

The Impact of Import Competition from China on Gendered Labor Outcomes: Evidence from Ethiopian Firm-level Data

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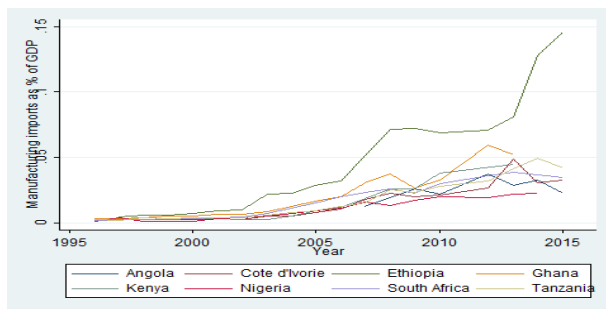
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Motivation: Increasing globalization and gender gap

- Globalization
 - increased globalization in the forms of trade and FDI
 - the increasing importance of China in the world
 - African countries have become more integrated into the global economy
 - increasing discontent with globalization (Brexit, Trump, etc.)
 - evidence of distributional effect of globalization
- Gender gap (World Bank 2011)
 - stark discrepancy between women employment and wages
 - female labor force participation remains low
 - women earn between 10-30% less compared to men
 - manufacturing employment is declining for both males and females
 - female labor are noted to be dwindling faster comparatively (Duflo 2012)

China's presence in Africa

Manufacturing imports as a percentage of GDP



- China is a dominant force in Africa in terms of trade
- Manufacturing import from China is rapidly increasing
- Ethiopia has the highest imports from China in per capita terms

China's presence in Ethiopia

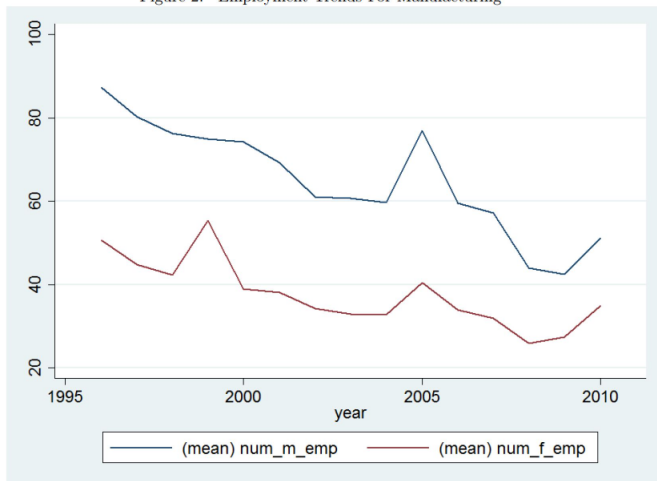
- Strong relations with China and unlike other Africa countries that are resource rich
- Ethiopia is not a resource-endowed country (how does China benefit from Ethiopia?)
- The main channel of benefit for China could not be resource extraction but it could be through channels of trade
- The rise of China may not only crowd-out the demand for African products in the international market
 - but also in the African domestic markets
 - low-cost competition from China threatens African manufacturing sector (Busse et al. 2016)
- Ethiopia's top import partner as of 2016 is China

China's penetration of Ethiopian market

- The increasing trade relationship with China may have some positive gains
 - technology transfer, import of intermediate and capital intensive goods
- There could be many downsides as well
- China and Ethiopia have a similar comparative advantage
 - in production of labor-intensive goods
- Adem (2012) highlights the concerns of cheap Chinese products flooding the Ethiopian markets
- Local firms struggle to compete with the influx of cheaper manufactured goods from China (Brautigam et al. 2018)
- Stiff competition induces firms to cut costs
 - cut jobs and wages
 - could also disproportionately affect gender

Manufacturing employment trend in Ethiopia

Figure 2: Employment Trends For Manufacturing



Data Source: Authors' computation based on firm data from Ethiopia

Chinese competition on labor markets in the USA

- Acemoglu et al. (2016)
 - import from China is a major force behind the reduction in US manufacturing employment
 - job losses from rising Chinese import competition in 2000s within the range of 2-2.4 million
- Autor et al. (2013)
 - Rising import causes higher unemployment, lower labor force participation and reduced wages in the local labor markets
- Feenstra et al. (2017)
 - considers not only the effect of import from China but also employment impact of US exports to the rest of the world
 - at the industry level the US export of manufactured goods created enough jobs to offset all but 0.3-0.4 million number of jobs lost due to imports from China between 1990-2011

Theoretical perspectives (1): competition closes gender gap

- Neoclassical framework of competitive markets (Becker 1971)
 - trade would lead to the closing up of the wage gap between male and female
 - the practice of gender discrimination is costly for firms
 - increasing competition induces firms to cut cost including costs associated with discrimination
- Technological ungrading (Juhn et al. 2014)
 - manufacturing involves physical effort
 - adoption of technology to become competitive
 - intensity of physical efforts required for common industrial activities have become less, and thus favorable to female production workers
 - women will gain if increased competition from trade leads to a reduction in the demand for physical labor due to technological upgrading.

Theoretical perspectives (2): competition widens gender gap

- Competition prompts cost-saving strategies (Menon and Rodgers 2009)
 - reduction in labor costs
 - women more likely to lose job because of physical nature of manufacturing jobs
 - substitution away from female to male labor
 - female-dominated industries are competitive in Africa because of low wages (Chen et al. 2013)
- Low technology in Africa
 - labor is abundant, so preference for labor-intensive production
 - technology diffusion from main technology frontiers to Ethiopian domestic firms are minimal (Abreha 2019)

Empirical perspective: trade liberalization and gender gaps

- The gendered dimension has received very little focus
- Wamboye and Seguino (2015)
 - Negative impact on women in SSA using cross-country level data
 - openness had a statistically negative impact on employment opportunities of women in SSA
- Busse and Spielmann (2006)
 - use cross-country sample and they show a positive relationship between gender wage inequality and comparative advantage for developing countries on labor intensive manufactures.
- These few studies do not use firm-level data
- Using firm level data is important because of firm heterogeneity (Acemoglu et al. 2016)

Ethiopia as a case study

- Ethiopia presents a good case-not a member of WTO
- Data at firm level facilitates disaggregated analysis
- Chinese presence in Ethiopia has been growing stronger and there has been strong political ties between the governments of the two countries
 - parallel political structures of the two states
- Ethiopia is the second largest recipient of Chinese aid (loan) in Africa
- China is also the largest source of imports for Ethiopia

Two main data sources;

- 1 Ethiopian firm census data
 - 623 firms (1996); 1,934 (2011)
 - 4 digit level (ISIC Rev. 3.1)
 - Data on wages and employment disaggregated by gender and occupational group
 - Others; production, ownership, capital, export status etc.
- 2 Trade data
 - UN COMTRADE
 - 4 digit ISIC

Data—Worker distribution by gender

ISIC2	Sector	No.female Workers	No.male Workers	Proportion of Female worker
15	Food	24.29	67.14	0.29
16	Tobacco s	343.07	489.79	0.43
17	Textiles	139.60	138.04	0.58
18	Apparel	108.60	54.19	0.50
19	Tanning and dressing of leather	32.32	45.44	0.35
20	Wood and of products of wood	9.83	41.43	0.13
21	Paper and paper products	51.42	94.28	0.41
22	Publishing, printing	31.68	39.75	0.45
24	Chemicals	36.08	60.21	0.41
25	Rubber and plastics	40.23	66.13	0.34
26	Other non-metallic mineral	9.17	33.74	0.20
27	Basic metals	16.37	101.53	0.18
28	Fabricated metal	9.27	40.40	0.14
29	Machinery and equipment n.e.c.	4.40	21.08	0.15
30	Office, accounting and computing	9.00	53.00	0.15
31	Electrical machinery and apparatus n.e.c.	7.28	29.44	0.16
34	motor vehicles, trailers and semi-trailers	18.05	94.89	0.16
36	Furniture; manufacturing n.e.c.	4.31	22.27	0.12

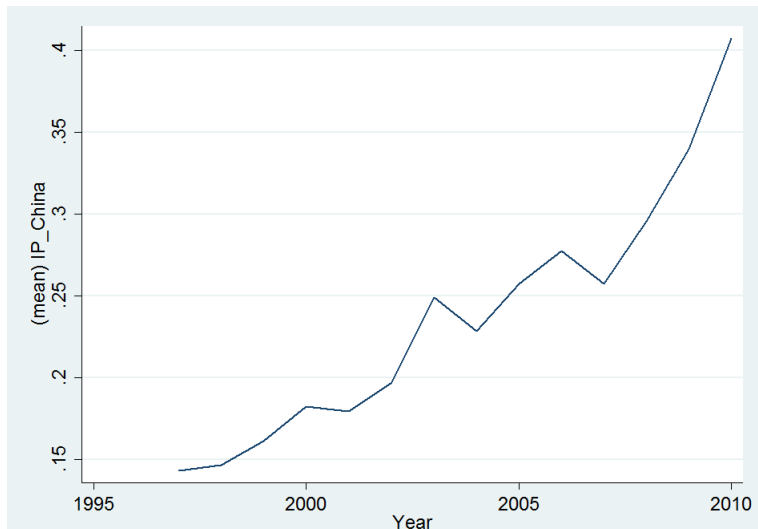
Import Penetration from China

- Import penetration (IP) from China for a given industry as the proportion of domestic demand for the output of that industry that is satisfied by imports from China
- Mathematically, IP is computed as the ratio of value of imports from China to the value of Ethiopian apparent consumption

$$IP_China_{jt} = \frac{Import_China_{jt}}{Total_Production_{jt} + Import_China_{jt} - Exports_China_{jt}}$$

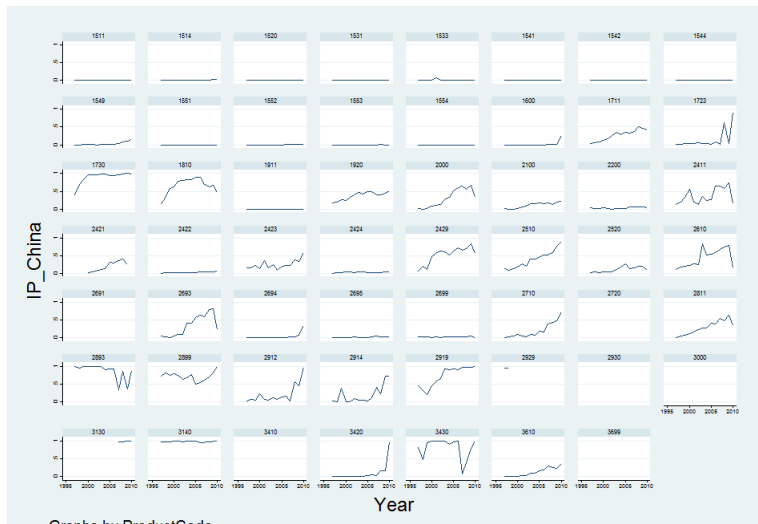
Import Penetration from China

Figure: China's Import Penetration Trend (All Industries)



Import Penetration from China

Figure: China Import Penetration Trend (By Industries)



- Gendered labor market outcomes as a function of trade exposure at the industry level of specific Ethiopian firms and also the firm-specific characteristics
 - $Outcome_{ijt} = \beta IP_{jt-1} + \alpha X_{ijt} + \alpha_i + \alpha_t + \epsilon_{ijt}$
- female and male labor market participation (employment), their different compensations, and employment and wage gaps as our main outcome variables
- i, j, t denote firm, industry and time, respectively
- X_{it} includes productivity, capital intensity, education level of male and female workers, export status, import status, foreign ownership, etc.

Results: Impact on Employment

Table 3: Import Competition and Employment (by gender)

	Male Employment		Female Employment		Total Employment	
	1	2	3	4	5	6
Import Penetration (China)	0.053	0.035	-0.077	-0.287**	0.015	-0.081
log(TFP)		-0.071***		-0.051***		-0.079***
Capital Intensity		-0.051***		-0.041***		-0.056***
Educated Male		0.077**		-0.459***		-0.01
Educated Female		-0.126		0.745***		0.156*
Age		0.029		0.022		0.032
Export Status		0.115		0.095		0.136*
Import Status		0.038*		0.04		0.034
Foreign Ownership		0.073		0.097		0.097*
Ownership		-0.058*		-0.085**		-0.056*
constant	2.816***	3.687***	1.832***	2.690***	3.148***	4.114***
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.03	0.077	0.058	0.13	0.048	0.104
N	14197	13281	11903	11185	14038	13164

Results: Impact on Employment

Table 4: Employment Effects (by occupation and gender)

	Administrative Workers				Production Workers				Total			
	Male		Female		Male		Female		Administrative		Production	
	1	2	3	4	5	6	7	8	9	10	11	12
Import Penetration (China)	-0.041	-0.061	0.031	-0.056	0.039	0.029	-0.289*	-0.414**	-0.073	-0.117	-0.057	-0.144
log(TFP)		-0.014		-0.032**		-0.045***		-0.013		-0.026**		-0.042***
Capital Intensity		-0.031***		-0.030***		-0.036***		-0.040***		-0.033***		-0.039***
Educated Male		0.046		-0.077		0.03		-0.561***		0.016		-0.062
Educated Female		-0.075		0.335***		-0.057		0.792***		0.048		0.216***
Age		0.088*		0.099*		0.062		0.03		0.08		0.056
Export Status		0.086		0.128*		0.087		0.047		0.097		0.07
Import Status		0.098***		0.056*		0.02		0.005		0.083***		0.022
Foreign Ownership		-0.017		0.033		0.09		0.157*		0.026		0.1
Ownership		-0.148***		-0.115**		-0.027		-0.163***		-0.151***		-0.042
constant	1.644***	1.868***	1.207***	1.476***	2.404***	2.901***	1.780***	2.444***	1.919***	2.263***	2.713***	3.252***
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.014	0.032	0.042	0.066	0.022	0.039	0.039	0.092	0.031	0.049	0.033	0.053
N	12366	11641	10077	9545	13533	12668	8592	8077	12843	12084	13638	12767

Results: Impact on Employment Gap

Table 5: Import Competition and Employment Gap

	Female-Male		Female-Male (adm)		Female-Male (prod)		Adm-Prod (female)		Adm-Prod(male)	
	1	2	3	4	5	6	7	8	9	10
Import Penetration (China)	-0.178*	-0.415***	0.018	-0.052	-0.349**	-0.473***	0.288	0.366*	-0.024	-0.045
log(TFP)		0.001		-0.016		0.023*		-0.023		0.035**
Capital Intensity		0		0.002		-0.006		0.013		0.008
Educated Male		-0.749***		-0.157		-0.642***		0.380***		0.025
Educated Female		1.188***		0.481**		0.965***		-0.486***		-0.011
Age		0.009		0.069*		-0.023		0.097		0.024
Export Status		-0.006		0.036		-0.06		0.088		-0.034
Import Status		-0.008		-0.047*		-0.012		0.066		0.080**
Foreign Ownership		0.032		0.04		0.052		-0.043		-0.099
Ownership		-0.017		0.025		-0.110**		0.07		-0.112**
constant	-1.149***	-0.926***	-0.742***	-0.840***	-0.890***	-0.691***	-0.508***	-0.947***	-0.801***	-1.152***
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.024	0.174	0.014	0.033	0.013	0.082	0.004	0.017	0.004	0.009
N	11847	11134	9600	9102	8487	7978	6711	6392	11688	11033

Table 6: Import Competition and Wages (by gender)

	Male		Female		Total	
	1	2	3	4	5	6
Import Penetration (China)	-0.505**	-0.473**	-0.188	-0.185	-0.262	-0.246
log(TFP)		0.060**		0.049*		0.056**
Capital Intensity		0.030***		0.023**		0.027***
Educated Female		0.085		-0.031		-0.056
Educated Male		0.14		0.264*		0.139
Age		0.076*		0.038		0.048
Export Status		0.1		0.085		0.09
Import Status		0.037		0.044		0.044
Foreign Ownership		0.011		-0.002		-0.009
Ownership		0.094**		-0.011		0.05
constant	9.184***	8.109***	8.886***	8.061***	9.137***	8.253***
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.062	0.087	0.04	0.055	0.057	0.081
N	14134	13261	11632	10955	11946	11249

Results: Impact on Wages

Table 7: Effects on Wages (by occupation and gender)

	Administrative Workers				Production Workers				Administrative		Production	
	Female		Male		Female		Male		Total	Total	Total	Total
	1	2	3	4	5	6	7	8	9	10	11	12
Import Penetration (China)	0.202	0.23	-0.093	-0.071	-0.217	-0.228	-0.247*	-0.244*	0.014	0.052	-0.215*	-0.213*
log(TFP)		0.021*		0.022*		0.022		0.047***		0.026**		0.042***
Capital Intensity		0.022***		0.026***		0.017**		0.021***		0.023***		0.020***
Educated Female		0.012		0.159		0.052		0.069		0.063		-0.013
Educated Male		0.066		0.077		0.033		0.053		0.096		0.08
Age		0.02		0.05		0.025		0.039		0.043		0.050*
Export Status		-0.055		-0.03		0.042		-0.007		-0.081		0.04
Import Status		0.002		-0.021		0.065*		0.051**		-0.019		0.057**
Foreign Ownership		0.059		0.06		-0.043		-0.064		0.048		-0.037
Ownership		-0.056		0.078**		0.005		-0.016		0.046		-0.002
constant	9.102***	8.693***	9.222***	8.562***	8.866***	8.427***	9.133***	8.455***	9.151***	8.545***	9.062***	8.385***
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.05	0.056	0.062	0.072	0.032	0.039	0.072	0.088	0.069	0.08	0.078	0.097
N	9999	9476	12278	11563	8452	7949	13484	12626	12782	12030	13607	12742

1 Employment

- Increasing import competition affects male and female differently
- Ethiopian firms respond to increased import competition from China by laying-off female production workers due to labour intensive methods of production
- Female administrative workers are not affected
- Significant effect on female-male employment gap for production workers

2 Wages

- No effect on female wages but...
- Male production workers witness a decline in their wages
- No statistically significant impact on the gender wage gap

THANK YOU