Econ 372   Barry W. Ickes

                                                                            Spring 2003

Midterm Exam II: Answer Sheet

1. *(35 %) External liberalization in transition economies is complicated by the problem of indus-tries that actually destroy value at world prices. Carefully explain the meaning of negative value added (NVA) at world prices. How can the same industry produce value added at do-mestic prices but destroy value at world prices?*

   brief answer NVA occurs if the value of output *priced at world prices* is less than the value of purchased inputs *valued at world prices.* E.G. if

   $$P_i^* X_i - P_M^* M_i < 0 \tag{1}$$

   where the asterisks refer to world prices, X_i is the output level of good i, P_M^* is the world price of purchased inputs, and M_i are the purchased inputs used in the production of good i. If (1) holds then all of the factors of production (labor and capital services) used in the production of i is completely wasted. Notice that if the domestic price of good i, P_i is greater than the world price, and if the domestic price of the purchased inputs is less than the world price, then we can have both expressions (1) and (2) hold simultaneously.

   $$P_i X_i - P_M M_i > 0 \tag{2}$$

   The reason why this can occur is that in a closed economy with prices that differ from the rest of the world, it may make sense to produce a good. Scarcity means it is more valuable. So production could take place in ways that departed dramatically from world prices. When markets are opened, however, it makes more sense to import the good from abroad.

   (a) *Why are transition economies plagued with problems of NVA producers? Do you find this problem in market economies? Explain.*

      brief answer In planned economies the direction of production was a planners decision. Economic efficiency was not a primary desideratum. Prices were distorted from world prices in systematic ways. These problem can also occur in market economies, but not systematically. Firms may enter an industry and it turns out that they are very inefficient. But they did not enter the industry with the idea of losing money. But in planned economies with opportunity costs not being a primary consideration enterprises are created that cannot possibly compete in the world economy. So in market economies this happens by mistake (and they be government subsidies for them to survive – it should be obvious why this is the case). But in planned economies not necessarily by mistake – and state ownership means subsidies are ubiquitous.

   (b) *Why is the presence of enterprises that produce NVA problematic for liberalizing economies? Why is the problem of whole sectors that produce NVA a problem for liberalizing economies?*

brief answer Enterprises are a problem because external liberalization will make it impossible for them to cover their costs. This will either require subsidies so they can restructure – which goes against market reform – or they will shut down causing unemployment, which may be unpopular for reformers. Whole sectors are even more problematic. If it is a firm then others in the industry can hire the laid off workers. Industry-specific skills and training may not be lost.

(c) *Why was this competitiveness problem more severe in Russia than in many East European transition economies?*

brief answer The Soviet Union was more militarized than Eastern Europe (although the latter was pretty militarized too) and Russia was the most militarized part of the Soviet Union (about 70% of defense industry of the Soviet Union, but a bit less than half the population). Second, Russia lays very far north with much of industry located in regions that are extremely cold and far from markets. Both factors imply that initially Russia probably had relatively more NVA enterprises than other transition economies.

2. *(30%) The process of structural adjustment involves the movement of resources from the state sector to the private sector. If the private sector is more productive than the state sector why is this a complex problem?*

brief answer It is complex for various reasons. A sample would include: (i) lack of property rights early in transition makes it hard to shift resources from the state sector. Without ownership there cannot be purchase and sale; what looks like purchase and sale is theft of state property. (ii) without hard budget constraints it is not clear that resources would leave the state sector. With subsidies life can remain good, and in the private sector work may be harder. (iii) Without space it may be hard for private enterprises to expand. How do they rent if nobody owns? (iv) Taxes have to be levied on value that is produced, and if that is ultimately the private sector then taxation could inhibit the growth of the private sector (this obviously relates to the issue of subsidies).

(a) *If the process of structural adjustment were smooth and frictionless what would happen to labor productivity in the transition? How does this compare with what actually happens to labor productivity in transition?*

brief answer If the process were frictionless labor productivity, and hence output, would rise during transition. Let α be labor productivity in the state sector, and β be labor productivity in the private sector, with $\beta > \alpha$. Let the total labor force, $\overline{L}$ be divided into the two sectors, so that $\overline{L} = L^s + L^p$. Then average labor productivity in the economy is a weighted average of productivity in the two sectors, hence:

$$q = \alpha\left[\frac{\overline{L} - L^p}{\overline{L}}\right] + \beta\frac{L^p}{\overline{L}}$$

and frictionless adjustment means that over time $\left[\frac{\overline{L}-L^p}{\overline{L}}\right]$ goes from near unity to near zero and $\frac{L^p}{\overline{L}}$ goes from near zero to near unity, labor productivity rises continuously. This conflicts with what is actually observed, as labor productivity falls early in the transition, and falls dramatically in the CIS countries.

2

(b) *What does your answer to part (a) suggest about the nature of structural adjustment?*

brief answer It suggests that labor (and other resources) may not move straight from the state sector to the private sector. There may be an intermediate state, unemployment. This would explain why output falls, even if $\alpha < \beta$. Something must interfere with the smooth adjustment to make labor productivity fall. To explain why q falls, however, we must consider even more complex issues. One could be mismeasurement of output pre-transition (see the next problem). A second could be that disorganization causes α itself to fall early in the transition. Without planning but no markets labor productivity may fall below its initially low levels.

(c) *What are the most important features that govern the process of structural adjustment in transition? Be as specific as you can.*

brief answer The pace of development of property rights. The speed with which subsidies are removed and hard-budget constraints imposed. The level of the barriers to private sector expansion.

3. (35%) *Why is it so difficult to estimate the true fall in output that occurs in transition? What are the most important factors that cause the output fall to be so difficult to measure?*

brief answer The change in the nature of the statistical system (from population-based to sampling) is one. Combined with entry of new business this means that some output is not observed. The change in system from output fulfillment to receive bonuses – which encouraged exaggeration of production – to taxation which encourages hiding output is a second. The change in relative prices that accompanies the replacement of planners' preferences with consumer preferences is a third key factor that makes this difficult.

(a) *Some analysts use data on power consumption in transition economies to assess the fall in output. Why might this be useful? What are the limitations of this approach?*

brief answer The idea is that power consumption is hard to hide because it is mostly produced by natural monopolies. It is easy to measure because it is relatively homogeneous units (kilowatt hours) that do not depend on value measures. The idea is that in the short run the demand for power is inelastic with respect to output. So variation in electricity or power generation will reflect variation in production of output. The problem with this approach is that in recessions the power intensity of production rises (as in Finland in 1990-93), and if transition causes a recession this will raise power intensity, rather than signalling mismeasured output. Moreover, as market reform succeeds enterprises will become more price sensitive, especially in countries where the relative price of energy rises (as in CEE). So cross-country variation may indicate different paces of market reform rather than variation in hidden output.

(b) *What principles ought we to think about when assessing the consequences of falling output? That is, when is a fall in output bad?*

brief answer The most important question is whether it is "good old output" (GOO) or "bad output" (BO) that is falling. If it is the latter this indicates an increase in welfare. Eliminating GOO reduces welfare, and represents some inefficient friction

(disorganization) in the economy. But a fall in BO represents progress in transition. The key point is to know whether the output fall is concentrated in value producing or value destroying sectors, measured at relative prices that reflect society's preferences (or world prices).

(c) *What factors might account for systematic differences in the size of the output fall across transition economies?*

brief answer Building on the last part, we could look at systematic differences in the share of BO to total output at the start of transition. This could vary across countries. In Russia the hyper-militarization may make it much higher than in less industrialized Bulgaria, for example. This reflects initial conditions and could also reflect how distorted the economy was when the transition started. The other type of factors could be policy-related. Was transition organized effectively or not. How fast were subsidies removed, for example. How quickly were market institutions put in place? Notice that the two explanations differ in that the former focuses on the BO problem, while the latter focuses more on the GOO problem.