

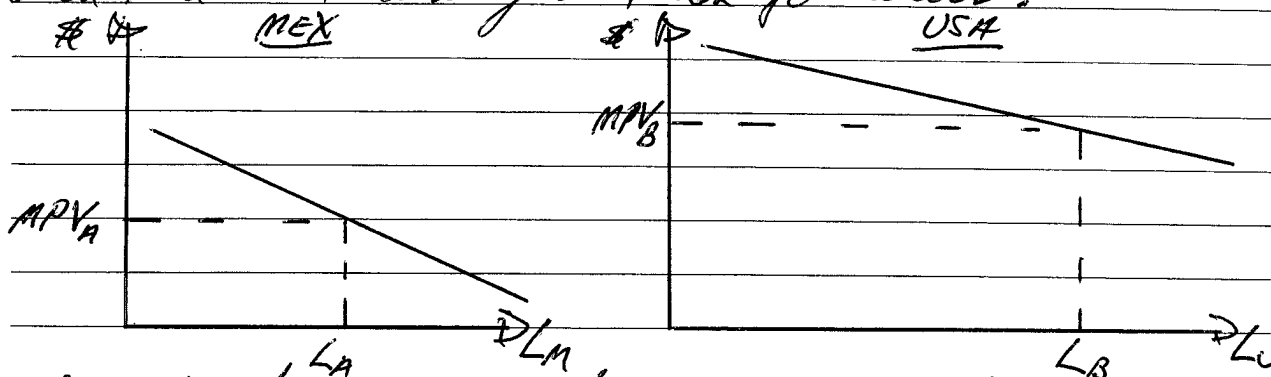
II. PROBLEM

Answer within the space provided. Your answers must be accompanied with clear explanations. Graphs and equations without explanations will not get you far.

1. Open economies and factor movements (20 points)

In the chapter on economic efficiency, we have seen that an impediment to the free flow of labor between the rural and the urban sectors of an economy can lead to an inefficient allocation of labor between the two sectors. A graphic was used to illustrate the problem. The same type of graphical argument can be made to study the effect of labor movements between two countries simply by replacing the urban and rural sectors with country A and country B respectively. With the help of a graphic, therefore, explain why the free movement of labor between Mexico and the USA is likely to increase the joint output of the countries. Assume that each country has a total population of L_A and L_B respectively. Explain intuitively with words. Why is it, then, that the US border remains virtually closed to the free movement of labor? (MPV)

Suppose Marginal product value curves for labor in Mexico and the USA are given as follows:



In the absence of labor movement between the countries and given the respective labor force sizes, the marginal product of labor in Mexico is lower than in the USA: $MPV_A < MPV_B$. This means that if one Mexican worker moves to the USA, joint output increases by $MPV_B - MPV_A > 0$. In a competitive labor market, wages are equal to marginal products. A free movement of labor would therefore increase joint output as Mexican workers seek higher wages in the USA. Since this tends to depress wages in the USA, USA workers would oppose this free movement.

2. Determinants of growth and wealth (40 points)

Read the following excerpt from an article recently published by the periodical *The Zimbabwean* and answer the questions below.

Cattle Rustling Decimates Herd¹

Written by Lovejoy Sakala

Friday, 01 April 2011 13:45

HARARE – The amount of cows in the country has fallen from 6.19 million to 5.11 million in the last decade due to rampant cattle rustling.

This follows the chaotic and often violent land grab by the Zanu (PF) government which forced former white commercial farmers out of their productive farms. According to the police Anti-Stocktheft Unit, 350 beasts have been recovered from January to March 2011, while 134 people were arrested for cattle rustling. Police also accused unlicensed butcheries for fuelling cattle rustling operations in the country.

“The availability of a ready market of unscrupulous butchers in both urban and newly resettled areas is contributing to the increase in thefts of cattle,” said ZRP Anti-stocktheft Unit coordinator, Assistant Commissioner Bernard Dumbura.

He said the police were working round the clock to eradicate stock theft in the country that has so negatively impacted the growth of the economy. Dumbura also said they closed 175 butcheries and 124 food outlets that have failed to disclose their sources of meat and records of purchase.

“We have intensified our operations and we urge farmers to take protective measures such as branding their cattle,” he said.

Zimbabwe has, since 2000, failed to meet its meat export quota to European markets after commercial farmers who specialises in cattle ranching were driven out of farms.

In this course, we have considered in turn the major factors suspected of explaining long-run economic growth and wealth differences between countries. We called them the “proximate” determinants of growth.

- a) (10) Enumerate all the proximate determinants of growth that we have studied in this course. (Do not describe them. Just list them.)

- physical capital
- human capital: - health
- education
- population size
- productivity: - technology
- efficiency
- international trade

¹cattle rustling = cattle theft

- b) (15) The above article relates *precisely* to one of those proximate determinants now affecting Zimbabwe. Identify which one and describe it in general terms. Then justify why you think that the case reported in the article fits that description.

The problem of theft is mostly related to a problem of inefficiency. We define efficiency as the ability with which an economy uses its factors of production and its knowledge (technology) in order to produce goods and services.

The presence of theft means that labor and capital must be used to protect producers from theft instead of being used to directly increase production. Moreover, the thieves themselves are spending time stealing from others instead of working to increase output. Finally, as the article relates, farmers appear to underuse their land in anticipation of theft.

All together, the presence of theft leads to a lower output for given factors of production and technology; an instance of inefficiency.

$$\frac{Y_1}{Y_2} = \frac{A_1}{A_2} \cdot \frac{h_1^\alpha k_1^{1-\alpha}}{h_2^\alpha k_2^{1-\alpha}}$$

c) (15) Explain how you could use the method of *Development Accounting* to measure the extent to which the determinant proposed in part b) can explain differences in income levels between Canada and Zimbabwe. (Suggestion: Begin by explaining briefly which data you would need and why.)

Assume that output per capita is given by the following equation in country i : $Y_i = A_i h_i^\alpha k_i^{1-\alpha}$ where $A_i \equiv$ productivity, $k_i \equiv$ capital per worker, $h_i \equiv$ human capital per worker. A_i is not directly measurable. However, with data on Y_i , h_i and k_i for both countries, we can estimate the ratio of productivities as follows:

$$\frac{A_{ZIM}}{A_{CAN}} = \frac{Y_{ZIM} / (h_{ZIM}^\alpha k_{ZIM}^{1-\alpha})}{Y_{CAN} / (h_{CAN}^\alpha k_{CAN}^{1-\alpha})}$$

Assume then that productivity can be broken down into technology (T) and efficiency (E) as follows: $A_i = T_i \cdot E_i$. If we further assume that Zimbabwe is 20 years behind Canada in technology, and that technological progress per year is equal to g in Canada, we have: $T_{ZIM} = T_{CAN} (1+g)^{-20}$ and thus

$$\frac{T_{ZIM} \cdot E_{ZIM}}{T_{CAN} \cdot E_{CAN}} = \frac{A_{ZIM}}{A_{CAN}} \Rightarrow \frac{E_{ZIM}}{E_{CAN}} = \frac{A_{ZIM}}{A_{CAN}} \cdot (1+g)^{+20}$$

This last ratio corresponds to the extent to which efficiency differences explain income differences.