MODELING JOB STEALING

Pascal Michaillat

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JOB STEALING IS EVERYWHERE BUT IN EXISTING MODELS

- in international/return/domestic migration experiments:
  - arrival of new workers raises unemployment rate of incumbents
- in popular perceptions (& political discourse):
  - people are worried that immigrants steal their jobs
- but in existing labor-market models:
  - Walrasian model: anyone who wants a job can get a job
  - DMP model: new entrants are seamlessly absorbed

A LABOR-MARKET MODEL WITH JOB STEALING

- richer description of immigration effects:
  - effect on labor market tightness & unemployment
  - resolve the Borjas-Card controversy
- richer understanding of immigration policy:
  - optimal policy responds to business-cycle conditions
  - actual policy depends on political system: populist, capitalist, …
- application to other labor supply shocks:
  - wartime mobilization
  - coronavirus pandemic

EVIDENCE OF JOB STEALING

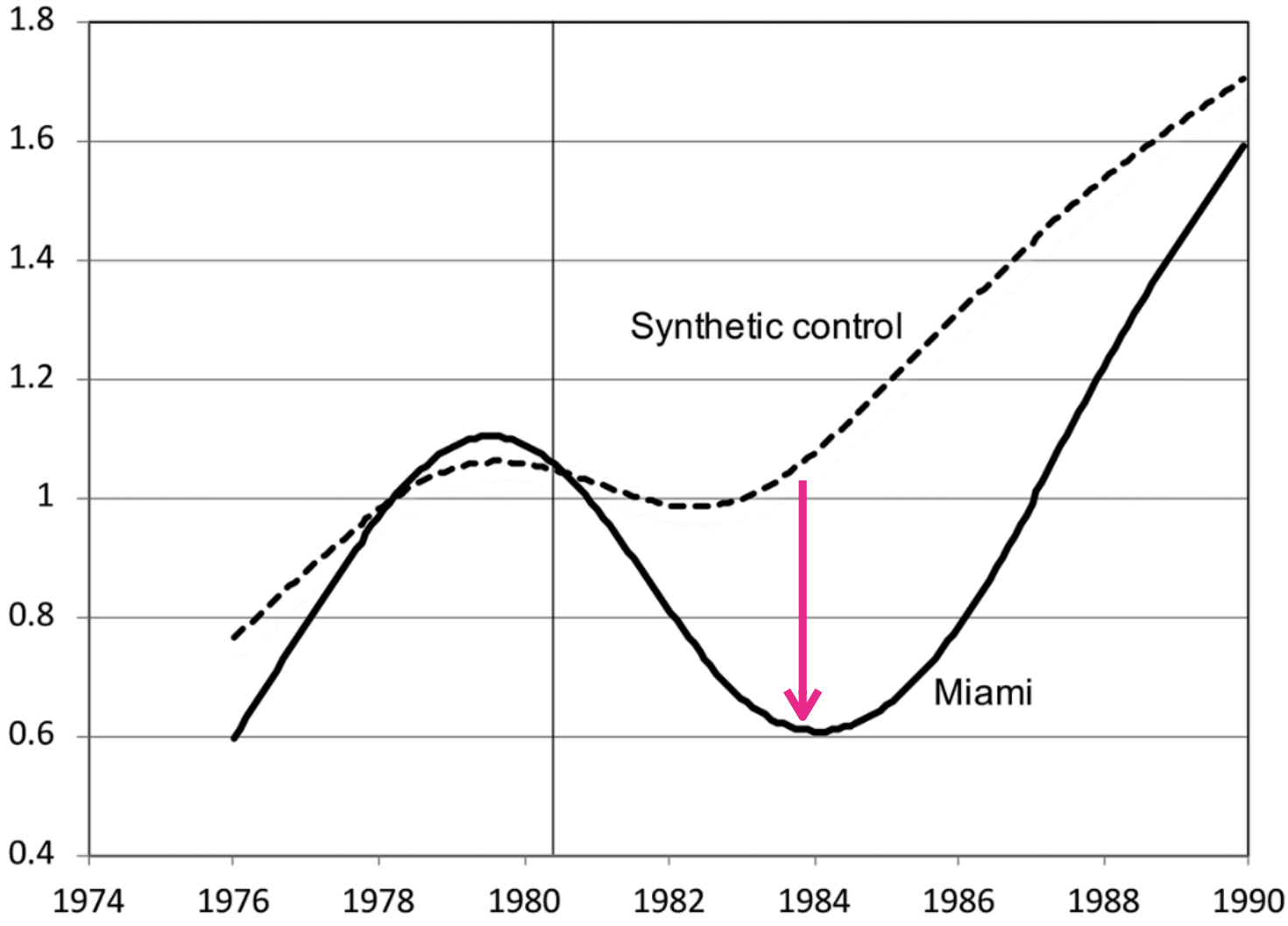
JOB STEALING IS PREVALENT IN EXISTING STUDIES

- US workers $\rightsquigarrow$ new cities during the Great Depression
  - 100 arrivals in a city $\Rightarrow$ 21 residents in unemployment + 19 residents moved out
  - "NO JOBS in California / If YOU are looking for work—KEEP OUT / 6 men for every job / No state relief available for non-residents"
  - source: Boustan, Fishback, Kantor (2010)
- French repatriates $\rightsquigarrow$ France in the 1960s
  - 100 repatriates in labor force $\Rightarrow$ 20 natives in unemployment
  - source: Hunt (1992)
- Algerians refugees $\rightsquigarrow$ France in the 1960s
  - 100 refugees in region-education cell $\Rightarrow$ 27 natives in unemployment
  - source: Borjas, Monras (2019)

- Cuban immigrants $\rightsquigarrow$ Miami in the 1980
  - 100 Cubans in labor force $\Rightarrow$ 13 Cubans in unemployment
  - source: Card (1990)
- Yugoslavian refugees $\rightsquigarrow$ Europe in the 1990s
  - 100 refugees in labor force $\Rightarrow$ 21–83 natives in unemployment
  - source: Angrist, Kugler (2003) & Borjas, Monras (2019)
- ethnic Germans refugees $\rightsquigarrow$ Germany in 1990s
  - 100 refugees in employment $\Rightarrow$ 31 natives in unemployment
  - source: Glitz (2012)

- Czech commuters $\rightsquigarrow$ German border towns in 1991–1993
  - 100 commuters in employment $\Rightarrow$ 71 natives in unemployment
  - cause: reduced inflows into employment
  - source: Dustmann, Schoenberg, Stuhler (2016)
- ethnic Germans, East Germans, foreigners $\rightsquigarrow$ Germany in 1987–2001
  - 100 new immigrants in employment $\Rightarrow$ 30–40 old immigrants in unemployment
  - source: d'Amurio, Ottaviano, Peri (2010)
- Arab Spring refugees $\rightsquigarrow$ Italy in 2011
  - 100 refugees employed $\Rightarrow$ 63–80 natives in unemployment
  - source: Labanca (2016)

TIGHTNESS FELL BY 40% AFTER MARIEL BOATLIFT (ANASTASOPOULOS, BORJAS, COOK, LACHANSKI 2021)



AND THERE MIGHT BE MORE EVIDENCE OUT THERE

- “The 1992 National Election Studies survey asked other questions about immigration that we do not analyze. For example, respondents were asked whether they think Asians or Hispanics ‘take jobs away from people already here.’ We do not focus on this question because its responses cannot clearly distinguish among our three competing economic models. All our models assume full employment, so no natives could have jobs ‘taken away’ by immigrants.”
- source: Scheve, Slaughter (2001)

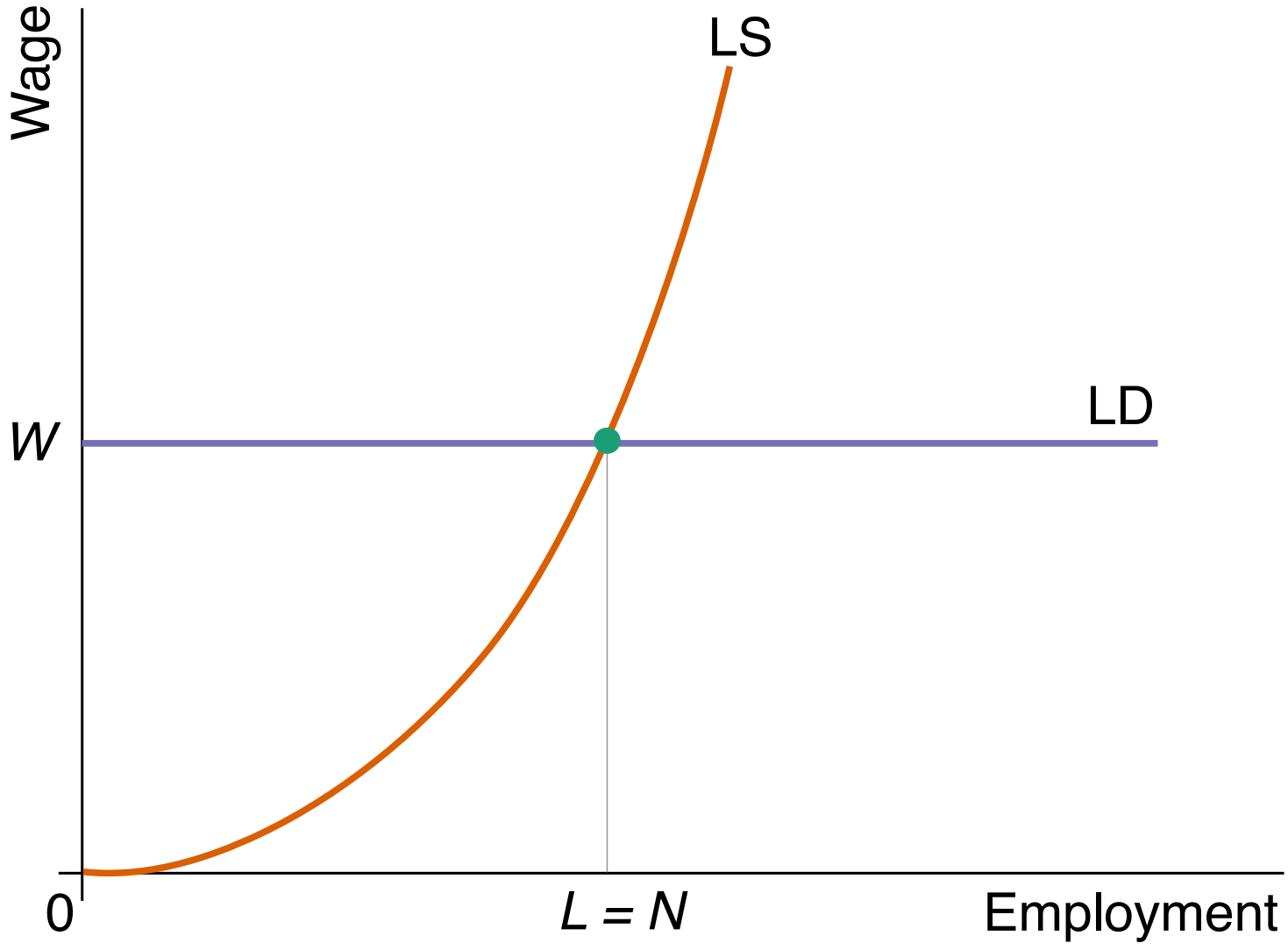
JOB STEALING IS ALSO PREVALENT IN POPULAR PERCEPTIONS

The growing number of these immigrants takes jobs away from people already here	How likely is it?			
	Extremely	Very	Somewhat	Not at all
Hispanics	20%	29%	38%	13%
Asians	19%	30%	37%	13%

Source: 1992 National Election Studies survey

ABSENCE OF JOB STEALING IN EXISTING MODELS

NO JOB STEALING IN CARD MODEL



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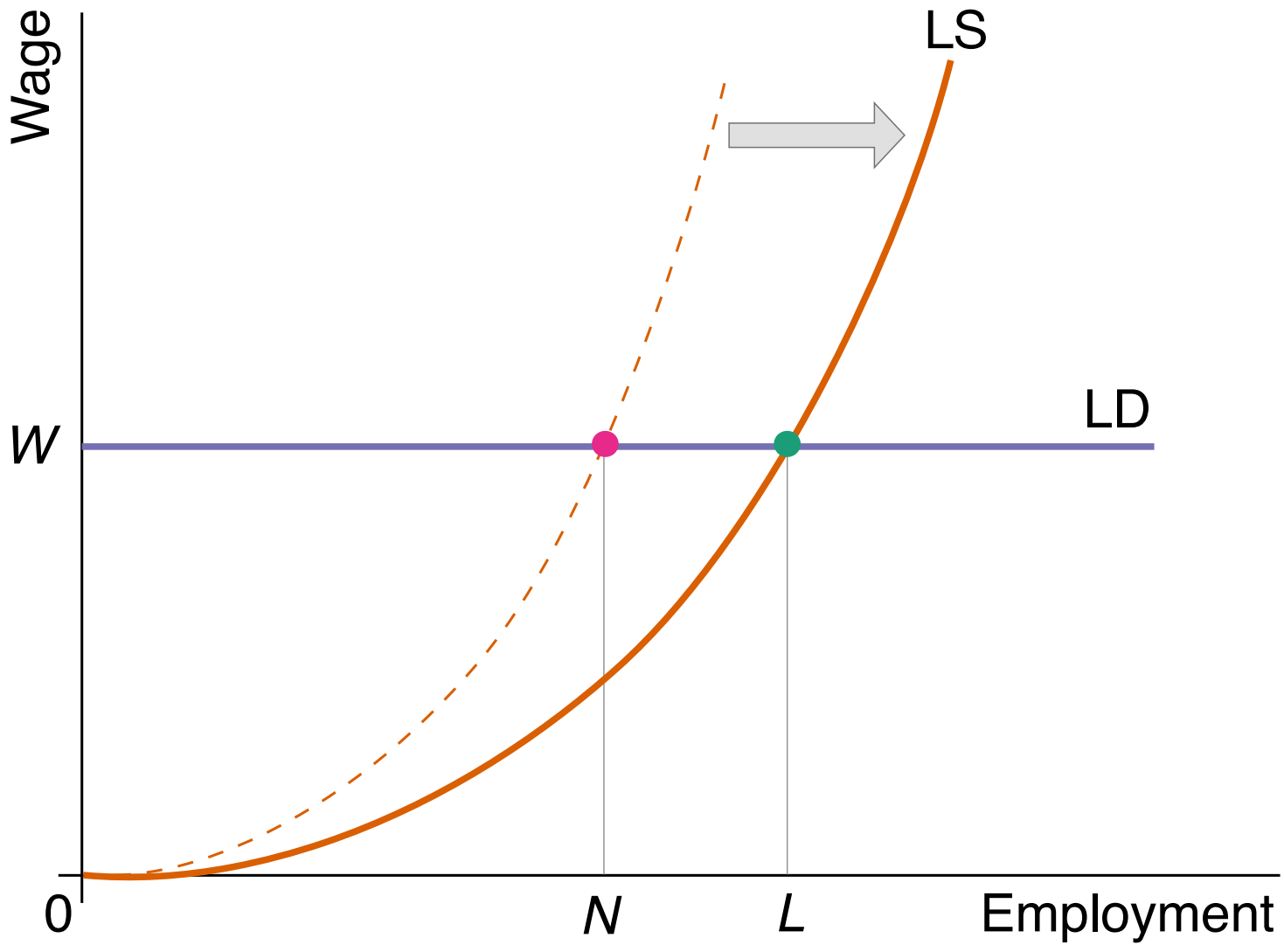
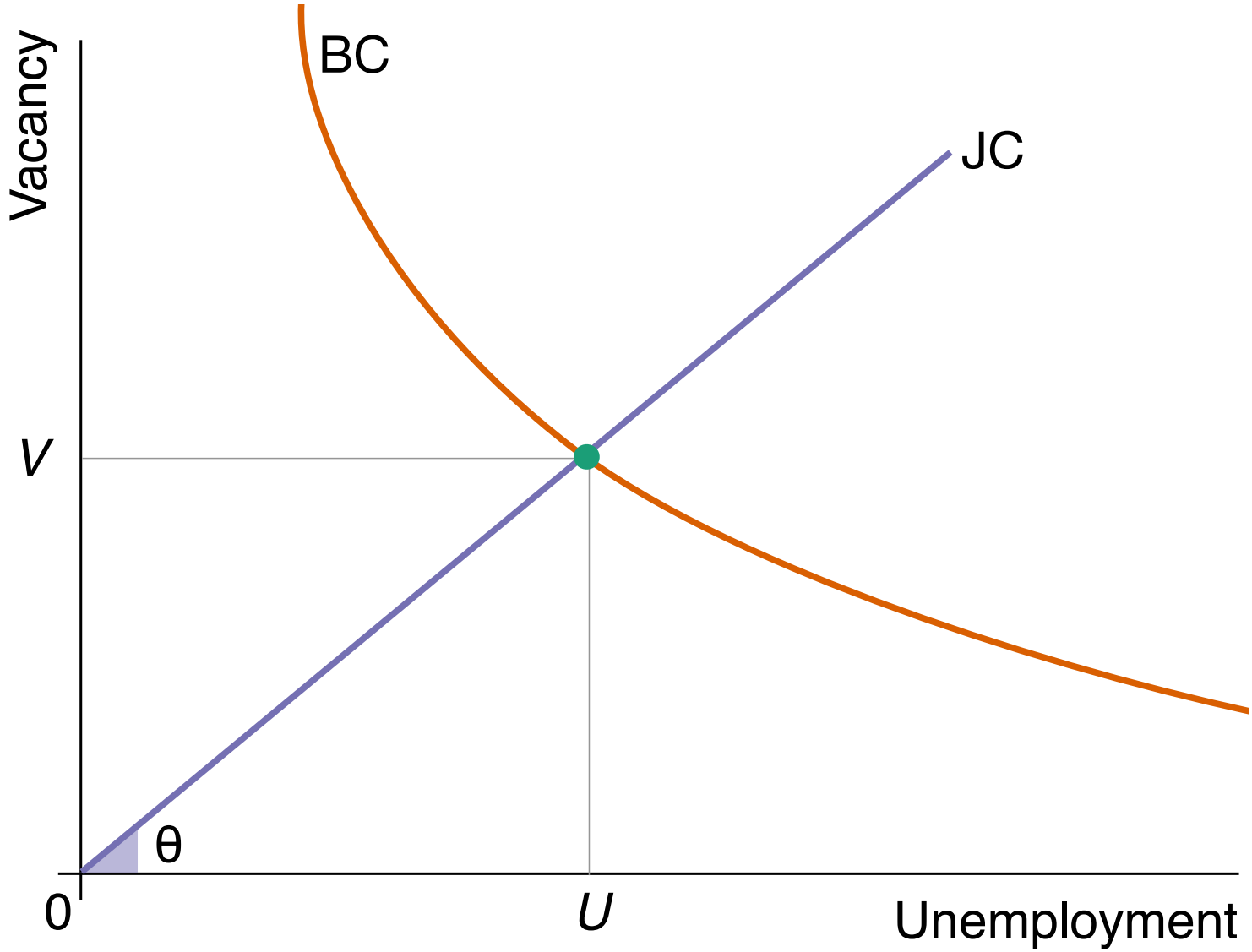


NO JOB STEALING IN DMP MODEL



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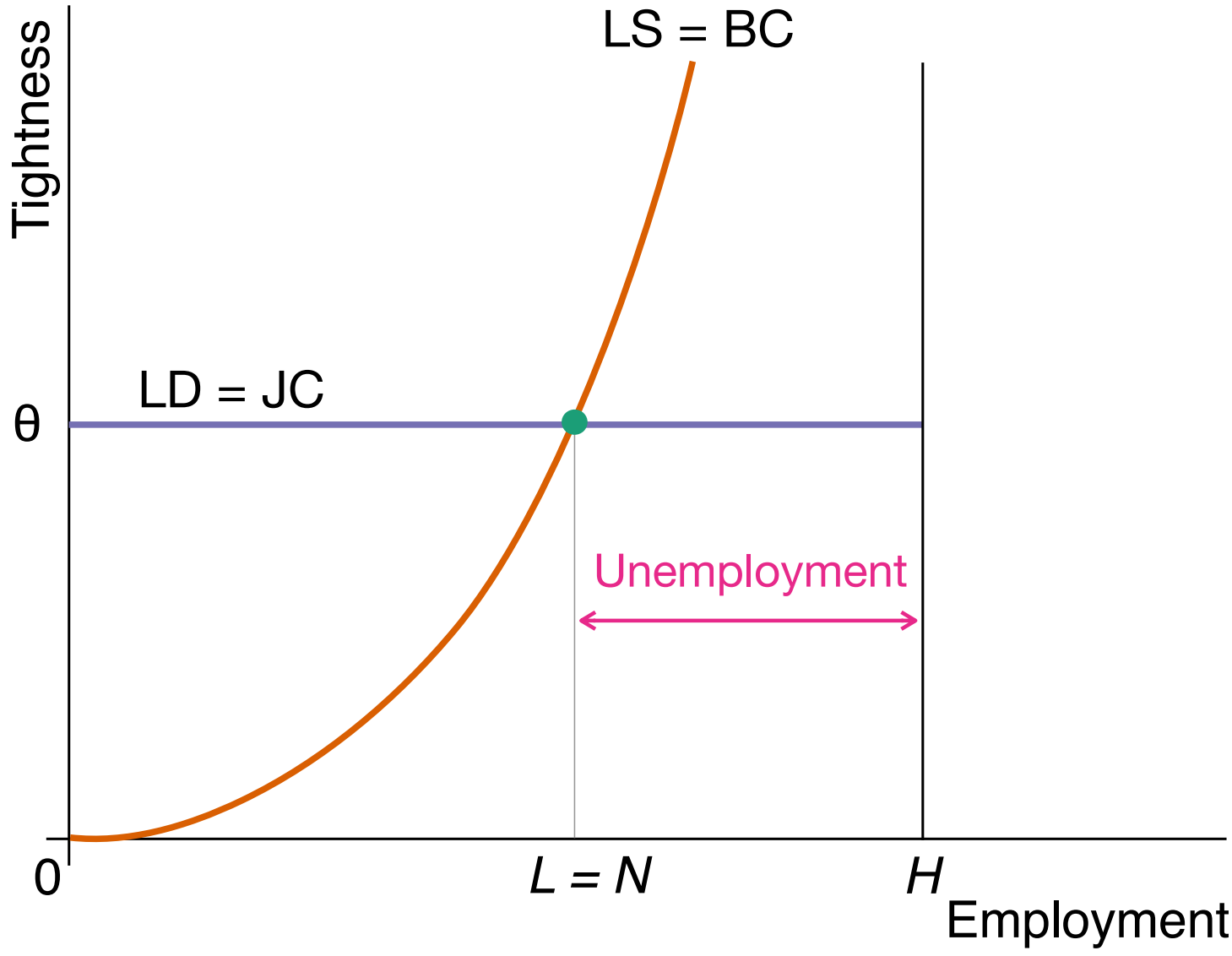

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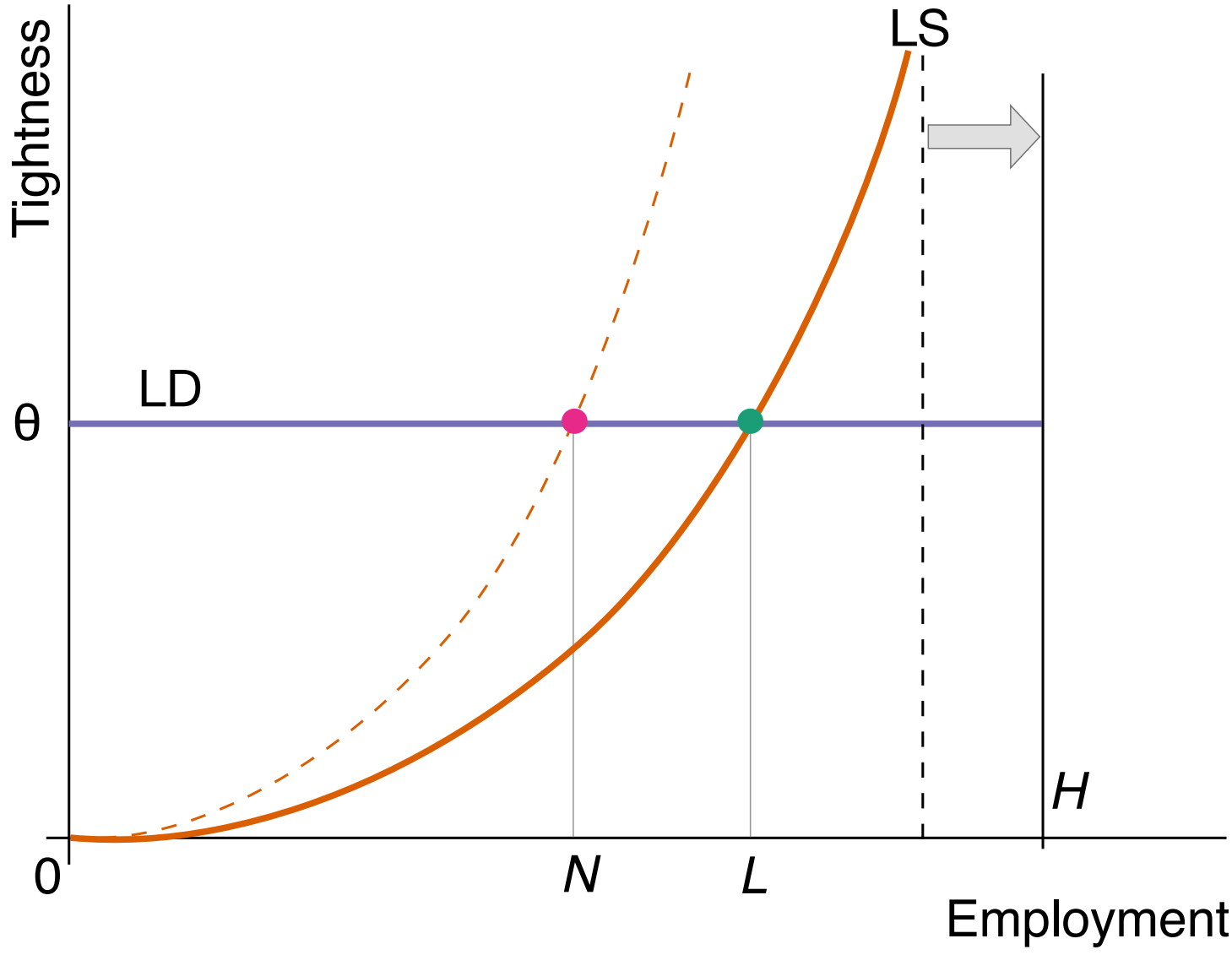
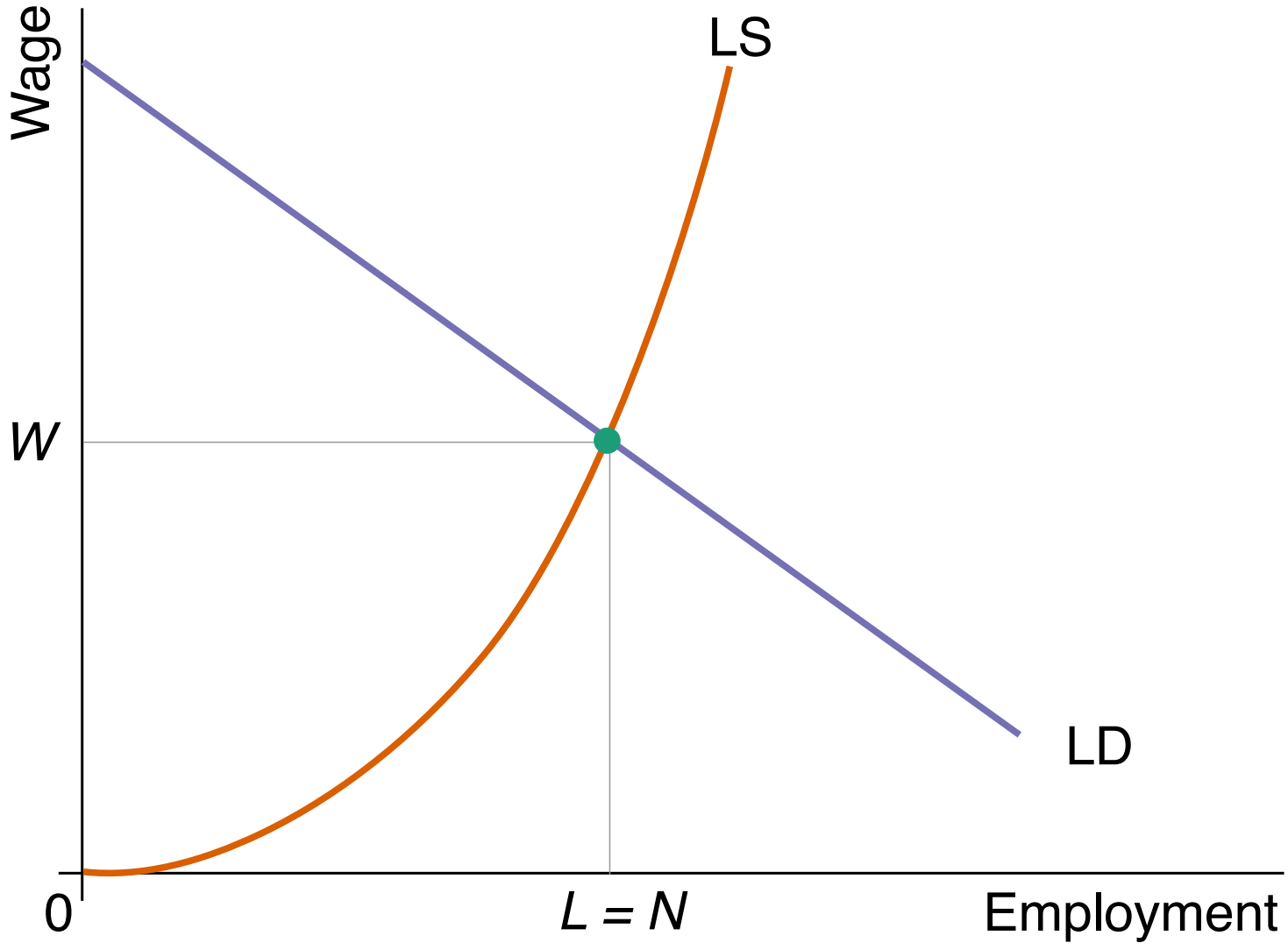


NO JOB STEALING IN BORJAS MODEL



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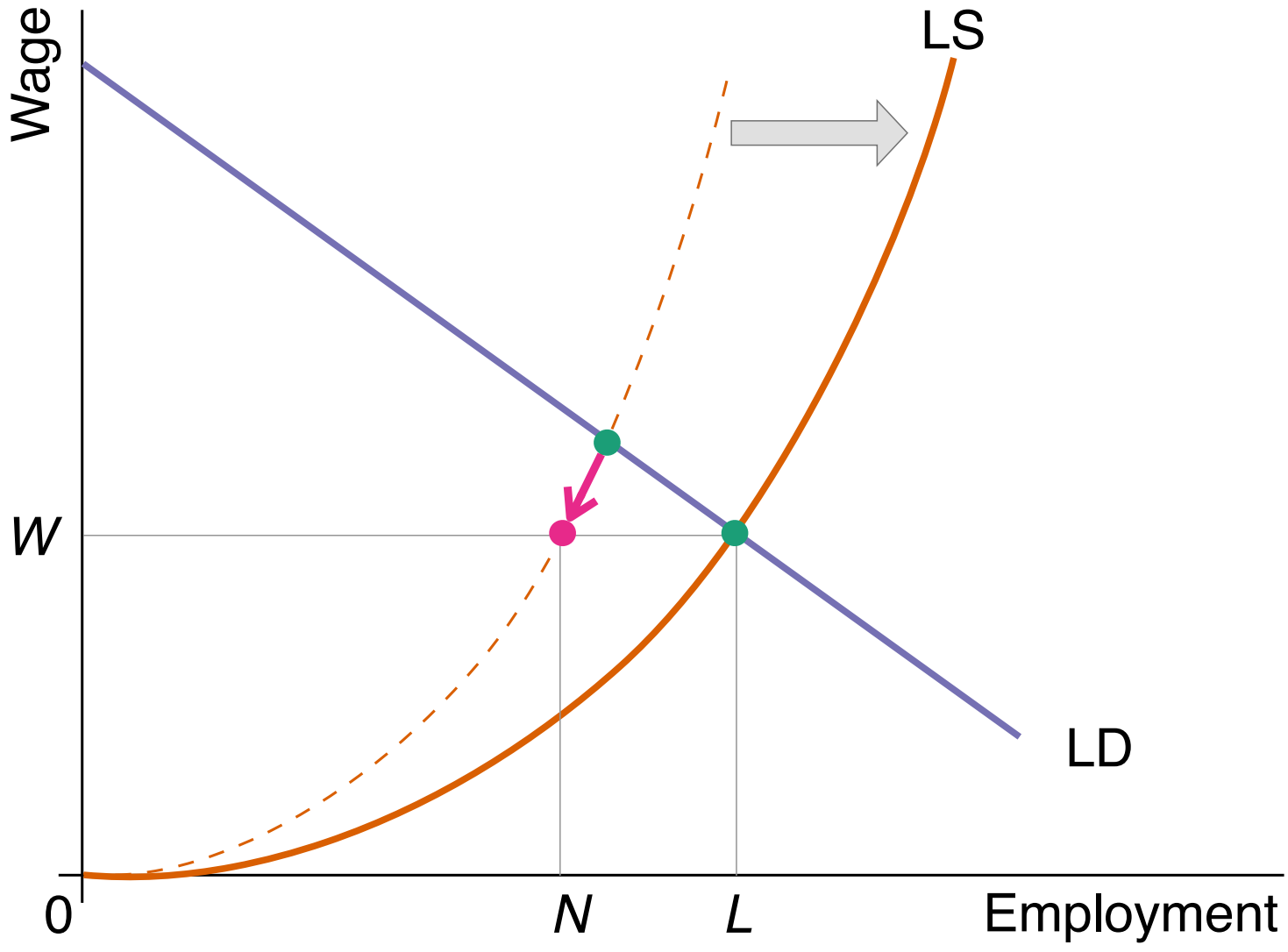


DESCRIPTION OF THE MODEL WITH JOB STEALING

DMP MODEL WITH 2 GENERALIZATIONS (MICHAILLAT 2012)

1. linear production function $\rightsquigarrow$ concave production function
   - labor demand is downward sloping in w and θ
   - somewhat limited number of jobs
2. bargained wages $\rightsquigarrow$ somewhat rigid wages
   - labor demand responds to business-cycle shocks
   - fewer jobs in bad times
   - response of wages to immigration calibrated to evidence

ASSUMPTIONS

- representative firm + labor force of size H
- production function: $y(P) = a \cdot P^{\alpha}$
  - $\alpha \in (0, 1)$: diminishing marginal returns to labor
- matching function: $m(U, V)$, CRS, increasing in U, V
- recruiting cost: $r > 0$ recruiters per vacancy
  - $R = r \cdot V$ recruiters, P producers, $L = R + P$ total workers
- job-destruction rate: $s > 0$
- real wage: $w = \omega \cdot a^{\gamma} \cdot H^{-\beta}$
  - $\gamma \in [0, 1)$: rigidity wrt productivity
  - $\beta \in [0, 1 - \alpha)$: rigidity wrt immigration

MATCHING RATES

- workers match with firms at rate:

$$f(\theta) = \frac{m(u, V)}{U} = m(1, \theta)$$

- vacancies are filled with workers at rate:

$$q(\theta) = \frac{m(u, V)}{V} = m(\theta^{-1}, 1)$$

- tight market (high θ):
  - easy to find jobs (high f), hard to recruit workers (low q)
- slack market (low θ):
  - hard to find jobs (low f), easy to recruit workers (high q)

BALANCED FLOWS

- law of motion of employment, given that $U(t) = H - L(t)$:

$$\dot{L}(t) = f(\theta)U(t) - sL(t) = f(\theta)H - \left[s + f(\theta)\right] L(t)$$

- critical point of the differential equation (such at $\dot{L} = 0$):

$$L = \frac{f(\theta)}{s + f(\theta)} H$$

- deviation between L and $L(t)$ decays at an exponential rate of 62% per month $\rightsquigarrow$ 90% deviation vanishes within a quarter

$\rightsquigarrow$ abstract from employment dynamics

$\rightsquigarrow$ # new employment relationships = # relationships dissolved at any t

$\rightsquigarrow$ labor market always on Beveridge curve

LABOR SUPPLY

- labor supply = employment level consistent with balanced flows:

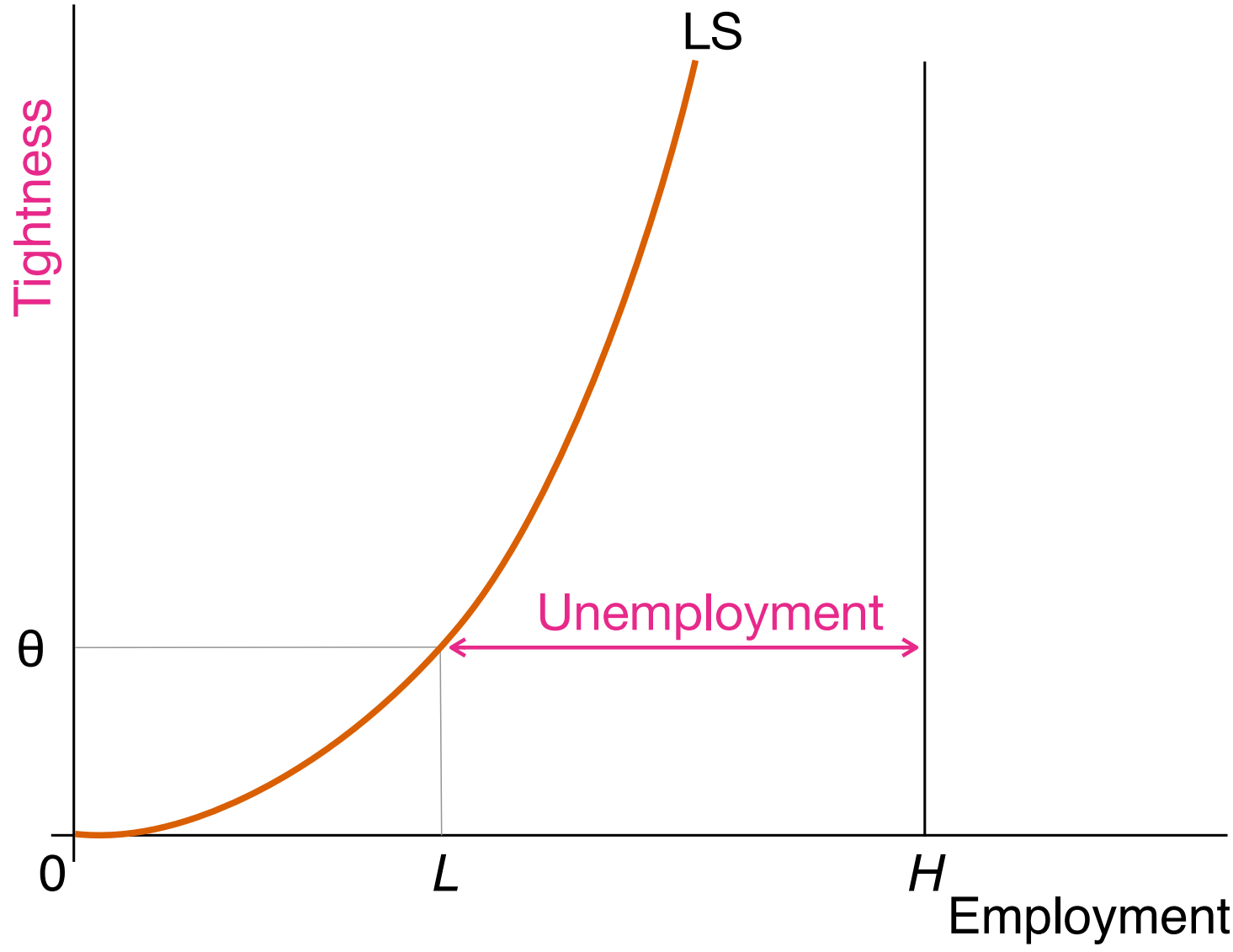
$$L^S(\theta, H) = \frac{f(\theta)}{s + f(\theta)} \cdot H$$

- $L^S(0, H) = 0$, $\partial L^S / \partial \theta > 0$, $\lim_{\theta \to \infty} L^S = H$
- unemployment rate at any point in time:

$$u(\theta) = 1 - \frac{L^S}{H} = \frac{s}{s + f(\theta)}.$$

- $u(0) = 1$, $\partial u / \partial \theta < 0$, $\lim_{\theta \to \infty} u = 0$

LABOR SUPPLY



RECRUITING-PRODUCER RATIO

- # new employment relationships: $q(\theta)V$
- # employment relationships that separate: sL
- stable firm size requires $V = sL/q(\theta)$ vacancies
- required # recruiters: $R = rsL/q(\theta) = rs(R + P)/q(\theta)$
  - $Rq(\theta) = rs(R + P) \implies R[q(\theta) - rs] = rsP$
  - $R/P = rs/[q(\theta) - rs]$
- recruiting-producer ratio $\tau(\theta) = R/P$ satisfies:

$$\tau(\theta) = \frac{rs}{q(\theta) - rs}$$

- $\tau(0) = 0, \tau'(\theta) > 0$ on $[0, \theta_\tau)$, $\lim_{\theta \to \theta_\tau} \tau(\theta) = +\infty$
- $\theta_\tau = q^{-1}(rs)$: fully recruiting economy

FIRM PROBLEM

- with balanced flows, firm determines workforce L by posting vacancies
- workforce maximizes flow of real profits:

$$y(P) - wL = y(P) - [1 + \tau(\theta)] \cdot w \cdot P$$

- optimum # producers is given by first-order condition:

$$y'(P) = [1 + \tau(\theta)] \cdot w$$

- since $y'(P) = \alpha a P^{\alpha-1}$, optimum # workers is given by:

$$a\alpha[1 + \tau(\theta)]^{1-\alpha} \cdot L^{\alpha-1} = [1 + \tau(\theta)] \cdot w,$$

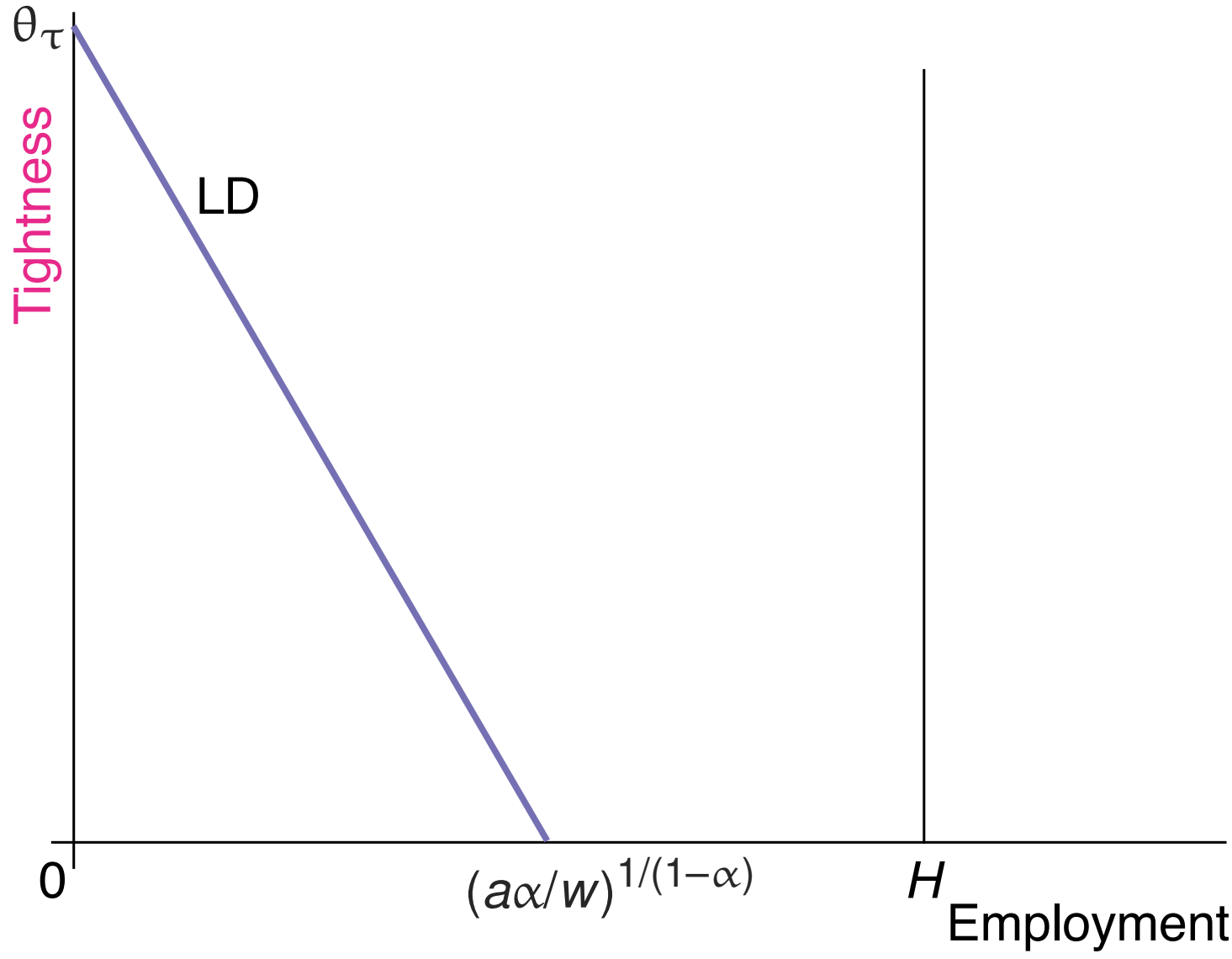
LABOR DEMAND

- labor demand = firm's desired employment level:

$$L^d(\theta, a) = \left\{ \frac{a \cdot \alpha}{w \cdot [1 + \tau(\theta)]^{\alpha}} \right\}^{\frac{1}{1-\alpha}}$$

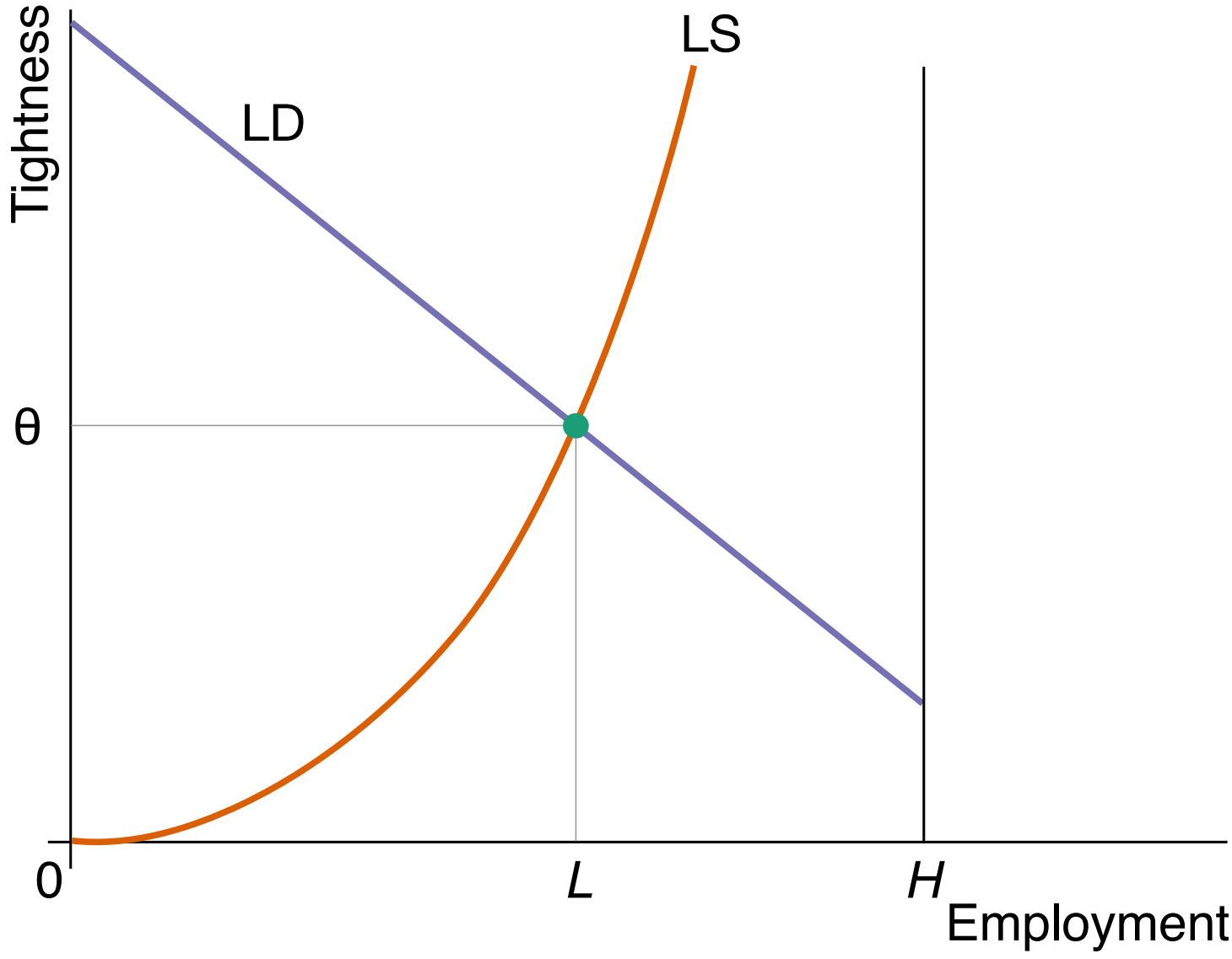
- $L^d(0, a) = (a \cdot \alpha / w)^{\frac{1}{1-\alpha}}$, $\partial L^d / \partial \theta < 0$, $\partial L^d / \partial a > 0$, $L^d(\theta_\tau, a) = 0$
- firm hires natives & immigrants alike (Martins, Piracha, Varejao 2018)

LABOR DEMAND



SOLUTION OF THE MODEL

SOLUTION: LABOR SUPPLY = LABOR DEMAND



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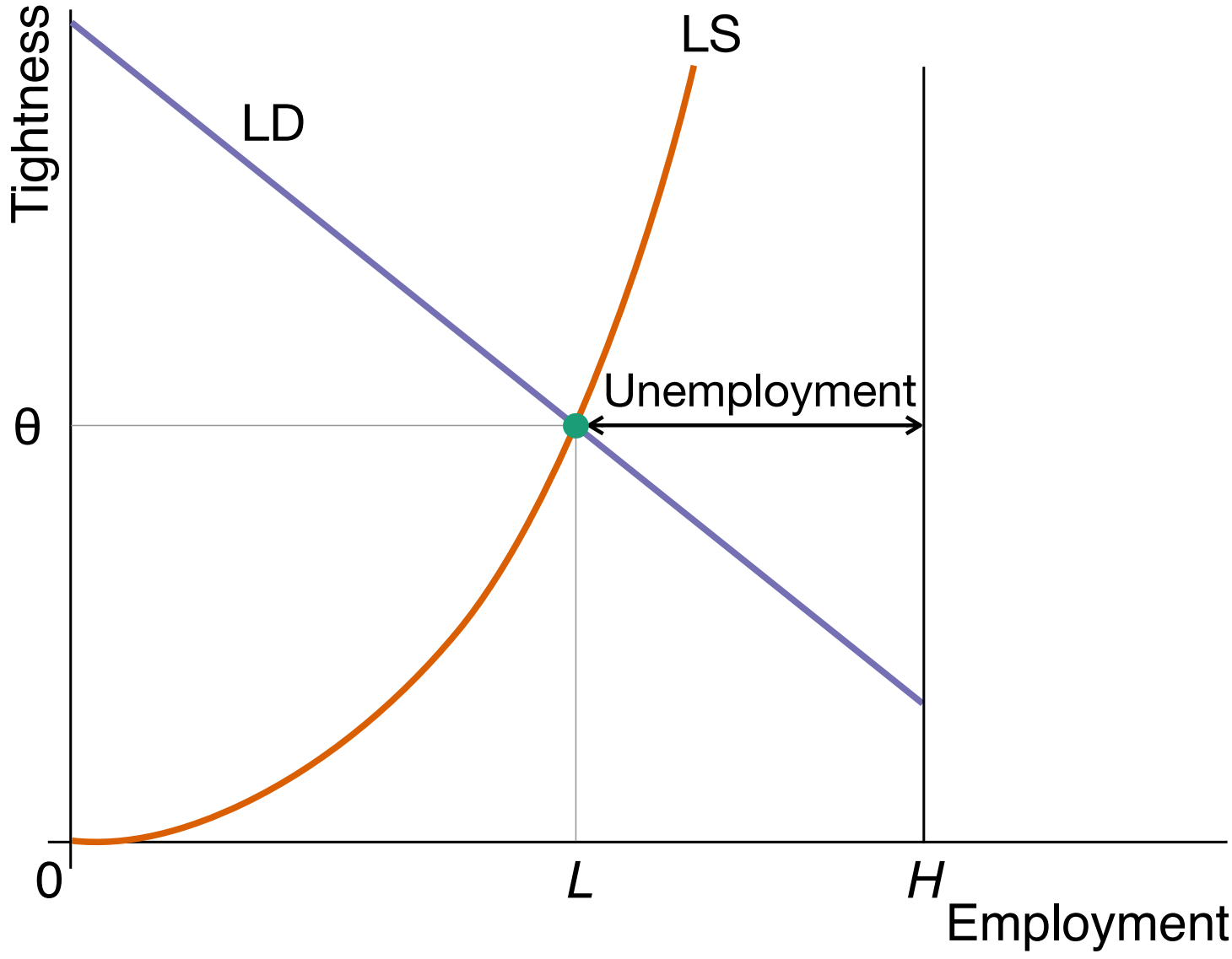
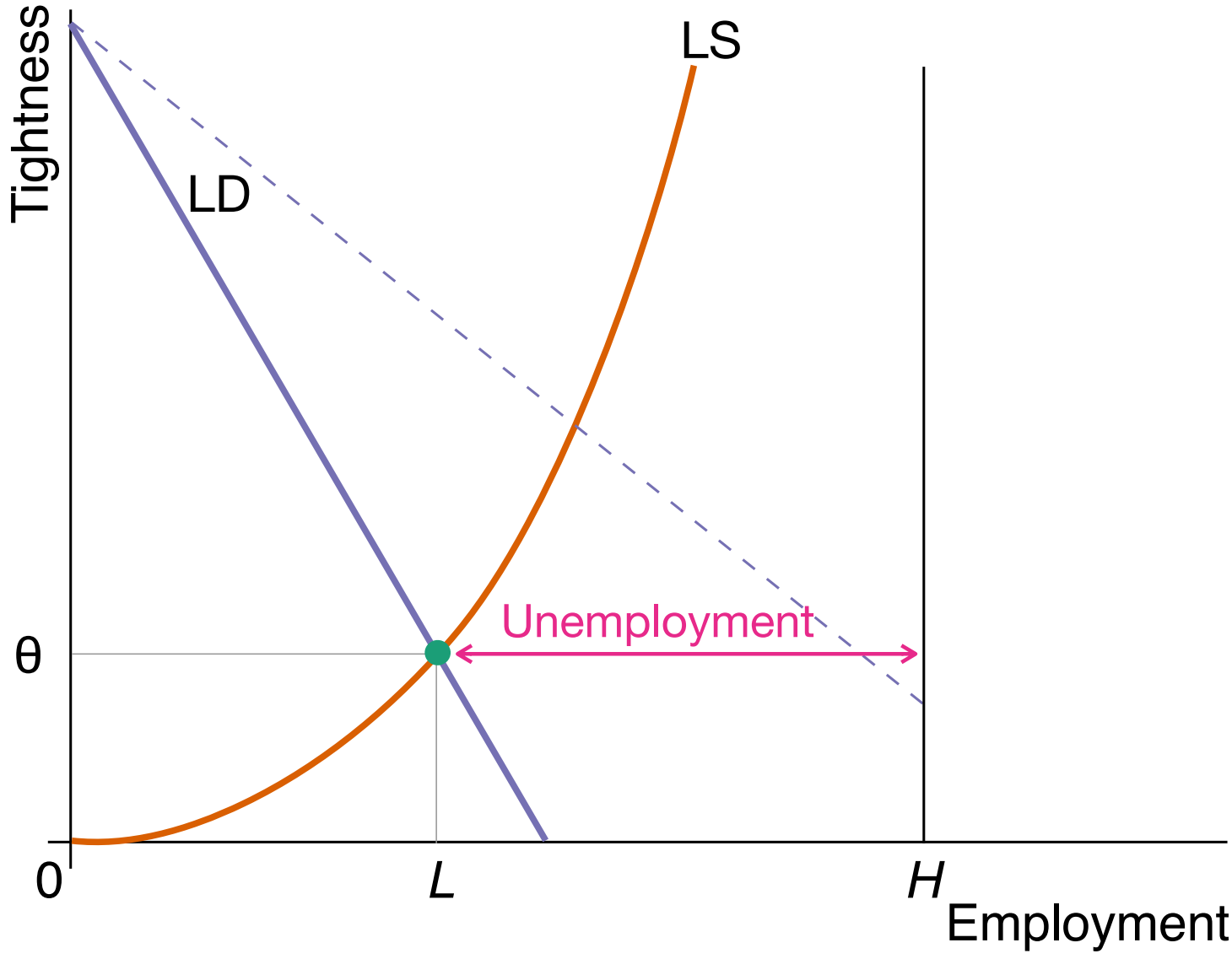
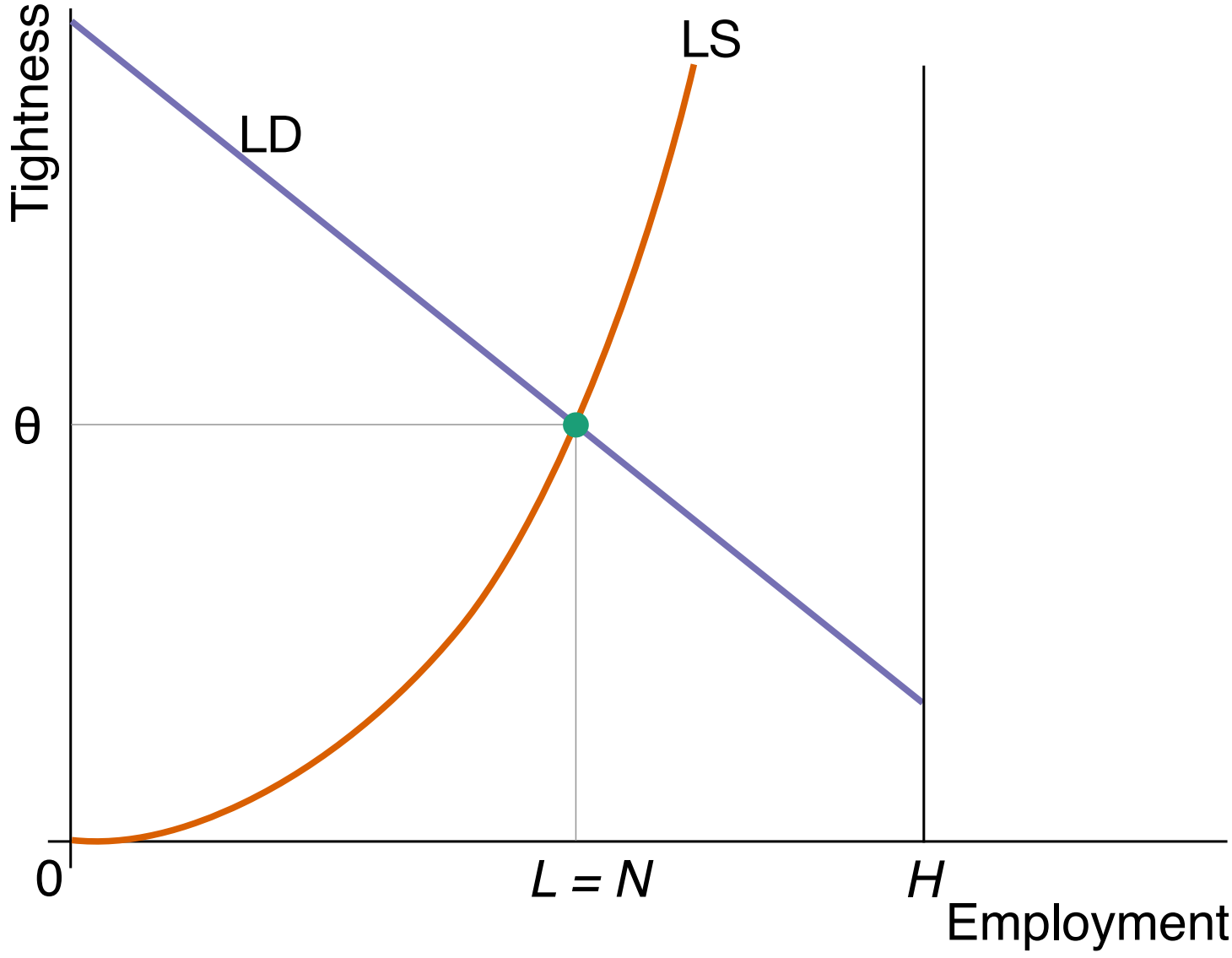


BAD TIMES: LOW LABOR DEMAND



EFFECTS OF AN IMMIGRATION WAVE

JOB STEALING: JOB-FINDING RATE OF NATIVES ↓



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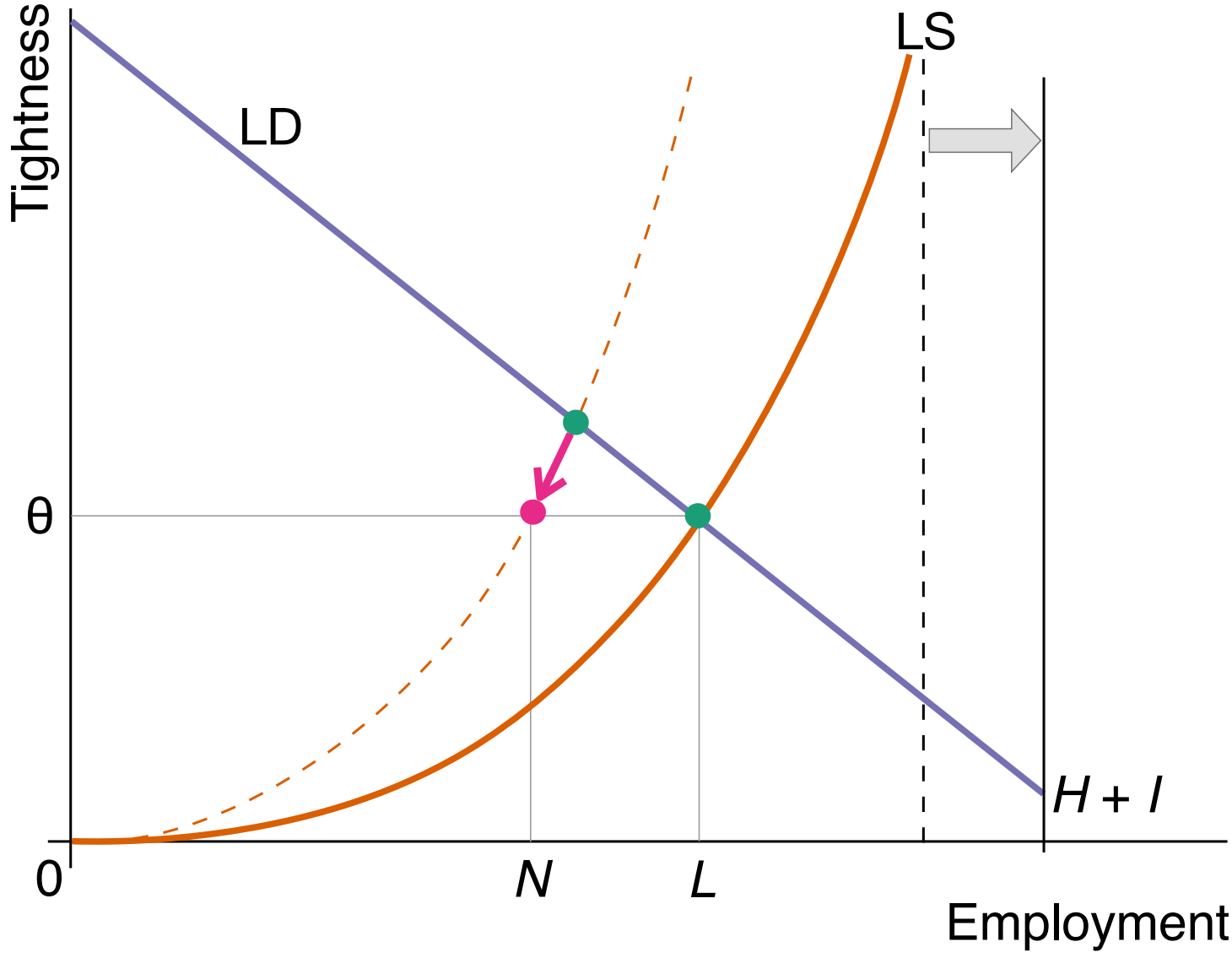
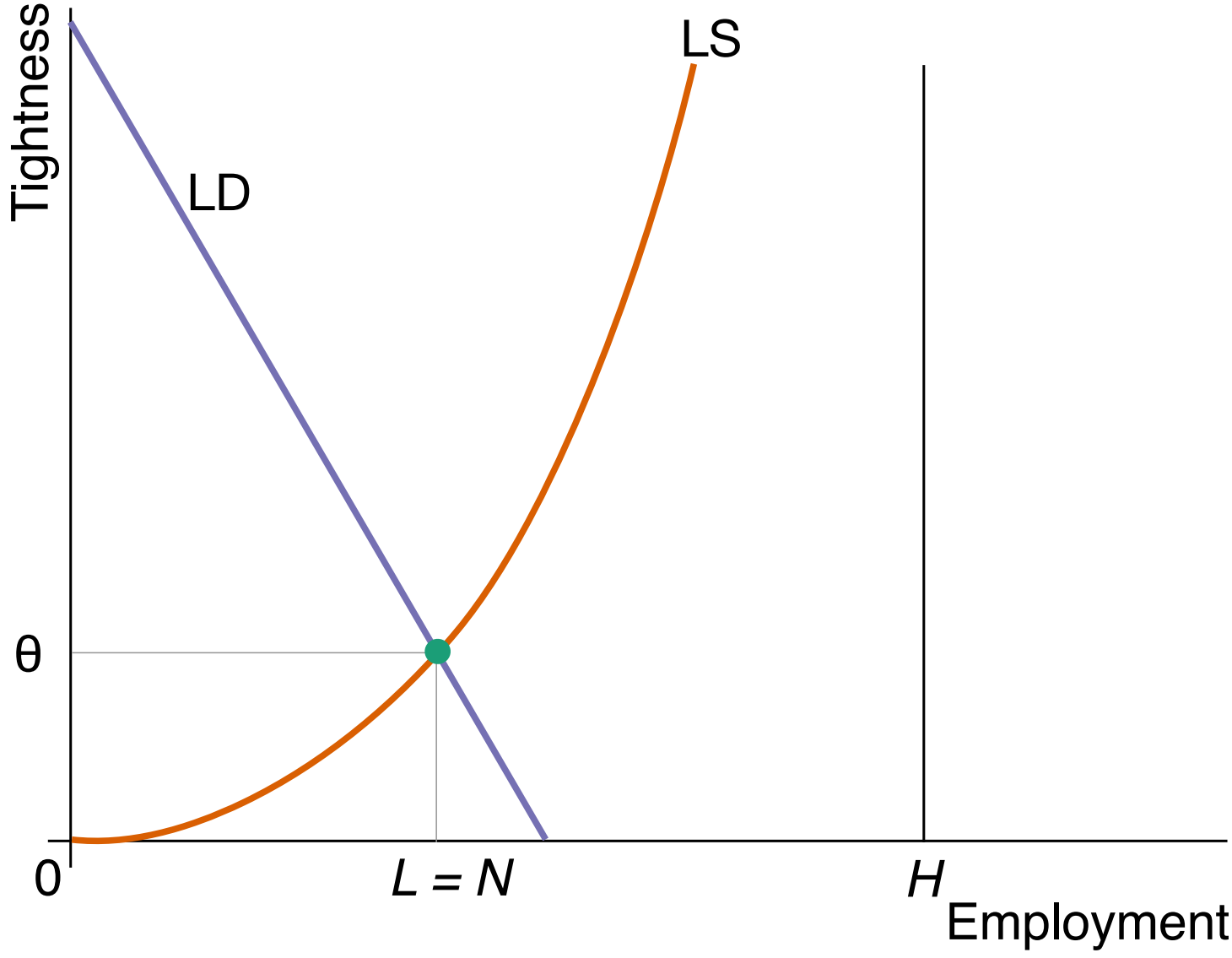


STRONGER JOB STEALING IN BAD TIMES



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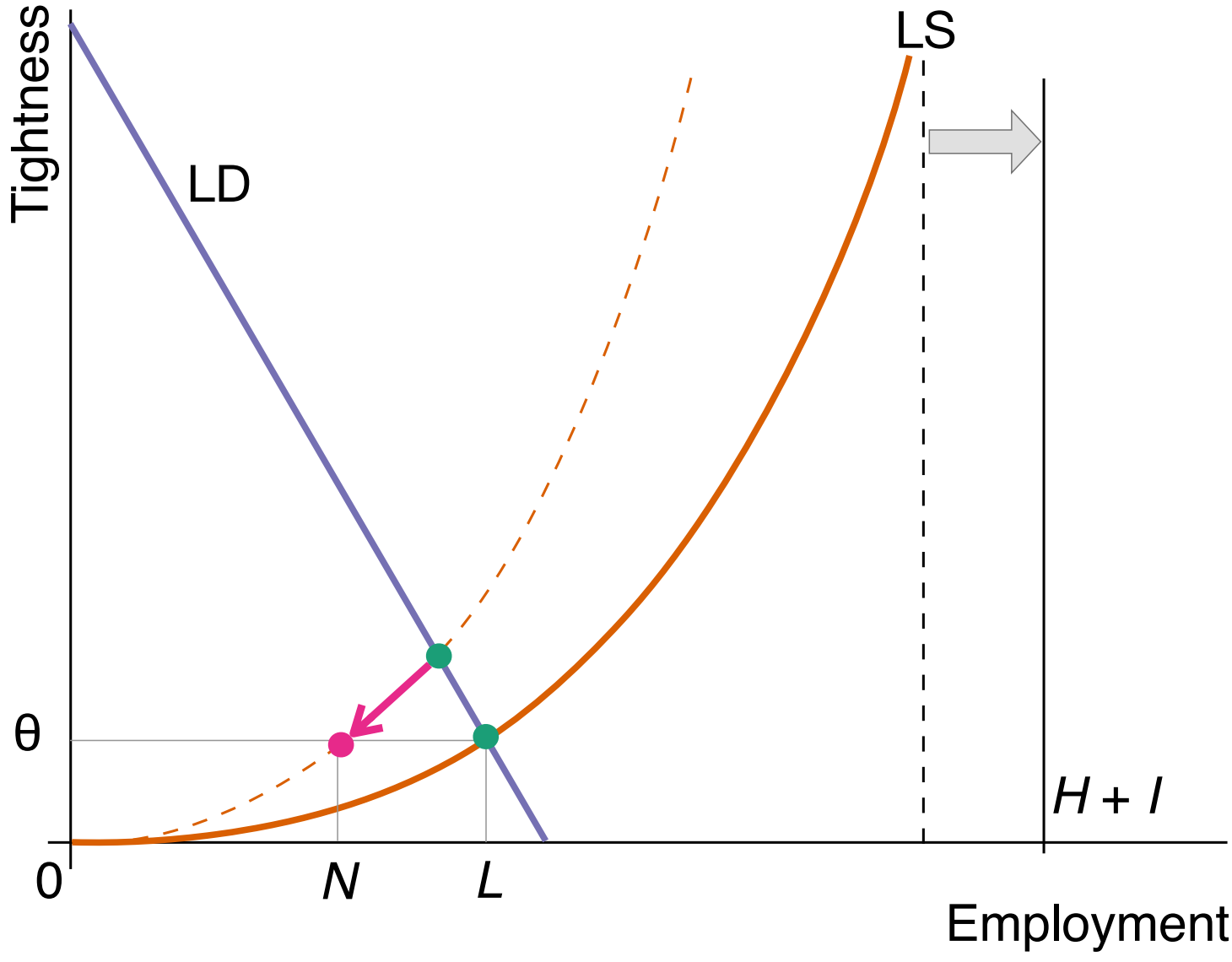
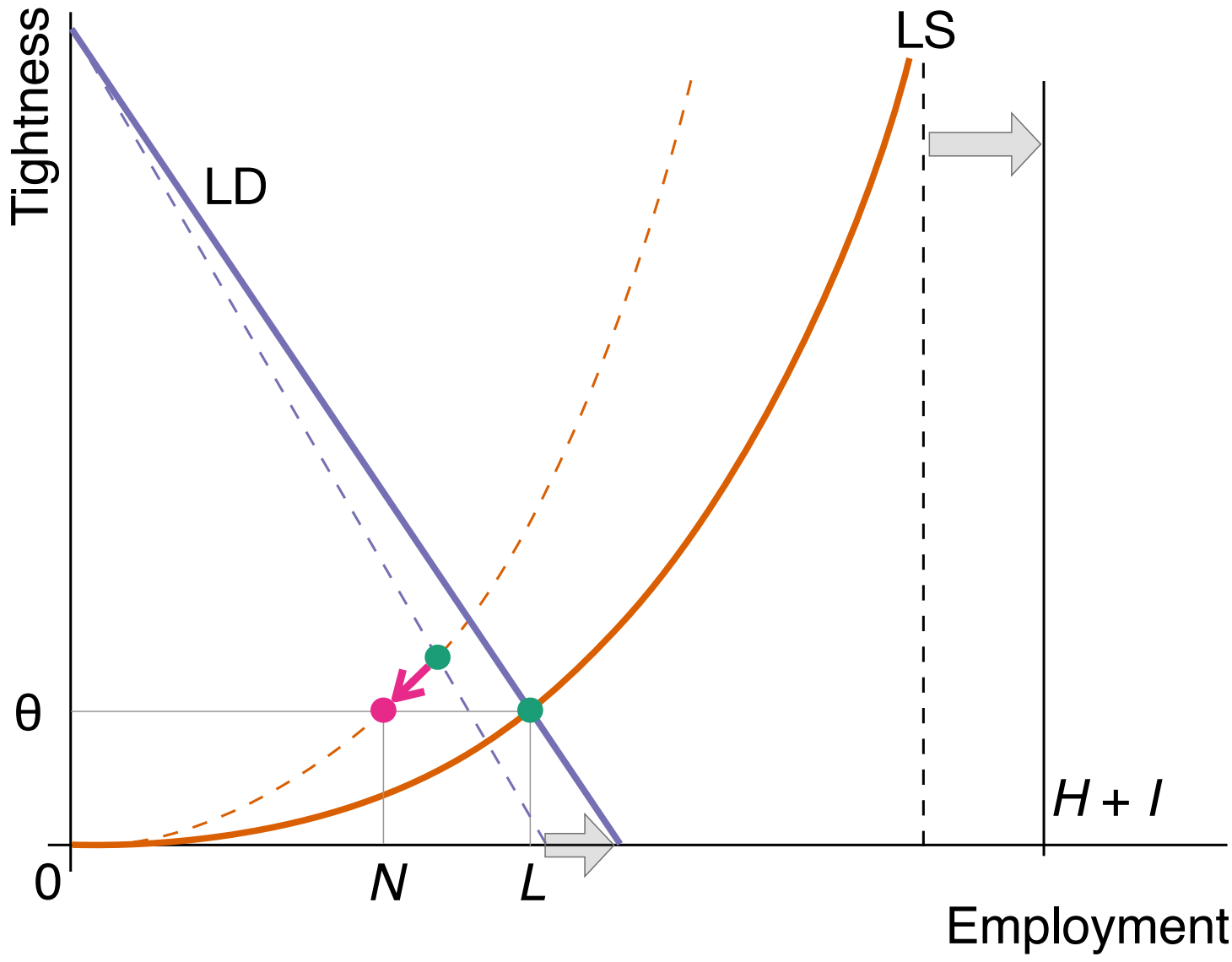
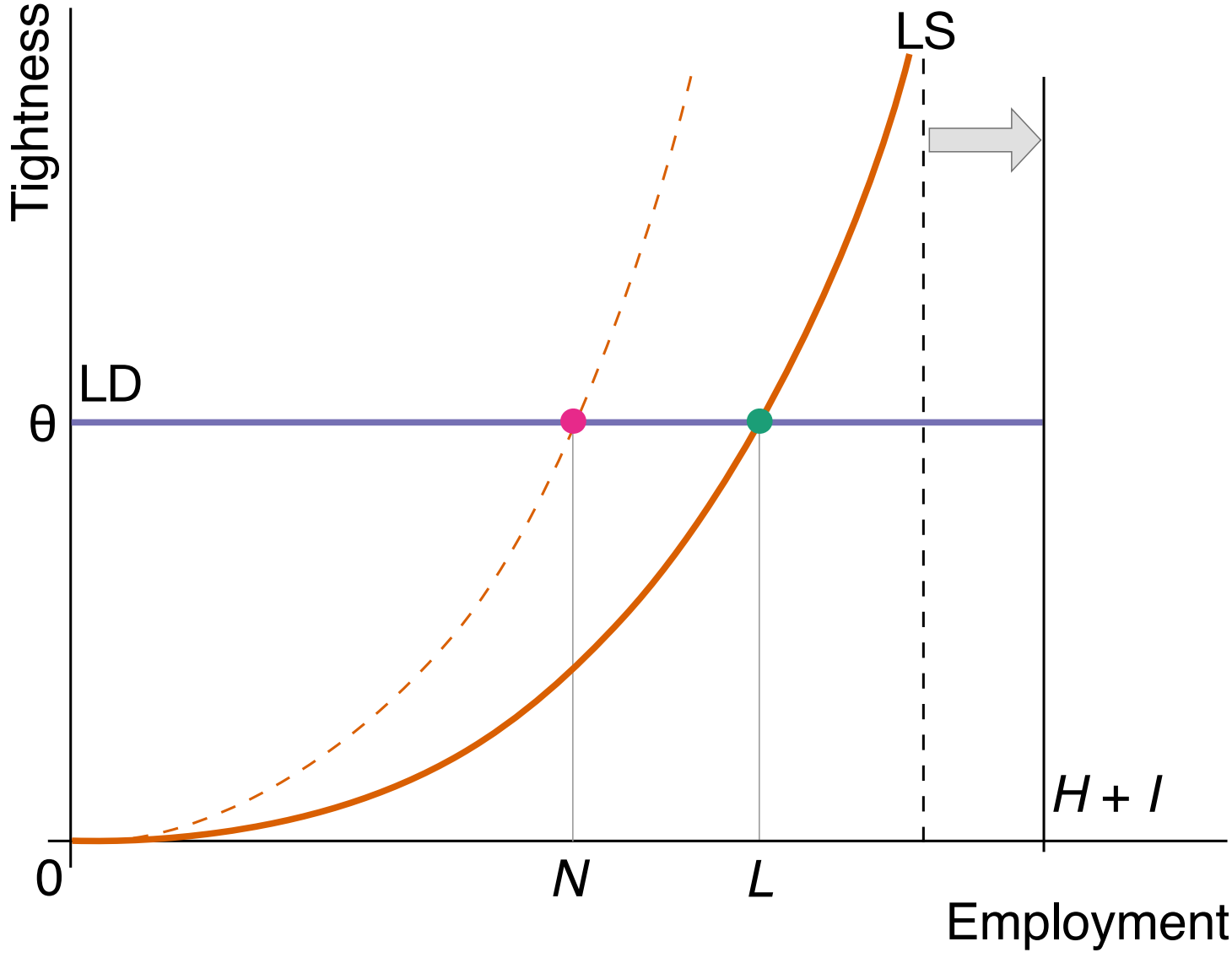


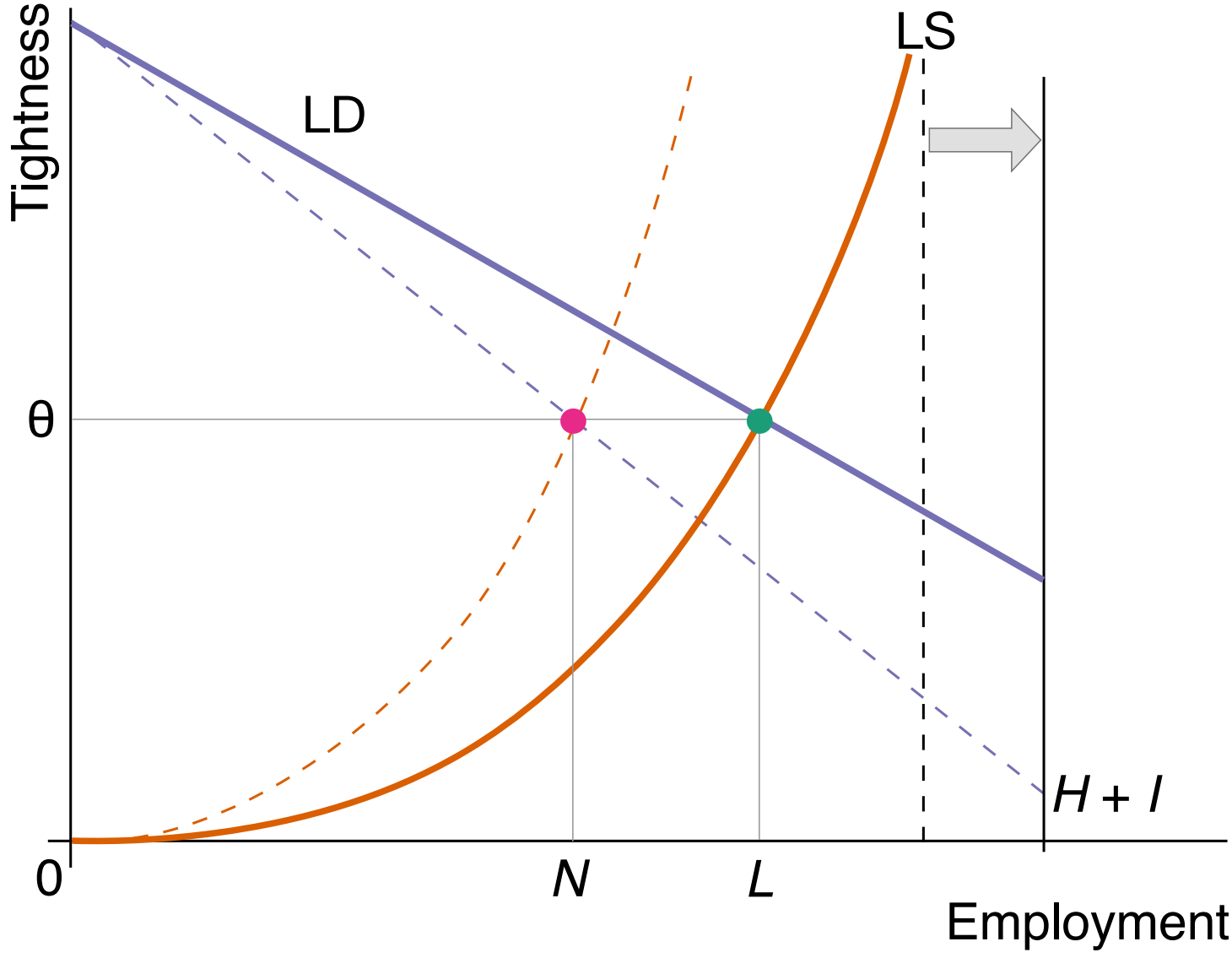
WEAKER JOB STEALING IF WAGES FALL



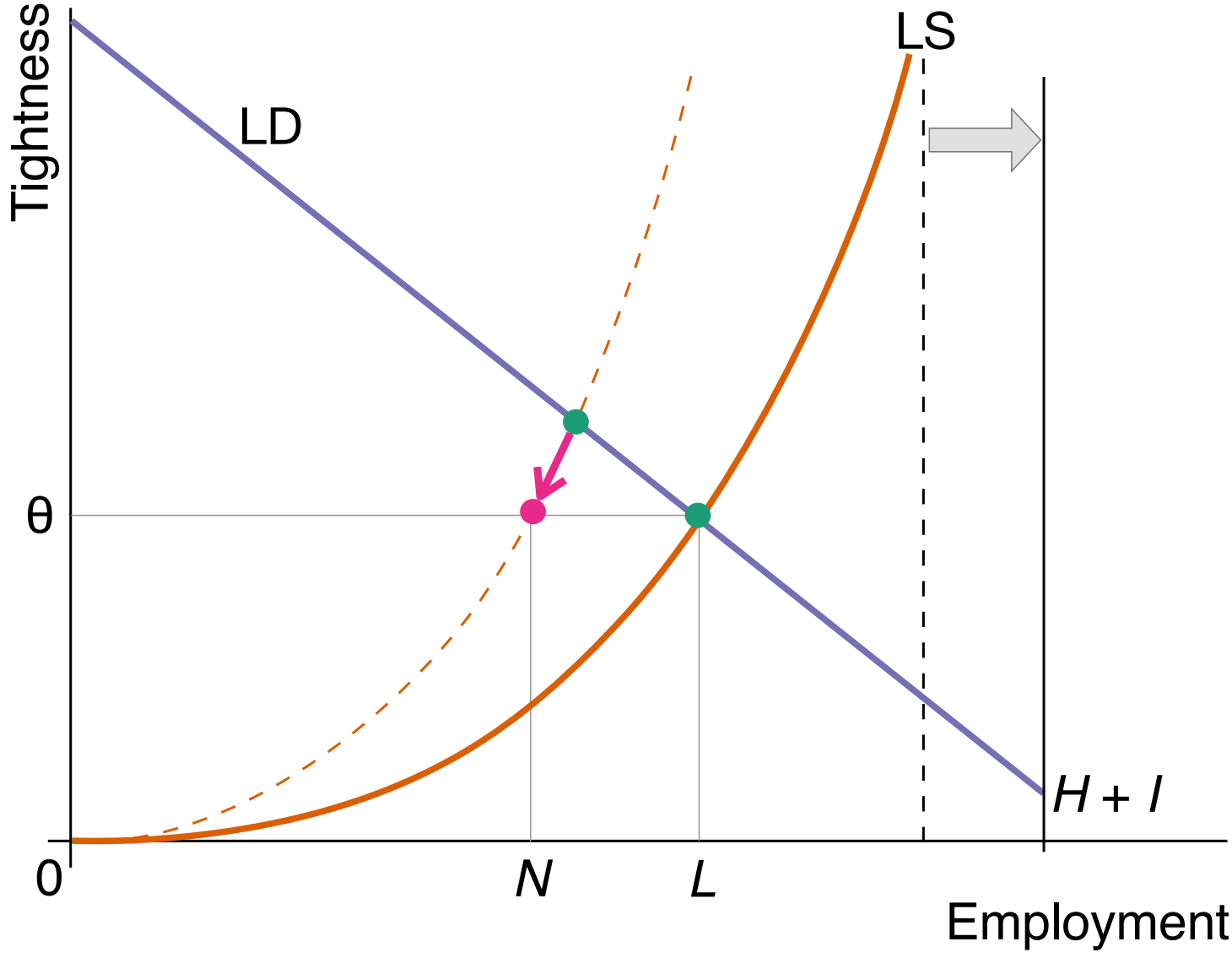
POSSIBLE EFFECTS OF IMMIGRATION: PURE CARD



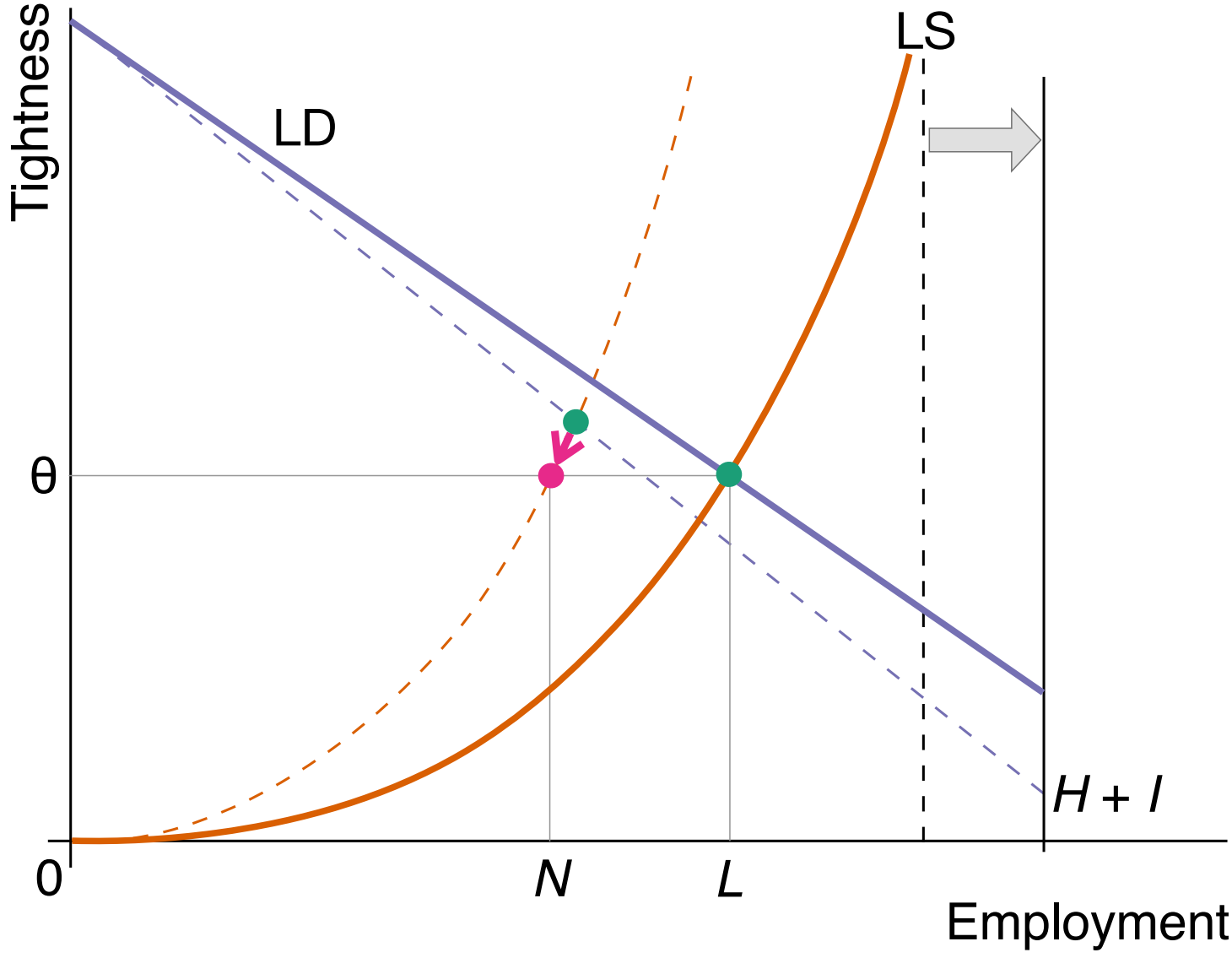
POSSIBLE EFFECTS OF IMMIGRATION: PURE BORJAS



POSSIBLE EFFECTS OF IMMIGRATION: CARD-BORJAS



POSSIBLE EFFECTS OF IMMIGRATION: GENERAL



IMMIGRATION POLICY

NATIVE WORKERS ARE GENERALLY HURT BY IMMIGRATION

- native labor income = $w \cdot N \downarrow$ with immigration
  - because $N \downarrow$ with immigration
  - and w is $\rightarrow$ with immigration
- also true if wages $\downarrow$ with immigration
  - then both $w, N \downarrow$ with immigration
- exception: pure Card scenario
  - because then $w, N \rightarrow$ with immigration
  - so native labor income $\rightarrow$ with immigration

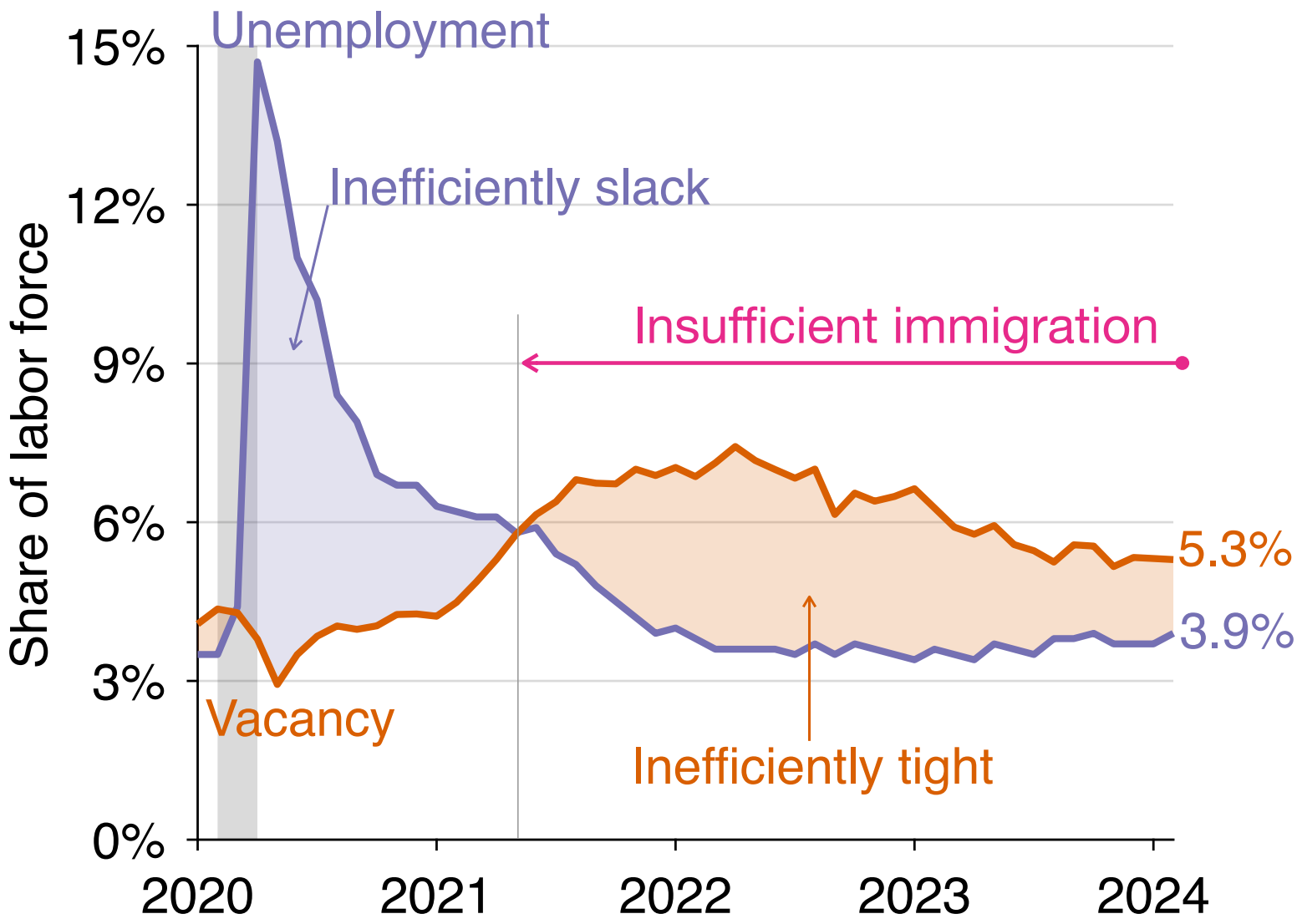
FIRM OWNERS ALWAYS BENEFIT FROM IMMIGRATION

- firm profits = $y(P) - wL$
- labor share is $\alpha \implies \alpha y(P) = wL$
- firm profits = $(1/\alpha - 1) \cdot w \cdot L \uparrow$ with immigration
  - because $L \uparrow$ with immigration
  - and w is $\rightarrow$ with immigration
- also true if wages $\downarrow$ with immigration
  - first-order condition: $w = \alpha y(P)/L = a\alpha L^{\alpha-1}[1 + \tau(\theta)]^{-\alpha}$
  - firm profits = $(1 - \alpha) \cdot a \cdot P^{\alpha} \uparrow$ with immigration
- also true in pure Card scenario
  - since $L \uparrow$ with immigration

IMMIGRATION AS STABILIZATION POLICY

- in model with job stealing, immigration should be procyclical
- immigration improves native welfare in inefficiently tight labor market
  - by reducing tightness, immigration raises firm profits more than it lowers native labor income
- to maximize native welfare, immigration should lower tightness until labor market is inefficiently slack
- immigration might complement monetary policy
  - monetary policy takes 12–18 months to affect tightness

LACK OF IMMIGRATION AFTER CORONAVIRUS PANDEMIC

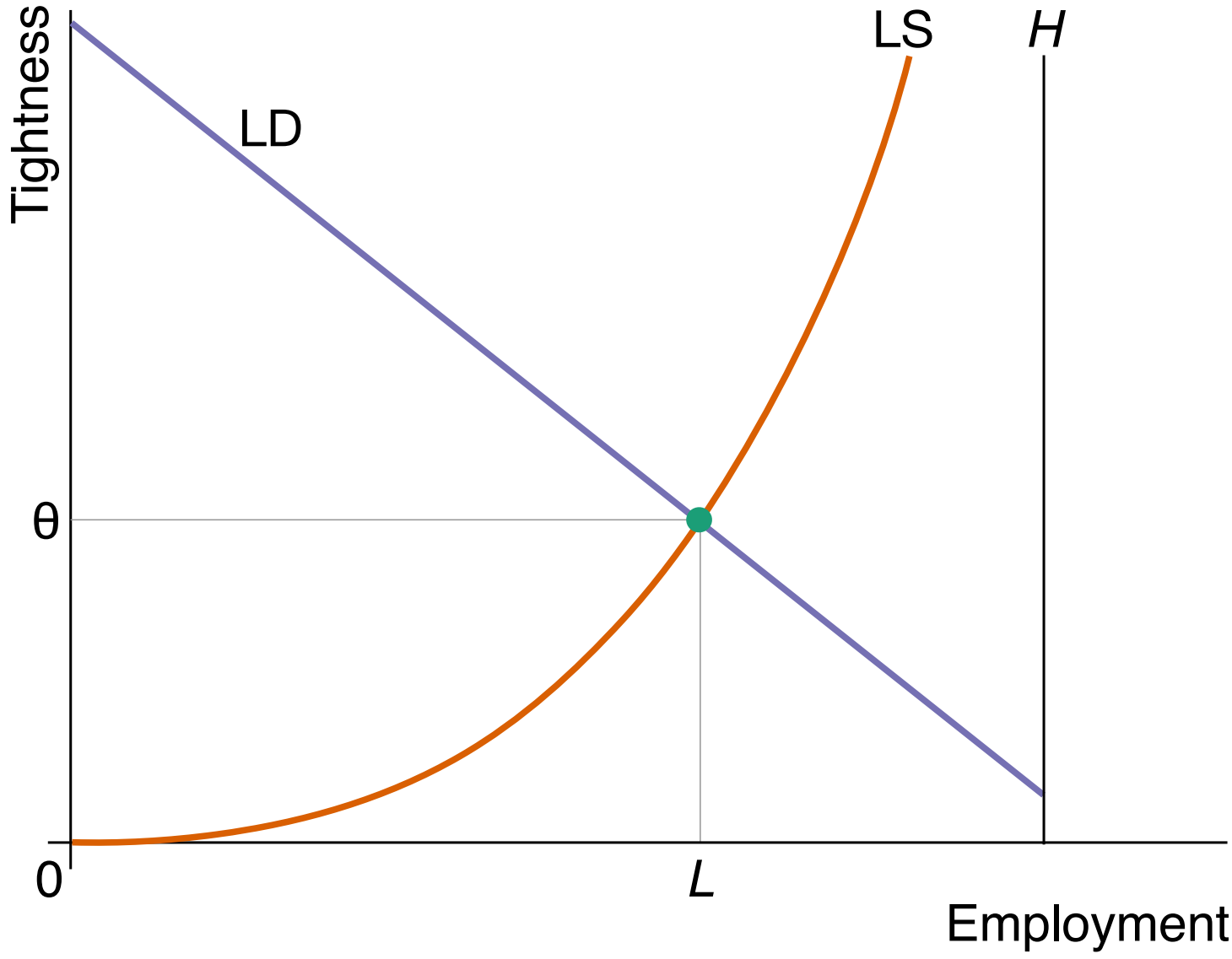


SOME POLITICAL PREDICTIONS

- populist regimes oppose immigration, especially in bad times
  - aim to maximize labor income, which is reduced by immigration
  - elasticity of employment wrt labor force is more negative in bad times
- capitalist regimes support immigration
  - aim to maximize profits, which are improved by immigration
- socialist regimes conditionally support immigration
  - workers own firms, so aim to maximize total income
  - ⇝ support when labor market is inefficiently tight
  - ⇝ opposition when labor market is inefficiently slack

OTHER LABOR SUPPLY SHOCKS

PARTICIPATION ↓ ⟹ LABOR MARKET TIGHTNESS ↓



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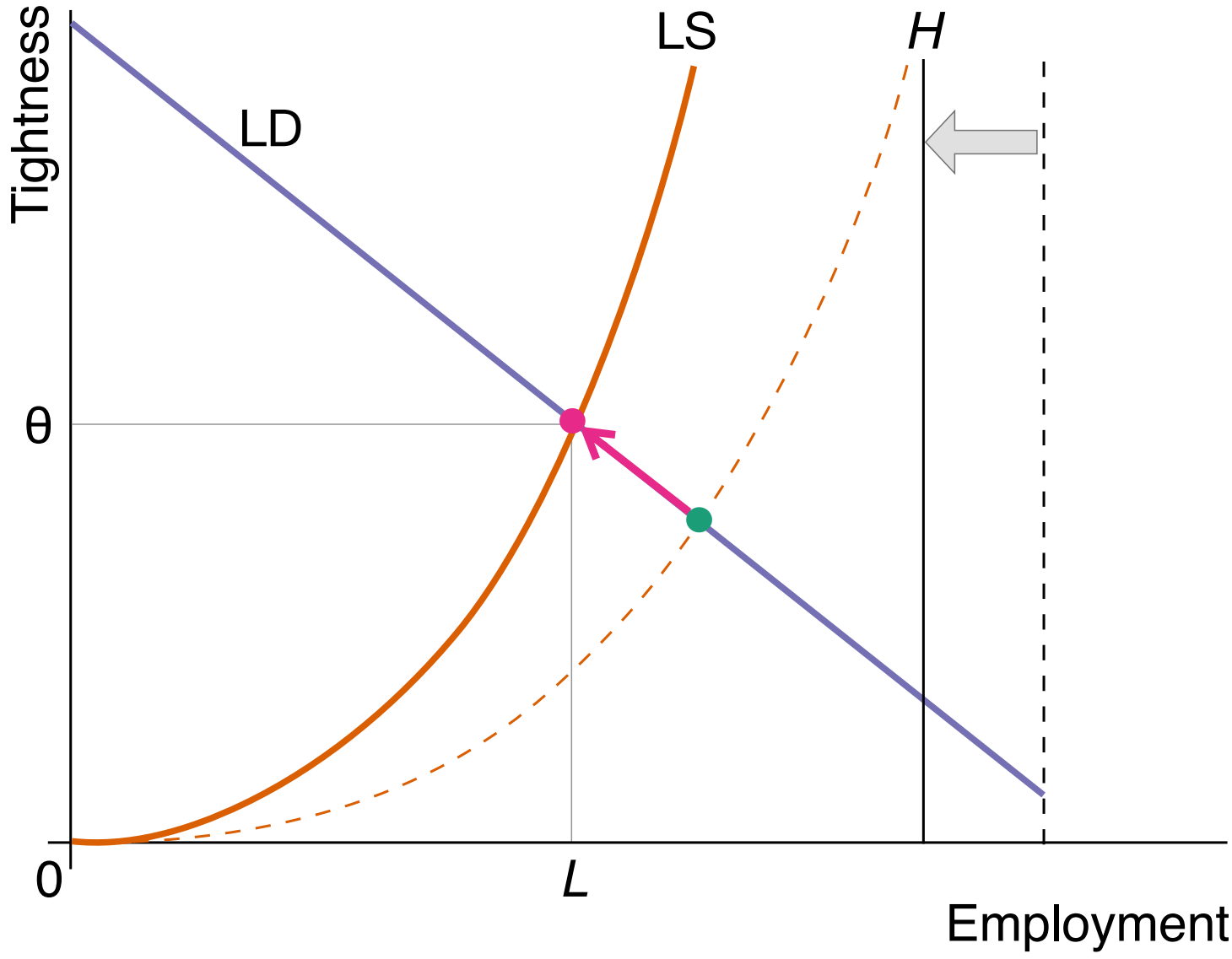
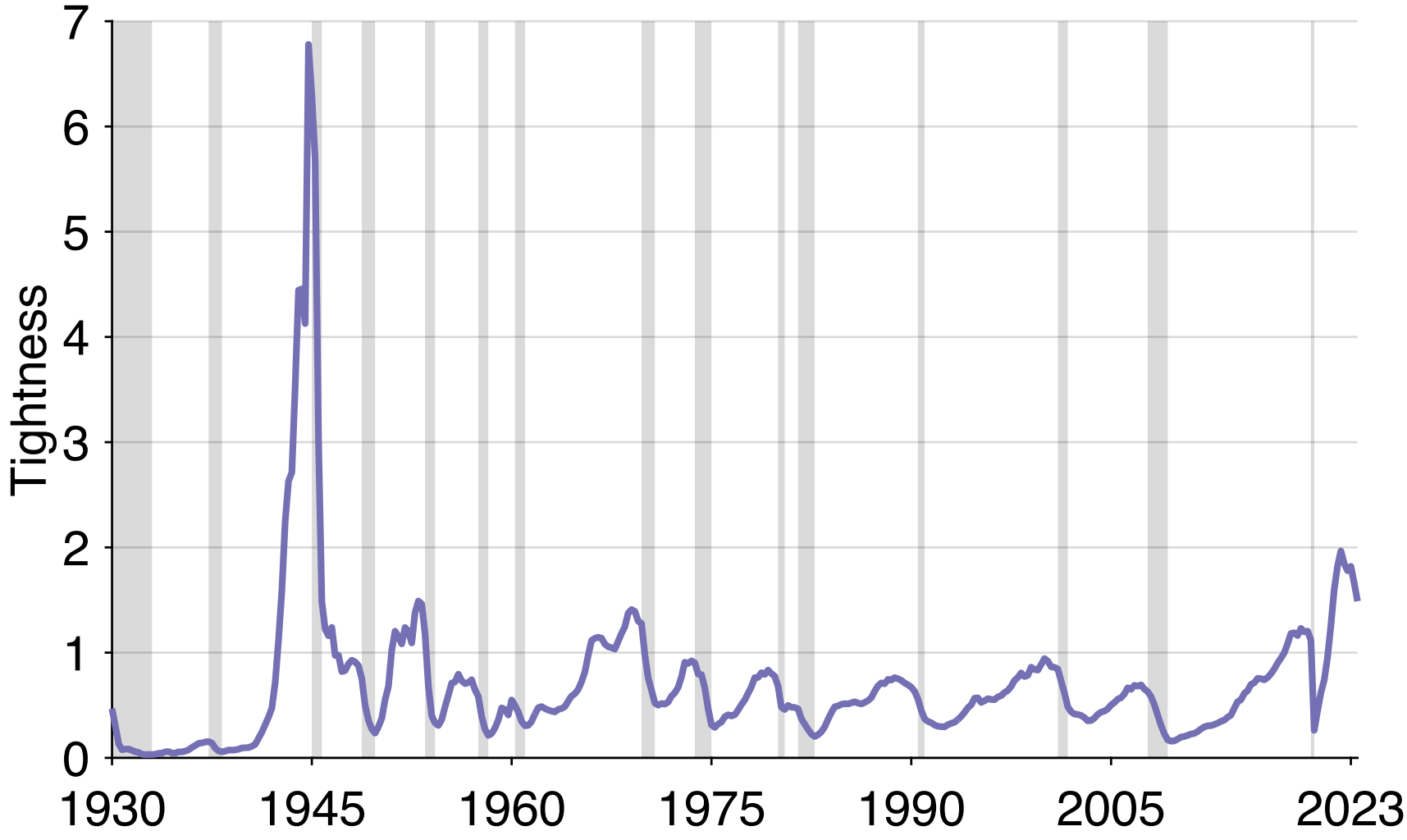


LOW PARTICIPATION COINCIDES WITH INEFFICIENTLY TIGHT ECONOMY



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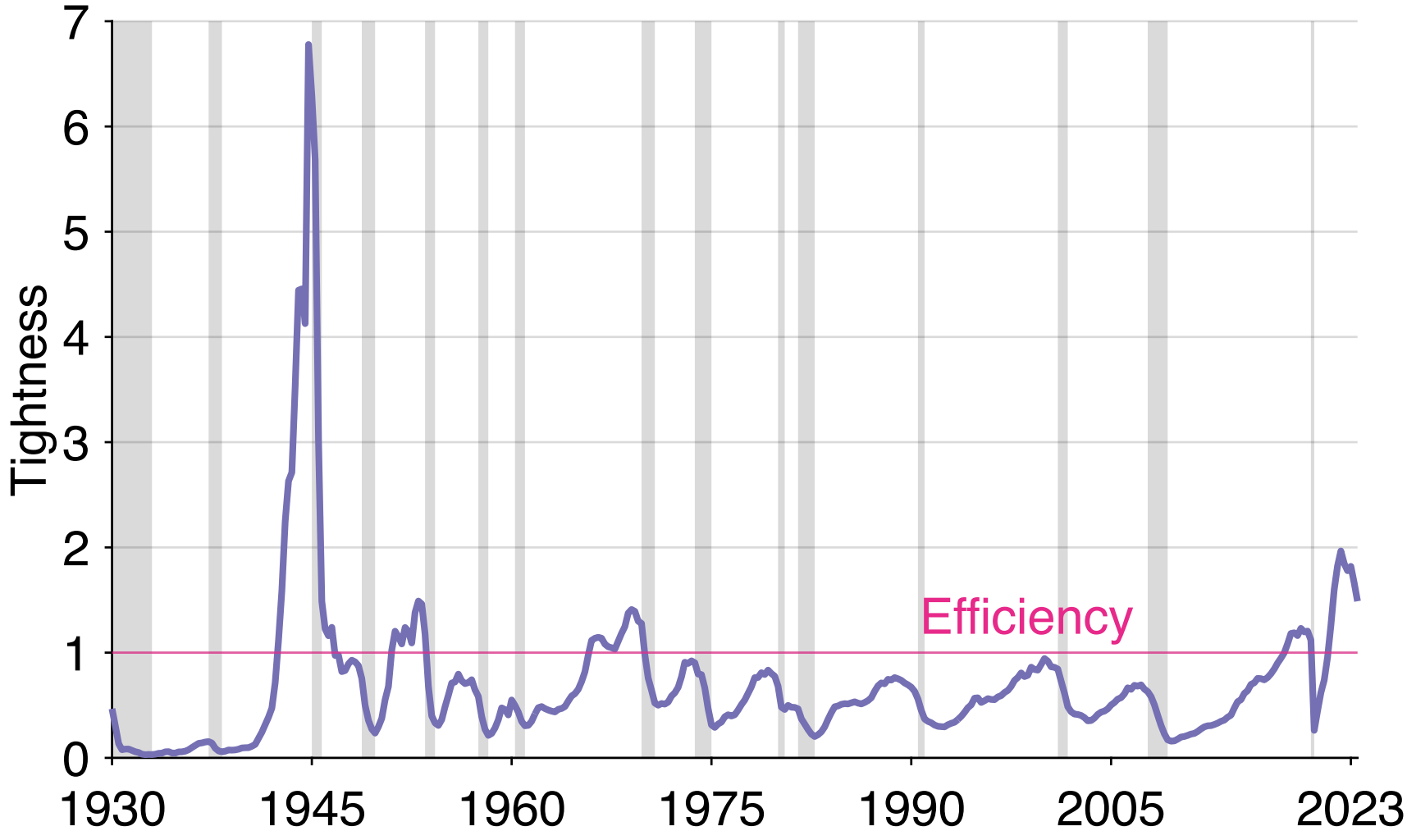

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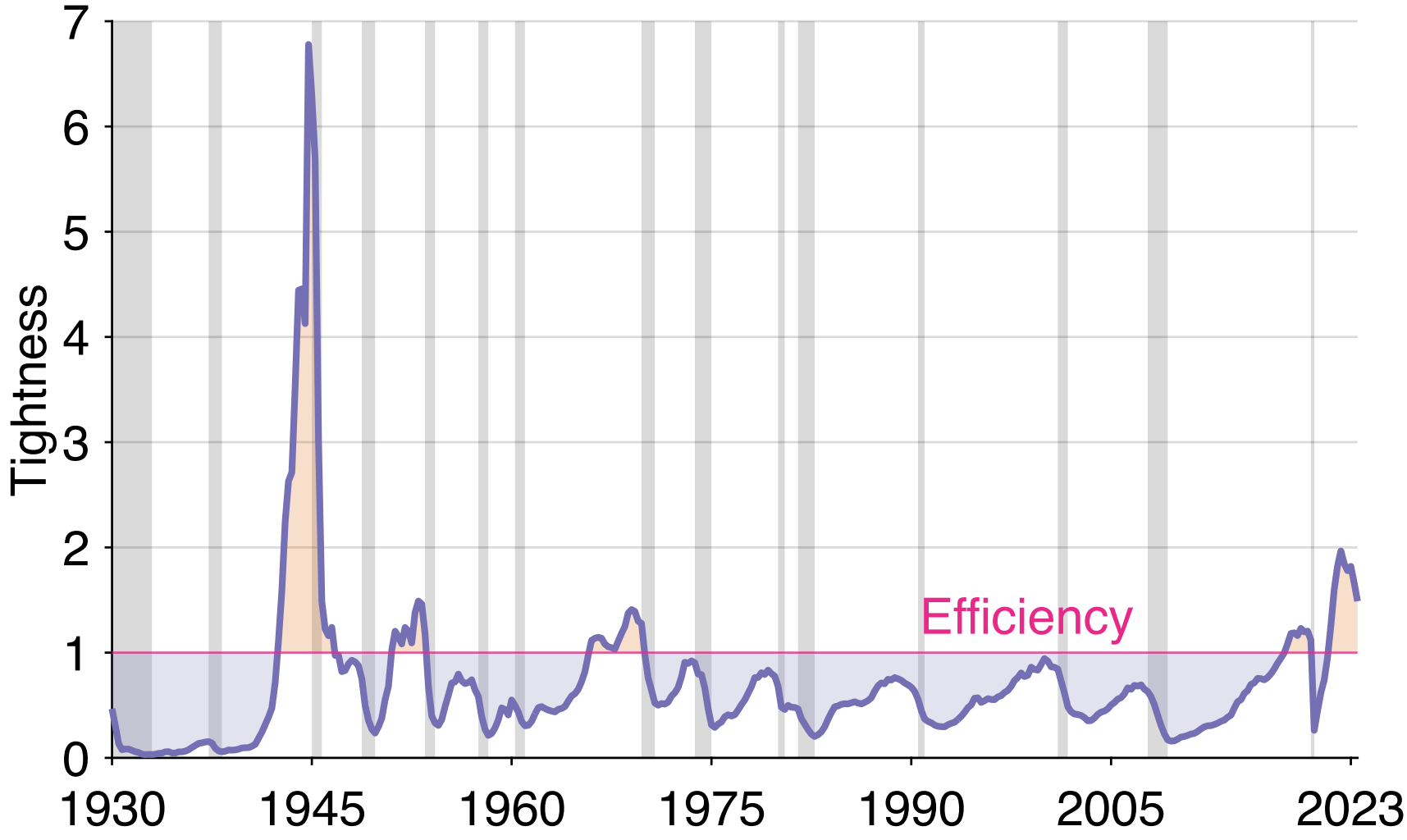

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