

## Final Exam - Answers

Econ 233

Spring 2002

*You have 150 minutes to answer the following 5 questions. Each question is worth 20%, so you should plan to spend an equal amount of time on each one. Answer all questions in your exam booklet. Any collaboration among students during the exam is considered a violation of the honor code. Good luck!*

1. Figure 1 at the back of the exam shows cumulative GDP growth rates for transition economies and OECD countries. Answer the following questions:

- a. What is the most striking difference between the pattern of growth in transition economies and that of the OECD? How would you explain this difference?

**Answer:** The most striking difference is falling output in all transition countries between 1989 and 1992/93. In contrast, OECD countries grew at a steady rate. Without exception transition countries experienced initial output fall. Some countries, such as Poland, Slovenia and Hungary, recovered lost output by 2001, but most have 2001 real GDP lower than in 1989. The initial fall in output could have occurred for several reasons: tight macro policies, disorganization associated with the collapse of central planning, lengthy sectoral reallocation, dissolution of CMEA etc. It is also possible that measured output fall is overstated due use of base year prices, inadequate data collection and shadow economy.

- b. In 1989, the gap in per capita annual incomes between OECD countries and transition countries ranged from approximately \$10,000 for Slovenia to \$15,000 for the Czech Republic, to \$20,000 for Moldova. Based on figure 1, did transition countries succeed in closing these gaps by 2001, or did the differences become even greater?

**Answer:** The cumulative growth in any of the transition countries was not greater than that of the OECD. Between 1989 and 2001 incomes in OECD countries increased more than incomes in transition countries, hence the gap in incomes became even greater for all transition economies. Even Poland, which since 1992 grew considerably faster the OECD did not manage to even narrow the gap. Since 1992 Slovenia and Hungary are growing at approximately the same rate as the OECD, thus maintaining the gap that existed in 1992 without any sign of convergence in incomes. The situation in the rest of the transition countries is even worse.

2. Slovenia is often said to be the most advanced and macroeconomically stable of the transition economies. Consider Slovenia's economic data and answer the following questions:

a. How would you assess Slovenia's balance of payments in 2001?

**Answer:** Slovenia's balance of payments is in very good shape. Its current account deficit is only \$66 million which is less than 1% of GDP. Its nonreserve capital account has \$1.3 billion surplus, which mainly consists of \$441 million in FDI and \$472 million borrowing by "other sectors" (firms). Slovenia's central bank increased its foreign exchange reserves by \$1.2 billion.

b. How would you assess Slovenia's inflation, growth and fiscal performances in 2001?

**Answer:** In 2001 the inflation was 8.9% which is about twice of that in the EU. Real output grew by a respectable 2.9%. Slovenia's budget deficit is very low at less than 1% of GDP.

c. Inflation in Slovenia does not satisfy the Maastricht criteria. How should Slovenia proceed to bring inflation down?

**Answer:** The surest way to bring inflation down is to introduce tight monetary policy, reduce the growth rate of money. This could be combined with tight fiscal policy to lower aggregate demand and bring inflation down. However, the central bank and the government need to think about the costs of such measures. An important determinant of inflation are inflation expectations. Any disinflationary effort needs to be accompanied with a clear statement that the central bank is planning to lower the inflation. If markets believe that inflation will be lower they will incorporate that into their nominal wage contracts, nominal interest rates, pricing etc. In addition, it is clear that 10% inflation is not harming economic growth. Therefore, the central bank may ask if it is necessary to bring inflation down. They may, however, need to convince EU commissioner that 10% inflation is okay.

d. How would you assess development of Slovenia's exchange rate since 1995? How about Slovenia's real exchange rate? Did Slovenia's central bank try to influence the exchange rate in 2001? In what direction?

**Answer:** The nominal exchange rate depreciated nearly 100% since 1995. Domestic price level increased only 68%, over the same period U.S. price level went up 16%. This means that the Slovenia's real exchange rate depreciated 48%. This is because  $RER = \frac{EP^*}{P}$ , therefore  $\frac{\Delta RER}{RER} = \frac{\Delta E}{E} + \frac{\Delta P^*}{P^*} - \frac{\Delta P}{P}$ . The central bank accumulated reserves and hence bought dollars and sold local currency.

This will lead to nominal depreciation of local currency. Hence, the central bank tried to depreciate the Tolar.

- e. Do you think Slovenia is ready to adopt the Euro? What economic variables would you look at to answer this question?

**Answer:** Adoption of Euro will deprive Slovenia of its independent monetary policy and a possibility to adjust to shocks through changes in the exchange rate. Its monetary policy and the exchange rate will be that of the EU. Therefore, I would try to see if Slovenia is likely to face different shocks than EU. I would look at the correlation of EU and Slovenia's GDP to see if their business cycles are correlated. The amount of trade between EU and Slovenia and the degree of financial integration would allow me to assess the savings from lower transaction costs. In addition, I would try to investigate if Slovenia is able to adjust to shocks without independent monetary policy or changes in exchange rates. Therefore, I would look at the flexibility of its fiscal policy, flexibility of its labor markets and wages in particular.

3. Consider a small economy  $X$  which is considering opening its stock market to foreign investors. The consulting firm which was hired to advise the government gathered the following data on variances and covariances of returns of the country's portfolio,  $R_X$ , world portfolio,  $R_W$  and two industries in country  $X$ : apparel production,  $R_A$  and banana production,  $R_B$ .

		country	world	apparel	bananas
		$R_X$	$R_W$	$R_A$	$R_B$
country	$R_X$	20			
world	$R_W$	15	10		
apparel	$R_A$	5	10	20	
bananas	$R_B$	25	10	-10	35

where the numbers on the diagonal are variances and the numbers off the diagonal are covariances of returns.

- a. (10 points) Would country  $X$  benefit from opening its stock market to foreign participation? Explain why.

**Answer:** The risk premium on portfolio investment in country  $X$  before liberalization is  $R_X - R_f = var(R_X) \cdot T = 20 \cdot T$  where  $T$  is the world price of risk. After liberalization the risk premium is  $R_X - R_f = cov(R_X, R_W) \cdot T = 15 \cdot T$  which is lower assuming that the country's price of risk is the same as the world price of risk.

- b. (10 points) Would all industries in country  $X$  benefit from the liberalization of capital markets? Explain the intuition behind your result.

**Answer:** The risk premium before liberalization is  $cov(R_A, R_X) = 5 \cdot T$  for apparel and  $cov(R_B, R_X) = 25 \cdot T$  for bananas. After liberalization the risk premium for apparel is  $cov(R_A, R_W) = 10 \cdot T$  for apparel and  $cov(R_B, R_W) = 10 \cdot T$  for bananas. This means that the cost of capital decreases for bananas industry and increases for apparel industry. This is quite possible. Industries which provide more diversification for the world portfolio than for the domestic portfolio benefit from liberalization. On the other hand industries which provide more diversification for the domestic portfolio than the world portfolio lose.

4. One of the mechanisms of corporate governance in developed countries is the presence of large shareholders. Recognizing this mechanism, designers of privatization allowed the establishment of privatization funds. Suppose a factory was privatized using vouchers. 20% of the shares are held by a privatization investment fund, and the rest of the shares are dispersed among the population. Shares of the privatization investment fund are also widely held by the public. The privatization fund charges 2% asset management fee to its shareholders, a common percentage in U.S. mutual funds. Suppose further that the factory is able to generate an annual profit of \$1 million.

- a. Given the ownership structure of the factory, how are control and cash flow rights distributed?

**Answer:** According to the law, the population has both the cash flows as well as the control rights. In practice, however, if the ownership of the fund and of the remaining 80% of the factory is widely dispersed, the fund management will have effective control over the company. This is because fund managers represent the largest block of shareholders. Individual shareholders who hold the remaining 80% have very little incentive to exercise his or her control rights. Similarly, while the fund managers should be controlled by the fund's shareholders, those are dispersed as well, and hence individually have very little incentive to exercise control.

- b. Assuming that all profits are distributed to shareholders, how much of the \$1 million profit is the fund management entitled to? Can you comment on your answer?

**Answer:** If the fund holds 20% they are entitled to \$200,000, 98% of which should accrue to the fund's shareholders. Hence, the fund's management is entitled to only \$4,000 of the \$1 million of profits. The fund management has nearly

100% effective control but is entitled to only 0.4% of the profits. This means that the fund management has a great incentive to divert profits out of the factory for themselves.

- c. Do you think that this ownership structure contributes to efficient allocation of resources?

**Answer:** Coase theorem tells us that initial ownership structure is irrelevant for economic efficiency. Indeed, even if the fund management steals all the profits, it has the incentive to generate as much profit as possible allocate allocate resources within the factory efficiently. One qualification that needs to be made is that, if the fund management does not expect this regime to last, they may prefer to invest less than is optimal.

- d. Do you think that selling 20% of the company to a foreign investor instead of the privatization fund would improve corporate governance?

**Answer:** Foreign investor will have the same economic incentives to steal profits from the 80% of shareholders as the privatization fund. The difference is that if foreign firms have better corporate governance, the foreign firm's management may not be able to steal from its shareholders. Thus, if the foreign firm diverts profits for itself it benefits its shareholders. Indeed, there are several high-profile cases from Poland where Michelin and ING channeled profits from their Polish investments abroad.

5. After privatization, the value of all Russian industry was approximately \$10 billion. For comparison, Microsoft is valued at \$300 billion, Anhenseur-Busch at \$43 billion, and Caterpillar \$13 billion. The table below shows valuations (in dollars) in different industries per unit of production in the U.S., Western Europe and Russia:

	unit of production	U.S.	EU	Russia
Telecom.	access line	1,637	848	69
Electricity	magawatt	372,000	650,000	2,260
Oil	barrel of proven reserves	7	3.9	0.17
Tabocco	cigarettes	5.6	4	2
Cement	tones	144	162	2

Answer the following questions:

- a. Using the above table above calculate average discount that Russian companies offer relative to the U.S. Why do you think that valuations of Russian companies are so low?

**Answer:** The average discount is 91%. Part of the discount could be explained by lower price level in Russia than in the U.S. Developing countries have typically lower prices for non-tradable goods such as telephone service etc. The difference in price levels is partly reflected in per capita incomes. U.S. has per capita income is about 10 times that of Russia, so this could explain discounts of up to 90%. However, the discounts are often much higher and they exist even for tradable goods such as oil. Another explanation of low valuations is nonexistent shareholder protection and very poor corporate governance. Individual shares are nearly worthless because shareholders have little hope to receive any profits from the company.

- b. Should policy makers in Russia mind the low valuation of Russian companies?

**Answer:** Market value of a company should not matter for efficient allocation of resources. As long as profits are maximized efficient allocation is attained. The problem could arise if companies want to use external finance for investment. With low value placed on company shares, equity finance is very expensive. This means that by selling large stakes in the company, only small amount of money is raised.

- c. What reforms should Russia introduce to increase stock market valuations?

**Answer:** Russia needs to improve shareholder protection. This must be done not just by introducing appropriate laws and regulations, but mostly by strong and speedy enforcement.

- d. Corporate takeovers constitute another corporate governance mechanisms used in developed countries. Do you think that this mechanism can work in transition countries?

**Answer:** Takeovers as a corporate governance mechanism can work when majority shareholders or firm managers are diverting profits. The desire of someone else to divert profits should lead to a takeover. This will bid up company's share price up and benefit minority shareholders as well. The low valuations suggest that this mechanism does not work. One reason could be that those in control do not just divert profits, but strip assets. Asset stripping is much more serious violation of shareholder rights than profit diversion. If assets are transferred from publicly traded company to a privately held company, there is nothing valuable to take over. In addition, while there may be incentive for a takeover, few people have enough capital or are able to obtain credit to undertake one.