
Lecture II: Fair Wage Preferences and International Outsourcing

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Center for Economic Studies, Munich

Motivation

- International outsourcing (IO) key aspect of modern industrial production
- Sparked a lot of interest in academic research and the public debate on globalisation
- Consequences of IO:
 - academic economists focus on the relative wage effects of IO
 - general public focuses on employment effects



Motivation

- This lecture:
 - presents a framework that allows for co-determination of skill premium and unemployment rate
 - introduces a diagrammatic tool to illustrate labour market effects of IO
 - focuses on unemployment of unskilled workers due to fair wage preferences (and the induced wage inflexibility)



Motivation

- Questions analysed include:
 - effects of IO on wage differential and unemployment
 - influence of the “preference for fairness” or the unemployment compensation scheme on the effects of IO
 - the effectiveness of welfare state reforms under integrated production and IO



Outline of this lecture

- A model of outsourcing, fair wages, and unemployment
 - integrated production
 - fragmented production and IO
- IO in egalitarian and non-egalitarian economies
- IO and the welfare state
- Concluding remarks



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A model of outsourcing, fair wages and unemployment

- Competitive SMOPEC, potentially producing three goods (X, Y, Z)
- Two factors of production, skilled labour H and unskilled labour L , both mobile between sectors (but not internationally)
- Leontief technology in all sectors
- Conditions for non-positive profits:

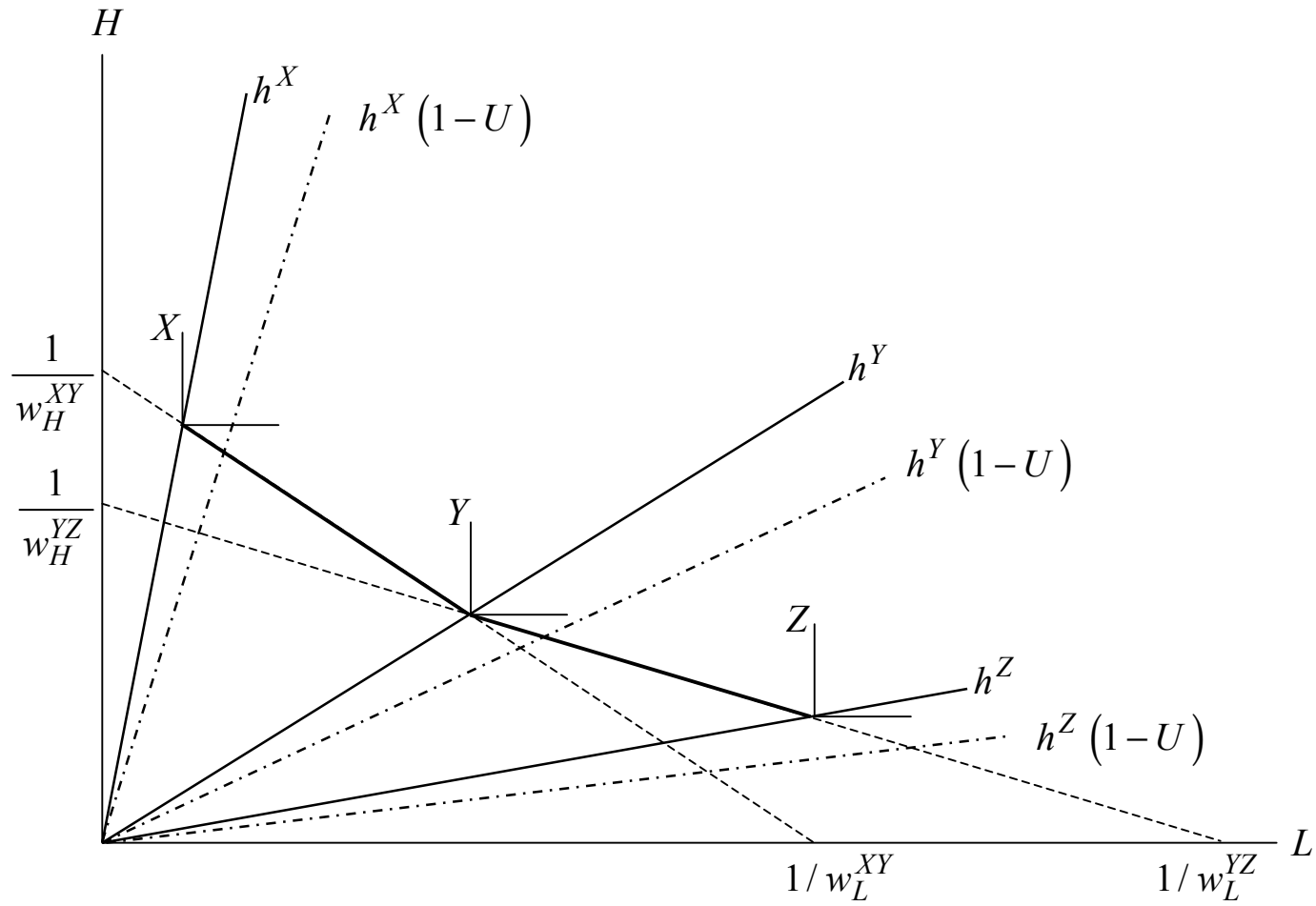
$$c_i(w_L, w_H) \geq P_i \quad \forall i \in \{X, Y, Z\}$$



A model of outsourcing, fair wages and unemployment

- Visualise equilibrium production structure and factor prices using a standard Lerner-Pearce (LP) diagram
- Take into account unemployment of *unskilled* labour
- At this point, treat unemployment as exogenous and constant across production regimes (endogenised below)





A model of outsourcing, fair wages and unemployment

■ Fair wage mechanism:

- follows Akerlof and Yellen (1990)
- both types of workers can choose effort e in their job, taking into account the effort norm e^n
- formally, worker of group k maximizes

$$v = v(X, Y, Z) + \Delta e_k \quad \text{with} \quad \Delta e_k \equiv -|e_k - e_k^n|$$

- Δe_k is the *disutility of norm violation*



A model of outsourcing, fair wages and unemployment

- Workers' effort norms are given by

$$e_k^n = \min\left(\frac{w_k}{\hat{w}_k}, 1\right) \quad k = L, H$$

- If $e_k = e_k^n$, firms cannot increase profits by paying less than \hat{w}_k , hence we assume they don't do this (i.e. $e_L^n = e_H^n = 1$): see lecture I, slide 27



A model of outsourcing, fair wages and unemployment

- ❑ Wages for each type of labour are assumed to depend on:
 - ✓ the market wage of the other group (w_j) in the same firm
 - ✓ their own expected wage (w_k), taking into account the unemployment risk

$$\hat{w}_k = \theta w_j + (1 - \theta)(1 - U_k) w_k$$

- ✓ unemployment benefits are introduced below



A model of outsourcing, fair wages and unemployment

- Assumption: Perfect competition in factor markets implies $w_H > w_L$. Then, we have

- ✓ the fair wage is binding only for unskilled workers

$$w_H > \hat{w}_H > w_L = \hat{w}_L$$

- ✓ strictly positive unemployment for unskilled labour but full employment for skilled workers

$$U_L > U_H = 0$$

- ✓ both types of workers provide the maximum effort level

$$e_L = e_H = 1$$



A model of outsourcing, fair wages and unemployment

- Equilibrium relation between wage differential and unskilled unemployment rate is given by the *fair wage constraint*:

$$\omega = f(U, \theta) = \frac{\theta}{\theta + (1 - \theta)U}$$

with $\omega = w_L/w_H$

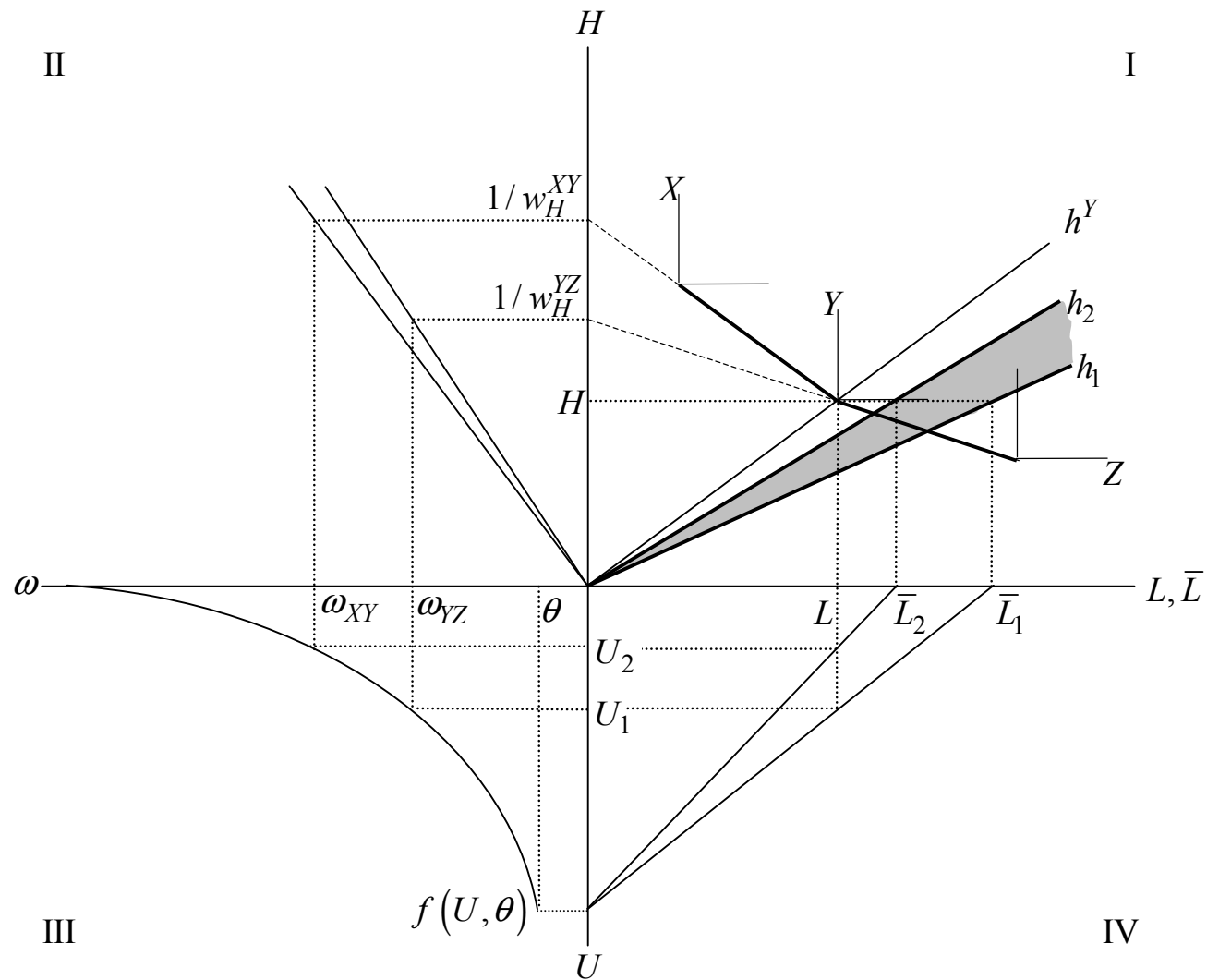
- ✓ negatively sloped and convex in ω - U space
- ✓ ω can vary over the interval $[\theta, 1]$ → intermediate case between full wage flexibility and fixed wage differential



A model of outsourcing, fair wages and unemployment

- Equilibrium determination:
 - Introduce four-quadrant diagram that merges
 - ✓ fair wage constraint
 - ✓ Lerner-Pearce (LP) diagram
 - Here: modification to standard LP diagram needed because
 - ✓ for given endowments, production structure depends on unemployment
 - ✓ unemployment is itself endogenous and depends on production structure





A model of outsourcing, fair wages and unemployment

■ Results:

- ❑ unique equilibrium for every combination of parameters
- ❑ inside diversified production regime (XY or YZ)
 - ✓ Endowment changes have no impact on ω or U
 - ✓ ω identical to the analogous full employment model
- ❑ under XY production unemployment and the skill premium are lower than under YZ production



A model of outsourcing, fair wages and unemployment

■ Results, contd.

- cone of non-diversification (NDIV cone):
 - ✓ region of specialisation on good Y
 - ✓ equilibrium unemployment determined by endowment ratio and skill intensity of Y
 - ✓ skill premium determined by the fair wage constraint
 - ✓ in the analogous full employment model, NDIV cone would have measure zero



A model of outsourcing, fair wages and unemployment

- Fragmented production:
 - production of Y can be split up into production of components A and B
 - Leontief technology for A and B production
 - components can be assembled without incurring additional cost
 - conditions for non-positive profits:

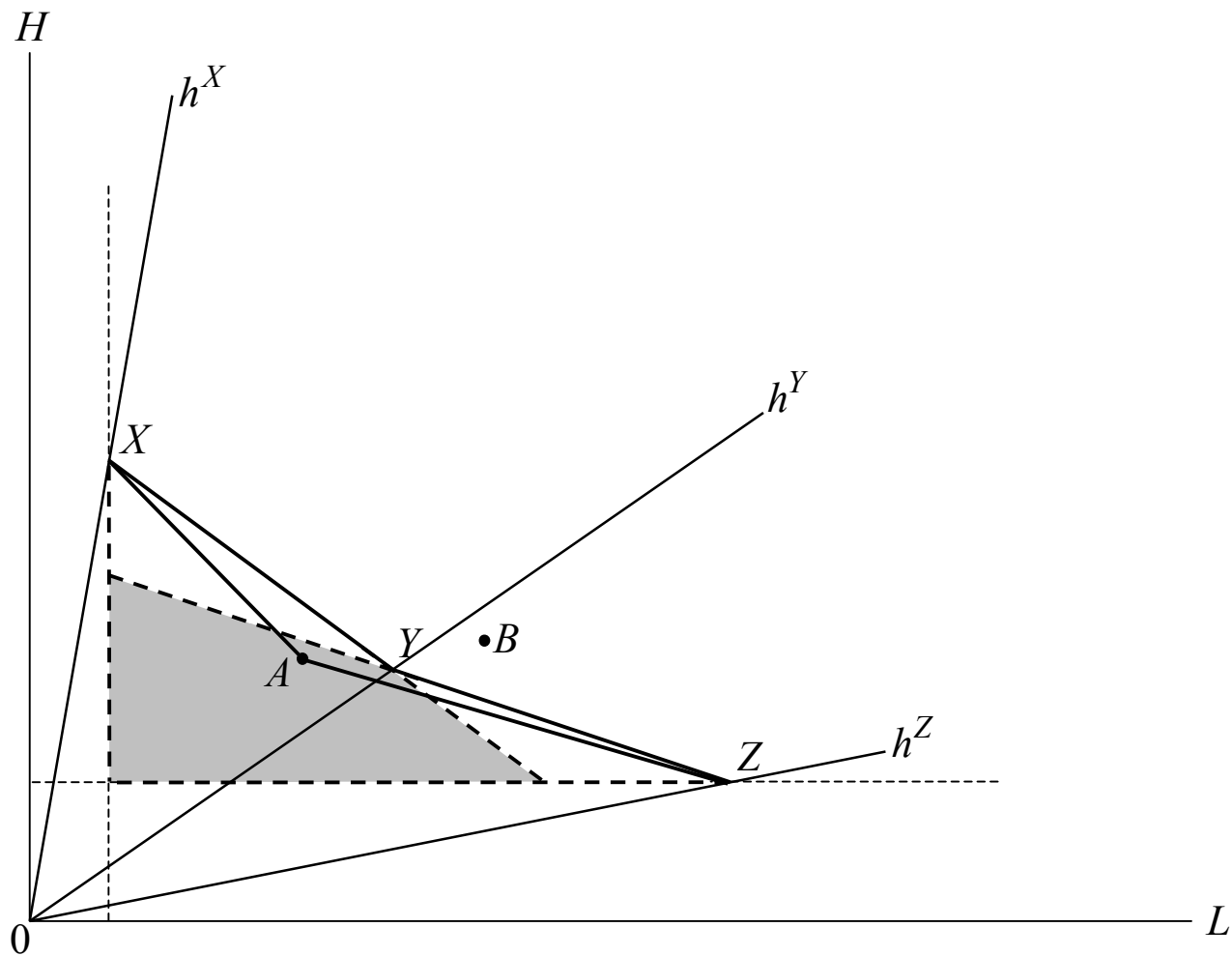
$$c_i(w_L, w_H) \geq P_i \quad \forall i \in \{A, B, X, Y, Z\}$$

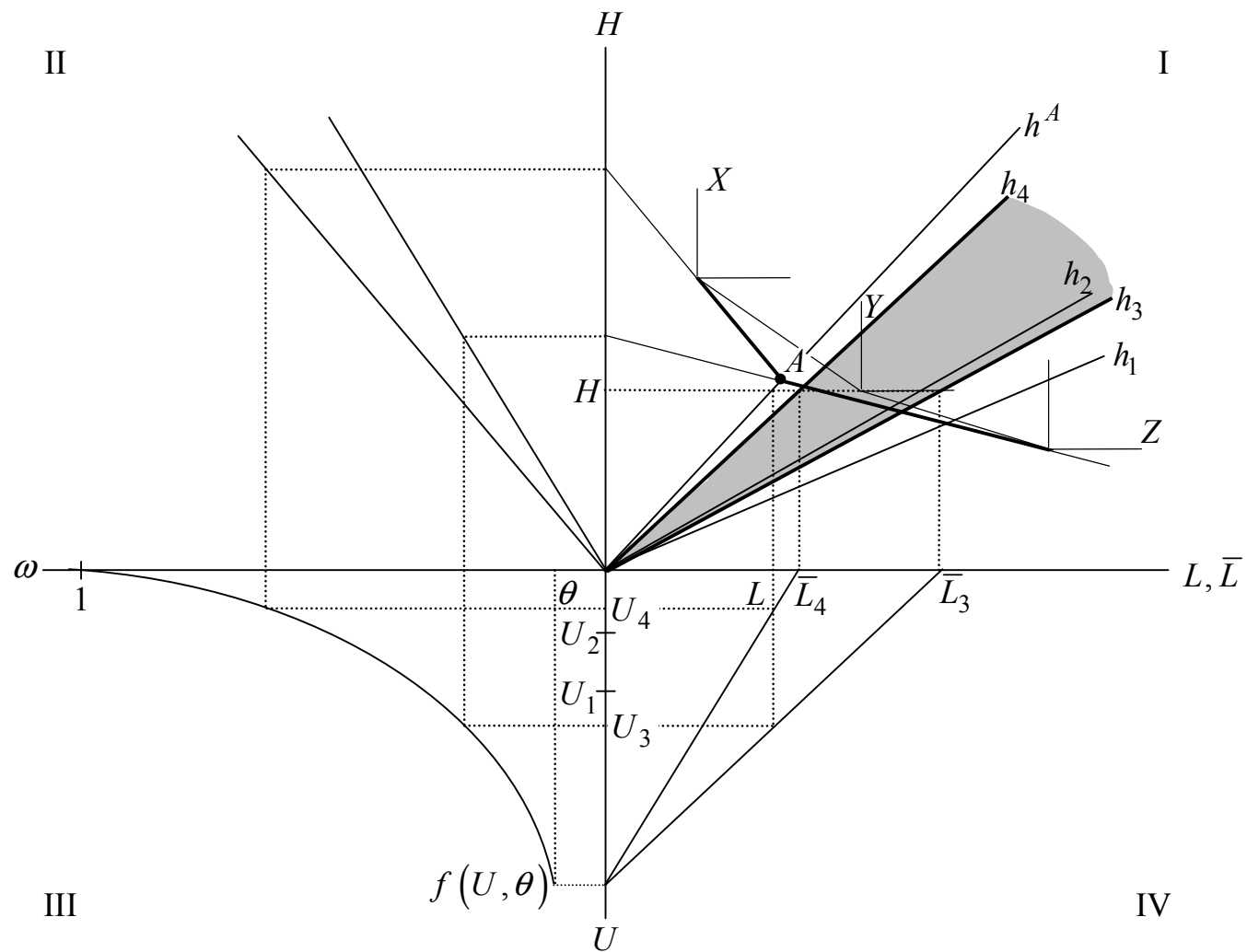


A model of outsourcing, fair wages and unemployment

- Restrict attention to situations where
 - ✓ production of one of the two components is retained domestically
 - ✓ fragmented production technology strictly preferred over integrated technology, once it is available
 - ✓ both X and Z production remain viable for some \bar{h}
 - ✓ the skill intensity of the domestically produced fragment lies between skill intensities of X and Z
 - ✓ good Y is produced in the pre-fragmentation equilibrium







Intuition

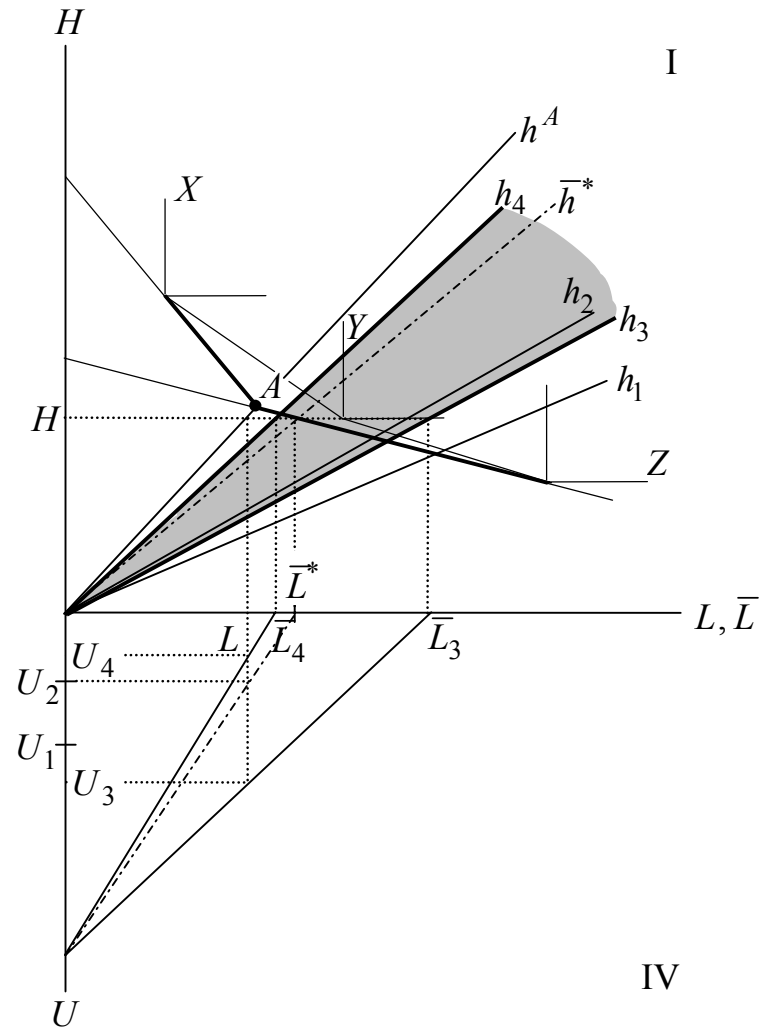
- $\bar{h} < h_3 : IO \rightarrow \omega \downarrow; U \uparrow$
 $\omega = f(U, \theta)$ -relationship

- $\bar{h} \in [h_3, h_2] : IO \rightarrow U \uparrow; \omega \downarrow$
because of $h^Y < h^A$

- $\bar{h} > h_4 : IO \rightarrow \omega \uparrow; U \downarrow$
 $\omega = f(U, \theta)$ -relationship

- What about $\bar{h} \in (h_2, h_4)$?

$$\bar{h} \uparrow \rightarrow \begin{cases} \text{no } U, \omega\text{-effect,} & \text{if } IP \\ U \downarrow \omega \uparrow, & \text{if } IO \end{cases}$$
 \Rightarrow critical \bar{h} -value exists



A model of outsourcing, fair wages and unemployment

■ Results:

- There is a critical endowment ratio \bar{h}^* that separates endowment ratios for which IO decreases unemployment from those for which IO increases unemployment.
- \bar{h}^* lies inside NDIV^{IO}
- \bar{h}^* is unique if and only if $h^Y \neq h^A$
- For given h^Y , a higher h^A is associated with a higher \bar{h}^* .



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IO in egalitarian and non-egalitarian economies

- Recall definition of the fair wage:

$$\hat{w}_k = \theta w_j + (1 - \theta)(1 - U_k) w_k$$

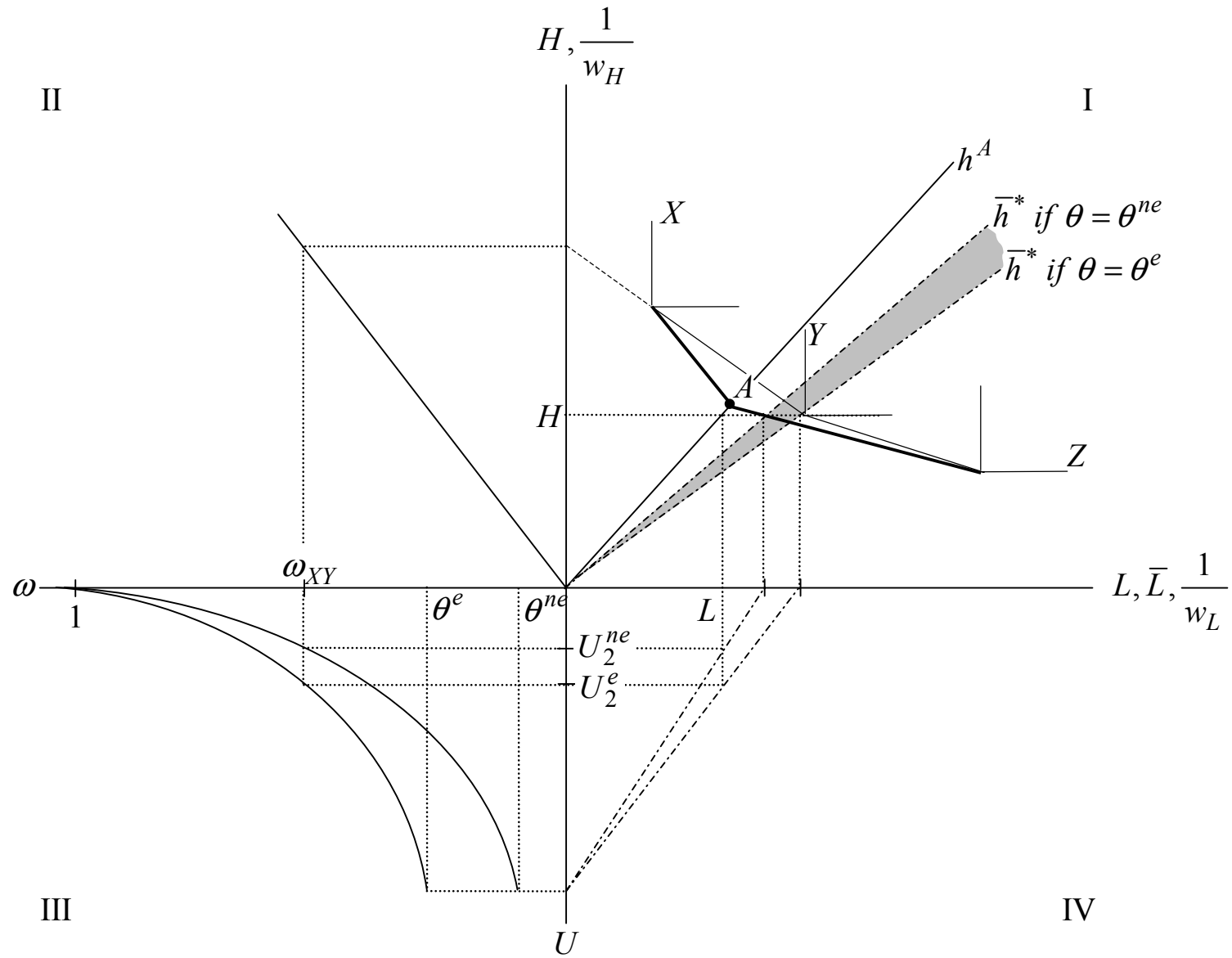
- θ is measure of fairness preference:
 - θ^e (egalitarian) $>$ θ^{ne} (non-egalitarian)
 - unskilled workers more concerned about wages of skilled workers in egalitarian economy
- Increase in θ rotates FWC outwards: $\partial f / \partial \theta > 0$



IO in egalitarian and non-egalitarian economies

- Main result:
 - With $h^Y \neq h^A$ and θ sufficiently small, there is a non-empty interval of endowment ratios for which IO leads to increased unemployment in the non-egalitarian economy and decreased unemployment in the egalitarian economy.
- In this interval, IO leads to unemployment convergence and divergence in relative factor prices





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IO and the welfare state

- Look at positive unemployment benefits (set to zero so far)
- Unemployment benefits equal to γw_k , $\gamma \in (0,1)$
- Fair wage for type k labour becomes

$$\hat{w}_k = \theta w_j + (1 - \theta) \left[(1 - U_k) + \gamma U_k \right] w_k$$



IO and the welfare state

- The FWC becomes

$$\omega = \underset{-}{\tilde{f}}(U, \underset{+}{\theta}, \underset{+}{\gamma}) = \frac{\theta}{\theta + (1 - \theta)(1 - \gamma)U}$$

- We have $\partial \tilde{f} / \partial \gamma > 0$:
 - effect of γ variation analogous to θ variation
 - but: γ is policy variable
 - look at effects of changing the replacement ratio under integrated and fragmented production



IO and the welfare state

- General observations:
 - With diversified production, a decrease in the replacement ratio that leaves production pattern unchanged has no relative wage effect but a positive employment effect.
 - With specialized production on Y or A , a decrease in the replacement ratio increases the skill premium but has no employment effect.



IO and the welfare state

- Case 1: Change in replacement ratio for given diversified production pattern
 - positive employment effect of decreasing the replacement ratio
 - size of the effect: $\partial U / \partial \gamma = U / (1 - \gamma)$
 - ✓ the higher the (pre-reform) unemployment rate and the more generous the compensation scheme, the more effective is a marginal γ -reduction
 - ✓ in elasticity terms, the effect is independent of the production regime



IO and the welfare state

- Case 2: Change in replacement ratio induces switch between diversified production regimes
 - decrease in replacement ratio has positive employment effect and increases the skill premium
 - with IO, the employment effect becomes smaller and the relative wage effect becomes larger
 - ✓ a switch from XY to XA production decreases unemployment
 - ✓ a switch from YZ to AZ production increases unemployment



Conclusion

- Have shown how the employment effects of IO are jointly determined by
 - relative factor endowments
 - skill intensity of component for which production is retained domestically
 - preferences towards wage equality
 - unemployment benefits



Conclusion

- If home production is sufficiently skill intensive, IO mitigates the unemployment problem and reduces the skill premium.
- Scaling down unemployment compensation schemes may be less effective in reducing unemployment under IO.



References

Basic Literature

Egger, H. and U. Kreickemeier (2005), International Fragmentation: Boon or Bane for Domestic Employment?, *CESifo Working Paper* **1595**.

Kreickemier, U. and D. Nelson (2006), Fair Wages, Unemployment and Technological Change in a Global Economy, *Journal of International Economics*, forthcoming.

Further Papers

Akerlof, G.A. and J.L. Yellen (1990), The Fair Wage-Effort Hypothesis and Unemployment, *Quarterly Journal of Economics* **105**, 255-283.

