

# Chapter 4: Market-Impeding Federalism

## 1. Introduction

"Muscovites should live well. Everyone else should think about Russia, so the Muscovites can live even better."<sup>1</sup>

We have seen that Russia suffers greatly from the legacy of spatial misallocation: too many people, and too much capital, in the wrong places. This would not be so bad if internal labor migration was high. In fact, however, it has been and remains very low.<sup>2</sup> To understand why this legacy persists we turn our attention to the federal structure of Russia. Post-Soviet Russia imposed a formal federal structure on a spatial distribution of productive forces that was non-market. The federalism became market-impeding rather than, as had been intended, market-promoting. We refer to the peculiar Russian policy that emerges as "Lights On."

Our argument in this chapter is that the peculiar policy of "lights on" plays a central role in the conservation of the legacies from the Soviet period. It reduces mobility of both labor and capital. It is the result of the grafting of a federal system on a non-economic territorial divisions. Given its importance in the political economy of Russia it is worth developing the argument in full.

Some have argued that federalism may be advantageous for countries trying to reform. A federal structure offers several potential advantages. First, it allows for competition among jurisdictions with regard to policies. Second, a federal structure may serve as a check on central government interference. Some have argued that *market-preserving federalism* is a "governance solution of the state to credibly preserve market incentives [13, 83]." The example of China is often used to illustrate how market-preserving federalism works. In contrast, Russia, which is also a federal state, is often characterized as failing to implement market-preserving incentives. In this chapter we will show what can happen when federalism is implemented in an economy

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<sup>1</sup>Reader comment by a resident of the Russian Far East in *Komsomol'skaya Pravda*, 29 May 2010.

<sup>2</sup>According to the most definitive study on migration in Russia, Andrienko and Guriev (2005), "Throughout more than a decade of economic transition, internal migration rates have been low, and there has been virtually no convergence across regions."

like Russia in which the initial allocation of resources across regions is non-economic. We will show that the conditions for federalism to work effectively may be absent in Russia.

Federalism is often considered to be a political structure that is conducive to market reform. We examine this argument. In particular, we focus on the consequences of a federal structure where the regional boundaries were created by administrative fiat, and where some regions may need to shrink if reforms are undertaken. We argue that observed industrial change will be slower than that predicted by a pure adjustment hypothesis because loser regions will want to subsidize high cost industry to prevent an outflow of capital and labor. Moreover, rich regions may also have an incentive to support such policies. In a social planner's solution to the adjustment problem for Russia, labor would move from the loser regions where TFP is low. Total income would be much higher if Moscow and similar regions were much bigger. But this lowers wage income in these regions. Hence, governors of rich regions may also want to restrict the movement of labor. Hence, they provide (support) the subsidies that the loser regions want to maintain their political authority.

### *1.1. Decentralization versus Federalism*

Federalism is to be distinguished from decentralization. Governance of any territorially large country requires some decentralization. Nondemocratic societies typically use an administrative-hierarchical system of decentralization. Democracies, in contrast, rely on some notion of federalism — that is, a regional distribution of political power. Typically, the power distribution is related to the regions' economic importance as reflected in their population sizes.

Federalism, it is often argued, tends to enhance democratic efficiency. At least it may lead to more participation. But what about the relationship between federalism and economic efficiency? The answer depends on the nature of the economic problem. If the problem is central government interference in — or even predation of — the economy, then federalism can serve to protect the market. If, on the other hand, the problem is regional inequalities in

economic performance, then federalism may be an obstacle.<sup>3</sup> Finally, if predation by regional governments is the problem, then federalism is not the solution.

There is always a trade-off between the problems of central government predation and regional inequality, so the solution will depend on the relative importance of the two problems. Here it is important to distinguish cases depending on initial conditions. In a normal spatial allocation population adjusts so that marginal returns are equalized.<sup>4</sup> Shocks alter conditions from that starting point. In Russia, on the other hand, the transition shock is imposed on an allocation that is very far from equilibrium.<sup>5</sup> In Russia, market reform requires very large structural changes along regional lines. Yet, the pace of such change is very slow and is inversely related to the degree of disequilibrium [Ickes and Ofer, 2006]. This suggests that federalist institutions may be inhibiting change rather than promoting it.

The misallocation of industry across regions also implies that the marginal cost of taxation differs widely across regions. Allowing subnational units freedom to set tax rates is thus very inefficient. One could argue that Tiebout effects will solve this.<sup>6</sup> But the size of the required population shifts may be very large. Else the level of public goods provision across regions will be too great for satisfying any democratic criteria.

Why not just re-draw the political boundaries? Keep federalism, but draw correct boundaries? This is an interesting possibility, but the problem is that without liberalization you don't know what the correct boundaries are. The virtual economy and pretense means that it is hard to uncover what these boundaries should be. Once transition is underway, on the

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<sup>3</sup>In Gaddy Ickes 2002 Appendix F ("Regions in R-D space) we develop a model of governor decisionmaking and show how initial condition can lead to a bifurcation in regional outcomes.

<sup>4</sup>This was noticed long ago by Adam Smith: "The policy of Europe, by obstructing the free circulation of labour and stock both from employment to employment, and from place to place, occasions in some cases a very inconvenient inequality in the whole of the advantages and disadvantages of their different employments (14, Book 1, chapter X, page 134).

<sup>5</sup>For a regional analysis of structural change in Russia see [Ickes and Ofer, 2006].

<sup>6</sup>The Tiebout hypothesis predicts that given that individuals have differing personal valuations on public services and varying abilities to pay the attendant taxes, individuals will move from one local community to another until they find the one which maximizes their personal utility. The model states that through the choice process of individuals, jurisdictions and residents will determine an equilibrium provision of local public goods in accord with the tastes of residents, thereby sorting the population into optimum communities. The relevance to Russia, where internal migration is low and democratic institutions relatively weak is not, perhaps, very strong.

other hand, vested interests make it very difficult to re-draw political boundaries.

Notice that with the very large differentials in marginal product across regions there are large incentives to move at the individual level. Given the wage differentials that exist in Russia today, everyone would want to move to Moscow. One might also expect that capital would flow to Moscow given that productivity is higher there and the infrastructure is better. But this is less likely to happen. The reason is that much of the capital in the regions is fictitious, maintained by the pretense of the virtual economy. Hence, diminishing returns will be reached much sooner in Moscow than would be the case if both capital and labor moved.

Contrary to what one might think, in Russia labor is less, not more mobile across regions than capital. Apparently, investment/disinvestment decisions produce more variation in the regional capital stock than interregional migration does for regional labor force. The regional labor supply is extremely stable, shockingly more so than regional capital.<sup>7</sup> A cross-sectional series of regional capital stocks in 1994 and in 2000 display a correlation of 92.6%,<sup>8</sup> while the series of regional labor forces are correlated at the 99.8% level.

But officials want to offset this. Not just via the use of *propiska*, but keeping enterprises open in home regions plays a big role.

## 2. Predation and Capture

Market-preserving federalism is seen as a mechanism for preventing predation. The idea is that decentralization of authority, by limiting the information available to central authorities enhances the credibility of commitments not to predate. By raising the cost of predation through limitations on information, federalist decentralization leads to improved market incentives.

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<sup>7</sup>This is not to say that the labor mobility is non-existent in Russia. On the level of individual firms labor has been getting increasingly more mobile during the transition period. However, most of labor movement is intersectoral but not interregional. The level of labor migration across regions is still low.

<sup>8</sup>Note that capital stock is measured as the base (purchase) value of capital adjusted for depreciation at the official rate, and does not truly represent capital stock used for production. If a region is economically successful and the investment level is high, all new capital correctly shows up in data. If a region is in recession, capital is underutilized, and the measured capital stock is actually higher than the utilized capital stock. Probably, capital is even more mobile across regions than it appears to be.

The importance of restraining the predatory instincts of central governments is no doubt important. But it raises the question, why do some governments predate more than others? Why, for example, has the private sector developed more in China than Russia? Blanchard and Shleifer (2001) develop a simple model that is very useful for studying this problem. They put forward two hypotheses to explain the greater level of predation in Russia.

- Capture by older firms. Local governments work to generate transfers to older firms and to protect them from new competitors
- Competition for rents by local officials. unintended effect of administrative disorganization. Too many agencies trying to extract rents from new private firms

But why are these forces weaker in China? According to Blanchard and Shleifer there are two key explanations. First, they argue that initial rent holders were weaker in China than in Russia. This is partly due to the level of development in the two countries and the nature of economic structure. Second, the strength of the central government in China was stronger – no collapse of party. Blanchard and Shleifer focus on the consequences of the latter explanation.

We augment the analysis to consider the implications of inefficient federal boundaries. What happens if the political boundaries in a federal system are inappropriate economic units?

### 3. Blanchard-Shleifer Model

It is useful to set out the basic Blanchard-Shleifer model [B-S] in some detail as it will be the basic structure for what follows. There is a government that has two levels: central and local. Each *local* government has a simple choice:

- foster growth, by limiting transfers of resources to state and former state firms and allowing new private firms to enter and grow, or

- kill growth, by transferring resources to old firms and/or preventing new firms from being created.

Why would the government do the latter? Under the capture view it is straightforward. Under the competition for rent view the government might be simply unable to prevent bribes and corruption. Both have the same implication for growth.<sup>9</sup>

Let  $y$  be the additional output under growth, and normalize this so it also stands for the additional amount of revenue available to the central and local governments under growth. Let  $b$  be the private benefits to the local government of killing growth.<sup>10</sup>

Now turn to the *central* government. It is assumed to prefer growth. It has a carrot and a stick:

- *Revenue Sharing.* Central government can choose the extent of revenue sharing. Let  $a$  be the share of revenues from additional growth going to the local government.<sup>11</sup> If it chooses to foster growth it gets  $ay$ . Normalize so this is also how much it values growth. Note that it is *ex post*  $a$  that is crucial.
- *Political centralization.* This is the stick. Central government controls whether the local government can stay in power. Let  $p_x$  be the probability that the local government stays in power if it kills growth, and  $p_y$  is the probability it stays in power if it fosters growth. Let  $p = \frac{p_y}{p_x}$ . The value of  $p$  will clearly depend on how local officials are chosen. In China they can choose  $p$  freely. In Russia, there were elections for these positions for the first ten years of transition,<sup>12</sup> so  $p$  depends on how effective the central government is at affecting elections.

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<sup>9</sup>In Appendix F of *Russia's Virtual Economy* we developed a model of governor decisionmaking and collusion with regional interests.

<sup>10</sup>Under the capture view this could be transfers back from existing firms – investing in relational capital. Under the rents interpretation it could be the cost to local officials of trying to stop bribe-taking.

<sup>11</sup>In practice this could include tax sharing, tax assignments and transfers. The key point is that  $a$  represents what the region ends up with from increased growth, not how the sharing takes place.

<sup>12</sup>Putin eliminated direct elections for Governor and replaced this with appointments. But even Stalin could not prevent officials from being captured by local interests.

- In other words,  $p$  is an index that measures the central government's stick with regard to governors. The higher the value of  $p$  the greater the penalty for not engaging in pro-reform policies. Notice that the stick is limited in the sense that the governor can only lose his job.<sup>13</sup>
- it would be nice if  $p$  were greater than one, but if the center has little control over outcomes, and if capture is important, then it may be less than one.
- *Uniformity.* Blanchard and Shleifer assume that regions do not differ. Hence, it makes sense to assume uniform values of  $a, p$ , and  $y$ .<sup>14</sup>

Under these assumptions the local government chooses growth if

$$p_y a y > p_x b$$

or

$$p a y > b. \tag{1}$$

Expression (1) says that the local government is more likely to choose growth the stronger the stick (high  $p$ ), the larger the carrot (higher  $a$ ), the larger the growth potential ( $y$ ), and the smaller the benefits of not reforming – either capture or the lower are the costs of reducing rents ( $b$ ).<sup>15</sup>

Proponents of the federalist position often focus on the fiscal problems of the center, which renegotiates its stake and cannot commit.<sup>16</sup> They argue that market-preserving federalism provides better incentives and thus the differences in economic performance between China and Russia are explained by differences in  $a$ .

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<sup>13</sup>This is thus a *Brezhnevite* system of incentives rather than *Stalinist* incentive system.

<sup>14</sup>This assumption is a result of their interest in comparing China versus Russia. This assumption, however, has implications that we discuss below.

<sup>15</sup>Notice that Blanchard and Shleifer do not subject  $b$  to any resource constraint, though obviously, there is a limit to how much looting there can be. We follow their interpretation in the subsequent analysis.

<sup>16</sup>What they ignore is an important structural difference. In China industry is not geographically specialized, in Russia it is. So for insurance reasons, alone, the optimal contract would have more fiscal federalism in Russia, hence lower  $a$ . For an empirical analysis of how fiscal transfers are related to structural differences in Russia, see [11]. Hence, below, our focus on differences across regions.

Blanchard and Shleifer argue that the empirical evidence suggests that  $a$  may be lower in Russia than China, but that this is not altogether clear. One complication is that there are actually three levels of subnational governments and most of the work looked at the bottom two.<sup>17</sup> There certainly appears to be a high level of fiscal transfers. There are few taxpaying regions and many recipients of subsidies. In China, the evidence seems to indicate a value of  $a$  near to 0.8. Although this may suggest that there is more redistribution in China, Blanchard and Shleifer argue that differences in  $a$  are probably too small to explain the differences in performance.

Blanchard and Shleifer note that  $p$  also differs significantly between China and Russia. In China the Party still rules, so  $p$  is very high, could be enormous. In Russia governors are elected, and the center cannot always get their way. So  $p$  is much lower, perhaps less than unity.

This suggests that differences in  $p$  could offset large improvements in  $a$  in the case of Russia. With high enough  $p$  a high  $a$  may not even be necessary.

The model suggests that to the extent federalism has been important in promoting growth in China, such federalism relied crucially on the power of the Party. Greater democracy could mean much lower  $p$ . Then we would see how important are the differences in  $a$ .

The model also suggests that in Russia the primary problem may be political decentralization. Improvements in  $a$  may have little effect in this environment. In other words, the economic benefits of federalism depend on some degree of centralization.<sup>18</sup>

#### 4. Loser Regions

The analysis in the B-S model is predicated on the idea that all regions could benefit from reform – the key problem is incentives. It is certainly true that market reforms would improve

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<sup>17</sup>For example, Zhuravskaya finds marginal  $a$  to be as low 0.1 between the bottom two layers of government [15].

<sup>18</sup>"As best we can tell, the economic benefits of decentralization obtained from federalism rely crucially on some form of political centralization. Without such centralization, the incentives to pursue regionalist policies are too high, and cannot be eliminated solely through clever economic and fiscal arrangements [5, 178]."



efficiency in any region, and certainly across regions. But it is not at all clear that reforms will necessarily lead to growth in all regions. Obviously if  $y$  is small (or even negative) – if there are poor growth prospects – then it really doesn't matter much about carrots or sticks.

In the B-S model appropriate federalism always leads to pro-growth policies. If  $p$  is raised high enough it can always compensate for a low value of  $y$ . B-S improve on the previous literature by showing that variation in  $a$  is insufficient to insure that federalism will be growth inducing. But their analysis is based on the assumption that  $y$  is always positive; that is, there is always a pro-growth reform that results in higher income in the region.

It is important to notice that  $a$  is bounded from above by unity. The B-S model points out that there are thus limits to the carrots that the center can provide to governors. Indeed, that may be the central point. Moreover, even if  $a \rightarrow 1$  the actual carrot is limited by the size of  $y$ . If  $y$  is low, carrots are limited.

Notice that  $p$  on the other hand can go to infinity. But this is still *Brezhnevite* incentives.<sup>19</sup> The governor can always walk away – all he loses is his  $b$ .

What B-S do not consider, however, is what happens if  $y < 0$ .

Notice right away that if  $y < 0$  then a policy of high  $a$  provides no carrot! Indeed, in the case of a loser region governors would prefer to have  $a < 0$ .<sup>20</sup> That is, they would want to be compensated for the loss – say, for example, in terms of tax revenue – incurred by adopting the pro-reform policies. Having a set of differentiated values of  $a$  is a move away from market

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<sup>19</sup>As opposed to Stalinist incentives which involve the Gulag and worse.

<sup>20</sup>What BS do not answer is why local governments are more likely to be anti-growth than the central government. They attempt to, arguing that larger units are less likely to be captured and that big oligarchs may be less anti-growth than local ones. But this is not all that satisfying.

A key reason why some regional officials are anti-growth is that they preside over loser regions. If they have a large share of dinosaurs, then policies that will be conducive to growth may also be conducive to growth *elsewhere*. The key point is that restructuring in Russia has a serious regional aspect to it, the governors realize this, and so they act accordingly. In this regard the comments of Viktor Tolokonkiy, Governor of Novosibirsk Oblast (August 2000) are instructive:

“Under conditions of total openness of the economy. . . , we here in Siberia should not expect any serious investment activity at all. Our costs of production are too high, residential housing and office manufacturing facilities are too expensive, and our transport costs and wages are higher than in southeastern Asia.”

federalism and towards discretion. To stay within the context of this literature we keep  $a$  fixed and then consider side payments that may be needed to get governors in loser regions to adopt reforms.

What does it mean for a pro-growth policy to induce  $y < 0$ ? Consider a region whose location-specific endowment is so poor that adoption of market reforms would lead to a shift of labor and capital out of the region. For example, regions that are distant from markets and are in very cold regions, and were over-industrialized in Soviet times. More important, market liberalization may require the value of capital to be written off. The correct market response is for the region to shrink, for people to move out, and for  $y < 0$ . These are true loser regions.<sup>21</sup> If subsidies are eliminated regional *GDP* (at least as measured) goes down. So the net change in taxable resources goes down. How does this change the analysis? We treat this in steps.

#### 4.1. *Inter-regional transfers*

If in some regions  $j$ ,  $y_j < 0$ , it follows that pro-growth policies will not be adopted even if a "perfect" form of federalism is chosen. That is, even setting  $a = 1$  and letting  $p \rightarrow \infty$ , condition (1) will not be satisfied for the loser region.<sup>22</sup> One solution to this problem is to have a differentiated value of  $a$  that would allow  $a < 0$  for loser regions. This is because the only way to implement pro-growth policies in loser regions is to have the winner regions buy them off. But this means that  $a$  cannot be set equal to one for all regions, since winner regions will have to contribute to the treasury to compensate the loser regions. Winners would have an  $a < 1$ .<sup>23</sup>

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<sup>21</sup>Lant Pritchett introduced the notion of "Zombie Countries" which captures a similar intuition on the international dimension. Consider a country that experiences a negative shock to labor demand. Then, if "...the negative shock is large and other regions prevent labor mobility then potential ghost countries become unrealized ghosts or zombie countries (the living dead) as nothing, besides out-migration, can prevent an extended and permanent downward movement in wages." (Pritchett, 2004).

<sup>22</sup>What would it mean for  $p \rightarrow \infty$ ? This means that with 100% certainty the governor is fired for not pursuing reform. But even this does not cause reform because no stick is sufficient when  $y < 0$ . Now you need new kind of carrots (that come from outside the region).

<sup>23</sup>Although we do not analyze this, one could argue that foreign aid or a budget deficit is required to maintain high incentives for winner regions. This allows the budget balance condition to be broken. In our

Consider the decision in loser region  $j$ . To choose pro-growth a side payment is required to offset the negative value of  $y_j$ . For simplicity assume  $a = 1$  for this region. Thus for this region  $pay_j < b$ , so a special transfer,  $\phi$ , is needed so that:<sup>24</sup>

$$p[y_j + \phi] > b_j \quad (2)$$

or

$$\phi > \frac{b_j}{p} - y_j. \quad (3)$$

Thus  $\phi$  is the minimum additional transfer payment required to get the loser region  $j$  to choose pro-growth.<sup>25</sup>

Notice that in this case we must already alter the model from "perfect" federalism. Now there is a cross-region budget constraint to consider. While  $a_j = 1$  is still feasible for the loser region, in some other regions that are winners we must have  $a_i < 1$  in order to finance the additional transfers. Suppose that there are only two regions. Then in region  $i$  (the "winner region") we must have  $\phi_j \leq (1 - a_i)y_i$ .<sup>26</sup> The additional transfers are also constrained by the requirement that  $i$  has to have the incentive to reform, which takes place if:

$$pa_i y_i > b_i. \quad (4)$$

In the two-region case a necessary condition for reform to be viable is that overall reform is efficient: i.e.,  $y_i > |y_j|$ . That is, the marginal gains in region  $i$  must be greater than the losses

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analysis, however,  $\alpha$  is fixed.

<sup>24</sup>In this formulation the additional transfer payment covers the loss and the governor's payoff from pro-reform is then  $pa$  times the sum  $y_j + \phi$ . Alternatively, you could calculate the additional transfer payment,  $\hat{\phi}$  such that  $\hat{\phi} + pay_i > 0$ .

<sup>25</sup>Introducing  $\phi$  is a simple way to make the net transfer to a region dependent on its growth possibilities.

<sup>26</sup>In the general case this constraint would be

$$\sum_{j \in J} \phi_j \leq \sum_{i \in I} (1 - a_i) y_i$$

where  $J$  and  $I$  are the sets of loser and winner regions, respectively.

in the loser region. We assume that this is indeed the case.<sup>27</sup> Of course this is not a sufficient condition for reform to be *chosen*. But it is the interesting case if we want to analyze when federalism may impede reforms.

#### 4.2. *Inter-regional migration*

Does the introduction of differentiated transfer payments – that satisfy conditions (3) and (4) – suffice to insure reform in both regions? Not necessarily. There are additional considerations for both loser and winner regions that result from the movement of factors caused by reforms. We consider these in turn.

##### 4.2.1. *Migration: loser regions*

If an additional transfer payment induces reform in a loser region it will shrink both demographically and economically. A governor who considers only net income will choose reform. It may be, however, that governors of loser regions are not indifferent to shrinkage. The status, prestige and other sources of wealth may depend on the size and importance of a region. Hence, from the viewpoint of the governor, reform may incur an additional cost. Therefore, governors of loser regions may require payments larger than  $\phi_j$  to choose reform.

##### 4.2.2. *Migration: winner regions*

Recall that pro-growth policies in  $j$  lead to out-migration to the winner region. So the excess labor moves to the winner region  $i$ . If productivity is higher in the winner region this will raise national income, and income in region  $i$ . However, it is crucial to note that migration will also impose additional *costs* on region  $i$ . These costs take the form of congestion costs, given that land and infrastructure are given at any point in time.<sup>28</sup> There are also losses to workers due to downward pressure on wages. Of course employers gain, but they are outnumbered by

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<sup>27</sup>Indeed, we are quite certain that this is the case in Russia.

<sup>28</sup>Of course there are also benefits to certain owners of assets. We assume for now that the cost of congestion outweighs the gain to rentiers. Otherwise, it would be hard to understand why rich countries limit migration. The gains to international migration dwarf all other known policies.

workers. On balance, the net gain could be positive or negative in the winner regions.<sup>29</sup> If the net gains were positive we would expect Moscow to embrace immigration from the rest of Russia.<sup>30</sup> Instead, we see the opposite, which suggests that congestions costs outweigh the benefits of immigration. Our assumption in the remainder is that net congestions costs are positive. Hence, let  $\eta_i$  be the *net* congestion costs in region  $i$ .

Now the governor of region  $i$  must look at two costs: the additional transfer payment and the congestion cost. Pro-growth is supported by  $i$  only if

$$pa_i y_i - \eta_i > b_i. \quad (5)$$

Clearly the size of  $\eta_i$  will matter. If there are many loser regions for each winner region congestion costs could be large. Taken to an extreme, if there a single winner region and many loser regions, the real and perceived congestion costs could be enormous.<sup>31</sup>

Whether (5) will be satisfied or not is open to question. But even if it is satisfied, and the governor of  $i$  is willing to reform despite being forced to pay an additional transfer to region  $j$  to reform, the payoff is now much lower. The congestion costs are reducing the payoff to the winner region. There may, however, be an alternative. What if the winner region could figure out a way to prevent the loser region from reforming?

### 4.3. *Lights On*

Suppose that Moscow can make a side payment to region  $j$  that keeps enterprises open in  $j$  – keeps "the lights on" – and prevents out-migration. Region  $i$  no longer must bear congestion costs. It can reform without having to suffer from region  $j$ 's reform.

Let  $\gamma y_i = \theta$  be the payment that  $i$  needs to make to keep the lights on in region  $j$  and

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<sup>29</sup>It could also be argued, for example, that the benefits take longer to accrue than the costs. This may be especially true in Russia where any capital flow to the winner regions is likely to be very gradual if at all.

<sup>30</sup>Of course, labor productivity in the US and other leading industrialized countries is so much higher than in India that world income would rise dramatically with a large reallocation of labor to high productivity countries. Citizens of rich countries do not appear to be sufficiently persuaded of these benefits to open their borders. See 9 for estimates of the potential gains.

<sup>31</sup>Recall the quote that opens this chapter.

prevent out-migration. Then if  $\theta > \phi$  region  $j$  does not reform.<sup>32</sup> In that case the payoff to region  $i$  under "lights on" is  $p(1 - \gamma)y_i \equiv p\tau y_i$  because in this case there is no taxation (so  $a_i = 1$ ). Clearly for this to be beneficial for region  $i$  we need  $p\tau y_i > b_i$ . For "lights on" to be preferable to pro-growth with side payments we also require that:

$$p\tau y_i > pa_i y_i - \eta_i \quad (6)$$

or

$$\eta_i > py_i[a_i - \tau]. \quad (7)$$

Notice what (7) implies. Lights on is preferred to pro-growth even if the tax rate is low, as long as the congestion cost is high.

It is important to note that if (7) holds region  $i$  reforms while the loser region does not reform, choosing instead to keep the lights on utilizing the payments made by region  $i$ . Moscow reforms and pays Perm to keep the lights on and prevent out-migration. Over time, this leads to an even greater divergence in economic performance across these regions. This increases the incentive for migration were Moscow to turn off the lights. Hence, embarking on this path may create a trap where the winner region has to continue to keep the lights on.<sup>33</sup>

What we have demonstrated is that under reasonable conditions it makes sense for loser regions to resist reforms if the transfer payments from winner regions are sufficient. The key condition is that congestion costs in the winner region be high enough. Basically, the winner region pays a tax to keep population in the loser regions. As long as economic performance in the winner regions is not dependent on an inflow of labor this condition is likely to hold. The fact that Moscow has utilized a residence permit system to limit in-migration since the

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<sup>32</sup>If  $j$  does not reform it does not receive the additional transfer, which means that  $i$  does not pay the additional tax.

<sup>33</sup>There is an extra effect from lights on that we have not analyzed. By encouraging Perm not to reform Moscow not only saves congestion costs, it becomes relatively more attractive for FDI. This happens at the cost of losing some domestic investment that could come from Perm. But it may well be that Moscow values the FDI much greater. And in fact the concentration of FDI in Moscow has been increasing in recent times.

early days of economic reform suggests that this condition is likely satisfied.<sup>34</sup>

## 5. Fictitious Capital

We now add capital to the model. In particular, we examine what happens if in some regions the capital stock has a nominal value greater than its effective productivity. Hence, without subsidies the regional production structure would unravel. We show that there are conditions where the winner regions will prefer to keep the fictitious capital employed in the regions. "Lights on" in this setting involves maintaining the fictitious capital in place.

Imagine that the economy is a chain of  $n$  enterprises (indexed by  $l = 1, \dots, n$ ) ala Blanchard-Kremer. Production is sequential, with each enterprise ( $l$ ) using the output of the preceding enterprise ( $l - 1$ ) as an input into its production. The only difference is that each enterprise is in a different region, so there are  $n$  total regions as well. Production is sequential. Region 1 produces a primary resource that is used in production by region 2, which produces an intermediate good used by region 3, etc. At the end of  $n$  steps a good is produced that has value normalized to equal 1. Let the alternative value – export value – of the primary resource be  $c$ .

In Blanchard-Kremer the value of producing in the chain is greater than the alternative value of the primary resource. One of the problems they analyze is inefficient bargaining.<sup>35</sup>

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<sup>34</sup>Moscow's economic success is not predicated on cheap labor. It has utilized migrant labor for construction, but continues to limit in-migration of permanent population. Moscow's economic success has more to do with being the financial and economic capital of the country, and headquarters of the companies that dominate the resource sectors.

<sup>35</sup>Each unit in the chain must bargain with a supplier and a customer. There is Nash bargaining at each step, so that the surplus is split given the symmetry of the situation. The value of the surplus in the last stage (bargaining between the final producer and the last intermediate producer) is 1. This follows because the value of the good at stage  $n$  is still zero. So the last intermediate producer gets one-half of the surplus,  $1/2$ . Now what happens at the prior stage? The surplus here is  $1/2$ , so the next-to-last intermediate producer and the last producer each get  $1/4$ . Continue in this fashion and it follows that the first intermediate producer gets  $(1/2)^n$ . The surplus available to split at the first stage is  $(1/2)^n - c$ , since the first producer must purchase the primary input to produce. Clearly then we must have  $c < (1/2)^n$  in order for there to be positive surplus to split. If  $c > (1/2)^n$ , then the primary producer will prefer to sell to someone else. Notice that  $c$  does not need to be all that large to trigger defection. Suppose the primary producer defects. The magnitude of the fall in output? Notice that it could be as large as  $1 - (\frac{1}{2})^n$ . Thus rather meager private opportunities can cause a rather large fall in output. We can interpret  $n$  as the level of complexity of production. As  $n$  increases the likelihood of defection increases exponentially. The problem is inefficient contracting causes an inefficient

In their setup only  $(1/2)^n - c$  is left to split due to bargaining at all previous stages. Let us suppose, however, that the value of production in the chain is less than the alternative value of the product. That is,  $c > 1$ . Then it is best to shut down production in the  $n - 1$  regions, and finance consumption out of exports alone. Export of the primary product is more efficient. Less is wasted in the chain. But if the first region defects and exports the primary product all the other regions are devastated. It is quite easy to think of the first region as Tyumen Oblast producing oil and all other oblasts as industrial regions that process oil into products, for example.

If the country is a federal region then the majority can force the winner region to compensate. Notice that the efficient policy would be to tax the export and rebate some amount to each citizen in the loser region. This, however, will not be the preferred policy of any Governor if agents are mobile. The reason is that if the enterprises are shut down in the loser regions there is no reason to stay there. Households can take their checks and move away. This is socially efficient – why pay the costs involved in having people live in far-away regions if that is not necessary. But this is disadvantageous for the Governor whose power and prestige is lost.

The Governors will prefer an alternative policy of forcing the winner region to subsidize production by diverting some of the primary resource at below the export price ("keeping the lights on" once again). This adds value to the fictitious capital. And it ties the subsidy to the region rather than to the individual. From the perspective of the Governor this is significantly better. It keeps people in the region, and keeps them important.

The obvious point is that subsidies are more efficient if they are individual-specific rather than region-specific. But politically, in a federal region, the reverse is true.

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output fall.



### 5.0.1. "Lights on" versus Wage Subsidies

Rather than keep the lights on one could just pay a wage supplement to prevent migration. But that is likely to be costlier than lights on. In Germany the FRG effectively paid such a supplement to keep the East Germans from moving. In [1, 46] respondents point out that what makes them move is not wage differentials but absence of a job. "Wage differentials will not induce them to move, but lack of work for a sufficiently long period will drive them to it." This is a form of "lights on" policy. So the cost to Muscovites in terms of subsidies to prevent moving is just the cost of keeping the lights on in the home factories. Hence, lights on may be cheaper for Moscow than wage supplements.

Another advantage of lights on over wage supplements is that the former does not require that a major problem slowing migration: liquidity constraints be removed.. Andrienko and Guriev [2] study migration across Russia's regions and find that liquidity constraints are a major hurdle to migration. Indeed, they find that for the poorest regions – our "loser" regions – an increase in income raises rather than reduces outmigration. Hence, for a winner region intent on preventing in-migration, lights-on is bound to be preferred to wage subsidies..

### 5.0.2. Summary

The problem with loser regions is that they impose a negative externality on winner regions. So regions likely to win from reform would still prefer to pay loser regions not to. For example, Moscow is better off with Perm not reforming even as Moscow does.

This may sound unrealistic. But Moscow has *propiska* and winner regions subsidize activity in loser regions all the time. So we observe that people stay in Perm, even though income differences are huge, reform does take place in Moscow, and dinosaurs stay open in Perm. Perm governors are happy and Moscow governors are happy.

## 6. Historical Digression

The preceding analysis has shown that with "lights on" the governors of both winner and loser regions may be happy. But this equilibrium is inefficient. Moreover, one might expect that this unhappy status quo could unravel as people vote with their feet. One of the key advantages of federalism is, in fact, the competitive discipline on regional policies imposed by mobility of the factors of production. This mechanism is often forgotten in the literature on market-preserving federalism because of the emphasis on center-region relations. But once we consider regional differences this is in fact paramount.

Essential to the "lights on" equilibrium are restrictions on mobility that prevents it from unraveling. It is important to understand that restrictions to mobility is not a new problem in Russia. Indeed, it has been a crucial element of Russian economic development for something like 500 years. It is useful to recall Domar's (1970's) analysis of the rise of serfdom in Russia, which begins with a summary of Kliuchevsky that goes something like this [pp. 18-19]:

1. From about mid-1400s, Russia fights wars that eventually require a military too big to support by taxes.
2. Government solves problems by assigning land to servitors in exchange for service.
3. But system breaks down after mid-1500s when peasants start to migrate to newly conquered areas in east and southeast.
4. Under pressure from serving class, government steadily restricts peasants' freedom, resulting in serfdom by mid-1600s.

"The economist would recast Kliuchevsky's account as follows: The servitors tried to live off rents (in one form or another) to be collected from their estates. But the estates could not yield a significant amount of rent for the simple reason that land in Russia was not sufficiently scarce relative to labor, and ironically, was made even less scarce by Russian conquests. The scarce factor of production was not

land but labor. Hence it was the ownership of peasants and not of land that could yield a income to the servitors or to any non-working landowning class." [p. 19]

The two essential ingredients for the development of serfdom are: (1) "a high land/labor ratio" and (2) "the government's determination to create a large class of servitors."

Taking this analysis to the current problem of Russia, our story, then, is that the governors and enterprise directors of low-productivity (cold and remote) regions are the "servitors" of today, their physical capital (manufacturing assets) in those locations is the "land" they received from the state, the workers in those manufacturing plants are the "peasants," and the opportunity to move back west to Moscow and so on is the analogue to the opening up of new and fertile land in the Volga valley in the mid-1500s.

Therefore, a strict analogue would be:

The peasants [workers] migrate eastward [westward], leaving the servitors' [governors'] land [factories] with a shortage of labor. Under pressure by the servitors [governors], the government restricts the peasants' [workers'] mobility, resulting in serfdom.

But can we really consider loser regions to have high capital-labor ratios? The key point here is to distinguish actual capital and fictitious (virtual) capital.<sup>36</sup> In loser regions there are enterprises that appear to be capital-intensive (the  $\tau$ -effect once again). They actually are lossmaking, but subsidies and transfers allow them to keep producing. In a virtual sense they have high capital-labor ratios. But if labor left the regions this would destroy the pretense that these enterprises are productive, and the pretense that the capital has value.<sup>37</sup> Hence, to maintain the pretense the governors need the labor to stay put.

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<sup>36</sup>There is an important contrast between real capital and fictitious capital. The former requires a compensating differential to locate in the east. Existing capital may be sunk but new investment would follow labor to warmer regions. Indeed, if labor migrated and the capital-labor ratio led to a rise in the real wage this would make it more difficult to earn rents in the east, further inhibiting new investment in the east. But fictitious capital is sunk.

<sup>37</sup>The reason is that subsidies can only be attracted if there is labor – population – in the regions.

But the important parallel is the one between Domar's two essential conditions then and the ones today. The combination of (1) the high manufacturing capital/labor ratio and (2) the government's commitment to preserve the status of the governors and local capital-owners are leading to a new serfdom.<sup>38</sup>

### 6.0.3. Discussion

Because the Soviet system scattered industry across regions lots of fictitious capital remains in regions that happen to be the median voter – the cold distant regions. This is important because it affects decisions about the pace of reform made in the center. It would be much less of a problem if these regions were just poor; in that case income transfers would be a sufficient policy response. If the region were poor and of little political weight policy could provide transfers that also support mobility.

Problems occur when regions are less transparently poor. It is the presence of fictitious capital which provides the alternative method of subsidy. If regions have fictitious capital specific types of subsidies – such as low energy and transport costs – can be used to make the assets appear to have value. This, of course, ends up wasting more resources. But it is far superior for the political prospects of local officials. These subsidies make regions appear to be viable, or at least less disadvantaged than they actually are. And these subsidies necessarily involve addiction so that they represent claims to future resources. The optimal policy involves subsidies that dissipate and then disappear over time. This is clearly not the case for addiction.

### 6.1. Federalism versus Efficiency

Our argument suggests that there is in Russia a conflict between two key goals of reform: democratic federalism and economic efficiency. The reason is that Soviet federal regions did not evolve as a result of economic activity. Rather they are the result of administrative efforts

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<sup>38</sup>See [7] for an analysis of Russia's industrial feudalism.

at occupation and control (by the Russian Empire), and Soviet efforts to invest independent of cost considerations. The Soviets achieved a balance of economic activity across regions through its peculiar pricing system and subsidies (though hidden by the circus mirror).

But why did an arbitrary system of investment and location decisions lead to *systematic* inefficiency in regional borders? One might suppose that if decisions were arbitrary regions would be inefficient in their own ways but not in any systematic way. This ignores, however, that Soviet location decisions (and Tsarist administrative policies) ignored the economic implications of size and cold. And size and cold are not randomly, but systematically distributed across the Soviet landscape. This creates a systematic regional bias in terms of economic efficiency. The relative economic advantages of regions are not randomly distributed across the federation. They are almost perfectly correlated with cold and distance.<sup>39</sup>

When liberalization took place in Russia the systematically-biased nature of political boundaries becomes critical. During Soviet times regions were not economic units that had to cover their costs – they were administrative units supporting centralized decisionmaking. With market federalist reform, however, the situation is drastically changed. Regions must cover their costs net of fiscal transfers. To offset this governors seek subsidies to support their regions. Because each unit has an equal vote, and because regions are heavily skewed towards inefficiency the median region votes for pretense and subsidies.

One important feature of federalism is its role as a diversification and insurance mechanism. There should be gains from trade across regions that are subject to idiosyncratic shocks. When regions experience adverse shocks income and tax payments to the center fall. Other regions that did not experience adverse conditions can pick up the slack. But this insurance mechanism cannot work if shocks are systematic. Federalist insurance can arise from a veil of ignorance. Regions can expect to not be net contributors or net beneficiaries. But this will not work if there are clear winner and loser regions. Then subsidization replaces insurance. Insurance does not work if the risks are systematic and predictable federalism will break down, or you

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<sup>39</sup>The exception being especially resource rich regions such as Tyumen or Yakutia.

get chronic fiscal transfers that contradict reform.

We see this effect in the United States where the equal numbers of senators results in perpetual agricultural subsidies. These would not survive if states voted according to population or if state boundaries were re-drawn to account for changes in relative economic importance.<sup>40</sup> Notice, however, that US states did not form for arbitrary reasons. At one time they reflected comparative advantage.<sup>41</sup> So the inefficiencies are not *systematic*. The problem in Russia is that they are, and that the median governor is very far from the reform end of the spectrum.

Because the Soviet system equalized industry across regions you have lots of fictitious capital in the regions which are the median voter – the cold distant regions. And plenty of labor is associated with that fictitious capital to act as hostages to continue addiction.

## 7. Conclusion

During the 1990's the inefficiency of federalism in Russia was paramount. With locally elected Governors the owners of fictitious capital provided natural allies in the effort to attract rents. One of Putin's first policies upon coming to power was to reduce the authority of Governors, primarily by eliminating direct elections. But even centrally appointed governors tend to be captured by the interests in their own regions.

Because of Russia's Soviet-era territorial legacy, it is not enough for allocation of assets to be made on the basis of market-economy logic alone. It also has to be made from a national point of view. That is, the owners of assets have to be able to consider, without prejudice, the costs and benefits of location as well as all other aspects of potential profitability. Financial oligarchs who were truly national oligarchs – freed of territorial ties—would be able to do that. They would chose to invest in Western locations. The irony is that the oligarchs are the one positive force in terms of viewing the economy in national terms, but the concentration of power has negative impacts in terms of democracy.<sup>42</sup>

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<sup>40</sup>Imagine the US when all dying industries just happened to be in the Dakotas, Kansas, and other plain states. If the rust belt was not in the northeast, but in the less populated plains states.

<sup>41</sup>When the Constitution was adopted agriculture was still the dominant industry in America.

<sup>42</sup>But when the oligarchs' financial capital is married with regional relational capital, the result is doubly

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