Appendix A1
Product Categories of Sample A and Sample B

Sample A			Sample B		
Category	**Count**	**Percentage**	**Category**	**Count**	**Percentage**
Accessory	5907	1.98%	Accessory	2258	0.87%
Bag	1774	0.59%	Boots	58	0.02%
Blouse	10	0.00%	Coat	46276	17.90%
Cape	515	0.17%	Dress	23107	8.94%
Cotton-padded coat	20353	6.81%	Hats	56	0.02%
Down coat	26182	8.76%	Infant clothing	399	0.15%
Ear shield	823	0.28%	Pants	86658	33.52%
Fleece	9247	3.09%	Suit	28140	10.88%
Gown	26	0.01%	Sweater	6481	2.51%
Hats	10898	3.65%	T-shirt	65090	25.18%
Hoodie	3949	1.32%	**Total**	258523	100.00%
Jacket	15307	5.12%			
Knit coat	731	0.24%			
Knit vest	2802	0.94%			
Knitting cardigan	795	0.27%			
Leggings	1620	0.54%			
Middle pants	113	0.04%			
One-piece dress	17162	5.74%			
One-piece sleeveless dress	2850	0.95%			
Overcoat	10066	3.37%			
Pants	30162	10.09%			
Parent-child attire	178	0.06%			
Raincoat	9	0.00%			
Scarf	332	0.11%			
Shirt	2885	0.97%			
Shoes	15126	5.06%			
Shorts	1994	0.67%			
Skirt	4344	1.45%			
Sleeveless T-shirt	543	0.18%			
Socks	4908	1.64%			
Stationery	469	0.16%			
Suit	27977	9.36%			

Sunglasses	148	0.05%	
Sweater	12368	4.14%	
Swimwear	440	0.15%	
T-shirt	30447	10.19%	
T-shirt with short sleeve	23085	7.72%	
Two-piece suit	593	0.20%	
Vest	3311	1.11%	
Wind coat	4565	1.53%	
Woven coat	3468	1.16%	
Zip-up coat	334	0.11%	
Tote bag	58	0.02%	
Total	298,874	100.00%	

Appendix A2
Preliminary Check of the Dependent Variables

N=31 Pearson correlation

		Female employment rate	Female unemployment rate	Female professional rate	Female NPC[a] member rate	Mortality of girls vs. that of boys	Female with no education rate	Female with college degree rate
Sample A	Ratio of Gender Discrimination (*Expenditure)*	-0.05	0.11	-0.04	-0.30	0.42	0.19	-0.22
	Ratio of Gender Discrimination (*Quantity*)	-0.09	0.06	0.01	-0.26	0.21	-0.02	-0.18
	Ratio of Gender Discrimination (*Order*)	-0.26	-0.03	0.11	-0.26	0.06	-0.17	-0.03
	Alternative Gender Discrimination Ratio (*Expenditure*)	0.12	0.11	-0.00	-0.22	0.24	0.23	-0.07
Sample B	Ratio of Gender Discrimination (*Expenditure*)	0.14	0.15	-0.12	-0.11	0.05	-0.14	-0.20
	Ratio of Gender Discrimination (*Quantity*)	0.21	0.18	-0.07	-0.20	0.22	0.60	-0.24
	Ratio of Gender Discrimination (*Order*)	0.07	0.14	0.04	0.12	-0.06	0.14	-0.31
	Alternative Gender Discrimination Ratio (*Expenditure*)	0.17	0.08	-0.10	-0.05	0.08	-0.09	-0.20

a: the National People's Congress

As a preliminary check, we correlated our dependent variable ratios with some macro province-level measures on gender equality and women's rights (such as female unemployment rate and mortality of girls vs. that of boys, and so on).

These measures were collected in 2010 from the National Bureau of Statistics of China. At the province level, again we computed the ratios by first aggregating expenditure across customers in a province, and then taking the ratio of boys over girls. The results were shown in Appendix A2 for Sample A and Sample B. We found, for example, the ratio (expenditure) was negatively correlated with females with college degree rate ($r = -.22$ for Sample A and $r = -.20$ for Sample B) but positively correlated to female unemployment rate ($r = .11$ for Sample A and $r = .15$ for Sample B)

Please kindly note that unemployment rate does not equal to 1-(employment rate). For example, US employment rate in 60.7% and unemployment rate is 3.5% in Feb 2020. Employment rate is defined as the ratio of the employed to the working age population. The unemployment rate is the share of the entire labor force that is jobless. Therefore, it is likely that our measures show positive correlation with both rates. For example, a low female employment rate and a low female unemployment rate could mean a high percentage of housewives in a good economy (US female employment rate in 2019 is 55%, lower than that in China, which is 60%). Again, Appendix A2 only reflects the general correlation patterns between our DV and province-level macroeconomic indicators. The main analysis at the county level allows us to further examining conditions that affect our DV.

Established measures on gender equality and women's right development[1] used by the United Nations and OECD) build on nation-level statistics across different dimensions of gender inequality indicators: health, education, socioeconomic opportunities, and many more. For example, Gender-related Development Index (GDI) is developed as a composite of life expectancy, adult literacy, school enrollment, and logarithmic transformations of per-capita income, while Gender Equity Measure (GEM) is determined using three basic indicators: Proportion of seats held by women in national parliaments, percentage of women in economic decision making positions and female share of income.

We believed that our boy-girl spending ratio measure would add additional insight along the broad stream of gender discrimination. We further examined the social-economic conditions that affect our dependent variables in the main regression analysis at the district level. Following AE's kind suggestion, we reported the covariates and the signs were consistent with our intuitions.

Moreover, part of the seemingly inconsistent correlation signs of Sample A (2011-2014) and Sample B (2015) with Census (2010) variables might because that the State Council set specific targets for certain provinces with low gender equality (e.g. more female

[1] https://en.wikipedia.org/wiki/Measures_of_gender_equality
http://www.oecd.org/dac/gender-development/43041409.pdf

NPC member representation, more investment on literacy rate for girls) in its highest level note *Development of Chinese Women (2011-2020)*[2]. Therefore, our expenditure measures would actually be more natural and reliable than the "look-good-on-paper" measures in reflecting gender discrimination, as we argued in our contribution of using marketing data for social implications.

Appendix A3
Correlation Matrix of All Continuous Variables Analyzed in Main Analyses

Variables	1	2	3	4	5	6	7	8	9	10
1. GD ratio (*spending*)	1.00									
2. GD ratio (*quantity*)	0.81 **	1.00								
3. GD ratio (*number of orders*)	0.52**	0.68**	1.00							
4. Log(GDP)	-0.10**	-0.10**	-0.05**	1.00						
5. Average education (Years）	-0.06**	-0.05**	-0.03	0.40**	1.00					
6. Birth rate	-0.03	-0.03	-0.03*	-0.31**	-0.56**	1.00				
7. Male female ratio	-0.00	-0.00	-0.00	-0.11**	-0.11**	0.13**	1.00			
8. Percentage of minority	0.04**	0.04*	-.00	-0.37**	-0.29**	0.33**	0.16**	1.00		
9. E-commerce development index	-0.05**	-0.03*	-0.02	0.34**	0.26**	-0.33**	0.05**	-0.14**	1.00	
10. Percentage of children	0.01	0.01	-0.01	-0.39**	-0.64**	0.82**	0.08**	0.32**	-0.39**	1.00
11. Percentage of fertile women	-0.04**	-0.04*	-0.03*	0.28**	0.61**	-0.39**	-0.06**	-0.15**	0.25**	-0.49**

**. p<0.01. *. p< 0.05.
a. Pearson correlation. Listwise N=4,647.

[2] http://www.gov.cn/zwgk/2011-08/08/content_1920457.htm

Appendix A4

λ Discussion

We developed a measure that was independent of the distribution of prices in the market (i.e., supply side). The measure, which we denoted as λ, was essentially the sales-weighted average percentile of price paid given the market price distribution. It measured the propensity of consumers to purchase at the high end of price distribution (i.e., more expensive items). Specifically, λ is constructed with the following steps.

1. Retail price menu for all SKU items in the market is given with N pricing points; $f(p_i) = 1/N,\ i = 1, \ldots, N$, where $f(p_i)$ is the pdf, $F(p_i)$ is the cdf, and N is number of SKU items
2. Each household's purchase quantity observed at each price point is q_i
3. Total quantity bought by the household is $Q = \sum q_i$
4. Define $s_i = \frac{q_i}{Q}, i = 1, \ldots, N$, as the share of purchase quantity at price point, p_i
5. Define $\lambda = \sum_i^N s_i F(p_i)$, weighted average price percentile
6. We can calculate λ for boys and girls, respectively.

λ has the following desirable properties:

a. λ is a scale-free measure, which means it is not affected by the magnitude of prices
b. $\lambda \in [0, 1]$
c. If $s_i = 1/N$, $\lambda = \frac{N+1}{2N} \to \frac{1}{2}$ as $N \to \infty$ (median)
d. A higher λ implies that the more purchases are associated with higher price points.

If $\lambda \to 1$, all purchases were made with the most expensive item, If $\lambda \to 0$, all purchases were made with the least expensive item; if $\lambda = 0.5$, on average purchases were made with the price that was the median in the distribution.

We computed λ by season, as firms may change their assortment each season. s_i is by season as well. A customer can have a λ value in each season, and we averaged λ values across four seasons for a given customer.

Appendix A5
OLS Full Results for Main Regression Analysis

	Main regression analysis with ratio of gender discrimination (*Spending*) as DV (District-level data)		**Main regression analysis** with ratio of gender discrimination (*Quantity*) as DV (District-level data)		**Main regression analysis** with ratio of gender discrimination (O*rders*) as DV (District-level data)	
	Within-subject (families with both boys and girls) comparison: spending on boys' clothing vs. spending on girls' clothing					
Variables	**B**	**t-value**	**B**	**t-value**	**B**	**t-value**
Log (GDP)	-0.12*	-4.08	-0.08*	-3.94	-0.02*	-2.04
Average education (yr)	-0.06*	-2.15	-0.04[e]	-1.94	-0.01	-0.97
Birth rate	-0.03*	-3.08	-0.02*	-3.11	-0.01*	-2.05
Medium cities[a,b]	-0.08	-0.92	-0.05	-0.96	0.01	0.22
Rural areas[a,b]	-0.12	-1.03	-0.07	-0.85	-0.02	-0.61
Male female ratio	-0.05	-0.15	-0.08	-0.34	0.05	0.56
Percentage of minority	0.00	1.39	0.00	1.16	0.00	0.13
E-commerce development index	-0.01	−1.59	-0.00	-0.32	-0.00	-0.82
Offline shopping[c]	-0.04	−0.57	-0.01	-0.15	-0.02	-1.16
Percentage of children	0.47	0.61	0.39	0.75	0.04	0.17
Percentage of fertile women	-0.00	-0.20	-0.00	-0.46	-0.00	-1.59
Region-south[d]	-0.28*	-4.32	-0.21*	-4.99	-0.09*	-4.75
Region-west[d]	-0.10[e]	-1.77	-0.05	-1.20	-0.04*	-2.74
Region-east[d]	-0.09*	-1.98	-0.04	-1.15	-0.03*	-2.06
Sample	0.43*	11.65	0.61*	23.80	0.30*	29.77
R-Square	4.84%		12.21%		16.05	

a: Metropolitan city areas are the reference group.
b: Further analysis indicates that city variables are correlated with socio-economic variables so that they are insignificant in the regression.
c: Areas without Balala stores are the reference group. Balala is the largest offline children clothing company in China.
d: North areas are the reference group. e: $p < .1$

Appendix A6
Sample A: Family Decomposition across City Levels

	Single-boy family	Single-girl family	Girl-then-girl family	Girl-then-boy family	Boy-then-girl family	Boy-then-boy family
Metropolitan Cities	36.8%	55.6%	2.2%	0.7%	1.1%	3.6%
Medium Cities	43.2%	48.4%	1.9%	0.7%	1.2%	4.6%
Rural counties	46.4%	44.0%	1.9%	0.8%	1.4%	5.5%
Total	43.1%	48.3%	2.0%	0.8%	1.2%	4.7%

Appendix A7

Robustness Check: Eliminating Wear Out Concern: Main Regression Analysis from Sample A

We selected consumers who at least purchased one product category twice during the one-year time window of our analyses with a size increase and aggregated these customers' purchases to district level. Our assumption was that these customers purchased these products of the same category because their kids outgrew those products, rather than because those produces were worn out. In fact, we could imagine that if the products got worn out easily, customers (especially rural customers) would not want to purchase the brand again under their budget constraint.

These customers' purchases were more likely to reflect the fact that children had outgrown rather than worn out the clothes. Using this sub-sample, we re-ran our main regression analysis. Unfortunately, clothing size information was only available to us in Sample A but not in Sample B. Thus, we only implemented this robustness check using Sample A and we were able to replicate our results.

The results with expenditure as the dependent variable presented suggested that families in more economically advanced areas ($B = -1.17$, $p < .05$) and in districts with higher education level ($B = -.55$, $p < .05$) were less discriminatory towards their girl children. Although we did not find a statistically significant relationship between birth rate and ratio of gender discrimination ($B = -.15$ $p > .05$), the direction of the coefficient was the same as the previous analysis. We also found consistent results when we used quantity and number of orders as the dependent variables. These largely consistent results further suggested that wear-out issue was not a major concern of our research.

Robustness Check – Eliminating Wear Out Concern (Sample A) – OLS Results

	Robustness Check 2 with ratio of gender discrimination (*Expenditure*) as DV (District-level data)		**Robustness Check 2** with ratio of gender discrimination (*Quantity*) as DV (District-level data)		**Robustness Check 2** with ratio of gender discrimination (*Orders*) as DV (District-level data)	
	Within-subject (families with both boys and girls) comparison: expenditure on boys' clothing vs. expenditure on girls' clothing. Also, these families have purchased a certain category at least twice with size increases.		Within-subject (families with both boys and girls) comparison: quantity of boys' clothing vs. quantity of girls' clothing. Also, these families have purchased a certain category at least twice with size increases.		Within-subject (families with both boys and girls) comparison: orders of boys' clothing vs. orders of girls' clothing. Also, these families have purchased a certain category at least twice with size increases.	
Variables	**B**	**t-value**	**B**	**t-value**	**B**	**t-value**
Log (GDP)	-1.17*	-3.99	-0.61*	-4.34	-0.22*	-3.47
Average education (Years）	-0.55*	-2.45	-0.19	-1.59	-0.11*	-2.11
Birth rate	-0.15	-1.47	-0.05	-1.06	-0.03	-1.23
Covariates[a]						
R-Square	6.37%		5.64%		4.93%	

* $p < .05$. N = 1,567

a. Covariates consisted of cities levels (other cities and rural cities with metropolitan cities as the reference group), male-female ratio, percentage of minority, region, offline shopping (Balabala Children Clothing Company), e-commerce development index, percentage of fertile women, and percentage of children.