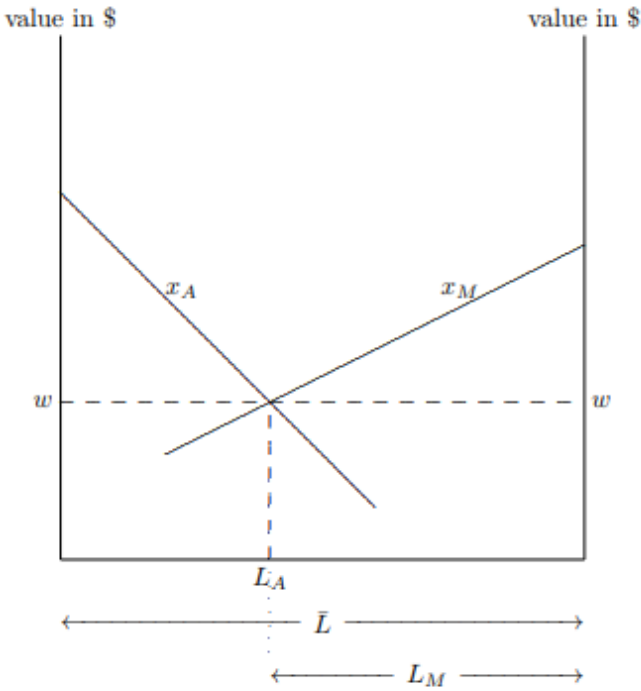Consider a dual economy with manufacturing sector in the city and agricultural sector in the countryside, and where workers are free to migrate.

1. Explain how labour allocation and the wage are determined in a situation with no international trade.

The ANSWER is given in the so called baththub diagram. See fig 9 in http://folk.uio.no/hmehlum/1910s18/MMecon1910s18.pdf.

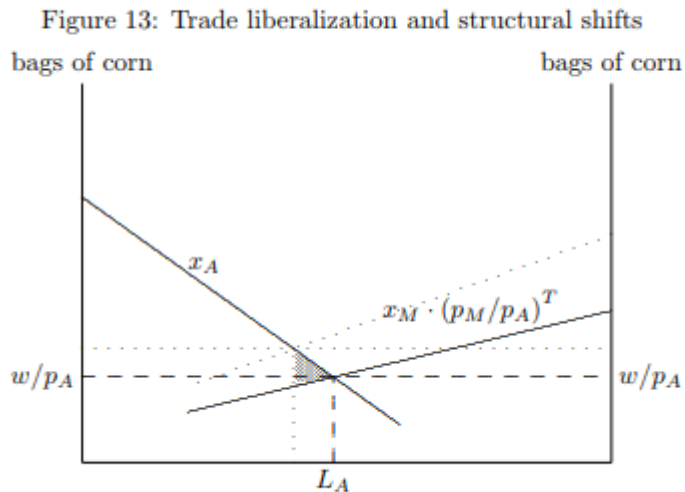Figure 9: Allocation of labour between Agriculture and Manufacturing

Consider an economy where there are two sector and where the demand for labor is declining as the wage increases. The manufacturing sector (M) employs L_M workers and has marginal product x_M. The agricultural sector (A) employs L_A workers and has marginal product x_A. Then if there is full employment in the economy (all $\bar{L}$ workers have a job) and if workers move to the sector with the highest wage we have the two conditions

$$x_A = x_B = w \quad \text{and} \quad L_A + L_M = \bar{L}$$

2

2 Assume that a free trade reform increases the relative price of agriculture. Explain what happens to the labour allocation and to the real wage after the reform.

Based on Fig 9, Fig 11 (with real wage w/p_A) is derived. fig 13 shows what happens when opening up for cheap manuf imports. ANSWER: Labor goes into into agric, and real wage down.

Figure 13: Trade liberalization and structural shifts

bags of corn   bags of corn

x_A

$x_M \cdot (p_M/p_A)^T$

w/p_A w/p_A

L_A

3 Explain who are possible winners and losers of the free trade reform by demonstrating what happens to:

   a) the income of owners of land

   b) the income of owners of manufacturing firms

   c) the income of the country as a whole

All of these can be answered by shading areas in figure 13. ANSWER: a) up, b) down c) up (the shaded tringle).

If student want to go all the way she can also do the same procedure looking at real wage relative to manuf goods. (upward shift in x_A *(P_A/P_M) curve). This gives . a) up, b) down c) up (another shaded tringle). but now also w/P_M up.

4. Assume that the wage in manufacturing is fixed at a high level. Show how this could result in unemployment (or in the rise of an urban informal sector with low paid jobs). How can the government reduce poverty in this case?

This is the classical Harris-Todaro model.

Figure 10: Harris-Todaro: allocation of labour between Agriculture , Unemployment, and Manufacturing
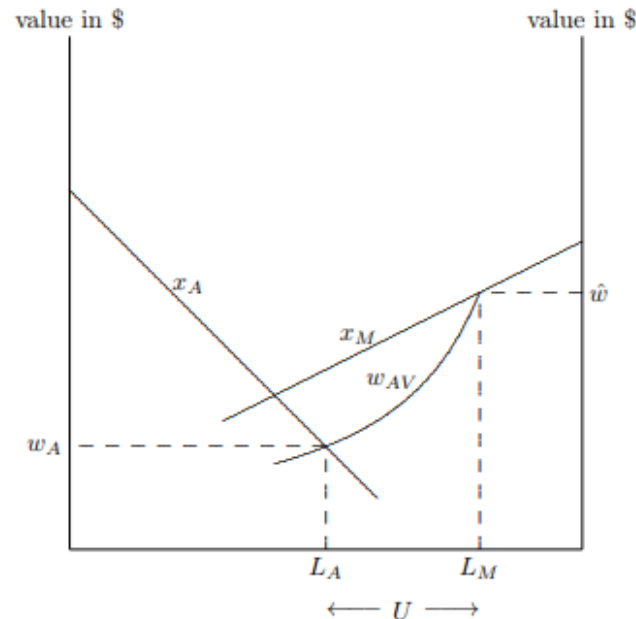
be the outcome of pressure from the labour unions. It may be given by law. Or it may be the minimum level required for a reasonably healthy, efficient workforce. Unemployment is illustrated in Figure 10. The unemployment U in town is equal to the difference between labour supply $\bar{L} - L_A$ and the labour demand L_M (at the fixed wage $\hat{w}$).

$$U = \bar{L} - L_A - L_M$$

The size of U is determined by how many workers that find it worthwhile to hang around in the town even without a job. The reason for hanging around is that there is a chance of getting a job in the modern sector at the wage $\hat{w}$ as long as you stay in town. One simple formulation assumes that workers will move to town until the average wage in town (for the L_M employed and the U unemployed) is equal to secure wage in agriculture $w_A = x_A$. Assuming for simplicity that the unemployed earns nothing, the average wage in town is

$$w_{AV} = \frac{0 \cdot U + \hat{w} \cdot L_M}{U + L_M}$$

ANSWER: Unemployment U>0 is a result of workers moving to city with a hope of getting a manuf job.

ANSWER: Many policies are possible.

1. Help the poorest, the unemployment, will give more unemployment.

2. Improve productivity in agric, will lower unemployment

3. investment in manufacturing, will increase number of manuf employed. This may both increase and decrease unemployment. This result is related to Kuznets curve.

HOW TO EVALUATE.? The problem set is quite similar to a seminar problem set. A student who delivers a convincing argument under each of the four sub-questions showing how the bits and pieces work together should get a B. If there is a little extra (typically on 3 or 4) the student could get an A.