

NATURAL RESOURCE DEPENDENCE AND RECENT ECONOMIC PERFORMANCE

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OUTLINE OF THE PRESENTATION

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1. INTRODUCTION

- Economists have recently made substantial progress in tracing the links between the quality of a country's political institutions and its level of economic growth and development.
- It is by no means surprising that in cross-country datasets there is a positive correlation between institutional quality, growth rates and *per capita* income.
- However, it is much more difficult to establish the main direction of causality in this correlation.
- Observance of the rule of law and the establishment of property rights might well improve economic efficiency by reducing the distortions faced by investors.
- On the other hand, the legal and political framework required to establish good institutions comes at a prohibitively high cost for low-income countries.

1. INTRODUCTION (CONT.)

- Deep determinants of economic development:
- INSTITUTIONS
- GEOGRAPHY
- OPENNESS/INTEGRATION
- MACROECONOMIC POLICY
- CULTURE
- ETHNIC/LINGUISTIC/RELIGIOUS COMPOSITION

GEOGRAPHY  DEVELOPMENT

- CLIMATE (MEAN TEMPERATURE, PRECIPITATION, SUNLIGHT, HUMIDITY, FROSTS, WINDS...)
- GROUND SURFACE (TOPOGRAPHY, LANDMASS ORIENTATION, RIVERS, ACCESS TO SEA)
- GEOLOGY (SOIL, MINERALS, VOLCANIC/EARTHQUAKE)
- BIO-GEOGRAPHY (DISTRIBUTION OF PLANTS, ANIMALS, DISEASE ENVIRONMENT)

GEOGRAPHY  INSTITUTIONS  DEVELOPMENT

- GALOR ET AL (2004) - GEOGRAPHICAL CONDITIONS ASSOCIATED WITH LAND INEQUALITY NEGATIVELY AFFECTED HUMAN CAPITAL PROMOTING INSTITUTIONS
- ENGERMAN AND SOKOLOFF (2005) - TROPICAL ECOZONES FAVOUR PLANTATION AGRICULTURE, PROMOTING USE OF SLAVERY, WHICH IMPEDES DEVELOPMENT
- ACEMOGLU ET AL (2001) - HIGH DISEASE ENVIRONMENT LEADS TO EXTRACTIVE COLONIES AND BAD INSTITUTIONS WHICH IMPEDE LONG-TERM DEVELOPMENT

ACEMOGLU, JOHNSON AND ROBINSON (AER, 2001)

- EUROPEANS ADOPTED DIFFERENT COLONISATION STRATEGIES IN DIFFERENT COLONIES: 'SETTLER' VERSUS 'EXTRACTIVE' COLONIES
- COLN. STRAT. = F(DISEASE ENVIRONMENT)
- HIGH MORTALITY → EXTRACTIVE COLONIES
- LOW MORTALITY → SETTLER COLONIES
- SETTLER MORTALITY: SETTLEMENT TYPE → EARLY INSTITUTIONS → CURRENT INSTITUTIONS → CURRENT ECONOMIC PERFORMANCE

REQUIREMENTS FOR VALID INFERENCE WITH ENDOGENOUS “DEEP DETERMINANTS”

- IDENTIFICATION PROBLEM:
 - (A) INSTITUTIONS → DEVELOPMENT
 - (B) DEVELOPMENT → INSTITUTIONS
 - ALSO, EFFECT OF OTHER FACTORS ON OLS REGRESSIONS → BIASED AND INCONSISTENT ESTIMATES OF (A)
- ECONOMETRIC SOLUTION: INSTRUMENTAL VARIABLES ESTIMATION (2SLS)
- 2SLS REQUIRES ‘VALID’ INSTRUMENTS:
 - RELEVANT: HIGHLY CORRELATED WITH THE ENDOGENOUS DEEP DETERMINANTS
 - EXOGENOUS: UNCORRELATED WITH THE MODEL ERROR TERM

OUR ARGUMENT: HISTORY OF COLONISATION

- Institutions shaped according to the decision to migrate based on *the awareness of the disease environment* does not explain 500 years of European settlement and colonization in Africa and Latin America.
1. **XV, XVI and XVII centuries:**
 - Europeans **colonizing** Western Africa, Bolivia, Peru, Mexico (regions with enormous risk of disease: malaria, yellow fever, etc.)
 - **AND AT THE SAME TIME** Europeans **not settling** in Argentina, Australia, Canada, South Africa, Uruguay (“empty countries”)
 - THE REASON: “LANDS OF NO PROFIT” versus REGIONS WITH GOLD, SILVER, SLAVES, what really mattered to the Colonial powers during those centuries (MERCANTILISM): HIGH COSTS (DEATH!) **BUT EVEN HIGHER BENEFITS...**

2. XVII, XVIII and XIX centuries:

- RELATIONSHIP (IN COMPARATIVE TERMS) FINALLY REVERSED...
- PASTORAL AGRICULTURE BECOMES PROFITABLE (EUROPE'S INDUSTRIAL REVOLUTION)
- MINES ARE EXHAUSTED, SLAVE TRADE IS OUTLAWED AND EUROPEANS START TO MIGRATE TO THE "TEMPERATE ZONES".
- **European settlements, Colonization strategy and Extractive institutions or "Neo-Europes"** defined by the type of product to be extracted, exploited or cultivated: DYNAMIC COST-BENEFIT analysis.

HYPOTHESIS – CELSO FURTADO (1976)

- 1) **DIFFUSED ECONOMIES**: The most 'fortunate' colonies were those with a **COMPARATIVE ADVANTAGE IN TEMPERATE AGRICULTURAL COMMODITIES** (MEAT, WOOL, DAIRIES)
 - In these colonies, agricultural production was based on the extensive use of land designed to compete with the domestic production of countries undergoing rapid industrialization and population growth (Argentina, Australia, Canada, New Zealand)
 - The production structure in these colonies matched that of northern Europe before industrialization, providing the incentive to import skilled settler labour.
 - The extensive agricultural production necessitated the creation of a widespread transportation network which indirectly led to the rapid unification of the domestic market.
 - These colonies acquired a well developed communication network at an early stage, conducive to the rapid development of civil society.

2) **POINT-SOURCED ECONOMIES I**: Less fortunate colonies had a **COMPARATIVE ADVANTAGE IN TROPICAL AGRICULTURAL COMMODITIES** (BANANAS, COTTON, COCOA)

- There was no pre-existing European human capital specific to the production of these goods.
- Production was intensive in unskilled slave labour on plantations, with a small number of settlers acting as managers.
- Traditional transportation networks continued to be used, and the conditions for the establishment of civil society never existed.
- Examples of this mode of colonization include parts of West and Central Africa, South East Asia, and much of Central America and the Caribbean.

- 3) **POINT-SOURCED ECONOMIES II**: The fate of **MINERAL-RICH COLONIES** was at least as miserable (GOLD, SILVER, COPPER)
- Production intensive in slave labour, which often had to be transferred forcibly to inhospitable mining regions.
 - This dislocation of the population broke up extended family networks, destroying the corresponding social capital.
 - Colonial political institutions developed to exploit not only the slave labour in the mines, but also the rural population providing food for the miners.
 - Given that the rural population was often producing at a near-subsistence level to begin with, a great deal of coercive force was necessary to extract the agricultural surplus.
 - Examples of this pattern are Bolivia, Chile, Mexico, Peru and Venezuela.

2. OBJECTIVES

1. Explore the link between certain types of natural resource dependence and poor recent economic performance in developing countries
2. Growth failure and resource dependence: two channels
 1. Dutch disease
 2. Rent seeking: the political economy of resource rents

3. THEORETICAL MODEL

- A Dynamic Model of Growth Collapse Combined with Rent Seeking
- Incorporation of increasing returns to scale in rent seeking outlays to a macroeconomic model of growth collapse.
- We postulate that certain political and social environments encourage greater rent seeking behaviour (as is common in the rest of the literature), but we propose an increasing returns to scale mechanism via which this greater rent seeking occurs.
- In our theoretical model, corruption or rent-seeking not only detracts from normal production, but can even diminish the availability of productive capital over time and a lower capital stock is what causes the eventual decline in growth.
- These process will in turn prevent the eventual growth enhancing redistribution of political power towards the middle classes, laying the foundations for democracy.
- In addition, the middle classes normally have a stronger preference for growth promoting public goods such as education, as well as publicly financed infrastructure.

4. EMPIRICAL ANALYSIS

- 56 countries, 1970-2000.
- Resource dependence conditional on endowments: two major export items UNCTAD [2002].
- Institutional quality: Fraser index of governance and the general quality of democracy (Polity 2 index).

4. EMPIRICAL ANALYSIS (CONT.)

- Equation for economic growth conditional on a measure of institutional quality. This measure is probably endogenous to income, so we need to use an instrument to generate consistent estimates.
- Two-stages least squares feasible generalized least squares method (FGLS) correcting for autocorrelation and heteroskedasticity.
- Instrumental variables generalized method of moments (GMM) estimator to take into account the possible autocorrelation between the dependent variable and our regressors.
- Alternative model specifications, we also condition on a set of exogenous variables that may influence factor productivity:
 - 1) ethno-linguistic fractionalization
 - 2) religious adherence
 - 3) identity of the colonial power
 - 4) climate and physical geography
 - 5) macro variables: terms of trade and real exchange rates

5. FINDINGS

$$Growth_{it} = \beta_1 + \beta_2 Pr Institutions_{it} + \varphi_i Z_{it} \eta_i + v_{it}$$

$$Institutions_{it} = \theta_1 + \theta_2 P + \theta_3 D + \phi_i Z_{it} + u_i + e_{it}$$

- A point-source type natural resource dependence does retard institutional development measured by both governance and democracy, which in turn hampers growth prospects.
- The resource curse may be more general and not simply confined to mineral exporters.

5. FINDINGS (CONT.)

	Fraser chain link index	Polity 2	Fraser chain link index	Polity 2
Panel A: Dependent variable – Institutions				
Point	-1.05*** (0.10)	-4.48*** (0.88)	-0.94*** (0.08)	-2.83*** (0.75)
Diffuse	-1.01*** (0.10)	-3.47*** (0.95)	-0.95*** (0.09)	-2.08** (0.88)
Initial income level	0.34*** (0.04)	2.75*** (0.42)	0.34*** (0.04)	2.59*** (0.42)
Initial human capital	0.01 (0.04)	1.23*** (0.45)	-0.00 (0.03)	1.29*** (0.46)
Investment	0.47*** (0.11)	0.06 (0.85)	0.49*** (0.11)	0.21 (0.83)
Panel B: Dependent variable – GDP per capita growth rate				
Predicted Institutions	1.33*** (0.40)	0.32*** (0.10)	1.52*** (0.40)	0.52*** (0.13)

6. CONCLUSION

1. Economic diversification and structural change as main engines of sustainable processes of economic growth and development.
2. Policy implications: Macro Stability and Social Policies as a necessary but not sufficient condition for economic development.
3. Prospective studies, national planning and industrial policies that help to develop sectors that generate value-added based on competitive advantage: biotechnology, pharma, nanotechnology, ITCs, logistics, design, alternative energies, etc.