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Comment on Aghion-Blanchard

**On the Speed of Transition in Central Europe**

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On the Speed of Transition in Central Europe

by

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I enjoyed reading the paper. It is well-written and well worth reading. It discusses some interesting data and raises some issues that economists working on transition need to struggle with. Since Andy Atkeson and I have been struggling with many of these same issues but don't often cross paths with Olivier I welcome the chance to discuss these with him.

Aghion and Blanchard present evidence from Poland that from the beginning of 1990 through the end of 1991 real GDP dropped 20 percent, industrial production dropped more than 30 percent and unemployment rose to about 12 percent. They build a simple qualitative model that captures some of these features of the aggregate data as well as some micro details including ownership structure within firms and policies for unemployment benefits.

In these comments I do four things. First, I discuss some details of the data. Second, I discuss four possible explanations of the data. Third, I focus on the explanation of Aghion and Blanchard by building a little model that captures most of the insights of their story. Finally, I end with some questions about the specifics of their model.

### Data Issues

Consider the macro data. When I think about different potential stories to tell about the reform it seems crucial to have data of labor productivity both total and broken down by sector: The old state sector and the new private sector. Olivier notes that labor productivity in industry which reflects mostly behavior in state firms fell by 13 percent from December 1989 to December 1991. Thus, a large fraction of the fall in output comes from a fall in productivity while the rest comes

from a fall in employment. Skimming through some recent papers by Sachs and others it seems that there is evidence that workers in the new private sector are more productive than workers in the old state sector. This leads me to conclude that while part of the output fall comes from a fall in employment a major part of the explanation of why output fell in Poland must be: *There was a large drop in productivity in the existing state sector.* Complete models of transition have to deal with this problem. As I will emphasize later Phillipe and Olivier have a nice model of the employment part of this phenomenon, namely the employment drop, but not the productivity drop.

In terms of the data in addition to productivity numbers I would have liked to see (a) a careful discussion of the base prices used to construct real GNP (hopefully they are *world* prices) and (b) data on employment instead of data on unemployment.

### Potential Explanations

In the literature I have found four basic stories about the output fall: Large demand shocks, bad policies, adjustment costs, and nebulous property rights. Let me briefly discuss each of these.

The demand shock story for the output fall in Poland runs as follows. There was a large drop in demand for the products of the large industrial firms in Poland. Much of this was due to the breakdown of CMEA trade. Briefly, Russia was buying a lot of mediocre industrial products from Poland at artificially high relative prices and selling them raw materials, such as oil, at artificially low relative prices. With the breakdown of CMEA trade Russia stopped this practice. Polish firms then found that at anything near the old artificially high distorted prices there was little or no world demand for their products. Moreover, at the undistorted world prices much of their industry had very low, and maybe negative, value added.

I have several comments on this popular story. First, the shock of moving from distorted prices to world prices is more accurately called a *subsidy-removal* shock rather than a *demand* shock.

I read the survey evidence from state enterprises discussed by Berg and Blanchard about managers opinions as not reflecting a demand shock but rather the shock of reality managers had when confronted with the fact that their enterprise's value-added was close to zero when evaluated at world prices. Second, if this is really the story then a careful accounting for the implicit subsidies in the old system will show that GNP falls a lot but that GDP falls much less. I wonder how carefully the accounts underlying the numbers in Olivier's table have been constructed? Take the extreme case in which the Polish industrial sector as a whole has a negative value-added at *world* prices then careful GNP accounting will have GDP *rising* when these industries are shut. There is clearly some controversy on the accuracy of these numbers. Economists like Jeffrey Sachs (Sachs 1993) argue there has been a large shift away from the bloated industrial sector towards the underdeveloped service sector but only a small drop in output and actually a rise in many consumption categories. If this is true the models that I discuss and the one by Aghion and Blanchard are probably irrelevant. So let me assume that Sachs has it wrong and Blanchard has it right and carry on.

A second explanation for the output fall is that during the transition the Polish government pursued poor policies which caused a recession that could have been avoided. A prime example of the bad policy story is the Calvo-Coricelli hypothesis: A sharp decline in working capital prevented firms from buying inputs needed in production. This credit crunch led to a large recession. Olivier has discussed his opinions of this story in another paper so let me just leave it on the table as one of the stories out there.

A third class of explanations might be called adjustment cost stories. Briefly, they argue that there are natural unavoidable costs in quickly transforming an economy from the old system to the new system. These costs may involve rematching costs, learning costs and so on. I will argue that most of the action in the Aghion-Blanchard model can be understood as a simple adjustment cost story: There are substantial adjustment costs involved in moving a large fraction of the population

from the old state sector to the new private sector. I will present a simple version of this story in the next section.

A final set of explanations is that during the transition the old system of rewards and property rights (or lack thereof) was disrupted and that eventually a new one will be set up properly. In the meantime much of the output drop is due to perverse incentives involved in being part way between the old system and the new system. In the paper Olivier touches on some aspects of undefined control rights, however, I haven't seen formal models developed in which the driving force behind the drop in output. Atison and I are working on a simple model in which future rent redistribution worsens current incentive problems and leads to lower output.

I throw out these four explanations to add some perspective on where the Aghion-Blanchard story fits in. While it actually has little hints of both the demand shock story and the nebulous property rights story, in essence, it is an adjustment cost story. Specifically, it is basically a simple model of sectoral adjustment with a few bells and whistles thrown in to make it more consistent with the micro realities of Poland. I will argue while these extra bells and whistles look nice they don't really affect the model's basic workings or insight. To develop this point I start with an extremely simple pure sectoral adjustment model (adapted from Atkeson and Kehoe, 1993a) and see how much mileage I can get. I then add a wrinkle at a time and see what it does. With that said let me get down to business.

### A Simple Model of Sectoral Adjustment

Time is discrete, indexed  $t = 0, 1, \dots$ . There are a continuum of agents, called workers, with mass 1. There are two production sectors: A state sector, with mass  $E_t$  of workers at  $t$ , each of whom produce  $x$  units of output and a private sector with mass  $N_t$  of workers at  $t$ , each of whom produce  $y$  units of output. Both  $x$  and  $y$  are constant with  $y > x$  so that workers in private sector

are more productive than those in the state sector. There is no capital. Initially all workers start in the state sector, so  $E_0 = 1$ .

At the beginning of each period  $t$  a worker in the state sector can either work there and produce  $x$  or can search for a new match in the new private sector. If a worker searches he will find a match the same period with probability  $\pi$  and produce  $y$  units in period  $t$  and with probability  $1 - \pi$  he won't find a match and will produce 0 in period  $t$ . (It might be more natural to let workers who find matches at  $t$  not be able to produce till period  $t + 1$ , but for the qualitative points I want to make this assumption is inessential.) Once a new match is found it stays productive forever. Let  $U_t$  denote the mass of searching or unemployed workers.

Denote the consumption of the state workers private workers, and unemployed workers by  $c_t(E)$ ,  $c_t(N)$ , and  $c_t(U)$  respectively. The resource constraints are

$$E_t + U_t + N_t = 1$$

$$E_t c_t(E) + U_t c_t(U) + N_t c_t(N) \leq E_t x + N_t y.$$

The preferences of each worker are given by the standard expected utility function

$$E \sum_{t=0}^{\infty} \beta^t u(c_t)$$

where  $U$  is increasing and strictly concave and  $0 < \beta < 1$ .

### A. The Basic Transition Path

Let us begin by assuming the government (or social planner) lets workers consumption be their output less taxes or plus subsidies. Specifically, let  $z_t(E)$  and  $z_t(N)$  denote lump sum taxes on those workers employed in the state and private sector and let  $b_t$  denote benefits paid to unemployed workers. With this setup we can make several of the points of the Aghion-Blanchard paper.

Consider a planner that chooses a tax-subsidy scheme and a rate to close the old sector to maximize a weighted sum of the expected utility of workers, with equal weights on each worker. Such a planner will choose to taxes and subsidies so that all workers consumptions are equal, so

$$c_t(E) = c_t(U) = c_t(N)(=c_t)$$

and this is accomplished by setting taxes and subsidies so that  $x - z_t(E) = b_t = y - z_t(N)$ . It is clear that if the new productivity  $y$  is big enough relative to old productivity  $x$  and the probability of finding a match,  $\pi$ , is not too small the planner will choose some positive rate. In some numerical examples Atkeson and I show the basic path for output is an initial recession followed by an eventual boom.

In deciding how fast to close down the old sector the planner trades off two aspects of transition: The more quickly the old sector is closed down the more quickly output will reach the new higher level but the deeper will be the initial recession. The lower the intertemporal substitutability of consumption the slower is the rate of shutdown. Thus even in this extremely simple economy with no distortions, no workers councils, no quasi-rents, no efficiency wages no externalities, and effectively complete markets (so no financing problems) there is a natural sense in which transition involves a recession.

Now the Aghion-Blanchard paper introduces a large number of wrinkles each designed to capture some feature of the actual Polish situation. Let me discuss several of these in detail.

### **B. A First Wrinkle: Mandated Unemployment Benefits**

The paper first considers a mandated minimum level of unemployment benefits so that

$$b_t \geq b$$

where  $b$  is some constant exogenously given benefit level. Obviously if the transition discussed above has a deep enough initial recession so that the consumption  $c_t$  falls below  $b$  then this transition is no longer feasible.

If, for simplicity, we continue to assume that consumption is equalized across agents then raising the minimum benefit level naturally slows down the transition. Clearly as the minimum level of benefits is raised the (constrained) optimal speed of transition slows and eventually with  $b$  large enough, say  $b = x$ , it stops completely.

This point is worth making, however, I wish Olivier would expand a little on what point he wants to use to get from it. If one interprets this model one could make the following point: Mandated unemployment benefits are a bad idea—they lower expected utility and, as a by-product, they slow down the transition. Thus the government should get rid of them and everyone would be better off. Knowing Olivier I sincerely doubt this is the point he wants to make. Instead I think he wants to simply point out there is an interaction between the speed of transition and the level of benefits. If, for some reason, there is a minimum politically acceptable level of benefits then this puts limits on how fast the state sector can be dismantled. If it is dismantled too quickly then there is a fiscal crisis: There are not enough tax revenues to cover the unemployment benefits and still have a transition.

### **C. More Wrinkles: Incentive Problems**

Olivier also adds incentive problems to the model that lead to a gap between the consumption of the unemployed and that of the employed. He motivates this gap with an efficiency wage story. In the simple model I described I can get a similar gap by introducing moral hazard in search. To do this in a simple way suppose that workers who put in unobserved effort into searching find



matches with probability  $\pi$  while those who do not find matches with probability zero. Putting effort into search decreases utility by a constant  $v$ .

In a two period version of this model agents will put in effort only if

$$\pi U(c(N)) + (1 - \pi)U(c(U)) - v \geq U(c(U))$$

or

$$U(c(N)) \geq U(c(U)) + v/\pi.$$

Thus there must be a gap between the consumption if the workers that find new matches and those that do not. In this model Atkeson and I analyze the allocations that maximize ex ante utility subject to the resource and incentive constraints. We find that under the optimal scheme

- there are forced layoffs from the state sector—so unemployment has an involuntary aspect to it,
- the distribution of consumption necessarily widens during transition,
- there is a large initial recession.

Moreover, attempting to undo the widening distribution of consumption interferes with incentives and leads to inefficient outcomes.

Now Andy and I added these incentive problems to get the above features and we suggested that these features may be both a natural and necessary consequence of transition in actual Eastern European economies. In their paper, Phillipe and Olivier introduce incentive constraints and they too get consumption gaps but I'm not sure what their bottom line is on them.

#### D. Specific Questions About the Model

In terms of explaining the aggregate data the model has a major problem. During transition productivity in the economy *rises* instead of falls. It rises simply because workers in the

new sector are more productive than those in the old. In theory it is easy enough to imagine a model in which workers in the new sector are initially less productive but after investing in specific skills will eventually be more productive. This could lead to a productivity fall. My reading of the data is that workers in the new sector are more productive and the productivity fall comes from the drop in the old state sector. The open issue then is why did productivity fall in the state sector.

I can think of several stories. First, the drop in productivity results from on the job search or rematching or internal reorganization on more general adjusting which takes time and resources. One can think of lots of models that work like this. For a concrete example, Andy Atkeson and I have a simple model of industry evolution (Atkeson and Kehoe, 1993b) involving a loss of informational capital that can be interpreted this way. We emphasize that giving up old well understood ways of doing things for new untried and uncertain ones may naturally lead to a fall in productivity. If we interpret this evolution as taking place *within* state firms then it could potentially explain the productivity drop in existing states firms. Second, the drop in productivity might be due to nebulous property rights during the transition I mentioned above. This is a little vague but it is worth taking a stab at. There are a whole number of potential models to be developed along these lines.

## Conclusions

In summary, I found it quite useful to have a chance to discuss these interesting issues in transition with Olivier. The basic model in the paper is one of costly sectoral adjustments. During a transition the model generates a fall in output and employment. As currently formulated, however, it leads to a *rise* in productivity in the economy. Thus, as I mentioned above, it is a model about part of the transition process. My reading of the evidence is that a large part of the output fall is

a large drop in productivity in the state sector. I think the next generation of transition models should focus on generating this drop.

In sum this is an interesting area ripe for both concrete models and serious data analysis to discriminate among these models. Hopefully, in several years the current efforts being expended will bear fruit.

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