

MANAGEMENT AND MISALLOCATION

EVIDENCE FROM MEXICAN FIRMS

AEA

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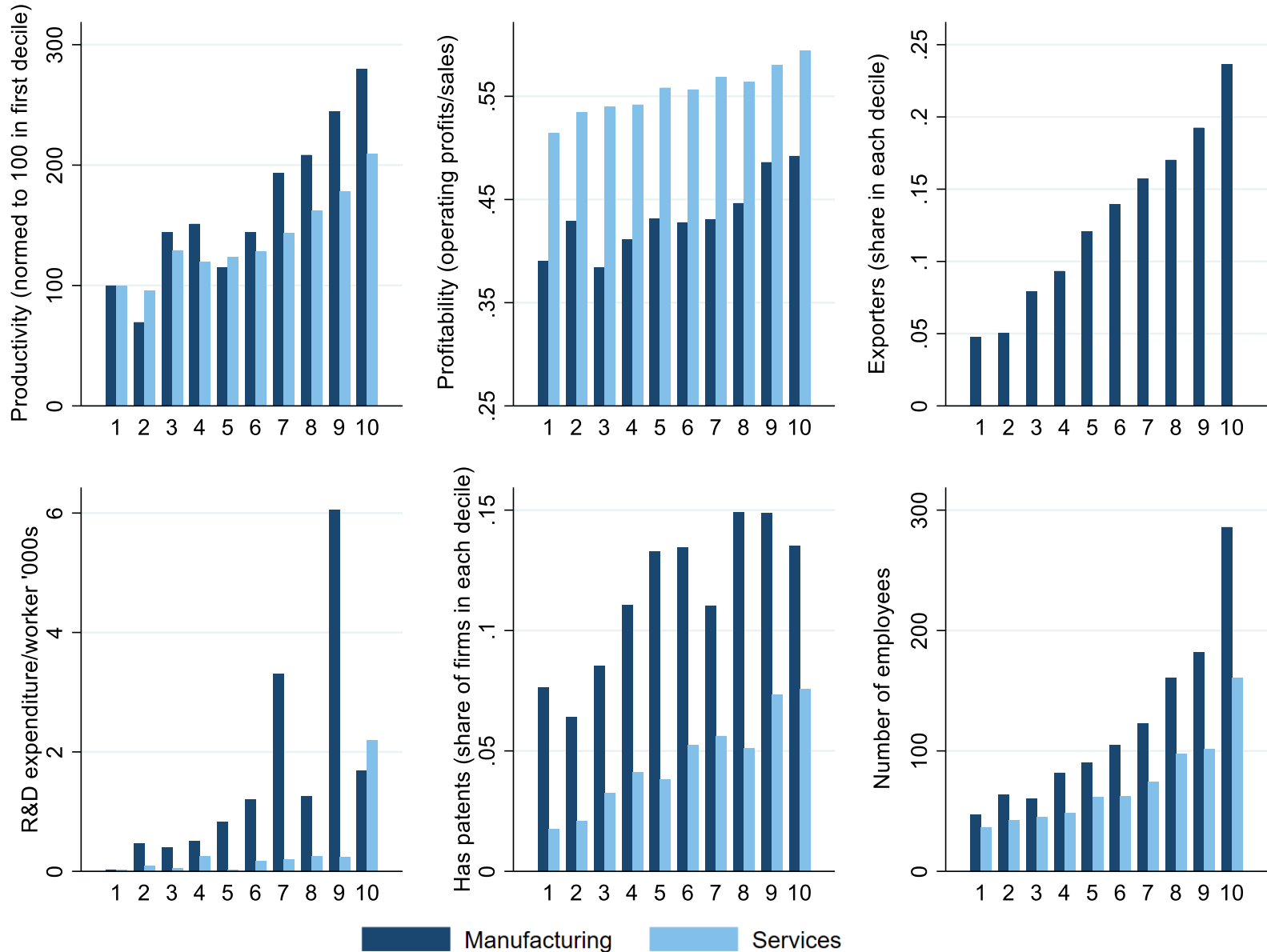
FIRST OFFICIAL LARGE-SCALE MANAGEMENT SURVEY IN MANUFACTURING AND SERVICES IN A DEVELOPING COUNTRY CONTEXT

- ENAPROCE 2015 is based on U.S. MOPS
- We use information for 16,100 firms in manufacturing & services
- Survey implemented by INEGI (national statistics office), 96% response rate
- Sampling framework is 2014 Economic Census

WHAT WE DO...

- Test whether previous results hold for a middle-income country and for all sectors.
- Compare management practices with the US and across sectors within Mexico.
- Analyze these differences in a misallocation framework. Frictions are a major factor depressing the Mexican Economy:
 - Competitive
 - Institutional.

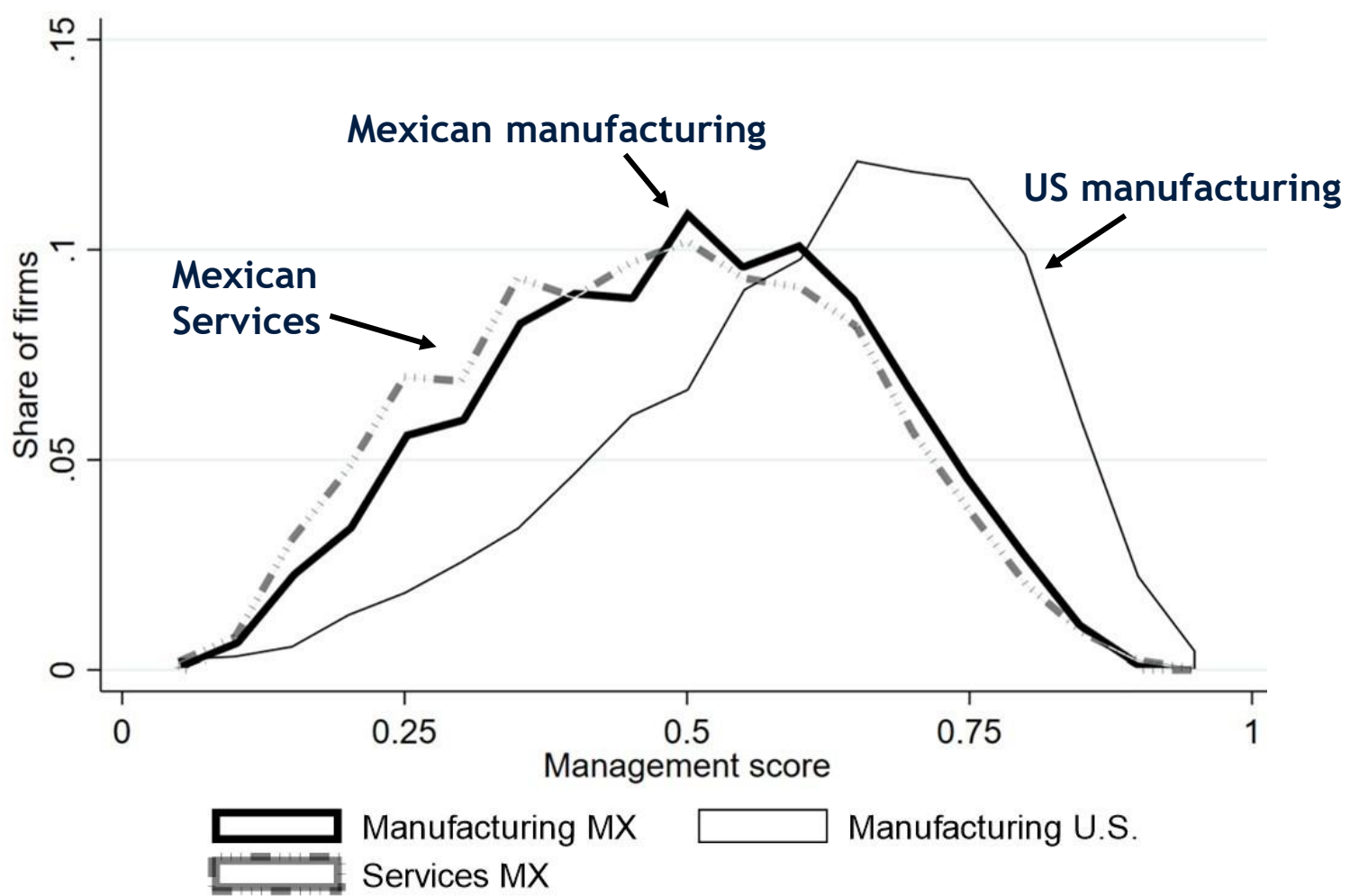
MANAGEMENT PRACTICES AND FIRMS' PERFORMANCE



■ Manufacturing ■ Services

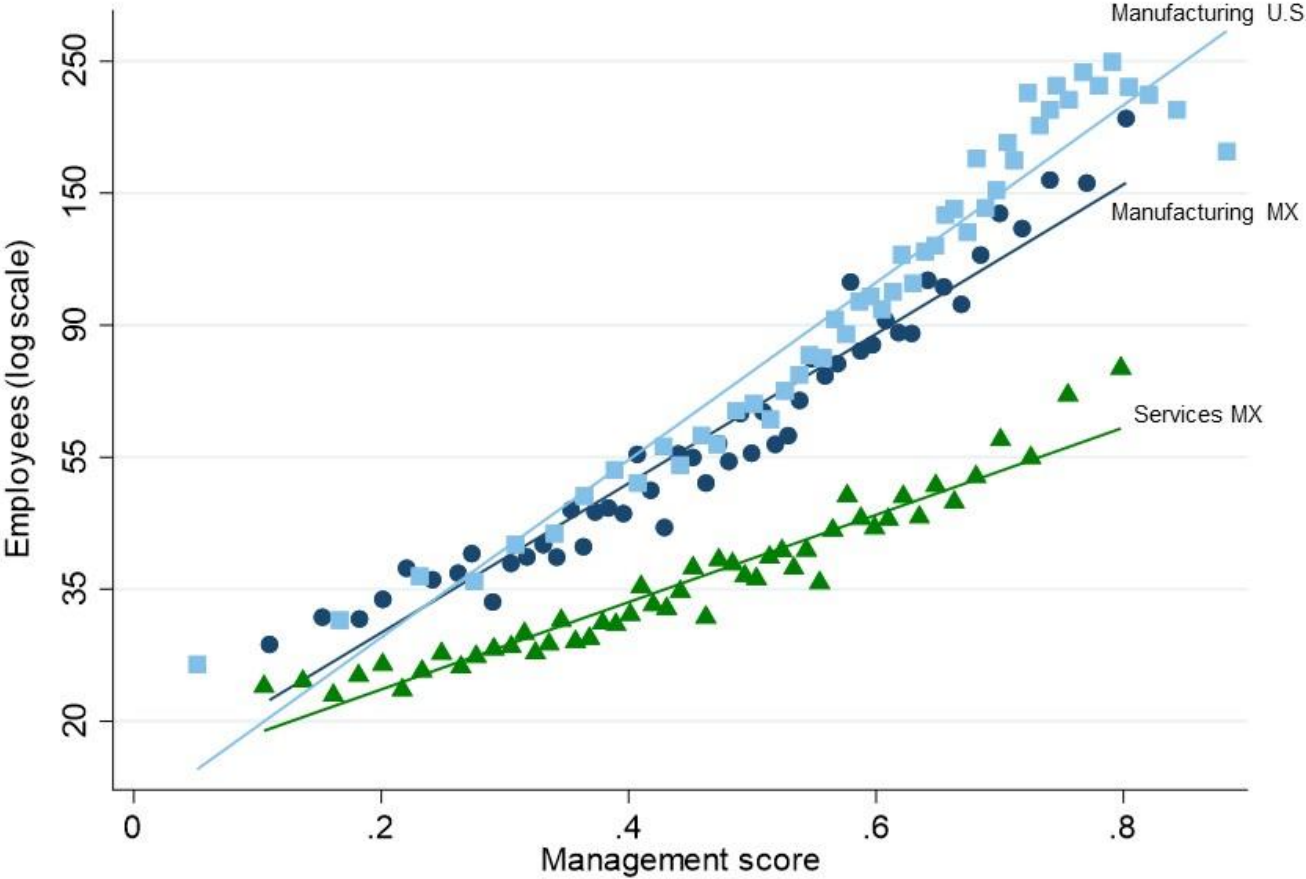
Notes: Results for the sample of 3,707 Mexican manufacturing plants in 2014 and 2,936 in 2017; 10,175 Mexican services firms in 2014 and 7,509 in 2017

MANAGEMENT DISTRIBUTION IS MORE DISPERSED AND SHIFTED TO THE LEFT IN MEXICO COMPARED TO US MANUFACTURING (AND SERVICES LAGS EVEN FURTHER)



Notes: Plots of sample of 3,707 Mexican manufacturing firms in 2014, 2,936 in 2017, 10,175 Mexican service firms in 2014 and 7,509 in 2017, against the distribution for 32,000 U.S. plants from Bloom et al. (2019)

FIRM SIZE INCREASES WITH MANAGERIAL PRACTICES IN MEXICO BUT LESS THAN IN THE US: EVIDENCE OF MISALLOCATION?



<ul style="list-style-type: none"> ● Manufacturing MX ▲ Services MX ■ Manufacturing U.S. 	<p>Slope</p> <p>2.752*** (0.0837)</p> <p>1.621*** (0.0475)</p> <p>3.360*** (0.123)</p>
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Notes: Results from Bin scatter with 50 quantiles from Mexican and U.S. firm-level Census management data. U.S. data described in Bloom et al. (2018). Regression results reported for log(employment) on management score across the 50 bins. Samples 3,707 Mexican manufacturing plants in 2014 and 2,936 in 2017; 10,175 Mexican services firms in 2014 and 7,509 in 2017; and 32,000 US manufacturing plants which have been aggregated into 18,000 firms for this analysis.

THE RELATIONSHIP BETWEEN FIRM SIZE AND MANAGEMENT IS STRONGER IN MANUFACTURING THAN IN SERVICES

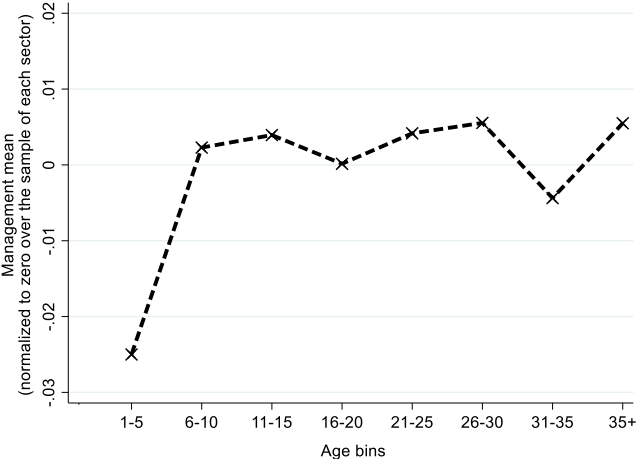
Dependent variable=ln(workers)	Pooled regression					
	Manufacturing		Manufacturing		Services	
	(1)	(2)	(3)	(4)	(5)	(6)
Management score	1.622*** (0.0475)	1.380*** (0.0453)	2.752*** (0.0837)	2.219*** (0.0807)	1.621*** (0.0475)	1.380*** (0.0452)
Manufacturing dummy*Management score	1.131*** (0.0967)	0.834*** (0.0918)				
6-digits NAICS	No	Yes	No	Yes	No	Yes
Region	No	Yes	No	Yes	No	Yes
Time	Yes	Yes	Yes	Yes	Yes	Yes
Skills control	No	Yes	No	Yes	No	Yes
Observations	24,327	24,327	6,643	6,643	17,684	17,684

Notes: Robust standard errors clustered at the firm level in parentheses. * Significant at the 10% level, ** 5% level, *** 1% level. 5 regional dummies included in all regressions. Column (2) also includes interactions of the manufacturing dummy with skills variables but these are not shown. Skills are measured as the share of workers with a college degree.

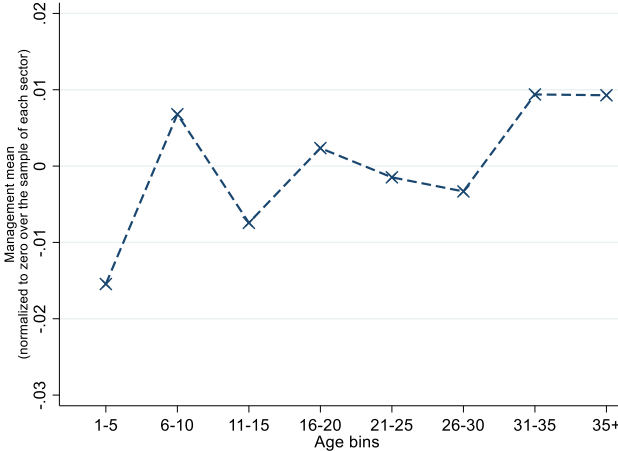
OLDER SERVICES FIRMS ARE NOT BETTER MANAGED WHILE MANUFACTURING FIRMS ARE...MORE EVIDENCE OF WEAK SELECTION?

Age and Management score: mean

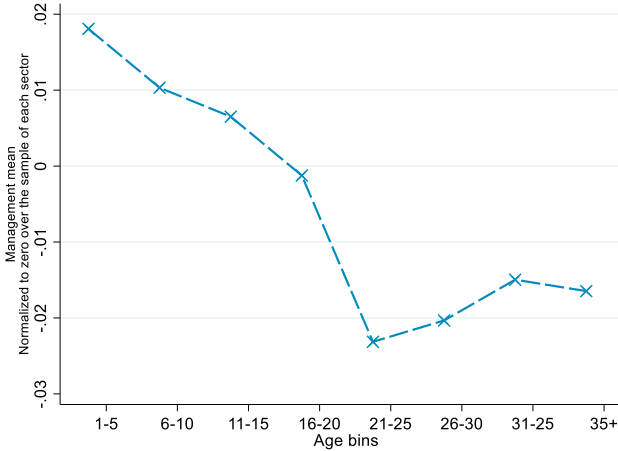
(a) Manufacturing US



(b) Manufacturing MX



(c) Services MX

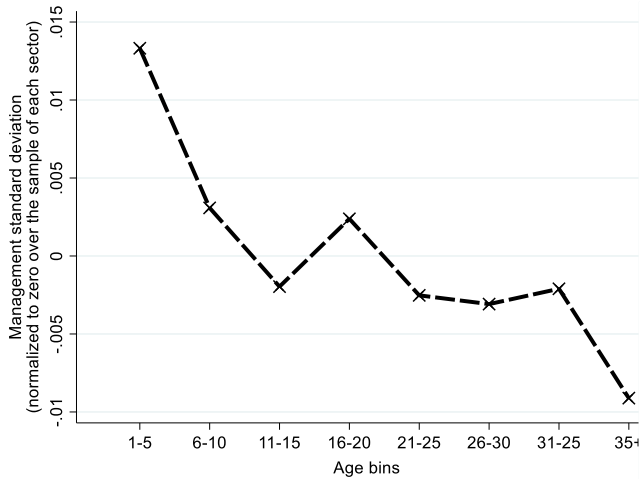


Notes: Plots of sample of 3,707 Mexican manufacturing plants in 2014 and 2,936 in 2017; 11,967 Mexican services firms in 2014 and 7,509 in 2017; and 32,000 US manufacturing plants

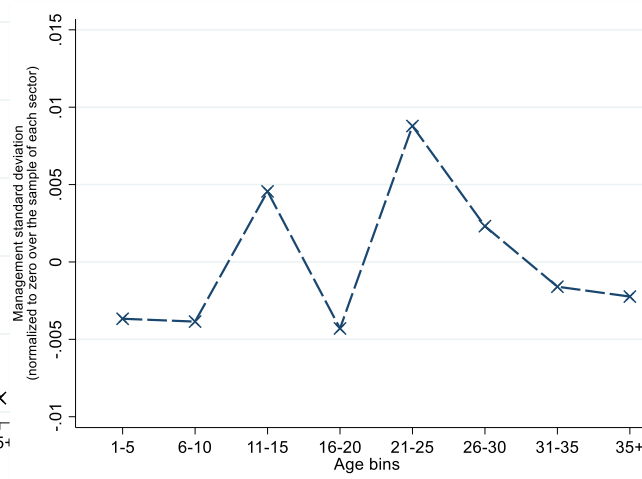
MANAGEMENT DISPERSION DOES NOT DECREASE WITH AGE, ESPECIALLY IN SERVICES: ALSO SUGGESTS WEAK SELECTION FORCES

Age and Management score: spread

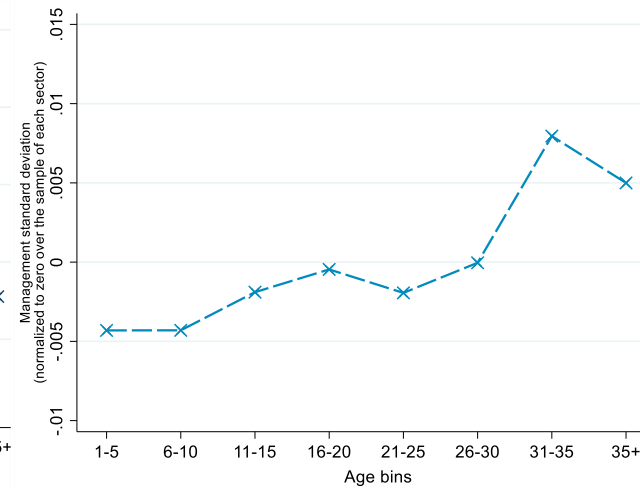
(a) Manufacturing US



(b) Manufacturing MX



(c) Services MX



Notes: Plots of sample of 3,707 Mexican manufacturing plants in 2014 and 2,936 in 2017; 11,967 Mexican services firms in 2014 and 7,509 in 2017; and 32,000 US manufacturing plants

GROWTH IN OUTPUT DUE TO REALLOCATION IS NON-TRIVIAL

Service sector: Magnitudes of reallocation

	Unweighted mean (A)	Employment- weighted mean (B)	(B-A)	Semi-parametric reweighting (manufacturing) (C)	(C-B)	VA/worker increase (C-B)	TFP increase (C-B)
Management score mean	0.446	0.520	0.074	0.559	0.039	4.50%	2.20%

Notes: Analysis based on a simple semi-parametric re-weighting approach in the style of DiNardo, Fortin and Lemieux (1996).

We split services into twenty quantile bins of the manufacturing score and calculate the fraction of employment in each bin for both manufacturing and services.

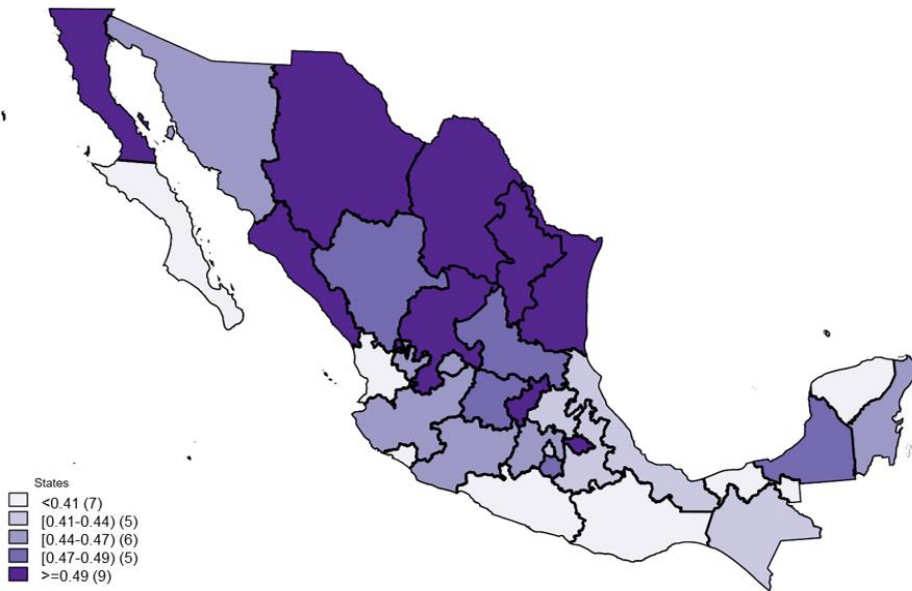
The equivalent magnitude for (B-A) in the manufacturing sector is 0.091.

REGIONAL PATTERNS IN MANAGEMENT BY MANUFACTURING VS SERVICES

Best management practices in manufacturing are observed in the North, near the U.S. border, while best management in services are observed near the big cities.

Management by state

Manufacturing



Services



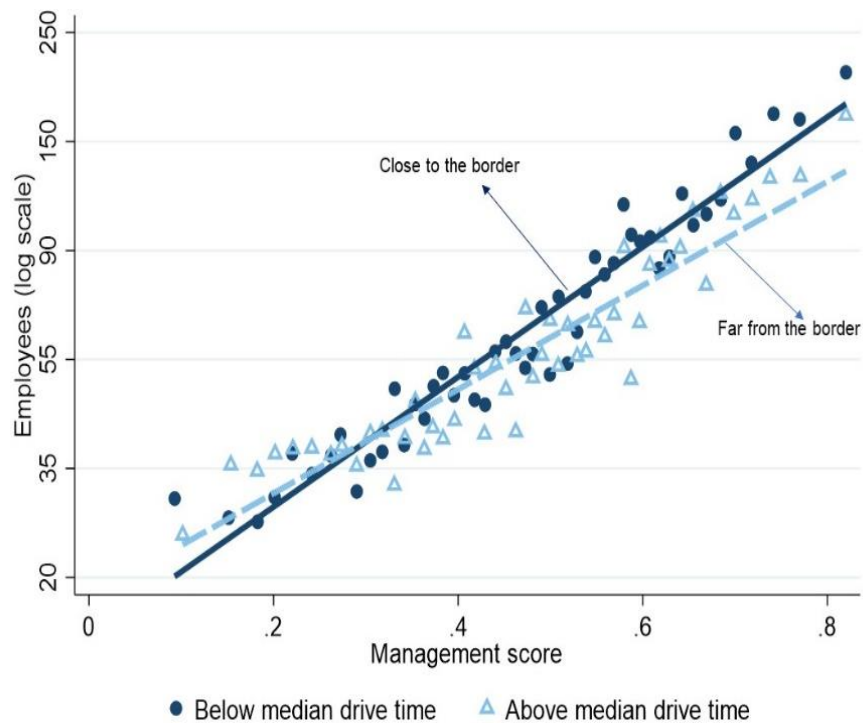
* sample of 4,224 Mexican manufacturing plants

* sample of 11,967 Mexican services firms

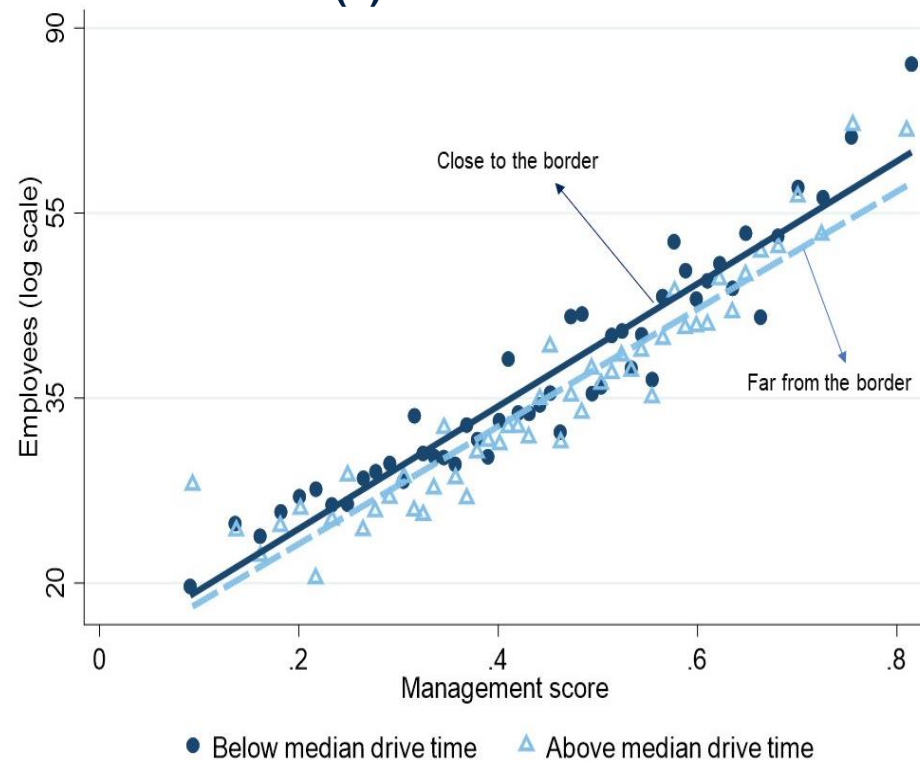
FOR MANUFACTURING FIRMS, BEING CLOSER TO THE US BORDER STRENGTHENS THE FIRM SIZE - MANAGEMENT-RELATIONSHIP

Sources of misallocation: Drive time to the border

(a) Manufacturing



(b) Services



Notes: Plots of sample of 3,707 Mexican manufacturing plants in 2014, 2,936 in 2017; 11,967 Mexican services firms in 2014, 7,509 in 2017.

BEING CLOSE TO THE US BORDER STRENGTHENS THE SIZE-MANAGEMENT RELATIONSHIP FOR MANUFACTURING

Dependent variable=ln(workers)	Drive time to the border	
	(1) Manufacturing	(2) Services
Management score	2.244*** (0.122)	1.351*** (0.0668)
Drive time below the median*Management score	0.469*** (0.173)	0.0851 (0.100)
Management score*Share of exports		
Management score*Share of exports*Drive time below the median		
Market size above the median*Management score		
6-digits NAICS	Yes	Yes
Municipality effects	Yes	Yes
Time	Yes	Yes
Observations	6,643	17,684

BEING CLOSE TO THE US BORDER STRENGTHENS THE SIZE-MANAGEMENT RELATIONSHIP FOR MANUFACTURING, ESPECIALLY IN HIGH TRADE SECTORS

Dependent variable=ln(workers)	Drive time to the border		Exports & drive time
	(1) Manufacturing	(2) Services	(3) Manufacturing
Management score	2.244*** (0.122)	1.351*** (0.0668)	1.564*** (0.189)
Drive time below the median*Management score	0.469*** (0.173)	0.0851 (0.100)	0.0209 (0.275)
Management score*Share of exports			3.469*** (0.743)
Management score*Share of exports*Drive time below the median			1.970* (1.140)
Market size above the median*Management score			
6-digits NAICS	Yes	Yes	Yes
Municipality effects	Yes	Yes	Yes
Time	Yes	Yes	Yes
Observations	6,643	17,684	6,643

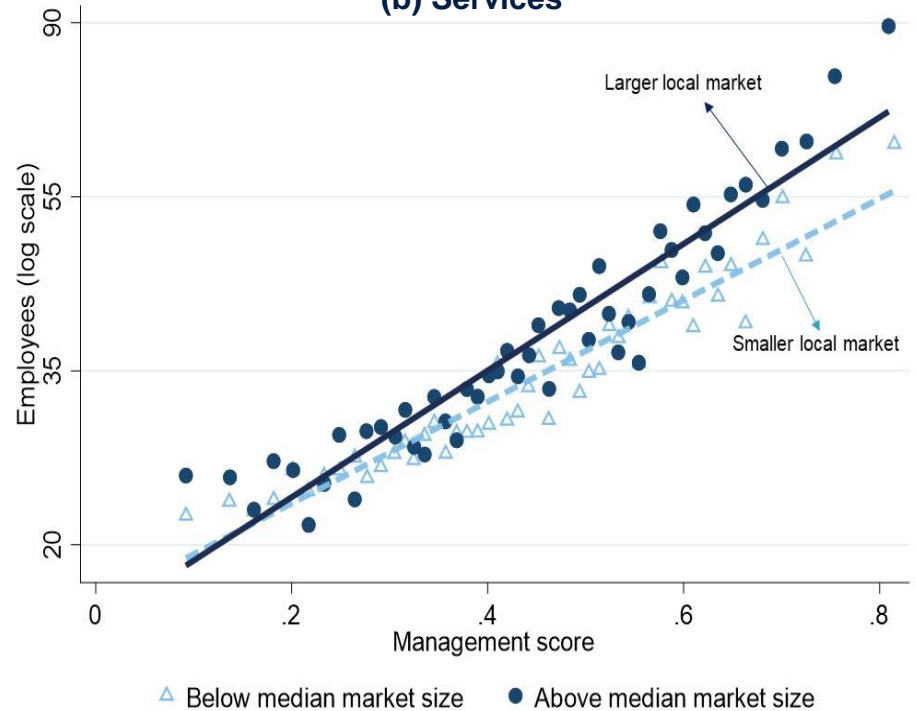
FOR SERVICES, BEING IN A DENSE CITY IS WHAT MATTERS

Sources of misallocation: market size

(a) Manufacturing



(b) Services



Notes: Plots of sample of 3,707 Mexican manufacturing plants in 2014, 2,936 in 2017; 11,967 Mexican services firms in 2014, 7,509 in 2017.

FOR SERVICES, BEING IN A DENSE CITY IS WHAT MATTERS

Dependent variable=ln(workers)	Drive time to the border		Exports & drive time	Market size	
	(1) Manufacturing	(2) Services	(3) Manufacturing	(4) Manufacturing	(5) Services
Management score	2.244*** (0.122)	1.351*** (0.0668)	1.564*** (0.189)	2.226*** (0.184)	1.192*** (0.0634)
Drive time below the median*Management score	0.469*** (0.173)	0.0851 (0.100)	0.0209 (0.275)		
Management score*Share of exports			3.469*** (0.743)		
Management score*Share of exports*Drive time below the median			1.970* (1.140)		
Market size above the median*Management score				-0.208 (0.219)	0.324*** (0.108)
6-digits NAICS	Yes	Yes	Yes	Yes	Yes
Municipality effects	Yes	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes	Yes
Observations	6,643	17,684	6,643	6,643	17,684

INSTITUTIONAL FRICTIONS ALSO CAUSE MISALLOCATION

Dependent variable=ln(workers)	(1) Top 10% share firms contract enforcement problems	(2) Top 10% kidnapping	(3) Top 10% share firms with gov. corruption problems	(4) Top 10% Business crime composite index
High level*Management score	-0.256* (0.139)	-0.258* (0.135)	-1.044*** (0.170)	-0.401*** (0.125)
Management score	1.605*** (0.0583)	1.557*** (0.0527)	1.590*** (0.0557)	1.612*** (0.0389)
Share of firms in municipalities with high-level	9.58%	7.13%	8.72%	8.76%
6-digits NAICS	Yes	Yes	Yes	Yes
Municipality effects	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Observations	24,327	24,327	24,327	24,327

ROBUSTNESS TESTS AND OTHER RESULTS

Robustness

- Using performance information from the Economic Census, does not change the results on management and performance.
- Management is also informative of microenterprises labor productivity.
- Changing the set of controls, our results do not change.
- Taking only those firms that only have one establishment does not change the results.
- Using continuous variables for competition frictions and institutional weakness, our results do not change.

Other results

- Management is positively correlated with employment growth and negatively associated with firm exit.
- Firms with FDI and external managers are better managed than family owned with family CEOs.
- Firms investing more in training tend to be significantly better managed.

CONCLUSIONS

- Like other countries, more structured management positively associated with better performance (productivity, profitability, innovation, size, and exports).
- Mexican management scores have a lower mean than their U.S. equivalent and a greater dispersion.
- We examine a key allocation moment: Employment size increases with managerial capabilities
 - But greater frictions will weaken this relationship

CONCLUSIONS

- Measuring frictions:
 - Greater frictions in Mexico than US
 - Within Mexico, greater frictions in services than in manufacturing (competition and regulation)
 - For manufacturing, greater frictions as distance to the US border increases (proximity increases competition)
 - For services, greater frictions in less dense cities (lower competition)
 - Greater frictions when institutions are weak as indicated by poor contract enforcement, high crime, or high corruption
- **All** of these friction indicators weaken the association of size and management