

Dadasov, Ramin; Harms, Philipp; Lorz, Jens Oliver

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# The Impact of Financial Integration on Institutions in Autocracies

Ramin Dadasov, Philipp Harms, and Oliver Lorz

*RWTH Aachen University\**

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## **Abstract**

It is often argued that a satisfactory institutional quality is prerequisite for successful financial integration. This paper analyzes the influence of financial integration on institutional quality. We construct a dynamic politico-economic model in which the ruling elite uses its political power to expropriate the entrepreneurial class. Although financial integration reduces capital costs for the entrepreneurs and therefore increases their gross profits, the elite counteracts this effect by raising the level of expropriation. Consequently, the net income of entrepreneurs may rise or decline depending on the respective magnitude of the countervailing effects. Since political power is linked to economic resources, financial integration also has consequences for the concentration of power in the hands of the elite and for the rise of the entrepreneurial class.

*JEL classification:* F21, O16, P48.

*Keywords:* Institutions, Capital Mobility, Political Economy.

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\*Address: RWTH Aachen University, Department of Economics and Business Administration, Templergraben 64, 52056 Aachen, Germany. Email: [ramin.dadasov@rwth-aachen.de](mailto:ramin.dadasov@rwth-aachen.de), [harms@rwth-aachen.de](mailto:harms@rwth-aachen.de), [lorz@rwth-aachen.de](mailto:lorz@rwth-aachen.de)

# 1 Introduction

For more than three decades we have been observing a substantial increase in cross-border capital flows. Lane and Milesi-Ferretti (2006) use the ratio of total foreign liabilities and assets to GDP to capture the extent of overall international capital flows. According to this measure the de facto degree of financial globalization between 1970 and 2004 has increased in the industrial countries by a factor of 6. The emerging and developing countries have participated less in this process. Nevertheless, an increase of this ratio from 45% to 150% for these countries in the same period can be observed. These findings are in line with Chinn and Ito (2007), who show that the industrialized countries have steadily increased levels of financial openness since the 1970s, whereas both the less developed and emerging market countries have accelerated to remove restrictions on international capital flows, by massive deregulations of the domestic financial markets, only since the 1990s.

Against this background, it is not surprising that a broad literature concerned with empirically evaluating the impact of financial integration on economic performance has emerged. In their detailed and comprehensive review of this literature Kose et al. (2006) conclude that the majority of empirical studies do not find any robust evidence regarding a causal relationship from capital-account openness to economic growth. From this they deduce the hypothesis that in addition to the traditionally acknowledged direct effects of financial integration on growth there might be some indirect channels through which financial globalization operates. These channels work via the improvement of institutional quality and governance, the development of domestic financial markets, and macroeconomic discipline.<sup>1</sup>

Whereas the role of institutions in attracting international capital and determining its composition is empirically well investigated (see e.g. Alfaro et al. (2008); Ju and Wei (2007)), the literature has largely missed to provide evidence on how the mechanism could work the other way round.<sup>2</sup> At the same time the view that financial integration improves the institutional quality might be too optimistic. Table 1 gives a sense of this presenting a list of developing and emerging countries in which the increase of capital inflows has gone along with the deterioration of institutions, measured here as a decreased level of control on corruption and of rule of law. According

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<sup>1</sup>This “collateral benefits” argument finds support in the recent IMF report about the benefits of financial globalization (IMF (2007)). See also Obstfeld (2007)

<sup>2</sup>Furthermore, some studies investigate the impact of financial globalization on corporate governance. See Kose et al. (2006) and the works cited there

to Lane and Milesi-Ferretti (2006) 69 out of 122 emerging and developing countries experienced net capital inflows between 1996 and 2004. In 72,5 % of these countries at least one indicator for institutional quality and in 33 % both indicators have changed for the worse in the same period. Moreover, according to Polity IV index half of the countries listed in Table 1 are characterized as autocracies or at least as anocracies.<sup>3</sup>

The aim of this paper is to cast more light on these observations by providing a theoretical explanation as to how financial integration itself can affect the evolution of domestic institutional quality in developing countries. Assuming a country which is ruled by an autocratic regime we argue that financial integration provides ruling elite with additional means to implement inefficient policies, such as e.g. expropriation, and thereby stabilize their grip of power. Our model is one of very few attempts to integrate the impact of financial integration to a framework with endogenous institutions.

Our understanding of what institutions are and which factors determine their evolution is based on the idea by Acemoglu and Robinson (2000, 2006) and Acemoglu et al. (2005), who argue that there is an explicit interplay between political and economical institutions. Whoever has more political power (*de jure and de facto*) is likely to secure the set of economic institutions that she prefers. The distribution of political power is in turn the outcome of political institutions and of the available material and non-material resources like human capital or control over military. However, we take political institutions as given and are concerned about the evolution of the economic institutions.

Formally our framework builds on Acemoglu (2006). We consider a developing country with a political system which can be described as a dictatorship by the elite. The ruling elite can implement policies to its own favour, e.g. expropriate non-elite and transfer resources from the rest of the society to themselves. Besides implementing a distortionary tax, the elite is engaged in productive activities. We distinguish between two sectors. The first one consists of firms controlled by the elite, while the second one is characterized by private entrepreneurship. The non-elite labour force is free to choose between either working for the elite-controlled firms in the first sector or engaging itself as entrepreneurs in the second sector instead.

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<sup>3</sup>Corresponding to the country scores Polity IV Project adopts following categorization of the political regimes: "autocracies" (-10 to -6), "anocracies" (-5 to +5), and "democracies" (+6 to +10)

To illustrate the practical relevance of this assumption one could assume that the country under consideration is rich on natural resources. The political system of these countries are typically characterized by authoritarianism and the ruling class controls economic activity. More generally, the country might be strongly agrarian-oriented. A proper example is Uzbekistan. Its economic activity is based on commodity production and agriculture. At the same time, the International Crisis Group suggests that revenues earned from key exports, especially cotton, gold, corn and increasingly gas, are distributed among a very small circle of the ruling elite, with little or no benefit for the populace at large.<sup>4</sup> In addition, the Polity IV index classifies Uzbekistan as being a completely totalitarian regime for more than 10 years. Note that according to Table 1 Uzbekistan experienced very large capital inflows and a significant deterioration in its institutional quality.

We further assume that expropriation is costly for the elite and interpret these costs as non-elite's ability to resist the expropriation. We start our analysis with a static model where these costs are exogenous. Then we extend our framework to a dynamic model, assuming that future costs of expropriation depend on the today's non-elite's total income, i.e. on today's level of expropriation. Thus, we model explicitly how the interaction between power and economic institution determines the future institutional outcome.

In this framework we analyze what happens to the institutional equilibrium, when the country liberalizes its financial account. Our result in the *static* model is that the economic institutions are worse than before liberalization. The access to the international capital market helps the entrepreneurs to finance their projects at a reduced rate and could thereby lead to a larger and wealthier entrepreneur class. The elite counteracts this potential rise in the entrepreneurs' profits by increasing the level of expropriation. The impact of financial integration in the *dynamic* setting is not that clear-cut. On the one hand we still get an increased expropriation rate, but at a level which might not fully counteract the interest rate-induced rise in the entrepreneurs' profits and thereby their future tax resistance ability. Hence, even if the elites' total rent increases, which would reinforce their power, altogether the entrepreneurs might still be better off through financial liberalization.

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<sup>4</sup>see International Crisis Group Policy Briefing, Asia Briefing Nr. 45, 2006, available on <http://www.crisisgroup.org/home/index.cfm?id=3952=1>

This result contradicts some common predictions according to which globalization leads to a larger middle class. Rajan and Zingales (2003) argue e.g. that in a closed autocratic economy the incumbent impedes the financial development at arm's length. Trade and financial integration would reduce the power of the establishment and thereby allow entry to the market. Acemoglu and Robinson (2006) show that globalization may make a rise of a democratic society more probable. However, they admit that the relation between democracy and globalization may be nonlinear. In an alternative model structure, globalization might lead to an income rise of the ruling class.<sup>5</sup> Besides, we are not interested in the influence of financial integration on the political system, what we want to analyse is its impact on the economic institutions.

The spirit of our paper is also related to Bourguignon and Verdier (2001), who analyze the consequences of financial globalization on the evolution of human capital. Since the evolution of political institutions is linked - though not modelled - to education via political participation, financial globalization has implications on the institutional development. In their model, capitalists have incentives to subsidize the education of the poor because both types of capital are complementary. With international financial integration the capitalist have additional investment and financing opportunities. From this it follows that the incentives to subsidize education might not be given any more, which results in a reinforcement of their political power. The central difference to our model is that the institutions and their evolutions are not modelled in their framework. This paper is also related to Aidt and Albornoz (2008), who analyse the role of foreign political interventions in explaining the rise of different forms of government. According to their argument these interventions are usually motivated by economic interests, such as securing one's own direct investments. Thus, a foreign government may support the consolidation of an autocratic regime with a friendly agenda toward foreign investors. Our work is further related to Gourinchas and Jeanne (2005), who want to find out how capital mobility shapes incentives to implement policies, which improve the social infrastructure. In their framework the decision to open up the domestic capital account is associated with a trade off: on the one hand international capital increases the domestic investment base, on the other hand there is a danger of capital flowing out, which would reduce the incentives for good policies. As a result capital mobility is good for

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<sup>5</sup>Acemoglu and Robinson (2006) analyze the impact of globalization as an extension to their baseline two-class model in a standard Heckscher-Ohline set up. In a labour abundant economy globalization would increase the factor price of labour, reducing thereby the inequality. Consequently, democracy would become less dangerous for the elite.

countries which are endowed with a certain level of initial capital. Finally, there are some contributions on the impact of trade on institutions. Segura-Cayuela (2006) shows e.g. that in a dictatorial states international trade is not necessarily welfare improving for the whole economy. Do and Levchenko (2008) analyses the impact of trade on economy which is dominated by a small amount of large firms. Trade shifts the political power toward this group, who prefer to maintain bad institutions.

The remainder of our paper is structured as followed: Section 2 presents the economic framework in the static environment and the comparative static results of financial liberalization. In section 3 we introduce dynamics. Section 4 concludes.

## 2 The Model

### 2.1 The Enviroment

We consider a small open economy populated by two different groups of individuals: elite and non-elite. Without loss of generality we normalize the size of each group to 1.<sup>6</sup> There are two competitive sectors in this economy: the elite controls the first sector, which is denoted by  $E$ , the second sector is an entrepreneurial private sector  $P$ . In sector  $E$  the elite employs non-elite workers  $L$ , to produce a good  $Y^E$ , in sector  $P$  entrepreneurs produce good  $Y^P$ . We assume that  $Y^E$  and  $Y^P$  are sold on the world market for given prices which we set equal to 1. The technology in sector  $E$  exhibits decreasing returns to scale and is represented by the following function for period  $t$

$$Y^E(t)E = L(t)^\beta ,$$

where  $\beta < 1$ .<sup>7</sup> Assuming a competitive labour market the gross wage in sector  $E$  is given by

$$w(t) = \beta L(t)^{\beta-1} .$$

Accordingly, the elite's profits from production are

$$\pi^E(t) = (1 - \beta)L(t)^\beta .$$

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<sup>6</sup>Certainly, a more realistic assumption would be that the elite is in a minority. As the size of the groups does not have any implications for our analysis, we stick to our simpler formulation.

<sup>7</sup>Since, as we proceed, we formulate the dynamic model in continuous time all variables represent instantaneous values.

Furthermore, we suppose that the elite holds the *de jure* power in this society. Thus, it is able to implement policies to its own favour. More specifically, it imposes a proportional tax on the non-elite's incomes ( $0 \leq \tau < 1$ ) and distributes the revenues from this tax among itself. The tax rate stands for the extent of expropriation and therefore for the failure of economic institutions to secure property rights of the non-elite. In a more broader sense, it may also be interpreted as representing other forms of economic inefficiency, like e.g. corruption.

The non-elite can choose between working in sector  $E$  or starting up a firm and becoming an entrepreneur. To start up a firm, an entrepreneur needs one capital unit. We assume that capital can only be borrowed from abroad at a given interest rate  $R$ . Hence, financial integration, interpreted as removing the frictions impeding capital flows, leads to a reduction of the costs of capital. Consequently, we model financial integration as an exogenous decline in the level of  $R$ .<sup>8</sup>

The sequence of events is the following: in the first stage, the elite decides on  $\tau$ , in the second stage, the occupational choice takes place and production is realized. This implies that elite can credibly commit to the tax rate and there is no time-inconsistency problem.<sup>9</sup>

The production function in sector  $P$  takes the simple linear form

$$Y^P(t) = \alpha P ,$$

where  $\alpha$  is an exogenous productivity parameter and  $P$  denotes the number of entrepreneurs. The net profits per entrepreneur can then be expressed as:

$$\pi^P(t) = (\alpha - R)[1 - \tau(t)] .$$

Note that a reduction in  $R$  has a same effect on profits as an increase in  $\alpha$ . Thus, financial integration entails efficiency gains for entrepreneurs.

Now we are able to characterize the individuals' occupational choice. In the labour market equilibrium the incomes from both activities have to be

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<sup>8</sup>This modeling choice is in line with textbook models (see e.g. Obstfeld and Rogoff (1996), Ch. 1.3.). Henry (2007) provides empirical evidence for 18 developing countries that cost of capital falls when countries liberalize their capital account.

<sup>9</sup>In this one period environment allowing elite to raise the tax rate ex post would lead to a maximum level of expropriation, that is,  $\tau$  would be equal to 1. Allowing for a lack of commitment in a dynamic environment would only increase the equilibrium expropriation rate, but do not change the mechanisms we are interested in.



equal. From this it follows that the equation  $(1 - \tau(t))w(t) = \pi(t)^P$  must hold. Consequently, the mass of non-elite individuals who are working in sector  $E$  is given by

$$L(t) = \left( \frac{\alpha - R}{\beta} \right)^{\frac{1}{\beta-1}}. \quad (1)$$

An interior solution with  $L(t) < 1$  exists for  $\beta > \alpha - R$ , which we assume for the following. Note, the relation between  $R$  and the number of workers is positive, which is intuitively obvious. Reducing  $R$  increases entrepreneurs' profits and thereby also their number  $1 - L$ , because  $L$  has to decline to keep the labour market in the equilibrium. That is, independently of institutional quality financial integration - a decline of  $R$  - raises entrepreneurial activity in our model. As each entrepreneur needs one unit of capital, financial integration causes more capital inflows.

## 2.2 Equilibrium with Exogenous Costs of Expropriation

Based on the fact that the political system is given by a dictatorship of the elite, we can determine the level of expropriation on the equilibrium by optimizing the elite's net total rent.<sup>10</sup> This rent is composed by adding total expropriation revenues to elite's profits from production and introducing some costs of expropriation. The cost function consists of two terms and has the following quasi-linear form:

$$C(\tau(t)) = \gamma(t)\tau(t) + \frac{c}{2}\tau(t)^2$$

The first term results from the non-elite's ability to resist the expropriation. This ability is represented by the parameter  $\gamma$ , and can also be interpreted as non-elite's political power. It is worth noting that power means here *de facto* power. Remember, the elite holds the *de jure* power in this society. Later in our analysis we will focus on the evolution of  $\gamma$  and its dependence on  $\tau$ . For now we assume it is constant over time and exogenous. The second term, with  $c > 0$ , represents all other costs associated with collecting and distributing tax revenues. The quadratic form ensures the strict concavity of the elite's rent function and simplifies our analysis.

In a static environment the elite's maximization problem can be written as

$$\max_{\tau} U = \tau(\alpha - R)(1 - L) + \tau w L + (1 - \beta)L^{\beta} - \gamma\tau - \frac{c}{2}\tau^2,$$

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<sup>10</sup>Throughout we assume that the members of the elite have the same preferences and are able to coordinate their political activities.

which simplifies to:

$$\max_{\tau} U = \tau(\alpha - R) + (1 - \beta)L^{\beta} - \gamma\tau - \frac{c}{2}\tau^2, \quad (2)$$

with  $L$  given by (1).

By optimizing (2) we obtain the optimal level  $\tau^*$  as:

$$\tau^* = \frac{A - \gamma}{c}, \quad (3)$$

where  $A \equiv \alpha - R$  denotes the entrepreneurs' gross profits. A comparative static analysis of the equilibrium level of  $\tau$  yields:

$$\frac{\partial \tau^*}{\partial R} = -\frac{1}{c} < 0$$

That is,  $\tau$  increases as  $R$  declines. As explained above, financial liberalization can be viewed as an exogenous positive productivity shock in this model. Hence, the mechanism of increasing  $\alpha$  works in the same way as reducing  $R$ . Both effects results in an increased level of the entrepreneurs' profits. This would not only increase their number, but also the wage rate on the labour market equilibrium. Hence, the elite counteracts the potential rise of the entrepreneurs' profits by increasing the expropriation rate. We state this result in our first proposition.

**Proposition 1** *In the static environment, financial integration raises the level of expropriation, changing the economic institutions for the worse.*

Though the number of entrepreneurs increases with financial integration, as seen by (1), the above result shows that the net effect of financial integration on entrepreneurs' income is ambiguous. This is demonstrated by taking partial derivatives of  $\pi^P$  with respect to  $R$  at the equilibrium, which yields:

$$\frac{\partial \pi^P}{\partial R} = \frac{2A - \gamma}{c} - 1$$

If  $2A > c + \gamma$ , financial integration results in a lower income of the non-elite.<sup>11</sup> Thus, if the costs of expropriation are sufficiently low, the elite burdens the non-elite more aggressively so that the expropriation effect would dominate the direct effect of liberalization resulting in a lower income.

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<sup>11</sup>Remember, profits and the wage in sector  $E$  are equal on the equilibrium.

### 3 Endogenous Costs of Expropriation

Our main objective is to look at how institutions evolve over time in such an environment. For this reason we analyze how entrepreneurs' political power and economic institutions interact with each other. Hence, in this section we endogenize  $\gamma$ . Modeling it we draw on the idea by Acemoglu and Robinson that power is mainly a function of (in our case material) resources.<sup>12</sup> Bearing in mind that in the labor market equilibrium the incomes from both activities are equal and the size of non-elite is normalized to 1, we assume that the political costs of expropriation depend on the level of the non-elite's income. We assume further that once power is established it does not fully vanish in the next period. That is, similarly to a physical resource political power can be accumulated over time. More precisely, we model the law of motion for  $\gamma$  as

$$\dot{\gamma} = \psi\pi^P(t) - \delta\gamma(t), \quad (4)$$

where  $\psi > 0$  and  $0 < \delta < 1$ . For reasons that become clear below, we assume  $\psi \leq \delta$ . The parameter  $\psi$  reflects how sensitive the political power reacts to an increase in economic resources. As we will show below,  $\psi$  plays an important role for the dynamic properties of the system and its comparative static results. The term  $\delta$  denotes the depreciation rate of the political power. Note that  $\frac{\partial \dot{\gamma}}{\partial \tau} < 0$ . Increasing the tax rate reduces  $\pi^P(t)$  and thereby leads to a decline in the level of  $\gamma$ . As a consequence, the elite has now an additional motivation to expropriate the non-elite, namely, to avoid a future rise in the endogenous costs of expropriation.

In an infinite time horizon model with perfect foresight and individual discount rate  $\rho > 0$ , elite maximizes:

$$\int_0^{\infty} e^{-\rho t} U[\tau(t), \gamma(t)] dt \quad (5)$$

s.t.  $\dot{\gamma} = \psi A(1 - \tau(t)) - \delta\gamma(t)$ ,

$L(t)$  given by (1), and

$\gamma(0)$  given

The corresponding *present-value-Hamiltonian* function takes the following form:

$$H = e^{-\rho t} [A\tau(t) + (1-\beta)L^\beta - \gamma(t)\tau(t) - \frac{c}{2}\tau(t)^2] + \lambda(t)[\psi A(1-\tau(t)) - \delta\gamma(t)], \quad (6)$$

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<sup>12</sup>As Acemoglu and Robinson (2006) argue to execute the power a group has to coordinate itself. We neglect the collective action problem and we concentrate only on resources as the driving force of de facto power.

where  $\lambda(t)$  denotes the costate variable.

Solving (6) we find that the evolution of  $\tau$  is characterized by the following differential equation:

$$\dot{\tau} = (\delta + \rho)\tau + \frac{(2\delta + \rho)}{c}\gamma - \frac{A(\delta + \psi + \rho)}{c} \quad (7)$$

With (4) and (7) we have a linear system of two differential equations which describes the evolution of the expropriation rate and the non-elite's political power in this economy. Before starting to analyze the dynamics of the system, we first derive the steady states levels -  $\tau^s$  and  $\gamma^s$  - of these two variables. Setting  $\dot{\tau} = 0$  and  $\dot{\gamma} = 0$  we obtain:

$$\tau^s = \frac{A(\delta - \psi)(\delta + \rho)}{c\delta(\delta + \rho) - \psi A(2\delta + \rho)} \quad \text{and} \quad \gamma^s = \frac{\psi A(c(\delta + \rho) - A(\delta + \psi + \rho))}{c\delta(\delta + \rho) - \psi A(2\delta + \rho)} \quad (8)$$

The following parametric restriction ensures an interior steady state with  $0 < \tau^s < 1$ :  $c\delta(\delta + \rho) > A(\delta + \psi + \rho)$ .<sup>13</sup> We assume that this inequality is satisfied.

For a further interpretation of steady state, using (4) we may rewrite (7) as:

$$\tau^s = \frac{A - \gamma^s}{c} + \frac{\tau^s \psi A}{c(\delta + \rho)}$$

The steady state tax rate exceeds the equilibrium tax in the static model. As explained above, the elite has an additional motivation to expropriate the non-elite as this keeps the political power of the non-elite low.

### 3.1 Dynamic Analysis

Due to the linearity of the differential equations we can derive the dynamic properties of our system rather easily. In matrix form, equations (4) and (7) can be written as:

$$\begin{pmatrix} \dot{\tau} \\ \dot{\gamma} \end{pmatrix} = \begin{pmatrix} \delta + \rho & \frac{2\delta + \rho}{c} \\ -\psi A & -\delta \end{pmatrix} \begin{pmatrix} \tau \\ \gamma \end{pmatrix} + \begin{pmatrix} -\frac{A(\delta + \psi + \rho)}{c} \\ \psi A \end{pmatrix}$$

Denoting by  $J$  the Jacobian matrix, we get:

$$\det |J| = -\delta(\delta + \rho) + \frac{\psi A(2\delta + \rho)}{c} < 0,$$

<sup>13</sup>Note, sufficient for  $\tau > 0$  is  $c\delta(\delta + \rho) > \psi A(2\delta + \rho)$ . But since  $\psi A(2\delta + \rho) < A\delta(\delta + \psi + \rho)$ , the later term is binding.

$$tr(J) = \rho > 0$$

Thus, the adjustment path to the steady state  $(\tau^s, \gamma^s)$  follows a saddle path.<sup>14</sup> The phase diagram in Figure 1 illustrates our findings and confirms our analytical results. The corresponding demarcation lines are given by:

$$\dot{\gamma} = 0 : \quad \gamma = \frac{\psi A}{\delta} - \psi A \tau \quad \text{and}$$

$$\dot{\tau} = 0 : \quad \gamma = \frac{A(\delta + \psi + \rho)}{2\delta + \rho} - \frac{c(\delta + \rho)}{2\delta + \rho} \tau$$

Note that  $\dot{\gamma} = 0$  is flatter than  $\dot{\tau} = 0$ .

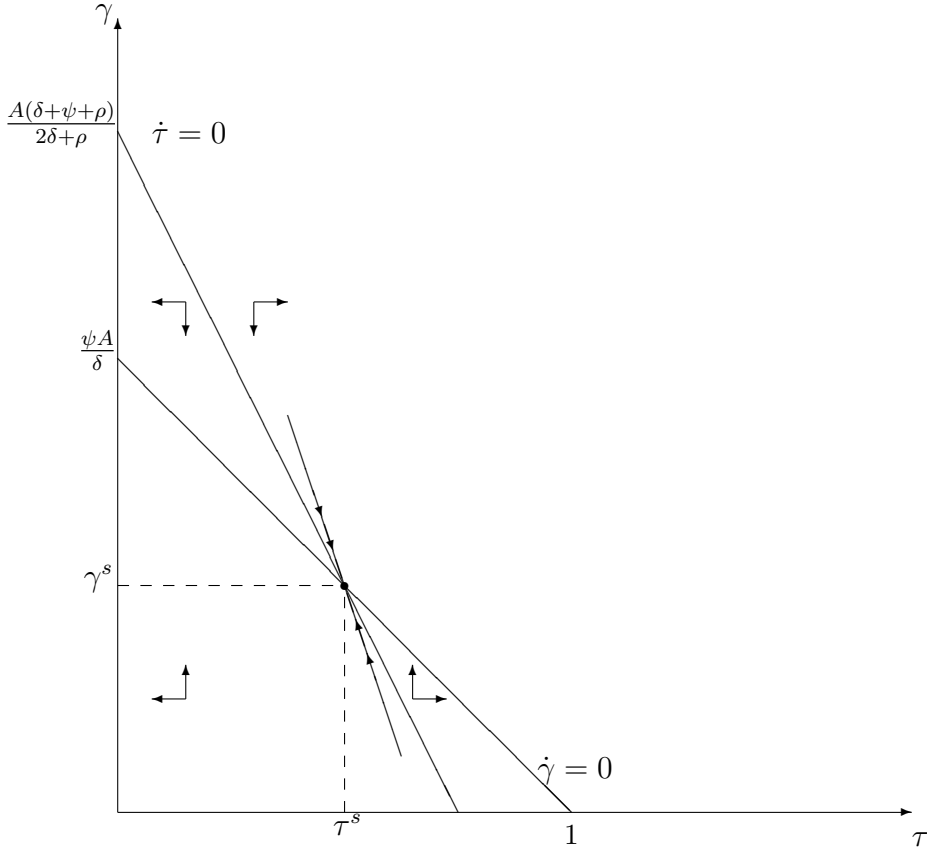


Figure 1: Steady State and Adjustment Path

<sup>14</sup>For  $\psi > \delta$  the steady state would be unstable (see Appendix).

### 3.2 The Effect of Financial Integration

We will now derive the impact of a decline of the cost of capital on the expropriation rate and the non-elite's political power in the steady state. Taking partial derivatives of (8) yields:

$$\frac{\partial \tau^s}{\partial R} = \frac{c\delta(\psi - \delta)(\delta + \rho)^2}{[c\delta(\delta + \rho) - \psi A(2\delta + \rho)]^2} \quad \text{and} \quad (9)$$

$$\frac{\partial \gamma^s}{\partial R} = \frac{\psi[A(\delta + \psi + \rho)(c\delta(\delta + \rho) - \psi A(2\delta + \rho)) - c\delta(\delta + \rho)(c(\delta + \rho) - A(\delta + \psi + \rho))]}{[c\delta(\delta + \rho) - \psi A(2\delta + \rho)]^2} \quad (10)$$

Since  $\psi < \delta$ , (9) implies that  $\frac{\partial \tau^s}{\partial R} < 0$ . As we know from the results in the static model, the elite expropriates additional efficiency gains caused by a reduced interest rate. This mechanism is amplified in the dynamic framework, since the elite takes now additionally into account the potential increase in the non-elite's political power. Hence,  $\tau^s$  increases as  $R$  declines. In contrast, the sign of  $\frac{\partial \gamma^s}{\partial R}$  is not clear-cut. Depending on the parameters the effect of the increased expropriation can dominate the effect of the reduced capital costs so that the entrepreneurs' net profits decrease after financial liberalization reducing thereby  $\gamma$ . Remember, in the static framework we have shown that the impact of liberalization on the entrepreneurs' profits is ambiguous. In the following we demonstrate the relation between  $\gamma$  and  $R$  in a more systematic way.

On the one hand, in the limit  $\psi \rightarrow \delta$ , according to (10), the term in square brackets in the denominator can be written as  $-\delta [c(\delta + \rho) - A(2\delta + \rho)]^2$ . This term is definitively negative such that  $\frac{\partial \gamma^s}{\partial R} < 0$ . Note, in this case  $\tau^s$  approximates zero, and we only have the positive effect of decreased  $R$  on  $\gamma^s$ . On the other hand, for  $\psi \rightarrow 0$ , we get following expression for the same term:  $\delta(\delta + \rho)^2(2A - c)$ . Thus, the sign of  $\frac{\partial \gamma^s}{\partial R}$  depends on the relative levels of gross productivity ( $A$ ) and exogenous costs of expropriation ( $c$ ). We can show that as long as  $2A \geq c$ ,  $\frac{\partial \gamma^s}{\partial R} \geq 0$  holds for any  $0 \leq \psi < \delta$  and rational low values of  $\rho$ .<sup>15</sup> This is analogical to our result in the static model. Relatively low costs ( $c$ ) or a relatively high gross productivity ( $A$ ) lead to a more aggressive taxation by the elite so that the net effect of liberalization on the non-elite's income is negative, which on its turn lead to a lower level of  $\gamma^s$ . However, if  $c$  is marginally larger than  $2A$  and  $\psi$  is increasing in the

<sup>15</sup>If we assume that  $2A = c$ , the difference in the square brackets in (10) can be rearranged to:  $\psi[(\delta + \rho)(2\delta - \rho) - \psi(2\delta + \rho)]$ . Assuming further that  $\psi = \delta - \epsilon$  with  $\epsilon > 0$  the expression simplifies to:  $\epsilon(2\delta + \rho) - \rho^2$ . For rational low values of  $\rho$   $\epsilon(2\delta + \rho) > \rho^2$  and therefore also  $\frac{\partial \gamma^s}{\partial R} > 0$ .

valid interval  $[0, \delta]$ , there is an interval  $[\underline{\psi}, \bar{\psi}]$ , in which the expropriation effect is still stronger than the direct effect of liberalization and consequently,  $\frac{\partial \gamma^s}{\partial R} > 0$ . (See footnote 17 for the corresponding values.) Finally, if we set  $c$  large enough, ceteris paribus the constellation  $2A < c$  lead to a positive impact of liberalization on  $\gamma^s$  for any given  $\psi$ . These three different outcomes are illustrated in the Figure 3, where the function  $F(\psi)$  corresponds to the term in the square brackets in the denominator of (10).<sup>16</sup> The solid thick line illustrates the case  $2A > c$ : on the whole interval, besides  $\psi = \delta$ , the function takes positive values. As a consequence,  $\frac{\partial \gamma^s}{\partial R} > 0$ . In case that  $c$  is marginally larger than  $2A$  the function  $F(\psi)$  has two roots as shown by the thin solid line. For  $\underline{\psi} < \psi < \bar{\psi}$  again  $F(\psi) > 0$ . In constast, for  $\psi < \underline{\psi}$  and  $\psi > \bar{\psi}$   $\frac{\partial \gamma^s}{\partial R} < 0$  holds. Finally, the dashed line illustrates the regime for a sufficiently high  $c$ . On the whole interval the function  $F(\psi)$  runs in the negative span, and therefore  $\frac{\partial \gamma^s}{\partial R} < 0$  is satisfied for any given  $\psi \in [0, \delta]$ .<sup>17</sup>

To stress the results, Figure 3 illustrates the direct relation between  $\gamma^s$  and  $R$ .<sup>18</sup> For relatively high values of  $R$  ( $R > R^{crit}$ )  $\gamma$  is monotonically decreasing, implying that  $\frac{\partial \gamma^s}{\partial R} < 0$ . This is consistent with the case  $2A < c$  as  $A$  is decreasing in  $R$ . On the contrary, for  $R < R^{crit}$   $\gamma$  is monotonically increasing, which corresponds to the result in case that  $2A > c$ . Concluding, we can state that crucial for the dependence of  $\gamma$  on the change of  $R$  is the relation between  $c$  and  $A$ . If taxation is relatively costly, the direct effect of the liberalization dominates the expropriation effect. As a result,  $\gamma$  increases as  $R$  declines. At the same time, higher values of  $\psi$  translate marginal increase in economic resources to a larger level of the political power such that we again obtain a positive net impact of the financial integration on  $\gamma$ .

<sup>16</sup>The parameters are chosen ad hoc considering the plausibility conditions, particularly  $\rho = 0.11$  and  $\delta = 0.9$

<sup>17</sup>The values of  $\underline{\psi}$  and  $\bar{\psi}$  are given by:

$$\psi_{\underline{\psi}, \bar{\psi}} = \frac{(\delta + \rho)(2c\delta - A(2\delta + \rho))_{\pm} \sqrt{[(\delta + \rho)(2c\delta - A(2\delta + \rho))]^2 + 4Ac\delta(\delta + \rho)^2(2 - \frac{c}{A})(2\delta + \rho)}}{2A(2\delta + \rho)}$$

Accordingly, if  $F(\psi)$  has only one single root following equation holds:

$$\frac{(2\delta + \rho)(2\psi + \rho + \delta)}{2\delta(\delta + \rho)} = \frac{c}{A}$$

That is, if the ratio  $\frac{c}{A}$  increases,  $F(\psi) < 0$  for any  $\psi \in [0, \delta]$ .

<sup>18</sup>Certainly, the necessary condition  $c(\delta + \rho) > A(\delta + \psi + \rho)$  holds for all values of  $R$ . At the same time, the choosen values ensure that with increasing  $R$  we pass through the relevant cases, i.e. both  $2A > c$  and  $2A < c$  are satisfied. Futhermore, in Figure 3  $\psi$  is given. Changing its value would only change the slope of the curve shifting thereby  $R^{crit}$ .

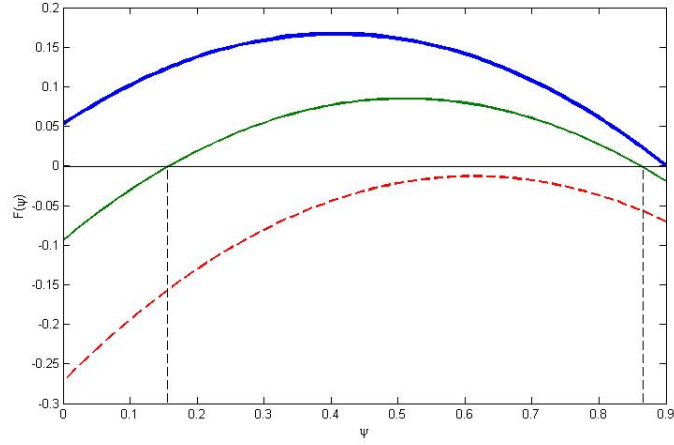


Figure 2: Relation between  $\gamma^s$  and  $R$  (a)

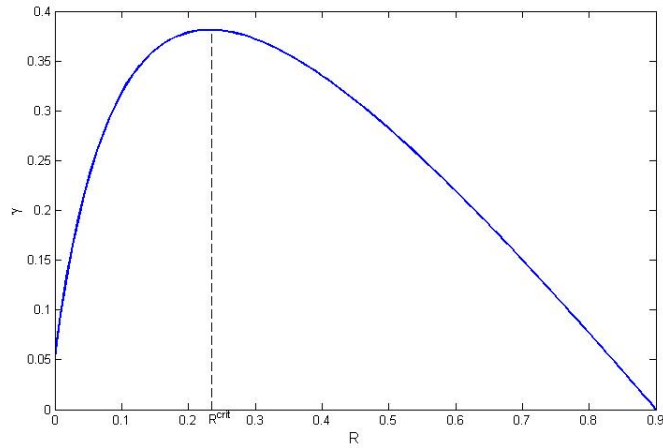


Figure 3: Relation between  $\gamma^s$  and  $R$  (b)

The impact of the financial integration on the steady state levels of expropriation and non-elite's political power can also be illustrated graphically, as it done below. Referring to Figure 1 an increase in  $A$  has two effects: it shifts the  $\dot{\tau} = 0$  line parallelly rightwards, and it shifts the  $\dot{\gamma} = 0$  line rightwards increasing also its slope. Whereas the new level of  $\tau^s$  is definitely larger than the old one, the level of  $\gamma^s$  might be lower (Figure 4) or higher (Figure 5) than before.



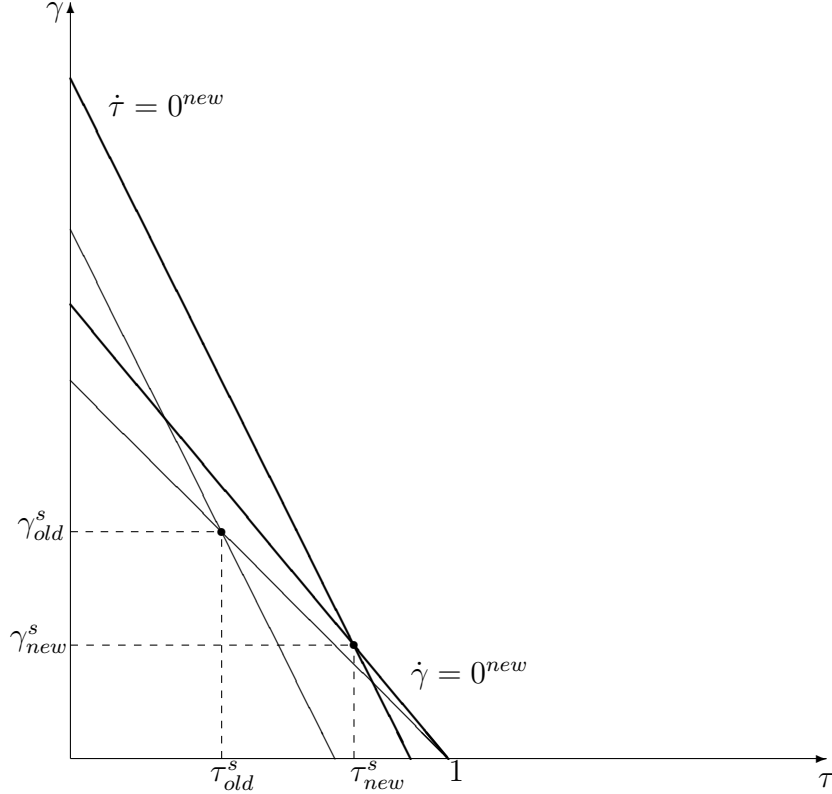


Figure 4: Impact of Liberalization (a)

We summarize the above findings proposition 2.

**Proposition 2** *For  $\psi < \delta$  financial integration leads to a higher level of expropriation. The level of the non-elite's de facto power can sink or rise.*

Our results related to the reaction of the non-elite's political power involve also interesting insights about the impact of the liberalization on the total income and the income distribution, respectively. The non-elite's income reacts on a decline in  $R$  in the similar way as  $\gamma$  does ( $\gamma^s = \frac{\psi}{\delta} \pi^P$ ). However, the impact on the elite's income is also ambiguous. Although the elite increases the expropriation rate, it is possible that it is worse off after the financial liberalization, because the expropriation may occur at the higher costs due to the increased level of  $\gamma$ . As a result, the total income can decline as well as rise.

Yet we can definitely determine the impact of the financial integration on the steady state level of the total production, which is given by:

$$Y = L^\beta + \alpha(1 - L)$$

Taking partial derivatives with respect to  $R$  yields:

$$\frac{\partial Y}{\partial R} = \frac{L}{1 - \beta} \left(1 - \frac{\alpha}{\alpha - R}\right) < 0$$

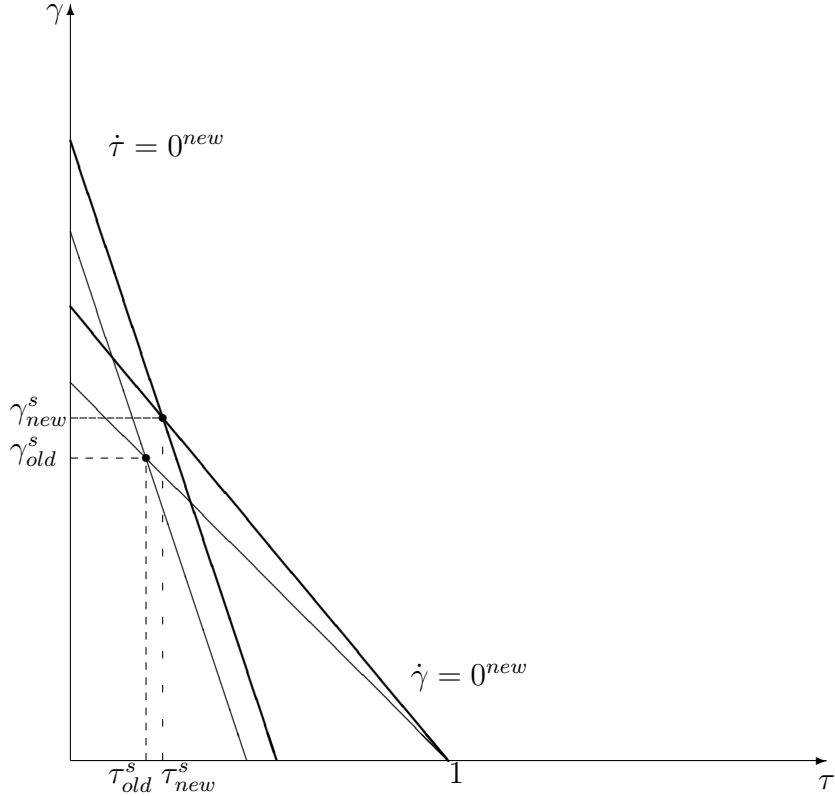


Figure 5: Impact of Liberalization (b)

The intuition for this relation is straight forward. A decline in  $R$  reduces the number of the workers in sector  $E$  and increases the number of the entrepreneurs by the same amount. This leads to a proportional increase in the production in sector  $P$ , but only to a less proportional decline of the production in sector  $E$  so that the total effect of the financial integration on the production is positive.

## 4 Conclusion

Our aim was to present a theoretical framework which enables us to analyse the impact of financial integration on institutions and their development in the domestic country. We have shown that in an autocratic regime the hazards of liberalization could dominate its potential benefits. Ruling elite makes use of their power and increases the level expropriation. This is not only associated with the worsening of economic institutions in our model, but could also lead to a concentration of power in the hands of elite. However, it is possible that despite of increased taxation the entrepreneurs (and so the workers) get wealthier and their number larger, becoming thereby also more powerful. We have demonstrated this ambiguous relation on its dependence

on the parameter constellation, particularly on the critical value of  $\psi$ , which stands for the non-elite's ability to translate its economic resources to political power, and the relation between the exogenous costs of expropriation and the gross productivity.

Our results are certainly subject to important caveats. One of these is that we do not distinguish between different forms of capital. Though empirical evidence suggests that composition of foreign capital might play an important role in determining its influence: direct investments are more appropriate than debt financing to set benign impulses, e.g. via affecting the productivity in the recipient economy. In our model the assumption of exogenous productivity is, certainly, a limited one. Thus, allowing for the sensitivity of the productivity to foreign capital is one possible extension of our framework. Furthermore, we have abstracted from capital endowment in our economy. The question who owns capital and introducing capital accumulation will highlight the interaction between the elite and entrepreneurs more intensively, and enable us to analyze the corresponding policy changes.

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## 5 Appendix A

Table 1

Change in Capital Inflows and Institutional Quality in Selected Countries 1996-2004<sup>1</sup>

Country	Relative Increase in Capital Inflows	Absolute Change in Control on Corruption	Absolute Change in Rule of Law	Average Democracy Index <sup>2</sup>
Albania	1,51	-0,77	-0,77	5,11
Angola <sup>R</sup>	0,88	0,18	-0,24	-2,56
Armenia	1,84*	-0,13	0,01	2,56
Azerbaijan <sup>R</sup>	7,41	0,10	-0,10	-6,78
Bangladesh	0,34	-0,17	-0,83	6,00
Belarus <sup>D</sup>	5,14	-0,31	-0,01	-7,00
Bolivia <sup>R</sup>	1,03	-0,29	0,16	8,78
Brazil <sup>R,D</sup>	0,95	-0,12	0,18	8,00
Burkina Faso	0,31	-0,27	0,15	-2,22
Chad <sup>R</sup>	3,18	-0,26	-1,17	-2,00
Chile <sup>D</sup>	0,44	-0,06	0,11	8,56
Colombia	0,37	-0,15	0,28	7,00
Congo	0,25*	0,14	-0,08	-4,00
Costa Rica <sup>D</sup>	1,22	0,03	-0,25	10,00
Czech Republic <sup>D</sup>	13,23	-0,17	-0,22	10,00
Dominican Rep.	0,86	-0,02	-0,16	8,00
Ecuador	0,59	-0,30	-0,79	7,22
Equatorial Guinea	3,56*	-0,05	-0,56	-5,00
Fiji <sup>D</sup>	0,79*	-0,27	-0,33	5,33
Guatemala	0,11	-0,09	0,47	8,00
Guinea <sup>R</sup>	0,08	0,28	-1,28	-1,00
Haiti	2,1*	-0,30	-0,39	1,86
Hungary <sup>D</sup>	2,76	-0,02	0,05	10,00
Israel <sup>D</sup>	0,08	-0,47	-0,64	9,67
Jamaica <sup>D</sup>	0,76	-0,24	-0,15	9,00
Kazakhstan <sup>R,D</sup>	1,47	-0,19	-0,22	-4,67
Kyrgyzstan	0,57	-0,19	-0,16	-3,00
Lebanon <sup>D</sup>	4,64	0,00	-0,32	keine Daten
Macedonia	0,07	-0,08	0,59	7,00
Madagascar	0,07	0,84	-0,50	7,33
Malawi	0,52*	0,28	-0,30	5,44
Mali	0,21	0,39	-0,14	6,11
Moldovia	1,35	-0,52	-0,74	7,44
Myanmar	0,52	-0,31	-0,45	-7,11
Niger	0,36*	0,13	-0,51	1,44
Papua New Guinea	0,06	-1,07	-0,89	10,00
Paraguay	0,59	-0,57	-0,72	7,11
Peru	0,12	-0,05	-0,16	5,00
Philippines	0,20	-0,61	-0,22	8,00
Poland <sup>D</sup>	3,10	-0,24	-0,19	9,33
Romania <sup>D</sup>	11,61	-0,02	-0,02	8,11
Slovenia <sup>D</sup>	10,45	0,00	-0,05	10,00
Sudan <sup>R</sup>	0,27	0,12	-0,17	-6,67
Swaziland	0,08	-1,68	-0,61	-9,00
Tanzania	0,07	-0,02	0,43	0,11
Trinidad <sup>D</sup>	0,65	-0,61	-0,84	9,89
Turkey <sup>D</sup>	1,58	0,12	-0,18	7,11
Uganda	0,40	-0,09	-0,20	-4,00
Uzbekistan	36,8*	-0,36	-0,09	-9,00
Vietnam	0,49	0,12	-0,25	-7,00
Zimbabwe*	0,17*	-0,99	-1,12	-4,44

<sup>1</sup> Capital inflows are measured as a decline in the net external position. Data stem from Lane and Milesi-Ferretti (2006). Data for Corruption and Rule of Law are taken from World Governance Indicators by Kaufmann et al. (2008)

<sup>2</sup> This average democracy index is adopted from Polity IV Project. The "Polity Score" captures a regime authority spectrum on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). It also categorizes governments with the index level from -10 to -6 as "autocracies" from -5 to +5 as "anocracies" and from +6 to +10 as "democracies".

\* Data span is only for a shorter period of time available.

<sup>R</sup> Indicates that the country is rich on nature resources.

<sup>D</sup> Stands for developed among these countries. Countries were classified with respect to the World Bank Index. Economies are divided among income groups according to 2007 gross national income (GNI) per capita. The groups are: low income, \$935 or less; lower middle income, \$936-3,705; upper middle income, \$3,706-11,455; and high income, \$11,456 or more. Only the countries belonging to upper middle income and high income groups are marked here as developed countries.

## 6 Appendix B

In this appendix we show that if  $\psi > \delta$ , the steady state is unstable. For  $\psi > \delta$  the inequality  $c\delta(\delta + \rho) < \psi A(2\delta + \rho)$  must hold to ensure that the interior steady state with  $0 < \tau^s < 1$  is given. From this immediately follows that  $\det |J| > 0$ . Since  $\text{tr}(J) > 0$  continues to hold, the steady state can only be characterized as an unstable one. This is also shown in the following figure. Note,  $\dot{\gamma} = 0$  is now steeper than  $\dot{\tau} = 0$ .

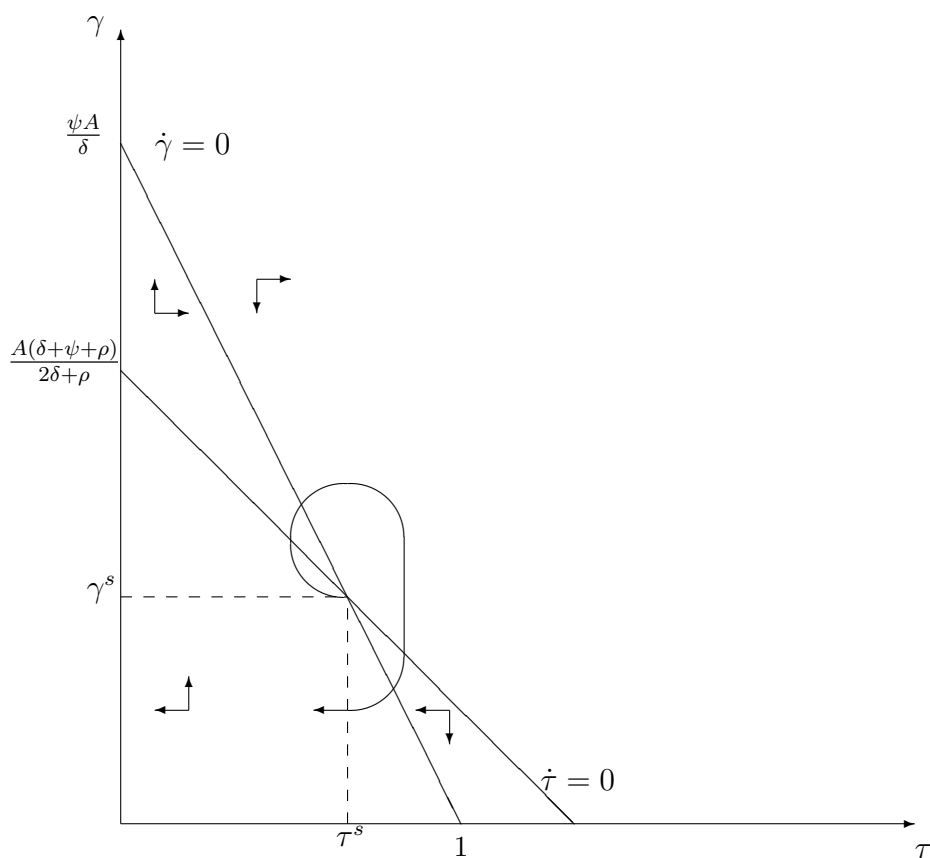


Figure 6: Unstable Steady State