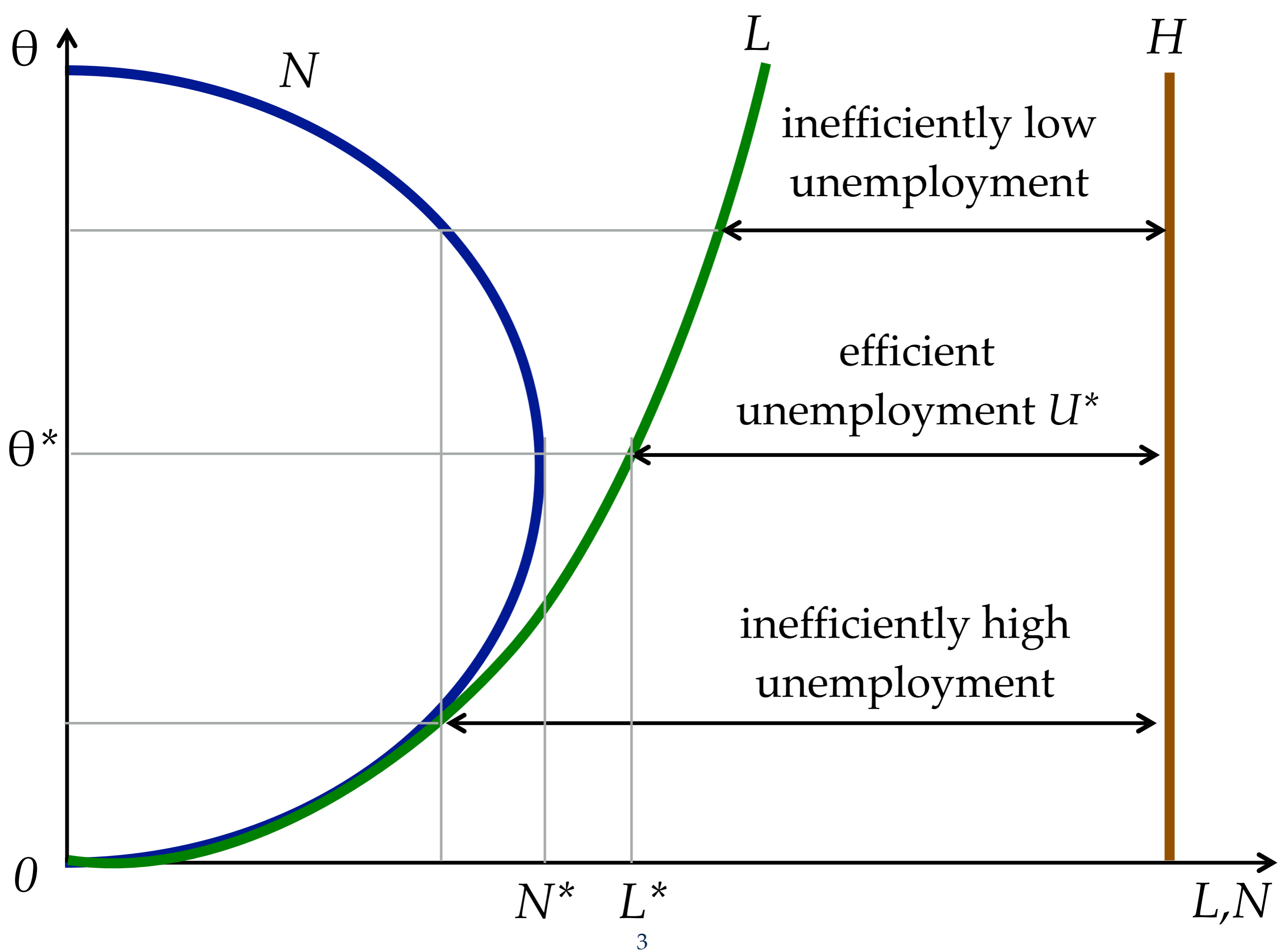


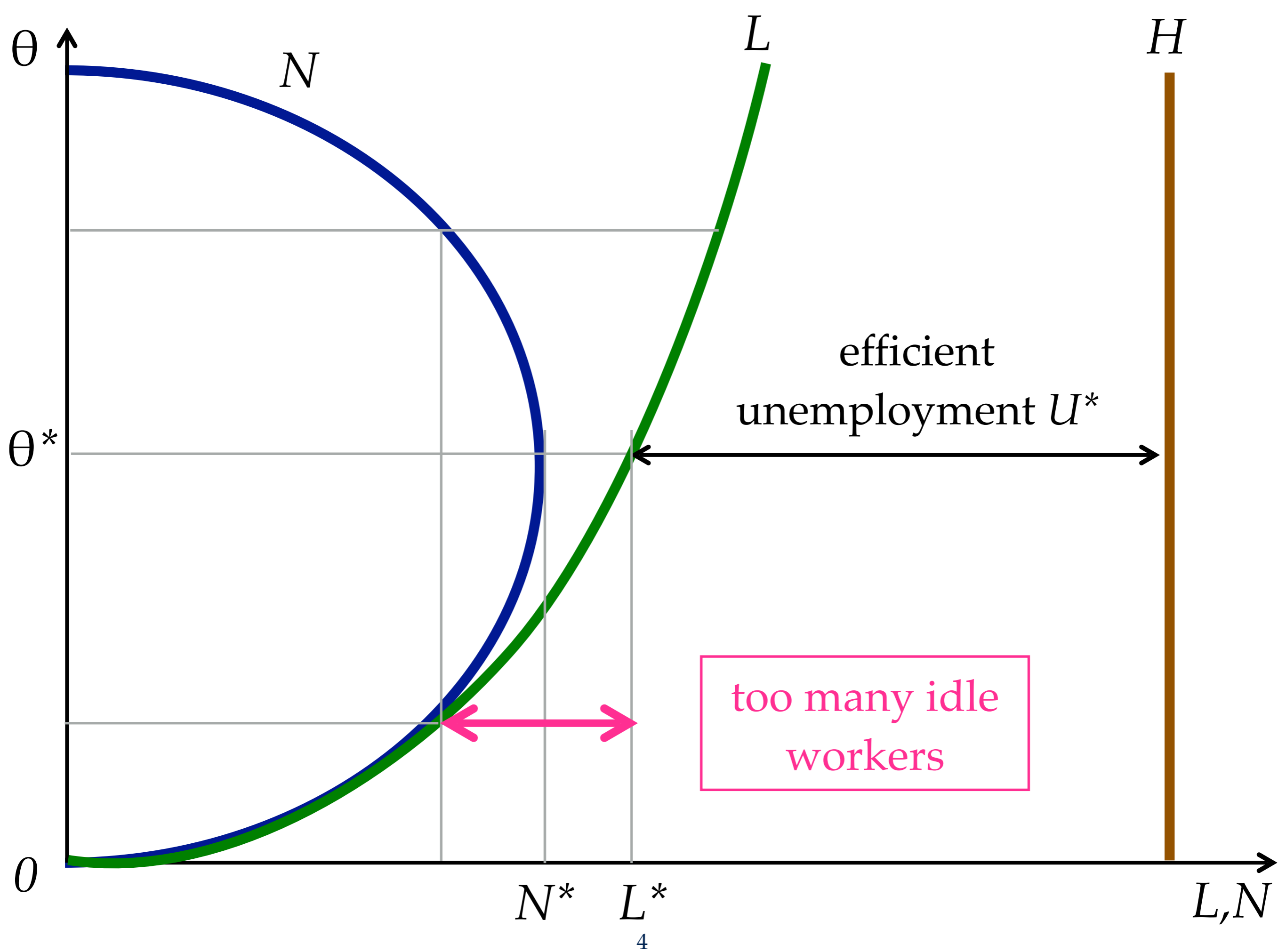
INTERMEDIATE MACROECONOMICS  
MATCHING MODEL OF UNEMPLOYMENT  
20. UNEMPLOYMENT TYPES

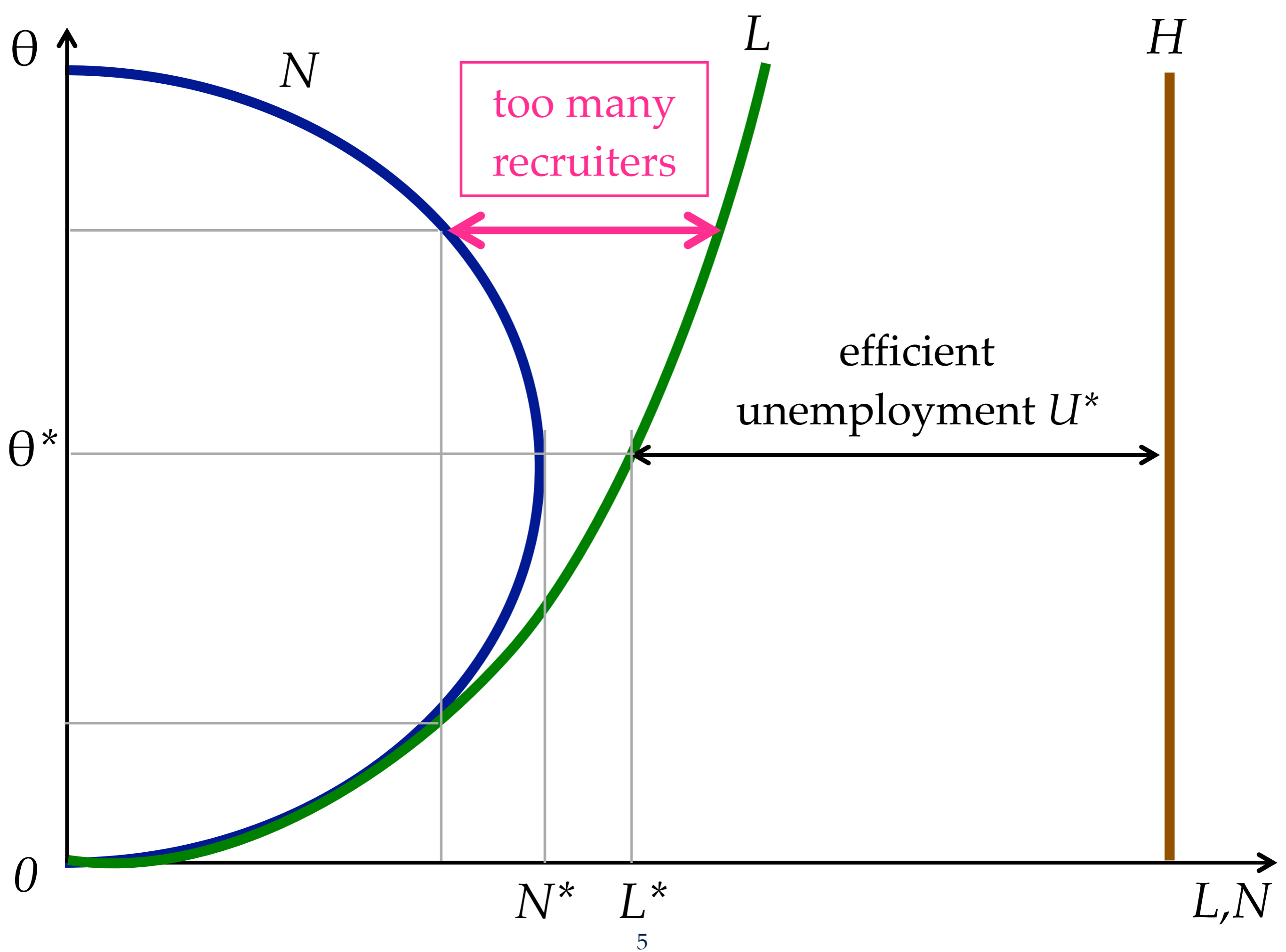
Pascal Michailat  
[pascalmichailat.org/c4/](http://pascalmichailat.org/c4/)

# EFFICIENT UNEMPLOYMENT

- definition: the amount of unemployment **maximizing the number of producers**
  - too little unemployment means that too many workers are devoted to recruiting (see <https://perma.cc/945L-4AJ3>) instead of producing consumption goods
  - too much unemployment means that too many workers are idle instead of producing consumption goods
- in the US: efficient unemployment is likely between 4% and 6%
  - but much more work is needed to develop a complete theory of efficient unemployment



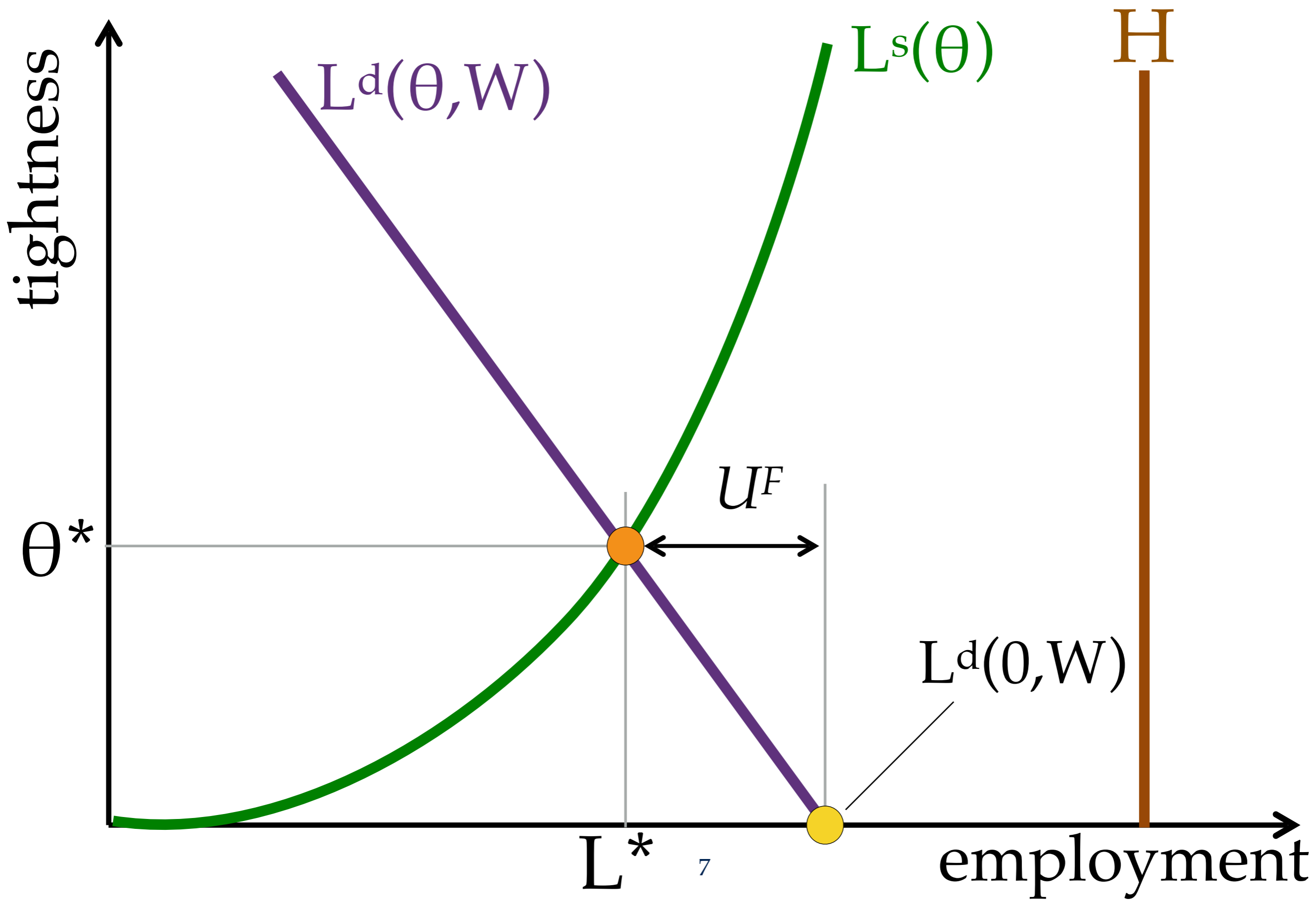




# FRictionAL UNEMPLOYMENT

- definition: amount of unemployment **due to recruiting costs**
- firms would hire more workers if recruiting costs  $r = 0$ 
  - that is, if the recruiter-producer ratio  $\tau = 0$  or equivalently if  $\theta = 0$
  - when  $\theta = 0$ , the recruiter-producer ratio  $\tau(\theta) = 0$  (because  $q(\theta) = \infty$ ), exactly as when  $r=0$
  - firms would hire more workers if  $r = 0$  because  $L^d(r = 0) = L^d(\theta = 0, W) > L^d(\theta^* > 0, W) = L^*$
- formal definition of frictional unemployment:  $U^F = L^d(r = 0) - L^*$ 
  - **hence:  $U^F = L^d(\theta = 0, W) - L^d(\theta^* > 0, W)$**
- frictional unemployment is high in booms (because it is hard to recruit workers) and low in slumps (because it is easy to recruit workers)

# FRITIONAL UNEMPLOYMENT

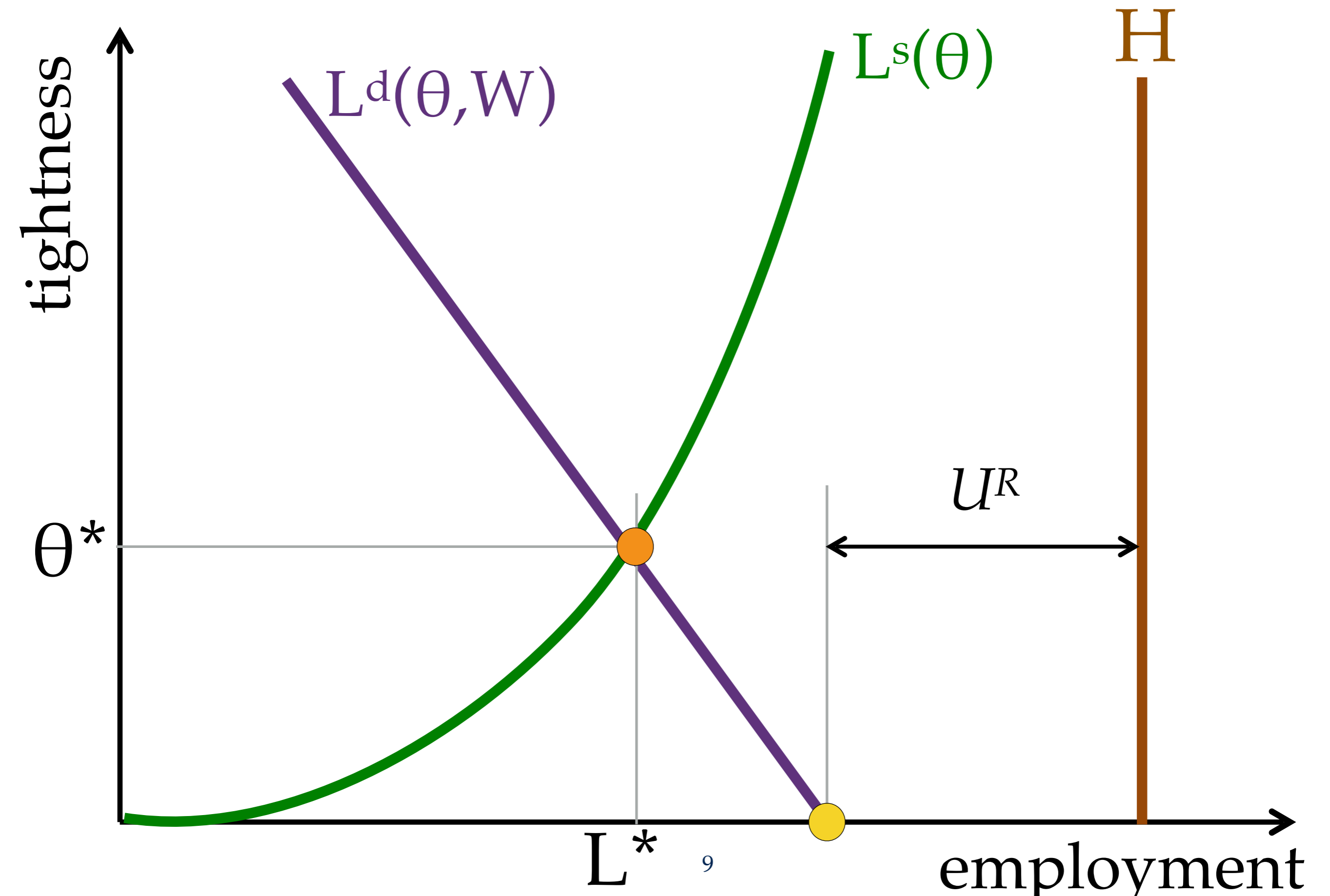


# RATIONING UNEMPLOYMENT

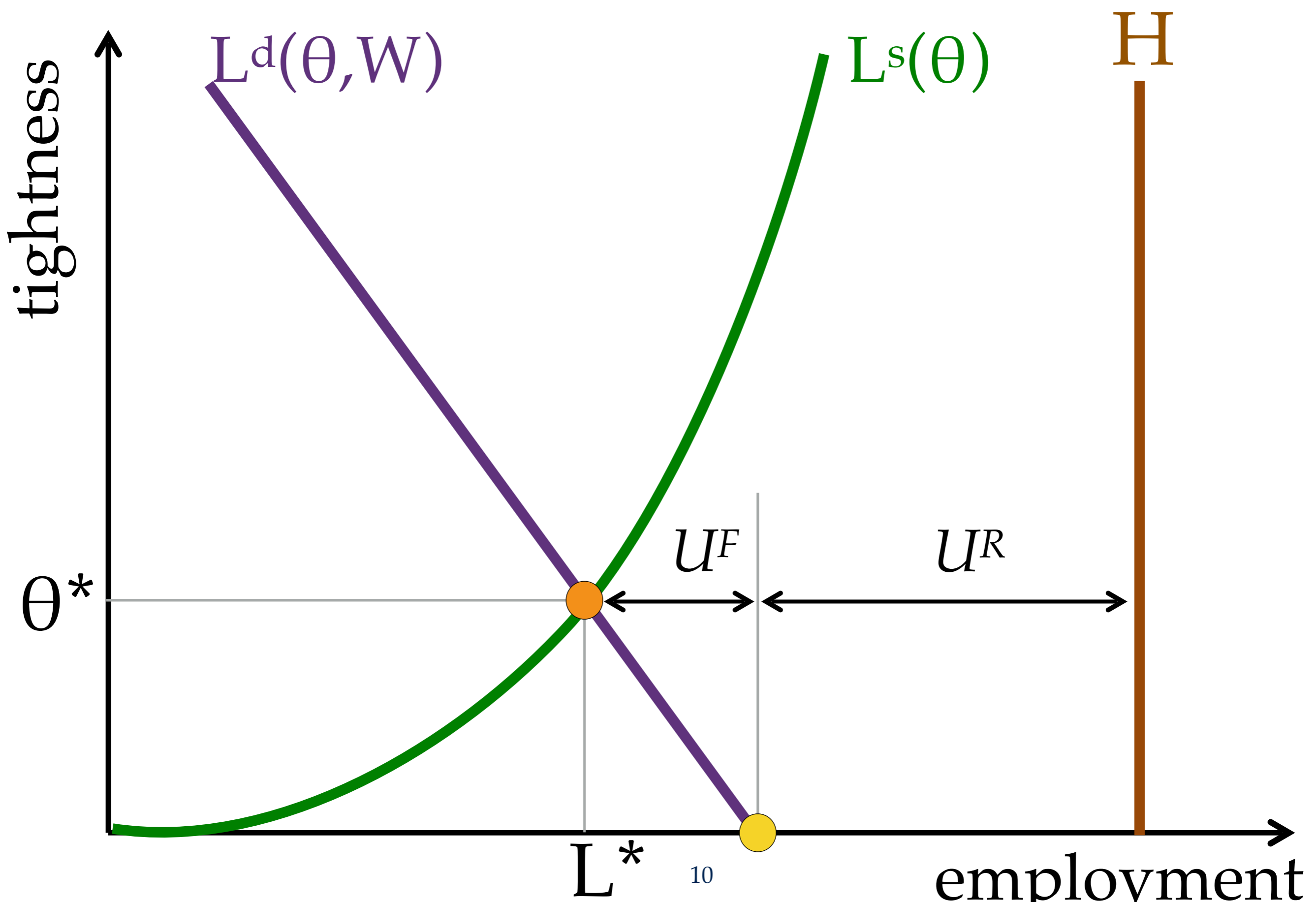
- definition: the amount of unemployment due to a lack of jobs, irrespective of recruiting costs
- formal definition:  $U^R = H - L^d(r = 0)$ 
  - hence:  $U^R = H - L^d(\theta = 0, W)$
  - once again, when  $\theta = 0$ , the recruiter-producer ratio  $\tau(\theta) = 0$  (because  $q(\theta) = \infty$ ), which is the same as when  $r=0$
  - (we impose  $U^R \geq 0$ )
- total unemployment = frictional + rationing
- rationing unemployment is high in recessions (because jobs are lacking) and low in expansions (because jobs are plentiful)



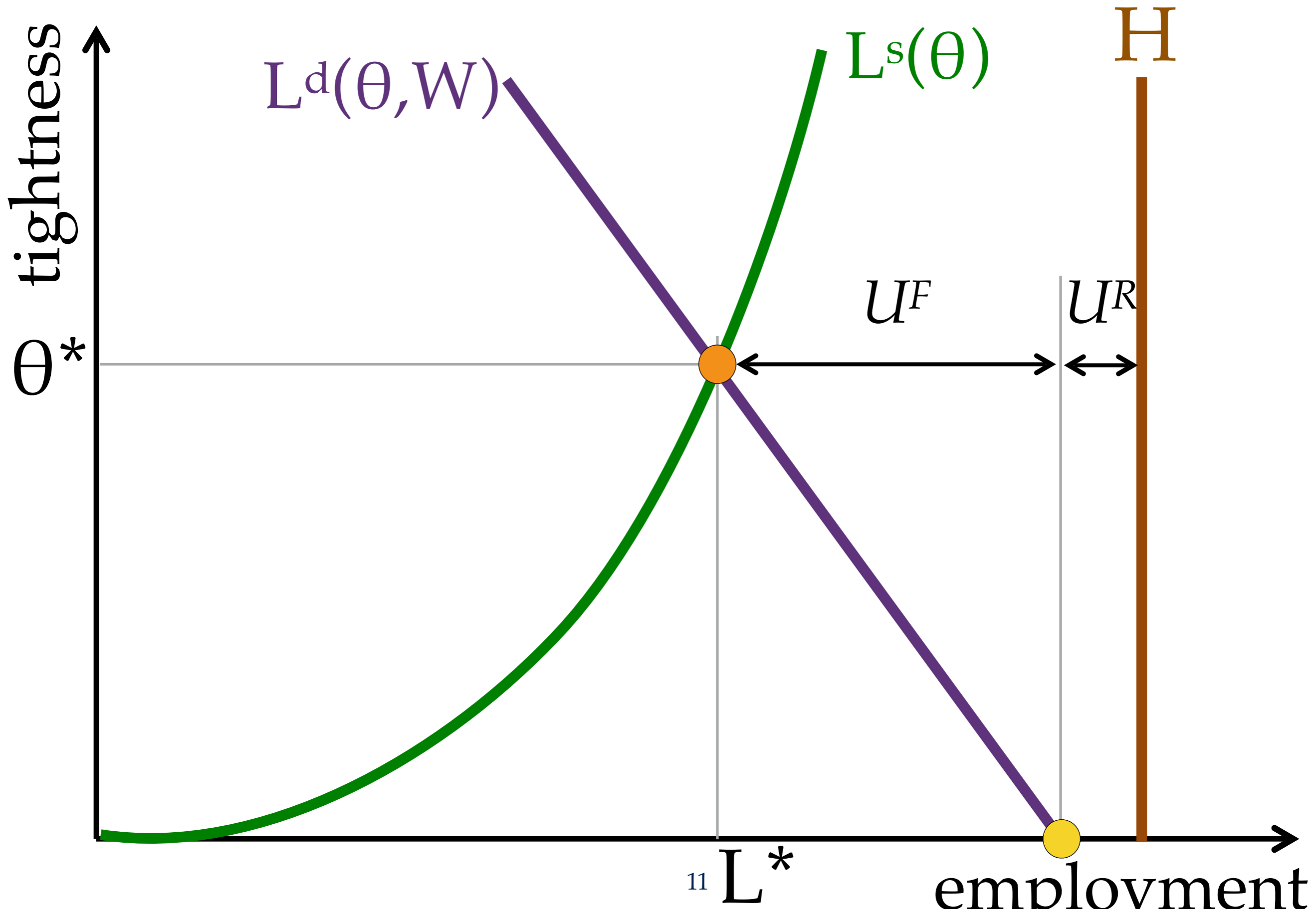
# RATIONING UNEMPLOYMENT



# FRictional & RATIONING UNEMPLOYMENT: BAD TIMES



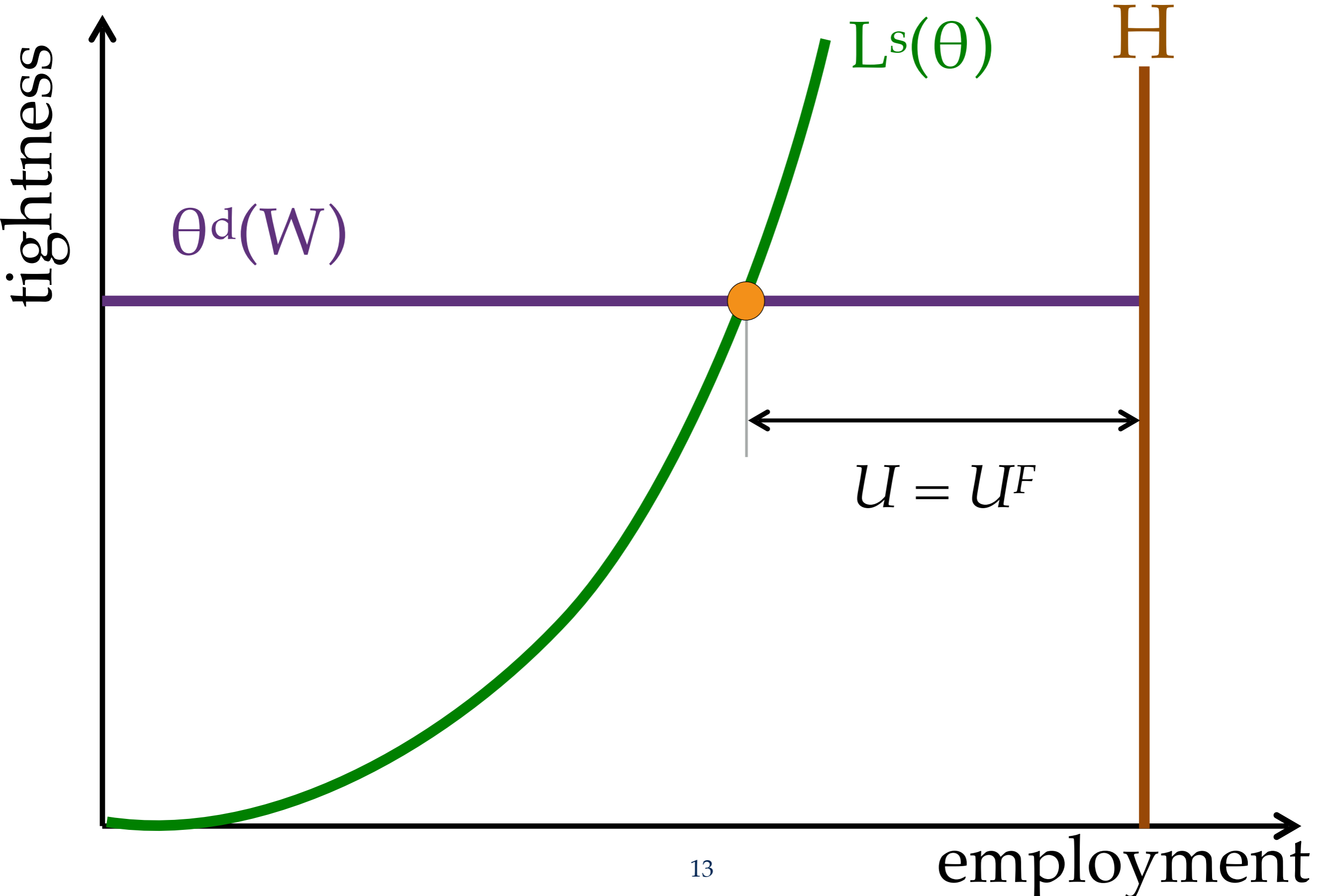
# FRictional & RATIONING UNEMPLOYMENT: GOOD TIMES



# LINEAR PRODUCTION FUNCTION

- consider a matching model with linear production function
  - $Y = a \times N$
- firm's profits are:  $a \times N - W \times N \times [1 + \tau(\theta)]$
- to maximize profits, the derivative of profits with respect to  $N$  must be 0:
  - setting derivative to zero:  $a = W \times [1 + \tau(\theta)]$
- thus the labor demand condition determines a unique tightness
  - tightness determined by labor demand:  $\tau(\theta) = (a/W) - 1$
- the labor demand curve is horizontal
  - all unemployment is frictional unemployment

# FRictional UNEMPLOYMENT WITH LINEAR PRODUCTION



# CLASSICAL & KEYNESIAN UNEMPLOYMENT

- classical unemployment: unemployment due to high wages
  - in matching model: high wage ( $W$ ) leads to low labor demand and high unemployment
- Keynesian unemployment: unemployment due to low aggregate demand
  - in matching model: low productivity ( $a$ ) leads to low labor demand and high unemployment
- rationing unemployment is made of Keynesian and classical components