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ABSTRACT

Are Endowments Fate?*

In recent theories of comparative development the role of institutional differences has been crucial. Yet what explains comparative institutional evolution? We investigate this issue by studying the coffee exporting economies of Latin America. While homogeneous in many ways, they experienced radically different paths of economic (and political) development which is conventionally traced to the differential organization of the coffee industry. We show that the different forms that the coffee economy took in the 19th century was critically determined by the legal environment determining access to land, and that different laws resulted from differences in the nature of political competition. Our analysis suggests that explanations of institutional differences that stress economic fundamentals can only be part of the story. At least in the economies we study, while geography, factor endowments and technology are clearly important, their implications for the institutional structure and thus development are conditional on the form that political competition takes in society. Endowments are not fate.

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“Striking differences can be easily perceived between the history of coffee cultivation in Costa Rica - with its early origins, and the absence of any large scale process of land concentration, and its effects on the organization of the labor market - and the Guatemalan and Salvadorean experiences - ... which exhibited features of land and labor control altogether different from those found in Costa Rica.” - *Ciro F.S. Cardoso (1977, p165)*

1 Introduction

Recent research on comparative economic growth and development has moved beyond explanations which focus on preferences and technology within a fixed set of institutions and organizational structures. Instead, much of the recent focus has been on institutional and organizational variables, such as well defined property rights (Davis and North 1971, North and Thomas 1973, Knack and Keefer, 1995, Barro, 1997, Hall and Jones, 1999, Acemoglu et al. 2001), particular financial and legal institutions (see Levine, 1997, La-Porta et al., 1998), and institutions which determine the distribution of assets and income (Alesina and Rodrik, 1994, Persson and Tabellini, 1994, and Benabou, 1997). While the move away from traditional economic fundamentals is a major conceptual change, we are far from understanding exactly why and how different societies have come to generate or sustain different sets of institutions or organizations. Moreover, if it is true that certain types of institutions are better for growth (and almost certainly more efficient in terms of total surplus) than others, the Coase Theorem suggests that, in the absence of significant transactions costs, these institutions should emerge as individuals take advantage of unexploited gains from trade. Thus the persistence of dysfunctional institutions is paradoxical.

Since the weakness in many studies of comparative development, such as between North and South American, or East Asia and Africa, is the inability to control for the large number of factors that can vary between such broad groups of countries, this paper examines comparative development in a relatively narrow group of countries, namely the coffee exporting economies of Latin America. Though we focus on Colombia, Costa Rica, El Salvador, and Guatemala, because these are the countries for which we have the best comparable data, we also later discuss pertinent evidence from Brazil, Nicaragua, and Venezuela. What distinguishes our study is that of the primary four countries we study,

two (Colombia and Costa Rica) organized their coffee production and exports in very different ways than did the other two (Guatemala and El Salvador). The major difference was (as shown in rows 2 and 3 of Table 1) that the first two developed coffee primarily via smallholders whereas the latter two did so via large plantations.¹ In all other respects however, the four countries were very similar, starting from similar levels of development, a common colonial history, language and religion, virtually identical climates, topographies, factor endowments, and technologies with the same dominant export crop (rows 7-9 of Table 1 document the importance of coffee).² Yet despite all these similarities, the former two countries have achieved a level of per-capita GDP about double that of the latter two, rank much higher in terms of the human development index (HDI) and have been considerably more democratic (rows 4, 5, 6 of Table 1).

We argue that it is precisely the differences in the way that the coffee economy was organized in these countries which accounts for their divergent paths of development. Our theory emphasizes both a level and a growth effect. The level effect comes from the fact that smallholder production is generally thought to be more efficient than plantation production of coffee.³ The growth effect, from the fact that the monopsony power of plantation owners creates a ‘hold-up’ problem (as in Grossman and Hart, 1986). Owners cannot commit to pay a wage above the subsistence level and as a result there is no incentive to accumulate human capital. In contrast, smallholders have much better incentives to accumulate human capital because they can capture part of the return. Thus in our theory Colombia and Costa Rica are richer than El Salvador and Guatemala because their organization of the coffee economy was more efficient and the structure of bargaining power that it induced generated more rapid human capital accumulation.⁴ The last three

¹Data for Costa Rica (1955), El Salvador (1940), Guatemala (1966) from Paige (1997, p.60 Tabel 1). For Colombia (1932) from Safford (1995, p. 126-128, Tables 2 and 4).

²All data from Bulmer-Thomas (1994).

³A large literature argues that smallholder coffee production is relatively efficient and that this is a classic example of the inverse relationship between farm size and productivity (see Yotopoulos and Nugent, 1976, Berry and Cline, 1979, Reynolds, 1985, p113; Cornia, 1985, Binswanger and Rosenzweig, 1986; Bulmer-Thomas, 1994, p95). Griffin (1976) found that coffee yields in Guatemala were twice as large on farms of less than 7 hectares compared to those of over 224 hectares. This appears to be because there are no scale economies and coffee tending and picking is very labor intensive and needs great care (high quality coffee requires that ripe berries be picked one by one from the bushes). Thus smallholders have much better effort incentives than plantation workers.

⁴Though literacy might be thought to be a poor proxy for the types of human capital relevant for coffee production, the microeconomic evidence in fact suggests that literacy is important for agricultural productivity. Schuman, Inkeles and Smith (1967) showed (with data from Bangladesh) that literacy, (1) raises the ability and willingness of cultivators to obtain information about technology and marketing, (2) it makes them more likely to educate their children, (3) raises the probability of innovating in agriculture. Foster (1965) found that it was precisely among the cocoa farmers of the Ashanti in Ghana

rows of Table 1 show the adult literacy rates in 1900, 1910 and 1930.⁵ These numbers demonstrate the large lead of Colombia and Costa Rica in human capital. This lead persisted, in 1980 the literacy rates in these four countries were, 91%, 85%, 54% and 64%.

Table 1.

| | Costa Rica | Colombia | Guatemala | El Salvador |
|--------------------------------|------------|----------|-----------|-------------|
| Land Privatization | 1820-40 | 1870-80 | 1870's | 1870's |
| % Coffee grown on Farms <10 Hc | 42.2 | 61 | 13.1 | 13.5 |
| % Coffee grown on Farms >50 Hc | 37.5 | 14 | 79.5 | 58.1 |
| GDP per cap. PPP 1995 | 5850 | 6130 | 3340 | 2610 |
| HDI Rank 1994 | 33 | 51 | 117 | 112 |
| Democracy Since | 1948 | 1958 | 1996 | 1992 |
| Coffee Exports % of Expts 1900 | 76 | 49 | 56 | 83 |
| 1929 | 58 | 55 | 77 | 93 |
| % Coffee Exports in GDP 1929 | 19 | 8 | 17 | 18 |
| % Adults Literate 1900 | 36 | 34 | 12 | 26 |
| 1910 | 50 | 40 | 13 | 26 |
| 1930 | 67 | 52 | 19 | 27 |

These differences in landownership have been recognized by several scholars to be important in the history of a particular country,⁶ nevertheless, thus far, nobody has proposed an account of why Colombia and Costa Rica ended up with such an organization of the coffee economy while El Salvador and Guatemala did not. Moreover, the patterns of landownership and different organizational forms in the coffee industry are not due to the direct effects of colonialism since coffee did not begin until after the 1820's and did so largely on land that was previously unoccupied.⁷ Rather, the structures of landownership

that literacy and elementary education began to make headway at the end of the nineteenth century. Cocoa development stimulated the demand for education, and education induced both a switch to cocoa and increased productivity of cocoa production. Other papers finding positive effects of education on agricultural productivity include Ram (1980), Grabowski and Pasuka (1998) and Singh and Santiago (1999). Lockheed et al. (1980) summarize the results of 31 datasets in 13 different developing countries and conclude that four years of education raised agricultural productivity by about 10%, relative to the situation with no education.

⁵All data from Thorp (1998).

⁶For example, Roseberry (1991, p353) notes, "what is perhaps...surprising is the remarkable variation in social, economic and political structures and processes among coffee producing regions, the radically distinct structures of landed property...encountered in Brazil, or Costa Rica or Colombia." Apart from the connection between smallholders and industrialization in Colombia, political scientists have pointed to the strength of the smallholder class in Costa Rica as the main factor sustaining its democracy (the argument is similar to that proposed by de Tocqueville, 1835).

⁷This is in fact generally true of Latin America. Bulmer-Thomas (1994, p93) notes "the area in private ownership in the 1820's was only a fraction of the area in private ownership in 1914. The increase over nearly a century was enormous and would have provided many opportunities to alter the concentration ratio if the new lands in private ownership had been allocated more equally. The failure owed more to the balance of political power...than to inherited colonial patterns."

are due to the differential evolution of the law relating to property rights in land in the 19th century as the coffee boom took off. The proximate cause of the difference is that both Colombia and Costa Rica (henceforth CRC) passed laws protecting smallholders and allowing them to gain title to land.⁸ On the other hand, in El Salvador and Guatemala (henceforth ESG), the onset of the coffee boom induced a mass land grab by powerful political elites who took possession of both Indian and free land themselves and created large coffee plantations.

But why did the political elites in these otherwise similar countries pursue such different strategies to exploit the potential opportunities provided by the expansion of the world coffee market in the 19th century? In our view, two factors were at work: First, in CRC elites were primarily merchants rather than landowners as in ESG. Second, in CRC the elites were more highly polarized and competitive than in ESG. Each of these differences had important implications. First, since CRC elites did not have a comparative advantage in agricultural organization, or in labor repression (an integral part of the plantation economy), but rather in commercial activities, they chose to control (and monopolize) finance, credit provision and exportation of the crop. This naturally led to a relative preference for smallholder production in CRC. In ESG the composition of the elite made creating and running plantations a relatively more attractive option. Second, the greater polarization of the elite in CRC led to a much more intense struggle for political power than in ESG. This struggle entailed mobilizing support and making concessions, among which were nascent democratic institutions and channels of representation such as elections. The most salient type of concession in a primarily agrarian society was conceding property rights to land and passing laws to protect smallholders.

But if a smallholder system was the more economic approach to coffee development, why did political elites in ESG not pass laws like those of CRC? In particular, after their land grabs, why did the elites not sell off their plantations? In our theory, this is because what is socially efficient is not necessarily privately rational. In particular, despite being inefficient from a production point of view, plantation production may arise in equilibrium because control of land generates control of labor.⁹ The resulting monopsony rents are not necessarily transferable through transactions in the land market even if capital markets are perfect.¹⁰ The plantation system and its resulting inefficiencies did

⁸Rather like the 1862 Homestead Act in the United States.

⁹We document in section 3 that this is a recurrent theme in Latin America historical analyses, not just Central America.

¹⁰We owe this insight to Jean-Marie Baland. It complements other theories of inefficient organizational form, for example, those due to imperfections in the capital market (see Legros and Newman, 1996, and

not arise in CRC because the political elite's relative skills were in mercantile activities and also because the intensity of political competition induced behavior which was privately, but not collectively rational for the elite.

Our explanation of comparative development in the coffee economies contrasts with recent attempts to theorize about comparative institutional evolution. Recent work on the empirical correlates of good and bad institutions has stressed differences in factor endowments and technology (Engerman and Sokoloff, 1997, Leamer et al., 1999), in geography (Gallup, Sachs and Mellinger, 1999), in colonial history (LaPorta et al., 1998, Acemoglu et al., 2001), and in culture and western influence (Greif, 1996, Landes, 1998, Hall and Jones, 1999). Contrary to this nascent literature attempting to explain institutional differences, our research suggests that the equilibrium institutional structure is not uniquely determined by these factors and depends crucially on the nature of political cleavages and competition in society.¹¹ As a corollary, factor endowments seem incapable in themselves of accounting for inequality. In our countries, even holding constant technology, different ways in which the coffee economy were organized led to large differences in land inequality and in incentives to accumulate human capital. Endowments are not fate.¹²

The paper proceeds as follows. In section 2 we develop our theoretical model. Section 3 presents the historical evidence about the evolution of the coffee industry in our sample of countries and section 4 discusses alternative hypotheses. Section 5 concludes.

2 The Model

We begin by laying out the economic structure of the model: agents, preferences, technology and the different institutions for organizing production. We then introduce the distributional assumptions and generate the payoffs to different agents from different economic institutions. Following this we introduce political competition, the outcome of

Mookherjee, 1997).

¹¹Our emphasis on political competition mirrors that of Weingast (1995) and North, Weingast and Summerhill (1998).

¹²This emphasis on factor endowments has already had a significant impact amongst more policy oriented economists. For example, in their analysis of the origins of inequality in Latin America, the IBD (1998-99) argue, "The concentration of landownership that typifies countries in tropical regions was facilitated in Latin America by the land, immigration and labor policies of governments from early colonial times. The interesting historical question is whether these policies were accidents of history, or whether they were themselves the results of the natural resource endowments, climate and other geographical conditions. Such policies, as well as other institutional features invoked as explanations for Latin America's skewed income distribution, [may] have their roots in the factor endowments that awaited the Spanish and Portuguese."

which will determine the equilibrium institutional structure. The model illustrates the key factors that help explain comparative development in CRC and ESG. Firstly, it formalizes the land privatization decision of political elites and the choice between smallholder and plantation production. Secondly, it shows how the different outcomes of the privatization process lead to different patterns of land and income inequality and resulting paths of human capital accumulation and steady-state income. Thirdly, it shows how, even if it is inefficient, plantation production may nevertheless persist. Finally, we demonstrate that, because of intra-elite political competition, the equilibrium institutional structure may not necessarily be that which maximizes the payoff of the elites.

2.1 Fundamentals

We consider an infinite horizon, small open economy in discrete time, populated by a fixed number of non-overlapping dynasties.¹³ We assume that coffee is never consumed domestically and that when coffee is produced the economy is completely specialized. In each period agents are born, live for only one period and each beget a single offspring. There are two types of agents, an elite of mass one and L identical peasants. We assume that the elite are exogenously and equally split into two factions, ‘conservatives’, C , and ‘liberals’, L .¹⁴ Each peasant inherits a bequest from his parent and has a utility function $u(c_t^f, b_{t+1}, E)$ defined over consumption of food, c_t^f , the bequest left to his child, b_{t+1} and whichever elite faction is in power, $E = C, L$. To model the dependence of utility on which faction of the elite has power we let the utility of each peasant be affected by a random variable θ which has a cumulative distribution function F which we assume to be uniform on the interval $[-\frac{1}{2s}, \frac{1}{2s}]$. θ captures an ideological preference of peasants in general for the Liberals. We assume that at $t = 0$ each initial peasant is endowed with $b_0 > 0$. For simplicity we shall assume that the utility from consumption and bequests is Cobb-Douglas, and that from the identity of the group with political power to be linear so that,

$$u(c_t^f, b_{t+1}, E) \equiv (c_t^f)^\alpha (b_{t+1})^{1-\alpha} + \theta D_t^L,$$

where $0 < \alpha < 1$ and D_t^L is an indicator variable which is one if the Liberals have power in period t and zero otherwise. To simplify the analysis we assume that the elite of any generation do not accumulate themselves and that they have preferences defined over

¹³The basic structure is similar to Galor and Zeira (1993).

¹⁴As we document in the historical section, liberal and conservative elites in 19th century Latin America typically had homogeneous preferences with respect to economic policy and this is how we shall model them.

their own consumption, c_t^{fE} , and whether or not they are in power politically. This utility function has form $u^E(c_t^{fE}, B)$, where B represents the utility benefit from power. We assume that this function is linear with,

$$u^L(c_t^{fE}, B) \equiv c_t^{fE} + BD_t^L$$

for a liberal and,

$$u^C(c_t^{fC}, B) \equiv c_t^{fC} + B(1 - D_t^L)$$

for a conservative. We also assume that the offspring of any agent inherits any assets that they hold.¹⁵ Before working, peasants can decide whether or not to accumulate human capital, which is useful in production. We assume that one unit of bequests can be converted costlessly into one unit of human capital. Even with no such investment, each agent is endowed with one unit of human capital. The stock of human capital of a peasant is denoted h_t and investment is i_t , and therefore $h_t = 1 + i_t$.

There are two goods, food, which is numeraire, and coffee with price q (which the country takes as given). Coffee is produced from the only two factors of production in the economy, land (of which there are N units in total) and human capital (efficiency adjusted units of labor). n units of land and ℓ workers each with h_t units of human capital produce $Af(n, \ell h_t)$ units of coffee, where $A > 0$. To reduce notation we now set $L = N$. We assume that the technology for producing coffee exhibits diminishing returns to scale so that, $f(N, Nh_t) < Nf(1, h_t)$.¹⁶ For simplicity we shall take f to be Cobb-Douglas with, $f(N, Nh_t) = N^{\alpha+\beta}h_t^\beta$ where $\alpha + \beta < 1$.

Coffee production can be organized either by a plantation system, or via smallholders. If a smallholder economy is created, we assume that each peasant receives one unit of land (recalling that $N = L$) and thus produces h_t^β . In the plantation system the elite collectively owns the land and hires the peasants as wage workers. Alternatively, the elite can collude perfectly in setting wages in the labor market. Plantation production

¹⁵As we shall see, in equilibrium, prior to production, land markets are inactive. After production there are never any gains from trade in the land market and thus land must simply be passed between dynasties.

¹⁶The assumption of diminishing returns to scale captures in a crude but simple way the idea that smallholder production is more efficient. A richer model would instead introduce non-contractible effort as a factor of production and allow for moral hazard. In this case, if peasants choose effort non-cooperatively then in a Nash equilibrium per-capita effort, and thus measured productivity, falls as farm size increases. A smallholder, on the other hand, would have first-best effort incentives. Nevertheless, while providing possibly more satisfactory microfoundations, such a model has the same basic implications as the one we choose. Our motivation for keeping things simple is that we embed the basic economic model in a model of political competition.

produces an output of, $N^{\alpha+\beta}h_t^\beta$. Either system of landownership creates organizational fixed costs for the elite, \mathcal{C}^P for the plantation system and \mathcal{C}^S for the smallholder system.

Smallholders with property rights to land can produce food instead of coffee. If so, a smallholder with one unit of land and h_t units of human capital, is assumed to produce h_t^γ units of food, where $1 > \gamma > 0$.¹⁷ More generally however we want to allow for smallholders to buy land so the technology for food production also depends on the amount of land employed, and we assume it is $N^{\rho+\gamma}h_t^\gamma$, where $\rho + \gamma < 1$.

We now consider how income is distributed in these different regimes. In a plantation system, the elite controls all the land and pays workers the subsistence wage of \underline{w} . The profits, denoted $\pi^P(\mathcal{C}^P)$, are divided equally between all members of the elite, with profits per-member of the elite for a given level of human capital h_t being,

$$\pi^P(\mathcal{C}^P) = qAN^{\alpha+\beta}h_t^\beta - N\underline{w} - \mathcal{C}^P, \quad (1)$$

where π^P is indexed by \mathcal{C}^P since this will be important in the subsequent analysis when we discuss the comparative advantage of the elite.

In the smallholder system, all the land is owned by the peasants but we assume that, rather than monopolize land and exert monopsony power in the labor market (as in the plantation system), the elite is instead the monopsony buyer of coffee from peasants. The elite buys the coffee at some price $r < q$, generating profits, $\pi^S = [q - r]NAh_t^\beta - \mathcal{C}^S$. How low can r be set? This depends on the outside options of smallholders, which we denote $\underline{V}(h_t)$. Clearly, $rAh_t^\beta \geq \underline{V}(h_t)$. If the price of coffee is set so low that this inequality is not satisfied, then smallholders can switch into producing food. Thus $\underline{V}(h_t)$ is partially determined by the technology for producing food. We assume that $\underline{V}(h_t) = \vartheta h_t^\gamma$ where $\vartheta > 1$. The lower is ϑ the lower is the price r that can be set. The the optimal price set by the elite must satisfy,

$$r = \frac{\vartheta h_t^{\gamma-\beta}}{A}$$

and therefore,

$$\pi^S(\mathcal{C}^S, h_t) = [qAh_t^\beta - \vartheta h_t^\gamma] N - \mathcal{C}^S. \quad (2)$$

¹⁷Even given an initial equal distribution of land between the peasants one must check that it is stable. For example, imagine that there are competitive land and labor markets. Rather than just produce on his own land, a peasant might want to sell his land and go to work as a laborer. On the other side of the market, a smallholder with one unit of land might want to buy more land and hire extra workers. Note however that an equilibrium with active land and labor markets must involve peasants being indifferent between selling their land and working for wages, and buying the land of others and hiring them as workers. Imagine peasant 1 buys the plot of peasant 2 and hires him. By diminishing returns, hiring the extra plot and worker produces less output than peasant 2 could have produced on his own. For it to be optimal to buy the plot and hire the worker peasant 1 must therefore pay less than peasant 2 could have produced on his own. There cannot therefore be such equilibria.

where we index π^S by \mathcal{C}^S and h_t . One property of the function $\pi^S(\mathcal{C}^S, h_t)$ which is important for the dynamics of the economy is whether or not it is increasing or decreasing in human capital. Here,

$$\pi_h^S(\mathcal{C}^S, h_t) > 0 \implies h_t^{\beta-\gamma} > \frac{\vartheta\gamma}{qA\beta}.$$

If $\beta > \gamma$, the productivity of coffee production rises faster than the reservation utility of peasants and so π^S is increasing in h_t . If $\beta < \gamma$, the profitability of the smallholder system falls as h_t rises, while if $\beta = \gamma$ profitability is independent of h_t . To reduce the number of cases we need to consider we shall proceed by assuming that the absolute profitability of the smallholder system is increasing in human capital. This seems the most plausible case, though we also discuss what happens when Assumption 1 is violated.

Assumption 1: $\beta > \gamma$.

Before comparing these two ways of organizing the coffee economy we must consider the investment decisions in human capital. Note that, since in the plantation system the wage is set after the investment decision is made, the elite who set wages cannot commit not to set \underline{w} . In this case, all the benefits from human capital accumulation by peasants accrue to the plantation owners, thus clearly $i_t = 0$ in the plantation system. The monopsony power of the plantation owners in the labor market destroys the incentives to accumulate human capital and $h_t = 1$ for all t . This is not so with smallholder production since the reservation utility is an increasing function of investment. A smallholder chooses i_t to maximize his income (which he then allocates between consumption and bequest). Thus i_t (if unconstrained) satisfies the first-order condition, $-1 + \vartheta\gamma(1 + i_t)^{\gamma-1} = 0$. Denote the solution to this condition i^* which is given by,

$$i^* = \left(\frac{1}{\vartheta\gamma}\right)^{\frac{1}{\gamma-1}} - 1$$

However, since we shall assume that capital markets are imperfect (in the sense that peasants cannot borrow to invest in human capital), investment by smallholders then satisfies, $i_t = i^*$ if $b_t \geq i^*$, or $i_t = b_t$ if $b_t < i^*$.

From the above analysis, and using the fact that $h_t = 1$ in the plantation system, the plantation system is preferred by the elites in period t if

$$qAN^{\alpha+\beta} - N\underline{w} - \Delta C > [qAh_t^\beta - \vartheta h_t^\gamma] N, \quad (3)$$

where $\Delta\mathcal{C} = \mathcal{C}^P - \mathcal{C}^S$. $\Delta\mathcal{C}$ is the ‘comparative cost advantage’ of the plantation system. If the elite have a relative advantage in organizing plantation production, perhaps because they have more experience at labor repression, or their social network allows them to collude more successfully, then $\mathcal{C}^P < \mathcal{C}^S$ and $\Delta\mathcal{C} < 0$, which increases the relative attractiveness of the plantation system. On the other hand if $\Delta\mathcal{C} > 0$ then the elite have a comparative advantage in mercantile activities. Both the presence of diminishing returns and the effects of labor market monopsony on human capital accumulation work against the plantation system.¹⁸

It now remains to specify the dynamics of bequests and human capital accumulation and growth in the different regimes. First note that from the simple form of the preferences, in a plantation regime the dynamics of bequests are, $b_{t+1} = (1 - \alpha) [b_t + \underline{w}]$, which converges to, $b^P = \frac{1-\alpha}{\alpha} \underline{w}$. In a plantation system, therefore, there is no growth in national income since the wage is fixed at \underline{w} . If this system is created, then the economy converges immediately to a steady-state with $h^P = 1$ and total national income, $y^P = qAN^{\alpha+\beta}$. On the other hand, under a smallholder system bequests follow,

$$b_{t+1} = (1 - \alpha)\vartheta(1 + b_t)^\gamma, \quad (4)$$

when $b_t < i^*$ and,

$$b_{t+1} = (1 - \alpha) \left[b_t - \left(\frac{1}{\vartheta^\gamma} \right)^{\frac{1}{\gamma-1}} + 1 + \vartheta \left(\frac{1}{\vartheta^\gamma} \right)^{\frac{\gamma}{\gamma-1}} \right], \quad (5)$$

when $b_t \geq i^*$. Equation (4) implicitly defines a steady-state level of bequests, b^* which we shall assume is greater than i^* . In this case (5) describes the dynamics which converge to a steady-state level, $b = \frac{1}{\alpha} \left[1 + \left(\frac{1}{\vartheta^\gamma} \right)^{\frac{1}{\gamma-1}} \left(\left(\frac{1}{\vartheta^\gamma} \right)^\gamma - 1 \right) \right] > 0$. In this process, human capital accumulates according to, $h_t = 1 + i_t = 1 + b_t$, when $b_t < i^*$, and $h_t = 1 + i^*$ for $b_t \geq i^*$. Thus steady-state income is $y^* = qAN \left(\frac{1}{\vartheta^\gamma} \right)^{\frac{\beta}{\gamma-1}} > qAN^{\alpha+\beta} = y^P$ since $\left(\frac{1}{\vartheta^\gamma} \right)^{\frac{1}{\gamma-1}} > 1$.

2.2 Structure of Political Competition

Having isolated the key trade-offs between efficiency and distribution for the differing methods of organizing the coffee economy, we now introduce political competition. At the start of each period, after peasants have received their bequests, liberal and conservative

¹⁸Note that the effect of human capital accumulation on the profits from the smallholder system are subtle. On the one hand higher human capital raises output and part of this accrues to elites. On the other, it also increases the reservation utility of peasants. The overall effect of this on the profitability of the system for elites depends on which effects dominates, but under Assumption 1 profits are increasing in h_t .

factions of the elite compete for political power. We assume that each faction of the elite announces non-cooperatively the form land rights will take should they be in power, and whichever faction gets into power (which is determined stochastically) then implements this decision. There is full commitment to these announced land policies. We model this using a standard probabilistic voting model (for example Section 10 of Persson and Tabellini, 2000), but it does not have to be understood literally as a model of elections (though as we note in the historical section, elections are important in the period we study in Colombia and Costa Rica). More generally the model can be thought of a fight for power where the probability of one faction of the elite winning is increasing in the extent to which they attract peasant support. We assume that whichever faction of the elite has power gets a utility benefit of B .

The form of land rights is binary. In the first period either an elite faction announces that it will pass a law that offers land equally to peasants, or it announces that it will expropriate the land itself. In any subsequent period if there was a smallholder economy in the previous period, and if whichever faction of the elite that wins political power in that period offers smallholders land, then children inherit their parents land and become smallholders. However, if the elite decide to switch from a smallholder to a plantation economy we assume that they can costlessly expropriate the land of those who inherited it. If there was a plantation system in the previous period the elite themselves inherit the land and this issue does not arise. This structure allows for non-stationary equilibria where, for example, if in one period the winning elite faction creates a smallholder system, then in the next period the winning faction can expropriate the smallholders and create a plantation economy. In this section we do not consider the option that the elite might sell the land to the peasants.¹⁹ We let σ^E for $E = C, L$, denote a strategy in the political game which can be either S , smallholder system, or P plantation system.

The indirect utilities of peasants from the smallholder and plantation systems are $V_t^S = \chi \vartheta h_t^\gamma + \theta D_t^L$ and $V_t^P = \chi \underline{w} + \theta D_t^L$, where $\chi = \alpha^\alpha (1 - \alpha)^{1 - \alpha}$. Given the ideological preference shock θ , common to all peasants, which elite faction they support (vote for) depends on the relative utilities. For example, if the Liberals are committed to creating a plantation system, while the Conservatives offer smallholders property rights, a particular

¹⁹More generally, even with imperfect capital markets the elite might find it optimal to sell land. Consider $t = 0$. Imagine that the elite are intending to create a smallholder economy. If the elite sell the land at price z then they understand that if peasants pay for the land they will have less to invest in human capital and since $\beta > \gamma$ this reduces $\pi^S(\mathcal{C}^S, h_t)$. The elite will therefore choose z to maximize the net benefits or, $zN + [qA(1 + b_0 - z)^\beta - \vartheta(1 + b_0 - z)^\gamma] N$. In the text we study the case where this maximization problem has a corner solution. We study the issue of land sales when $\pi^P(\mathcal{C}^P) > \pi^S(\mathcal{C}^S, h_t)$ in the next section.

peasant would support the Conservatives if,

$$\chi\vartheta h_t^\gamma > \chi\underline{w} + \theta \implies \theta < \chi[\vartheta h_t^\gamma - \underline{w}]$$

In this case, the probability that the Conservatives win power is $\Pr\{\theta < \chi[\vartheta h_t^\gamma - \underline{w}]\} \equiv \mathcal{P}^C(S, P) = F(\chi[\vartheta h_t^\gamma - \underline{w}])$. Here, $\mathcal{P}^C(S, P)$ is the probability that the Conservative faction wins power when it chooses smallholder property rights, S , given that the Liberals are offering a plantation system P . Obviously, $\mathcal{P}^L(S, P) = 1 - \mathcal{P}^C(S, P)$. With our assumptions about the distribution function F ,

$$\mathcal{P}^C(S, P) = \frac{1}{2} + s\chi[\vartheta h_t^\gamma - \underline{w}]$$

Note that if both factions of the elite are offering the same policy then $\mathcal{P}^C(S, S) = \mathcal{P}^C(P, P) = \frac{1}{2}$ which follows because θ has a mean of zero. If $\vartheta h_t^\gamma > \underline{w}$, $\mathcal{P}^C(S, P) > \frac{1}{2} > \mathcal{P}^C(P, S)$. Therefore, if the Liberal party were offering P , the Conservatives can increase the probability of gaining power by offering S . To see if they will do so, we now investigate the equilibria of this model. Since each faction takes only one of two actions, it is easy to see the different possibilities. Intuitively, if $\mathcal{P}^C(S, P) - \frac{1}{2}$ is sufficiently large, the Conservative party may wish to offer S even if $\pi^P(\mathcal{C}^P) > \pi^S(\mathcal{C}^S, h_t)$ since the expected political benefits more than offset the lower profits from the smallholder economy.

2.3 Analysis of the Model

We now study the different types of dynamic equilibrium paths that can arise and the conditions under which the economy is organized in different ways. One result is immediate. This follows from the fact that the incentives of the elite depend critically on the relationship between ϑh_t^γ and \underline{w} . If $\vartheta h_t^\gamma > \underline{w}$, an elite faction can increase its probability of winning political power by offering S while if $\vartheta h_t^\gamma < \underline{w}$ the incentives are reversed. However, given the assumption that $\vartheta > 1$, and since $h_t \geq 1$ we must have $\vartheta h_t^\gamma > \underline{w}$. In this case, creating a plantation system can never arise as a way of increasing the probability of winning political power. Hence, if $\pi^S(\mathcal{C}^S, h_t) > \pi^P(\mathcal{C}^P)$, so that the smallholder system is unambiguously more profitable for the elite, the unique equilibrium of the political game involves both factions offering to create a smallholder system and each winning power with probability $\frac{1}{2}$. What about the dynamics of the economy in this case? This hinges on the sign of $\pi_h^S(\mathcal{C}^S, h_t)$. If this is increasing and if $\pi^S(\mathcal{C}^S, 1 + b_0) > \pi^P(\mathcal{C}^P)$, then $\pi^S(\mathcal{C}^S, h_t) > \pi^P(\mathcal{C}^P)$ for all h_t . From this we have the following.

Proposition 1 *If $\pi^S(\mathcal{C}^S, 1 + b_0) > \pi^P(\mathcal{C}^P)$ and Assumption 1 both hold, then political elites create a smallholder system which persists indefinitely and the economy grows monotonically to the steady-state income level y^* .*

If Assumption 1 did not hold, then $\pi_h^S(\mathcal{C}^S, h_t) < 0$ so that, as bequests accumulate towards the steady-state, the smallholder system would become relatively less attractive for the elite. It is then possible that there exists a $\tilde{b} \in (b_0, b^*)$ such that, for all $b_t \in [b_0, \tilde{b}]$ (with an equality at $b_t = \tilde{b}$), $\pi^S(\mathcal{C}^S, 1 + b_t) > \pi^P(\mathcal{C}^P)$, while for $b_t > \tilde{b}$, $\pi^S(\mathcal{C}^S, 1 + b_t) < \pi^P(\mathcal{C}^P)$. In this case at the first date when $b_t > \tilde{b}$ the plantation system becomes more profitable. Assumption 1 rules out such paths.

The comparative statics of Proposition 1 provide an explanation as to why the elite in CRC may have opted to create a smallholder system, while those in ESG instead chose to create a plantation system. Since $\frac{\partial \pi^P(\mathcal{C}^P)}{\partial \mathcal{C}^P} < 0$ and $\frac{\partial \pi^S(\mathcal{C}^S, h_t)}{\partial \mathcal{C}^S} < 0$, the lower is \mathcal{C}^S or the higher is \mathcal{C}^P , the more likely it is that $\Delta \mathcal{C} > 0$ and $\pi^S(\mathcal{C}^S, h_t) > \pi^P(\mathcal{C}^P)$ and that the elites will find it more profitable to create a smallholder system. This follows from the different comparative advantages of the elites in the different countries. If this is the case, then elites pass laws giving access to the land to smallholders and the economy grows to the steady-state income level of y^* .

The effects of political competition become interesting when $\pi^P(\mathcal{C}^P) > \pi^S(\mathcal{C}^S, h_t)$. In this case, introducing political competition is important since it allows us to see that, even if $\pi^S(\mathcal{C}^S, h_t) < \pi^P(\mathcal{C}^P)$, a smallholder economy might nevertheless emerge in equilibrium. We shall restrict attention to pure strategy Nash equilibria. In the political game, a Nash equilibrium is a pair of strategies, (σ^C, σ^L) , one for each elite faction, which simultaneously solve the following pair of optimization problems;

$$\max_{\sigma^C \in \{S, P\}} \mathcal{P}^C(\sigma^C, \sigma^L) \left[\pi^{\sigma^C}(\mathcal{C}^{\sigma^C}) + B \right] + (1 - \mathcal{P}^C(\sigma^C, \sigma^L)) \pi^{\sigma^L}(\mathcal{C}^{\sigma^L}),$$

and,

$$\max_{\sigma^L \in \{S, P\}} \mathcal{P}^L(\sigma^C, \sigma^L) \left[\pi^{\sigma^L}(\mathcal{C}^{\sigma^L}) + B \right] + (1 - \mathcal{P}^L(\sigma^C, \sigma^L)) \pi^{\sigma^C}(\mathcal{C}^{\sigma^C}).$$

The nature of equilibria in this game relies on two intuitive conditions. Consider the best response of the Conservative faction if the Liberals offer a plantation system. In such a situation it is optimal to offer a smallholder system if,

$$\left[\mathcal{P}^C(S, P) - \mathcal{P}^C(P, P) \right] B \geq \mathcal{P}^C(S, P) \left[\pi^P(\mathcal{C}^P) - \pi^S(\mathcal{C}^S, h_t) \right] \quad (6)$$

This condition says that, given that the Liberals are choosing L , it is optimal to offer a smallholder system if the increase in the probability of winning power times the benefit

from power is greater than the expected loss in profits which results from offering the smallholder system. On the other hand, if the Liberals are playing $\sigma^L = S$, then $\sigma^C = S$ is optimal if the following inequality holds,

$$\left[\mathcal{P}^C(S, S) - \mathcal{P}^C(P, S) \right] B \geq \mathcal{P}^C(P, S) \left[\pi^P(\mathcal{C}^P) - \pi^S(\mathcal{C}^S, h_t) \right]. \quad (7)$$

(7) implies that, given $\sigma^L = S$, $\sigma^C = S$ is a best response for the Conservatives if the incremental expected fall in the benefits of power is larger than the expected benefit in profits from switching to the plantation system (recalling that $\pi^P(\mathcal{C}^P) > \pi^S(\mathcal{C}^S, h_t)$). From the definitions above, it is immediate that, $\mathcal{P}^C(P, S) \equiv \mathcal{P}^C(S, P)$, $\mathcal{P}^C(S, P) - \mathcal{P}^C(P, P) \equiv \mathcal{P}^C(S, S) - \mathcal{P}^C(P, S) = s\chi [\vartheta h_t^\gamma - \underline{w}]$ and thus if (6) is satisfied then so must (7). Now note that by symmetry, if (6) is satisfied for the Conservative faction, then the analogous inequality,

$$\left[\mathcal{P}^L(S, S) - \mathcal{P}^L(P, S) \right] B \geq \mathcal{P}^L(P, S) \left[\pi^P(\mathcal{C}^P) - \pi^S(\mathcal{C}^S, h_t) \right]. \quad (8)$$

is satisfied for the Liberals. Writing out (6) in full we get the following condition.

Condition 1:

$$s\chi [\vartheta h_t^\gamma - \underline{w}] B \geq \left(\frac{1}{2} + s\chi [\vartheta h_t^\gamma - \underline{w}] \right) \left[qA \left[N^{\alpha+\beta} - N h_t^\beta \right] - N [\underline{w} - \vartheta h_t^\gamma] - \Delta \mathcal{C} \right].$$

Clearly, if Condition 1 is satisfied then $\sigma^L = S$, and $\sigma^C = S$ are dominant strategies and political competition is a prisoner's dilemma for the elite. Notice that it is more likely to hold the greater is B , the benefit from holding power, and the smaller is the difference between $\pi^P(\mathcal{C}^P)$ and $\pi^S(\mathcal{C}^S, h_t)$, namely the smaller the opportunity cost of offering S in an attempt to increase the likelihood of gaining power. Interestingly then, other things equal, even when $\pi^P(\mathcal{C}^P) > \pi^S(\mathcal{C}^S, h_t)$, the greater the absolute advantage the elite has in mercantile activities, the lower are their losses from switching to a smallholder system and the more attractive this is as a strategy to increase the chances of winning political power.

On the other hand, if Condition 1 is violated, the loss from offering a smallholder system is too large to be attractive as a way of increasing the probability of gaining political power. In this case $\sigma^L = P$ and $\sigma^C = P$ are dominant strategies and elites take the land themselves.

The other interesting property of Condition 1 is the impact of human capital accumulation on it. Imagine that Condition 1 holds at $t = 0$ with $h_0 = 1 + b_0$, since $b_0 < i^*$. In this case a smallholder system is created and human capital accumulates. If the right

side of Condition 1 increases faster than the left, then one could have a situation where at some point the higher stock of human capital might alter the political game so that S ceased to be a dominant strategy for the elite factions. In this case the economy might switch from a smallholder system to a plantation system. Intuitively, this could only happen when $\beta < \gamma$ so that $\pi_h^S(\mathcal{C}^S, h_t) < 0$. Higher human capital accumulation increases the reservation utility of a peasant faster than it increases revenues for the elite and thus, as human capital accumulates, the smallholder system becomes relatively unattractive. Note though that as h_t rises (bequests when $b_t < i^*$), so does $\mathcal{P}^C(S, S) - \mathcal{P}^C(P, S)$. Higher levels of bequests available to invest in human capital increase the relative attractiveness of the smallholder system for peasants and increase the marginal impact of playing $\sigma^L = S$ and $\sigma^C = S$ on the probability of winning power. This effect of h_t on the probabilities tends to increase the left side of Condition 1, but $\mathcal{P}^L(P, S)$ is also increasing in h_t . Once created, a smallholder system clearly persists if the right side of Condition 1 increases faster than the left. This is true if,

$$\phi B > \phi \left[\pi^P(\mathcal{C}^P) - \pi^S(\mathcal{C}^S, h_t) \right] - \mathcal{P}^L(P, S) \pi_h^S(\mathcal{C}^S, h_t) \quad (9)$$

where $\phi = s\chi\gamma\vartheta h_t^{\gamma-1}$. Now if Condition 1 holds then $B > \pi^P(\mathcal{C}^P) - \pi^S(\mathcal{C}^S, h_t)$ and thus a sufficient condition for (9) to hold is that $\pi_h^S(\mathcal{C}^S, h_t) > 0$, which is what Assumption 1 guarantees. In this case a smallholder system, once created, persists forever.²⁰

If Condition 1 does not hold at b_0 , a plantation system is created. Such a system persists as long as Condition 1 still fails at the steady-state level of bequests $\frac{1-\alpha}{\alpha}\underline{w}$. In this case, Condition 1 must be violated at all future dates and the plantation system persists. On the other hand, if $\beta > \gamma$, it is possible that Condition 1 fails at b_0 but holds at some $\hat{b} < \frac{1-\alpha}{\alpha}\underline{w}$. Define \hat{t} to be the first date at which $b_{\hat{t}} \geq \hat{b}$, in this case a plantation system is created initially but in period \hat{t} the political game becomes a prisoner's dilemma

²⁰Clearly, if $\pi_h^S(\mathcal{C}^S, h_t) < 0$ then there is a countervailing force which tends to make the smallholder system even worse for the elite as bequests accumulate. It is then possible that there exists a $\tilde{b} \in (b_0, b^*)$ such that, for all $b_t \in [b_0, \tilde{b}]$ (with an equality at $b_t = \tilde{b}$) Condition 1 holds, while for $b_t > \tilde{b}$ it does not. In this case when b_t increases above \tilde{b} at some date $\tilde{t} > 0$ the outcome of the political game changes and $\sigma^L = P$, $\sigma^C = P$ become dominant strategies. Consider what happens next. At \tilde{t} a plantation system is created so that at date \tilde{t} , $h_{\tilde{t}} = 1$ and hence $b_{\tilde{t}+1} = (1-\alpha)[b_{\tilde{t}} + \underline{w}]$. In this case, if $(1-\alpha)[b_{\tilde{t}} + \underline{w}] < \tilde{b}$ then at date $\tilde{t}+2$ Condition 1 will hold again and the smallholder economy will be re-created. It is even possible that a two-cycle exists here with $(1-\alpha)[b_{\tilde{t}} + \underline{w}] < \tilde{b}$ and $(1-\alpha)\vartheta(1 + (1-\alpha)[b_{\tilde{t}} + \underline{w}])^\gamma > \tilde{b}$. Under these two conditions the dynamics feature initially a smallholder economy and then a two-cycle with the economy fluctuating backwards and forwards between a smallholder and a plantation system. On the other hand, if $(1-\alpha)[b_{\tilde{t}} + \underline{w}] < \tilde{b}$ and $(1-\alpha)\vartheta(1 + (1-\alpha)[b_{\tilde{t}} + \underline{w}])^\gamma < \tilde{b}$ then the economy spends several periods with a smallholder system before going through one period of a plantation system when \tilde{b} is reached again. Finally, if $(1-\alpha)[b_{\tilde{t}} + \underline{w}] > \tilde{b}$ then once created the plantation system persists.

and a smallholder system is created. Clearly, in this case bequests increase and Condition 1 must hold from that point on.

We can sum up the results of the analysis with the following proposition which gives a full classification of the possible dynamic paths under the assumption that $\beta > \gamma$. The key aspects of Propositions 1 and 2 are; firstly, if the elite have a comparative advantage in mercantile activities rather than running plantations, they choose to create an efficient smallholder system, irrespective of the structure of political competition. Secondly, even if their comparative advantage is in plantations, political competition can still lead to a creation of a smallholder economy when the elite are polarized (B is large) and when the comparative advantage is not too strong ($\pi^P(\mathcal{C}^P) - \pi^S(\mathcal{C}^S, h_t)$) is not too large. We argue that both of these latter factors held in Colombia and Costa Rica. It may have been that a smallholder economy was just more profitable given the comparative advantage of the elite. However, even if this was not true, the intensity of political competition might have led to the creation of the smallholder system as part of a competition for political support. While offering peasants a smallholder system represented a best response for factions of the elite, it was therefore not necessarily collectively optimal for them.

Proposition 2 *Assume Assumption 1, then:*

1. *If Condition 1 holds at $1 + b_0$ then a smallholder system is created at $t = 0$, persists indefinitely, and income converges monotonically to y^* .*
2. *If Condition 1 does not hold at $1 + \frac{1-\alpha}{\alpha}\underline{w}$ then a plantation system is created at $t = 0$, persists indefinitely, and income converges monotonically to y^P .*
3. *If Condition 1 does not hold at $1 + b_0$ but does hold at $1 + \frac{1-\alpha}{\alpha}\underline{w}$, then at $t = 0$ a plantation system is created, but in period \hat{t} a smallholder system is created and persists from that point on and income converges monotonically to y^* .*

2.4 Persistence of Inefficient Institutions

The main source of inefficiency in our account comes from the incentives of the elite to create a plantation system in order to exert monopsony power over labor and thus pay the subsistence wage. Interestingly, even if capital markets were perfect, such a system can persist since monopsony rents are not necessarily transferrable through transactions in the land market. To see why, consider the functioning of the land market if a plantation system is created. Note first that in one rather extreme case there are no ‘transactions costs’ and the Coase Theorem implies full efficiency.

Proposition 3 *If capital markets are perfect and the elite can make take-it-or-leave-it offers simultaneously to all of the peasants, the Coase Theorem holds and the plantation system can never arise.*

In this case the optimal strategy for the elite in every period is to expropriate all of the land from those who inherited it and then sell it back to the peasants. The most a peasant would be willing to pay for a plot would be $qAh_t^\beta - \underline{w}$. Selling at this price gives the elite a total payoff of $[qAh_t^\beta - \underline{w}] N > \pi^P(\mathcal{C}^P)$.

However, the ability to simultaneously make such offers seems extreme. We now show that, if instead they can only make sequential offers then the Coase Theorem does not necessarily hold. This is because the sequential selling of land generates competition in the labor market which induces a discrete jump in the wage rate that the plantation has to pay to attract labor. To see this note that in period t the first plot can be sold at price $\hat{\pi}_1(w_{t1}^c) - \underline{w}$. Here w_{t1}^c is the competitive wage rate for labor when one plot of land has been sold and $\hat{\pi}_1(w_{t1}^c)$ is the maximized value of profits of the first smallholder at this wage rate.²¹ However, after this the subsistence wage becomes irrelevant and the total profit which accrues from selling of the land is,

$$\Pi = \hat{\pi}_1(w_{t1}^c) - \underline{w} + \sum_{n=2}^N [\hat{\pi}_n(w_{tn}^c) - w_{tn}^c]$$

where the competitive wage rate satisfies, $w_{tn}^c = qA(N-1-n)^{\alpha+\beta}[(N-\sum_{j=1}^s x_j)h_t]^{\beta-1}$ and x_j is the demand for labor of the smallholder of plot $j = 1, \dots, N$. In this case, by selling plots sequentially, the elite cannot expropriate the full difference between the productivity of a smallholder and the subsistence wage and it may therefore be more profitable to stick with the plantation system. This gives the following result.

Proposition 4 *If $\Pi < \pi^P(\mathcal{C}^P)$ then even if capital markets are perfect, if the elite makes sequential offers to peasants, then the Coase Theorem does not hold and the plantation system can arise despite being inefficient.*

Intuitively, Proposition 4 holds when the subsistence wage rate is low compared to the competitive wage rate.

²¹ $\hat{\pi}_1(w_{t1}^c)$ is therefore the profit function corresponding to the optimization problem, $\max_x \{qA(xh_t)^\beta - w_{t1}^c(x-1)h_t\}$.

3 Historical Evidence

We now present some relevant historical evidence. In doing so we do not attempt to provide a comprehensive overview but rather stress the plausibility of certain aspects which are crucial to our story: (1) the spread of coffee coincided with large changes in the legal environment determining property rights to land and these changes were primarily responsible for the subsequent pattern of landownership; (2) elites in the different countries differed in their composition and socio-economic background; (3) there were significant differences in the extent and intensity of intra-elite heterogeneity and political competition; (4) the desire to control the labor supply was an important force which favored mass land expropriation by elites and the creation of plantations was complementary to extensive labor repression.²²

In contrast to other New World countries with rich mineral resources which were exploited by the Spanish colonizers, both ESG and CRC largely lacked mineral resources (though Colombia was a partial exception with quite significant gold deposits). Commercial activities were limited to agricultural exports, but these were small before the rise of coffee. El Salvador and Guatemala were successful in indigo and subsequently Guatemala in cochineal. However, by 1880 the markets for these goods collapsed due to the development of artificial dyes. Bananas came only after 1900 and none had the right type of land to compete with Cuba, the Caribbean islands and Brazil in the production of sugar. Tobacco production saw a brief boom in the 1850's in Colombia, but coffee was to be the first significant export crop for any of these countries.

Liberal free trade ideas spread from Spain in the late 18th century and in the period prior to independence (Colombia, 1819, Costa Rica, El Salvador and Guatemala, 1821).²³ Yet these countries varied in terms of the extent to which there were entrenched forces resisting change and these new ideas. Much of the dynamics of political competition in the 19th century can be understood as a conflict between groups which favored the

²²In a representative statement of this idea, McGreevey (1971, p133) says "once ownership was concentrated, the landowner could capture not only the rental income of land, but also any increment above subsistence which accrued to labor. This was achieved...most importantly by action taken to appropriate all available land and keep it out of the reach of rural laborers." Despite the prevalence of this view in the historical literature (for example, see Klein, 1992, on the expansion of export agriculture in Bolivia and Griffin, 1976, p. 183-200 on Ecuador) to our knowledge it has never been developed until now in the economics literature. It is summed up nicely by the anthropologist Sidney Mintz (1974, p46) "free men do not willingly work for agricultural entrepreneurs when land is almost a free good."

²³See Rodriguez (1978) for a good treatment of the independence era. Between 1821 and 1824 Guatemala, El Salvador and Costa Rica were united with Mexico, and after that formed (along with Nicaragua and Honduras) the Central American Federation.

maintenance of the mercantilist colonial system, conservatives, and those who favored abandoning it, liberals.²⁴ At different times in different countries during the nineteenth century liberals triumphed, abolishing the colonial system and generally privatizing Indian, Church, communal and government owned lands. This was an important precondition for coffee because it represented a large investment for which secure private property was essential. The timing of the regime change and the accompanying changes in property rights was affected by the comparative strength of vested interest in the status quo. Where these forces were weak, as in Costa Rica and Colombia, the changes occurred earlier than they did in Guatemala and El Salvador, where the vested interests were stronger. However, our view is that the strength of the vested interest is not significant for understanding the *form* that land privatization took when the Liberal revolution occurred. Rather, the factors that determined the sharply different forms of privatization were more subtle differences in the socio-economic background of political elites and the extent of intra-elite competition.

3.1 Costa Rica

With animosity to the church authorities for failing to allow Costa Rica to have its own bishop, and to the Guatemalan authorities and merchants for forbidding direct trade with Panama, Chile, and other countries, and for suppressing tobacco production, Costa Rica provided fertile ground for liberal ideas. Karnes (1959) shows that from the time of independence Costa Rica had already developed a strong liberal movement. However, in the absence of a dominant city or town at independence, there was considerable rivalry and conflict among the four main population centers, Cartago (the colonial capital and center of conservative groups), San José, Alajuela and Heredia. Each town in essence conducted its own foreign policy, seeking alliances with powerful factions in neighboring countries. This erupted into wars in 1823 and 1835, after which San José became consolidated as the capital. Gudmundson (1986, p4) notes “Over the course of the transition to coffee political infighting was often violent and always vociferous. From the Carillo dictatorship (1835-1842), to the overthrow and execution of President Mora (1849-1859),

²⁴As Mahoney (2001, p53) puts it, “Early nineteenth-century liberals were generally represented by those notables and professional men who called for the creation of republican forms of government, the promotion of private property and free markets, and the removal of matters of religion from the public sphere. By contrast, early nineteenth-century conservatives were represented by those privileged merchants and landed elites who sought the preservation of key colonial institutions, including quasi-monarchical forms of governance, restrictions on private property and free trade, and special privileges for the Church.”

to the Guardia military dictatorship (1870-1882), elite politics involved intense factional strife.” In particular, each town tried aggressively to lure in-migrants by selling them title to land in small parcels at very low prices. This competition did not end even when Carillo became dictator, as Mahoney records (2001, p148) “the government continued to gradually extend private landholdings to small farmers, and the state never experimented with forced labor policies.” The pattern of political cleavage then was one where local elites attempted to firstly establish their own credentials to be the central government, and after the dominance of San José was established, to gain control over that. As all scholars record, this process of competition involved from the early days, an attempt to attract both labor and political support by offering property rights to land.

Laws granting title and subsidies to smallholders who grew coffee were passed by the central government in 1828, 1832 and in 1840, and by 1856 all public lands had been sold off. These laws opened up the land of the central valley which were previously baldió (government owned land). This was followed in 1867 by the creation of a federal land registry. Despite some subsequent consolidation of landholdings (particularly during depressions in world prices where smallholders sold out), contemporary data continue to confirm the small average size of coffee farms (see Table 1). Cardoso (1977, p176) summarizes as follows “there was an absolute predominance of small farms, both of numbers and of the total land occupied.” In contrast to ESG, in Costa Rica there was a complete absence of labor repressive laws (see for example Williams, 1994). Due to the early land privatization, coffee expanded rapidly and by the 1840’s represented 80% of exports.

Who were these Costa Rican political elites? There is a consensus in the historical literature over their identity. “At the time of independence, the dominant class of Costa Rica was not a landed elite, for it did not derive the majority of its wealth from agricultural ownership or from extracting surpluses from peasant producers. Instead [it was] fundamentally a merchant elite,” Mahoney (2001, p82).²⁵ Yashar (1997, p56) concurs, arguing “the Costa Rican Oligarchy did not produce coffee on large estates. Instead, it...derived its economic, political and social power through control over coffee processing, credit and commerce.” This is also documented by the careful sociological studies of Paige (1997) and Stone (1990).

These scholars also document the attempt by the Costa Rican elite to exert monopsony

²⁵Elsewhere Mahoney notes (2001, p146) “unlike the coffee oligarchy of late nineteenth-century Guatemala whose wealth and power were based on estate ownership, landowning per se was not the [Costa Rican elite’s] defining characteristic or basis for power. Instead, the Costa Rican dominant class was a coffee elite by virtue of its control over the commercial aspects of coffee production, specifically the financing, processing and marketing of the crop.”

power over smallholders. The most famous example of this is the overthrow of President Mora by the Montealegres in 1859 because he proposed to create a bank to lend directly to smallholders, thus breaking the monopoly power of financiers.

As the 19th century progressed, Costa Rica witnessed a dramatic expansion of human capital. Thorp (1998, Table IX.2, p354) shows that 36% of adults were literate by 1900, and 67% by 1930. Engerman, Mariscal and Sokoloff (1998, Table 1) record literacy rates of 23.6% in 1892, 33% in 1900 and 64% in 1925. The data in Woodward (1985, p173) is even more impressive, with a literacy rate of 76% in 1927.

3.2 Guatemala

Guatemala had been the seat of colonial power in Central America and had a very strong conservative merchant guild in the *Consulado de Credito*. However, even in the pre-independence Bourbon period some landed groups, particularly the Indigo Growers Society, founded in 1794, became early adherents to liberalism (see Wortman, 1982, Woodward, 1965). However, Woodward, (1981, p27) documents that “conservatives represented the wealthy, established families of the late colonial period, whereas liberals represented more especially the upper-middle sector, professional classes.” Following the brief union with Mexico and the Central American Federation, conservatives ruled Guatemala under the dictator Carrera from 1838 to 1871. During this period they maintained the policies of the colonial era.

Only in 1871 was the conservative Carrera regime finally overthrown by the liberals, led initially by Garcia Grenados and after 1873 by Rufino Barrios. These Liberals pushed through land privatization, though this was protracted and bitterly contested. Between 1871 and 1883 nearly 1 million acres of land were privatized and it was only then that coffee developed rapidly. The aim of this was the formation of large estates (see McCreery, 1994, p203, Mahoney, 2001 p120-123). Unlike the Costa Rican liberals, the Guatemalan liberals of the late 19th century were different from those of the 1820's. “The major transformation of liberalism concerned the individuals who made up the core of Liberal supporters. During the mid-nineteenth century, the class composition of this faction became similar to that of the conservatives” Mahoney (2001, p69) (see also Woodward, 1984, p292-293; and Gudmundson and Lindo-Fuentes, p82-90, in support of this view).

The coercive power of the liberal state was also used to help large landowners gain access to labor. While liberals did not invent forced labor in Guatemala, the onset of large-scale coffee production induced them to codify and increase the efficiency of such a

system through a reconstituted *mandamiento* and debt peonage.²⁶ Liberal land policies attempted to undermine the subsistence economy of the highland Indians and force them into the wage economy (Williams, 1994). Menjívar (1980) argues that the *ejidos* and communal lands were eliminated “to increase labor supply by denying access of such labor to land.” McCreery’s (1976, p456-60) analysis is similar suggesting that, “taking away or reducing the land belonging to Indians was an effective way of creating a low wage labor force...In the 1870’ and 1880’s 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.”

Compared to Costa Rica, literacy rates lagged well behind those in Costa Rica. Thorp (1998) shows the adult (greater than 15 years) literacy rate was 12% in 1900, 19% in 1930 and 29% in 1950.²⁷ Engerman, Mariscal and Sokoloff’s (1998) data is consistent, showing literacy rates of 11.3% for 1983 and 15% for 1925.

3.3 El Salvador

As noted above, while liberal elites in the immediate post independence period in both Costa Rica and Guatemala were not primarily landowners, the picture is different in El Salvador where a substantial proportion were, even in this period (Gudmundson and Lindo Fuentes, 1995, and White, 1973, p62). From colonial times the country had been carved up into communal and *ejidal* lands constituting about two thirds of the land area, with large private haciendas (of between 1,000 and 45,000 acres) accounting for the remaining third of the land. Despite the fact that the two types of land were generally in close proximity, the forms that agricultural operations took were strikingly different. The communal and *ejidal* economy was almost entirely subsistence, while the haciendas were commercial (see Browning, 1971). Following the collapse of the Central American federation, El Salvador came under the control of the Carrera regime in Guatemala and as Lindo-Fuentes (1990, p133) puts it, Carrera and his successor Cerna “were always available to fight against liberal excesses in El Salvador.”

²⁶Mandamiento was a system in which employers could request and receive up to 60 workers for five days of wage work. These workers could be forcibly recruited unless they could demonstrate from their personal workbook that such service had recently been performed satisfactorily (see McCreery, 1983).

²⁷This last increase owes much to the creation of (a soon to be aborted) democracy in 1945 in Guatemala.

The succession of conservative regimes fell in 1871 with the victory of the moderate liberal Santiago González who ruled until 1876. After this Rafael Zaldívar ruled until 1885 and instituted the most radical period of liberal reform. In 1882 all communal lands were abolished and this led to a redistribution of about 40% of all agricultural land.²⁸ Browning (1971, p151) argues that “the reforms arose from the struggle between different social groups to claim the benefits of the land, and not from the efforts of an enlightened minority to increase the efficiency of the economy.” As in the Guatemalan case, scholars point to the close relationship between the control of land and the control of labor. Paige (1997, p106-107) notes about the Salvadorean case “the land concentration created a large proletariat and semi-proletariat of agricultural wage laborers...The Liberal land reform had eliminated subsistence based on traditional agriculture.” Williams (1994, p124) says, “through the use of force, squatting was held in check and the landless...became dependent on coffee growers for survival.” A system of ‘agricultural judges’ was created in 1881 to enforce restrictive vagrancy laws intended to impede labor mobility and trap workers on coffee estates.

Compared with CRC, El Salvador, like Guatemala, has a very poor record of human capital accumulation. The adult literacy rate was 26% in 1900, 27% in 1930 and 42% by 1960 (data from Thorp, 1998).²⁹

3.4 Colombia

Colombia is a much larger and more diverse nation than any of the three Central American ones we study. Yet despite having inegalitarian patterns of landholding on the northern plains (the *tierra caliente*) devoted to cattle grazing, the development of its coffee industry is remarkably like that of Costa Rica. As with Costa Rica, Colombia was relatively peripheral during the colonial period (the Viceroyalty of Nueva Grenada being established as late as 1739), and the Liberal revolution occurred relatively early with the presidency of José Hilario Lopez in 1849. In 1850 the Indian lands (*Resguardos*) were abolished, government was radically decentralized, and in 1861 church lands seized.

Although in Colombia there was the same cleavage between liberals and conservatives as in the other countries we study, their conflict was perhaps more intense and certainly more persistent. Between 1850 and the end of the century there were 7 major civil wars and innumerable regional and provincial revolts, nearly all based on party lines. Yet

²⁸This figure is from Browning (1971, p191-192). Others put it lower, for example Lindo-Fuentes (1990, p130) argues for a figure of about 25%. See also Menjivar (1980, p60).

²⁹Only Bolivia and Haiti have a (marginally) worse record on literacy than ESG over this period.

this conflict had little to do with land or other economic policy issues.³⁰ In fact even before 1849 the conservative regime under Mosquera had reduced tariffs and the reform of Indian lands had begun as early as the 1820's. Thus even in the "Regeneration period" after 1885 when the conservatives regained power under Rafael Nuñez there were no reversals in the land policies (e.g. Le Grand, 1986). As Bergquist puts it (1978, p10) "In the late 1840's and early 1850's, under the aegis of the liberal party, import-export interests acquired preponderant political power, and the initial success of their *laissez faire* economic reforms won approval or acquiescence from upper-class leaders identified with both political parties."

While some measures occurred earlier,³¹ two main laws of 1874 and 1882 were designed to allow farmers (*colonos*) to gain title to open government owned land that comprising about 75% of the land area of Colombia including all of the area which was subsequently to become the major coffee growing areas of Antioquia, Caldas and Quindio (LeGrand, 1986). Before this time the major driving force behind land laws was the desire of the state to gain revenue (see Deas, 1982). Le Grand (1986, p13) notes "from 1820 to 1870 *baldios* legislation primarily reflected the fiscal preoccupations of the Colombian government. Then in the 1870's and 1880's a significant reform of public land policy occurred: the aim of promoting the economic exploitation of frontier areas through free grants of land gained precedence." LeGrand documents this in detail, noting "only in Costa Rica...did legislation in the nineteenth century also encourage homesteading on the part of native settlers," (p17). She adds (p15) "it might seem surprising that in a continent where politics was the province of elites, a land policy so apparently responsive to peasants interests became law." She concludes that the policy emerged precisely because Colombian political elites were not *latifundistas* and saw the commercial advantages of promoting smallholder production; "if the public land reform of the 1870's and 1880's grew out of the government's desire to stimulate rural production, it also responded to the economic interests of the politicians themselves and the social groups they represented."

Yet the passage of these laws also took place in the midst of heated political party competition which revolved around elections. As Bushnell (1971) documented, universal male suffrage was introduced in the 1850's with perhaps 46% of adult males voting in the

³⁰Palacios (1980, p27) sums up the consensus view by arguing "the economic aspects of the mid-century reforms produced relatively little disagreement among political leaders, while the issues of the constitutional organization of the Republic, and of relations between church and state, provoked the most passionate discord" (Bushnell, 1993, provides a good overview).

³¹McGreevey (1971, p129) notes that in 1843 the government passed legislation which ceded *baldió* to settlers who farmer it productively.

1856 Presidential election, an extraordinarily high number for any country in the 19th century. While the 1863 constitution led to restrictions on suffrage there is little doubt that the changes in the land laws took place in the context of support mobilization by the parties. Bergquist (1986, p. 328) concludes his discussion of this by arguing “the clientelistic structure of party politics and the competitive struggle between the parties for control over local affairs was enlisted by individual smallholders in their efforts to create a social field...favorable to their interests.”

As in Costa Rica, but unlike ESG, landownership was not the distinguishing feature of the political elite in Colombia (see Twinam, 1982, for evidence on the important Antioquian case).³² Instead it was “a combination of commerce, office holding, and diverse investments in urban and rural real estate,” (Gudmundson, 1986, p57). Palacios documents this in great detail, arguing (1980, p25) “merchants were in the forefront of development, and their participation was decisive for the future of coffee,” and that (p145) in the case of the coffee bourgeoisie “capital no longer went into control land and labor, but to control the internal coffee market.”³³

Colombianists have also noted the desire to monopolize land to gain control of the labor supply. LeGrand (1986, p38-39) claims “the problem of labor scarcity helps to explain why entrepreneurs tried to monopolize tracts of public lands much larger than they could possibly put to use. Only by restricting the free access of peasants to...lands, thus depriving them of an alternative economic base, could the landowning classes hope to tie them to the estates.” However, in Colombia such a strategy did not work. Palacios explicitly discusses (1980, p103) how the smallholder economy destroyed monopsony power of landowners but adds (p141) “no sooner was he [the small and medium cultivator] established on the slopes of the central cordillera than he was integrated into the network of monopsonistic purchase.”³⁴ He develops this argument in great details demonstrating (p153) that “the system of purchasing and processing the coffee for export...showed a high

³²Safford (1972) and Delpar (1981) are important studies of the origins of Colombian political party elites. Regional loyalties, as in Costa Rica, were also important with the liberal heartland being in Santander and the conservative one in Antioquia. The strengthening of these regional power bases was part of the liberal revolution, Dix (1987, p19) noting “the liberal constitution of 1863 carried federalism almost to its logical extreme by according the Colombian states many of the attributes of sovereignty.”

³³The leading scholar of Colombian economic history, Luis Ospina Vasquez (1955, p128) argued “The wealthy, important, and influential class [of colonial Colombia] was not the landlords but rather the merchants and officials...That spirit of the ‘feudal landlord’..has served to explain the entire process of economic life in Latin America, even in those nations in which the wealthy classes’s aversion to the countryside and agriculture comes to have aspects of a sickness, and in which the ‘feudal’ latifundium is perfectly exceptional or unknown and even the hacienda in its typical form is rare.”

³⁴Palacios’s views on these matters, whilst the most definitive, are almost unanimously shared by Colombian historians (eg. the important work of Arango, 1977).

degree of concentration, and powerful financial control was exercised by the commercial houses in the interior,” moreover (p157) “the coffee [was] thus acquired at monopsony prices.”³⁵

As we noted in the introduction, it is widely accepted that the smallholder economy has been an integral part of Colombia’s superior economic performance. McGreevey (1971, p197) argues “this difference in the organizational structure of coffee production is a major explanation for the favorable impact of coffee growing on Colombian development.”³⁶ In our theory this derives from a level and a growth effect. We here emphasize the superior human capital performance of Colombia.³⁷ As Table 1 records (data from Thorp, 1998) the literacy rate in Colombia was 34% in 1900, 52% in 1930 and 62% by 1960. Engerman, Mariscal and Sokoloff (1998) have literacy rates of 32% for 1918 and 56% for 1938. McGreevey’s data (1971, p234) also shows that there is a significant relationship between educational performance and land distribution within Colombia. The areas where smallholders dominate are those with the greatest educational attainment. For example, in 1874 Antioquia’s schooling rate (% of children in school as percentage of total population) was 189% of the average while in 1918 Antioquia’s literacy rate was 131% of the average. This is consistent with the data presented by Helg (1984, p. 30-1) showing that while in 1918 the average literacy rate was 32.5%, it was 45.7% in Caldas and 39.2% in Antioquia, while in 1922 Caldas and Antioquia had the highest and second highest proportion of children in school of any states.

3.5 Other Countries: Brazil and Venezuela

We now briefly consider pertinent evidence from Brazil and Venezuela. The comparison with Brazil is complicated by several factors. Firstly, it had a different colonial master, and therefore different colonial institutions. Secondly, following independence Brazil be-

³⁵The main cartel of coffee purchasers in Medellin, the “Negocio de X y Y” (where X stood for coffee and Y for hides) purchased about 65% of all the coffee produced in Antioquia (Palacios, 1980 p 156).

³⁶Interestingly, it is not currently fashionable amongst modern Colombianists to uncritically accept the myth of Juan Valdez initially propagated by Parsons (1949) (see for example Christie, 1978). Indeed, both Palacios (1980) and LeGrand (1986) are cautious about how well the land laws were actually enforced. However, there is no dispute about the data on farm size. While examples of peasant expropriation can easily be cited the laws clearly did have a major impact on the pattern of landownership.

³⁷In the Colombian case a large literature has argued that the predominance of smallholder production stimulated industrial and economic development by creating a relatively affluent middle class. Hirschman (1977) popularized this idea (see also Thorp, 1991), though the original insights date back to Parsons (1949) and Ospina Vasquez (1955). See also the formalization by Murphy, Vishny and Shleifer (1989). The mechanism these authors emphasize runs from smallholders, to relative income equality, to the demand for domestic manufactures. Though our emphasis on human capital accumulation is complementary to the demand story, we feel that it is more plausible given the openness of these economies during this period.

came an empire with an emperor and not a republic and thus had very different political institutions until 1888. Thirdly, slavery was very important in Brazil until its abolition in 1888, following which large-scale immigration from Southern Europe occurred. Neither of these were of any significance in our other countries. Finally, the type of coffee grown in Brazil is different (*robusta* rather than *arabica*) and since it is of lower quality coffee berries tend to be stripped rather than picked from the bushes. This makes harvesting much less quality intensive. Moreover, the big coffee states of Sao Paulo and Parana are much flatter and have different topographies from Central and Andean America. Both of these latter factors may allow for greater scale economies.

Nevertheless, despite these complicating factors, the basic evidence from Brazil is consistent with our theory. Factually, the average size of coffee farms in Brazil was and is large. Moreover, Brazil has a dismal record of human capital accumulation. For example, the literacy rate was 14.8% in 1890 and 30% in 1930 (Engerman, Mariscal and Sokoloff, 1998). What accounts for this? The historical literature explains the heavy land concentration in Brazil by the dominance of landed interests and the planter class. During the colonial period and up until 1850 land was either squatted (*posses*) or occupied on the basis of huge grants from the state (*sesmarias*). As the long run feasibility of the slave economy vanished the Brazilian government wanted to develop a new system of property rights in land with the most significant legislation being passed in 1850. “The bill...was based on the assumption that where access to land was easy, it would be impossible to get people to work on the plantations...The only way to obtain free labor...would be to create obstacles to landownership, so that the free worker, unable to get land, would be forced to work for others. Therefore the traditional means of access to the land—squattening, tenancy, sharecropping—should be limited, and unused land should revert to the imperial government as public property and then sold at a high enough price to make it difficult for newcomers to buy,” Costa (1985, p82-83). For example, Dean (1971, p606) describes how landed interests derailed any attempt to promote widespread access to land in nineteenth century Brazil, concluding that while some elements in the government “sought consciously to deal with land concentration and to counter the power of the great landowners. The final failure of these efforts is an interesting example of the difficulty of reform from within a political system dominated by the landed elite.” Most analysts argue that it was precisely the interests of the coffee planters that were served by the 1850 bill (see for example Alston, Libecap and Mueller, 1996, Chapter 2) and Costa (1985, p 84) notes “it seemed clear that the bill served the interests only of the planters of Rio, São Paulo, and Minas, the coffee land.” This legislation then served as the basis for the

expansion of the Brazilian coffee industry and led directly to the dominance of large scale plantations (for example, Love, 1980).

The Venezuelan coffee economy has received little attention from scholars. However, the existing research suggests the following evolution of the industry. Coffee expanded in the nineteenth century as squatters moved into frontier and government owned lands. They did so in the most part without ever gaining formal title to their lands. In this process elites participated for the most part not as landowners but as providers of credit and purchasers of the crop (see Roseberry, 1983, Chapter 3, and Yarrington, 1997, Chapter 3). The period up until 1899 was one of vigorous competition between rival Liberal and Conservative parties with strong regional divisions, disputed elections and relatively frequent civil wars. Indeed politically, Venezuela looks remarkably similar to Colombia in the nineteenth century. For example, Lombardi (1982, p177) suggests that it was precisely intra-elite competition for support which stopped the introduction of forced labor laws in the 1840's. After 1899, however, things changed dramatically with the two long dictatorships of Cipriano Castro from 1899 to 1908, and the Juan Vicente Gómez from 1908 to 1935. During this autocratic period the old political parties were destroyed and the central state was greatly strengthened. One result of this was large changes in land laws which apparently led to significantly increased land concentration. Yarrington (1997, p5-6) documents that during the Gómez dictatorship "the decline of household economies in Duaca resulted from the elite's sudden, wholesale expropriation of public and Indian lands." He shows that in this region the smallholder economy which had grown up in the nineteenth century was destroyed.³⁸

For our purposes the usefulness of the Brazilian and Venezuelan cases is that they both underscore the importance of politics in determining the structure of the coffee economy. In Brazil, where landowners dominated politics both during the Empire and the Old Republic (from 1889-1930), land laws favored the consolidation and maintenance of large plantations. In Venezuela, the coffee economy of the nineteenth century appears to have been close to that of Colombia or Costa Rica, but the consolidation of the long dictatorship after 1899 put this process into reverse. Once political competition disappeared there was mass land expropriation of smallholders. Yarrington (1997, p211) concludes, "the agrarian history of Duaca...points to the connection between politics and agrarian change. Changes in the prevailing system of land and labor did not simply represent the cumulative effects

³⁸Available data on farm size is consistent with this. For example, de Janvry (1981, p75 Table 2.4) records that in 1970 50% of coffee farms in Venezuela were over 100 hectares, while the corresponding numbers for Colombia (1959) and Costa Rica (1970) are 9% and 26% (for Guatemala (1950) and El Salvador (1961) the numbers are 94% and 46% respectively).

of market or demographic forces; rather, the transformation of Duaqueño society grew out of political changes at the local and national level.”

4 Alternative Theories

We now discuss other possible interpretations of the evidence presented in the last section and argue that our theory provides the best fit. We here concentrate on the most important hypotheses which are not obviously inconsistent with the evidence that we have provided. Nevertheless, it is worth noting that by examining only a sub-set of the countries, several scholars have proposed untenable theories. For example, Hirschman (1958, 1977) argued that there was something different about coffee which led to smallholder production with all its beneficial effects. This is clearly inconsistent with the evidence from El Salvador and Guatemala. On the other hand Thorp (1991), in her comparison of Colombia and Peru, argued that the better performance of Colombia was due to smallholders, but that this difference originated in topographical differences. Yet this is inconsistent with the accepted view in the literature on coffee that there are no significant topographical differences between the countries we study, yet smallholder production was limited to CRC (for example, de Graaf, 1986).³⁹ Other scholars of a particular country often attribute land laws to liberal ideology (for example the discussion of Colombia in Osterling, 1989, p69). Yet our comparative study shows that there was no simple connection between liberal ideology and the form that land privatization took.

4.1 Indigenous People and Population Density

Perhaps the most common theory of why Costa Rica is different is that, relative to other Central American countries, it had very few indigenous people at the time of the conquest (or at least after the decimation of the population by disease) and very low population density.⁴⁰ Low population density might matter because it made plantation agriculture

³⁹The reason for this is that growing requirements of “mountain” coffee of the *arabica typica* variety which these countries grow, are quite sensitive (see the discussion in de Graaff, 1986, p. 29-32). Thus it can only be grown in rather specific climatic zones. In particular, it must receive light throughout most of the year and 60-90 inches of rain, and have porous soils which are not alkali (Ph score between 5 and 6) and must never experience frost. The areas of these four countries devoted to this variety of coffee are all between 2000 and 6000 feet, receive at least 70 inches of rainfall in volcanic soils which provide both the right Ph value and excellent drainage (see Van Royen, 1954, and for Colombia, Instituto Geografico Augustin Codazzi, 1967).

⁴⁰Gudmundson and Lindo Fuentes (1995) report that pure Indians made up only 1% of the population in Costa Rica, while in Guatemala the indigenous population was 400,000 in 1820, constituting 68% of the population.

infeasible (since there was not a large potential labor force) and that as a result the smallholder economy emerged. In a representative statement of this view Bulmer-Thomas (1994, p95) says “some of these pockets of yeoman farming developed in parts of Latin America where the shortage of labor was so acute that no amount of manipulation of the labor market could be expected to yield an adequate wage-labor force. Such was the case in Costa Rica.” Though this argument appears less in the Colombian literature, it is certainly true that in the regions of Antioqueño colonization the population density was low. Therefore the hypothesis can be plausibly applied to Colombia.

Telling evidence against the role of population density, however, is provided by the experience of Nicaragua. The Liberal revolution came late to Nicaragua with the coup of José Zelaya in 1893.⁴¹ Zelaya proceeded to privatize and expropriate land in exactly the same way as in ESG (Mahoney, 2001, provides a detailed discussion). Paige (1997) documents that 50% of all land privatized went to just 30 families, all of them liberals. Moreover, according to his data, the size distribution of coffee farms is almost identical to that in El Salvador. Yet like Costa Rica, Nicaragua was far from the Mayan highlands where the great concentrations of indigenous people were found, and as the data in Cardoso (1991, p. 39) reveals, the population density of Nicaragua was 6.8 people per square mile in 1875, almost identical to the figure for Costa Rica (6.1 in 1870). The other numbers from Cardoso (1991) are 29.2 in 1880 for Guatemala and 68.4 in 1878 for El Salvador. For Colombia this figure is 6.39 in 1870 (author’s calculations based on data from Bulmer-Thomas, 1994). Therefore, contrary to this common hypothesis, it is not low population density which differentiates CRC.

A related idea stems from the relative lack of Amerindians in Costa Rica. It could be that Indians are easier to exploit and this makes a plantation system more attractive (perhaps because it reduces the subsistence wage). It seems clear that Costa Rica was different in this sense. Yet, as with population density, the presence or absence of Indians does not seem a good predictor of the form that organization of the coffee economy took. In particular, the proportion of both Amerindians and those of European descent in the whole population is almost identical for Colombia, Venezuela and Nicaragua (see McEvedy and Jones, 1975). Yet in Colombia political elites passed laws promoting smallholders while in Nicaragua they expropriated land for themselves and created plantations.

⁴¹The reason for the delay was that Liberalism had been somewhat discredited by its association with William Walker, an American mercenary who had ended up declaring himself President in the 1850’s.

4.2 Other Different Initial Conditions

One idea much discussed in the Costa Rican literature is the “rural democracy” thesis, which holds that before the rise of coffee Costa Rica was settled primarily by ‘yeoman farmers’ who owned their own land and created an egalitarian democratic ethos (Seligson, 1980, is a famous exponent of this view). It seems likely that if this were the case it might lead to smallholder production when coffee took off. However, the recent literature on Costa Rica has largely debunked this view (see Gudmundson, 1986). Moreover, even if one were to accept this view about Costa Rica, it does not explain why smallholder production occurred in Colombia since no such myths exist there.

Another idea given wide credence is that smallholder production occurred when there was an open frontier for settlers to move into. It was certainly true that in both Costa Rica and Colombia, the largest areas of coffee production came to be on lands that had previously been unoccupied. However, this is also true of Guatemala where the western slopes of the central cordillera contained the best coffee growing land. Thus the presence or absence of an open frontier is not a good predictor of the form land privatization took.

4.3 Capital Markets

Since coffee is a large investment it seems plausible that the nature of capital markets might be important in determining organizational form and perhaps the resulting preferred land policies of elites. For example, without well functioning capital markets where smallholders could borrow, attempting to foster smallholder production might be infeasible and thus creating plantations the only option. This argument suggests that it could have been the greater development of capital markets in Costa Rica and Colombia that led to smallholder production. The main piece of evidence against this view is that, as a result of its position during the colonial era, Guatemala undoubtedly had the best developed capital markets at independence of any of these countries. Yet, as noted above, the Consulado did not want to lend for the purposes of coffee production and blocked other institutional changes that would have facilitated it. While by the end of the century Costa Rica and Colombia undoubtedly had much better financial institutions, this was primarily as a result of coffee expansion (see Hyland, 1982, on the Colombian case).

4.4 Technological Changes subsequent to Costa Rica's move into Coffee

There is some suggestion in the literature that technical innovations around the middle of the 19th century, particularly in processing (for example the invention of the method of 'wet processing'), may have led to greater scale economies. Thus it could have been true that at the time when Costa Rica went into coffee small scale production was more efficient, while subsequent technical innovations had made large scale production more efficient by the 1870's. The evidence against this hypothesis is the fact that the great expansion of smallholder production in Colombia occurred at exactly the same time as the plantation system was under construction in ESG. Thus technological changes, even if significant,⁴² do not seem to have been critical in determining the differential form which coffee organization took.

4.5 International Factors

Various authors have emphasized a variety of international factors which might help explain why the coffee industry in El Salvador and Guatemala differed so greatly from that in Costa Rica. There seem to be three arguments, that (1) the later Liberal revolution in ESG meant that there was a much greater availability of foreign capital than was true when Costa Rica had embarked on coffee in the 1820's, (2) immigration of foreigners played an important role, (3) changes in the price of coffee.

It is true that in the case of Guatemala the disenfranchisement of the *Consulado de Comercio* after the Liberal revolution led the new elite to rely on foreign merchants and firms (mostly German and British) to finance part of the industry. However, the clinching evidence against all these arguments is the experience of Colombia. The most important period of coffee expansion, the great Antioquian colonization started in the 1870's and 1880's at exactly the time when Guatemala and El Salvador moved into coffee. Moreover, Palacios (1980) documents that foreign capital was very important in the financing of the Colombian coffee industry. Yet Antioquia has the highest incidence of smallholders in Colombia.

Interestingly, Yashar shows in her comparison of Costa Rica and Guatemala that while both countries experienced significant immigration from Europe, particularly Germany, such immigrants went into whatever activities were dominated by local elites, "while Ger-

⁴²Note here that the contemporary literature cited in the introduction uniformly argues that smallholder production is more efficient (presumably despite previous technological changes).

mans in Costa Rica played a pivotal role in processing, Germans in Guatemala privately became powerful landowners,” (Yashar, 1997, p. 60). Thus the foreigners themselves did not determine the occupational structures of elites.

4.6 Impact of State Autonomy

Mahoney (2001) in an important work distinguishes between “Radical Liberalism” in El Salvador and Guatemala and the “Reformist Liberalism” of Costa Rica. He points out, as we do, that these had very different manifestations with respect to property rights in land which he then links to different class structures and subsequent paths of political development. His explanation of the different policies of the different liberal regimes then hinges on the political strategies of the dictators, Barrios, Zaldívar and Guardia, who he regards as being largely autonomous from local elites. In his view, the pattern of land expropriation and the creation of a plantation system in El Salvador and Guatemala can be explained by the fact that these policies were the best way for Barrios and Zaldívar to consolidate their political power. He notes (p. 41) “it is certainly true that much of the time the smoothest way for liberals to rule was to fully support oligarchic interests. However, sometimes liberal dictators did act outside of dominant class interests.” Nevertheless, he never really establishes why the best way to consolidate power in ESG involved mass land expropriation, while in Costa Rica under Guardia it meant carrying on with the promotion of smallholders. The most plausible explanation of why these dictators did as they did was that it was heavily conditioned by the interests of political elites, which is essentially our argument.

5 Conclusion

In this paper we have used the experience of the comparative economic development of the coffee exporting economies in Latin America to shed light on the origins of differential institutional development. While Costa Rica and Colombia developed and protected relatively efficient and egalitarian smallholder economies, El Salvador and Guatemala instead created inegalitarian plantation societies. The dynamic effects of these were relatively rapid human capital accumulation and income growth in Costa Rica and Colombia and stagnation in El Salvador and Guatemala. We conjecture that these inefficiencies persisted because of important inseparabilities between efficiency and distribution. In particular, a prime motivation behind land concentration seems to have been a desire to exert monopoly power in the labor market yet we showed that even if capital markets are perfect,

monopsony rents may not be transferrable. One can think of these as the transactions cost which stop the Coase Theorem implying that institutions would take on a socially efficient form.

The historical record suggests that it is important differences in the composition and strategies of political elites which led these, apparently structurally very similar societies, to move onto such radically different growth paths. The differential processes of economic development over the last century cannot be understood just by an examination of the physical endowments of the countries and the technologies available, since these were all very similar. In our view political economy factors were decisive. At least for the economies we consider, endowments were not fate.

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