Settlers and missionaries: a sub-national comparison of the consequences of colonial institutions and historical school investments

THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Frank-Borge Wietzke

Department of International Development and Masters of Public Administration

Motivation

Are development outcomes explained by differences in human capital or quality of institutions?

•Around the world sub-national incomes highly correlated with human capital (Acemoglu and Dell 2010, Gennaioli et.al. 2013).

•But a lot of variation not accounted for. This could be due to differences in local institutions (Acemoglu and Dell 2010).

•Existing studies also do not account for endogeneity of human capital and institutions at the sub-national level.

Study approach and contribution

- This study uses historical data on institutions and human capital to deal with these endogeneity issues.
- Compares long-term consequences of missionary schooling and colonial settler institutions within Madagascar.
- Sub-national focus also helps resolve deadlock in the debate about colonial institutions and colonial human capital (AJR 2001, 2002, Glaeser et al. 2004, Huillery 2010, Bolt & Bezemer 2009).

Main Results

- Robust long-term impacts of colonial settlement institutions
- No sign of regional development impacts of school investments
- Results suggest a ‘reversal of fortunes’ story (AJR 2002): Initially disadvantaged settlement areas developed due to better property rights institutions
- Weak regional impacts of missionary schools probably due to domestic migration

Identification strategy

Study exploits historical variation between missionaries and settlers

Variation in time:

- Missionaries active in Madagascar since 1820
- French colonial rule established in 1896

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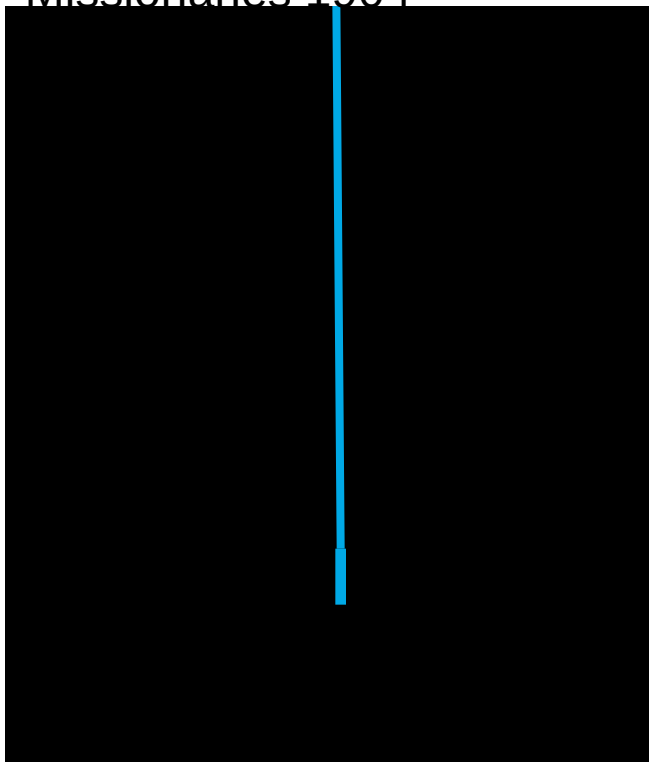
Example: David Livingstone travelled Africa from 1850-1873, well before the ‘scramble for Africa’.

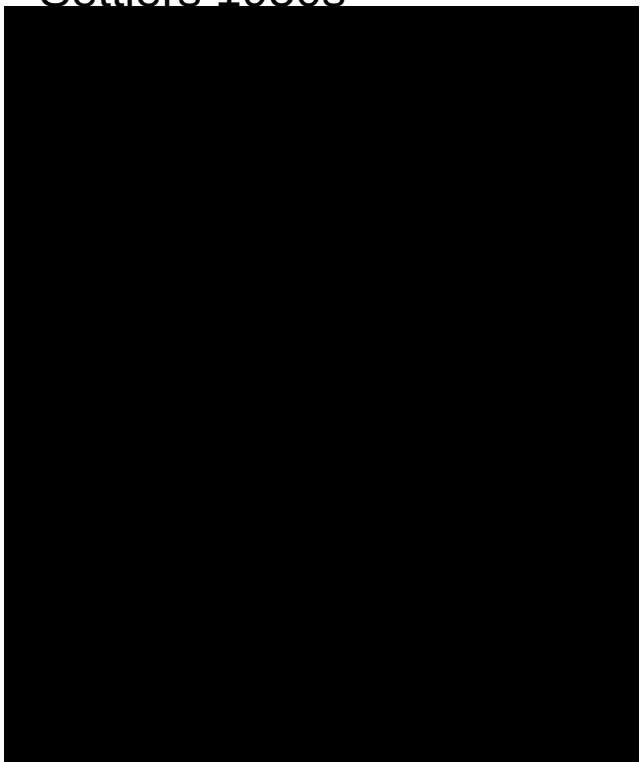
Variation in space

- Missionaries preferred the temperate central highland regions
- European settlers concentrated in coastal lowlands (for cash crop production). These areas had low initial population densities
- Correlation between missionaries and settlers close to zero

Missionaries 1904



Settlers 1950s



Estimation

Dep var: log of mean district hh consumption

$$logExp_d = \alpha_1 + \beta_2 \, log\ Missionaries + \gamma \, log\ Controls_d + \varepsilon_d$$

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- IV for *Missionaries*: dummies for stages of expansion of pre-colonial Merina empire

- IV for *Settlers:* District population densities 1936 (AJR 2002)

What do my historical variables measure?

Missionaries: Number of churches per 1000 inhab per district in 1904.

- Churches historically linked to mission schools. Mission schools often double as churches

- I combine Protestants and Catholics because they were in the same regions

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- French encouraged settlement in Madagascar.
- Settlement accompanied by introduction of formal land titles. Traditional communal land-titling system remained intact in non-settlement areas

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NB: Contextual evidence suggests *Settlers* does not proxy for human capital: *"It is often difficult to distinguish a European or Creole plantation from that of his Malagasy neighbour. In general the settlers appear to have had little or no capital and often little competence or aptitude." (Heseltine 1971: 150)*

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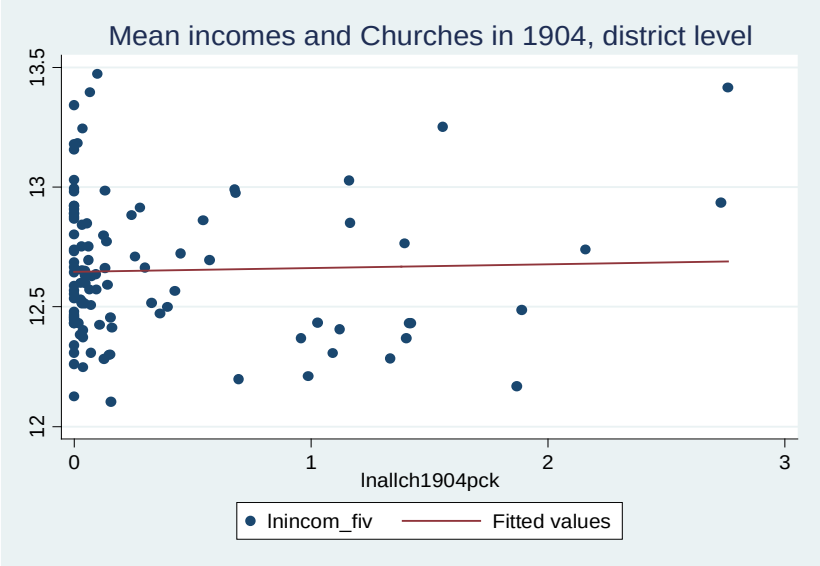
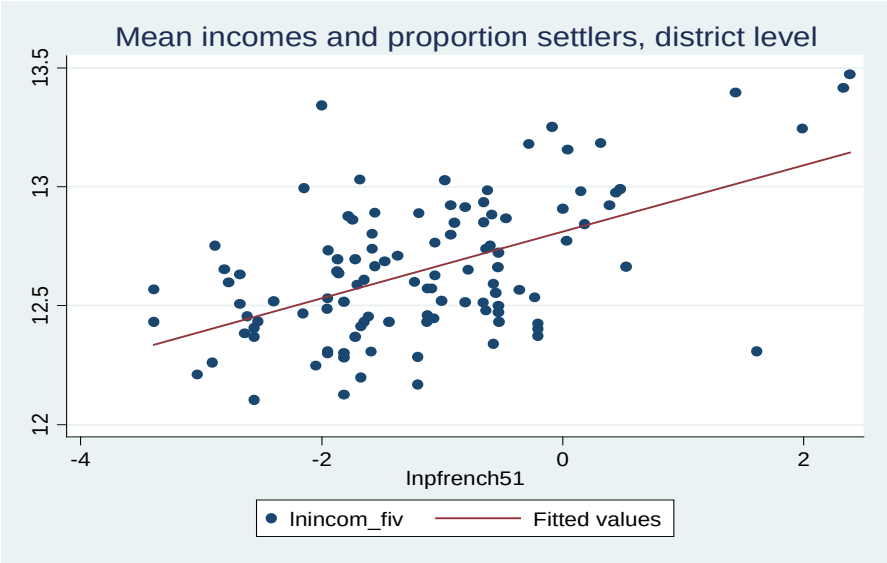
- No economic effects of missionary schools
- Robust effects of colonial institutions





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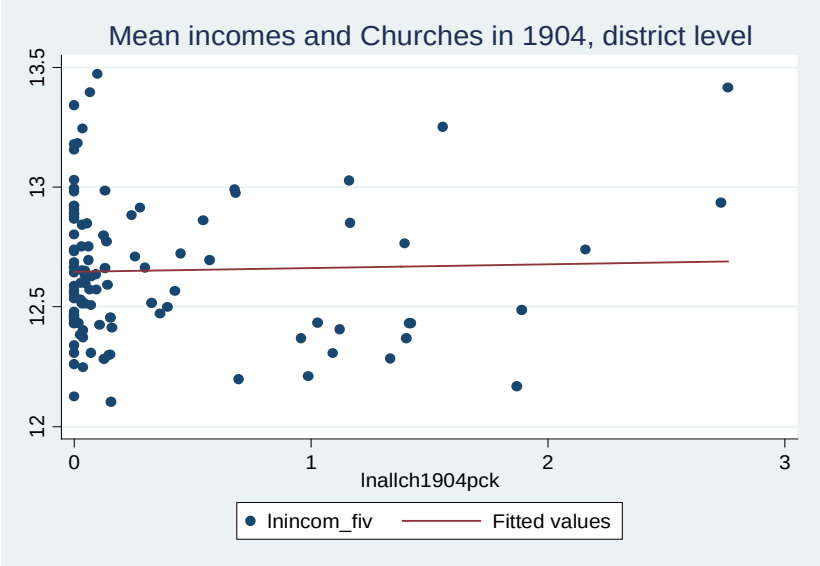
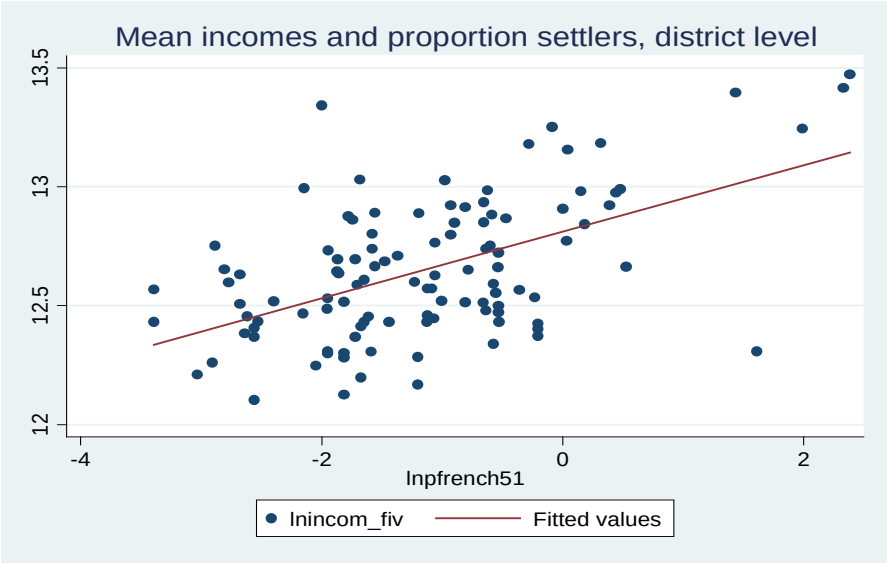
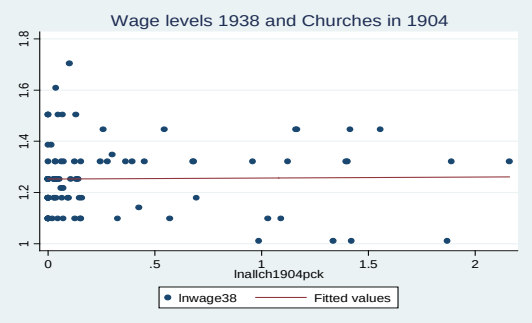




NB: Same result for missionaries and wages levels in 1938



Estimation results –missionaries and incomes

	Hh income	Hh income	Hh income
	OLS	OLS	2SLS
Missionaries	-0.002	0.005	-0.081
SE	(0.077)	(0.069)	(0.086)
Geographic and historical controls	No	Yes	Yes
N	107	106	106

Estimation results – district incomes

	Hh income	Hh income	Hh income	Hh income
	OLS	OLS	OLS	2SLS
Settlers	0.139***	0.112***	0.097***	0.275**
SE	(0.025)	(0.032)	(0.032)	(0.107)
Geographic and historical controls	No	Yes	Yes	Yes
Historical wages and infrastructure	No	No	Yes	Yes
N	107	106	106	106

What explains greater effect of *Settlers?*

‘Reversal of fortunes’ thesis (AJR 2002): former settlement regions historically disadvantaged (low population densities). But faster growth in subsequent periods due to superior property rights institutions

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	Settlers	% Land titled	Cash crops	Manufactu ring
	IV first stage			
Pop density1936	-0.337***			
	(0.105)			
Settlers		0.149**	0.057	0.257***
		(0.075)	(0.095)	(0.080)

Full set of controls included

What explains weak effect of missionary schools?

Evidence for human capital spill overs from missionary districts to former settlement regions

	Public school teachers	Private school teachers	Secondary school	Adult education rates
Settlers	0.046	-0.016	0.030	0.146**
SE	(0.054)	(0.056)	(0.062)	(0.059)
Missionaries	0.210*	0.885***	0.341**	0.150
SE	(0.109)	(0.145)	(0.169)	(0.167)

Full set of controls included

Conclusions

Paper uses historical experiment to study income effects of institutions and human capital investments.

- Strong support for institutional approach (AJR's 'reversal of fortunes' hypothesis).

- Weak / no support for human capital argument. Missionary education *alone* was not sufficient for regional economic development.

Conclusions

Paper uses historical experiment to study income effects of institutions and human capital investments.

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But some questions about measurement of human capital impacts:

Is the regional level the right level of analysis to study school impacts?

- Human capital is mobile, institutions less so. Domestic migration may dilute regional impacts of school investments

IV for missionaries
Stages of expansion of the Merina empire