Figure Replication for "Cities, Heterogeneous Firms and Trade"

Jason Jia

March 2023

Obtained (obt.) refers to the statistics obtained in my replication attempt. Reported (rep.) refers to the statistics reported in the paper.

1 Table 1: City size (population) and export intensity (US only)

- Obtained vs reported (note that population is in thousands):

	Pop (obt.)	Pop (rep.)	Export Int (obt.)	Export Int (obt.)
Obs.	298	312	298	312
Mean	733.9892	798.8	.1476	.1131
25th	153.265	157.5	.0344	.0445
50th	262.3375	277.5	.0651	.0853
75th	595.585	636.6	.1141	.1370
90th	1605.741	1929.2	.2024	.2250
95th	2754.637	3176.1	.3533	.3292

- Reported (full):

Table 1: Descriptive Statistics for City Size and Export Intensity Across Datasets

	Population ('000s)				Export Intensity			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Brazil	China	France	U.S.	Brazil	China	France	U.S.
Observations	317	655	210	312	317	655	210	312
Mean	463.0	780.2	258.1	798.8	.0684	.0853	.218	.1131
25th percentile	141.1	185.0	94.6	157.5	.0071	.0228	.136	.0445
50th percentile	203.1	293.4	148.6	277.5	.0358	.0541	.203	.0853
75th percentile	360.7	542.2	287.1	636.6	.0742	.1107	.282	.1370
90th percentile	811.9	1,088.6	490.1	1,929.2	.1845	.2084	.355	.2250
95th percentile	1,469.3	2,214.8	740.5	3,176.1	.2724	.3023	.410	.3292
Cities without exports	—	—	—	—	20	13	0	0

Notes: The Table analyzes the relationship between city size and export intensity. Cities are defined in terms Microregions for Brazil, Metropolitan Areas for China (as defined by Dingel et al., 2019, using lights at night with a threshold equal to 30 to define metropolitan areas) and the United States; and Commuting Zones for France. For all countries, the analysis only considers cities with positive exports and population over 100,000 inhabitants. City-level export intensity is defined as manufacturing exports over manufacturing sales for China; overall exports over manufacturing sales for the United States, and as overall exports over GDP for the case of Brazil.

2 Table 2: Regression of export intensity against city size (US only)

- Obtained:

	(7)
log City Size	0.235***
	(.05294)
Geog. Controls	No
R^2	0.0623
Observations	298

- Reported (full):

Table 2: Export intensity and City size in Brazil, China, France, and the United States

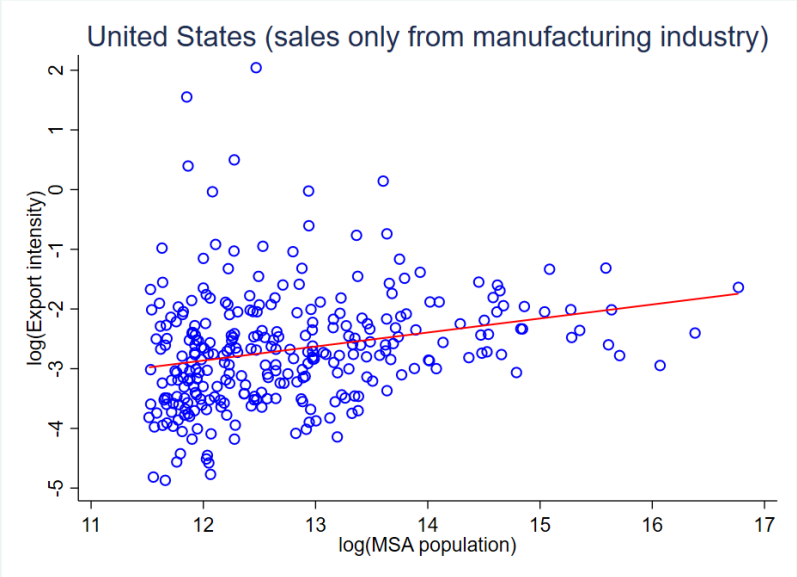
Dependent Variable: City-Level Export Intensity

	Brazil		China		France		United States	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log City Size	.327***	.371***	.326***	.249***	.198***	.197***	.323***	.305***
	(.1210)	(.1424)	(.0490)	(.0452)	(.0467)	(.0493)	(.0351)	(.0366)
Geog. Controls	No	Yes	No	Yes	No	Yes	No	Yes
Mean Dep. Var.:	-3.65	-3.65	-3.14	-3.14	-1.67	-1.67	-2.52	-2.52
R^2	.013	.021	.042	.190	.060	.300	.158	.166
Observations	297	297	642	642	210	210	312	312

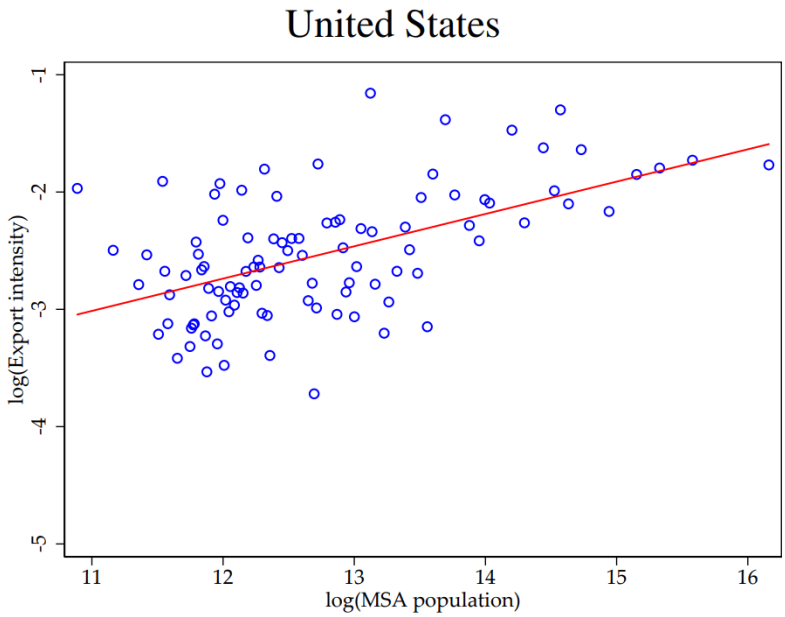
Notes: The Table analyzes the relationship between city size and export intensity. Cities are defined in terms of Metropolitan Areas for China and the United States, commuting zones for France, and Microregions for Brazil. For China and France, the analysis considers cities with positive exports and at least 250 manufacturing firms. For Brazil and the United States, the analysis considers cities with a population above 100,000 inhabitants. City-level export intensity is defined as manufacturing exports over manufacturing sales for China and France; overall exports over manufacturing sales for the United States, and overall exports over GDP for the case of Brazil. Geographical controls for Brazil, China, and the United States include a dummy variable for cities located in coastal areas, and the log of the linear distance between the city center and the nearest port. Geographical controls for France include the average distance to other domestic commuting zones, distance to the Western and the Spanish border, dummies for individual country borders, and a dummy for the Atlantic and the Mediterranean coast. Robust standard errors in parentheses. Key: ** significant at 1%; ** 5%; * 10%.

3 Figure 1: Export intensity against population (US only)

- Obtained:

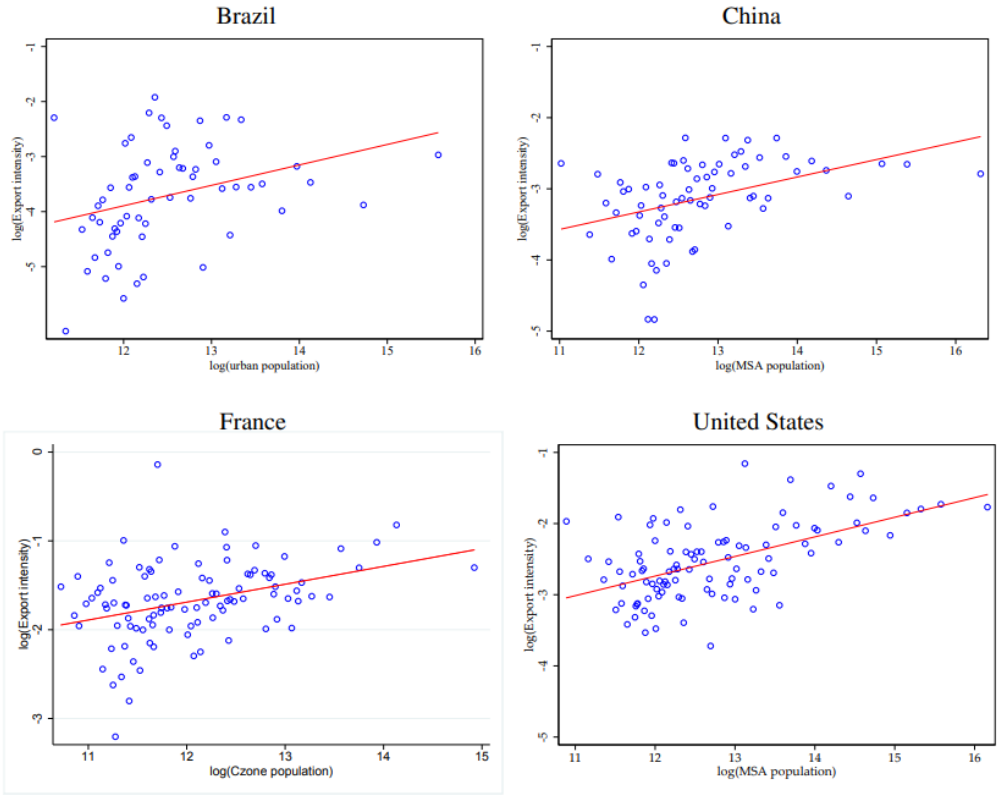


- Reported:



- Reported (full):

Figure 1: Log Export intensity and Log City size in China, Brazil, France and the United States



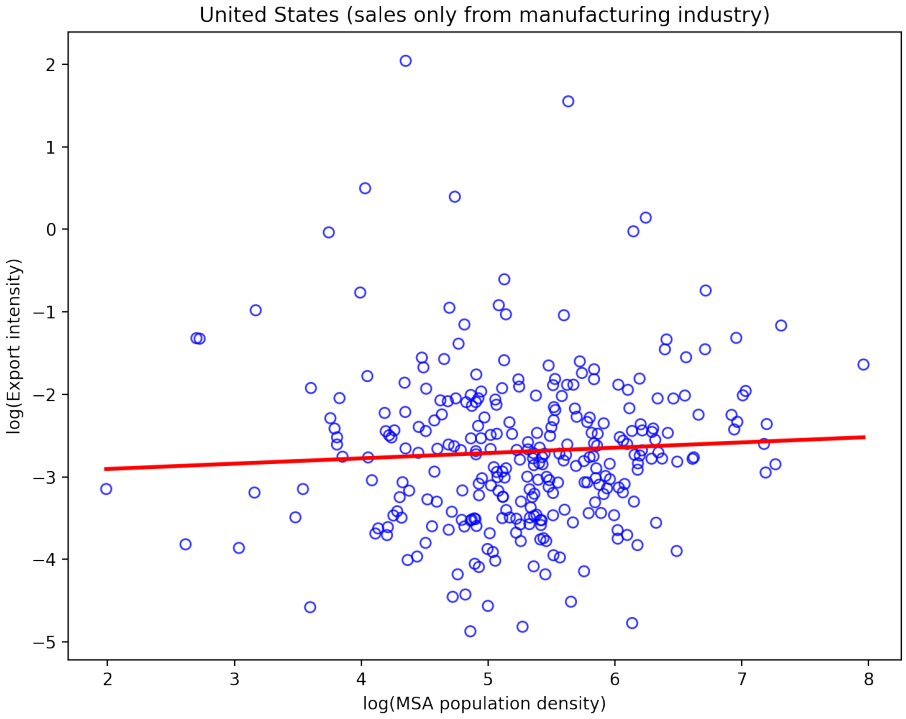
Notes: The figure shows the relationship between city size and export intensity. Cities are defined in terms of metropolitan areas in the cases of China and the United States, and in terms of microregions for the case of Brazil. For all countries, the analysis only considers cities with positive exports and population over 100,000 inhabitants. City-level export intensity is defined as manufacturing exports over manufacturing sales for China; overall exports over manufacturing sales for the United States, and as overall exports over GDP for the case of Brazil.

4 Regression of export intensity against population density (US only)

Using log population density instead of log population changes the statistical significance of the coefficient. Population density = population / land size (in square miles).

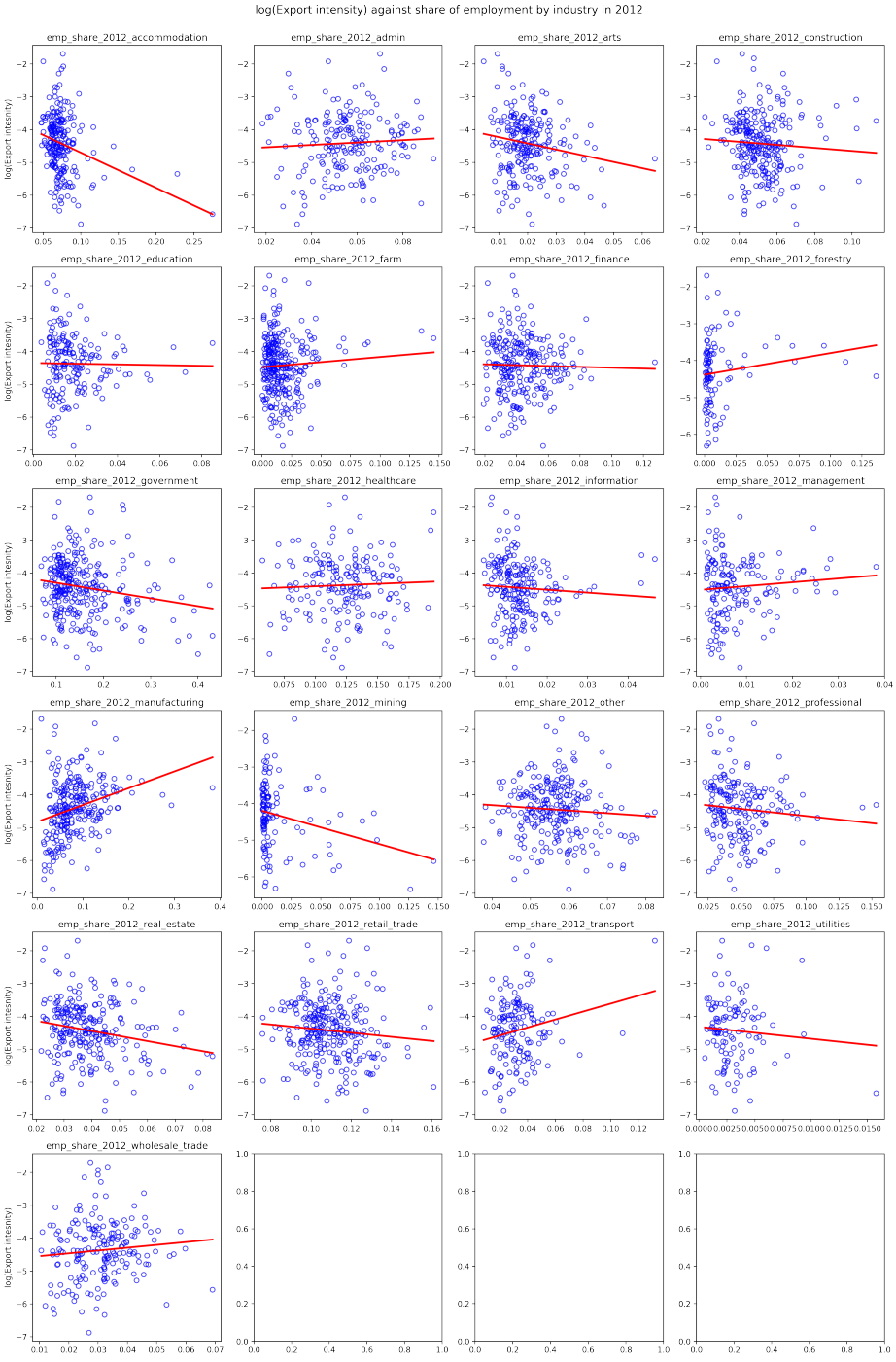
- Obtained:

	log Export Intensity
const	-3.0321***
	(0.3439)
log Pop. Density	0.0644
	(0.0643)
R-squared	0.0035
Observations	290



5 Local industry employment shares (US only)

Local industry employment shares refer to the share of population in a MSA employed in a certain industry. The data provides a breakdown at the 2-digit NAICS level. Below are graphs visualizing correlations between employment shares for each industry and log export intensity.



6 Regression of export intensity against population and local industry shares (US only)

We use manufacturing, retail trade, wholesale trade and government. The coefficient on the share of employment in manufacturing is statistically significant. We note that the number of observations is notably smaller because some industry shares are redacted to avoid disclosure of confidential information, resulting in NULL values that are dropped.

- Obtained:

Table 1: With log local industry employment shares

	log Export intensity
const	-8.3591***
	(1.8737)
log City size	0.1816**
	(0.0903)
log Share of emp. in manufacturing	-0.6067***
	(0.1366)
log Share of emp. in retail trade	0.0703
	(0.5967)
log Share of emp. in wholesale trade	-0.2870
	(0.2413)
log Share of emp. in government	-0.4850*
	(0.2484)
R-squared	0.1977
Observations	181

Table 2: With local industry employment shares

	log Export intensity
const	-3.8855**
	(1.7356)
log City size	0.1921**
	(0.0934)
Share of emp. in manufacturing	-5.3015***
	(1.6733)
Share of emp. in retail trade	1.4068
	(5.6467)
Share of emp. in wholesale trade	-14.8698*
	(8.2375)
Share of emp. in government	-2.8808*
	(1.5130)
R-squared	0.1557
Observations	181

7 Regression of export intensity against population density and local industry shares (US only)

Controlling for the four local industry shares does not change the statistical significance of the coefficient on log population density.

- Obtained:

Table 3: With log local industry employment shares

	log Export intensity
const	-7.3702***
	(1.8174)
log Pop. density	0.0603
	(0.0826)
log Share of emp. in manufacturing	-0.7192***
	(0.1267)
log Share of emp. in retail trade	-0.3438
	(0.5600)
log Share of emp. in wholesale trade	-0.1673
	(0.2351)
log Share of emp. in government	-0.5859**
	(0.2498)
R-squared	0.1816
Observations	181

Table 4: With local industry employment shares

	log Export intensity
const	-1.0611
	(0.9939)
log Pop. density	0.0493
	(0.0830)
Share of emp. in manufacturing	-6.7935***
	(1.5328)
Share of emp. in retail trade	-2.9316
	(5.2618)
Share of emp. in wholesale trade	-12.0708
	(8.2039)
Share of emp. in government	-3.8017**
	(1.4703)
R-squared	0.1371
Observations	181