

Colonial technology, human capital and African development: the case of Italian Libya. 1920-2000

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1) Research Question(s)

- ✓ How did Italian agricultural settlement in the 1930s affect Libyan agriculture?
- ✓ What mechanisms explain this effect and its persistence?

2) Motivation(s) and contribution to the literature

- ✓ Little micro-level research exists on the impact of white farming settlement in Africa, despite its paramount importance for long-term development and inequality. The existing literature relies on country-level analysis (Frankema et al, 2014) and does not look at the long-run (Mosley, 1982)
- ✓ Contribution to the literature on the effect of migrations on productivity (Fourie and Von Fintel, 2014; Hornug, 2014) by looking at the agricultural sector.

3) Key historical facts

- ✓ Italian settlement was shaped by the slow conquest of the Libyan territory (started in 1911, but only completed in 1934). Settlement in more fertile and developed areas was not always possible.
- ✓ All Italian farmers (about 30,000) were expelled from the Eastern region of Cyrenaica in 1943 during WWII, following the British conquest.
- ✓ Kadafi expelled the last remaining farmers from the Western regions in 1969.

4) Methodology

✓ Creation of a spatially explicit village-level dataset containing:

- Archival data on cereal production from an unpublished agricultural survey for 1938-9
- Firm-level data on machinery, irrigation and workers from the 1937 Italian Agricultural Census (unpublished at the firm-level)
- Village-level data on production and capital from the 1960 Libyan Agricultural Census, FAO-Gaez data on value of production in 2000

✓ OLS analysis to explore the effects of Italian farming on Libyan agriculture:

- Land productivity (cwt/Ha) in 1939 and nominal value of agricultural output in 1939 and 2000 (\$) are regressed on presence of Italian farms in 1939 (Binary variable)
- Proximity to a village experiencing Italian farming (Cut-off distances) on Libyan productivity and value of production in the surrounding villages

✓ Placebo and IV strategies to address omitted variable bias

✓ Additional controls to explore the channels

5) Main results

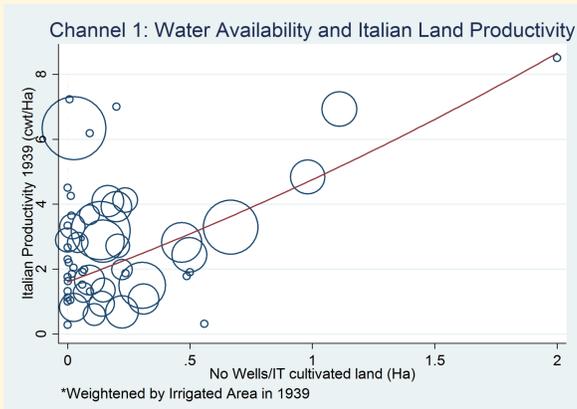
- ✓ **Positive direct effect of Italian presence on productivity and value of production in 1939**
- ✓ **Positive direct effect of Italian farming on real value of production in 2000 and in surrounding villages in both 1939 and 2000**
- ✓ **Negative effect on land productivity in surrounding villages in 1939**

The Effect of Italian Farming on Libyan Agriculture (1939-2000)				
	(1)	(2)	(3)	(4)
Dependent Variables:	Land Productivity (1939, cwt/Ha)	Nominal Value Cereal Production (1939, \$)	Real Value Total Production (2000, GK\$)	Real Value Total Production (2000, GK\$)
IT Dummy 1939	2.031*** (0.441)	8,879.328** (3,482.117)	536.856** (215.077)	
IT Dummy*D_Tripolitania				454.616* (256.678)
IT Dummy*D_Cyrenaica				737.500** (313.696)
Dist IT Village, 0-20km	-1.967*** (0.691)	59.664 (1,705.294)	584.009** (211.191)	587.546*** (205.313)
Dist IT Village, 20-40km	-1.962*** (0.673)	6,771.111** (3,222.016)	308.586 (220.853)	309.223 (217.046)
Dist IT Village, 40-60km	-1.909*** (0.575)	-2,327.336* (1,356.156)	-12.005 (108.473)	-28.764 (110.089)
Observations	218	218	218	218
R-squared	0.36	0.18	0.18	0.18
Provincial FE	YES	YES	YES	YES
Geographical Controls	YES	YES	YES	YES

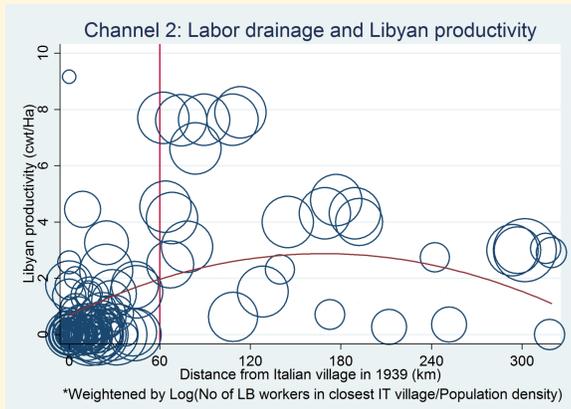
Notes: Robust standard errors clustered for 27 municipalities in brackets. Provincial fixed effects for the 5 provinces in which Italian Libya was divided are added in each specification. Geographical controls include: average annual temperature; average rainfall; land suitability; altitude; distance from the coast in km and from the closest river. *** p<0.01, ** p<0.05, * p<0.1

6) Explaining the effect of Italian farming in 1939

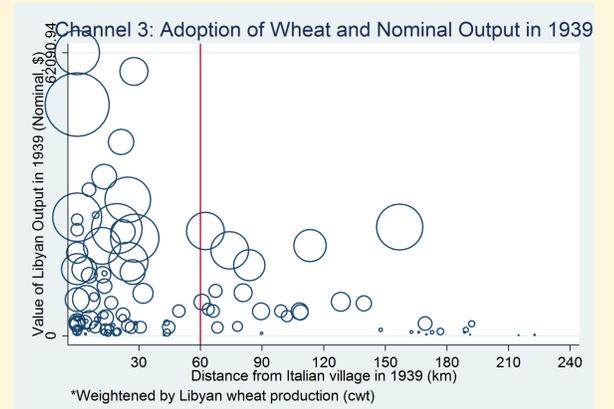
Irrigation and water availability largely account for the direct effect on Italian presence on land productivity in 1939.



Drainage of agricultural workforce in under-populated areas explains the decrease of Libyan productivity within 60 km from Italian villages.



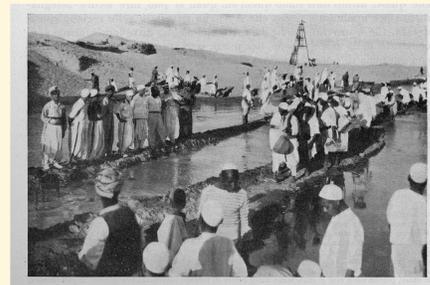
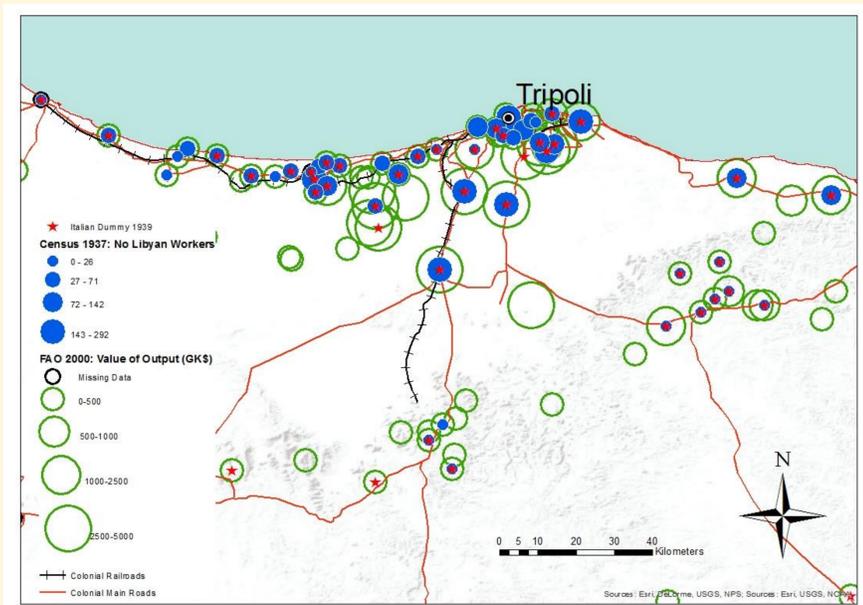
Adoption of more valuable crops (wheat) accounts for the positive spillovers in surrounding villages in both 1939 and 2000.



7) Explaining the persistent effect of Italian farming in 2000

Locations that employed more Libyan workers (as opposed to Italian) in the colonial period produced, on average, more real output in 2000. This suggests a spillover effect of agricultural skills between Italian and Libyan farmers, that persisted after the expulsion of the white settlers in 1969.

Evidence from colonial photographic material (Piccioli, 1934), supports the hypothesis that agricultural skills spillovers might explain long-term persistence. Examples of diffusion of irrigation techniques and use of tractors:



8) Conclusions

- ✓ **Causal, positive and statistically significant effect of Italian farming on village-level productivity in 1939.** Superior irrigation technology and construction of wells explains this effect. **Negative spatial effects of Italian presence on Libyan land productivity in surrounding villages** are accounted for by drainage of local labor.
- ✓ **Positive effect of Italian farming on nominal and real value of produced crops in both 1939 and 2000.** Adoption of more valuable cereals, such as wheat, explains the effect in 1939. In the long run, the available evidence suggests **positive spillovers through the adoption of modern agricultural techniques transmitted to Libyan workers during the 1930s.**

9) References

- Fourie, J. and Von Fintel, D., 'Settler skills and colonial development: the Huguenot wine-makers in eighteenth-century Dutch South Africa', *Economic History Review*, 67, 4 (2014), pp. 932-63
- Frankema, E. et al., 'Success and failure of European settler farming in colonial Africa', *African economic history working paper series*, 16 (2014)
- Hornung, E., 'Immigration and the diffusion of technology: the Huguenot diaspora in Prussia', *American Economic Review*, 104, 1 (2014), pp. 84-122
- Mosley, P., 'Agricultural development and government policy in settler economies: the case of Kenya and southern Rhodesia, 1900-1960', *Economic History Review*, 35, 3 (1982), pp. 390-408