

TWO

Institutional Comparative Statics

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1.0 Introduction

What is the impact of productive natural resources on national income? The conventional wisdom in U.S. and British economic history is that natural resources are good for prosperity, even crucial (Wright 1990; Wrigley 2004; Allen 2008). In fact, the greater natural resources available to Great Britain and Western Europe is arguably one of the key reasons for their divergence from China in the early modern period (Pomeranz 2000).

Although compelling because natural resources seem to raise income in a mechanical way, this view faces some striking empirical puzzles. The first set concerns the “Dutch Disease” and the impact of natural-gas discoveries on the competitiveness of manufacturing in the Netherlands. The second set suggests a more general negative correlation between economic growth and the importance of natural resources in the economy (Sachs and Warner 1995). Since then, such findings have expanded into a whole literature on the “resource curse,” replete with detailed case studies as well as econometric results. Indeed, Sachs and Warner (2001, pp. 828, 837) argued:

What the studies based on the post-war experience have argued is that the curse of natural resources is a demonstrable empirical fact, even after controlling for trends in commodity prices. . . . Almost without exception, the resource-abundant countries have stagnated in economic growth since the early 1970s, inspiring the term “curse of natural resources.” Empirical studies have shown that this curse is a reasonably solid fact.

This view is shared by many, including Auty (2001, p. 840): “Since the 1960s, the resource-poor countries have outperformed the resource-rich

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countries compared by a considerable margin." How can a resource boom reduce income? How can it be that resources were a boon for economic growth in Great Britain and the United States but, on average, are a curse in the postwar period?

This puzzling situation with respect to natural resources such as oil, coal, and diamonds is reproduced in many other areas of economics. We consider the issue of the impact of the availability of "frontier lands" on economic and political development in the Americas in the nineteenth century. Turner (1920) posited that the availability of frontier land was a key factor in "American exceptionalism." Postulating what has become known as the "Frontier (or Turner) thesis," Turner argued that the availability of the western frontier had led to a particular type of person and had crucially determined the path of U.S. society:

The existence of an area of free land, its continuous recession, and the advance of American settlement westward, explain American Development.

Behind institutions, behind constitutional forms and modifications, lie the vital forces that call these organs into life and shape them to meet changing conditions. (Turner 1920, pp. 1–2)

Turner emphasized that the frontier created strong individualism and social mobility, and his most forthright claim was that it was critical to the development of democracy. He noted:

The most important effect of the frontier has been to promote democracy. (Turner 1920, p. 30)

and:

These free lands promoted individualism, economic equality, freedom to rise, democracy... American democracy is fundamentally the outcome of the experiences of the American people in dealing with the West. (Turner 1920, pp. 259, 266)

Moreover, the things that went along with democracy and helped to promote it, such as social mobility, most likely also stimulated economic performance.

Since Turner's time, the "Frontier Thesis" has become part of conventional wisdom among historians and scholars of the United States. Although the specific mechanisms that Turner favored (e.g., individualism) have become less prominent, arguments about the frontier have appeared in many places, particularly the literature on the democratization of the United

States (Keyssar 2000; Engerman and Sokoloff 2005). Keyssar (2000, p. xxi) argued:

The expansion of suffrage in the United States was generated by a number of key forces and factors... These include the dynamics of frontier settlement (as Frederick Jackson Turner pointed out a century ago).

When Turner talked about "America," in fact he meant the United States. Elsewhere in the Americas, the impact of the frontier was rather different. In fact, the existence of a frontier clearly *did not* distinguish the United States from the other countries of the Americas or, indeed, other societies such as Russia, South Africa, and Australia in the nineteenth century. Every independent South American and Caribbean country, with the exception of Haiti, had a frontier in the nineteenth century. As in the United States, these frontiers usually were inhabited by indigenous peoples and they experienced the same pattern of expansion into this zone, which – as in the United States – coincided with the expropriation and often annihilation of indigenous communities.

In Latin America, however, frontier expansion is not associated with democracy or economic development. The most important book on this topic concludes that:

Latin American frontiers have not provided fertile ground for democracy. The concentration of wealth and the absence of capital and of highly motivated pioneers effectively blocked the growth of independent smallholders and a rural middle class. (Hennessy 1978, p. 129)

How can the frontier be good for democracy and economic growth in the United States and bad for the same two outcome variables in Latin America?

The search for an unconditional impact of natural resources or the availability of new land is at some level quite strange because the standard tools of comparative static analysis rarely make such a clean-cut prediction. One of the first things we learn in microeconomics is that it is not even possible to state whether people will buy less of a good when its price increases or that workers will work less if their wage falls. Even the most celebrated comparative-static results – such as those of international-trade theory, the Stolper–Samuelson Theorem (Stolper and Samuelson 1941), and the Rybczynski Theorem (Rybczynski 1955) – are conditional in the sense that both results depend on conditions about factor intensities.

In this chapter, we argue that the temptation to search for simple unconditional relations has marred much of the research in economics. In fact, we argue that the natural position is that the impact of resources or of frontier

land on the economy and polity is conditional. Conditional on what? In the tradition of the Arrow–Debreu model, the conditioning factors include preferences, factor endowments, production possibilities, and the structure of markets; such would be in the spirit of the Stolper–Samuelson Theorem.

Yet, this traditional approach encounters many empirical problems. Consider the following: After the discovery of diamonds in Kimberly in 1873 and gold in Johannesburg in 1886, the economy of South Africa boomed on the basis of its mineral sector. In the first half of the twentieth century, the terms of trade improved and the relative price of gold increased. The goldmines were labor-intensive and the government of South Africa created an entire set of labor-market institutions that were designed specifically to mobilize labor for the mines (van der Horst 1942; Feinstein 2005). The Stolper–Samuelson Theorem applied to a booming relative price of gold in an economic sector that was clearly labor intensive implies that the real wage rate should increase. That it did not is clearly indicated by the data in Wilson (1972), which showed that in fact the real wages of (black) goldminers fell over this period. Indeed, in 1970, they were 20 percent lower than they had been in 1911. How can booming terms of trade reduce real wages in labor-intensive sectors?¹

Modern empirical research stresses that to understand comparative patterns of economic development, it is crucial to consider the institutional structures of a society. Fundamental has been the research of North and his co-authors (North and Thomas 1973; North 1982; North and Weingast 1989; North, Wallis, and Weingast 2009) and Engerman and Sokoloff (1997), which placed institutional change at the heart of explaining the “Great Divergence” of the last 250 years. This historical work has been largely

1. Of course, it is well known that theorems such as those of Stolper and Samuelson and Rybczynski are not general. As long ago as 1958, Bhagwati proposed the notion of “immizing growth,” in which a country could become worse off when it received a positive endowment shock because of severe deterioration in the terms of trade. In addition, it is clear from the Debreu–Mantel–Sonnenschein Theorem (Debreu 1974; Mantel 1974; Sonnenschein 1972, 1973) that such simple comparative static results are not robust. Opp, Sonnenschein, and Tombaz (2007) showed that we can build a nonpathological model in which there is a “Reverse Rybczynski Theorem” (see also Kemp and Shimomura 2002).

Nevertheless, there is a tendency to regard such demonstrations as theoretically interesting but probably not empirically relevant (Hildenbrand 1994). In addition, it seems unlikely that the forces that generate the Reverse Rybczynski Theorem are what also cause the types of empirical phenomenon we describe above even though if this theorem holds then factor growth is immizing (Opp, Sonnenschein, and Tombaz 2007, Proposition 5). For one thing, many of the negative correlations between resource booms and economic growth take place in the context of increases in the prices of the resources and improving terms of trade, which means they cannot be generated by immizing growth-type effects.

substantiated by econometric work by Acemoglu, Johnson, and Robinson (2001, 2002, 2005a,b) and Acemoglu, Cantoni, Johnson, and Robinson (2009, 2011). Their econometric work suggests that the preponderance of differences in incomes between poor and rich countries is explained by their institutions with little role being played by natural endowments and resources. The main point of this chapter is that institutions not only determine the level of income or its rate of growth; they also determine the comparative statics of the equilibrium.

This is seen readily by returning to the two examples with which we started the chapter. Once we bring institutions into the picture, they influence the political and economic incentives that a resource boom can have. Although resource rents may have a direct positive impact on national income, they also may have all sorts of positive or negative indirect effects. For example, increments of resource income could lead political power to become more valuable, inducing politicians to engage in socially wasteful clientelism to stay in power (Robinson, Torvik, and Verdier 2006). Another negative channel is isolated in Mehlum, Moene, and Torvik (2006), who showed that a resource boom can intensify rent seeking. Alternatively, if resource rents flow into the private sector, they may boost the return to productive activity, drawing people out of rent seeking or bolstering the wealth and political power of productive individuals, which could improve political accountability. Which of these effects tends to dominate depends on institutions. Political institutions determine the extent to which politicians will be able to use socially undesirable strategies to stay in power following a resource boom. Economic institutions, such as the security of property rights, determine the extent to which agents will find it optimal to become rent seekers following a resource boom. If we think in a simple way of the strength or weakness of institutions (i.e., strong political institutions placing more constraints on politicians, making them more accountable to citizens; strong economic institutions giving greater property-rights security and creating better incentives for productive economic activity), then we could conjecture that in countries with strong institutions, the positive indirect effects would dominate, whereas in countries with weak institutions, the opposite might be true.

That this is so in the case of natural resources was first shown by Mehlum, Moene, and Torvik (2006). They measured the strength of institutions by constructing an index from five different data series produced by Political Risk Services: the rule of law, bureaucratic quality, government corruption, risk of expropriation, and a measure of the government’s likelihood to repudiate contracts. They then examined the impact of natural-resource

abundance on economic growth conditional on this index of institutions. They found that for countries with weak institutions – low values of the index – resources were a curse; however, for countries above a critical value of the index, resources were a boon.² Using a measure of mineral abundance, they found that for the top 38 percent of countries ranked according to institutional quality (including Chile, Botswana, and Malaysia), resource abundance stimulates growth, whereas for the bottom 62 percent of countries (including Cameroon, Venezuela, and Mexico), resource abundance retards growth.³

We can apply the same set of ideas to thinking about the impact of the frontier. Indeed, Hennessy (1978, p. 13) reasoned:

If the importance of the Turner thesis lies in its . . . ability to provide a legitimating and fructifying nationalist ideology, then the absence of a Latin American frontier myth is easy to explain. Without democracy, there was no compulsion to elaborate a supportive ideology based on frontier experiences.

García-Jimeno and Robinson (2011) showed that the impact of frontier land is conditional on the strength of institutions. As with resource booms, it is clear why this might be so: Frontier lands must be allocated by the political system. In the United States, legislation dating back to the Land Ordinance of 1785 through the 1862 Homestead Act created an egalitarian allocation of land. The situation in Latin America outside of Costa Rica and Colombia was very different. There, oligarchic or authoritarian political systems created inequalitarian frontiers, thus locking in their power. To capture this, García-Jimeno and Robinson (2011) constructed estimates of the proportion of land that was frontier for all countries of the Americas in 1850 and showed that the long-run impact on economic and political development is conditional on initial institutions, specifically constraints on the executive in 1850. With respect to economic development, they showed that for countries with the lowest level of constraints on the executive in 1850, there is a negative correlation between the extent of frontier and per-capita GDP today, whereas for countries with greater constraints in 1850, there is a positive correlation. They proposed a Conditional Frontier Thesis

² Recent work investigates other types of political institutions. Andersen and Aslaksen (2008) found that the resource curse is present in countries with presidentialism but not in countries with parliamentarism. A likely explanation for this result is that except for the U.S. presidential system, in most systems there are few checks and balances that constrain the executive (Robinson and Torvik 2008).

³ Instrumenting for institutional quality, Boschini, Pettersson, and Roine (2007) found similar results.

such that if institutions are strong, an open frontier is good for economic development; however, if they are weak, it is bad for economic development.

In this chapter, we develop the simple idea that the comparative statics of an equilibrium often are conditional on the institutional equilibrium of a society, a phenomenon we call *institutional comparative statics*. We develop a simple model to illustrate these ideas.

Although our model is not the one to address the South African paradox stated previously, the right explanation is much in the spirit of our results because it was the initial institutional equilibrium that determined the outcome. This equilibrium featured the political dominance of the white 20 percent of the population and economic institutions designed to extract rents from blacks to enrich whites. When the price of gold goes up, this creates a greater incentive for whites to exploit blacks, thus driving down the wage.

A significant literature in political economy and development of course emphasized the importance of the institutional environment for thinking about differences in income levels, development paths, and public-policy outcomes. There now is a great deal of theoretical work that suggests that the structure of political institutions – for instance the capacity of the state, the nature of the constitution, and the electoral system – influences public policy. The effects include the extent to which public goods are provided, the amount of rent extraction or corruption by politicians, and the ability of politicians (Persson and Tabellini 2000, 2003; Besley 2006; Besley and Persson 2011). For instance, in comparing a situation with and without checks and balances, we would expect politicians to extract more rents when checks and balances are absent (Persson, Roland, and Tabellini 1997). Alternatively, comparing a situation in which politicians have reelection incentives to one in which they do not, we would expect politicians to extract fewer rents when they face reelection (Barro 1973; Ferejohn 1986; Ferraz and Finan 2008). Empirically, research argued that differences in economic institutions, such as the security of property rights, are the main determinant of cross-country income differences (Acemoglu, Johnson, and Robinson 2001, 2002). In turn, this work sees economic institutions as the outcome of a political process and therefore connected to the nature of political institutions and the distribution of political power in society (Acemoglu, Johnson, and Robinson 2005b; Acemoglu and Robinson, 2012).

Our main contribution to this literature is to emphasize that institutional quality or “strength” influences the way that the political-economy equilibrium will respond to shocks and changes in the economic environment. This point, we believe, is important but not widely understood. For instance,

although development problems often are blamed on poor institutions, policy advice is independent of the institutional environment. Consider Africa: Nearly every economist regards the poverty of Africa as being closely related to institutional problems. Yet, they continue to make policy prescriptions that ignore this – for instance, discussing the benefits of allowing African countries to export more freely to Organisation for Economic Co-operation and Development (OECD) countries without considering how the initially poor institutions determine the consequences of export booms. We think history and much of cross-national evidence shows that the consequences of changes in economic opportunities or the environment are conditional on the institutions of a country. This implies that there is no necessity that opening markets to exports from Africa would stimulate economic growth in Africa.

The model and this way of thinking about the evidence allows us to make sense of different empirical and historical research. Although our simple model has no aspiration to generality, we believe that the approach we outline is powerful. We should not hope for unconditional comparative static results and think about how institutions condition the impact of perturbations of an equilibrium.

This chapter builds on many historical and empirical studies as well as a few papers in the literature on the resource curse, particularly Mehlum, Moene, and Torvik (2006) and Robinson, Torvik, and Verdier (2006). Our model builds on these papers as well as Torvik (2002). Our approach also is related to models of the allocation of talent by Murphy, Shleifer, and Vishny (1991); Acemoglu (1995); Baland and Francois (2000); and Dal Bó and Dal Bó (2011). Our main results also are related to Lane and Tornell (1999), who showed how a windfall can reduce growth via the incentives it creates for interests groups to intensify their lobbying. The mechanism herein is completely different than the one they studied. Our chapter shares a spirit similar to Conning (2004) and Acemoglu and Woltzky (2011). Both papers proposed models to shed light on Dornier's (1970) analysis of labor coercion and studied the conditions under which free labor or slavery can appear. In neither case do the comparative statics hinge on institutions as they do in this chapter.

In Section 2.0, we develop our model to study how new economic opportunities map into aggregate income and to show that this mapping is conditional on the quality of institutions in place. In Section 3.0 we review other relevant historical evidence on how similar improvements in economic opportunities generated different outcomes in different countries. Section 4.0 provides concluding remarks.

2.0 A Simple Model of Economic Opportunities and Economic Outcomes

We develop herein a simple and fairly reduced-form approach that can shed light on different historical episodes and empirical results. Still, a common characteristic is that we study how new economic opportunities affect aggregate income. These opportunities may be new possibilities for trade; new available land; new technology; and the discovery of valuable timber, oil, and minerals. In the model, we refer to these simply as natural resources.

The utilization of these new opportunities depends on the strength of institutions in place, and they do so because they affect the incentives of entrepreneurs. We assume throughout that entrepreneurs may engage in one of two activities, which we term *production* and *politics*. To keep things simple, we initially abstract from the possibility that politicians can undertake any socially productive action, such as providing public goods. By producers, we understand those entrepreneurs, that use their labor and talent in a standard way to convert factors into output. By political entrepreneurs, we understand those entrepreneurs that use the political system in various ways so as to redistribute income and property rights toward themselves.⁴ A common characteristic of such activities is that political entrepreneurs earn income partly by decreasing the income of entrepreneurs engaged in production.

When institutions allow politicians and those engaged in political activities to extract rents, then increased opportunities are likely to expand the part of the economy that – with the help of political power – transfers income and property rights to itself. For productive entrepreneurs and for society, this is costly. However, when institutions provide secure property rights to a broader segment of society, increased economic opportunities are likely to strengthen commercial interests outside the political elite and make politics less attractive as a profession. This is favorable to entrepreneurs who

⁴ The most obvious way is for those who have political power to use it to enrich themselves by taxation and expropriation, but the model also may be interpreted in several other ways. For instance, when entrepreneurs benefit by using their talent to lobby for targeted subsidies that are beneficial for themselves but costly for the rest of society – or, they lobby for regulations that yield monopoly rents, or when they block technological progress so as to keep old privileges, or when they extort productive enterprises, or when they grab other agents' property or output, or when they initiate civil conflict with the motivation of gaining access to natural resources, and so on. In general, the quality of institutions may be understood as how constrained entrepreneurs are in undertaking such rent-extracting activities.

undertake production not only because they are able to utilize new economic opportunities but also because the relative position of the rent-extracting political class becomes weaker. In the model, when institutions place strong constraints on politicians, entrepreneurs are incentivized to choose economically productive activities, whereas when political institutions place few constraints on politicians, then entrepreneurs will be incentivized to use the political system to transfer income and property rights to themselves. We then investigate how the effect of new economic opportunities are conditional on institutions.

Our interpretation of the most important institutions being those that constrain politicians stems from our reading of the literature on both the resource curse and frontier expansion. For example, García-Jimeno and Robinson (2011) specifically use constraints on the executive to measure institutional strength (directly analogous to our model), and the historical evidence suggests that it was precisely the ability of political elites to determine the allocation of frontier lands that determined its impact. Similarly, the index of institutional constraints used by Mehlum, Moene, and Torvik (2006) was dominated by public-sector outcome variables (e.g., corruption), which ultimately would be determined by the extent of constraints on politicians.

A traditional approach to investigate the effect of natural resources is to postulate a macroproduction function that describes how factor endowments map into aggregate income. In such an approach, the effect of factor endowments follows from the assumptions captured by the production function. If the mapping from resources to aggregate income is weak, exogenous parameters in the production function (e.g., technology) are to blame.

Although the marginal productivity of natural resources is key to understanding the link between resource endowments and aggregate income, it does not tell the full story because there is limited scope for investigating how incentives to utilize the resources may be conditional on institutions. The marginal productivity of natural resources may be thought of as the impact effect of an increase in factor endowments. Then, if there are no additional effects, the final effect coincides with the impact effect. In most instances, however, we argue that such an understanding of the mapping from factor endowments to aggregate income is rather limited and often incorrect. We illustrate this with our simple model, in which the aggregate effect of natural resources depends on the marginal productivity of resources interacted with the type of political institutions in place. We show that when institutions place strong constraints on the political elite, the aggregate-income effect

is stronger than the impact effect. Even with full employment and no price rigidities, we have a multiplier effect of resource endowments that resembles the effect in the simplest closed-economy Keynesian model – although for a very different reason.

When institutions do not place strong constraints on politicians, an increase in the natural-resource endowment also induces a multiplier effect – but the bad news is that in this case, the multiplier has a negative sign. As a result, when institutions allow political entrepreneurs to extract rents, the indirect negative effects of natural-resource endowments are stronger than the positive impact effect, and aggregate income falls. Thus, in our model, the comparative statics of resource endowments, in general, and the sign of the effect, in particular, are conditional on the strength of institutions.

2.1 Factor Endowments and Technology

We assume a continuous mass of entrepreneurs normalized to size 1 and denote by l the share of entrepreneurs in private production, where the remaining share $1 - l$ of entrepreneurs engage in politics. The endowment of natural resources in the economy is denoted by r . Their distribution between private and political entrepreneurs depends on the strength of institutions. In countries with strong constraints on politicians, the ability of politicians to use their position to transfer property rights to resources to themselves is more limited than in countries with weak constraints. Here, we model this in the simplest way. We let the institutional strength be given by $\theta \in [0, 1]$. The stronger the institutions, the more constraints they place on politicians, and the higher is θ . These constraints have the effect of reducing the ability of politicians to transfer property rights to themselves. Thus, if institutions make it impossible for the political elite to transfer property rights to themselves we have the strongest checks possible, and we denote this by $\theta = 1$. The converse case, in which politicians are not constrained at all, we denote by $\theta = 0$; for cases in between, $\theta \in (0, 1)$.

We denote by r^p the amount of natural resources available to each entrepreneur in production and by r^e the amount available to each politician (i.e., e denotes extraction). We assume:

$$\begin{aligned} r^p &= r^p(\theta, l), & r_\theta^p(\theta, l) &> 0, & r^p(0, l) &= 0 \\ r^e &= r^e(\theta, l), & r_\theta^e(\theta, l) &< 0, & r^e(1, l) &= 0 \end{aligned}$$

where $r_\theta^p(\theta, l)$ denotes the derivative of $r^p(\theta, l)$ with respect to θ , and so on. Thus, the more constraints on political power, the less of the natural

resources are appropriated by each political entrepreneur and the more they are available to each producer. To proceed, we let:

$$r^P(\theta, l) = \frac{\theta}{l} r \quad \text{and} \quad r^E(\theta, l) = \frac{1-\theta}{1-l} r$$

where r is the total amount of resources available.

In the production sector, the income or net production of a producer is given by:

$$y = f(l, r^P(\theta, l)) \quad (1)$$

where $f_l(l, r^P), f_r(l, r^P) > 0$. More entrepreneurs in production means fewer entrepreneurs engaged in political rent extraction, which is favorable to each entrepreneur in production. More natural resources available to entrepreneurs in production increases their production and income.

The income of an entrepreneur engaged in political rent extraction is given by:

$$x = g(l, r^E(\theta, l)) \quad (2)$$

where $g_l(l, r^E), g_r(l, r^E) > 0$. More entrepreneurs in the productive sector mean fewer political entrepreneurs with whom to compete and more productive entrepreneurs to transfer income from, which increases income for each politician. More natural resources available to each political entrepreneur increases the income of political rent extraction.⁵

Aggregate and per-capita income in the economy is given by:

$$Y = ly + (1-l)x \quad (3)$$

2.2 Equilibrium

An *equilibrium* in this economy is defined as a situation in which no entrepreneur has an incentive to switch activity. We assume the following assumption to be fulfilled.

Assumption 1: $f(0, r^P) > g(0, r^E)$ and $f(1, r^P) < g(1, r^E)$.

This assumption assumes that there is no specialization. The first of these inequalities implies that the income of a political entrepreneur is lower than

⁵ Through affecting the property rights to natural resources, institutional quality has a partial negative influence on income for productive entrepreneurs and a positive effect on income for entrepreneurs in political rent extraction. It is obvious that institutions may also have negative impact on production and positive impact on rent extraction through additional channels. Adding on such effects would strengthen our qualitative conclusions.

the income of a producer if there are no producers, because then there are many political entrepreneurs with whom to compete but no producers to transfer income from. This is immediate from our assumptions about the allocation of natural resources because with θ and r exogenous as l goes to zero, the per-capita amount of resources becomes unboundedly large as long as $\theta > 0$. Thus, what Assumption 1 adds is that when $\theta = 0$, there is no specialization.

The second inequality implies that the income of a producer is lower than the income of a political entrepreneur if there are no political entrepreneurs because then there are many producers from whom to transfer income and no political entrepreneurs with whom to compete. The second inequality will always be fulfilled for $\theta < 1$ as again with our particular specification of how resources are allocated $f(1, r^P) < g(1, r^E)$ is implied by the per-capita resource allocations. The second inequality in Assumption 1 states simply that the no-specialization case also holds for $\theta = 1$.

Thus, Assumption 1 implies that in any situation with specialization, some entrepreneurs have an incentive to switch activity; thus, specialization cannot constitute an equilibrium.⁶

Therefore, an implication from Assumption 1 is that any equilibrium has a strictly positive number of political entrepreneurs and producers. The condition for equilibrium is simply:

$$y = x \quad (4)$$

Also, we note that (4) in combination with (3) implies that aggregate income in any equilibrium is given simply by:

$$Y = y = x. \quad (5)$$

We define a locally stable equilibrium as:

$$y = x \quad \text{and} \quad f_l(l, r^P) - f_r(l, r^P) \frac{\theta}{l^2} r < g_l(l, r^E) + g_r(l, r^E) \frac{(1-\theta)}{(1-l)^2} r \quad (6)$$

To see why this is locally stable, we assume that we start with $y = x$ and then, for some reason, l increases marginally. Then, income for each entrepreneur in production increases by $f_l(l, r^P) - f_r(l, r^P) \frac{\theta}{l^2} r$. The first term here is simply the direct effect of output, whereas the second (negative) term results from the fact that when the number of producers increases, the per-capita endowment of resources in the production sector decreases. The income for each political entrepreneur changes by

⁶ For a model on how natural resources affect income when there also is the possibility of specialization, see Mehlum, Moene, and Torvik (2006).

$g_l(l, r^e) + g_r(l, r^e) \frac{(1-\theta)}{(1-l)^2} r$, where the second (positive) term captures the fact that when the number of productive-sector agents increases, the per-capita resource endowment of those left in politics increases making politics even more attractive. When (6) holds, the income increases more for political entrepreneurs than for producers, which means that the number of producers decreases and the number of political entrepreneurs increases until we are back at the initial situation, where $y = x$.

Conversely, we define an unstable equilibrium as:

$$y = x \text{ and } f_l(l, r^p) - f_r(l, r^p) \frac{\theta}{1-l} r > g_l(l, r^e) + g_r(l, r^e) \frac{(1-\theta)}{(1-l)^2} r \quad (7)$$

When (7) holds, a marginal increase in l from a situation with $y = x$ implies that the income of producers has become higher than the income of political entrepreneurs. Thus, the initial movement out of equilibrium has a positive feedback on itself, further increasing the number of producers and further lowering the number of political entrepreneurs, and so on.

Assumption 1 implies that there always exists at least one stable equilibrium. There may not exist unstable equilibria. If there exists unstable equilibria, the number of stable equilibria always exceeds the number of unstable equilibria by 1.

Moreover, to study the most interesting case that is in line with our motivation, we assume the following:

Assumption 2: $f_l(l, r^p) - f_r(l, r^p) \frac{\theta}{1-l} r > 0$ (in equilibrium).

This assumption states that other things being equal, fewer political entrepreneurs in rent extraction is good for entrepreneurs in production. Fewer entrepreneurs in rent extraction has two effects on the income of a productive entrepreneur. The direct effect of fewer entrepreneurs engaged in political rent extraction is favorable for producers and is captured by the term $f_l(l, r^p)$. An indirect effect also is operating, however, because fewer entrepreneurs in rent extraction means more productive entrepreneurs in production; thus, for a given θ , fewer natural resources are available to each. Assumption 2 simply states that (in equilibrium) the direct effect dominates.⁷

⁷ We note, however, that all of the analytics of the model to follow are valid also in the case in which Assumption 2 does not hold. We discuss herein the results when Assumption 2 does not hold.

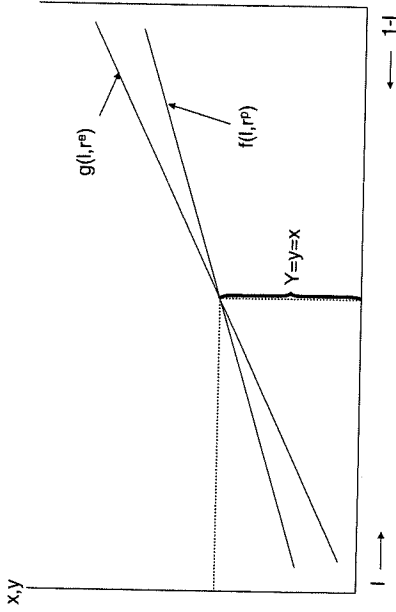


Figure 1.

Figure 1 illustrates the case of a unique stable equilibrium. The number of entrepreneurs engaged in production is measured from left to right on the horizontal axis; the number of entrepreneurs in politics is measured from right to left. The income of an entrepreneur in politics is measured from the vertical axis. Aggregate income is given simply by the vertical distance from the horizontal axis to the intersection of the $f(l, r^p)$ and $g(l, r^e)$ curves (due to the number of entrepreneurs being normalized to unity).

Figure 2 illustrates a case with two locally stable and one locally unstable equilibria. All of our comparative statics results are valid around any stable equilibrium.

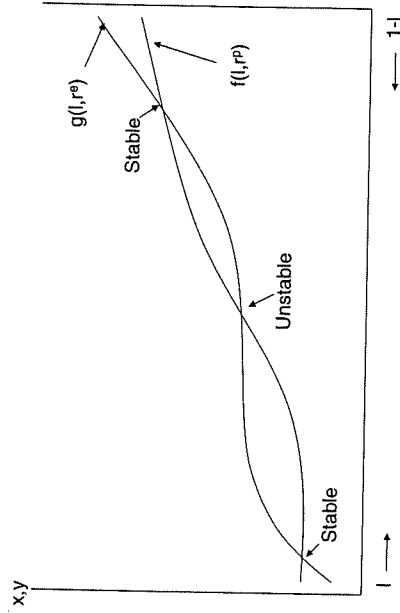


Figure 2.

2.3 Institutions and Aggregate Income

It is already clear that improved institutions have the partial effect of increasing income for an entrepreneur in production and decreasing income for a political entrepreneur. To find the general equilibrium effect of improved institutions, we substitute from (1) and (2) in (4); then, by differentiating, we find the effect on the allocation of entrepreneurs to be:

$$dl = \frac{f_r(l, r^p) \frac{r}{l} + g_r(l, r^e) \frac{r}{1-l}}{g_l(l, r^e) + g_r(l, r^e) \frac{(1-\theta)}{(1-l)^2} r - f_l(l, r^p) + f_r(l, r^p) \frac{\theta}{r}} d\theta \quad (8)$$

We recall that due to (6), the denominator is positive, and we also recall that $r_\theta^e < 0$. Thus, institutions with stronger constraints on politicians increase the number of productive entrepreneurs and decrease the number of political entrepreneurs.

To economize on notation, in the following we use f_r instead of $f_r(l, r^p)$ and so on; moreover, we let $c(\theta)$ be defined by:

$$c(\theta) \equiv \frac{f_l - f_r \frac{\theta}{r}}{g_l + g_r \frac{(1-\theta)}{(1-l)^2} r}$$

We note that in light of Assumptions 1 and 2, $c(\theta) \in (0, 1)$.

By (1) and (8), the effect on income for each productive entrepreneur then is given by:

$$\begin{aligned} dy &= f_r \frac{r}{l} d\theta + \left(f_l - f_r \frac{\theta}{r} \right) \left(\frac{f_r \frac{r}{l} + g_r \frac{r}{1-l}}{g_l + g_r \frac{(1-\theta)}{(1-l)^2} r - f_l + f_r \frac{\theta}{r}} \right) d\theta \\ &= \frac{1}{1-c(\theta)} \left[f_r \frac{r}{l} + c(\theta) g_r \frac{r}{1-l} \right] d\theta \end{aligned}$$

Then, by (5), the effect on aggregate income from institutions that place stronger checks on politicians is given by:

$$\frac{dY}{d\theta} = \frac{dx}{d\theta} = \frac{1}{1-c(\theta)} \left(f_r \frac{r}{l} + c(\theta) g_r \frac{r}{1-l} \right) > 0$$

Multiplier effect

because all terms on the right-hand side are positive. Institutions that place stronger constraints on political entrepreneurs increase aggregate income, which is magnified by a multiplier effect. More constraints on politicians mean that entrepreneurs are incentivized to shift from political rent extraction to production. In turn, the lower number of entrepreneurs in political

rent extraction and the higher number of entrepreneurs in production further increase the payoff in production, making even more entrepreneurs shift from rent extraction to production. This explains why the increase in income is higher than the partial effect of institutions on the income of productive entrepreneurs.⁸

2.4 Institutional Comparative Statics

We have discussed that institutions that place constraints on politicians have a strong effect on aggregate income; thus, countries with such institutions are likely to have a much higher income level than countries where institutions do not place constraints on politicians. We now investigate how countries with different institutions respond to a new discovery of natural resources. As shown herein, the effect of a discovery of new natural resources is conditional on the institutions in place. With strong constraints on politicians, new economic opportunities map into higher aggregate income; with weak constraints on politicians, new economic opportunities map into lower aggregate income. Thus, initial differences due to institutional quality are magnified with new economic possibilities; the same economic possibilities across countries lead to further divergence in income levels. Moreover, compared to traditional approaches in which the effect of natural resources is given by the marginal productivity of resources, the present simple setting differs in that with strong institutions, we obtain a more optimistic picture whereas with weak institutions, we obtain a more pessimistic picture.

To illustrate this in a simple and intuitive way, we start with the cases of $\theta = 1$ and $\theta = 0$ before we turn to a more general case, where $\theta \in (0, 1)$.

2.4.1 Institutions with Strong Political Constraints

When an increased number of natural resources r is channeled into the productive sector of the economy, $\theta = 1$, each productive entrepreneur receives higher-factor endowments:

$$dr^p|_{\theta=1} = \frac{1}{l} dr$$

⁸ We also note that if Assumption 2 does not hold, then the effect of institutions is still positive. However, because in this case $c(\theta)$ is less than zero, we do not have a multiplier effect, and the income-inducing effects of strong institutions are thus weaker.

Substituting from (1) and (2) in (4), by differentiating, we find the effect on the allocation of entrepreneurs to be:

$$dl|_{\theta=1} = \frac{f_r}{g_l - f_l + f_r \frac{1}{l}} dr$$

By (1), the effect on income for each productive entrepreneur then is given by:

$$dy|_{\theta=1} = f_r \frac{1}{l} dr + \left(f_l - f_r \frac{\theta}{l} \right) dl|_{\theta=1} = \frac{1}{1 - c(1)} \frac{f_r}{l} dr$$

and by (5), we find the effect on aggregate income from more natural resources to be:

$$\frac{dY|_{\theta=1}}{dr} = \frac{dx|_{\theta=1}}{dr} = \frac{1}{1 - c(1)} \underbrace{\frac{f_r}{l}}_{\text{Multiplier effect}} > \frac{f_r}{l}$$

Thus, we see that with strong constraints on politicians, the effect of an increased amount of natural resources is stronger than the isolated effect through the marginal productivity. The reason for this is that when institutions are strong, an increase in resource endowments initially increases profitability among productive entrepreneurs in the economy but not for entrepreneurs engaged in political rent extraction. As a result, natural resources crowd more entrepreneurs into the productive sector and out of political rent extraction. In turn, the weakening of political entrepreneurs means that income in the productive sector increases not only as a result of more natural resources but also as a result of less political rent extraction. This attracts even more entrepreneurs into the productive sector, and so on. Thus, although there is full employment, institutions with strong constraints on politicians ensure that resource endowments induce a multiplier effect.⁹ We see from the definition of $c(\theta)$ that the multiplier is higher the higher is the income effect of productive entrepreneurs in production f_l relative to the effect on the income of political entrepreneurs g_l . The intuition for this is that in such a case, as a large reallocation of entrepreneurs from the political to the productive part of the economy takes place, in turn making the increase in income strong.

⁹ The reason that this process is not unstable is that the income of production increases less than the income of rent seeking when l increases. Thus, at some point at a higher level of income than the one represented by the impact effect, the arbitrage condition $y = x$ again is fulfilled.

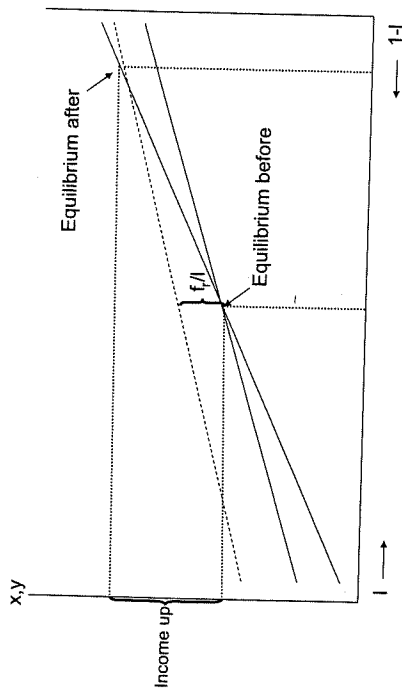


Figure 3.

This result also can be given a graphical representation. In Figure 3, the income curves for producers and political entrepreneurs are depicted. With $\theta = 1$, an increased amount of natural resources shifts upward the income curve for producers with the distance f_r/l , which represents the impact effect. The new equilibrium is at a higher level than the increase represented by the impact effect, which is a result of the allocation of the entrepreneurs-induced multiplier.¹⁰

We have seen that conditional on institutions placing strong constraints on politicians, the income effect of resources in the present model is stronger than what an analysis based solely on the marginal productivity of resources would suggest. The general equilibrium effect is not captured simply by adding up the microeconomic income effects of more natural resources.

2.4.2 Institutions without Political Constraints

When $\theta = 0$, a new discovery of natural resources benefits politicians because each political entrepreneur has access to more natural resources than before:

$$dr^e|_{\theta=0} = \frac{1}{1-l} dr$$

¹⁰ Again, we note that if Assumption 2 does not hold, then the effect on income is still positive; however, because in this case $c(\theta)$ is less than zero, we do not have a multiplier effect, and the effect on income is less than f_r/l . This also can be seen easily graphically because, in this case, the curve for entrepreneurs in production is downward sloping.

Again, substituting from (1) and (2) in (4), by differentiating, we find the effect on the allocation of entrepreneurs to be:

$$dI|_{\theta=0} = -\frac{g_r}{g_l + g_r \frac{r}{(1-l)^2} - f_l} \frac{1}{1-l} dr$$

By (2), the effect on income for each political entrepreneur then is given by:

$$\begin{aligned} dx|_{\theta=0} &= g_r dr^e|_{\theta=0} + \left(g_l + g_r \frac{r}{(1-l)^2} \right) dI|_{\theta=0} \\ &= \left(1 - \frac{1}{1-c(0)} \right) \frac{g_r}{1-l} dr \end{aligned}$$

Then, by (5), we find the effect on aggregate income from more natural resources to be:

$$\frac{dY|_{\theta=0}}{dr} = \frac{dx|_{\theta=0}}{dr} = \frac{dx|_{\theta=0}}{dr} = \left(1 - \underbrace{\frac{1}{1-c(0)}}_{\text{Multiplier effect}} \right) \frac{g_r}{1-l} < 0$$

Thus, perhaps maybe surprisingly, when institutions do not place constraints on politicians, more natural resources imply not higher but rather lower aggregate income. The intuition for this result is as follows: When there are more natural resources, the impact effect is that the income of political entrepreneurs increases. The impact effect pulls in the direction of increased aggregate income. However, there is an additional multiplier effect that has the opposite sign: As a result of political rent extraction becoming relatively more profitable, entrepreneurs shift from production to politics. As a result, after the initial increase in income due to the impact effect, (average) income per political entrepreneur starts falling. Consider the case in which the income in political rent extraction has fallen back to its initial value. Would this be sufficient to stop the outflow of entrepreneurs from production? The answer to this question is no because at this point, we have fewer productive entrepreneurs and more political entrepreneurs and, therefore, income for productive entrepreneurs is lower than it was initially. Thus, at this point, the relative income in political entrepreneurship is still higher than in productive entrepreneurship, and even more entrepreneurs flow out of production and into politics. It follows that aggregate income must have fallen: Each productive entrepreneur has the same number of natural resources as before, but the political entrepreneurs are stronger

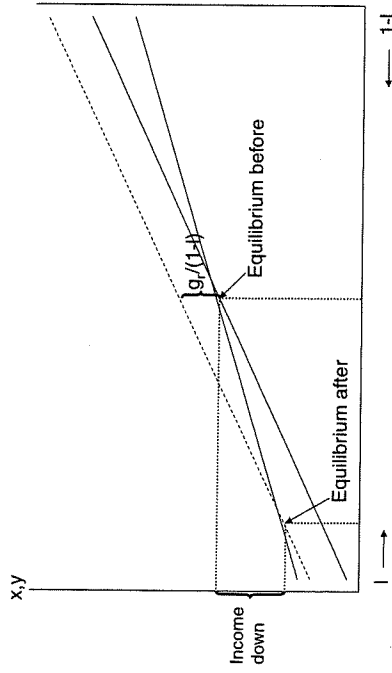


Figure 4.

than before; thus, income for each productive entrepreneur must be lower than it was initially. Because the income of each political entrepreneur in the new equilibrium is the same as the income of a productive entrepreneur, income for each political entrepreneur also must have fallen. Thus, aggregate income is lower.

Again, we have a multiplier effect, but when there are no constraints on political behavior, the multiplier effect is negative and more than outweighs the positive-impact effect of the increase in natural-resource endowments.

This result also can be given in a graphical representation. In Figure 4, with $\theta = 1$, an increased amount of natural resources shifts upward the income curve for political entrepreneurs with the distance g_r/l , which represents the impact effect. However, as shown in the figure, aggregate income in the new equilibrium is not only lower than what is the case after the impact effect, it also is lower than in the initial equilibrium. As shown, the explanation for this is the negative multiplier effect that is created by the change in the allocation of entrepreneurship.¹¹

Thus, the country with the weakest institutions and the lowest income initially will find income further reduced with the discovery of new resources, whereas the country with the strongest institutions and highest income will experience increased income. For both reasons, the initial income difference

¹¹ We note that if Assumption 2 does not hold, then total income cannot go down with more natural resources because then c is negative. Again, this easily can be seen graphically because, in this case, the curve for entrepreneurs in production is downward sloping. For this reason, more resources cannot push down total income.

is magnified with the discovery of new resources. Conditional on institutions, similar new economic opportunities in different countries may lead the countries to diverge.

2.4.3 Intermediate Institutions

We assume now that we obtain an increase in natural resources, which is distributed according to:

$$dr^p = \frac{\theta}{l} dr, \quad dr^e = \frac{1-\theta}{1-l} dr$$

Thus, the stronger constraints on political entrepreneurs, the more of the increase in natural resources is allocated to entrepreneurs in production and the less to political entrepreneurs.

The allocation of entrepreneurs then is changed according to:

$$dl = \frac{f_r \frac{\theta}{l} - g_r \frac{1-\theta}{1-l}}{g_l + g_r \frac{(1-\theta)}{(1-l)^2} r - f_l + f_r \frac{\theta}{l} r} dr \quad (9)$$

and the effect on aggregate income is given by:

$$\frac{dY}{dr} = \frac{dx}{dr} = \frac{\theta}{f_r l} + \left(f_l - f_r \frac{\theta r}{l^2} \right) \frac{f_r \frac{\theta}{l} - g_r \frac{1-\theta}{1-l}}{g_l + g_r \frac{(1-\theta)}{(1-l)^2} r - f_l + f_r \frac{\theta}{l} r} \quad (10)$$

Defining the resource curse as a situation in which $dY/dr < 0$, we then can find a critical level of the quality of institutions, which we denote by θ^* , where if $\theta < \theta^*$, more resources are a curse and if $\theta > \theta^*$, more resources are a blessing. Substituting $dY/dr = 0$ in (10), we implicitly can define a critical level of θ , denoted θ^* , such that:

$$f_r \frac{\theta}{l} + \left(f_l - f_r \frac{\theta r}{l^2} \right) \frac{f_r \frac{\theta}{l} - g_r \frac{1-\theta}{1-l}}{g_l + g_r \frac{(1-\theta)}{(1-l)^2} r - f_l + f_r \frac{\theta}{l} r} = 0 \quad (11)$$

After some calculation and substituting for the definition of c , we find:

$$\theta^* = \frac{1}{1 + \frac{1}{c(\theta^*)} \frac{f_l(1-l)}{g_r l}}$$

We see that (11) implicitly defines a $\theta^* \in (0, 1)$.¹² Thus, if $\theta < \theta^*$, there is a resource curse and if $\theta > \theta^*$, there is not.

¹² In (11), θ^* is implicitly defined because the right-hand side of the equation also is dependent on θ . However, a $\theta^* \in (0, 1)$ that solves (11) always will exist. To see this, we note that if $\theta = 0$, then the left-hand side of (11) is smaller than the right-hand side of (11); if

2.5 Productive Politicians

In this subsection, we extend the basic framework to allow those engaged in politics also to take socially efficient actions. In such a case, more politicians also have positive effects on the income of productive entrepreneurs. Thus, we now let income per entrepreneur in the production sector be given by:

$$y = f(l, r^p(\theta, l)) + \delta(1-l) \quad (12)$$

where $\delta > 0$ represents the income gain for a productive entrepreneur from an additional politician. To see how this affects the model, we assume – to save notation – that we are in a case where $\theta = 0$ so that all natural resources accrue to the politicians.

Then, substituting from (12) and (2) in (4), by differentiating, we find the effect on the allocation of entrepreneurs to be:

$$dl|_{\theta=0} = - \frac{g_r}{g_l + g_r \frac{r}{(1-l)^2} - f_l + \delta} \frac{1}{1-l} dr$$

By (2), the effect on income for each political entrepreneur then is given by:

$$\begin{aligned} dx|_{\theta=0} &= g_r dr^e|_{\theta=0} + \left(g_l + g_r \frac{r}{(1-l)^2} \right) dl|_{\theta=0} \\ &= \left(1 - \frac{1}{1-c(0) + \frac{\delta}{g_l + g_r \frac{r}{(1-l)^2}}} \right) \frac{g_r}{1-l} dr \end{aligned}$$

Then, by (5), we also find the effect on aggregate income from more natural resources to be:

$$\frac{dY|_{\theta=0}}{dr} = \frac{dy|_{\theta=0}}{dr} = \frac{dx|_{\theta=0}}{dr} = \left(1 - \frac{1}{1-c(0) + \frac{\delta}{g_l + g_r \frac{r}{(1-l)^2}}} \right) \frac{g_r}{1-l}$$

Thus, when politicians also take socially efficient actions, income will increase with more resource abundance when:

$$\frac{\delta}{g_l + g_r \frac{r}{(1-l)^2}} > c(0)$$

$\theta = 1$, the left-hand side of (11) is larger than the right-hand side. Thus, because both the left- and right-hand sides of (11) are continuous in θ , by the Intermediate Value Theorem, there must exist a $\theta^* \in (0, 1)$ that solves (11). In the continuation, we assume that the θ^* that solves (11) is unique.

which can be seen to be equivalent to:

$$\delta > f_i$$

Thus, when the socially efficient actions of politicians are sufficient to outweigh the socially destructive actions through transferring income to the political elite, more resources increase income. In the opposite case, we also have a resource curse when politicians provide socially beneficial services.

2.6 Entry Barriers

In our baseline model, there is free entry into any profession. In this subsection, we investigate the results in our model when there are entry barriers. We investigate this in a simple way by assuming that entrepreneurs who switch professions must incur a cost, and the stronger the entry barriers, the higher is this cost.

We consider first the case with strong political constraints, $\theta = 1$. It is straightforward to see that when it is costly to switch from politics to production, the upward shift in the curve for producers in Figure 3 is smaller, resulting in a smaller increase in income from more natural resources. Thus, when institutions are strong, entry barriers are costly from the point of view of society.

We consider next the case of institutions without political constraints, $\theta = 0$. In this case, the upward shift in the curve for politicians in Figure 4 is smaller, resulting in a weaker resource curse than what otherwise would have been the case. Thus, when institutional constraints are weak, entry barriers (into politics) are conducive to prosperity.

Finally, we consider the case in which entry barriers are so strong that entrepreneurs never switch activity. In such a case, we can never have a resource curse because the income response to more resources is given by:

$$\frac{dY}{dr} = f_r \theta + g_r (1 - \theta) > 0$$

(i.e., the income effect of natural resources is simply the aggregate of the marginal productivities). Thus, in our model, the view that the mapping from factor endowments to aggregate income and development is covered by adding up the income responses found in microeconomic estimates holds only when entry barriers are excessive.

2.7 Endogenous Institutions

Admittedly, we interpret institutional strength in a simple manner, in which we assume that in countries with strong institutions, increased resource endowments are channeled into the productive sector, whereas in countries with weak institutions, they are not. Even with this simple assumption, however, we obtain stark results. We believe that considering mechanisms related to institutions as being endogenous to resources, would further strengthen our results. Thus, we consider the case claimed by some researchers that institutional strength is not exogenous but rather endogenous to resource endowments.¹³ If this is the case, it is reasonable to assume that it is easier to tear down weak institutions than strong institutions. Then, the difference in economic outcomes may be clearly stronger than in the simple model herein. When institutions are weak in the first place, then more natural resources not only push aggregate income down through the effect studied herein, but also the increased resources weaken institutions further, magnifying the negative effects. Then, the difference in aggregate income conditional on institutions is even stronger than our simple model predicts.

Moreover, some researchers (e.g., Acemoglu, Johnson, and Robinson 2005a) argued that when initial institutions are strong, then new economic opportunities are likely to politically strengthen the merchant groups relative to the political elite, in turn making the constraints on the political elite and – by implication – growth even stronger. In our model, such an effect could easily be incorporated by having $\theta = \theta(l)$ with $\theta'(l) > 0$. This would induce an institutional multiplier, in which when initial institutions were strong, new economic opportunities would make them stronger, whereas when initial institutions were weak, new economic opportunities would make them weaker.

2.8 Implications for Empirical Strategy

Although simple, the previous analysis indicates that the mapping from resource endowments or, more generally, economic opportunities of many forms to income should not be studied independently of institutions. Moreover, the *interaction* of institutional quality and resource endowments and opportunities is crucial. Failing to condition the effect of resource abundance on the quality on institutions means that we estimate the average effect of oil in Norway and Nigeria, which may be neither interesting nor

¹³ There is a large literature on this going back to the notion of the “rentier state” first proposed by Mahdavy (1970).

relevant. Although obvious, this point often seems to be overlooked in empirical analysis. One example is the much-celebrated Sachs and Warner (1995) paper, which in a cross section of countries looked at the *average* effect of resource abundance. According to these authors, because there is no strong effect from resource abundance on bureaucratic efficiency (their measure of institutional quality), they concluded that the negative effect of resource abundance on growth “does not appear to work through the bureaucracy effect” (p. 19, bold in original). However, as clarified by this model and as discussed by Mehlum, Moene, and Torvik (2006), failing to find that institutions are endogenous to resources is different than claiming that the resource curse does not operate through institutional quality. Indeed, as we discuss, there is reason to believe that a number of cases in which divergence in the mapping from economic opportunities to aggregate income is observed can be explained by countries having different institutions. This is true even if institutions are not endogenous to factor endowments, as illustrated in the simple model herein.

3.0 Historical Episodes and Empirical Results

In addition to the impact of natural resources and frontier lands, there are other historical examples and empirical results that indicate that the mapping from factor endowments or economic opportunities to aggregate income and development is not simply covered by totaling the income responses found in microeconomic estimates. The general equilibrium effects are likely to be conditional on the nature of institutions.

3.1 The Transition from Feudalism to Capitalism

What caused the transition to capitalism away from the feudal world? This question has attracted the attention of scholars for many generations and much of the historical debate anticipates the notion of conditional comparative statics (see Hatcher and Bailey 2001 for an overview of the debate). For example, Pirenne (1937) argued that the decline of feudal institutions such as serfdom was due to the spread of market exchange and the money economy. Yet, Postan (1937, 1944) quickly pointed out that the most dramatic fall in feudalism occurred after the Black Death, when trade and markets contracted. He also noted that expanding trade in the late medieval period did not necessarily lead to declining serfdom. For instance, the expansion of the Baltic wheat trade came along with intensified serfdom in the supplying areas of the Eastern Baltic. Although Pirenne (1937)

pointed to examples in which expanding trade and marketization led to better institutions and economic growth, Postan pointed to other examples with the opposite conclusion.

Postan then proposed an alternative explanation for the emergence of capitalism: the demographic collapse of the Black Death. He argued that it was the collapse of the European population in the 1340s, by possibly 40 to 50 percent, that led to the end of serfdom by dramatically increasing the bargaining power of labor (an argument espoused by North and Thomas 1973). Yet, as Brenner (1976) observed, although demographic collapse may have led to better institutions in Western Europe, in Eastern Europe, it went along with worse institutions and the so-called Second Serfdom. Although demographic trends were similar all over Europe¹⁴ and:

... it is true that ... in most of Western Europe serfdom was dead by the early sixteenth century. On the other hand, in Eastern Europe, in particular Pomerania, Brandenburg, East Prussia and Poland, decline in population from the late fourteenth century was accompanied by an ultimately successful movement towards imposing extra-economic controls, that is serfdom, over what had been, until then, one of Europe's freest peasantries. By 1500 the same Europe-wide trends had gone a long way towards establishing one of the great divides in European history, the emergence of an almost totally free peasant population in Western Europe, the debasement of the peasantry to unfreedom in Eastern Europe. (Brenner 1976, p. 41)

What can explain these divergent outcomes? Brenner noted (p. 51): “It was the logic of the peasant to try to use his apparently improved bargaining position to get his freedom. It was the logic of the landlord to protect his position by reducing the peasants’ freedom.” The outcome “obviously came down to a question of power” (p. 51); whether the peasants or the lords had more political power determined whether serfdom declined or grew stronger.

Although we are far from an understanding of the determinants of the relative structure of political power in different parts of Europe, Brenner (1976, p. 52) suggested that an important element was the:

patterns of the development of the contending agrarian classes and their relative strength in the different European societies: their relative levels of internal solidarity, their self-consciousness and organization, and their general political resources – especially their relationships to the non-agricultural classes (in particular, potential urban class allies) and to the state.

¹⁴ This is the current conventional wisdom among historical demographers; see Benedictow (2004).

To substantiate this view, Brenner studied how villages tended to be organized differently in Eastern Europe: There was “more of a tendency to individualistic farmings, less developed organization of collaborative agricultural practices at the level of the village or between villages; and little of the tradition of the ‘struggle for commons rights’ against the lords which was so characteristic of western development” (1976, p. 57). This differential organization was due to the process of initial occupation of these Eastern lands. In other words, the impact of the Black Death was conditional on the initial institutional equilibrium.

3.2 Economic Growth in Early Modern Europe

Modern economic growth began with the British industrial revolution that started circa 1750. However, Great Britain had begun to grow economically before this. Indeed, both it and the Netherlands began to experience sustained if slow economic growth from at least the mid-seventeenth century onward. This was closely linked to the new trade and colonial opportunities represented by the Americas and the expansion of demand for new products such as sugarcane and tobacco. These new economic opportunities and the Atlantic economy that developed from them has long been viewed as central to the economic success of preindustrial Europe, which has been seen as essential for the industrial revolution (see Allen 2008 for the latter argument). Many arguments have been made about the mechanism via which trade may have mattered (see Morgan 2001 for a survey). It could have been through the profits of the slave trade (Williams 1944), or that slave plantations were good markets for exports of manufactured goods, or that the natural-resource endowments of the Americas relaxed constraints in Europe (Pomeranz 2000).

Yet, the Americas represented a new economic opportunity and potential resource boom for all European countries. Indeed, the British and the Dutch were latecomers in the race; the Spanish and Portuguese had already established large American empires for more than a century before either country began to expand economically. So, the Americas potentially benefited all European powers, but growth happened only in some. In fact, Spain actually declined economically during the Early Modern Period (Ávarez-Nogal and Prados De La Escosura 2007).

An interpretation of these facts is proposed in Acemoglu, Johnson, and Robinson (2005a), who showed that although economic growth in early modern Europe, on average, is positively correlated with involvement in Atlantic trade and colonial activities, the effects are heterogeneous. In

particular, when we examine the conditional relationship between initial institutions, measured by constraints in the executive in 1500, we find that the positive effect of Atlantic trade is in countries that initially had strong institutions (i.e., relatively high levels of constraints on the executive¹⁵), such as Great Britain and the Netherlands. For those countries with weak initial institutions (i.e., low constraints on the executive), such as Spain and France, there is no such effect. This is another example of institutional comparative statics.

3.3 The First Wave of Globalization

The British industrial revolution and those that followed created a wave of globalization in the late nineteenth century (O'Rourke and Williamson 1999). For many commodity-exporting countries, such as those in the Americas, this created a huge improvement in their terms of trade. However, the effects of this boom were very different in different contexts. In the United States, the traditional historiography views these movements in relative prices and trade patterns as promoting the development of the country—for instance, the expansion of Chicago as the hub for Midwestern farming exports. Yet, the Latin American story is quite different. Although in most countries, globalization indeed led to economic growth, its impact on inequality, real wages, average living standards, and institutions was dramatically different. In fact, in many places, a dynamic akin to the Second Serfdom of Eastern Europe emerged (Nugent and Robinson 2010).

A salient example is what happened in Guatemala. As the world price of coffee rose and international trade expanded, there were huge profits to be made. In 1871, the long-lasting regime of the dictator Rafael Carrera finally was overthrown by a group of people calling themselves “Liberals” after the worldwide movement of that name. Led initially by Miguel García Grenados and, after 1873, by Justo Rufino Barrios, the Guatemalan Liberals implemented a huge reorganization of the economy to exploit coffee. Coffee production needed two things: land and labor. To create land for coffee farms, the Liberals pushed through land privatization, a “land grab” in which they would be able to capture land previously held communally or by the government. Between 1871 and 1883, nearly 1 million acres of land—mostly indigenous communal land and frontier lands—passed into the hands of the elite, and it was only then that coffee developed rapidly. Typically, the privatized lands were auctioned off to members of the oligarchy or those

¹⁵ As constructed by the authors using the definition of the Polity dataset. www.systematicpeace.org/polity/polity4.htm.

connected with them. The coercive power of the state then was used to help large landowners gain access to labor. To do this, they adapted and intensified various systems of forced labor. In November 1876, President Barrios wrote to all of the governors of Guatemala noting that:

Because the country has extensive areas of land that it needs to exploit by cultivation using the multitude of workers who today remain outside the movement of development of the nation's productive elements, you are to give all help to export agriculture:

1. From the Indian towns of your jurisdiction provide to the owners of fincas [farms] of that department who ask for labor the number of workers they need, be it fifty or one hundred (McCreery 1994, pp. 187–8).

The *repartimiento*, the forced labor draft, had not been abolished after independence and now it was increased in scope and duration. It was institutionalized by Decree 177 in 1877, which specified that employers could request and receive from the government as many as 60 workers for 15 days of work if the property was in the same department, and for 30 days if it was outside of it. The request could be renewed if the employer so desired. The workers could be recruited forcibly unless they could demonstrate from their personal workbook that such service had recently been performed satisfactorily. All rural workers also were forced to carry a workbook, called a “libreta,” that included details of whom they were working for and a record of any debts. Many rural workers were indebted to their employers, and an indebted worker could not leave his current employer without permission. Decree 177 further stipulated that the only way a worker could avoid being drafted into the *repartimiento* was to show that he was currently in debt to an employer. Workers were trapped. In addition to these laws, numerous vagrancy laws were passed so that anyone who could not prove he had a job would be immediately recruited for the *repartimiento*, or other types of forced labor on the roads, or forced to accept employment on a farm. As in nineteenth- and twentieth-century South Africa, land policies after 1871 also were designed to undermine the subsistence economy of the indigenous peoples, to force them to work for low wages. McCreery (1976, 1994), who is a historian of rural Guatemala, argued that:

... taking away or reducing the land belonging to Indians was an effective way of creating a low wage labor force. . . . In the 1870s and 1880s insufficient cheap labor was a . . . barrier to the expansion of coffee. The incorporation into the latifundia of Indian village lands . . . helped to create rural unemployment by forcing families into marginal areas or leaving them without access to sufficient land. Such conditions were precisely those prerequisites to the laws of vagrancy and debt servitude favored by the Liberals for mobilizing the cheap labor.

The *repartimiento* lasted until the 1920s; the *libreta* system and the full gamut of vagrancy laws were in effect until 1945, when Guatemala experienced its first brief flowering of democracy.

The pattern exhibited in Guatemala happened elsewhere, in Bolivia, Peru, and Mexico. Indeed, Coatsworth (1974) showed that in Mexico, the expansion of the railway system was correlated to uprisings and rebellions caused by the expropriation of lands made more valuable by improved infrastructure. We have no real evidence on living standards outside of Mexico, but the evidence suggests that during the long economic expansion that took place under the dictator Porfirio Díaz between 1878 and 1910, real wages fell (Gómez-Galvarriato 1998) as did the stature of military recruits (López-Alonso 2007).

The impact of globalization on the nineteenth-century Americas is another example of conditional comparative statics. Where institutions were initially strong, as in the United States, globalization promoted economic growth and improved institutions and living standards. Where institutions were initially weak, as in much of Latin America although globalization did accompany increased income per-capita, it also led to massive inequality, institutional deterioration, and falling average wages. It also is worth noting that the economic growth of the “Profiriato” was followed by the Mexican Revolution.

Perhaps the most devastating example of this phenomenon is the impact on West Africa of the abolition of the slave trade in 1807 (see Acemoglu and Robinson 2010 and 2011, and the essays in Law [ed.] 1995). In place of the slave trade came “legitimate commerce,” a phrase coined for the export from Africa of new commodities not tied to the slave trade, including palm oil and kernels, peanuts, ivory, rubber, and gum arabic. The industrial revolution in Europe created new commercial opportunities in Africa as in Latin America, but in a peculiar context in which slavery had become a way of life but the external demand for slaves had suddenly evaporated. Instead of selling slaves to Europeans, many were now profitably put to work in Africa producing the new items of legitimate commerce.

One of the best-documented examples is in Asante, in modern Ghana (Austin 2002, 2005). Prior to 1807, the Asante Empire had been heavily involved in the capturing and exporting of slaves, bringing them down to the coast to be sold at the great slaving castles of Cape Coast and Elmina. After 1807, with this option closed off, the Asante political elite reorganized their economy. Slaving and slavery did not end; rather, slaves were settled in large plantations, initially around the capital city of Kumase but later throughout the empire (corresponding to most of modern interior Ghana).

They were employed in the production of gold and kola nuts for export but they also grew large quantities of food and were used intensively as porters because Asante did not use wheeled transportation. Farther east, similar adaptations took place. In Dahomey, for example, the king had large palm-oil plantations near the coastal ports of Whydah and Porto Novo, all based on slave labor.

Even if the trade outside of Africa was over, it did not alter many of the political institutions it had wrought in the previous two centuries and did not restore incentives to produce and invest in these societies. As a result of these developments, rather than contracting, the extent of slavery appears to have expanded in Africa throughout the nineteenth century. Although accurate figures are difficult to obtain, a number of existing accounts written by travelers and merchants at the time suggest that in the West African kingdoms of Asante and Dahomey and in the Yoruba city-states, well over half of the population was slaves (Lovejoy 2000, p. 174). More accurate data exist from early French colonial records for the Western Sudan, a large swathe of Western Africa stretching from Senegal, via Mali and Burkina Faso, to Niger and Chad. In this region, 30 percent of the population was slaves in 1900 (see Lovejoy 2000, p. 192).

Here, we see another example of a potential positive shock, in the form of expanding markets for tropical products and reduced transportation costs ending up with adverse effects on African societies because of the way they interacted with the initial institutional equilibrium.

3.4 Foreign Aid

Finally, we note that the literature on the impact of foreign aid on economic growth also has similar findings. Burnside and Dollar (2000), for example, found that in countries with bad economic policies, foreign aid has no impact on economic growth. However, when economic policies are good, foreign aid and growth are positively correlated.

4.0 Concluding Remarks

In this chapter, we develop the idea that economists have been too ambitious in trying to develop simple models of the comparative static effects of resource endowments and new economic opportunities. Even political scientists are tempted. For example, the debate in economics on the impact of natural resources on economic growth is closely mirrored by the debate in political science about the impact on democracy. Some claim natural

resources cause authoritarianism (Ross 2001), some that it causes democracy (Karl 1997), and others that it has no impact on either (Haber and Menaldo 2011). All look for average effects. Yet, Luong and Weinthal (2010) presented a resource curse in which the impact of resources, particularly oil, is conditional on ownership structure. For instance, state ownership is associated with a resource curse. Luong and Weinthal (2010) argued that the form of ownership structure depends on the availability of different fiscal possibilities and the nature of political conflict in society. Their argument is closely related to the one presented in this chapter.¹⁶

Although trying to show that natural resources creates booms or democracy (or the opposite) may be appealing, even basic microeconomic theory suggests that there would be conditional and heterogeneous effects. Such effects might be unrelated to institutions in the same way that standard comparative static results of international-trade theory are conditional on factor intensities. However, in this chapter, we argue that in many well-studied cases, it is the nature of institutions that determines the comparative statics of an equilibrium. This emphasis is natural, given the existing consensus about the dominant role of institutional differences in determining comparative patterns of economic development.

Of course, many institutions may be relevant, and which are relevant may depend on the context. Following much research, we emphasize the strength or weakness of institutions that place checks and balances or constraints on political leaders. The argument that these are crucial for a well-functioning society was recognized by the formulators of the constitution of the Roman Republic, was received articulate modern treatments from Montesquieu and James Madison in the eighteenth century, and has been central to the work of North and his collaborators. It also is central to many of the empirical studies that inspired this chapter. We develop a simple model to illustrate how comparative statics may be conditional on the strength of institutions and emphasize how this can reconcile many historical and empirical studies. The model was extremely reduced from and based on the allocation of talent in society – in particular, the allocation between productive and nonproductive activities, which we associate with “politics.” Although simple, we believe the theoretical approach brings with it a number of insights that have implications for empirical design, the understanding of economic history, and the general question of how resource endowments and new economic opportunities map into aggregate incomes.

¹⁶ Dunning (2008) injected an early piece of nuance into this literature by developing a theoretical model in which there are different mechanisms linking oil wealth to democracy – the strength of which is conditional on inequality.

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THREE

The Political Economy of Mass Media

Andrea Prat and David Strömberg

1.0 Introduction

In the last decade, a sizable number of economists have begun to study the behavior and political effects of mass media. In this survey, we propose a way to organize this body of research, we attempt to summarize the key insights that have been learned so far, and we suggest potentially important open questions.

We structure the discussion in sections covering background, transparency, capture, informative coverage, and ideological bias. Section 2.0 begins with an overview of how economics and other disciplines approach this field and defines the scope of this survey. Section 3.0, discusses the benefits and costs of transparency in politics: Under which situations do voters benefit from receiving more information?

Section 4.0 addresses under which conditions the government will prevent the media from performing its information-provision task. Media capture is a present or latent risk in most developing and many developed countries. We present a theory of endogenous capture and survey the growing empirical literature on the extent and determinants of capture. As demonstrated herein, different sources of evidence provide support for the idea that ownership plurality is the most effective defense against capture.

Section 5.0 discusses a crucial theme in media studies – namely, how informative media coverage affects political accountability and government policy. A model of policy choice with endogenous media coverage supplies an array of testable implications, used to organize the existing empirical

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