The Short- and Longer-Term Effects of a Child Labor Ban: Appendix

Caio Piza* André Portela Souza† Patrick M. Emerson‡ Vivian Amorim§

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1 Differences from the recent Literature on Child Labor

Piza and Souza (2016) employ a difference-in-differences to assess the impact of the increase in the minimum legal working age implemented in Brazil in 1998. The authors find evidence of a four percentage point reduction in the incidence of paid labor among boys in urban areas. Our current paper, under a local randomization approach, finds evidence of a 5.2 percentage point reduction in child labor (also among boys in urban areas), equivalent to a 35% decrease. These results are restricted to 14-year-old boys in urban areas, the largest cohort of paid child labor among children that age.[1] Bargain and Boutin (2021) employ a regression discontinuity design to assess the impact of the same legislation. However, the authors do not find evidence of a sizable effect of the ban on child labor.

To understand the difference in the results, even though we, Piza and Souza (2016) and Bargain and Boutin (2021) use the same dataset (the 1999 wave of the Brazilian Household Survey),

*Development Impact Evaluation Unit (DIME) at the World Bank. Contact: caiopiza@worldbank.org
†Sao Paulo School of Economics, Getúlio Vargas Foundation (FGV EESP). Contact: andre.portela.souza@fgv.br
‡Oregon State University and IZA Institute of Labor Economics. Contact: patrick.emerson@oregonstate.edu
§Development Impact Evaluation Unit (DIME) at the World Bank. Contact: vamorim@worldbank.org

[1] Among all 14-year-old children in paid jobs: 50% are boys in urban areas, 29.6% are girls in urban areas, 14.2% are boys in urban areas, and 6.2% are girls in rural areas.

we set up this appendix with the main assumptions, selected sample and dependent variables adopted by the three studies.[2]

We conclude that three factors drive the differences. First, the child labor definition employed by Bargain and Boutin (2021) is whether *"children are employed, looking for a job, active but preventing from working, or working in agriculture or construction, but excluding children who are working exclusively for self-consumption or self-production"*.[3] Our paper and Piza and Souza (2016) considered paid work as the main dependent variable since 97 percent of 14-year-olds in unpaid activities were either members of the household in which they worked or were workers for self-consumption.[4] It is unlikely that the ban would impact these children and therefore their inclusion could bias the results.

Second, Bargain and Boutin (2021) excludes households in which the child is not indicated as the son or daughter of the individual listed as the head of the household and households in which the head is younger than 18 years old or older than 60 years old. None of these exclusions were performed by us or Piza and Souza (2016). As multigenerational households are common in Brazil (in 1999, 11.8 percent of all 14-year-olds are listed as neither the son nor daughter of the head of the household, and the majority of these kids are listed as "other relative"), these households should be retained in the sample.[5] Considering a 3-month bandwidth, all the exclusions performed by Bargain and Boutin (2021) reduced the sample by 16%, which represents a significant number of children that were potentially impacted by the ban.[6] See Table 1.

Third, Bargain and Boutin (2021) includes both urban and rural employment and both boys and girls. However, almost 80 percent of 14-year-olds who worked in rural areas were unpaid, and more than half of the girls in paid jobs in urban areas worked as housekeepers in the house of the employer, where enforcement of the law is much less likely.[7] On the other hand, our

[2]PNAD stands for *Pesquisa Nacional por Amostra de Domicílios*.

[3]However, when we look at the author's code, we observe that the child labor variable does not include children that are looking for a job (PNAD variable V9115). The author's replication package is available in the following link: https://academic.oup.com/wber/article-abstract/35/1/234/5681375. Check the do file 1.CleanDataset, rows 434 and 435.

[4]PNAD, 1999. Among those children, 85.5% worked for their household and 14.5% were workers for self-consumption.

[5]PNAD, 1999.

[6]Bargain and Boutin (2021) sample for a 6-month bandwidth has 6,100 children. Without performing these exclusions, the sample has 7,307 children.

[7]PNAD, 1999.

paper and Piza and Souza (2016) focus on the sample of boys in urban areas, the ones more likely to be affected by the ban.

In addition to that, Bargain and Boutin (2021) presents the results for 3 and 6-month bandwidths. The working paper version of our current work, under a regression discontinuity design, includes 3, 5, and 9-month bandwidths, since up to a 9-month bandwidth, there are no significant differences between affected and unaffected cohorts with regards to adult's income, children's skin color, years of schooling, age, and gender of the head of the household, household size, and % of children living in urban areas.[8] Also, to gain precision, we pool the 1999 and 2001 PNAD waves.

2 Variable's harmonization

Some PNAD variables used as controls by Bargain and Boutin (2021) were harmonized differently than ours. These variables are household income, number of household members, skin color, years of schooling, and age of the head of the household.

- For *years of schooling*, Bargain and Boutin (2021) based their calculation on whether the person is enrolled in school, level and grade enrolled, or the last degree finished. We opted to work with the variable years of schooling available in 1999 wave of PNAD (variable v4703 of the questionnaire).

- For *household income*, Bargain and Boutin (2021) considered the sum of the wages of the head of the household and his/her spouse. We opted to use the variable household income available in PNAD (variable v4721 of the questionnaire). Then, we calculated the adult's income which is the household income minus the sum of the wages of people younger than 18 years old. We opted for this harmonization as there are other sources of income in the household (pensions, rents, or social programs), as well as income from other household members (other relatives or son/daughters with more than 18 years old).

- For *age of the head of the household*, Bargain and Boutin (2021) considered the difference in years between September 1^{st}, 1999, and date of birth. Since some adults do not have a

[8] Considering the sample of boys and girls, in rural and urban areas. PNAD, 1999. See the working paper here: https://openknowledge.worldbank.org/handle/10986/25041.

date of birth available (for example, the person does not have a birth certificate), we opted to work with the variable age available in PNAD (variable v8005 of the questionnaire). In these cases, the survey inputs the estimated age of the respondent.

- For *household size*, Bargain and Boutin (2021) considered all household members (including housekeepers and relatives of the housekeepers). We opted to consider a member of the household the head, her/his spouse, their children, and other relatives.

- For *skin color*, Bargain and Boutin (2021) defined the dummies: whites and pardos. For whites, for example, the variable assumes the value one if the person is white and 0, otherwise. The definition includes people that opted not to declare their skin color. Since we do not know whether the person that did not declare his/her color is white or not, our paper defines a dummy for whites that is equal to one if the person declared being white, 0 for blacks, pardos, indigenous, or Asians, and missing for people that did not declare their skin color.

3 Results

In Table 1, we reproduce Bargain and Boutin (2021) results considering two main samples: the same one the authors used in their paper, that is, 14-year-olds that are son/daughter of the head of the household or his/her spouse; and households where the head is between 18 and 60 years old (***Bargain/Boutin sample***); and the sample that do not consider these exclusions (***No sample exclusions***). We show the results for 1999 PNAD and pooling 1999 and 2001 PNAD waves. We present the results for three groups: boys and girls in rural and urban areas (column "All"), boys and girls and urban areas (column "Urban"), and boys in urban areas (column "Boys, urban"); and for 3, 6 and 9-month bandwidths.[9]

Pooling 1999 and 2001 PNAD waves and without the exclusions suggested by Bargain and Boutin (2021), we found evidence of a 3.5 pp decrease in paid labor for boys in urban areas.

[9]The running variable is the number of weeks between the date of birth and December 16, 1984. Standard errors clustered at the var zw, which is the number of weeks between the date of birth and December 16, 1984. All regressions are weighted by the sample weight of respondents (variable v4729 of the questionnaire), which is the variable available in PNAD without any transformations. Bargain and Boutin (2021) defined the regression weight as individual weight (variable v4729) divided by the sum of the individual weights.

A Tables

Table 1: RDD of the Child Labor Ban

	Bargain and Boutin sample						No sample exclusions					
	1999			Pooling 1999 and 2001			1999			Pooling 1999 and 2001		
	All	Urban	Boys, urban	All	Urban	Boys, urban	All	Urban	Boys, urban	All	Urban	Boys, urban
Economically Active Children, Bargain and Boutin definition, 6-month bandwidth												
ITT	1.44	1.96	1.42	1.35	1.04	0.77	-0.18	0.68	-0.8	0.48	0.41	-0.4
	(2.66)	(3.54)	(4.94)	(1.54)	(1.82)	(2.52)	(2.33)	(2.93)	(4.07)	(1.31)	(1.48)	(2.06)
Obs	6100	4818	2446	12022	9841	5052	7307	5757	2878	14900	12160	6039
Economically Active Children, IBGE definition, 6-month bandwidth												
ITT	0.35	0.61	1.41	0.32	-0.12	-1.06	-0.56	-0.37	-0.77	0.11	-0.27	-1.96
	(3.03)	(3.94)	(5.76)	(1.80)	(2.24)	(3.29)	(2.55)	(3.27)	(4.77)	(1.59)	(1.91)	(2.30)
Obs	6094	4813	2442	12015	9835	5047	7300	5751	2873	14892	12153	6033
Paid work, 6-month bandwidth												
ITT	1.93	2.33	0.37	0.74	0.05	-3.05	0.17	0.92	-1.98	0.16	-0.02	-3.52**
	(1.64)	(2.39)	(3.53)	(1.41)	(1.91)	(2.10)	(1.51)	(2.02)	(2.94)	(1.21)	(1.50)	(1.55)
Obs	6100	4818	2446	12022	9841	5052	7307	5757	2878	14900	12160	6039
Economically Active Children, Bargain and Boutin definition, 9-month bandwidth												
ITT	1.02	0.28	-1.52	0.65	0.14	-0.61	-0.49	-1.11	-3.92	-0.22	-0.53	-1.89
	(2.03)	(2.65)	(3.68)	(1.17)	(1.36)	(1.88)	(1.80)	(2.19)	(3.14)	(0.99)	(1.10)	(1.57)
Obs	9261	7321	3693	18183	14899	7654	11157	8808	4362	22634	18495	9177
Economically Active Children, IBGE definition, 9-month bandwidth												
ITT	-0.21	-0.79	-2.39	-0.91	-1.16	-2.56	-1.15	-1.97	-4.28	-1.1	-1.5	-3.75*
	(2.29)	(2.94)	(4.29)	(1.41)	(1.79)	(2.52)	(1.96)	(2.45)	(3.69)	(1.27)	(1.52)	(1.92)
Obs	9254	7316	3689	18175	14893	7649	11148	8801	4357	22624	18487	9171
Paid work, 9-month bandwidth												
ITT	1.34	0.54	-1.75	0.53	-0.15	-2.38	-0.2	-0.92	-4.05*	-0.33	-0.72	-3.64**
	(1.36)	(1.81)	(2.65)	(1.23)	(1.54)	(1.75)	(1.18)	(1.55)	(2.27)	(1.05)	(1.25)	(1.46)
Obs	9261	7321	3693	18183	14899	7654	11157	8808	4362	22634	18495	9177

PNAD. ***, **, * Statistically significant at 1, 5, and 10 percent, respectively. RDD in which the running variable is the number of weeks between the date of birth and the cutoff (December 16, 1984). Standard errors clustered at the running variable. Control variables: Brazilian region; years of schooling, age, and gender of the head of the household; household size; children's color of the skin; and a dummy for urban areas. The variable economically active children according to Bargain and Boutin (2021) definition assumes value 1 if the children are employed (v9001 PNAD variable), active but prevented from working (v9004), working in agriculture (v9002) or construction (v9003); and value 0, otherwise, which include children that work for self-consumption (v9008) or self-production (v9029). Check their replication package https://academic.oup.com/wber/article-abstract/35/1/234/5681375. The variable paid work is defined by Piza and Souza (2016) as having value 1 if the children are employed (v9001), active but prevented from working (v9004), working in agriculture (v9002) or construction (v9003) as long as they have monetary payments for it and 0 for children that are out of the labor market or unemployed. The variable economically active children defined by Piza and Souza (2016) has the Brazilian Institute of Geography and Statistics definition (variable V4704). Check our replication package: https://github.com/worldbank/child-labor-ban-brazil. The columns *Bargain sample* exclude households in which the 14-year-old child is not indicated as the son or daughter of the individual listed as the head of the household and households in which the head is younger than 18 years old or older than 60 years old. The columns *no sample exclusions* do not perform any of these dataset droppings. The 1999 columns consider affected and unaffected cohorts in the 1999 PNAD wave. The 1999 and 2001 columns follow the affected and unaffected cohorts in 1999 when they were 14 years old, and in 2001 when they were 16 years old. The estimated coefficients are multiplied by 100.

References

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