

Appendix:

Modelling the U-Shaped Relation between Financial and Political Reforms

In this appendix, we present an extremely simple framework to account for the non-monotonic relationship between political regime and financial reform. The model is a simple extension of the Acemoglu and Robinson (2006a) workhorse model, which focuses on redistributive politics. One extension of this model is that we assume that the government, in addition to determining tax rates and transfers, also selects the level of financial reform. Financial reform produces efficiency gains but at the same time reduces government revenue per unit of output.

The other extension is given by the presence of heterogeneous elites, associated with different sectors of the economy. We assume the economy is composed by two sectors, a “modern” sector and a “traditional” sector, for instance a sector based on natural resources or traditional technologies. We call capitalists in the former sector as the “modern” elite and the owners of the firm in the other sector as “traditional” elite. Workers form the majority of the population and are employed in both sectors. Population is formed by N^b , members of the “traditional” elite, N^g , members of the “modern” elite, L^m , workers in productive sector, L^o , workers in the “traditional sector.” Total population, N , is normalized to be equal to 1.

Output in the productive sector can be produced with two technologies, an advanced and a traditional one. The advanced technology requires a sufficient level of financial development. Thus, output in the productive sector is given by:

$$Y^m = F(K, L^m)I(Z) \quad \text{for } Z \geq Z^*$$

or

$$Y^m = L^m \quad \text{for } Z \leq Z^*$$

where Z represents the level of development of the financial sector and with

$I(Z) > 1$ for $Z \geq Z^*$.

Workers earn $w^m I(Z)$ for $Z \geq Z^*$ or w^m for $Z \leq Z^*$.

In this specification, financial development appears as a public good. The elite and workers in the good sector favour financial development.

In the “traditional” sector, output is produced by labour and a natural resource R . If labour falls below a given threshold, output cannot be extracted in the sector. Therefore, owners of natural resources have to pay the same wage as in the productive sector. As a result, workers in the natural resource sector benefit as well from financial development. However, financial reform reduces government revenues, and in particular those generated by financial repression. We define such revenue cost as $C(Z)$.

Incomes of the different groups are taxed with the same tax rate τ . Income taxes lead to inefficiencies, measured by a loss function $C(\tau) \bar{y}$, with $C'(\tau) > 0$, and \bar{y} denoting average income in the economy. The government uses tax revenues to redistribute income through transfers, T in per capita terms, which we assume are the same across groups. In autocracy part of the transfers are directly appropriated (or “grabbed”) by the government.

Given these assumptions, there are three possible equilibria in the model: (i) democracy, with the preference of the workers (the majority of the population) determining policy outcomes; (ii) autocracy, with a political elite in power that wins a political contest against the “traditional” elite. The autocratic government is based on consensus from the “modern” elite and from the worker-population; (iii) partial or captured democracy, with the “traditional” elite dominating the political scene; such regime is unstable as it has no consensus on any parts of the population.

The worker-population prefers high redistribution of income, thus high tax rates, as its income is lower than average income. It also favours financial reform. The “modern” elite has a preference for low income taxes and it favours financial reform. The “modern” elite cannot

form a coalition with the “traditional” elite as its income crucially rests on the presence of financial development. However, the “modern” elite is averse to redistribution and thus has a preference for an autocratic regime that can deliver financial reform and lower taxation. In contrast, democracy will ensure financial reform but will imply high tax rates.

Full democracy and partial democracy are relatively easy to characterize, as they reflect the preference of the worker-population and of the “traditional” elite, respectively. The equilibrium in autocracy is more complex, as the government has two objectives: one, is retaining its power, which requires sufficient consensus from the heterogeneous groups; the other, is the appropriation of resources (“grabbing hands”). We will characterize three different political equilibria, related to different reform policies. First, we will define the objective functions of the four players (government, two elites and the worker-population).

The indirect utility of the different players are as follows

$$V^b = (1 - \tau)M/N^b + T \quad (1)$$

for the “traditional” elite (with $m = M/N^b$ rents per rentier in the natural resource sector).

$$V^g = [(1 - \tau)(1 - \alpha)F(K, L^m)I(Z)]/N^g + T \quad (2)$$

for the modern elite.

$$V^w = [(1 - \tau)\alpha F(K, L^m)I(Z)(1 + L^o)]/(L^m + L^o) + T \quad (3)$$

for the worker-population.

Assuming that per capita transfers are the same across different population groups, transfers are obtained from the government budget constraint:

$$T = [\tau - C(Z) - C(\tau)] \bar{y} \quad (4)$$

The payoff of the autocrat has two components, one related to the consensus motive, which involves the utility of the different parts of the population, and the other to the appropriation motive of part of tax revenues:

$$V^a = \mu V^b + (1 + \mu)[V^g + V^w] + \beta T \quad (5)$$

The two elites and the worker-population have different preferences over τ and Z , derived from the maximization of their utility. The desired tax rate for the “traditional” elite is obtained by maximizing the indirect utility with respect to τ . The first order condition is

$$-m+(1-C'(\tau))\bar{y} = 0 \quad (6)$$

Under the assumptions that $m > \bar{y}$, and $C'(\tau) \leq 1$, the optimal tax rate for the “traditional” elite is $\tau=0$, as the LHS is always negative (this is the same result as in Acemoglu and Robinson, 2006a). Furthermore, as financial reform affects negatively the “traditional” elite, through the increase in wage costs and through the overall negative effect on budget revenue, the optimal value of Z for the “bad” elite is $Z=0$.

The optimal tax rate for the “modern” elite is also zero, again because per capita income of the “modern” elite members is higher than the average per capita income. Regarding financial reform, the “modern” elite will obviously support it and thus its optimal value of Z is $Z=Z^*$. Moreover, the “modern” elite does not face a trade-off between income tax rate and financial development, as lack of financial development implies zero income for the “good” elite, irrespective of income taxes.

Finally, we solve for the optimal tax rate and optimal financial reform for the worker-population. The optimal income tax rate desired by the population satisfies:

$$((\partial V^w)/(\partial \tau))=0: -w^m+(1-C'(\tau))\bar{y} = 0 \quad (7)$$

Given that $w^m < \bar{y}$ then $\tau > 0$.

The population desires redistribution, given that its incomes are lower than those of the elites. The optimal choice of development of the financial sector is the same as for the “modern” elite, $Z=Z^*$. Thus, the worker-population demands redistribution and favours financial development.

In democracy, the preference of the population will dominate and the outcome will thus be a positive tax rate and financial sector reform. By contrast, under partial democracy,

the equilibrium reflects the preferences of one of the elites. We assume that the “traditional” elite will prevail because it possesses more resources to be spent in the process of controlling the government. This assumption implies that initially the level of financial development is low, and thus the total amount of profits of the “modern” elite is low as well. Another way to look at the two elites is thinking in terms of incumbents and entrants. The “resource” sector can be seen as representing the incumbents, while the “manufacturing” sector new entrants.

An additional assumption is that under partial democracy the government is weak and it is not able to counteract the pressure of the elite. In other words, the government is simply a “puppet”, executing the mandate of the “traditional” elite, and therefore under partial democracy $Z=0$.

Under autocracy there are equilibria with financial reform. These equilibria arise for two main reasons. The first is the “consensus motive”, as the autocrat needs consensus to maintain its power. As the utility of the “modern” elite and of the worker-population enters its objective function, the autocrat has incentive to implement financial reform. The second is the “grabbing motive”, as financial reform may increase the tax base from which the autocrat derives its income (the effect through the appropriation component of the objective function). This effect depends on the net outcome of the increase in manufacturing output and the adverse effect on loss of revenue ($C(Z)$). Therefore, financial reform may help the autocratic government to maintain its power and protect its rent appropriation.

Under autocracy, there are two possible sets of equilibria: one in which the government bases its power on the “traditional” elite, the other in which the base for the government power is due to a coalition of the “modern” elite and the population. Given our assumptions on the technology in the manufacturing sector, if the government gets support from the “traditional elite” (thus $\mu=1$), $Z=0$ and output in the economy comes solely from the resource sector. Thus, the indirect utility of the government becomes:

$$V^a = V^b + \beta T \quad (5')$$

or

$$V^a = (1 - \tau)M/N^b + (1 + \beta)[\tau - C(\tau)] \bar{y}$$

And

$$\bar{y} = (M/N^b) (N^b/N)$$

where N is the total population.

The tax rate that maximizes the above indirect utility is obtained from the following condition:

$$-1 + (1 + \beta)[1 - C'(\tau)] (N^b/N) = 0$$

If $(1 + \beta) (N^b/N) < 1$ then $\tau = 0$, otherwise $\tau > 0$. If the “grabbing hand” objective is high (high β), tax rates can be positive. However, considering that N^b is a small proportion of total population, positive tax rates imply that β has to approach 1, an unlikely scenario. In the more likely scenario of zero tax rate, the government does not appropriate any resources, and at the same time faces high risks of losing power, given the opposition of the large majority of the population. Thus, this equilibrium is consistent only with a situation in which the “traditional” elite captures the government. In other words, the political elite is powerless. This is of course always a possible equilibrium under autocracy and may well reflect backward autocratic regimes, as illustrated by Acemoglu and Robinson (2006b). The outcome in autocracy resembles the result obtained by Goshal and Proto (2008), who model the autocratic regime as one in which the government is supported by a coalition between one elite and the population.

The second set of equilibria implies financial reform. The “traditional” elite opposes such outcome and thus the consensus base is given by the “modern” elite and the worker-population. Such situation corresponds to the case in which $\mu = 0$.

The objective function of the government is:

$$V^a = V^g + V^w + \beta T$$

Or

$$V^a = [(1-\tau)(1-\alpha)F(K, L^m)I(Z^*)]/N^{e2} + [(1-\tau)\alpha F(K, L^m)I(Z^*)(1+L^o)]/(L^m + L^o) + (2+\beta)[\tau - C(Z^*) - C(\tau)] \bar{y}$$

The condition for the optimal tax rate is:

$$C'(\tau) = 1 - [F(K, L^m)I(Z^*)((1-\alpha)/N^{e2} + \alpha(1+L^o)/(L^m + L^o))]/[(2+\beta) \bar{y}]$$

The tax rate is always positive in this case. Thus, the government can appropriate resources and, at the same time, it has a broad support from one elite and the population. Financial reform is a key element for such consensus. If the government cares about consensus, the equilibrium supported by the coalition of the “modern” elite and the population dominates.

In sum, the discussion so far has illustrated the fact that financial sector reform decreases during the shift from autocracy to partial democracy, whereas it increases with the shift from partial to full democracy. The model predicts a non-linear relationship between democracy and financial sector reform.