Workers and Firms sorting into Temporary Jobs

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Increasing Labor Market Flexibility - Boon or Bane?

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Outline of the paper

- Deregulation of fixed-term contracts has been the main labour market policy during the last twenty years
- Observers wondered whether temporary employment would eventually absorb the whole workforce
- We propose a matching model with direct search in which both temporary and permanent jobs coexist in equilibrium
- Ex post firms are better off with temporary contracts, but in order to fill a temporary vacancy they need to keep it open longer; similarly, ex post all workers prefer a permanent contract, but finding a temporary one is easier
- The model is extended in order to include training and on the job search

The matching framework/1

- Workforce consists of a mass one of risk neutral workers
- They are subject to natural turnover and separate from the job at rate *s*
- Workers only differ in their outside flow utility *z*. This *z* is drawn from a c.d.f. *F(z)* with upper support $z^u < w$ (wage) and is not observable to firms
- Labour productivity $y_h > w$ has an instantaneous probability λ of experiencing a permanent adverse shock. Conditional on the shock productivity falls to $y_l < w < y_h$
- Firms create jobs by posting costly vacancies; keeping open a vacancy involves a flow cost *c*

The matching framework/2

- Two types of contracts exist: *temporary* and *permanent*; temporary contracts can be broken by the firm at will
- Temporary and permanent contracts are offered in different submarkets; workers and firms can freely move across submarkets but they can't search simultaneously in both: the search is directed
- In each market the meeting of unemployed workers and vacant jobs is described by a well defined matching function $m(v_i, u_i)$, with constant returns to scale, where $i = (p, t)$ i.e. permanent or temporary
- Unemployed workers searching in the permanent market receive an exogenous fixed benefit $b > 0$

The matching framework/3

- As usual, θ_i denotes the submarket specific tightness v_i / u_i; $h(\theta_i)$ is the job finding rate and $q(\theta_i)$ is the vacancy filling rate

$$\lim_{\theta_i \to 0} h(\theta_i) = \lim_{\theta_i \to \infty} q(\theta_i) = 0 \qquad i = p, t$$

$$\lim_{\theta_i \to \infty} h(\theta_i) = \lim_{\theta_i \to 0} q(\theta_i) = \infty \qquad i = p, t$$

- The exogenous wage w is fixed for the entire employment relationship with no possibility of rollover. All workers enjoy the same wage. Any wage within the parties bargaining set can be supported as an equilibrium
- r is the pure discount rate

Job creation in the permanent market

- The p.d.v. of a permanent job when productivity is high or low reads

$$\begin{aligned} rJ_p^h &= y_h - w + \lambda[J_p^l - J_p^h] + s[V_p - J_p^h] \\ rJ_p^l &= y_l - w + s[V_p - J_p^l] \\ rV_p &= -c + q(\theta_p)[J_p^h - V_p] \end{aligned}$$

- Assuming free entry $V_p = 0$ one gets one of the key equations of the model

$$c = q(\theta_p) J_p^h$$

- Moreover the values of a filled job can be rewritten as

$$J_p^h = \frac{y_h - w}{r + s + \lambda} + \frac{\lambda(y_l - w)}{(r + s)(r + s + \lambda)} \qquad J_p^l = \frac{y_l - w}{r + s} < 0$$

Job creation in the temporary market

- In the temporary market firms are not forced to retain the worker when the productivity is low, so that $J_{t,l} = 0 > J_{p,l}$ and

$$
\begin{aligned}
r J_t^h &= y_h - w + (s+\lambda)[V_t - J_t^h] \\
r V_t &= -c + q(\theta_t)[J_t^h - V_t] \Rightarrow V_t = -\frac{c}{r+q(\theta_t)} + \frac{q(\theta_t)}{r+q(\theta_t)} J_t^h
\end{aligned}
$$

- Assuming free entry

$$
c = q(\theta_t) J_t^h \qquad\qquad J_{t,h} = \frac{y_h - w}{r+s+\lambda} > J_{p,h}
$$

- Ex post the value of a temporary job is higher whatever the level of productivity, but...

The equilibrium trade off

- Free entry leads to an ex ante indifference condition on the demand side of the market

$$q(\theta_t)J_t^h = q(\theta_p)J_p^h$$

- Since we proved that $J_{p,h} < J_{t,h}$ it must be that

$$q(\theta_t) < q(\theta_p)$$

- And therefore $\theta_t > \theta_p$. As a consequence, in equilibrium

$$h(\theta_t) > h(\theta_p)$$

Workers' sorting/1

- Permanent workers are subject to natural turnover and enjoy the benefit *b* when unemployed

$$
\begin{aligned}
rU_p(z) &= z + b + h(\theta_p)[E_p(z) - U_p(z)] \\
rE_p(z) &= w + s[U_p(z) - E_p(z)]
\end{aligned}
$$

- On the contrary, temporary workers face the risk of being fired when a productivity shock occurs and do not receive any benefit

$$
\begin{aligned}
rE_t(z) &= w + (s + \lambda)[U_t(z) - E_t(z)] \\
rU_t(z) &= z + h(\theta_t)[E_t - U_t]
\end{aligned}
$$

Workers' sorting/2

- Since workers can freely move across markets, their optimal allocation will be

$$U(z) = Max[U_t(z), U_p(z)]$$

- where

$$rU_t(z) = \frac{z(r+s+\lambda) + h(\theta_t)w}{r+s+\lambda+h(\theta_t)}$$

$$rU_p(z) = \frac{(z+b)(r+s) + h(\theta_p)w}{r+s+h(\theta_p)}$$

- Workers take the tightness as given so that the value of unemployment is increasing in *z* in both markets; in what follows we look for a reservation value *R* such that

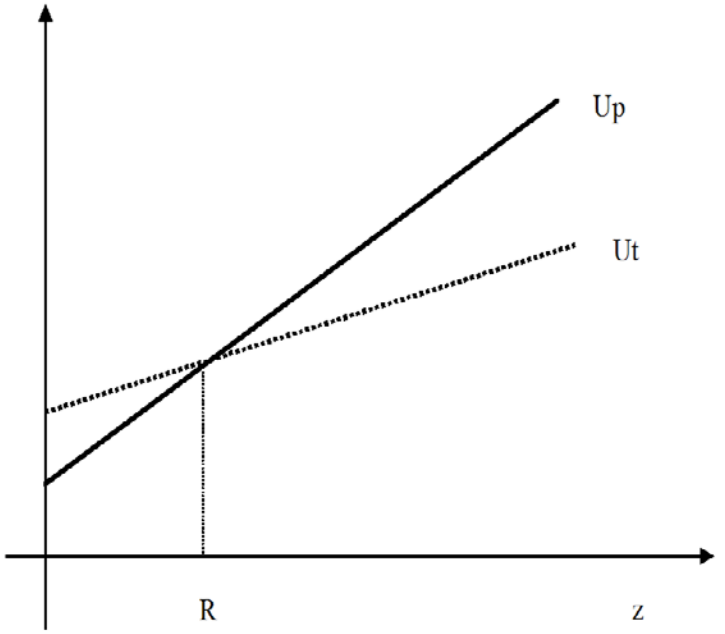
$$rU_p(R) = rU_t(R)$$

Workers' sorting/3

- The formal value of R reads

$$R = w - b\frac{(r+s)[r+s+\lambda+h(\theta_t)]}{(r+s)h(\theta_t)-(r+s+\lambda)h(\theta_p)}$$

- As long as the existence condition holds, $R < w$. Workers with $z < R$ will search for a temporary job; the marginal worker (the one with $z = R$) is indifferent and the others stay on the permanent market



Dynamics/1

- We define the introduction of temporary jobs as a permanent unexpected shock to the the steady state of an "old regime" market
- In the "pre-reform" labour market only permanent contracts are allowed
  - all the labour force is either employed or unemployed with a permanent contract (whatever the outside utility)

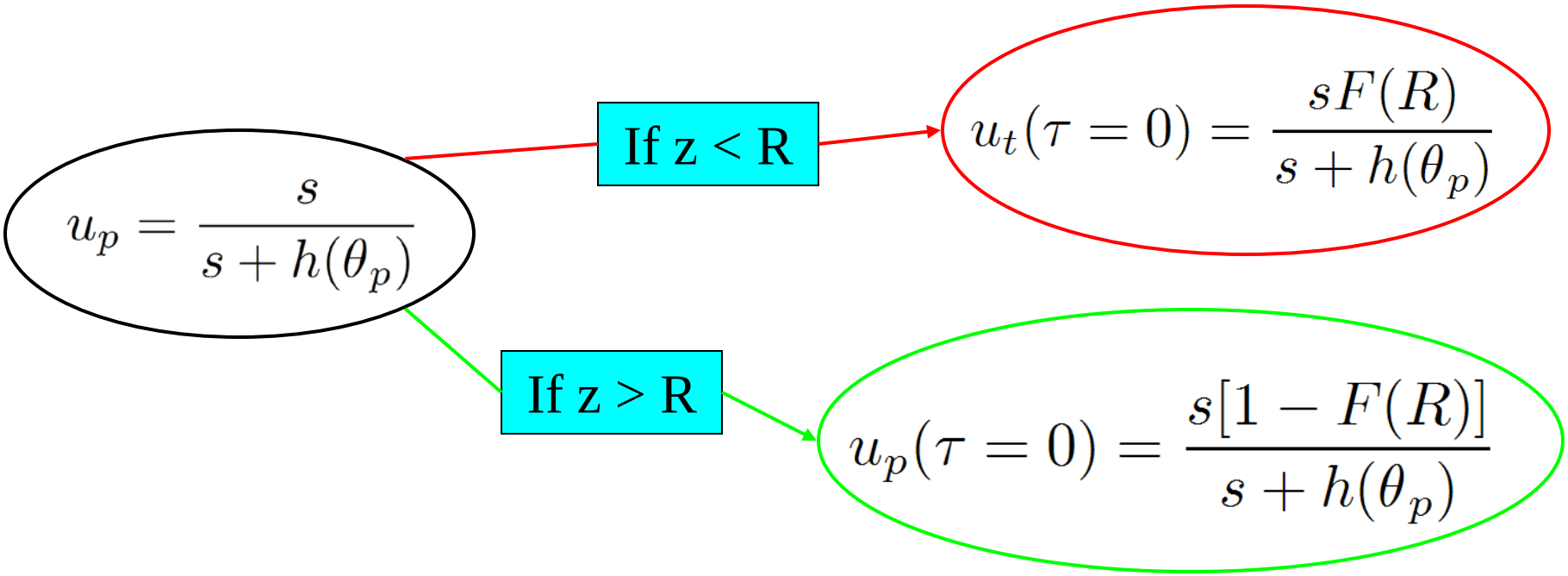
$$u_p + n_p = 1$$

  - the steady state stock of unemployed reads

$$u_p = \frac{s}{s + h(\theta_p)}$$

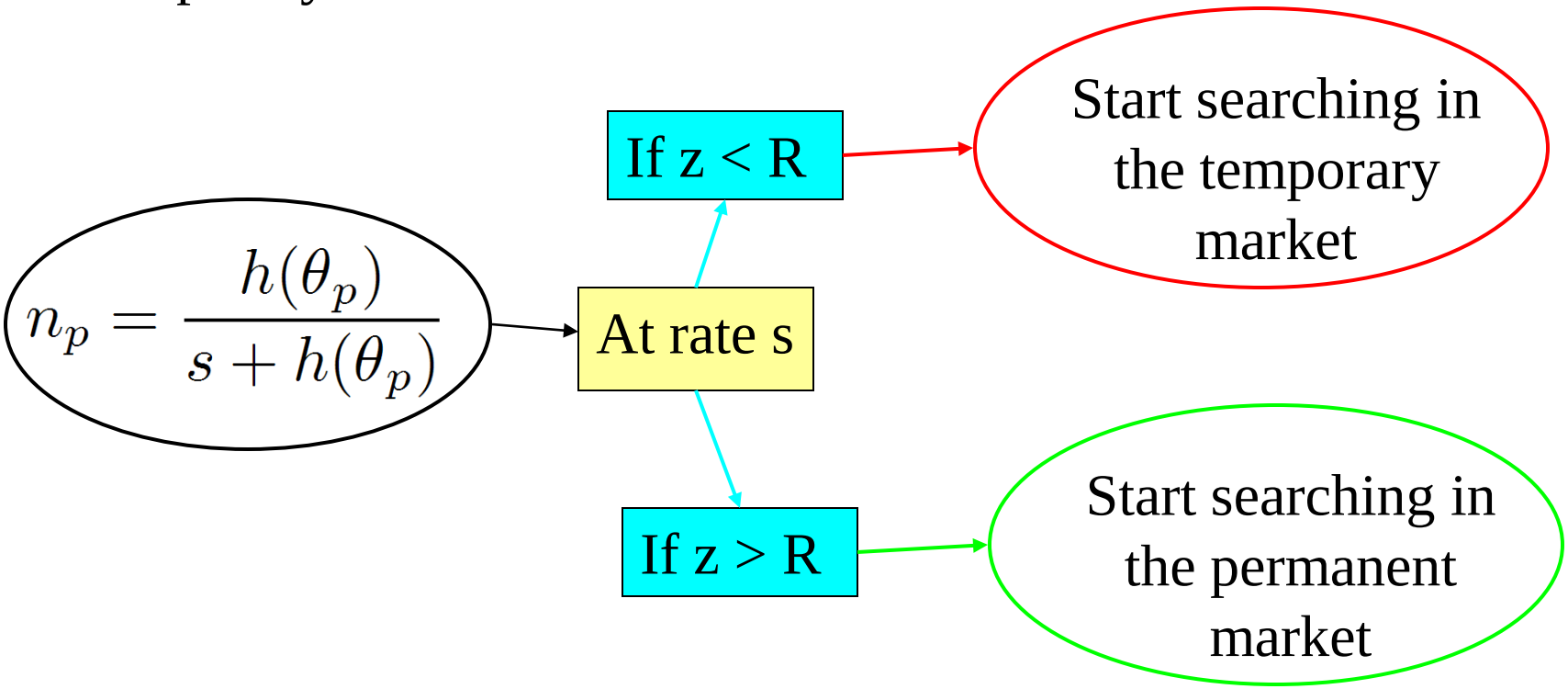
Dynamics/2

- When the shock occurs unemployed workers of the old regime are immediately split into unemployed on the permanent and on the temporary submarket, depending on the outside option



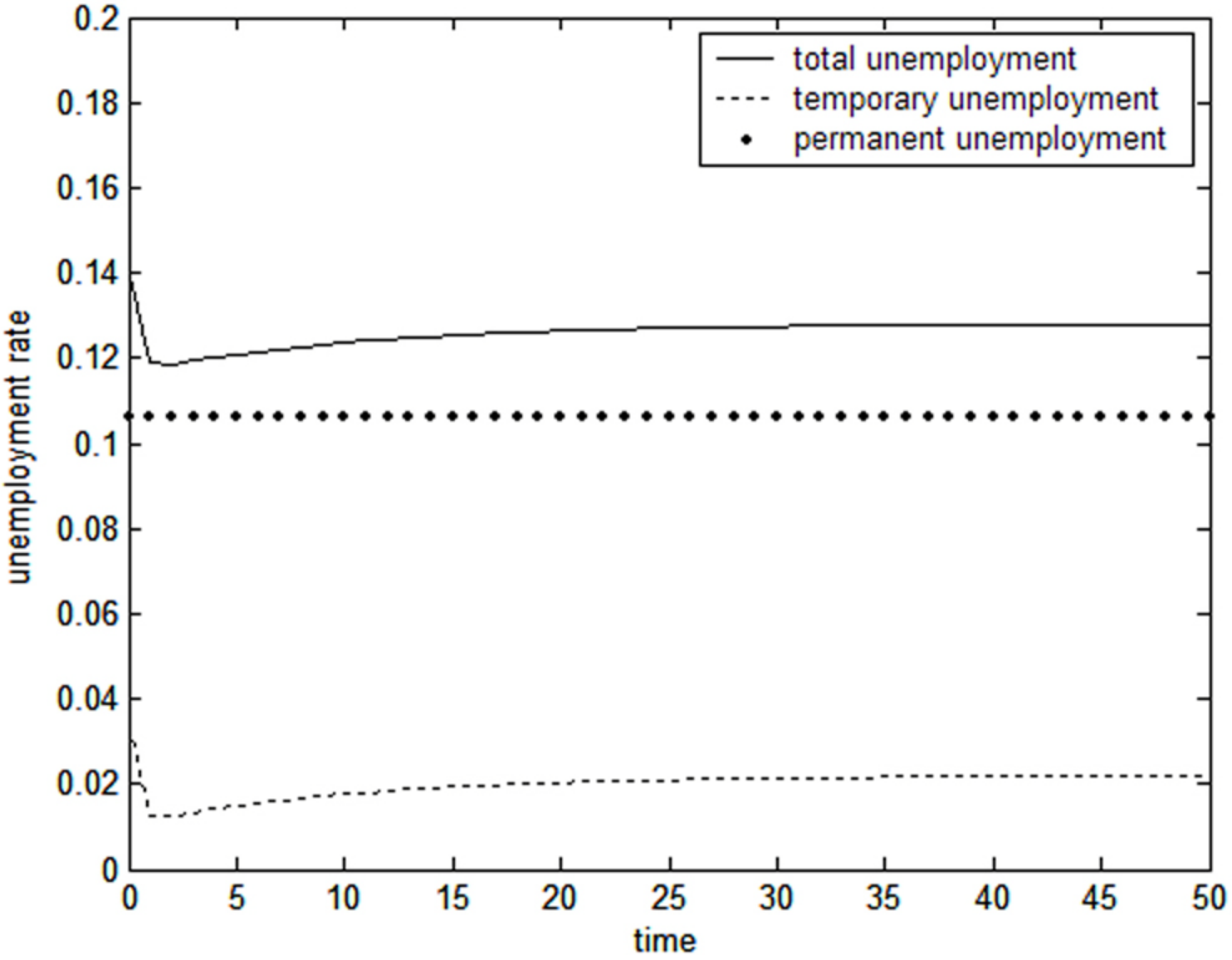
Dynamics/3

- On the contrary, the transition of workers with low *z* from employment in the old (permanent) regime, to the temporary market is not immediate



Dynamics/4

- This dynamic problem has an analytical
- Labour market tightness immediately shifts at its long-run level on both submarkets
- This implies that the stock of unemployed workers in the permanent submarket is constant during the transition
- Instead the stock of unemployed workers in the temporary one first falls due to higher job finding rate, then rises due to natural turnover of low-outside-option workers from the old regime
- The new overall stock of unemployed may be higher than the rigid regime's one, depending on the parameters


total unemployment
temporary unemployment
permanent unemployment
unemployment rate
time
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
5
10
15
20
25
30
35
40
45
50

Further results

- The main conclusions still hold when workers with a low outside option are allowed to search on both temporary and permanent submarkets
- By allowing firms to pay a lump-sum cost to re-train workers in the face of an adverse shock, we prove that permanent workers are more likely than temporary ones to receive training
- By estimating a discrete-time competing-risk model on a flow sample of involuntary unemployment spells experienced by prime-aged non-seasonal male workers from Italian Northern regions, we also prove that unemployment duration is shorter when terminated by a fixed-term job