Exploring the deep determinants of tax revenues

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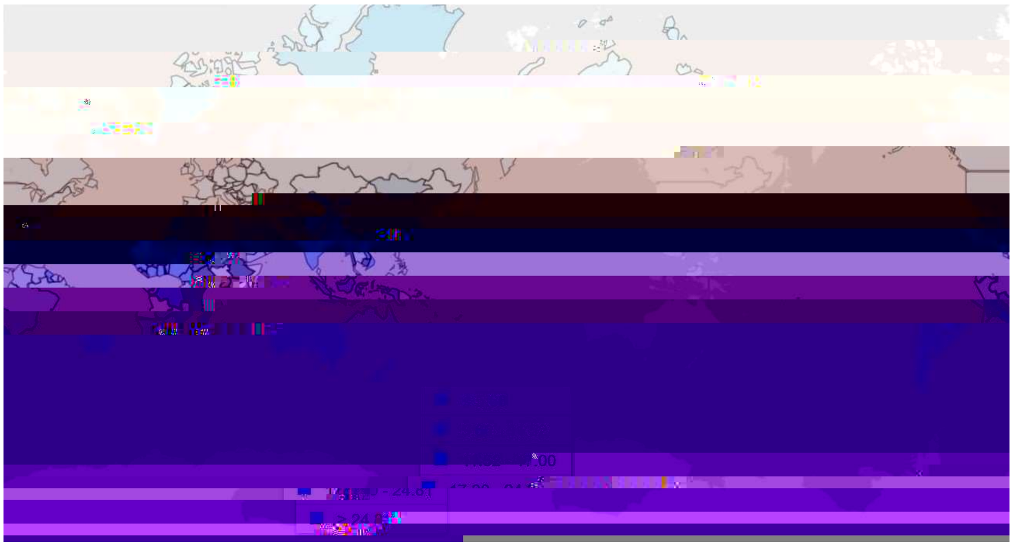
determinants may also impact the tax ratio directly. Deep determinants show that history matters towards tax revenues and that tax revenues are path dependent.

The focus is on deep determinants since the argument, as borrowed from the

sectors found in countries with large agricultural sectors may also have limited the ability of the countries' governments to increase their tax ratios.

Fig. 1: World Map of Agriculture to GDP



Source: World Bank. Note that no data is available for countries coloured in white.

I test the hypothesis that a country's location has an influence on tax ratios with the use of a cross-section dataset of at most 141 countries for the year 2014, using alternative models (refer to Table 1). Appendix A provides the sample and a description for all variables used in this article. The models contain predominantly geographical variables, geography described as being 'as exogenous a determinant as an economist can ever hope to get'. The only non-geographical variables are malaria risk in 1965 and population size. Malaria risk in 1965 serves as a proxy for the disease environment faced by settlers and seems likely to be exogenous to current tax ratios. Formal testing for endogeneity by using various geographic variables as instruments supports this conclusion. Since current population size may be endogenous to tax ratios (and the coefficient is relevant for the remainder of the article), I use population size in 1960 as an instrument for current population size and two-stage least squares as the estimator when including population size. It seems unlikely that population size in 1960 will influence tax revenues through a channel not represented by the current population size and population size in 1960 may, therefore, be a valid instrument.

Table 1: Country's Location and Tax Ratios

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**OLS**	**OLS**	**ή**	**ʻ**	**ή ʻ**

Since the economic development literature finds a strong relationship between the past disease environment and economic development and economic development is shown

citizens' preferences. Easterly and Levine show that ethnic diversity adversely affects many public policies associated with economic growth and conclude that their 'results lend support to theories that interest group polarization leads to rent-seeking behavior and reduces the consensus for public goods'. La Porta and co-authors show that ethnic heterogeneity is correlated with poorer quality of governance and Lago-Peñas and Lago-Peñas, as well as Xin Li show that ethnic fractionalisation is negatively correlated with tax morale. The correlation between country size and tax ratios may, therefore, also be due to ethnic fractionalim ° ʻ a h

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3.1 Formal institutions and tax ratios

Diamond's discussion, as summarised in section 2, focuses on the diffusion of technology and how this led to Eurasian dominance. But the plentiful supply of food and consequent division of labour, population growth, and trade do not only benefit technological development. The interaction between different social groups and societies necessitates the establishment of new institutions. The institutions developed and established in Eurasia were replicated in societies where colonisers settled and many continue to exist today. Today, non-settler societies often also enforce formal institutions originating from Eurasian societies. Formal institutions are regarded as deep

Gil and Sala-i-Martin). Persson and Tabellini find that presidential systems decrease tax revenues (parliamentary systems increase tax revenues), although this result is questioned by the replication study of Blume and co-authors, which uses a larger sample. The results reported in this section are from a greater number of observations than these previous studies (141 compared to 88 by Blume and co-authors and 76 by Persson and Tabellini).

The majority of past studies on democracy and government size measure the

political power is more distributed. Rent-seeking behaviour could also influence tax morale, decreasing tax compliance.

Table 5: Influence of a Parliamentary System on Tax Ratios

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**

Table 7: Inglehart-Welzel Values Measure

	Factor loadings
Traditional values emphasise the following (Secular-rational values emphasise the opposite):	

Self-expression societies are also on average more rule abiding (r=0.72). This is different to traditional societies who are less rule abiding (r=0.56) although having informal institutions that emphasise rule obedience. It appears that institutions that support the involvement of society in the creation of rules that represent their interests drives rule obedience, rather than institutions emphasising rule obedience. Stronger enforcement of formal institutions is not necessarily the answer (as much of the tax literature emphasises). Supporting the development of improved informal institutions and creating formal institutions that represent these informal institutions could be a more fruitful approach.

similar to Mkandawire, suggest that the economic environment of countries at the time of colonisation, emphasising the extent that mineral wealth has been discovered, influences current levels of tax ratios. Although mineral wealth most likely played a part in the policies implemented during colonisation, this article provides an alternative narrative that emphasises geography, rather than the economic environment.

It is shown that the past disease environment is a significant determinant of tax ratios and that the effect does not run only through the influence of the past disease environment on economic development (as shown by Acemoglu, Johnson and Robinson). It is suggested that this effect is as a result of the institutions and, importantly, the technology and ideas of settlers, which were implemented and applied where they settled. Adopting foreign technology may be particularly important for developing countries if they are to increase their tax ratios.

Second, for tax ratios the division of powers matter. The results in this article suggest that toward increased tax ratios, democratic institutions can be preferred to authoritarian institutions and parliamentary institutions can be preferred to presidential institutions. Societies with informal institutions aligned with democratic principles also exhibit greater tax ratios. These results suggest that a greater division of power is beneficial to tax ratios. This suggestion is, however, not supported by the finding that federal institutions, which likely lead to tax competition, have a negative effect on tax ratios. Taking the findings on democratic institutions, parliamentary institutions, and federalism into consideration, it appears that the division of power can increase tax ratios, but these effects may be dampened if such division results in tax competition.

Third, for tax ratios formal and informal institutions matter. Since institutions are slow changing, advising changes to formal and informal institutions may not be particularly helpful for countries which require additional tax revenues in the short term. For the short term, knowledge of the effect of institutions on tax ratios may be more useful in how tax policy is designed and debated. Incorporating the results presented in this article, Figure 2 provides a theory on how greater cognisance of institutions can be useful in designing tax policy.

these institutions and enforcement characteristics. The theoretical principle that I propose here is institutional efficiency.

When proposing a new formal institution (eg, tax law), institutional efficiency will be high if: (1) the proposed formal institution does not adversely influence the intended outcomes of other existing formal institutions; (2) the proposed formal institution is aligned with the existing informal institutions, and (3) the proposed formal institution does not adversely influence the existing informal institutions. The higher the institutional efficiency, the lower the transaction costs of the policy.

The transaction costs of the policy will include implementation costs, adjustment costs, and enforcement costs. Implementation costs include political costs (for instance, the loss of votes), costs to obtain consensus on the policy, the costs of citizen organisations

require an in-depth understanding of the informal institutions residing in countries, bringing sociology squarely into the field of fiscal policy.

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The sample includes Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bosnia, Botswana, Brazil, Bulgaria, Burkina Faso, Cabo Verde, Cambodia, Canada, Central African Republic, Chile, China, Colombia, Congo, Rep., Costa Rica, Cote d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Dominica,

		gives citizens the right to vote in an election, freely and fairly.
Development	**World Bank**	**GDP per capita**

Religion Fractionalisation	**Alesina and others**	**Reflects the probability that two randomly selected people from a given country will not**