Labour and product market reforms: questioning policy complementarity

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Aim of presentation

• Theoretical analysis of economic complementarity vs. substituability of reforms in labour and product markets

• Preliminary empirical findings on 18 OECD countries, from 1980 up to 2004
Outline

• Product market competition and employment

• Interactions across policies

• The model

• Main theoretical results

• Preliminary empirical findings

• Conclusion
Product market competition and employment

Main positive effects of PM competition:

– increased PM competition lowers mark-ups and shifts out the labour demand curve (Nickell [1999])
– tighter PM competition favours the entry of new firms (Blanchard and Giavazzi [2003] and Koeniger and Vindigni [2003])
– increased PM competition yields productivity improvements (Aghion et al. [2002], Peretto [2000] and Gersbach [2000])
– tighter PM competition makes labour demand more sensitive to real wages; this shifts down the bargained real wage schedule (Nickell [1999]; Blanchard and Giavazzi [2003])

However:

– short-term costs due to lower PM and LM rents (Blanchard and Giavazzi [2003])
– in dynamic efficiency wage models, PM competition yields reduced job security, hence the efficiency wage schedule shifts upward: possible long term employment losses (Amable and Gatti [2004])
Interactions across policies (1)

• Policies interactions within the labour market (Coe and Snower, 1997; Orszag and Snower, 1999)

• Interactions across labour and financial market imperfections (Wasmer and Weil, 2004; Acemoglu, 2001)

• Interactions across product and labour market imperfections (Blanchard and Giavazzi, 2003; Koeniger and Vindigni, 2003; Saint Paul, 2002)
  – LM deregulation, by lowering rents, reduces incentives to fight for capturing them and eases PM deregulation and *vice versa*
  – free entry makes it more difficult for firms to bear the costs of EPL
  – LM competition increases employment and lowers incentives to protect jobs

• No analysis of interactions across market regulations in dynamic efficiency wage frameworks
Interactions across policies (2)
Empirical findings

- Boeri et al. [2000] and Nicoletti et al. [2000] prove that OECD indexes of regulations in product and labour markets are strongly correlated

- Kugler and Pica [2003] show, on Italian data, that a tighter entry regulation lowers the gains associated with LM deregulation

- No systematic empirical investigation of interactions across LM and PM policies
The model (1)
General features

• Imperfections on both LM and PM:
  • PM: imperfect competition due to entry barriers
  • LM: intrinsic imperfections due to workers incentive problem
  plus legislative intervention through firing costs

• Firms are subject to productivity shocks:
  • High vs. low productivity firms (or jobs)
  • Transitions can take place in both directions

• Two building blocks:
  • Wage setting
  • Price setting
The model (2)
Wage setting

- Efficiency wage model *a la* Shapiro and Stiglitz [1984]
- Workers instantaneous utility depends on real wage and on on-the-job effort
- Effort is either 0 (shirking) or $e > 0$
- Firms have a monitoring device allowing to detect a shirking worker with probability $1 > x > 0$
- Workers caught shirking lose their jobs
The model (2)

Wage setting

• Workers employed in firms hit by a bad shock lose their jobs with probability $q$

$$ q = \frac{lg - lb}{lg} = \left(1 - \frac{1}{l}\right) $$

$$ l = \frac{lg}{lb}. $$

• They receive a lump sum $F$ paid by the firm

• Workers fired because of shirking receive nothing
The model (2)

Wage setting

• By imposing the no-shirking conditions, one obtains

\[
\begin{align*}
    w^G &= \frac{a + p \cdot q + r + x}{x} \cdot e - F \cdot p \cdot q \\
    w^B &= \frac{a + r + x}{x} \cdot e
\end{align*}
\]

• Both \( a \) and \( q \) are endogenous

\[
\frac{\partial w^G}{\partial q} \quad \text{has the sign of} \quad \frac{e}{x} - F
\]
The model (3)

Labour demand

• Firms benefit from imperfect competition on PM and impose a mark-up over production costs → this lowers labour demand

• Because of PM imperfections high and low productivity firms can impose differentiated prices: \( P_G \) and \( P_B \) → this possibility fades away when PM competition increases → following shocks, firms replace price adjustments with quantity adjustments (through LM turnover)
The model (4)
Macroeconomic equilibrium

- As in Shapiro and Stiglitz [1984], equilibrium employment is determined by crossing optimal labour demand curves and marginal labour cost schedules.

- First, we determine the hiring rate $a$ compatible with the flow equilibrium condition

$$a \cdot \left( N - \frac{L_G + L_B}{2} \right) = \frac{p}{2} \cdot q \cdot L_G$$

- At any instant a fraction $p$ of G-firms switch positions with B-firms.
- Firms adjust their labour force to its optimal value.
- Size of adjustment is $q \ L_G$. 
The model (4)

Macroeconomic equilibrium

\[
(r+p) \cdot F + p \cdot e/x = \alpha_G \cdot P_G(l^*) \cdot (1 - 1/\eta) + \alpha_B \cdot P_B(l^*) \cdot (1 - 1/\eta)
\]

\[
\phi^G(L,l^*) \quad \phi^B(L,l^*)
\]

\[
\phi^G \quad \phi^B
\]
Main theoretical results (1)

• An increase in redundancy payments $F$ always lead to an increase in aggregate employment.

• The effect of PM competition is ambiguous: more competition improves access to employment, but it increases job losses.

• Let us consider two policy dimensions (reforms can go in both directions):
  – PM regulation decreases competition and the elasticity $\eta$.
  – LM regulation, via legislative firing constraints, increases the value of $F$.

• How should one combine these two policies?
Main theoretical results (1)

- Policies can be complements or substitutes with respect to employment

- Two policies are complements if each of them is more effective in improving employment when the other one is also implemented:
  - if \( \frac{\partial L}{\partial \eta} < 0 \) and \( \frac{\partial^2 L}{\partial \eta \partial F} < 0 \) the positive effect of PM regulation on employment is stronger when F is increased → complementarity between PM and LM regulations
  - if \( \frac{\partial L}{\partial \eta} > 0 \) and \( \frac{\partial^2 L}{\partial \eta \partial F} > 0 \) the positive impact of PM deregulation is larger when F is increased → complementarity between PM deregulation and increasing LM regulation

- Two policies are substitutes if implementing any of them decreases the effectiveness of the other one
Main theoretical results (2)

Simulations

- Complementarity between PM and LM regulations ($\frac{\partial L}{\partial \eta} < 0$)

- Higher F and stronger PM regulation foster job security, the latter by reducing employment differential across B− and G−firms. Increased job security contributes to real wage moderation

- For very high values of F and low values of $\eta$, PM and LM regulations are policy substitutes. The economy is close to full employment: increasing F makes unnecessary further increases in PM regulation
Main theoretical results (2)

Simulations

• Substitution between PM deregulation and LM regulation \( \frac{\partial L}{\partial \eta} > 0. \)

• Increased PM competition yields stronger turnover while higher F promote job security. Hence, although each policy enhances employment, together they provide conflicting incentives to workers and employers.

• Lowering F magnifies the positive effect of PM competition, but yields lower employment.
## Preliminary empirical findings

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Preliminary empirical findings

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Conclusion

• We show that engaging in PM deregulation yields an implicit LM reform leading to more intense turnover.

• Because job insecurity has a negative impact on incentives, a pressure towards a compensation through higher real wages follows.

• Hence, policies increasing job security may be necessary to offset detrimental effects of labour turnover.

• When increased PM regulation is desirable for employment, a complementarity emerges between PM and LM regulations → both interact to ensure more stable labour relations.

• When tighter PM competition is the desirable policy for employment, PM deregulation and LM regulation become substitute policies → although lowering redundancy payments magnifies the positive effect of PM competition, it also lowers employment; joint deregulation policies have conflicting effects on employment.
The model (2)

Wage setting

- Discounted utilities associated with various possible positions for a worker

\[
\begin{align*}
    r \cdot U &= a \cdot (V^G - U) \\
    r \cdot V^G_S &= w^G + x \cdot (U - V^G_S) + p \cdot q \cdot (U + F - V^G_S) + p \cdot (1 - q) \cdot (V^B - V^G_S) \\
    r \cdot V^G_{NS} &= w^G - e + p \cdot q \cdot (U + F - V^G_{NS}) + p \cdot (1 - q) \cdot (V^B - V^G_{NS}) \\
    r \cdot V^B_S &= w^B + x \cdot (U - V^B_S) + p \cdot (V^G - V^B_S) \\
    r \cdot V^B_{NS} &= w^B - e + p \cdot (V^G - V^B_{NS})
\end{align*}
\]
The model (1)

General features

• A single consumption good and a continuum of intermediate goods over [0, 1]

• Final good is produced competitively. One has:

\[ Y_t = \left( \int_0^1 Y_t(j) \frac{n-1}{n} \, dj \right)^{\frac{n}{n-1}} \]

\[ P_t = \left( \int_0^1 P_t(j)^{1-\eta} \, dj \right)^{\frac{1}{1-\eta}} \]

\[ Y_t(j) = \left( \frac{P_t(j)}{P_t} \right)^{-\eta} \cdot \bar{Y}_t \]

• Monopolistic competition in the intermediate goods market
The model (1)

General features

- Firms are subject to productivity shocks

\[ Y_t(j) = \alpha_t(j) \cdot l_t(j) \]

\[ \alpha_j(t+dt) = \begin{cases} 
\alpha_G \text{ with probability } p \cdot dt \text{ if } \alpha_j(t) = \alpha_B \text{ and with probability } 1 - p \cdot dt \\
\alpha_B \text{ with probability } 1 - p \cdot dt \text{ if } \alpha_j(t) = \alpha_B \text{ and with probability } p \cdot dt \\
\text{ if } \alpha_j(t) = \alpha_G 
\end{cases} \]

such that \( \alpha_G > \alpha_B > 0 \).
The model (3)
Labour demand

• For each firm, the value of a marginal job is

\[ r \cdot J = \frac{\partial \pi}{\partial l} + E \left[ J \right] \]

• Let \( J_G \) being the value of a marginal job in G-firms is and \( J_B \) in B-firms

• A firm hit by a bad shock adjusts its labour force up to the point where \( J_B = -F \). Hence:

\[ -r \cdot F = \frac{\partial \pi_{Bj}}{\partial l_{Bj}} + p \cdot (J_G + F) \]
\[ r \cdot J_G = \frac{\partial \pi_{Gj}}{\partial l_{Gj}} - p \cdot (J_G + F) \]

• According to the state \( j \) of the firm, the marginal revenue is

\[ \frac{\partial \pi_j}{\partial l_j} = \frac{P_j}{P} \cdot \left( 1 + \frac{\partial P_j}{\partial l_j} \cdot \frac{l_j}{P_j} \right) - w^j - \frac{\partial w^j}{\partial l_i} \cdot l_j \]
The model (3)

Labour demand

- Intermediate goods price varies across G- and B-firms: \( P_G \) and \( P_B \). We normalize \( P = 1 \)

- One has

\[
\frac{P_j}{P} \cdot \left(1 + \frac{\partial P_j}{\partial l_j} \cdot \frac{l_j}{P_j}\right) = \frac{\alpha_G \cdot P_G \cdot \left(1 - \frac{1}{\eta}\right)}{\alpha_B \cdot P_B \cdot \left(1 - \frac{1}{\eta}\right)}
\]

- Hence, given efficiency wage constraints, first-order conditions are:

\[
\alpha_G \cdot P_G \cdot \left(1 - \frac{1}{\eta}\right) = \frac{w^G + p \cdot \left(\frac{e}{x} - F\right) \cdot (1 - q) + p \cdot F}{\frac{a + p + r + x}{x} \cdot e} = \frac{a + p + r + x}{x} \cdot e
\]

\[
\alpha_B \cdot P_B \cdot \left(1 - \frac{1}{\eta}\right) = \frac{w^B - (p + r) \cdot F}{\frac{a + r + x}{x} \cdot e - (p + r) \cdot F}
\]
The model (3)

Labour demand

- Given price index and aggregate production, the expressions for intermediate goods’ prices are:

\[
P_B = \left( \frac{1 + (\alpha \cdot l)^{\frac{\eta-1}{\eta}}}{2} \right)^{\frac{1}{\eta-1}}
\]

\[
P_G = \left( \frac{1 + (\alpha \cdot l)^{\frac{1-\eta}{\eta}}}{2} \right)^{\frac{1}{\eta-1}}
\]

\[
\alpha = \frac{\alpha_G}{\alpha_B}
\]
The model (4)
Macroeconomic equilibrium

- One can express the hiring rate as a function of aggregate and relative employment

\[ L = \frac{a \cdot (2 - q)}{a \cdot (2 - q) + \rho \cdot q} \]

- Hence, equilibrium conditions are:

\[ \phi^B(L, l) = \alpha_B \cdot P_B(l) \cdot \left(1 - \frac{1}{\eta}\right) \]

\[ \phi^G(L, l) = \alpha_G \cdot P_G(l) \cdot \left(1 - \frac{1}{\eta}\right) \]

- Wage schedules are increasing in L; however, their position depends on the equilibrium value of the employment ratio