

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: NBER International Seminar on Macroeconomics 2005

Volume Author/Editor: Jeffrey Frankel and Christopher Pissarides, editors

Volume Publisher: MIT Press

Volume ISBN: 0-262-06265-8, 978-0-262-06265-7

Volume URL: <http://www.nber.org/books/fran07-1>

Conference Date: June 17-18, 2005

Publication Date: May 2007

Chapter Title: Comment on "Shadow Sorting"

Chapter Author: Christopher Pissarides

Chapter URL: <http://www.nber.org/chapters/c0341>

Chapter pages in book: (167 - 170)

Comment

Christopher A. Pissarides, Centre for Economic Performance, London School of Economics

The authors of this paper set themselves a challenging task. They ask, why is shadow employment in Europe increasing, when detection methods by the authorities must be improving? The answer they give is plausible—maybe because governments know that suppressing shadow employment would increase unemployment. Of course, there is another solution to the problem, the deregulation of legal employment. But if there are obstacles to deregulation, legal, political or ones likely to lead to economic disruption by trade unions and other vested interests, then governments can circumvent to some extent the measures by turning a blind eye to activity that does not comply.

The hypothesis put forward is not tested directly by the authors. Instead they set out to show that in an equilibrium with regulation there is a negative correlation between shadow employment and unemployment. In their model production efficiency is the same in the legal and underground economy, and the difference between them is that in the legal economy employers pay taxes and unemployed workers receive compensation. In the shadow sector no transfers take place. When shadow activity is detected the job is closed down.

The main result of the theoretical model is the demonstration that there is a cut-off skill level that sorts workers into the legal and shadow sectors. Shadow employment is associated with more labor turnover because of detection, and this discourages more skilled workers. Employment taxes and unemployment benefits are independent of income and high income workers lose more from turnover if UI benefits are low enough. So they avoid going to the shadow sector. Given that low-skill workers are willing to enter shadow employment it is easy to see how closing down this employment outlet will increase unemployment. The low-skilled will then apply for legal jobs and increase the unemployment queue.

But is the real reason that low-skill workers sort into shadow employment the fact that unemployment benefits are not generous enough to attract high-skill workers? It is certainly true that the opportunity cost of employment is higher for more skilled workers, so more frequent unemployment spells in the shadow sector may be a factor. To make the point more convincing the authors need to demonstrate that unemployment spells are indeed more frequent in the shadow sector. But this is not the main point. Usually, shadow employment is criticized for its low capital intensity and low commitment to training. The cost of a large shadow sector to the economy is both the output cost due to low investments in capital and training and the loss of tax revenue. I will show here that a modification to the authors' model delivers sorting along the lines discussed by the authors, but one that does not have to rely on the cost of unemployment. It also delivers a richer framework for thinking about shadow employment and, needless to add, the correlation between shadow employment and unemployment.

Firms offer training at some level z when a job match first takes place. We can think of this as either training for the worker or as capital investment, the theoretical results are not affected. Assuming that workers are distinguished by their skill x and the firm may choose different training levels in each sector, we can write $px(1 - \tau)f(z_g)$ for the output from a legal job and $pxf(z_b)$ for the output from a shadow job. The key assumption is that the skill level x and the returns to training are complementary.

The value of a legal job that is destroyed at rate λ is

$$(r + \lambda)J^s(x) = px(1 - \tau)f(z_g) - w_g(x).$$

The firm chooses z_g to maximize the value of its job,

$$\max_{z_g} J^s(z_g) - pz_g(1 - \tau).$$

I have implicitly assumed that the firm gets a tax rebate on money spent on training. Assume that the training choice is efficient, i.e., that $w_g(x)$ is taken as given when training choices are made, but let

$$w_g(x) = \bar{w}_g + \beta px(1 - \tau)f(z_g),$$

with z_g fixed at the optimal level. For example, this wage equation could be the outcome of an implicit bargain between the firm and the worker, as is commonly analyzed in search equilibrium models.

The optimal z_g satisfies

$$\frac{xf'(z_g)}{r + \lambda} = 1.$$

Similar reasoning for shadow jobs gives

$$\frac{xf'(z_b)}{r + \lambda + \rho} = 1.$$

Shadow jobs break up for two reasons, because of the same separation process as in the legal sector and also when they are detected, at rate ρ . Under standard assumptions we get $z_g > z_b$. Interestingly the reason that there is more training in legal jobs is the same that drives the authors' results, namely that legal jobs are more stable than shadow jobs. But whereas the author's results depended on the cost of unemployment to the worker, with training the key result is driven by the fact that detection reduces on average the duration of a shadow job, and so gives less time to the firm to exploit the rewards from its investment.

It is straightforward to get the paper's single crossing property, namely the sorting according to skill. But the single crossing is now on the expected profit from the job, irrespective of the costs of unemployment. Under iso-elastic (Cobb-Douglas) $f(z)$, and if

$$\frac{p(1 - \tau) - 1}{(r + \lambda)^{1/\alpha}} > \frac{p - 1}{(r + \lambda + \rho)^{1/\alpha}}$$

$$\bar{w}_g > \bar{w}_b,$$

the J s of legal and shadow employment cross only once, as shown in Figure 1. The sufficient conditions required are that taxes are not too high and detection is not too low—otherwise the whole economy is driven to the shadow sector—and that the outside opportunities of those in legal jobs are better than those in shadow jobs. The latter could be satisfied, for example, under the authors' assumption that workers in the legal sector receive unemployment compensation.

The model with training can reproduce the sorting results of this paper and in addition it formalizes the output costs of shadow employment, which is an important issue in the European policy debate. It can easily be incorporated into the model of this paper to yield more

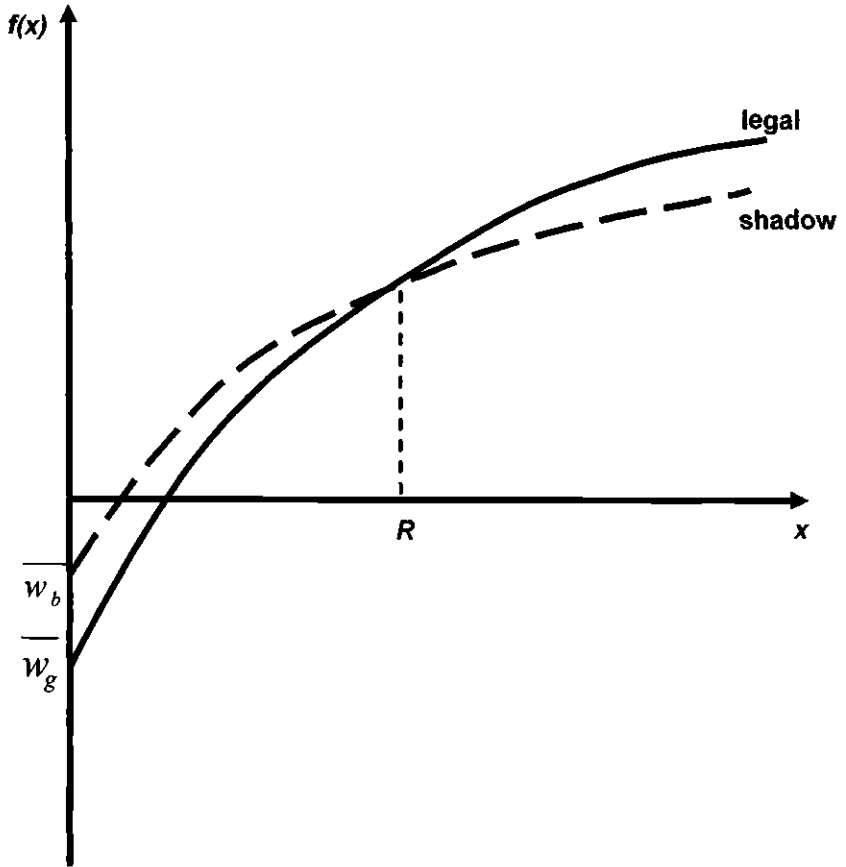


Figure 1
The value of legal and shadow jobs

general sorting results, which reflect both the training inefficiencies of shadow employment and the unemployment costs. Full calibration of this model may also avoid some implausible results in the reported calibrations, like for example the very large wage differential between the two sectors.