Brazil's Long Divergence

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Introduction

Timur Kuran has offered a novel explanation for the great divergence. Institutions in the Middle East emerged a millennium ago that initially encouraged wealth-creation. They provided the foundations for economic growth. But as time passed, the same institutions became dysfunctional and hindered economic growth. They attained such security that when shocks arrived to change the status quo and potentially increase economic growth, they persisted. Middle Eastern institutions became robust institutions. As the centuries past, previously 'good' institutions evolved into impediments for long-run development. They did not allow for the modern institutions associated with economic development to emerge. The Middle East fell behind Western Europe and has yet to catch up.

West European countries and the United States adopted and developed organizational forms that encouraged invention and innovation. They created institutions that allowed various members of society to pool their resources to make investments over increasing periods of time. Kuran (2011: 5) stressed the

> laws, regulations, and organizational forms that enabled economic activities now taken for granted in all but the most impoverished parts of the globe: the mobilization of productive resources on a huge scale within long-lasting private enterprises and the provision of social services through durable entities capable of transformation.

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Long-Run Growth Required

> …[the] institutions essential to the mass mobilization of savings, the lengthening of individual planning horizons, and the exploitation of new technologies through structurally complex organizations.

Providing the incentives for individuals to adopt new technologies that yielded benefits into an uncertain future was key for understanding why some countries are rich and others are not.

Kuran's framework provides a unique approach to understand the economic history of Brazil. Half a millennia ago, GDP per capita in Brazil was approximately equal to that in the U.S. Since about 1600, Brazil's income per capita has declined substantially relative to the U.S.. We argue that Brazil adopted institutions that promoted growth after the arrival of the Portuguese in 1500 but evolved into dysfunctional institutions. Given the tropical environment and the small size of the indigenous population, a plantation economy emerged that was initially efficient and economic growth followed (Engerman and Sokoloff 2012). Sugar plantations became very important to the economy. Over time, the owners of the large farms became the political elite. They adopted and sustained policies that institutionalized their political power. Reforms, such as the abolition of slavery or land reforms to recognize the rights of squatters, did not happen until the late nineteenth century if they happened at all. As a result, Brazil failed to develop the commercial institutions associated with economic development. These include financial markets and limited liability corporations, two institutions emphasized by Kuran.

The United States offers a natural point of comparison. Both Brazil and the U.S. were New World Colonies. Both have long coastlines on the Atlantic Ocean that provided access to the markets of Western Europe. Both are over 3,000,000 square miles. Both relied on natural resources for economic growth. Malaria hindered economic growth in portions of both countries although to a lesser extent in the U.S. Both have large river networks. Although Brazil has a large tropical land area that U.S. does not, it does not imply hindered development. Other tropical regions, such as Malaysia and Singapore, have succeeded (Tullock 1997).

Yet, Brazilian income has diverged greatly from that of the United States. Figure 1 illustrates Brazil's long divergence. According to Maddison (2003), GDP per capita in both Brazil and the United States was $400 in 1500. One hundred years later, Brazilian income per capita exceeded American income by approximately 7 percent. However, Brazilian income did not fare well during the next 270 years. By 1870, income per capita in Brazil was less than one-third of the income of the average American. By the beginning of the First World War, it was less than one-fifth. By the end of the Second World War, the ratio reached its lowest point, 11 percent. More recent data puts the ratio at approximately

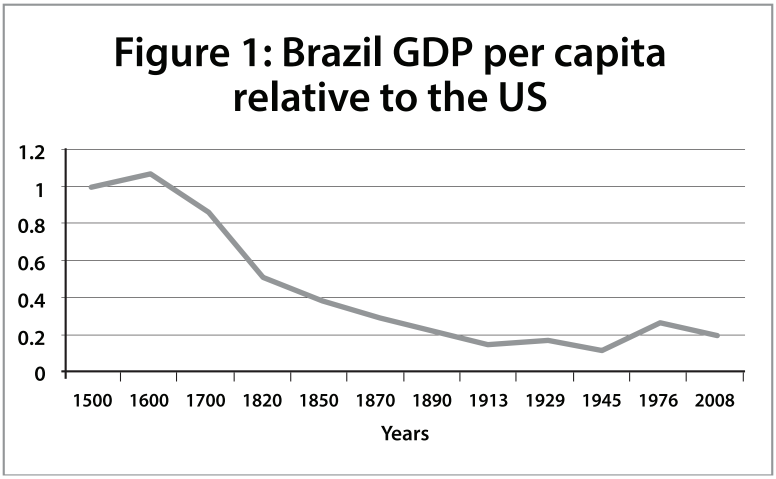

Figure 1.

20 percent. What explains Brazil's long divergence? We begin by looking at the initial conditions and subsequent institutional development.

Sugar Plantations and Efficient Institutions

Economic cycles based on sugar, gold, and coffee characterized the evolution of the Brazilian economy (Normano 1935). Natural resource booms in various parts of the country led to the adoption of institutions that promoted short-run growth but often led to long-run stagnation. We will focus on the sugar boom in the Northeast region from Rio Grande do Norte to Bahia that lasted from the early sixteenth century until 1760 because it illustrates the basic reasons for Brazil's long divergence (see Figure 2).

The sugar economy had three characteristics: "plantations, monoculture, and slave labor" (Naritomi, Soares, and Assunção 2012). Two fundamental reasons explain the predominance of African slave labor in the Brazilian sugar cane planta-

Figure 2: The Location of the Sugar Plantations
Source: Naritomi, Soares, and Assunção (2012)

tions starting in the late sixteenth century. First, voluntary European immigration proved near impossible. Many Europeans did not want to move to Brazil. Second, the indigenous peoples did not survive enslavement for long periods of time or produce enough to justify their continued use. Enslaving the indigenous peoples was too costly. The alternative, imported African slaves, proved cheap and practical for the Portuguese settlers when no other suitable substitutes existed.

The Dutch and French navies separately fought against the Portuguese for the better part of the sixteenth century for parts of Brazilian territory claimed by Portugal in the Treaty of Tordesillas in 1494. The Dutch sought land in the Northeast portion of modern Brazil. The French fought to take over the area in present day Rio de Janeiro and other southern territories. The Portuguese kingdom initially did not secure settlements in Brazil, opting instead to extract Brazilwood from the new colonial territory by bartering with the indigenous peoples. However, once the pressure from the Dutch and the French grew, Portugal claimed the vast territories by granting land to Portuguese gentlemen who would to cultivate it and pay dues to the Crown.

Before introducing sugar cane to Brazil, the Portuguese had already experimented with sugar growing farms in their Atlantic colonies. Furtado (2007: 32) argued this pre-acquired knowledge of sugar planting and milling techniques contributed to the success and expansion of the Brazilian sugar industry early on. The climate and topography allowed for the large plantations. Sugar cane thrived in the hot and humid environment of the Northeast.

The Brazilian Northeast did not provide the Portuguese Crown with the gold and silver wealth the Spanish found in their colonies. As a substitute, the nutrient-rich soil, *terra roxa*, and the tropical climate of the northeastern coast provided ideal conditions for the development of large-scale agricultural production. Sugar cane thrived in *terra roxa*, which gave the Portuguese colony a major advantage in world markets. High demand in Europe and its lack of substitutes increased the profitability of cane sugar. Sugar soon became the colony's leading export and the basis for Brazil's entire economy for over two centuries.

Larger plots of land yielded higher profitability to landowners due to economies of scale. Since the Portuguese Crown had the monopoly on land grants, noblemen interested in growing sugar had to negotiate with the monarch the right to settle. Larger production and profitability for the landowner meant higher tax collection for the Crown. A land distribution system arose, in which few plantations secured high revenues for the monarchy. Once in place, large plantations were easier to defend and manage remotely than smaller land plots with multiple landlords.

In Brazil expenses related to territory defense, cultivation, transportation and shipping justified the rise of large-scale production (Simonsen 1977: 98). Portugal had the land and technical knowledge to produce large amounts of sugar and dominate the world market. But labor was scarce. Upon the Portuguese arrival, approximately 5 million people inhabited Brazil, mostly near the coastline (Gomes 2000).[1] European immigrants did not satisfy labor demand in the colony. Few Europeans would willingly leave their temperate home continent to venture into unexplored tropical territories (Simonsen 1977: 126). The Portuguese could not profitably enslave or contract with native groups. Most indigenous peoples led a nomadic lifestyle and adopted hunting and gathering as their main sources of nourishment. Agriculture existed, but it was largely underdeveloped compared to Europe, and based on slash-and-burn methods that rendered the land infertile within a few cultivation cycles. Virtually no concept of private property rights existed and very little trade took place within or between local groups. Native

[1] This, of course, should be taken with a grain of salt. Estimates range from approximately one million to eight million.

enslavement offered a narrow prospect for productive labor at the plantations.

The alternative to European and native labor came from Africa. In 1511, the Spanish brought the first fifty African slaves to the Antilles. By 1549, the Portuguese Crown had authorized the use of African slave labor in the Brazilian plantations, although there are reports of slaves in the southern colony of São Vicente (currently in São Paulo state) as early as 1535. In Brazil, African slaves sold for considerably more than indigenous peoples suggesting African slaves had higher rates of productivity than the alternatives (ibid. 132).

One factor of the colonization process made Portugal better situated to exploit the trans-Atlantic slave trade: The Treaty of Tordesillas. It allocated to Portugal the territories in Africa where slave supply was most abundant (ibid. 129-30). Plantation owners benefited from access to cheap labor, and the slave traders made a profit off of the trans-Atlantic trade. Simonsen (1977) estimates that between the seventeenth and nineteenth centuries, a total of 1.35 million African slaves came to Brazil to work on the sugar cane plantations alone. Klein (1999) estimates the number of slaves to be 1.569 million between 1551-1760.

The owners of large plantations yielded considerable political power. They controlled the colony's primary economic product. As a result, they manipulated the political and legal systems to their advantage. The Portuguese Crown did not seek to interfere with its main source of revenue. In particular, the political elite created a system of property law that protected their interests and discouraged productive investment. They discouraged innovation in cultivation methods, and limited the extent of public services available to the population in the Northeast. The region still underperforms in measures of institutional development and public goods provision to this day.[2]

Sugar Plantations and Dysfunctional Institutions

The Portuguese government sought to generate revenue from sugar. They granted large parcels of land (*sesmarias*) that generally varied between 16 and 50 square miles (Dean 1971). The *sesmarias* often lacked clearly defined boundaries but this did not prevent investments from taking place. The landowners fulfilled their obligation to produce sugar and provided revenue and sugar to the Portuguese Crown. In return, they received support in the form of scarce credit and slaves, which offset the limited availability of labor both free and forced. By the

[2] The Firjan IFDM 2010 index of public goods provision has six Northeastern states in the bottom ten performing states, and none in the top five states.

mid-eighteenth century, the more innovative Dutch sugar producers of the Antilles had taken over the world market. The Northeastern sugar economy collapsed soon thereafter.

At its independence in 1822, Brazil's property laws reflected the demands of the Portuguese government and the Brazilian economic elite. But the laws clearly had become dysfunctional. The Industrial Revolution had begun in Britain and Brazil had fallen behind the United States and portions of Western Europe. The Portuguese colonizers allocated land to the politically connected with little concern for economic efficiency. Friends and allies of the Crown had the legal rights to vast tracts of land. Often they had little interest in improving the land beyond the areas near the Atlantic Ocean where sugar grew efficiently. But the large tracts encouraged the establishment of informal property rights. Few landowners monitored their land and squatters took advantage of it. They claimed large tracts of land and, by independence in 1822, the demand for land reforms had become a political issue.

The vastness of Brazil and the difficulty of enforcing land grants made squatting profitable. Anyone willing to move inland and defend their claims from indigenous peoples and the environment could. The formal legal system did little to stop squatting. The claims of squatters came into conflict with expanding plantations, who sought to satisfy demand in international markets for Brazilian resources.

Reform focused on two issues. First, the new government had to address the question of recognizing the rights of squatters. Second, the post-colonial government faced the looming problem of labor supply in a world where slavery did not exist. But addressing these issues required adjusting to the evolving political equilibrium that shifted economic power from the northeast to the south where coffee planters had begun to exert influence on national policy.

Table 1

Exports as a Percentage of Total Exports

Years	Sugar	Coffee	Cotton	Mining
1650	95.0	--	--	5.0
1750	47.0	--	--	53.0
1800	31.0	--	6.0	63.0
1841-1850	26.7	41.4	7.5	25.4
1891-1900	6.0	64.5	2.7	26.8

Source: Skidmore (1999), p. 50

Table 1 illustrates the changing economic significance of the sugar planters. In 1650, sugar dominated the economy accounting for ninety-five percent of the exports. Sugar was king. A century later, sugar remained a little less than fifty percent of exports but gold had become the largest component of exports. Fifty years later, the relative decline of sugar continued as gold production remained the most important economic activity. By 1850, coffee had become the dominant export product that would last throughout the century. Sugar declined to less than ten percent of exports.

Following the collapse of the sugar economy, coffee took over as the main source of income for the colony. Quick to adjust to its new revenue source, the Portuguese Crown shifted the colony's capital from São Salvador, in Bahia, to Rio de Janeiro. By moving the capital to the main port city in the Southeast, the government's ability to collect taxes improved. Coffee planters had ready access to the political agents that could shape policy to their likings. Many became politicians themselves, and with that, by the early nineteenth century Brazilian politics had taken a turn to the south.

The expansion to the coffee growing regions in São Paulo took place in the late eighteenth century, when squatters and slave raiders crossed the coastal mountains of Serra do Mar. Once established, the coffee planters sought more land. When the squatters refused to yield, the planters used their political power to force them out. The Southeastern politicians began pushing for land reform.

The growing importance of coffee led to the property reform in 1850. The land law of 1850 changed the rules for land allocation. Rather than simply grant land to the politically connected or claim land by squatting, would be owners had to purchase the land from the government. This would provide incentives for those who valued the land to obtain it. It also served as a way to generate funds for the government to overcome its labor supply problem. Revenue from land sales could be used to subsidize immigration.

Great Britain abolished the slave trade in 1834. A treaty with Great Britain in 1826 which became effective in 1830 declared slavery illegal. The Aberdeen Act of 1845 made it legal for British ships to seize ships carrying slaves headed to Brazil. Finally the Free Womb Law in 1871 paved the way for the end of slavery. It stated any child of a slave born after 1871 would be granted freedom upon their 21st birthday (Schulz 2008). In 1888, slavery was abolished. But the transition illustrated the persistence of the political power of the sugar plantation owners in the Northeast.

The Brazilian government outlawed the trans-Atlantic slave trade in 1850, the same year the British began enforcing the Aberdeen Act of 1845. Brazil could no longer import slaves. However, slavery persisted due to the regional differences between the sugar dominated northeast and the coffee economy of the south. The sugar plantation owners remained politically powerful even though their relative economic importance had declined (see Table 1). Slaves represented a valuable asset even as the value of sugar declined. This provided the incentives for the persistence of dysfunctional institutions as they sought to remain politically powerful.

The coffee plantation owners needed cheap labor to satisfy growing demand for Brazilian coffee. The impending demise of slavery signaled by the passage of Lei Eusébio de Queirós led them to search out alternative methods to obtain workers. They could buy existing slaves from the declining sugar plantations. Marginal farmers in the Northeast did sell their slaves. But this undermined the overall political influence of the sugar elite. In 1853, they introduced an intrastate tax on slaves so as to discourage their sale to southern farmers.

Europe offered an attractive alternative. With the U.S. offering opportunities for many Europeans and the British subsidizing immigration, the coffee planters and the Brazilian government devised a plan to attract workers to the coffee region, especially São Paulo. Competition from Argentina, with its European-like climate, for immigrants also required a plan of action to satisfy the demand for labor by the coffee barons. Subsidies for immigrants and a promise of landownership became a proposed policy to address the issue.

The debates over the revision of the land law through the 1840s and leading to its reform in 1850 stressed two major questions. First, the rights of the squatters had to be addressed. Large numbers of people had access to land but did not have legal title. Formalizing ownership offered an opportunity to provide an incentive structure for wealth-creating invention and innovation. It would also provide collateral necessary to expand the extent of credit markets. Second, it provided an opportunity to raise revenues to subsidize the importation of European labor (Dean 1971). With the impending demise of slavery as signaled by the treaties with Britain, coffee barons searched for a viable source of cheap labor.

As the various politicians debated the land reform laws, it became increasingly clear that the status quo would prevail. Proposed changes to recognize the rights of squatters met opposition (Da Costa 2000). Although the reformed law granted more rights to squatters, it limited the ability to make legal claims to land.

Few had the resources to pay for official surveys demarcating land. Furthermore, in the event of a legal conflict, the squatters rarely won. For example, the de jure landowner often took advantage of "lost" ledgers documenting the squatter's legal claims. The second provision to provide funding for European labor did attain some measure of success. European immigration increased from approximately 500 per year before the 1850 law to nearly 20,000 by 1860 (Dean 1971: 623). The government did secure their property rights and the number of small landholdings grew.

Even though an important economic shock loomed in the future with the impending ending of slavery, the political elite did little to change institutions. Instead, the political balance of power remained in the landed interests although the coffee barons gained relative political power. But without vibrant, domestic credit markets, their ability to expand in order to meet increasing demand faced severe constraints. For example, heavy reliance on British credit meant that financial crises in London limited Brazilian coffee plantation owners' options.

Why No Financial Market Development?

The legal system impeded the emergence of one of the vital institutions for economic development: the credit market. As late as 1888, only 26 banks existed in Brazil and only 7 out of 20 states had a bank. Haber (1997) reports that half of all deposits were placed in banks located in Rio de Janeiro. Although a stock exchange existed in Rio since 1820, it remained relatively small. Furthermore, it offered little funding for private enterprise. Credit markets barely existed.

The lack of legal status of squatters limited their access to credit markets. They could not use land as collateral to secure a loan. As a result, the number of people in the credit markets remained small and only the wealthy and politically connected had access to credit. This empowered the landed elite. They had access to credit necessary for economic growth.

The imperial government sought to limit banking competition. The 1860 incorporation law limited joint-stock companies to those who received permission from the government. Most importantly, it did not provide limited liability. The law allowed for a Brazilian investor to be legally liable for a firm's debt for five years after selling the asset (Haber 1991). This policy greatly limited financial market development. It discouraged investors who could potentially have to pay for actions that took place after the investment occurred.

The lack of financial market development mirrored the political-economic equilibrium. The government's policies reflected the interests of the wealthy landowners. They supported the internal slave trade because it provided revenue and they preferred small credit markets since they had the assets necessary to obtain credit when needed. Collateral existed for the rich. More broadly, they sought monetary stability in order to protect the value of their assets. To do so, they effectively limited the ability of any bank to issue currency in large quantities. As a consequence, they prevented the emergence of a countrywide banking system. The persistence of slavery exacerbated the problem.

Slavery reduced the price of labor. It also altered the relative price of labor and capital. With a relative abundance of slaves (compared to physical capital), only weak incentives existed to create financial markets. If they did emerge, they could threaten the political-economic status of the landowners. Credit represented a means for more and more people to make investments in either human or physical capital. If profitable, entrepreneurs would move resources to these ventures and out of the traditional but declining sectors. In the end, the sustained economic growth experienced by Western Europe and the United States did not take place and Brazil's long divergence continued.

Geographic Destiny?

We have stressed the institutional sources for Brazil's great divergence. But what about geographic explanations for economic development? A long tradition in economics dating at least back to David Hume and Adam Smith has identified the role of geographic factors in affecting the evolution of economies. More recently, Diamond (1997), Kamarck (1976), and Sachs (2001) attribute relative economic backwardness to a country's geographic endowments. They argue geography directly affects long-run growth through several mechanisms. The prevalence of malaria affects worker productivity. In some cases malaria kills and in others it limits a worker's time on the job. Tropical environments with a lack of frost allow disease-carrying insects to infect people with productivity reducing maladies. Dense tropical forests raise the costs of engaging in trade and limits specialization.

Brazil has significant geographic constraints. Over 90% of the country is classified as tropical and the Amazon region accounts for over 40% of the land area. Malaria has and remains a public health concern, especially in the Amazon region (Oliveira-Ferreira 2010). Geography appears to be a viable explanation for Brazil's long divergence. A comparison with the U.S. reveals a 'reversal of fortune' that undermines the geography hypothesis.

From 1500 until the seventeenth century, Brazil's economy expanded primarily due to the sugar plantations. Income per capita was greater in Brazil than the U.S. But the U.S. outperformed Brazil during the subsequent centuries. The geographic endowments of the countries remained the same. However, institutional developments differed greatly.

In the U.S., institutions developed that secured property rights and increasing included large portions of the population in political decision-making (Engerman and Sokoloff 2012). The rule of law and democracy emerged. Education and literacy spread throughout the population. An Industrial Revolution occurred. The U.S. economy modernized and became the largest in the world. As we have argued, dysfunctional institutions emerged and persisted in Brazil. And that made all the difference.

Conclusions

The abolition of slavery occurred in 1888. The imperial government came to an end and a republican form of government emerged the following year. Financial market reforms occurred shortly thereafter. The newly empowered coffee barons sought and gained access to credit. Bank deregulation occurred. Shareholder liability was limited to 12 months. New laws increased transparency. By 1891, 68 banks operated in Brazil.

However, the potential to end the long divergence disappeared quickly. The rapid expansion of credit led to the *Encilhamento*, a speculative bubble. It burst in 1892. In response, the government constrained financial market development after 1896. Only one bank had the right to issue currency and by 1906, only 10 banks operated (Triner 2000).

The long divergence continued. Quickly after a period of liberal reforms that undermined the sugar interest, the coffee barons successfully captured the government and instituted reforms that stifled Brazil's economic growth. They pursued policies that hindered financial market development. They did not embrace reforms that would encourage the formation of limited liability corporations. They prevented the reforms that would have led to the emergence of the institutions that Kuran identified as crucial for economic growth. As a result, Brazil remained relatively poor.

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