

# Economic Modelling

## Lecture 26

Application of Game Theory in Macro-Economics

# Solutions of GAMES

- Co-operative and Non-Co-operative Game
  - Prisoner's dilemma
  - Battle of sexes
  - Static and dynamic games
- Dominant Strategy
- Nash Equilibrium
- Sub-game perfect equilibrium
- Extensive form
- Backward induction

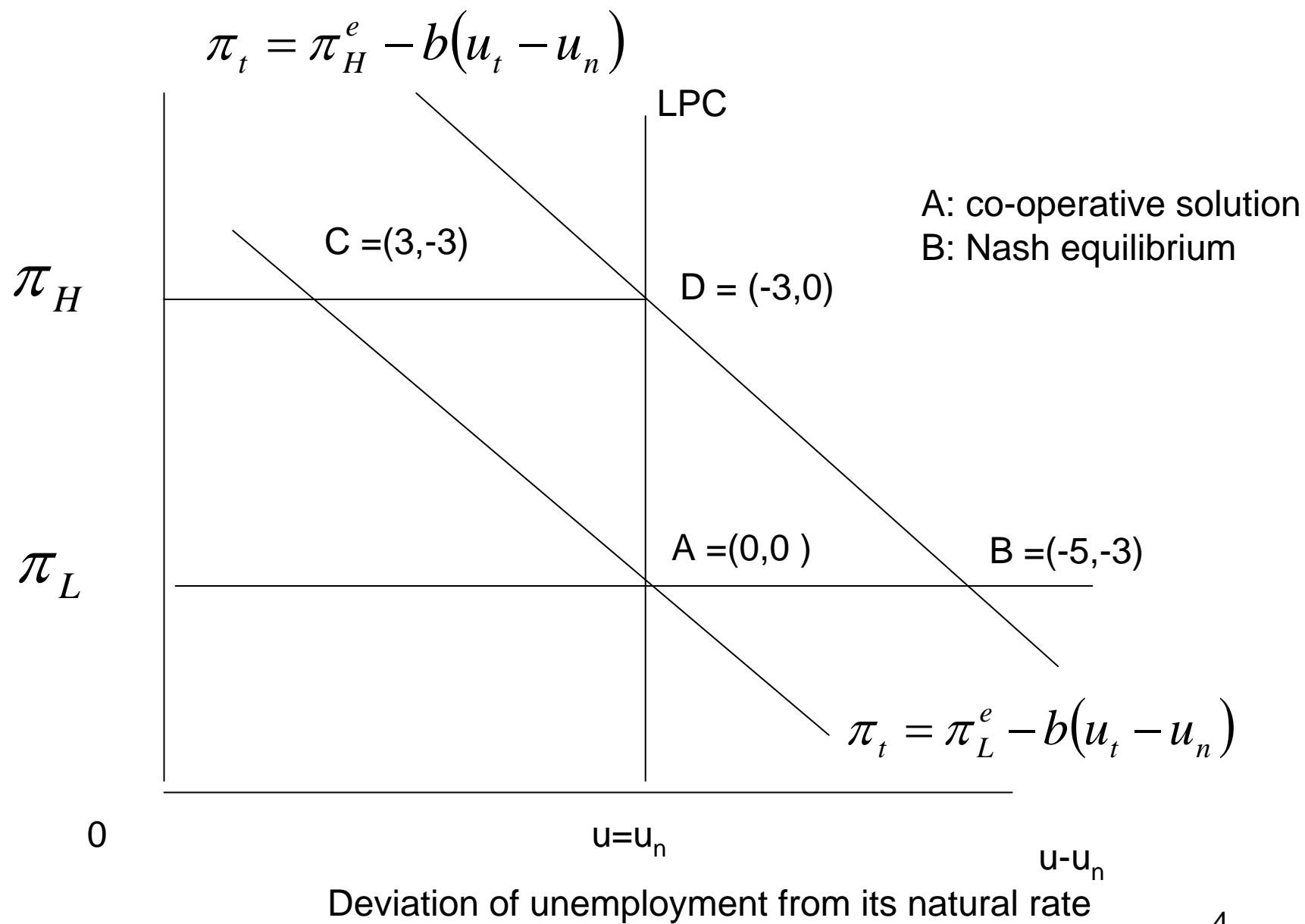
# Inflation Policy Game: Pay-Off for the Government and Private Sector

Pay-off: (private sector, Public sector)

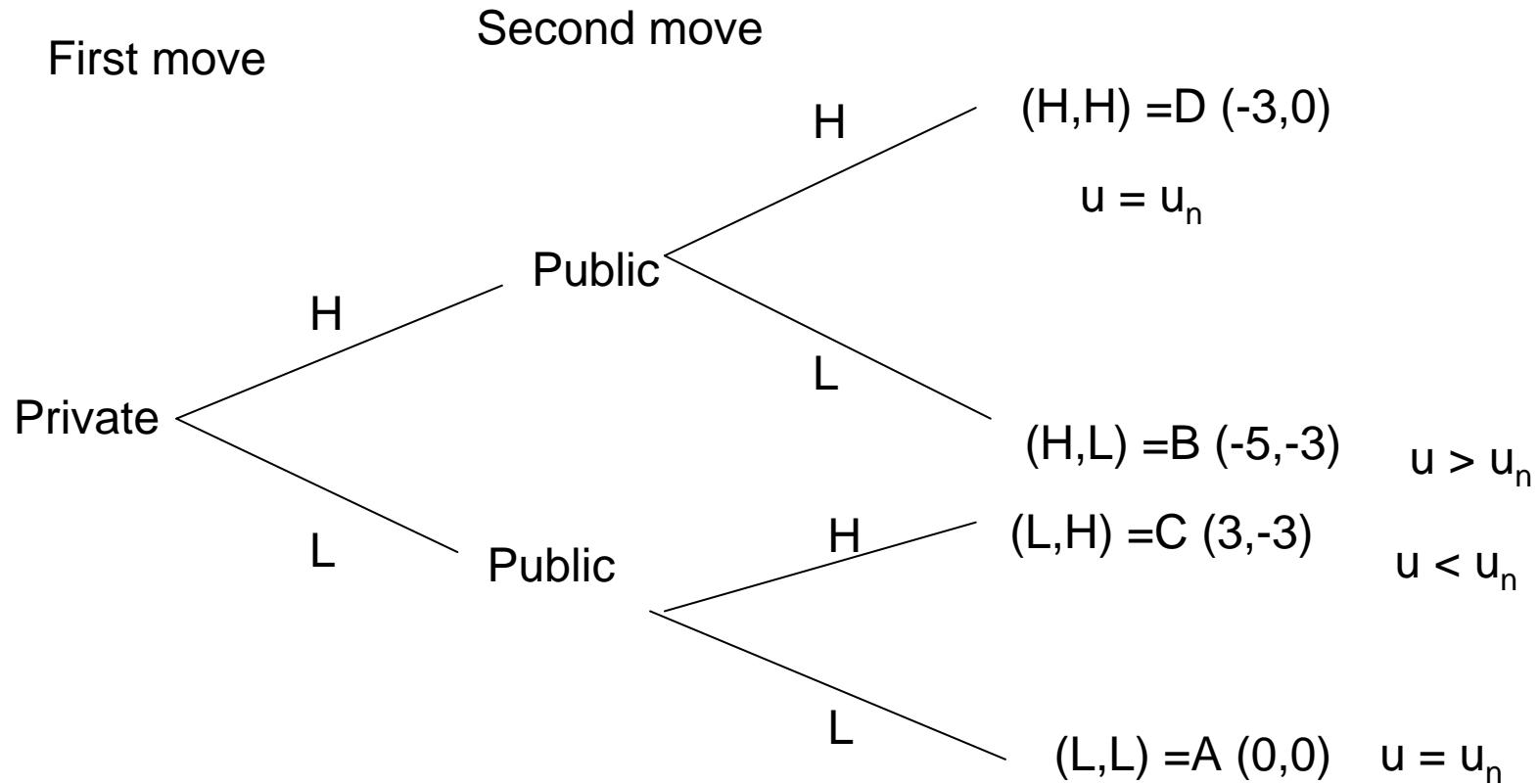
.....	<i>Private Sector</i>
<i>Government Sector</i>	$\begin{bmatrix} & H & L \\ H & -3,0 & 3,-3 \\ L & -5,-3 & 0,0 \end{bmatrix}$

## Policy options and its outcome

Policy Options	Actual inflation	Expected inflation	Unemployment rate
A	Low	Low	$u = u_n$
B	Low	High	$u > u_n$
C	High	Low	$u < u_n$
D	High	High	$u = u_n$



## Extensive Form of the Inflation Game



Government likes C; Private sector likes A, Nash equilibrium is B



# References

- John Nash (1953), Two-Person Cooperative Games *Econometrica*, Vol. 21, No. 1. Jan., pp. 128-140.
- Romp Graham (1997) *Game Theory*, Oxford University Press, Chapters 1-14.