (±4 months around 2018).

- Manually matched firms with high pay ratio disclosures to product producers.

- Final sample: *63,619 households* and *198,506 products*, of which *35,092 are treated products* manufactured by *64 high-pay-ratio firms*.

Treatment vs. control groups

Figure 1. Conceptual framework of empirical strategy
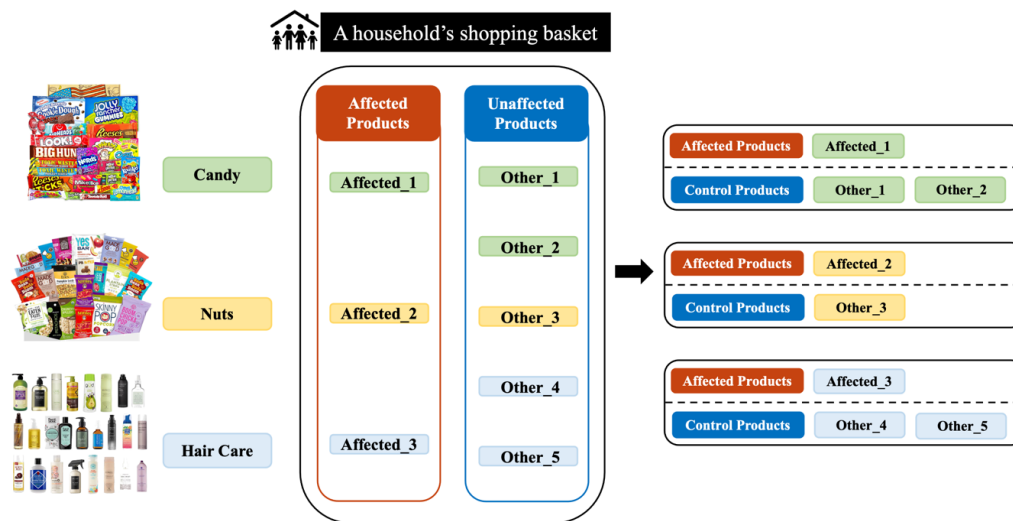
- Treatment and control products drawn from the same household's shopping basket.
- Analysis conducted *within household* and *within product group*.
- Control group: *never-treated products* from the *same product group*, within the *same household's shopping basket*.
- Price-matched: *±20% of treated product's unit price*.

Figure 2. Trends in consumption for treated and control products

*A. Consumption in terms of **total spending***
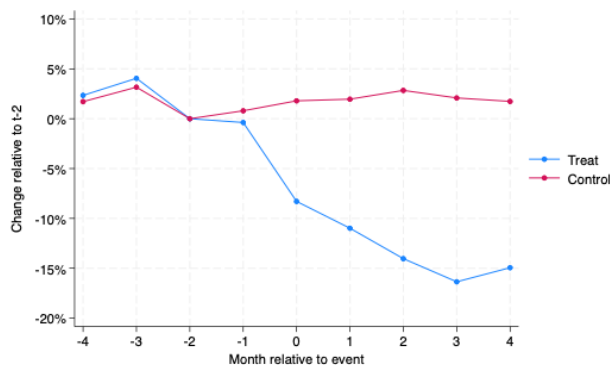
*B. Consumption in terms of **quantity purchased***
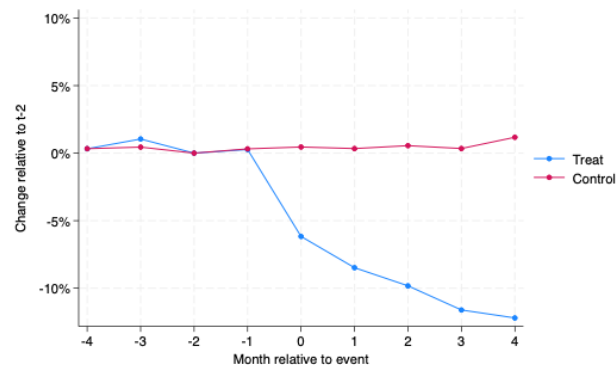
☐ **Baseline analyses(1):** *Baseline regression model*

$$LN\ Total\ spending_{i,j,p,t} = \beta_1 Treat_{j,p} \times Post_{i,t} + \alpha_{i,j,p,t} + \epsilon_{i,j,p,t}$$

- where i refers to surveyed households, j indicates events pertaining to the disclosure of high pay ratios, p denotes products, and t stands for calendar month-years.
- The ***dependent variable*** is the natural logarithm of one plus the total amount a household spends on a specific product in a given month.
- ***Treat*** is set to one for products whose manufacturers disclose high pay ratios, and zero otherwise.
- ***Post*** is set to one for each month during the five-month period following the disclosure (including the event month), and zero otherwise.
- $\boldsymbol{\alpha_{i,j,p,t}}$, represents a set of ***high-dimensional fixed effects***, namely ***Cohort $\times$ Month-year*** and ***Cohort $\times$ Household $\times$ Product***, that account for unobservable heterogeneity across event cohorts, households, and products.

❑ **Baseline analyses(1):** *Baseline results*

Panel A. Baseline results

Dependent variable	LN Total spending [t-4, t+4]	LN Total spending [t-4, t-1] & [t+1, t+4]
	(1)	(2)
Treat × Post	-0.049***	-0.048***
	(0.003)	(0.003)
Cohort × Month-year FE	Yes	Yes
Cohort × Household × Product FE	Yes	Yes
Cluster by Product	Yes	Yes
Cluster by Household × Month-year	Yes	Yes
Observations	19,709,658	17,519,696
Adjusted R^2	0.205	0.182

▪ We find that consumers *react negatively* to high pay ratios.

❑ **Baseline analyses(2):** *Dynamic effects*

Panel B. Time-series dynamics of consumer reaction

Dependent variable	LN Total spending	LN Units	LN Price
	(1)	(2)	(3)
$Treat \times Pre_{t-4}$	0.006	0.002	-0.002
	(0.005)	(0.004)	(0.005)
$Treat \times Pre_{t-3}$	0.007	0.003	-0.000
	(0.007)	(0.004)	(0.005)
$Treat \times Pre_{t-2}$	-0.003	-0.002	0.005
	(0.004)	(0.002)	(0.004)
$Treat \times Post_t$	-0.049***	-0.018***	-0.006
	(0.004)	(0.002)	(0.005)
$Treat \times Post_{t+1}$	-0.049***	-0.017***	-0.003
	(0.004)	(0.002)	(0.005)
$Treat \times Post_{t+2}$	-0.045***	-0.014***	-0.003
	(0.004)	(0.002)	(0.005)
$Treat \times Post_{t+3}$	-0.044***	-0.012***	-0.008
	(0.004)	(0.003)	(0.005)
$Treat \times Post_{t+4}$	-0.044***	-0.012***	-0.001
	(0.004)	(0.002)	(0.005)
Cohort × Month-year FE	Yes	Yes	Yes
Cohort × Household × Product FE	Yes	Yes	Yes
Cluster by Product	Yes	Yes	Yes
Cluster by Household × Month-year	Yes	Yes	Yes
Observations	19,709,658	19,709,658	19,662,202
Adjusted R^2	0.205	0.231	0.909

▪ The post-disclosure reduction in product consumption is driven by a decrease in the number of units purchased – *demand-side interpretation*.

▪ We find that reductions in consumer spending become statistically significant only after the disclosure of high pay ratios -- supports the ***parallel trend assumption***.

❑ **Enhancing identification(1):** *Pay disparity versus pay levels*

Panel A. Consumer reaction and CEO Pay

Dependent variable	LN Total spending
	(1)
Treat with high CEO pay × Post	-0.050***
	(0.004)
Treat with low CEO pay × Post	-0.048***
	(0.003)
Equal treatment effects (*p*-value)?	
(*Treat with high CEO pay - Treat with low CEO pay*) × Post	0.751
Cohort × Month-year FE	Yes
Cohort × Household × Product FE	Yes
Cluster by Product	Yes
Cluster by Household × Month-year	Yes
Observations	19,709,658
Adjusted R^2	0.205

Panel B. Consumer reaction and median worker pay

Dependent variable	LN Total spending
	(1)
Treat with high worker pay × Post	-0.045***
	(0.004)
Treat with low worker pay × Post	-0.052***
	(0.004)
Equal treatment effects (*p*-value)?	
(*Treat with high worker pay - Treat with low worker pay*) × Post	0.241
Cohort × Month-year FE	Yes
Cohort × Household × Product FE	Yes
Cluster by Product	Yes
Cluster by Household × Month-year	Yes
Observations	19,709,658
Adjusted R^2	0.205

▪ We find that the adverse impact of pay disparity *does not vary* with CEO or worker pay levels, suggesting that the observed decline in consumer purchases is *driven by pay disparity itself*, rather than solely by the levels of CEO or worker pay.

❑ **Enhancing identification(2)**: *The effect of firm-brand name similarity*

This table investigates whether firm-brand name similarity affects consumer reaction to high pay ratio disclosures. The sample spans from four months before to four months after the disclosure event. The dependent variable, *LN Total spending*, is the natural logarithm of one plus the total amount a household spends on a specific product in a given month. *Treat* is set to one for products whose manufacturers disclose high pay ratios, and zero otherwise. *Post* is set to one for each month during the five-month period following the disclosure (including the event month *t*), and zero otherwise. *High name similarity* is an indicator variable that equals one if the similarity score between the firm and brand names is in the top quintile among treated firms in our sample, and zero otherwise, where the similarity score is calculated using a fuzzy string-matching algorithm. We include *Cohort × Month-year* and *Cohort × Household × Product* fixed effects to account for unobservable heterogeneity across event cohorts, households, and products. The standard errors reported in parentheses are heteroscedasticity-robust and clustered at the product and household × month-year levels. ∗∗∗, ∗∗, and ∗ indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	*LN Total spending*
	(1)
Treat × Post × High name similarity	-0.017**
	(0.008)
Treat × Post	-0.047***
	(0.003)
Cohort × Month-year FE	Yes
Cohort × Household × Product FE	Yes
Cluster by Product	Yes
Cluster by Household × Month-year	Yes
Observations	19,709,658
Adjusted R^2	0.205

▪ We find that the negative reaction is more ***pronounced*** for products with brands that share a ***similar name*** with their manufacturing firms.

❑ **Enhancing identification(3)-(5):** *Summary of results*

3) *Confirming the salience of the pay ratio*
   - Pre-2018 disclosures of ***aggregate labor costs*** enabled rough estimates of average employee pay, potentially reducing the salience of initial pay ratio disclosures.
   - Consumer reactions were ***similarly negative*** regardless of prior wage information, suggesting limited consumer sensitivity to prior staff cost information.

4) *Pay disparity and product recalls*
   - High pay ratios may harm ***employee morale and productivity***, leading to product quality issues and negative consumer reactions.
   - We find that pay ratios ***do not*** significantly ***influence*** subsequent ***product recalls***, indicating recalls do not explain our findings.

5) *Falsification tests*
   - We shift the true event month one year earlier ($Post_{pseudo}$) and randomly assign treated products ($Treat_{pseudo}$).
   - The results confirm that our findings are ***not driven by*** omitted variables or random chance.

☐ **Underlying mechanisms(1)**: *Social preferences*

The table investigates how consumers' aversion to inequality affects their responses to high pay ratio disclosures. The sample spans from four months before to four months after the disclosure event. The dependent variable, *LN Total spending*, is the natural logarithm of one plus the total amount a household spends on a specific product in a given month. *Treat* is set to one for products whose manufacturers disclose high pay ratios, and zero otherwise. *Post* is set to one for each month during the five-month period following the disclosure (including the event month *t*), and zero otherwise. We use four measures to capture local inequality aversion. *Minimum wage* refers to the minimum hourly wage (in dollars) in the state where the household is located. *Tax diff* represents the difference between the state's maximum and minimum personal income tax rates. *Democratic* denotes the percentage of votes the Democratic Party received in the 2016 Presidential Election in the county where the household is located. *Social capital* is the social capital index constructed following Hasan et al. (2017) and Hoi et al. (2019). We include *Cohort × Month-year* and *Cohort × Household × Product* fixed effects to account for unobservable heterogeneity across event cohorts, households, and products. The standard errors reported in parentheses are heteroscedasticity-robust and clustered at the product and household × month-year levels. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	LN Total spending			
	(1)	(2)	(3)	(4)
Treat × Post × Minimum wage	-0.003***			
	(0.000)			
Treat × Post × Tax diff		-0.092***		
		(0.018)		
Treat × Post × Democratic			-0.021***	
			(0.004)	
Treat × Post × Social capital				-0.004***
				(0.001)
Treat × Post	-0.023***	-0.047***	-0.041***	-0.050***
	(0.005)	(0.003)	(0.003)	(0.003)
Cohort × Month-year FE	Yes	Yes	Yes	Yes
Cohort × Household × Product FE	Yes	Yes	Yes	Yes
Cluster by Product	Yes	Yes	Yes	Yes
Cluster by Household × Month-year	Yes	Yes	Yes	Yes
Observations	19,255,833	19,255,833	19,255,833	19,241,869
Adjusted R^2	0.211	0.211	0.211	0.211

- We examine whether consumer responses to high pay ratios vary according to *local attitudes* toward income inequality.

- We find that the negative consumer reaction to high pay ratios is *stronger* in areas with *greater aversion to inequality*.

❑ **Underlying mechanisms(2)**: *Consumer trust*

This table explores the role of consumer trust by examining whether consumer reaction is stronger for high-value purchases and products with unobservable attributes. The sample spans from four months before to four months after the disclosure event. The dependent variable, *LN Total spending*, is the natural logarithm of one plus the total amount a household spends on a specific product in a given month. *Treat* is set to one for products whose manufacturers disclose high pay ratios, and zero otherwise. *Post* is set to one for each month during the five-month period following the disclosure (including the event month t), and zero otherwise. *High value products* is an indicator variable that equals one if the product price exceeds the sample median and zero otherwise. *Experience products* is an indicator variable that equals one if the product belongs to the following product departments: health and beauty aids, frozen foods, packaged meat, non-food grocery, and general merchandise; otherwise, it equals zero. We include *Cohort × Month-year* and *Cohort × Household × Product* fixed effects to account for unobservable heterogeneity across event cohorts, households, and products. The standard errors reported in parentheses are heteroscedasticity-robust and clustered at the product and household × month-year levels. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	LN Total spending	
	(1)	(2)
Treat × Post× High value products	-0.165***	
	(0.004)	
Treat × Post × Experience products		-0.077***
		(0.003)
Treat × Post	-0.013***	-0.025***
	(0.003)	(0.003)
Cohort × Month-year FE	Yes	Yes
Cohort × Household × Product FE	Yes	Yes
Cluster by Product	Yes	Yes
Cluster by Household × Month-year	Yes	Yes
Observations	19,709,658	19,709,658
Adjusted R^2	0.206	0.205

▪ We examine whether negative consumer responses to high pay ratios varies with different product characteristics.

▪ We find that the reported pay ratio is more relevant for *high-value* or *experience products,* where *trust* plays a particularly important role in purchasing decisions.

❑ **Condition: *Consumer awareness***

Panel A. Consumer reaction and media coverage

Dependent variable	LN Total spending	
	(1)	(2)
Treat × Post × Newspaper	-0.034***	
	(0.005)	
Treat × Post × Twitter		-0.042**
		(0.017)

Panel B. Consumer reaction and firm visibility

Dependent variable	LN Total spending			
	(1)	(2)	(3)	(4)
Treat × Post × High brand value	-0.033***			
	(0.005)			
Treat × Post × Admired		-0.031***		
		(0.005)		
Treat × Post × High Google search index			-0.018***	
			(0.005)	
Treat × Post × High advertising intensity				-0.009*
				(0.005)

Panel C. Consumer reaction and information access

Dependent variable	LN Total spending	
	(1)	(2)
Treat × Post × County with NP	-0.002*	
	(0.001)	
Treat × Post × Household with internet access		-0.011***
		(0.002)

▪ We find that the negative reaction is more pronounced when a firm's pay ratio is covered in the *media*, when the firm is more *prominent and visible*, and when consumers have *better access* to information.

We examine whether consumers care about pay inequality within firms.

Our study presents two key takeaways:
- ❑ Firms disclosing high pay ratios experience a significant decline in consumer purchases.
- ❑ Consumers are concerned about high within-firm pay disparity, driven by their social preferences and a loss of trust, to the extent that they are aware of this information.

Thank you!
Q&As

Panel A. List of departments

Description	Number of product groups	Distribution of products
Health and beauty care	18 (e.g., baby needs, cosmetics, cough and cold remedies, deodorant)	5.90%
Dry grocery	38 (e.g., baby food, baking mixes, candy, cereal, coffee, condiments, crackers)	56.16%
Frozen foods	10 (e.g., ice, frozen baked goods, frozen vegetables)	7.19%
Dairy	10 (e.g., cheese, eggs, yogurt)	6.40%
Deli	1	2.02%
Packaged meat	2 (fresh meat and packaged meats)	4.71%
Fresh produce	1	6.05%
Non-food grocery	12 (e.g., detergent, disposable diapers, fresheners, and household cleaners)	9.63%
Alcoholic beverages	3 (beer, wine, liquor)	0.18%
General merchandise	22 (e.g., batteries and flashlights, cookware, shoes care)	1.77%

- The tables provide an overview of the product categorization structure in the NielsenIQ Homescan Consumer Panel.

- Panel A lists the number of product groups in each department and the distribution of products purchased by surveyed households in our sample.

Panel B. Example of product modules within the "Candy" group

Module name
BREATH SWEETENERS
CANDY – CHOCOLATE
CANDY – CHOCOLATE – MINIATURES
CANDY – CHOCOLATE – SPECIAL
CANDY – DIETETIC – CHOCOLATE
CANDY – DIETETIC – NON – CHOCOLATE
CANDY – HARD ROLLED
CANDY – KITS
CANDY – LOLLIPOPS
CANDY – NON – CHOCOLATE
CANDY – NON – CHOCOLATE – MINIATURES
CONFECTIONERY PASTE
GIFT PACKAGE WITH CANDY OR GUM
MARSHMALLOWS
PERISHABLE CHOCOLATE CANDY
PERISHABLE MARSHMALLOW
PERISHABLE NONCHOCOLATE CANDY

- Panel B details the product modules within the "Candy" group of the "Dry Grocery" department.