

## Rural urban migration: the Harris-Todaro model

(Source: Debraj Ray, Chapter 10)

### Harris Todaro equilibrium and the informal sector

If working in the urban informal sector means lower wages and worse working conditions than in the countryside, given that not everybody can find a formal sector job, why do people keep coming to urban areas even if they end up in these terrible informal sector conditions? The model provides a nice and simple explanation.

Let  $L_f$  be the number of jobs in the formal sector and  $L_I$  the number of jobs in the informal sector. Thus, the total number of urban jobs is  $L_f + L_I$ . Since the number of jobs in the formal sector

is  $L_f$ , the ratio  $\frac{(L_f)}{(L_f + L_I)}$  captures the probability that someone coming to the city find a formal sector job (= nb of jobs in the formal sector / total number of urban job seekers). In the event that she doesn't, she stays in the informal sector, hoping to find a formal sector job someday

(NB: Here, we implicitly assume that  $L_f$ , employment in the formal sector, equals the number of vacancies in the sector, which is true if there is a rapid enough rate of turnover in the sector).

Assume the minimum wage in the urban formal sector is  $w_f > w_A$  the wage in the rural sector. In urban areas, those who do not find a formal sector job find a refuge in the informal sector, where we assume a fixed wage  $w_I < w_A$ .

Then, the expected wage from migrating to the urban area is

$$\frac{(L_f)}{(L_f + L_I)} w_f + \frac{(L_I)}{(L_f + L_I)} w_I$$

Then, people keep coming from the countryside as long as this is greater than  $w_A$ .

In equilibrium, i.e. When people don't migrate anymore, we have

$$\frac{(L_f)}{(L_f + L_I)} w_f + \frac{(L_I)}{(L_f + L_I)} w_I = w_A$$

This is the Harris-Todaro equilibrium condition.

According to the model, the informal sector exists for two reasons:

- not everybody can find a job in the formal sector because wages are too high for the formal labor market to clear.
- However, there is a chance to find a formal sector job someday (with proba  $\frac{(L_f)}{(L_f + L_I)}$ ),

and this prospect makes people in rural areas migrate to urban areas. This keeps happening until  $w_A$  and the expected wage from migration are equalized. They might end up in the informal sector for awhile, with a wage even lower than in the countryside. But this is still worth it in expected terms. The informal sector is thus a refuge for frustrated formal job seekers.

The informal sector, in this model, acts as a necessary counterweight to the attractiveness of the urban formal sector, and slows the pace of rural urban migration.

### **Government Policy: the paradox of urban job creation**

The informal sector is often characterized by very unpleasant features: its unregulated activities are often responsible for congestion, pollution and a high crime rate.

Then, governments may want to design policies to reduce the size of the informal sector. One obvious idea that comes to mind is to create more formal sector jobs to absorb workers waiting in the informal sector.

Even if wages can't go below the minimum wage, you can still encourage job creation by various investment incentives, or even by creating more jobs the public sector enterprises.

The idea is to expand labor demand (shift the curve) in the formal sector. People are still paid the fixed minimum wage but more people are employed.

So this should obviously reduce the size of the informal sector, right? But maybe not...

In the short run,  $L_I$  falls because some people, previously in the informal sector, take the new jobs in the formal sector and  $L_f' > L_f$ . This raises the probability of finding a formal sector job and as a result, the *expected* urban wage initially rises.

However, this cannot be persistent. Indeed, because of better job prospects in the formal sector, now more migrants come from the countryside! Then, the supply of labor in the rural sector decreases, which leads to an increase in  $w_A$  (which is flexible, unlike  $w_f$ )

More formally, look at the equilibrium condition:

$$\frac{(L_f)}{(L_f + L_I)} w_f + \frac{(L_I)}{(L_f + L_I)} w_I = w_A$$

Rearranging, you get

$$L_I = L_f \frac{(w_f - w_A)}{(w_A - w_I)}$$

Then, what is the effect on  $L_I$  of increasing the number of formal jobs  $L_f$ ?

$$\frac{(dL_I)}{(dL_f)} = \frac{(w_f - w_A)}{(w_A - w_I)}$$

Since  $w_f > w_A$  and  $w_A > w_I$ , this is POSITIVE! That is, increasing the number of jobs in the formal sector has the unintended effect of INCREASING the size  $L_I$  of the informal sector!

Because the policy of creating formal jobs makes migration more attractive, you end up with even more people migrating and thus more people in the informal sector!

Analogy: like when you improve road infrastructure to reduce congestion. Because the roads are better, even more people take their car and as a result, you may end up with even worse traffic congestion!

### **Efficient allocation of labor and migration policy**

In the case where wages are fully flexible in the urban formal sector as well, the equilibrium is such that the equilibrium wages in the formal urban sector and the rural sector are equalized, at the point where labor demand curves intersect. Then, no informal sector arises.

Basic economic theory: When markets are competitive, labor demand curve in one sector simply reflects the marginal productivity of labor (and labor is chosen so that this MPL equals the marginal cost of labor, i.e the wage). Situations where MPLs are equalized among sectors correspond to efficient allocations of labor. If MPLs were different, labor should be allocated to the sector with higher MPL, until MPLs are the same in both sectors.

Why are we talking about this? Because what migration policy should aim to achieve is efficiency in the allocation of labor among sectors, not the removal of the informal sector per se. And as we just said, efficiency is achieved when MPLs are equalized among sectors. And in the Harris Todaro model, inefficiency arises because the formal sector wage is too high and rigid. If creating jobs does not work, what can the government do?

Consider two policies:

First, migration restrictions. Well, if you can prevent anybody who does not have an informal sector job to come to enter urban areas, they all have to stay and work in agriculture. So of course, you removed the urban informal sector, but this does not make things efficient: there are too few people in the formal sector, that is:  $MPL(\text{formal sector}) > MPL(\text{agriculture})$ . There would be gains from having more people in the city.

The second policy is to offer subsidies  $s$  to employers in the formal urban sector, so that given that the wage is  $\underline{w}$  (i.e workers get  $\underline{w}$ ), each worker only costs them  $\underline{w}-s$ . Then, employers in the

urban formal sector choose  $L_f$  so that  $MPL_f = \underline{w} - s$ . (instead of  $= \underline{w}$  in the absence of subsidy)

Then, note that if the subsidy is pushed to high, you end up with too many workers in the formal urban sector (because MPL is then lower than in the rural sector). And even if you set the subsidy to that  $\underline{w} - s$  is at the intersection between labor demand curves in both sectors, then rural people still compare their wage to  $\underline{w}$  and so they come anyway, and you haven't solved the problem.

So maybe you can combine subsidies and migration restrictions, such that you achieve the equalization of MPLs between rural and formal urban sectors. This way, efficiency is restored.

However, it is hard to enforce such strict migration restrictions! Can you do anything without them? Well, you can subsidize the agricultural sector as well as the formal urban sector: the subsidy should be such that the cost of a worker for an employer in both sectors is at the point where the labor demand curves intersect. This way, their choice of labor is such that MPLs are the same in both sectors. But in addition, the subsidy should also be such that the agricultural wage equals  $\underline{w}$ , so that no worker has an incentive to migrate.

While this magical policy might work in theory, this is in fact hard to implement in practice. Why?

- Employment figures are often very difficult to verify, and without proper verification, it is impossible to pay a subsidy based on employment. Of course, in principle, you could go out there and verify how many workers every single employer has, to check if they report the true number. But as you can easily imagine, this would be immensely costly, and this cost needs to be taken into account when assessing the efficiency of the policy.

- Moreover, verifying employment levels accurately is even more impossible in the agricultural sector, which is a really informal sector in practice.