Econ 372 Barry W. Ickes

Fall 2001

Midterm Exam II: Answer Sheet

Instructions

Here are some brief answers to the second midterm. These are meant to be informative and instructive, but not exhaustive.

1. (35 %) How can an industry produce value added at domestic prices yet destroy value at world prices? Carefully explain.

brief answer Under socialism domestic and world prices were separated by the wall of the foreign trade monopoly. So internal prices could be very different from external prices. For example, if materials were underpriced and industrial goods overpriced domestically, then industrial output would produce value at domestic prices. But at world prices the cost of the materials used to produce industrial goods could be worth more than the industrial goods. It is this price separation – due to the controls of the previous period – that are crucial here. A more formal analysis (much more than is necessary but you might as well have it here) would note that value added in domestic prices is given by:

$$V_{\mathsf{i}} = P_{\mathsf{i}} z_{\mathsf{i}} - P_{\mathsf{m}} M \tag{1}$$

where z_{i} is gross output of industry, and for convenience we have assumed that there is a single material input, M. For most countries we would expect $V_{\mathsf{i}} > 0$, although in STE's this need not be the case.[1] Now let us suppose that there was protection. Let the explicit tariff on good i be t_{i}. Then

$$P_{\mathsf{i}} = (1 + t_{\mathsf{i}}) P_{\mathsf{i}}^{*} \tag{2}$$

where P_{i}^{*} is the world price of good i. In addition to tariffs on imports, the price of material inputs may be distorted. Let t_{m} be the implicit export tax on material inputs. Then we can write:

$$P_{\mathsf{m}}(1 + t_{\mathsf{m}}) = P_{\mathsf{m}}^{*}. \tag{3}$$

Now if we divide goods prices by material prices we get:

$$\frac{P_{\mathsf{i}}}{P_{\mathsf{m}}} = (1 + t_{\mathsf{i}})(1 + t_{\mathsf{m}}) \frac{P_{\mathsf{i}}^{*}}{P_{\mathsf{m}}^{*}} \equiv (1 + \tau) \frac{P_{\mathsf{i}}^{*}}{P_{\mathsf{m}}^{*}} \tag{4}$$

where τ is the coefficient of protection. We can now compute value added at world prices:

$$V_{\mathsf{i}}^{*} = P_{\mathsf{i}}^{*} z_{\mathsf{i}} - P_{\mathsf{m}}^{*} M \tag{5}$$

[1] Thus if the price of materials is lower than the social opportunity cost of their use (perhaps due to the exclusion of rent), it is clearly possible that $V_{\mathsf{i}} > 0$, even though the activity actually destroys value.

and if we substitute from (2) and (3):

$$\begin{aligned} V_{\mathsf{i}}^{*} &= \frac{P_{\mathsf{i}} z_{\mathsf{i}} - (1+t_{\mathsf{i}})(1+t_{\mathsf{m}})P_{\mathsf{m}} M}{1+t_{\mathsf{i}}} \\ &= \frac{P_{\mathsf{i}} z_{\mathsf{i}} - (1+\tau)P_{\mathsf{m}} M}{1+t_{\mathsf{i}}}. \end{aligned} \tag{6}$$

It is clear from (6) that even if $V_{\mathsf{i}} > 0$, V_{i}^{*} can be negative if τ is large enough. A condition for this would be that the implicit tariff on materials is too large. This is not farfetched for STE's.

(a) Why are transition economies likely to suffer from such a situation?

brief answer Socialist pricing undervalued materials relative to industry due to ideological preferences for industry and lack of pricing rent. Moreover, the sellers' market and other features of planning results in low quality of industrial goods. When the economy is closed the high relative price of industrial goods can persist. These prices will be much higher than world prices for the same goods. The inefficiency of production due to various features of socialism also raises the cost of producing industrial goods relative to materials.

(b) What are the likely implications for a liberalizing economy if it has such industries?

brief answer These industries will face severe pressure from liberalization. They will not be able to cover costs. If hard-budget constraints are imposed they will have to shut down, unless there are capital markets that are already developed (which is very unlikely).[2] There may also be a problem if materials producers shift to exports which will make it hard for domestic producers to keep producing. Of course, this shift will be efficient. But some industries may be viable with some investment and restructuring.

(c) Does this mean that transition economies should refrain from external liberalization? If so, explain why. If not, explain why not.

brief answer Almost surely not. If these sectors destroy value at world prices it is good for the economy that they are shut down. Moreover, external liberalization brings many advantages such as increased competition. This is a problem only if the sector could adjust. That is, if the cost of making the sector value producing (at world prices) is not too high. "Not too high" compared to what? Compared to the cost of the funds needed to succeed in the restructuring. Still one must wonder if the restructuring will take place if there is temporary protection. If not, then it is a pure waste – better to shut down these sectors now.

2. **(30%)** Disorganization is a popular theory of the output fall in transition economies. Carefully explain the essential idea of this theory.

[2] Even if such markets existed would they lend to enterprises that are still state owned? Surely not until there are property rights.

brief answer The essential idea of this theory is that the collapse of planning institutions **before** market institutions are in place causes the output fall. Because production involves the coordinated activity of many different producers the collapse of planning can lead to inefficient declines in output. If activity could be coordinated the output fall would not occur.

(a) Does the fall in output predicted by disorganization theory represent a decrease in welfare? Is this a real cost to society? Explain.

brief answer Yes. The output fall predicted by this theory is welfare reducing because value adding activities do not occur. Productive activity is not taking place because resources are diverted. They are diverted because there are inadequate means of organizing production. For example, inefficient bargaining – due to the absence of contracts – causes raw materials to be exported when they could produce higher value if production chains are maintained.

(b) What are the factors that could prevent the output fall according to this theory?

brief answer Vertical integration or long-term contracts could prevent disorganization. In the bargaining example it is the inability to split the surplus effectively that causes output to fall dramatically. But if production was vertically integrated this would not happen because by assumption the production chain as a whole is producing value added. Similarly, long term contracts could prevent conflict over splitting the surplus from leading producers to defect from productive chains.

(c) What would the theory predict about the relative fall in output across transition economies? That is, how would the predicted output fall differ according to country characteristics?

brief answer The theory predicts that the more complex is the production process the greater the likely output fall. If output was produced in a single enterprise there would be no disorganization. Disorganization predicts that output falls because of a lack of institutions that coordinate productive activity. If production is very specialized and highly disintegrated there is more opportunity for disorganization. The presence of alternative suppliers would also reduce the potential for the output fall as the withdrawal of a single producer has less of an impact. This could mean that openness of the economy may also reduce the severity of this problem.

3. **(35%)** The path of output displayed in most transition economies has a "U-shape."

(a) Does this mean that welfare necessarily declines in the early stages of transition?

brief answer Not if the fall in output represents the contraction of value destroying activities. It could be less production of "bad output" and this would enhance welfare.

(b) Does this mean that welfare only begins to rise when output recovers?

brief answer No. Output growth could reflect increased production of bad output if there are subsidies or other incentives for such production. There is no reason to believe that output growth reflects on good production, though it might. Even so, the answer to part a insures that the answer to this question is false.

(c) Why might the measured fall in output be overstated? Explain.

brief answer Too many reasons to list. Problems in the statistical system are one reason. Before the incentives were to overstate output, now the incentives are to evade taxes. It is also harder to measure the production of new private enterprises than big state enterprises. The shadow economy may have increased in size. Relative prices change so dramatically it is also hard to know what happens to output. At which prices?

(d) 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 argument is that it is easier to measure power production and this is highly correlated with output. You just look at kilowatt hours and you do not need to worry about prices. The problem with this approach is that power production is inelastic in the short run. When output falls in a recession, the ratio of power consumption to output rises. This is true in market economies. Moreover, the use of power depends on the rate at which budget constraints harden. If they remain soft enterprises may continue to use power even if output falls, while in more reformed economies the use of power will decrease to cut costs. So the ratio of power consumption to output will vary with the state of economic reform.