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Boy-girl gender discrimination as evidenced by consumption behavior of Chinese households

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Do "Little Emperors" get more than "Little Empresses" ?: Boy-girl gender discrimination as evidenced by consumption behavior of Chinese households

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1.

Abstract

This research aims to demonstrate that the abundant marketing data that companies are

1 Introduction

It has been well recognized that business practices and their outcomes reflect the social value of firms as well as consumers. In fact, this is the premise for the growing popularity of cause-

Asia which aim to inspire women to challenge age-related social pressure¹. Increasing efforts have been made to empower young girls. The "Like A Girl" campaign by Always sets out to redefine the negative connotation of doing things "like a girl", while Barbie's "Imagine the Possibilities" campaign hopes to have a lasting positive impact on young girls, showing them that they can achieve anything they want in life. These powerful cause-related marketing campaigns not only strike a chord with women and young girls, but also promote a desirable social value that calls for a change in attitude and behavior across the entire society. There are many similar examples today, especially in emerging markets.² For companies who aim to reach female consumers, the keen observation of the prevalence of undesirable social values and practices is a prerequisite to the success of such sensational cause-related marketing or CSR campaigns. Our research on using firm's transaction data for social implications would be particularly relevant to these companies.

Specifically, we examine the issue of parental boy-girl discrimination within households – a phenomenon that is often observed anecdotally yet is difficult to verify in a society. We explore girl-boy discrimination as manifested in parents' purchase decisions on behalf of their children because we believe having a better understanding of this societal phenomenon is important for several reasons. First, girl-boy discrimination generates enduring long-term ill effect on children's developmental experience that lasts into adulthood. Spears and Bigler (2005), for example, argued that children's perception of themselves, as the target of discrimination is likely to affect their self-esteem, peer relations, academic achievement, occupational goals, and mental and physical well-being. When the practice is pervasive it means that society is eventually affected and could potentially devolve into a female-unfriendly

perception is that parents spend more on girls than boys for their clothing needs in the absence of son or daughter favoritism as reported in New York City Department of Consumer Fair 2015 report. In a setting where there is no cultural history of gender discrimination, they show parents spend 4% more on clothes and 7% more on toys, respectively, for a daughter than a son. Therefore, parents' expenditure on clothes is probably the most salient indicator of discrimination, if there is a reversed outcome.

Third, the online sales data, as compared to traditional household survey data in gender discrimination research, offer many benefits: 1) accessibility – customer purchases are not constrained by distance or location that normally apply to an offline business; In addition, orders are all shipped to actual addresses, information that is not necessarily easily obtainable from off-line store sales; 2) availability – product displayer piegio act cust hood, actual addresses are not to a solution that normal addresses are not necessarily easily obtainable from off-line store sales; 2) availability – product displayer piegio act cust hood, actual addresses are not necessarily easily obtainable from Т

might lead to male-female ratio imbalance within a society, which over time had a negative

measures. In what follows, we described our data, approach, and analyses.

3 Data

According to a recent report, sales of maternal and infant supplies in China reached RMB 637 billion in 2017 with a 27.3% growth rate compared to the sales in 2016.⁴ Among all categories in maternal and infant supplies, the children's apparel industry was number one (25.4%), followed by baby toys (14.8%). The children's apparel industry, as reported by the National Bureau of Statistics of China, reached RMB 300 billion (USD 47 billion) in sales volume in 2016 with a 25.3% compound annual growth rate (CAGR). The average expenditure on children's apparel was RMB 350 RMB (\$55) per child in 2008, growing sharply to RMB 1,700 (\$265) in 2017.

First, we introduced companies A and B, two pure e-commerce children's clothing companies in China as our focal data for research. Though these two companies were two of many in this very low-concentrated market in China,⁵

household. We used this sample for within-subject comparisons as our data for main analyses.

Company B had a uniform brand for boys and girls, but indicated whether a product was designed for boys or for girls in product names and descriptions. Similarly, we used the data containing customers who purchased both girl and boy clothing for our main analyses. We

further aggregated the data. For instance, to compute a customer's total expenditure on girls' clothing, we added up all the expenditure, quantities, and orders across all categories of this customer. The average price paid was around 90 RMB

results were shown in Table 3 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), mostly

Average education level. This was the number of years of education on average in a certain district. Similarly, when parents were more educated, they were less likely to be bound by traditional mindsets.

Birth rate. This was defined as the average birth rate of a district as a proxy for how many infants were born in a given district. The One-Child Policy drastically reduced the average fertility rate in urban households from about three in 1970 to just over one by 1982. Gupta and Bhat (1997) showed that one consequence of fertility decline in East Asian countries was the increased manifestation of sex bias, including prenatal gender selection, excessive mortality rate of young girls, and continuous gender discrimination in adulthood. Therefore, we conjectured a negative relationship between birth rate and gender discrimination.

Other control variables. We included the male-female ratio (gender balance in the district), minority percentage (percentage of residents who are minorities), region (geographic location dummy variables), percentage of fertile women (percentage of residents who are female and in their child-bearing years), children percentage (percentage of residents who are children), offline shopping (whether a district has a Balabala, Gap or Zara store), and e-commerce development index defined by Alibaba. The correlation matrix of all continuous variables included in the analyses was shown in Appendix A2.

To summarize, our efforts to collect multi-source, multi-type, and multi-company data allowed us to examine the gender discrimination on a scale that previous research could not achieve. In sections 4, 5, and 6 below, we would present how we used these data and what the results were.

4 Empirical Strategy, Analyses, and Results

We intended to show the relative differences of gender discrimination across different city-tiers

metropolitan cities as the reference group (control group) and given the confidence intervals (CI) derived from the difference-in-difference (DID)

for boys in rural areas (paid price range for boys: 49-266 RMB; for girls: 38-282 RMB).

Then, we performed the DID Tukey test (ANOVA) to understand whether the differences among city levels in price paid and expenditure were significant. We found that the difference between paid average price for boy and paid average price for girl in rural counties was significantly larger than that difference in metropolitan cities¹⁵. Also, although the difference between expenditure for boy clothing and girl clothing in rural areas was not significantly larger than the difference in metropolitan cities¹⁶, the values of these differences among city levels indicated a consistent pattern that the expenditure gap between boys and girls was the largest in rural areas.

In summary, these three sets of summary statistics in Section 4 showed three scenarios: Table 5: all key measures were higher for boys over girls; Table 6: quantities and frequency were higher for girls, but the price paid was the opposite; and Table 7: quantities and frequency were not significantly different, but the price paid was higher for boys. results revealed that families in more economically advanced areas (B = -.16, p < .05), in districts with higher education level (B = -.09, p < .05), and in the areas with higher birth rates (B = -.04, p < .05) were less discriminatory towards their girls. Similar patterns held when using *Quantity* and *Number of Orders* as the DVs. All these results were aligned with our conjectures. Appendix A3 contained the full results of our main regression analyses. To ensure the validity and reliability of our analyses, we conducted a series of robustness checks, shown in section 5.

---- Insert Table 8 about here ----

5 Robustness Checks

Our measures were potentially subject to confounding factors that might not truly reflect gender discrimination. Hence, we first provided a discussion of our empirical strategies to address these concerns in section 5.1. The details of the robustness checks discussed in section 5.1 are then reported in sections 5.2-5.7.

5.1 Discussion on Potential Confounding Factors

In this section, we listed potential confounding factors to our gender discrimination measure and explained how we would try to rule out them. First, one might argue that consumer brand preference could potentially confound our measure. For example, even though the company did not deliberately implement gender-specific marketing strategies, the boy brand might be better received by rural customers, while the girl brand might be better received by city customers. To rule out this, we conducted Robustness Check 1, in which we used customer-level analysis in rural counties only, combining both samples. The patterns of discrimination across socioeconomic conditions still held in this more homogeneous subsample.

Second, though wear-out was not the key discussion focus, we would like to further demonstrate our empirical robustness in this vein.

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. 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 in Robustness Check 2. 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.

Third, to eliminate the concern that

strengthened. For the return argument, unfortunately we did not have return information in this dataset. However, China is probably one of the most advanced countries in logistics covering

clean proxy for age, we could use size as a screening variable for two-children families, which we defined as families who purchased clothes that were more than two sizes apart within the year of study. For instance, if a family purchased a boy clothing with a size bigger than a boy clothing's size by 2 sizes, this family is deemed as BB family. Again this robustness check only used Sample A as only Sample A has clothing size information.

Lastly, given that China wa

toward girls (B = -.16, p < .05), and the same for the districts with higher birth rates (B = -.04, p < .05). Though only for this particular robustness check, results were not significant using the incremental measure for *Quantity* and *Number of Orders*, the signs were consistent with our predictions. Like what we found in summary statistics in Table 5, 6, and 7 and as we discussed before, we believed that the expenditure gap in rural counties was mainly driven by relative paid price difference between boys and girls (i.e. rural parents tended to buy more expensive clothes for boys than for girls), not quantity. The analysis here further confirmed our previous finding.

---- Insert Table 9 about here ----

5.3 Robustness Check 2Robpa

< .05), as shown in Table 13. We were unable to replicate the results for education and birth rate this time; however, their signs were consistent with our main results. Similar patterns were found when using quantity and number of orders as the dependent variable, shown in Table 13. Overall, we felt the incremental measure provided additional robustness to the main regression analyses.

---- Insert Table 12 and 13 about here ----

5.6 Robustness Check 5: Gender Discrimination Vs. Birth Order Favoritism

In order to address the birth order concern, what is the impact of having a second child on the firstborn? Some might argue that it is the favoritism towards the younger child (or older child) rather than towards the boy.

Using size as a screening variable for two-children families, we were left with 887 districts for the GG vs. GB comparison, and 723 districts for the GB vs. BG comparison. Note that the GB families in the two sets of samples were slightly different, as the number of BG families was smaller than that of GG families.

There were also possibilities of sharing or pass-on of gender-neutral clothing between siblings of different gender. However, given the inherent nature of boy-girl families (that girls were born first, and mostly in rural counties where we observed higher expenditure for boys), we assumed that parents were less likely to purchase girl clothes intentionally for their younger sons to wear later.

We compared the ratio in Expenditure, Quantity, and Number of Orders of the second

order.

Linfen, and Enshi) and two special administrative regions, Hong Kong (HK) and Macau, were not subject to the one-child policy. Specifically, for the four areas in Mainland China selected by the Chinese State Family Planning Commission, regardless of the first child's gender, families could bear a second child, called the two-child policy. As to the special administrative regions, families did not have any restrictions on the number of children they could have. For our analysis, we also added Taiwan (TW) to the latter group (no restrictions), which also enjoyed a higher level of economic development as compared to most parts of Mainland China. We anticipated lower ratios of child gender discrimination in the non-restricted regions than the policy-restricted areas. In fact, we contrasted the ratios for these three types of regions (shown in Table 16), combining both Samples A and B and found the expected results: The ratios of boy-girl discrimination (*Expenditure*) in the non-restricted areas were significantly lower than the policy-restricted areas (Mean_{policy-restricted areas} = 2.17, Mean_{nor}-

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Discrimination against girls is universally regarded as socially unacceptable and yet, it is still very prevalent worldwide. As stated in a recent NGO report, thirty percent of countries are characterized by discrimination against girls (55 of 185 countries).¹⁹ Sociologists worry that pervasive girl discrimination within households could potentially transcend to a female-unfriendly society and create further gender frictions in the workplace. Business communities certainly cannot ignore this threat as they have been working hard to promote and comply with gender-equal work environments.

The actual acts of discrimination against girls are, unfortunately, hard to detect because they are done behind closed doors and unobservable to outsiders. Also, as Deaton (1989) mentioned, the ability to detect boy-girl child discrimination is hampered by a lack of data on actual intra-household resource allocations. Hence, our study in itself is significant because it is the first large-scale empirical work to clearly show the phenomenon of boy-girl discrimination, taking advantage of e-commerce data.

On boy-girl discrimination, there was a paragraph cited in an ancient Chinese book, *Book* of Songs (1000-700 B.C.):

"When a son is born,

Let him sleep on the bed,

Wrap him with fine clothes,

And give him jade to play...

When a daughter is born,

Let her sleep on the ground,

Clothe her in plain swaddle,

And give her cotton spinning wheel to play..."

¹⁹ www.savethechildren.org

In ancient times, Chinese boys were treated so much better than girls as soon as they were born. Thousands of years later, we found Chinese parents treating their girls much better, though families living in rural China still acted like their ancestors. Fortunately, our study showed that the degree of discrimination diminishes as economic development, community openness and the level of education increase. In other words, as socioeconomic conditions of a society continue to improve, discrimination will likely gradually subside and hopefully disappear altogether.

In summary, we found:

- Families in economically less-developed areas and rural areas were more likely to show boy-girl discrimination tendency compared to those living in more prosperous cities.
- The expenditure difference was largely due to the fact that rural parents were more likely to choose higher-priced items for boys than for girls their peers in urban areas.
- Higher education and birth rate could reduce this discrimination.
- The newly less-restricted population-control policy is expected to reduce the degree of discrimination, if it can indeed promote higher birth rates.

Our analysis of marketing data related to e-commerce purchases of children's clothing revealed the existence of the undesirable social behavior of parental discrimination against girls, particularly in less developed rural areas of China. This may have practical implications for companies looking to design corporate initiatives such as CSR programs that can help educate the public and mitigate this problem.

Like their western counterparts, many C such as CSR iganay comedR comq 0.2eET Q q 0 Tm4 () 62 590

from 61st (among 134 countries) to 103rd (among 149 countries) in the World Economic Forum's Gender Gap Report²⁰. Economic disparities between the sexes tend to narrow as countries grow richer (*Economist*, May 18th 2019 issue). To market in these rapid-developing emerging markets, companies should seek opportunities to carry out cause-related marketing or CSR initiatives to educate families about the importance and benefits of treating children of both genders equally. China's geographically widespread provinces and regions display cultural differences while sharing some cultural roots. Combining these local cultural variations with the different organizational cultures of companies, it is understandable that the notion of CSR in China faces more challenges; companies probably need to embrace a tailored approach based on the interface of three dimensions: customer segmentation, regional idiosyncrasy, and economic development – as illustrated by our study.

Echoing the recommendation made by the #SaveTheChirdren report, our results suggest that companies should 1) invest in achieving gender equality, including increasing expenditure and monitoring budgets designed to close gender gaps, especially those living in rural, marginalized, vulnerable populations. For example, launching initiatives for girls to access to basic services and empowerment programs. #UnitedbyHalf, is a campaign promoting gender equality in India, the second largest market for United Colors of Benetton. The company's long-term Benetton Women Empowerment Program quickly opens its previously male customer-targeted brand to female consumers; 2) raise awareness in advertising campaigns. The gender equality issue was a key theme Cannes Lions Festival for several years, with theme being not objectifying women and girls portrayed in advertising, and increasing women in the higher echelons of the greater advertising and marketing workplace. For example, Cannes Glass Lion Award winner, Whisper's "Touch a Pickle" Sanitary Napkins campaign, aims to break

²⁰ https://www.livescience.com/18573-countries-gender-equality-ranking.html

menstruation rules of "not touching a pickle" in India. According to AdAge, more than 2.9 million women pledged to "touch the pickle jar" after seeing the ad, and Whisper's share of voice grew from 21 percent to 91 percent in its category.

In summary, the contribution of this study is twofold. First, as noted in marketing communities, the strategy of customer segmenting and targeting, which has worked well for exploring new business opportunities, can be eqTm /TT2()6 254 64333 00.54 cm 00612 792 re W n4 -10 (at

expenditures. Thirdly, though we tried our best to control for offline options, obtaining complete information on competitive landscape is always a challenge in many studies. One future research direction is to model and analyze the behavior at the household level provided that household-specific information is available or can be properly inferred through other measurable proxies.

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Table 3

Descriptive Statistics of Various Operationalization of Gender Discrimination (Combined Samples A and B)

Sample A Data (All Categories): Customers Who Bought from Both Boy Brand and Girl Brand: Expenditure

Sample B Data (All Categories): Customers Who Bought Both Boy Clothing and Girl Clothing: Expenditure on Boy Clothing vs. Expenditure on Girl Clothing

	Item Quantities (Total)	95% Confidence Interval ^d Number of Orders		95% Confidence Interval ^d Total Expenditure	95% Confidence Interval ^d
City Level	Boy Girl t-value ^b D ^c	Lower Upper	Boy Girl t-value ^b D ^c	Lower Upper Boy Girl t-value ^b	

Sample A (Sub-categories - coat, down coat, hat, and long pants): Customers Who Bought Both from Boy Brand and Girl Brand: Expenditure on Boy Brand vs. Expenditure on Girl Brand

	Item Quantities (Total)	95% Confidence Interval ^d	Number of Orders	95% Confidence Interval ^d	Total Ex	penditure		95% Confic Interv	lence al ^d
City Level	Boy Girl t-value ^b D ^c	Lower			Boy (Girl t-value ^b	Dc	Lower	Upper
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Table 8OLS Results for Main Regression Analyses (Combined Samples A and B)

Main regression analysis with ratio of gender

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Table 9

OLS Results for Robustness Check 1 - Customers from Rural Counties (Combined Samples A and B)

Robustness Check 1 with ratio of gender
discrimination (*Expenditure*) as DV
(Customer-level data^b - rural counties only)Robustness Check 1

Robustness Check 2 – Eliminating Wear Out Concern (Sample A) – OLS Results

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b. Covariates consisted of cities levels (other cities and rural cities with metropolitan cities as the reference group), male-female ratio, percentage of

Table 13 Robustness Check 4 – Eliminating Local Confounding Factors — OLS Results (Combined

	The alte operatio DV - <i>Exp</i> (District	The alternative operationalization as DV <i>-Expenditure</i> (District-level data)		native alization as <i>untity</i> level data)	The alternative operationalization as DV - <i>Order</i> (District-level data)	
Variables	В	t-value	В	t-value	В	t-value
Log (GDP)	-0.19*	-4.47	-0.17*	-4.59	-0.02*	-2.33

N = 4,418 (Sample size reduced from 5,041 to 4,418 because that we included log (GDP) in the model and we were unable to retrieve information on GDP for some cities.)

* p < .05.

a. Sample B as the reference group.

b. 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 (Balala Children Clothing Company), e-commerce development index, percentage of fertile women, and percentage of children.

Robustness Check 5 (Sample A) : Gender Discrimination Vs. Birth Order Favoritism: Ratio Comparisons^a for second born vs. first born between Girl-girl (GG) Families^b and Girl-boy (GB) Families^b, and between GB Families and Boy-girl (BG) Families^b

Gender Discrimination Ratios by Regions and by Metropolitan Cities^a –Sample A and B

a: Using customer-

Additional Analysis: Ratio of Gender Discrimination Between Policy-Restricted Areas and Non-Policy-Restricted Areas (Combined Samples A and B)

					95% Confidence Interval of the Difference	
	City Level	Mean	Difference	t-value	Lower	Upper
Ratio of Gender	Policy-Restricted Areas	2.17 ^a				
Discrimination (<i>Expenditure</i>)	Non-Policy-Restricted Areas in Mainland China ^b	1.08	1.10	8.40	0.84	1.36
-	HK, Macau, and TW	1.41	0.			

Two-tail test. Independent samples t-test. The tests did not assume equal variances.

a: Policy-restricted areas were the reference group.

b: Non-policy-restricted areas in mainland china included Chengde, Jiuquan, Linfen, and Enshi.