MODELING JOB STEALING

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JOB STEALING IS EVERYWHERE BUT IN EXISTING MODELS

- in popular perceptions & political discourse:
  - people are worried that immigrants might steal their jobs
- in international/return/domestic migration experiments:
  - arrival of new workers raises unemployment rate of incumbents
- 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

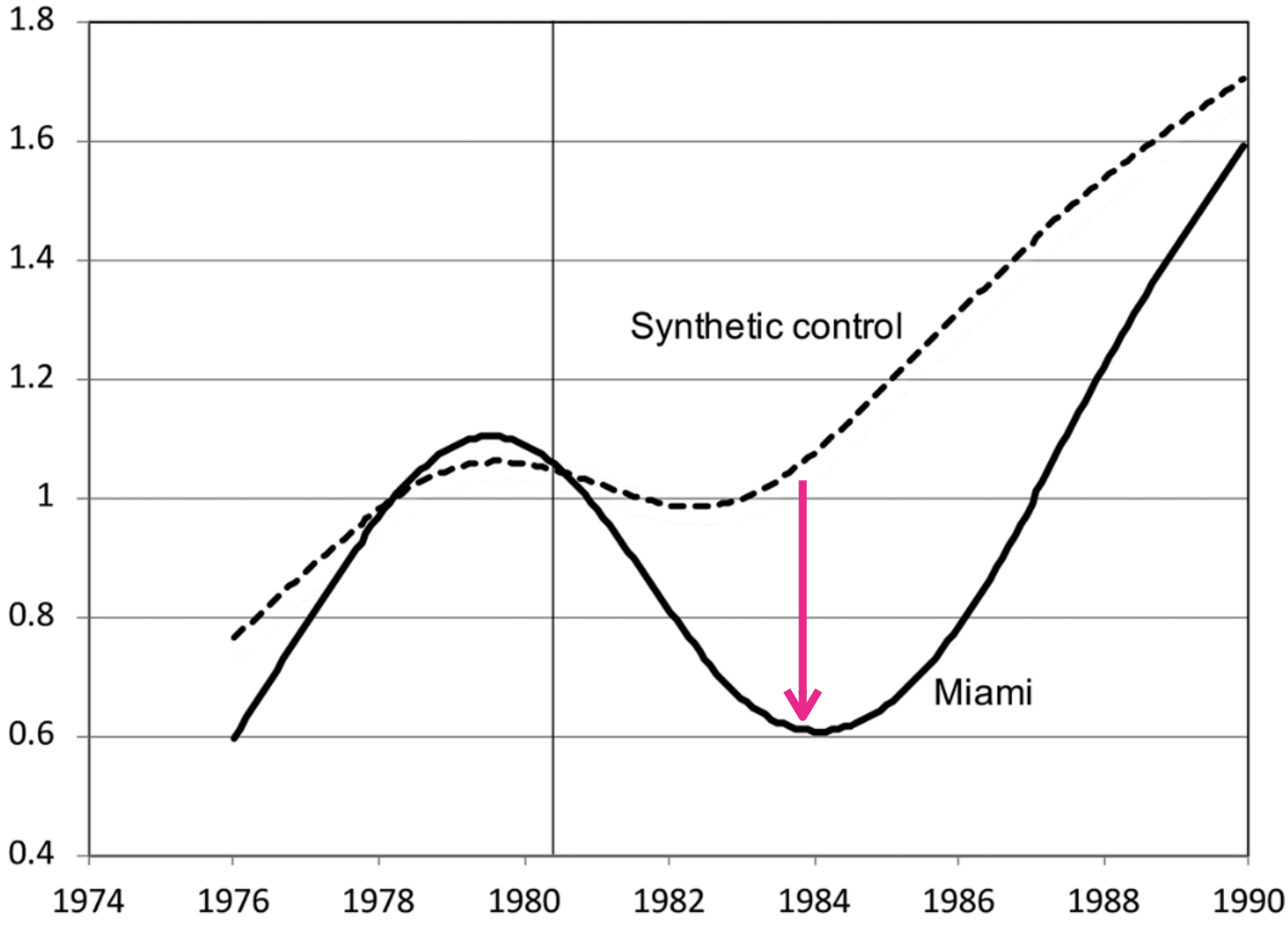
- based on matching model from Michaillat (2012)
- richer description of immigration effects:
  - effect on labor market tightness & unemployment
  - resolve the Borjas-Card controversy
- richer understanding of immigration policy:
  - optimal policy responds to business-cycle conditions
  - actual policy depends on political system: populist, capitalist, …
- application to other labor-supply shocks:
  - wartime mobilization
  - coronavirus pandemic

EVIDENCE OF JOB STEALING

CAN IMMIGRATION NEGATIVELY AFFECT NATIVE WORKERS?

- “One of the central questions in the debate over immigration policy is whether immigrants adversely affect labor market outcomes for natives. Some Americans believe they do, worrying that immigrants take jobs away from native workers. Most of the empirical evidence produced by economists, however, does not support these concerns.”
- source: Federman, Harrington, Krinsky (2006)

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



JOB STEALING IS COMMON 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)

- 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 newcomers 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)

JOB STEALING IS ALSO PREVALENT IN POPULAR PERCEPTIONS AND POLITICAL DISCOURSE

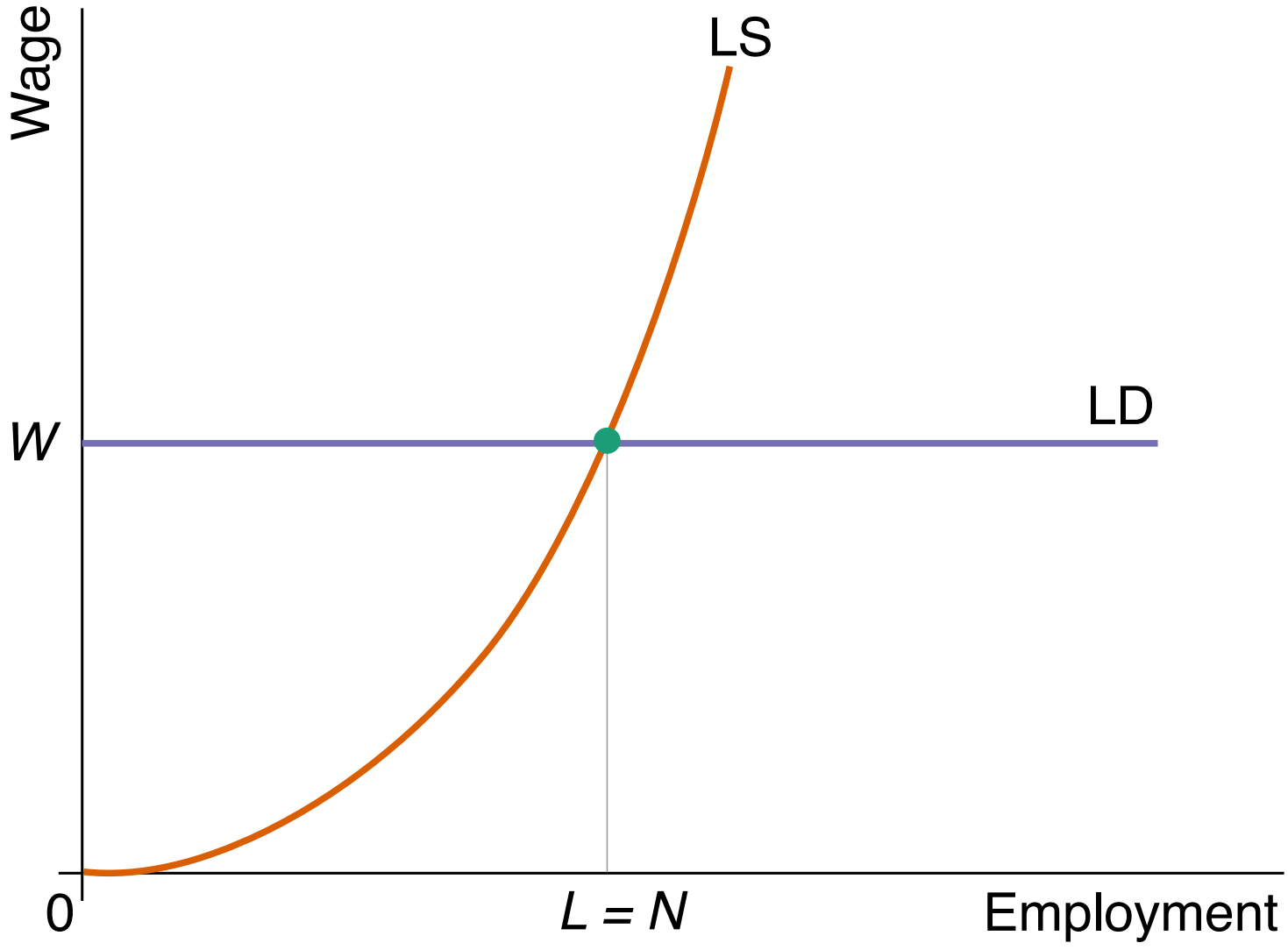
- immigration is always one of voters' chief concerns
  - build the wall!
- job stealing is central to the immigration debate
  - Sessions (2017): "DACA denied jobs to hundreds of thousands of Americans by allowing those illegal aliens to take those jobs."
- job stealing was a key concern during the Mariel boatlift (Card 1990)
  - "A 3-day riot occurred in several black neighborhoods, killing 13. A government-sponsored committee cited the labor market competition of Cuban refugees as an important factor."

AND THERE MIGHT BE MUCH MORE EVIDENCE OUT THERE!

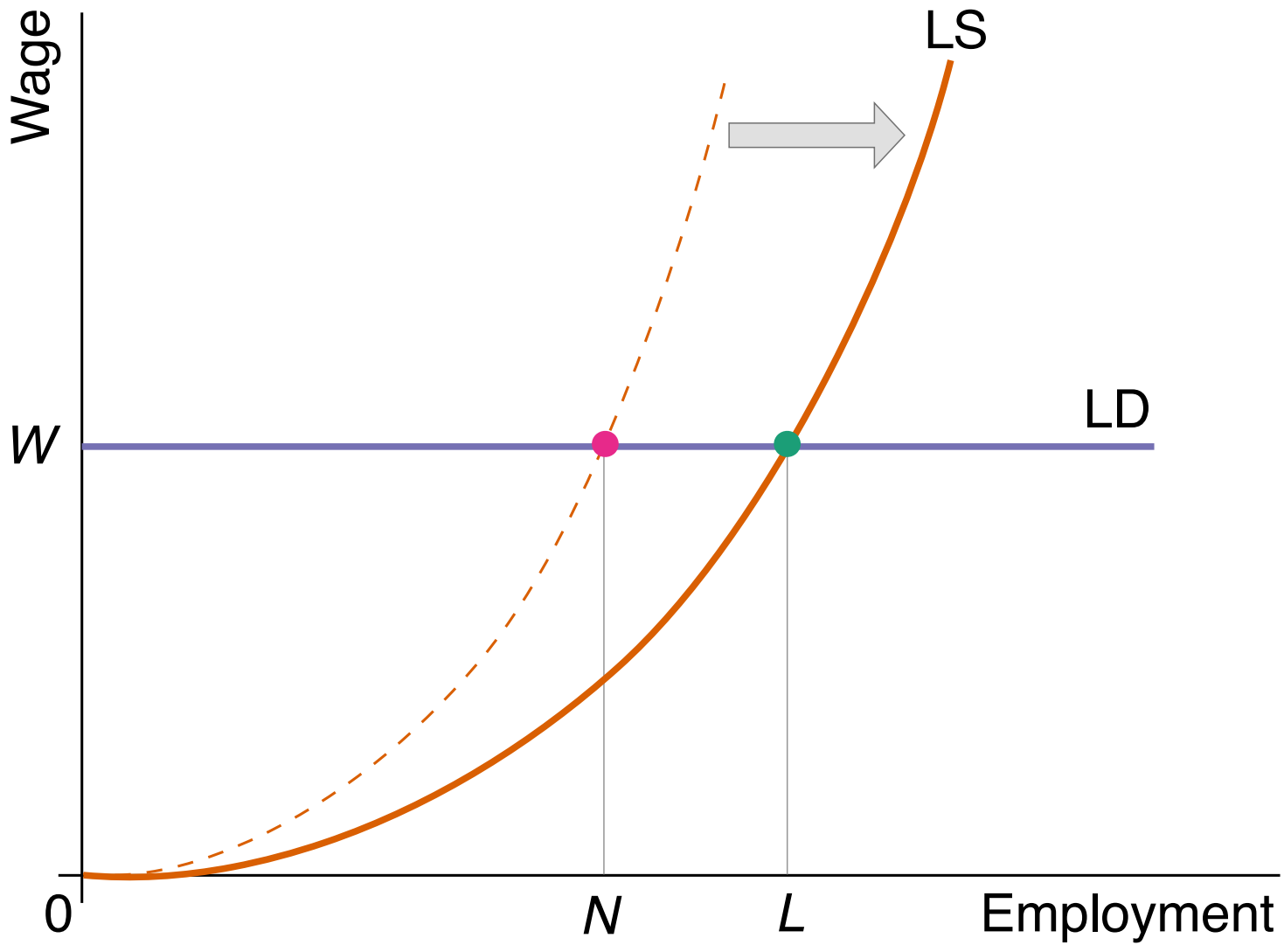
- “The 1992 National Election Studies survey asked other questions about immigration that we do not analyze. For example, respondents were asked whether they think Asians or Hispanics ‘take jobs away from people already here.’ We do not focus on this question because its responses cannot clearly distinguish 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)

ABSENCE OF JOB STEALING IN EXISTING MODELS

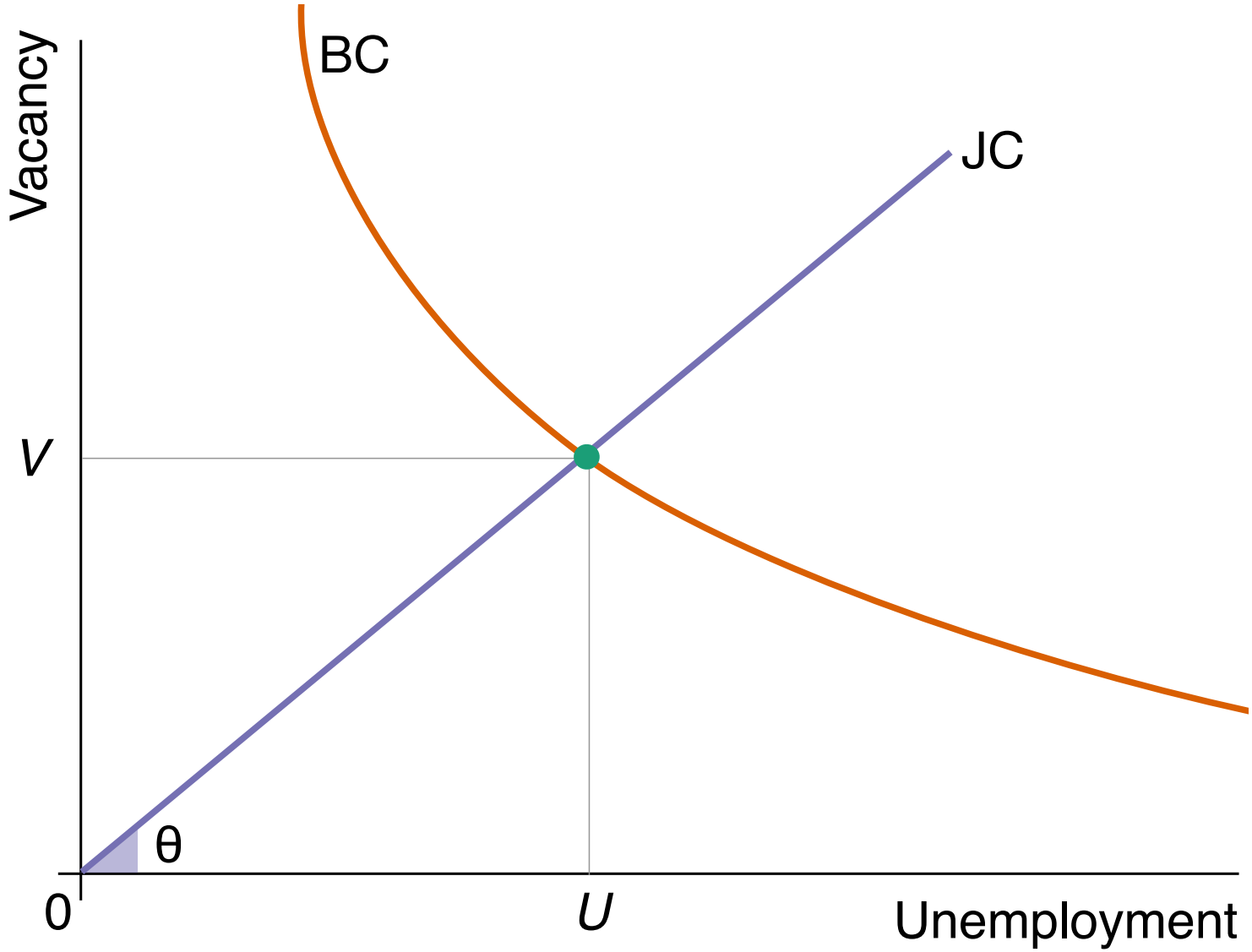
NO JOB STEALING IN CARD MODEL



NO JOB STEALING IN CARD MODEL



NO JOB STEALING IN DMP MODEL



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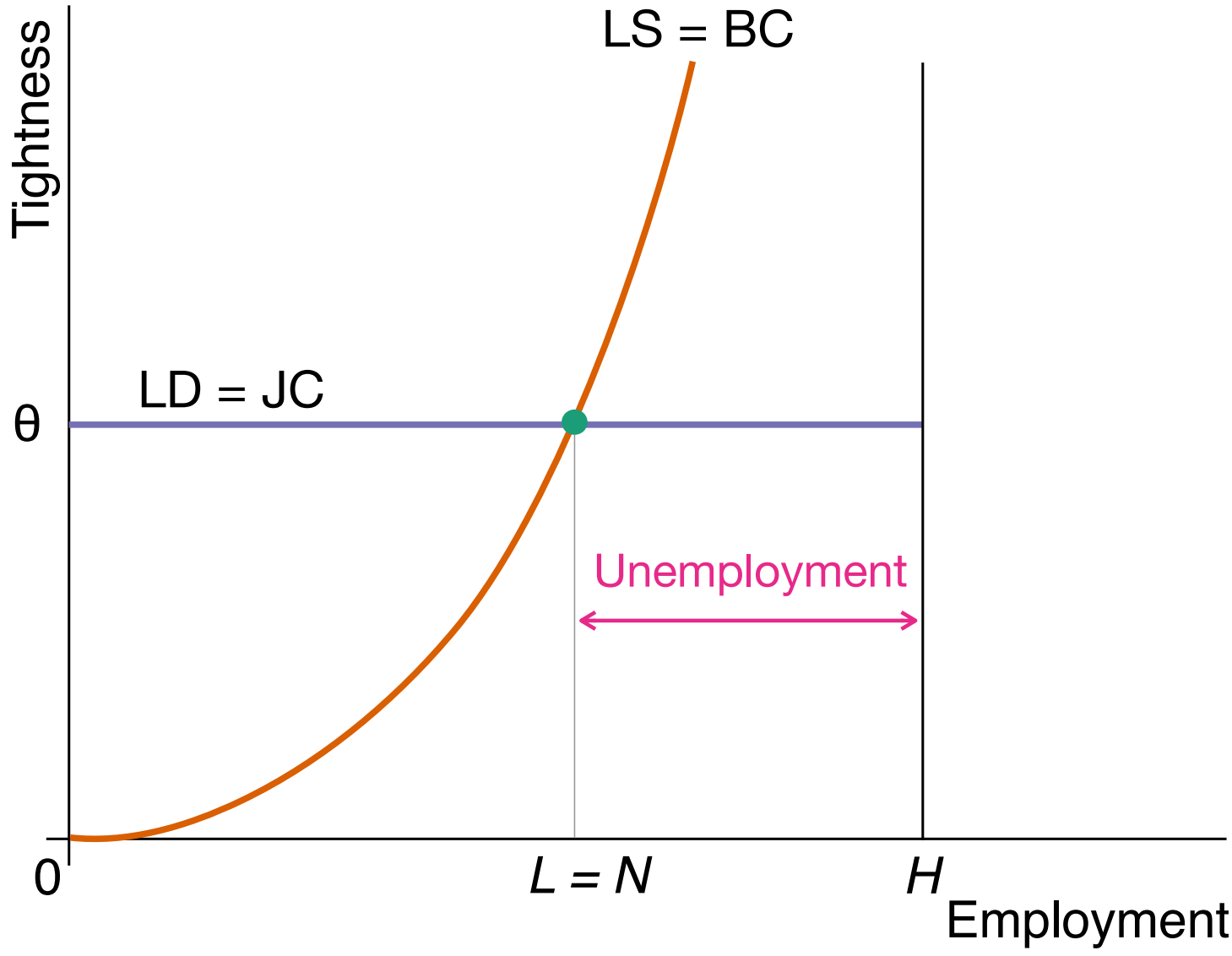

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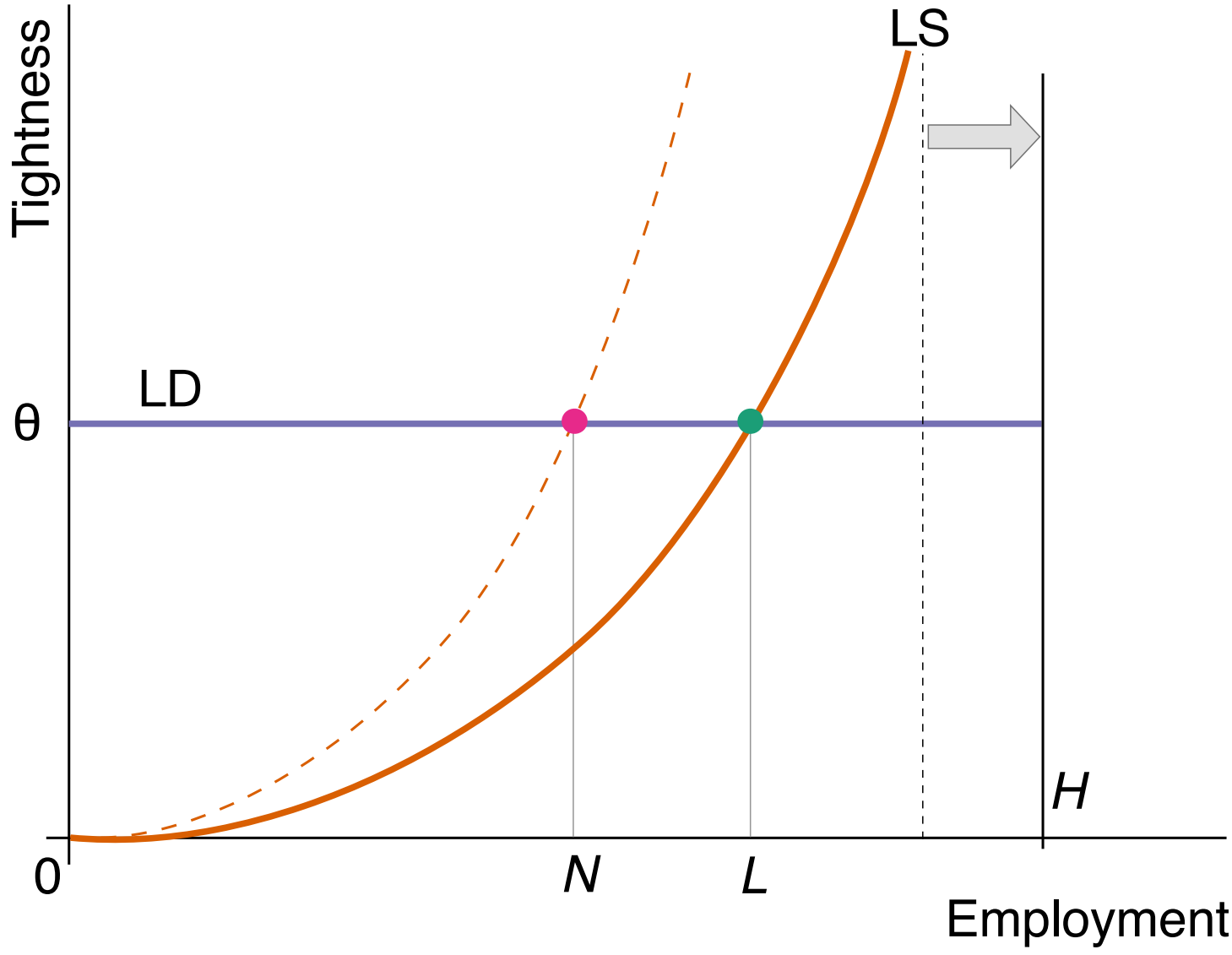
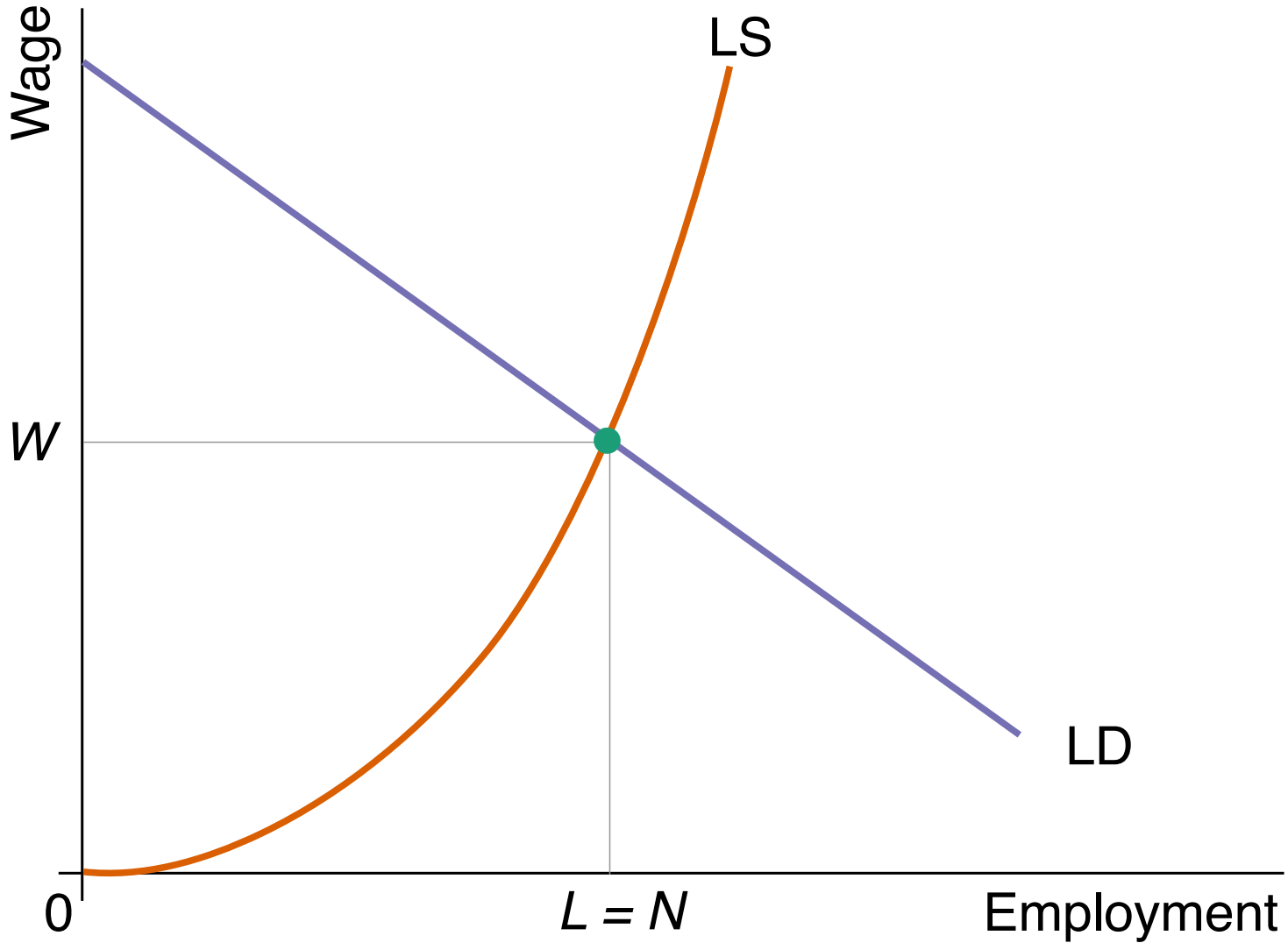


NO JOB STEALING IN BORJAS MODEL



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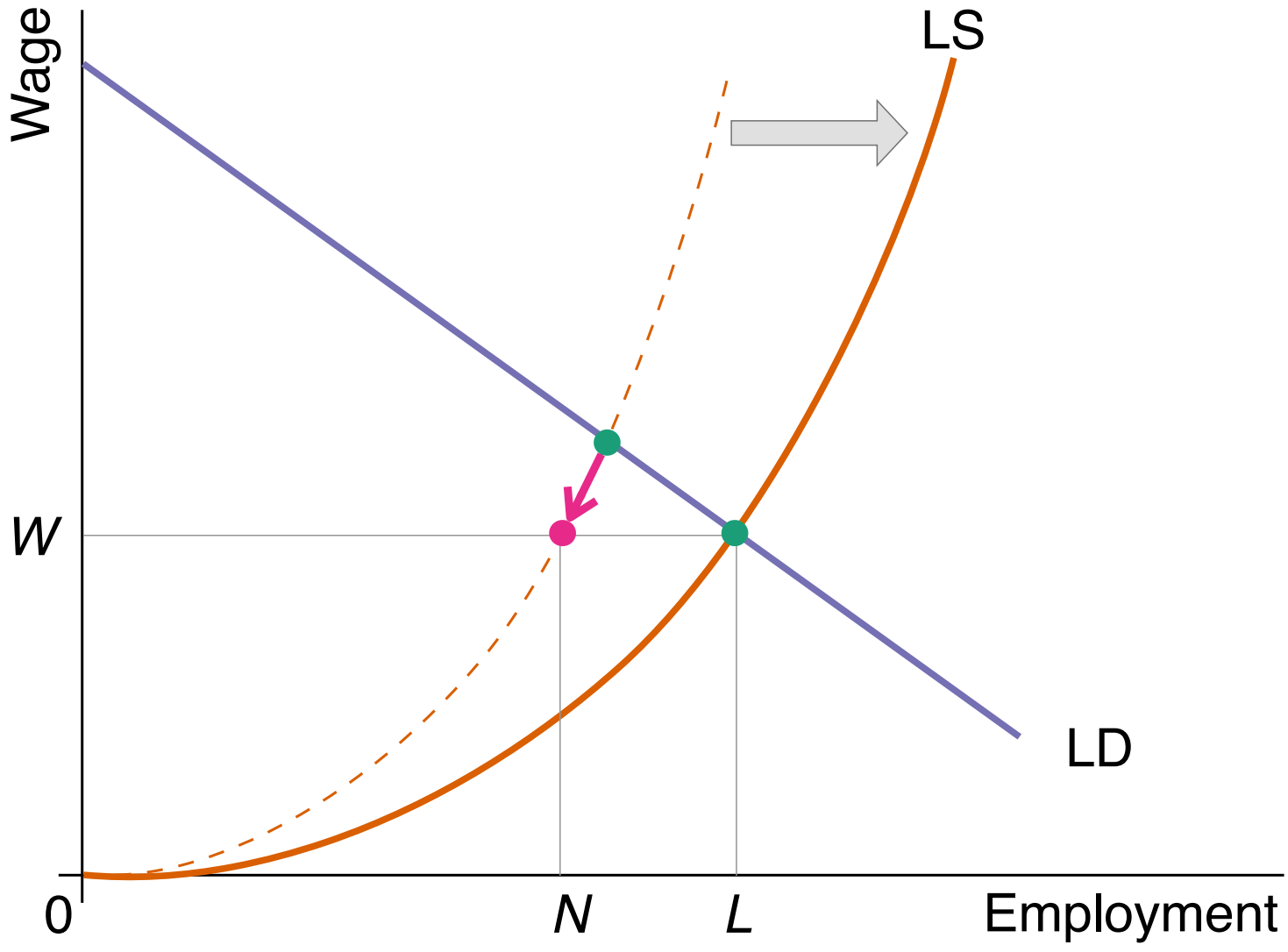


DESCRIPTION OF THE MODEL WITH JOB STEALING

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
  - production sold on Walrasian product market
- 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, employment is critical point

$\rightsquigarrow$ # 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:

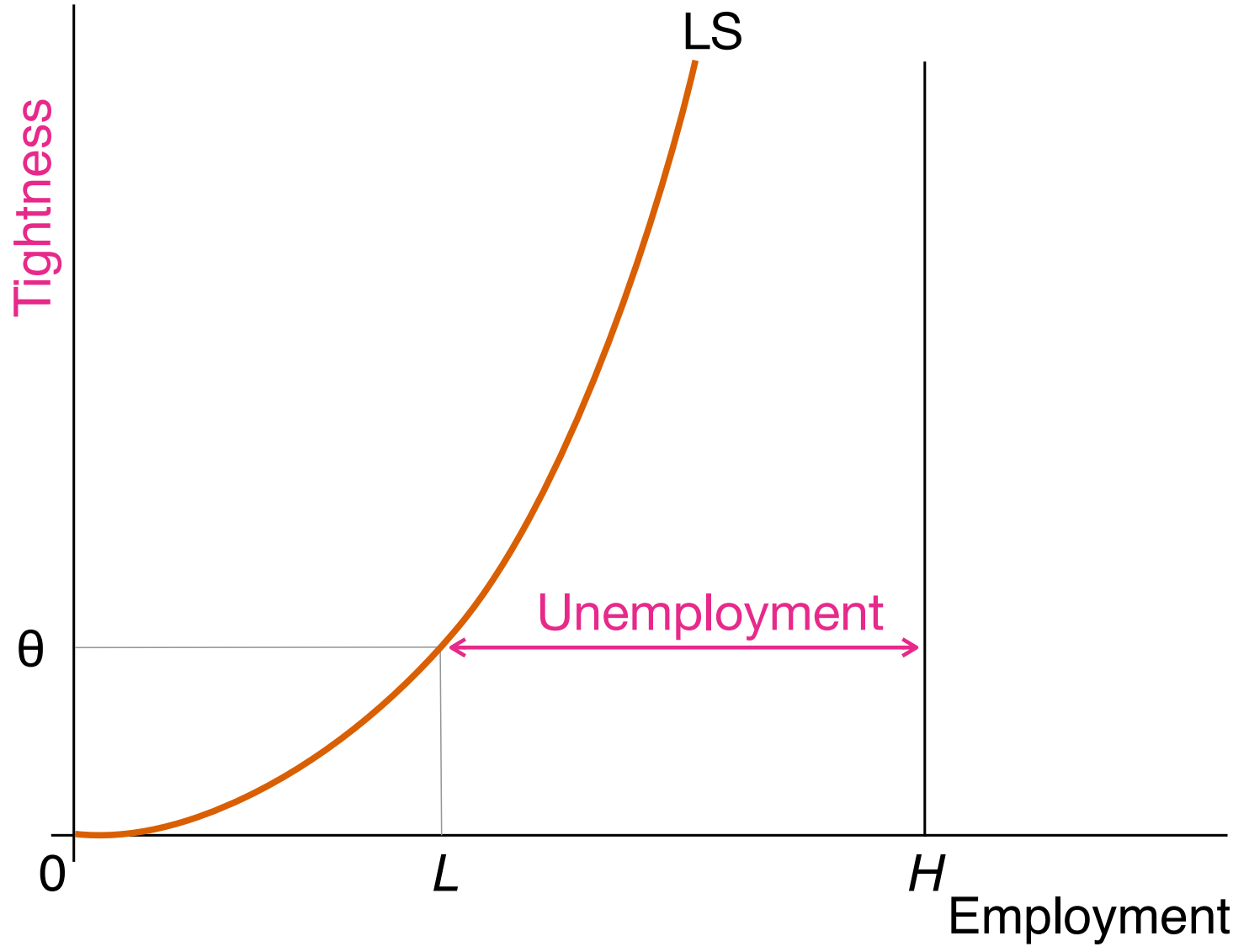
$$L^S(\theta, H) = \frac{f(\theta)}{s + f(\theta)} \cdot H$$

- $L^S(0, H) = 0$, $\partial L^S / \partial \theta > 0$, $\lim_{\theta \to \infty} L^S = H$
- 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:

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

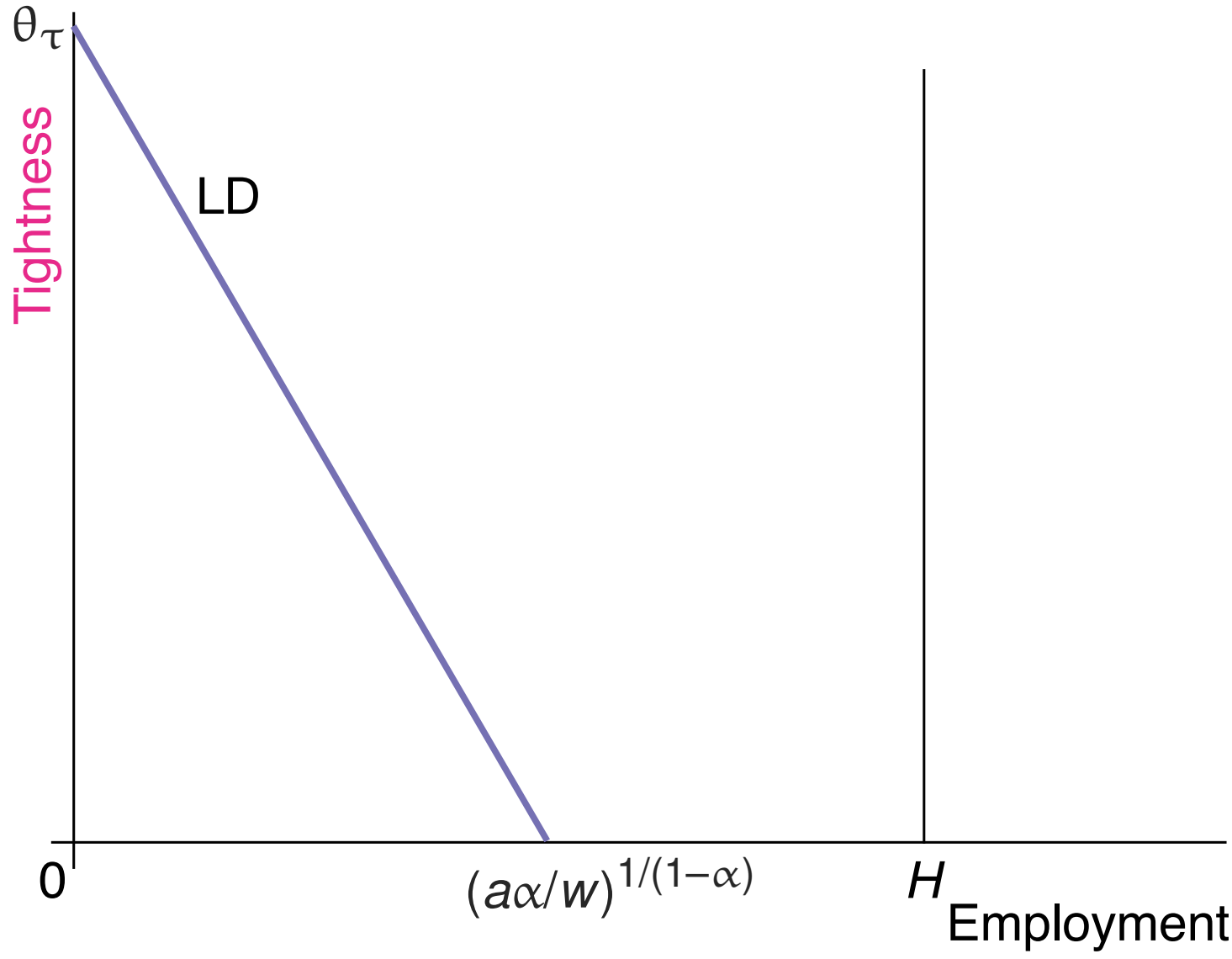
LABOR DEMAND

- labor demand = firm's desired employment level:

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

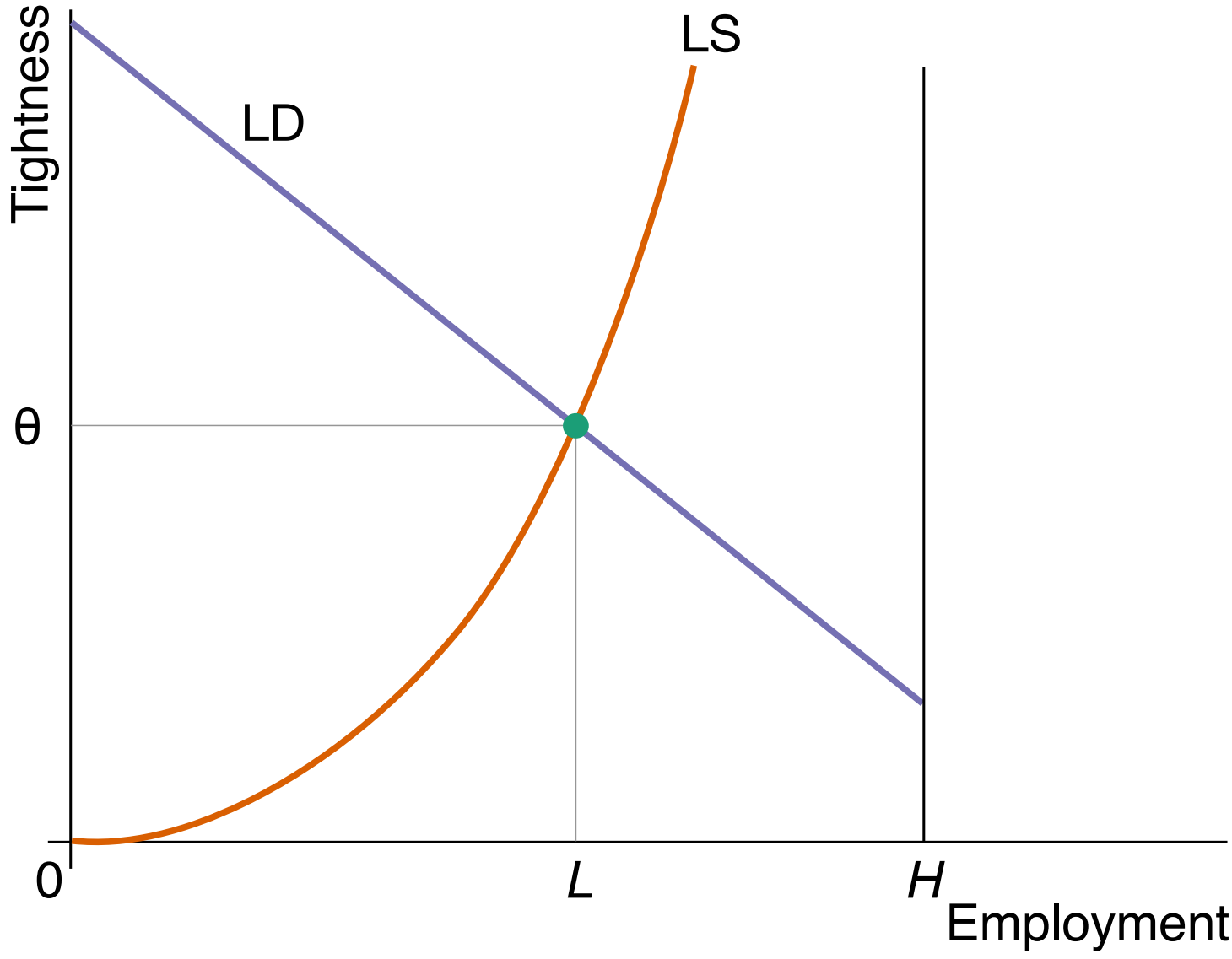
- $L^d(0, a) = (a \cdot \alpha / w)^{\frac{1}{1-\alpha}}$, $\partial L^d / \partial \theta < 0$, $\partial L^d / \partial a > 0$, $L^d(\theta_\tau, a) = 0$
- firm hires natives & immigrants alike (Martins, Piracha, Varejao 2018)

LABOR DEMAND



SOLUTION OF THE MODEL

SOLUTION: LABOR SUPPLY = LABOR DEMAND



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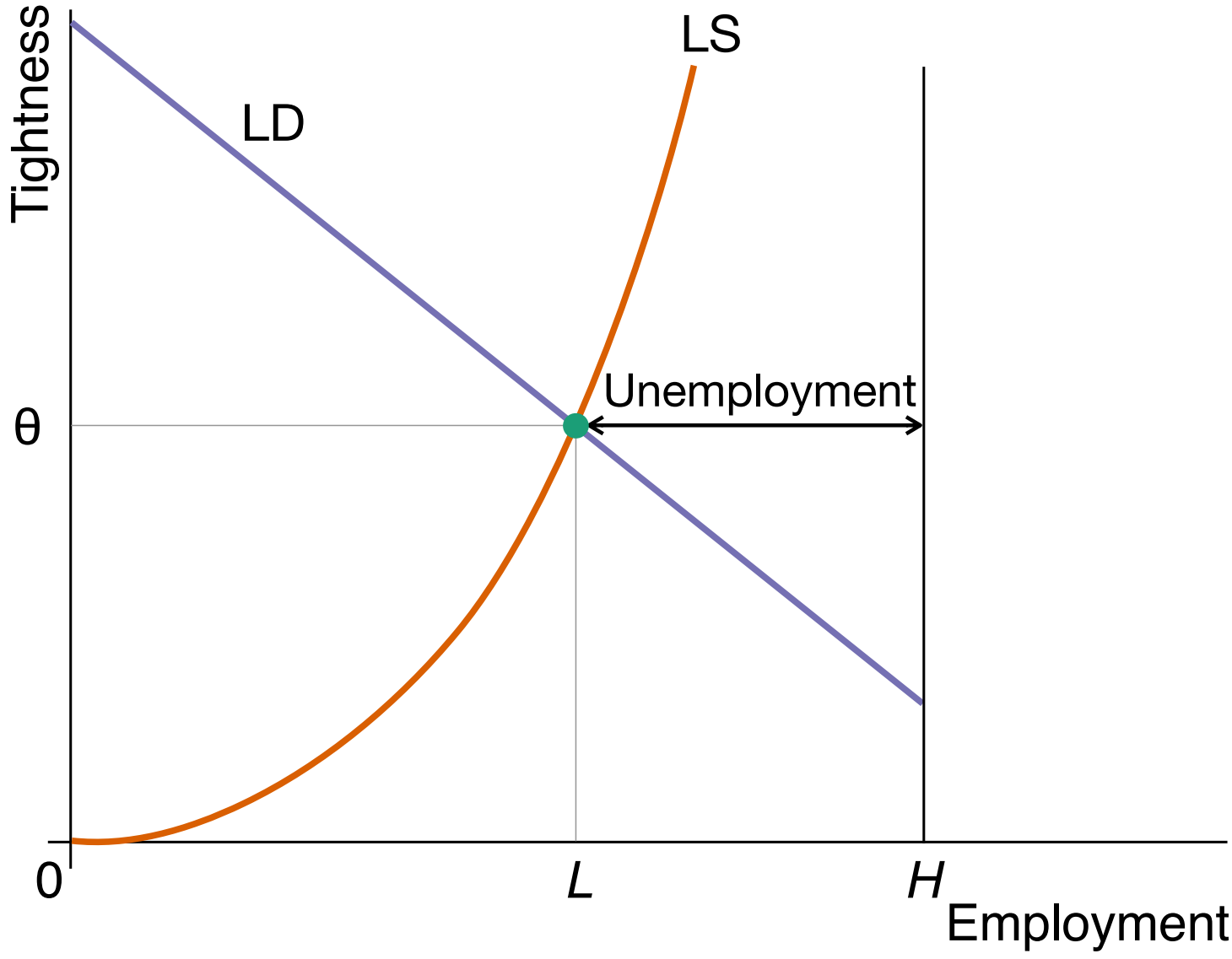
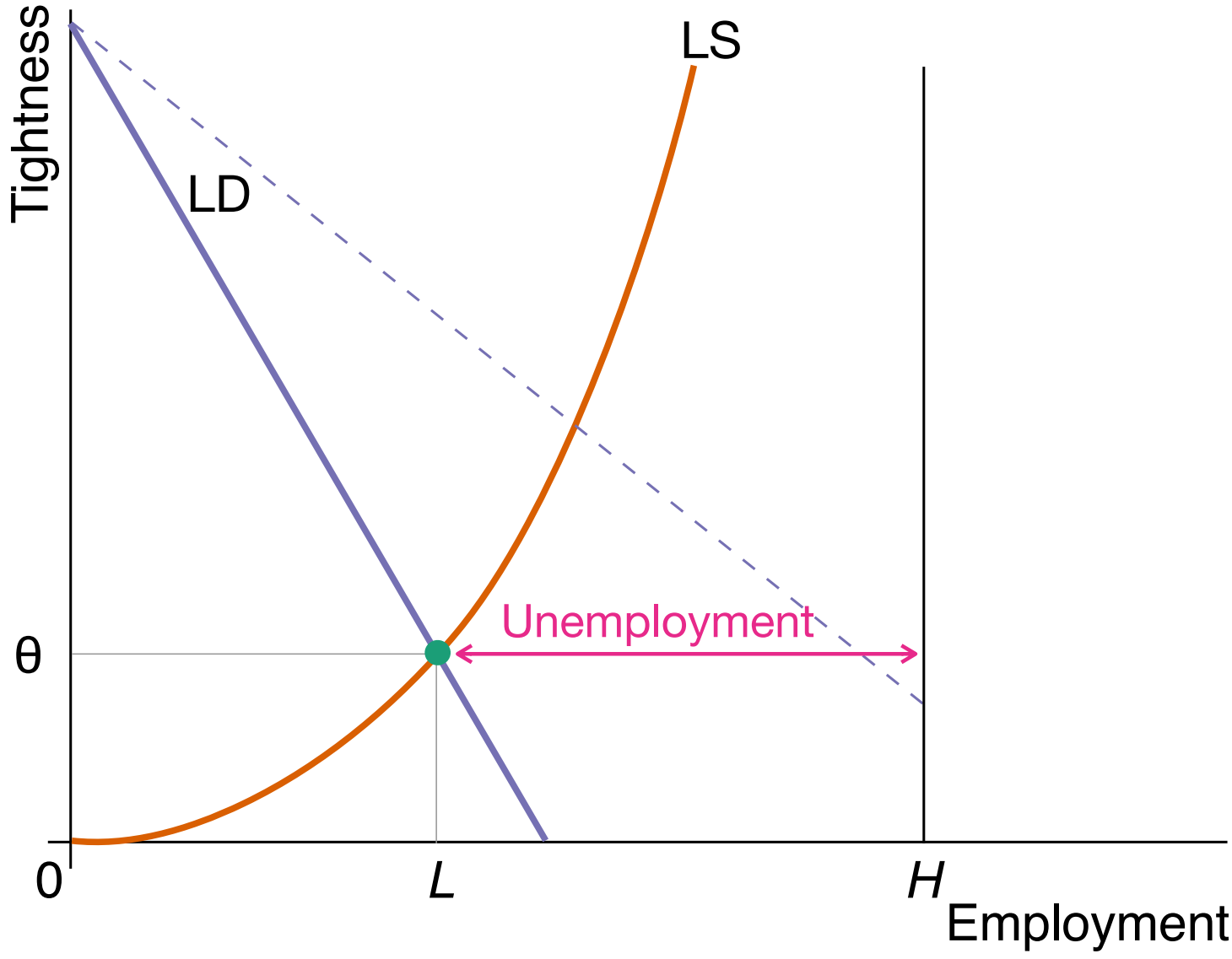


BAD TIMES: LOW LABOR DEMAND

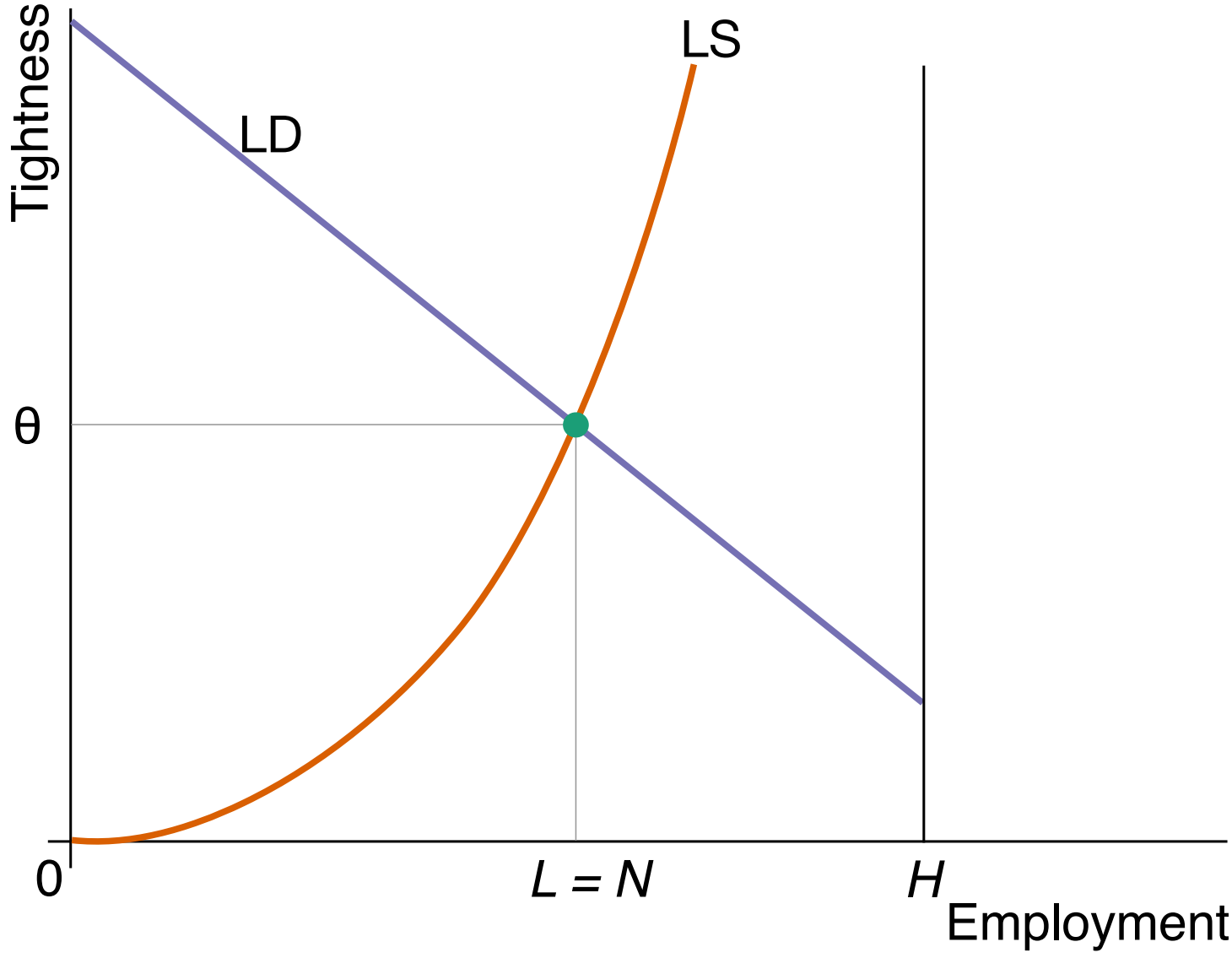


EFFECTS OF AN IMMIGRATION WAVE

IMMIGRATION SHOCK

- increase in the labor force from H to $H + I > H$
  - I immigrants are similar to native workers
- workforce L now has N native workers and $L - N$ immigrants
- in the future: slackish product market (Michaillat, Saez 2015)
  - immigrants consume so might affect aggregate & labor demand
  - conjecture: same results if immigrants have no wealth
  - conjecture: results attenuated if immigrants have some wealth
  - Cameron (2013): restrictions “until your wealth is similar to our wealth”

JOB STEALING: JOB-FINDING RATE OF NATIVES ↓



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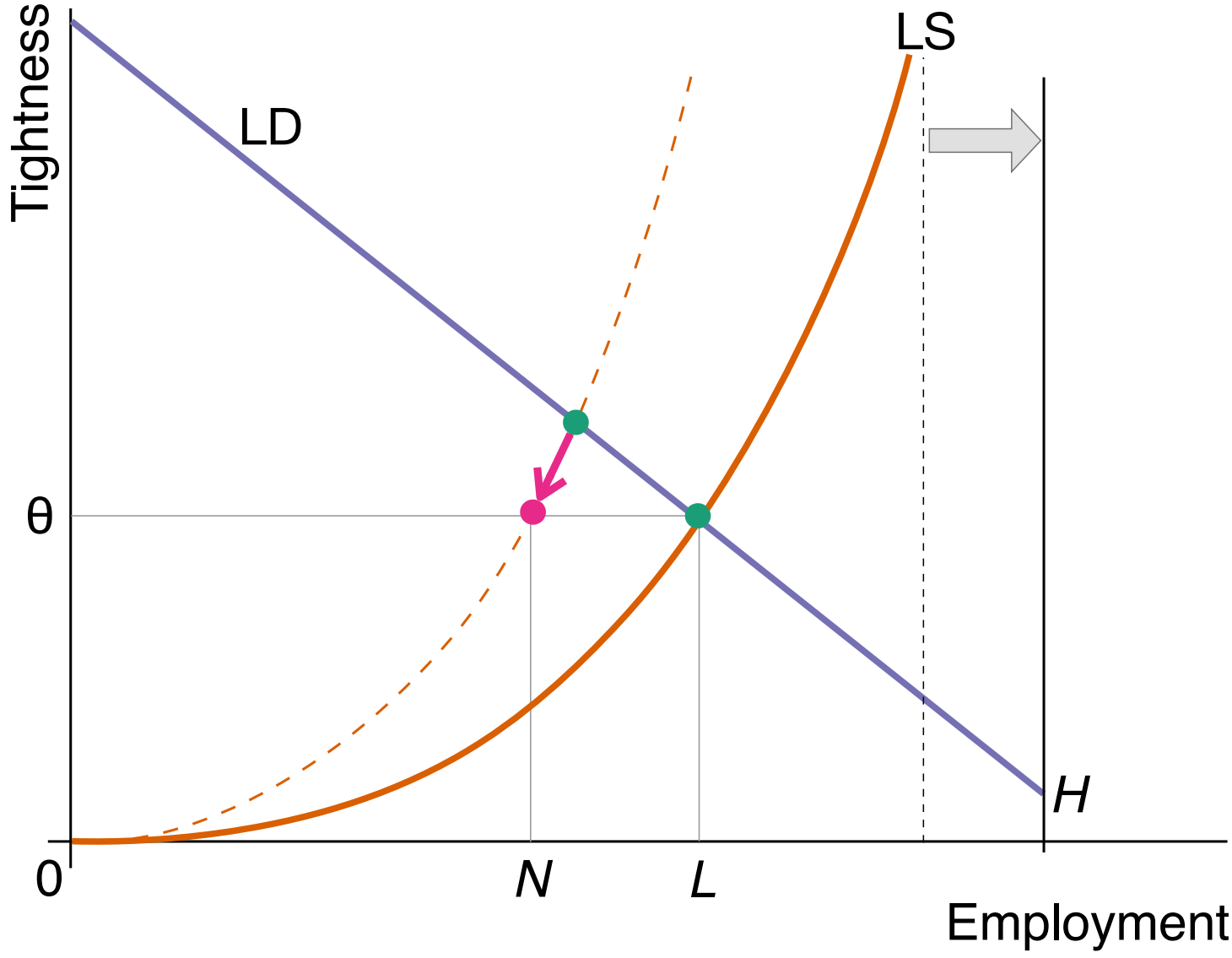
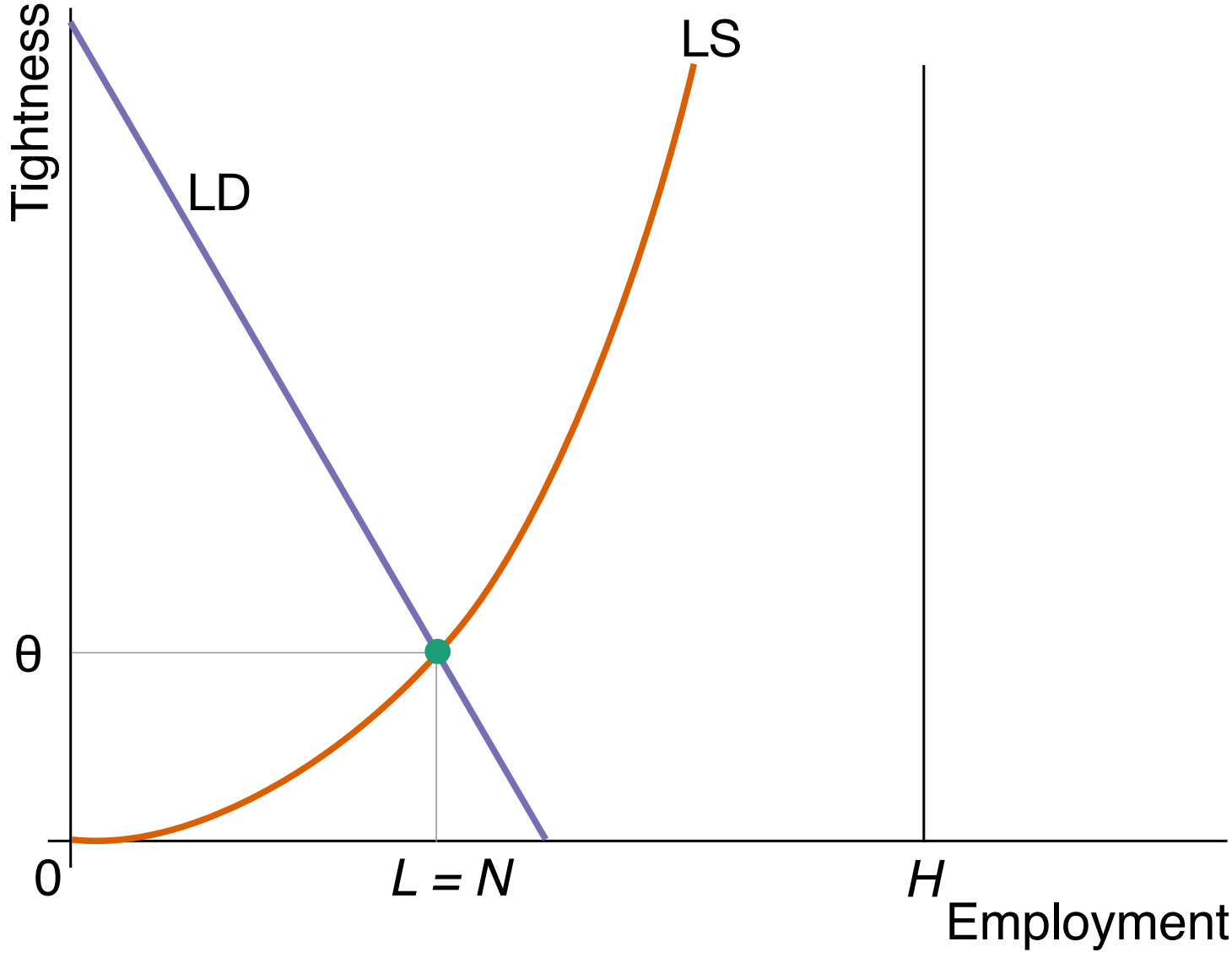


STRONGER JOB STEALING IN BAD TIMES



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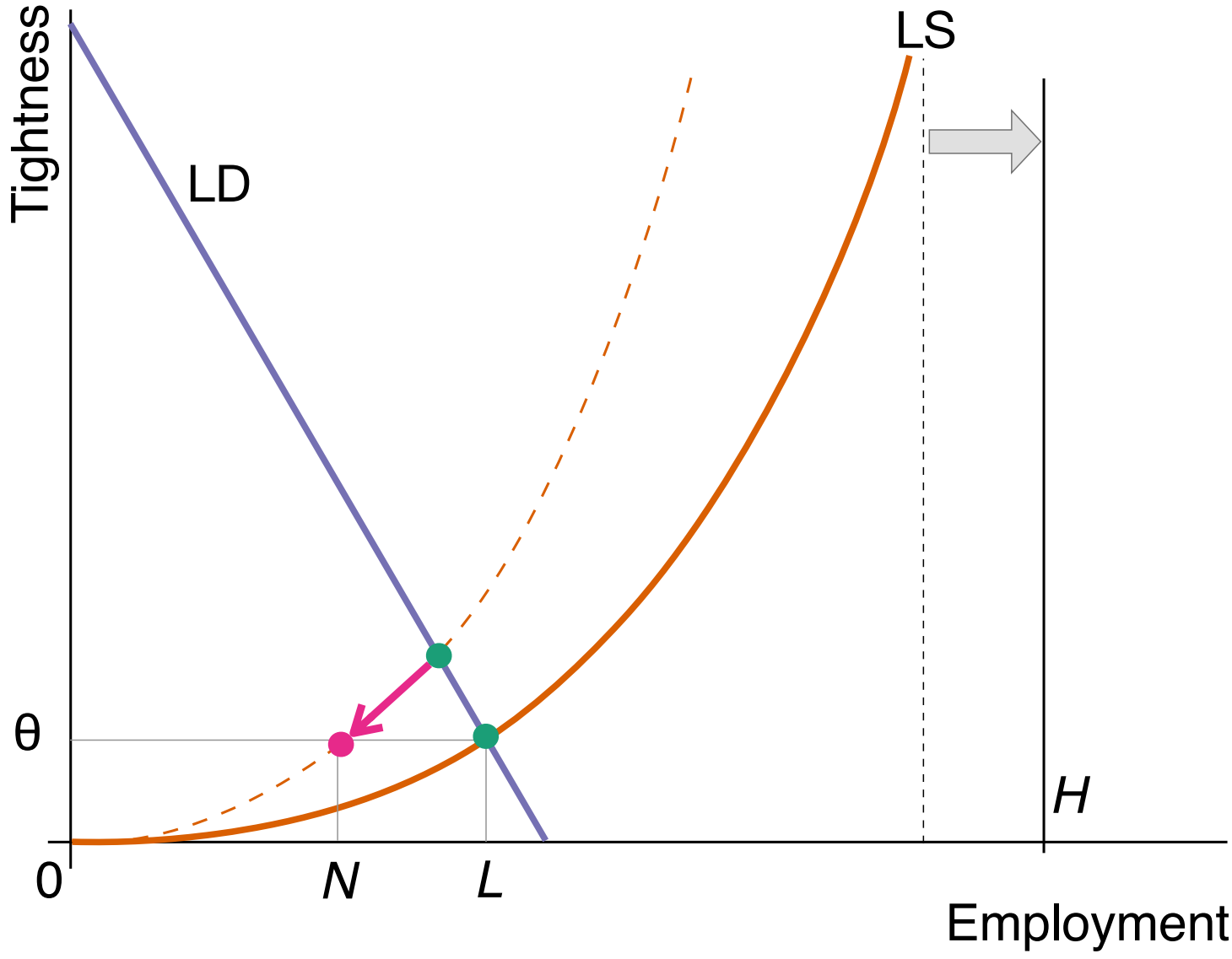
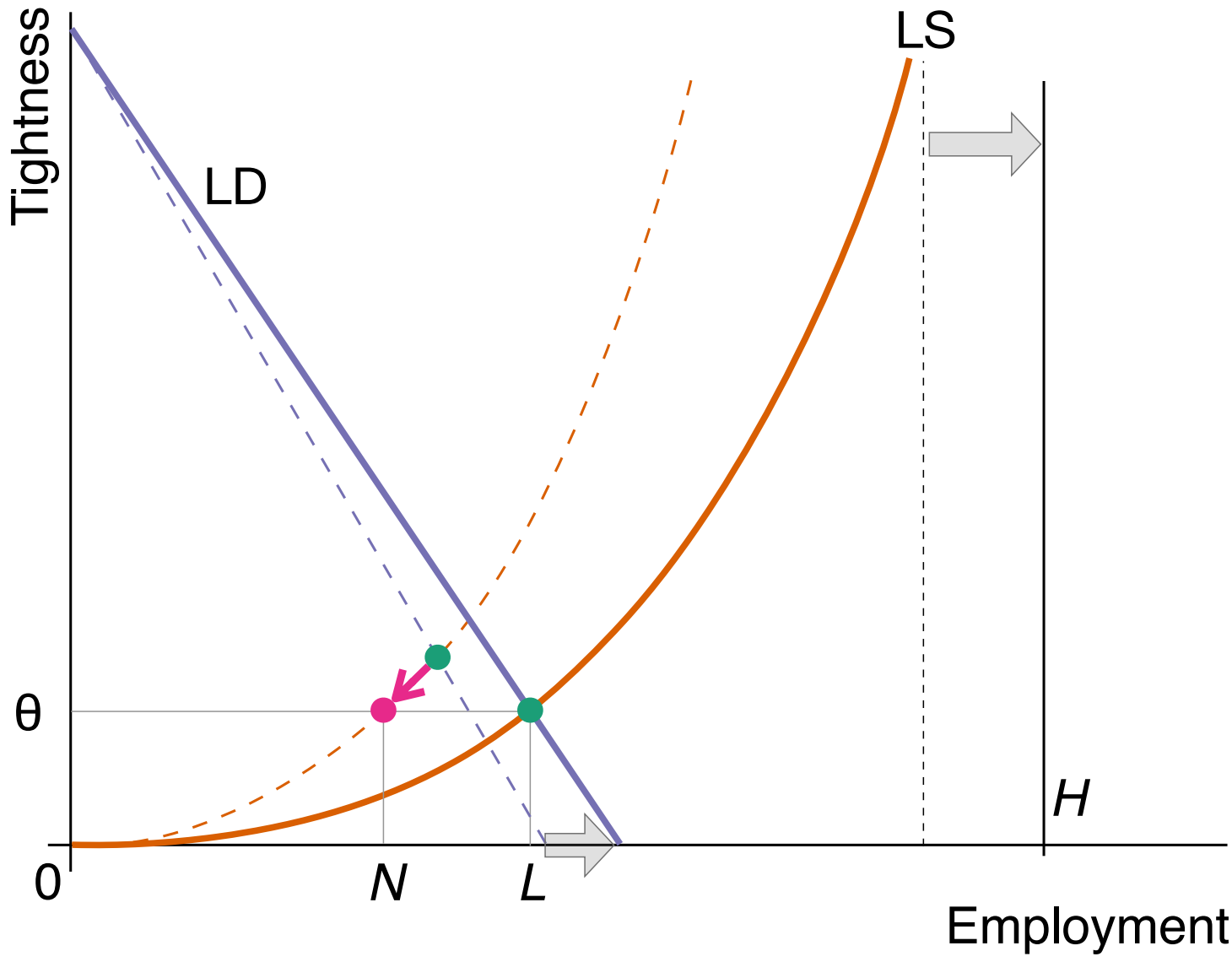


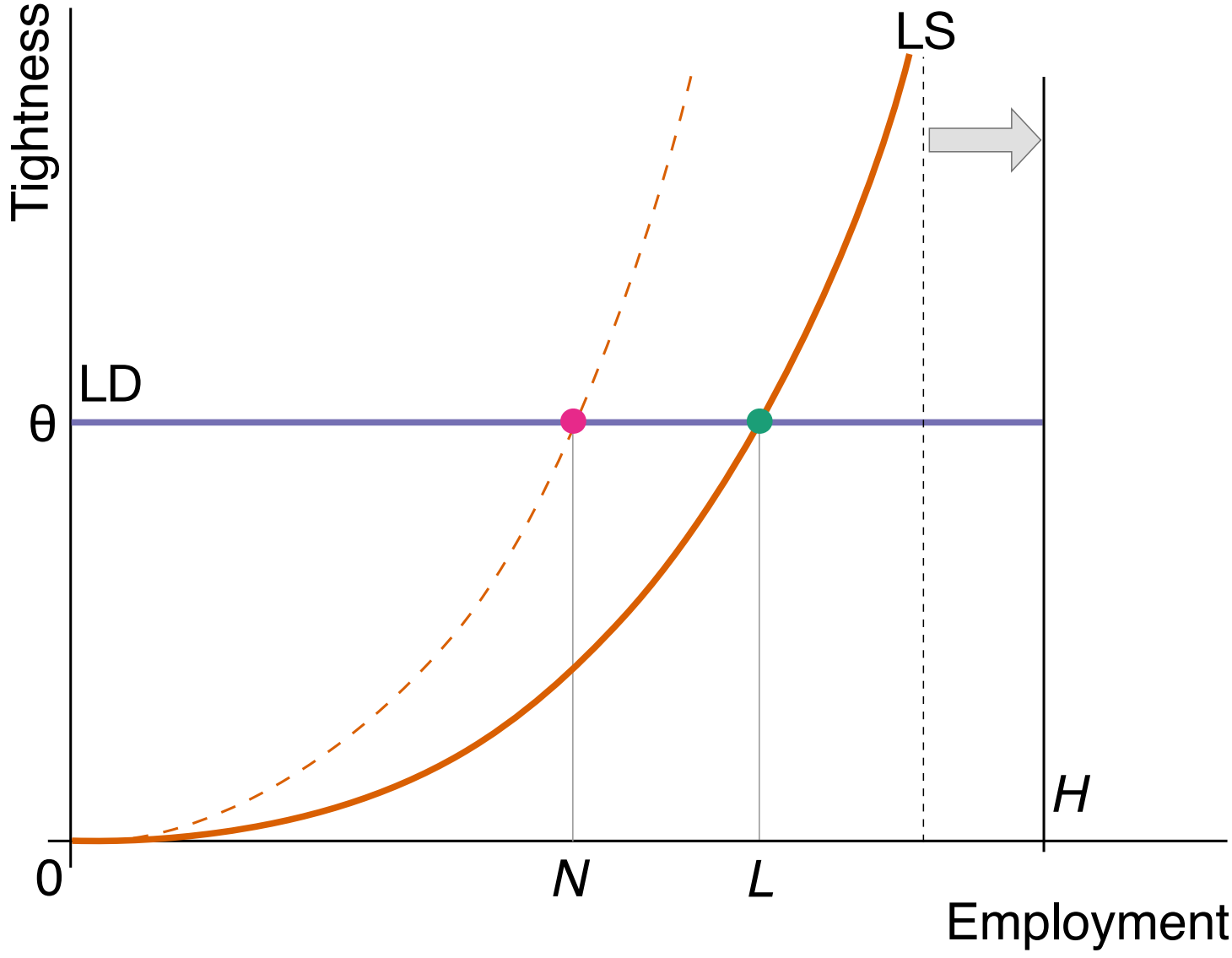
WEAKER JOB STEALING IF WAGES FALL



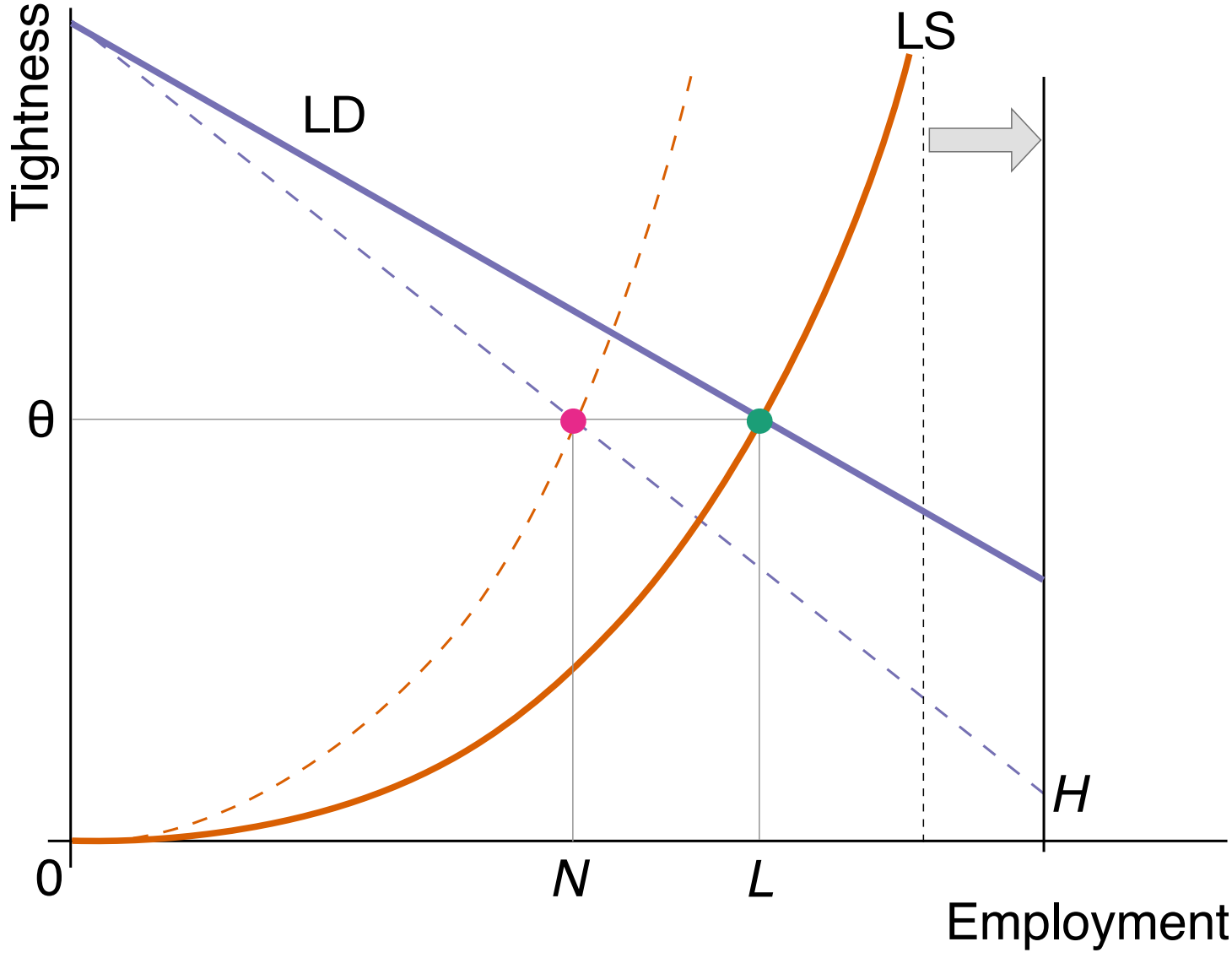
POSSIBLE EFFECTS OF IMMIGRATION IN MODEL

- linear production, fixed wage: pure Card
  - ⇝ same native wages
  - ⇝ same native employment
- concave production, flexible wage: pure Borjas
  - ⇝ lower native wages
  - ⇝ same native employment
- concave production, fixed wage: Card $\times$ Borjas
  - ⇝ same native wages
  - ⇝ lower native employment
- concave production, somewhat rigid wage: Borjas $\times$ Borjas
  - ⇝ lower native wages
  - ⇝ lower native employment

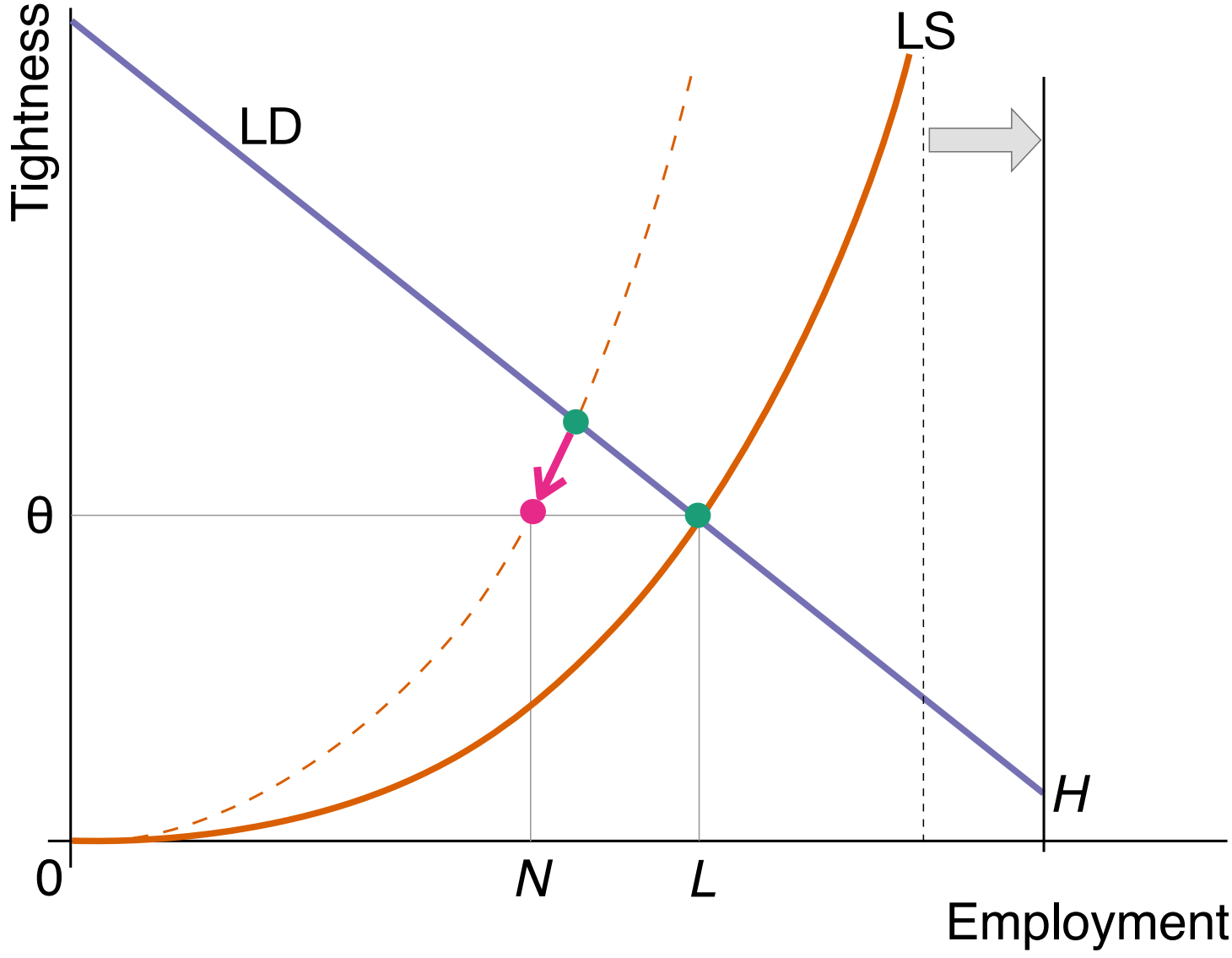
POSSIBLE EFFECTS OF IMMIGRATION: PURE CARD



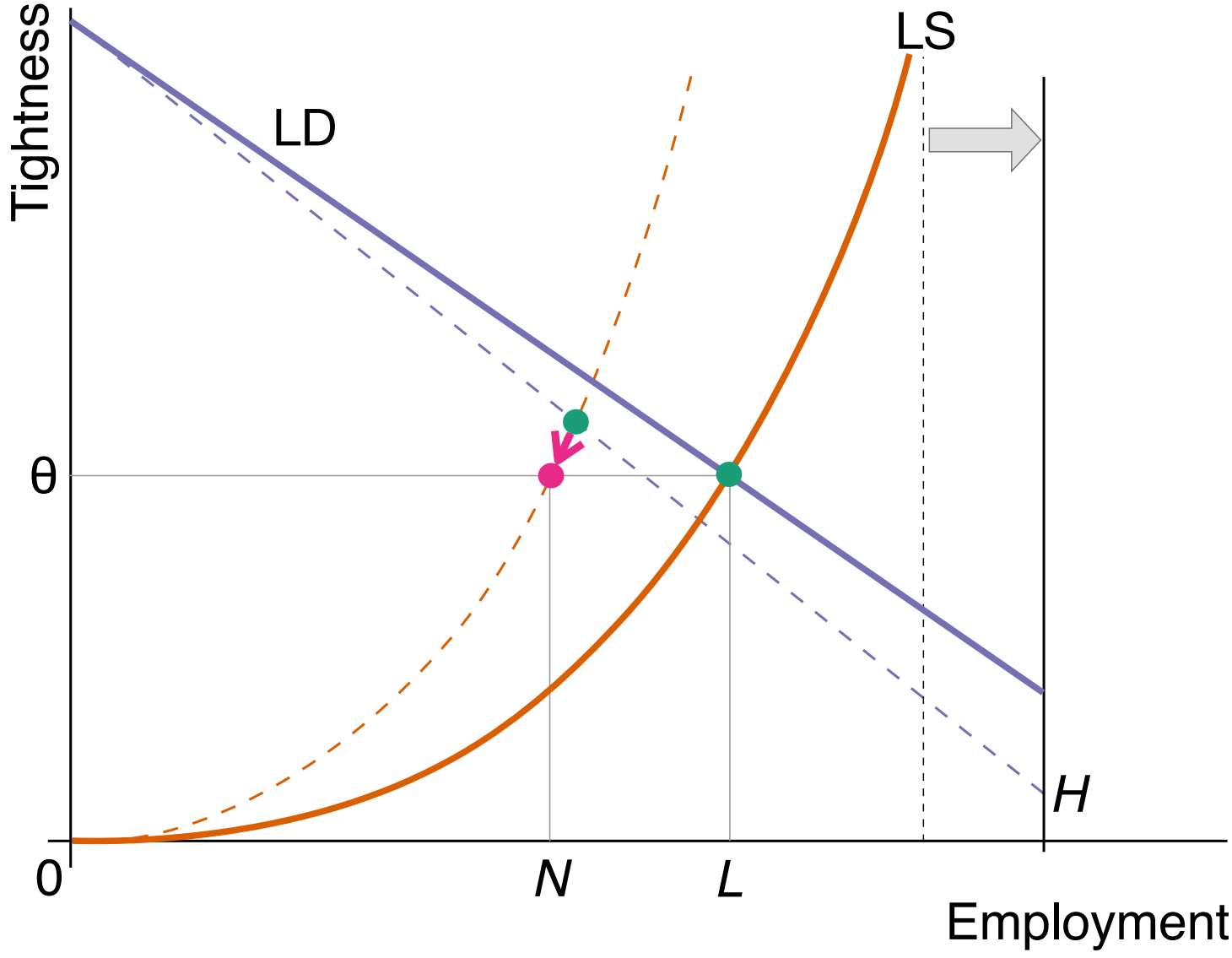
POSSIBLE EFFECTS OF IMMIGRATION: PURE BORJAS



POSSIBLE EFFECTS OF IMMIGRATION: CARD × BORJAS



POSSIBLE EFFECTS OF IMMIGRATION: BORJAS × BORJAS



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 = $(1/\alpha - 1) \cdot w \cdot L$ ↑ with immigration
  - because L ↑ with immigration
  - and w is → with immigration
- also true if wages ↓ with immigration
  - first-order condition: $w = \alpha y(P)/L = \alpha y(L/[1 + \tau(\theta)])/L$
  - production function: $w = a\alpha L^{\alpha-1}[1 + \tau(\theta)]^{-\alpha}$
  - firm profits = $(1 - \alpha) \cdot a \cdot P^{\alpha}$ ↑ with immigration
- also true in pure Card scenario
  - since P ↑ with immigration

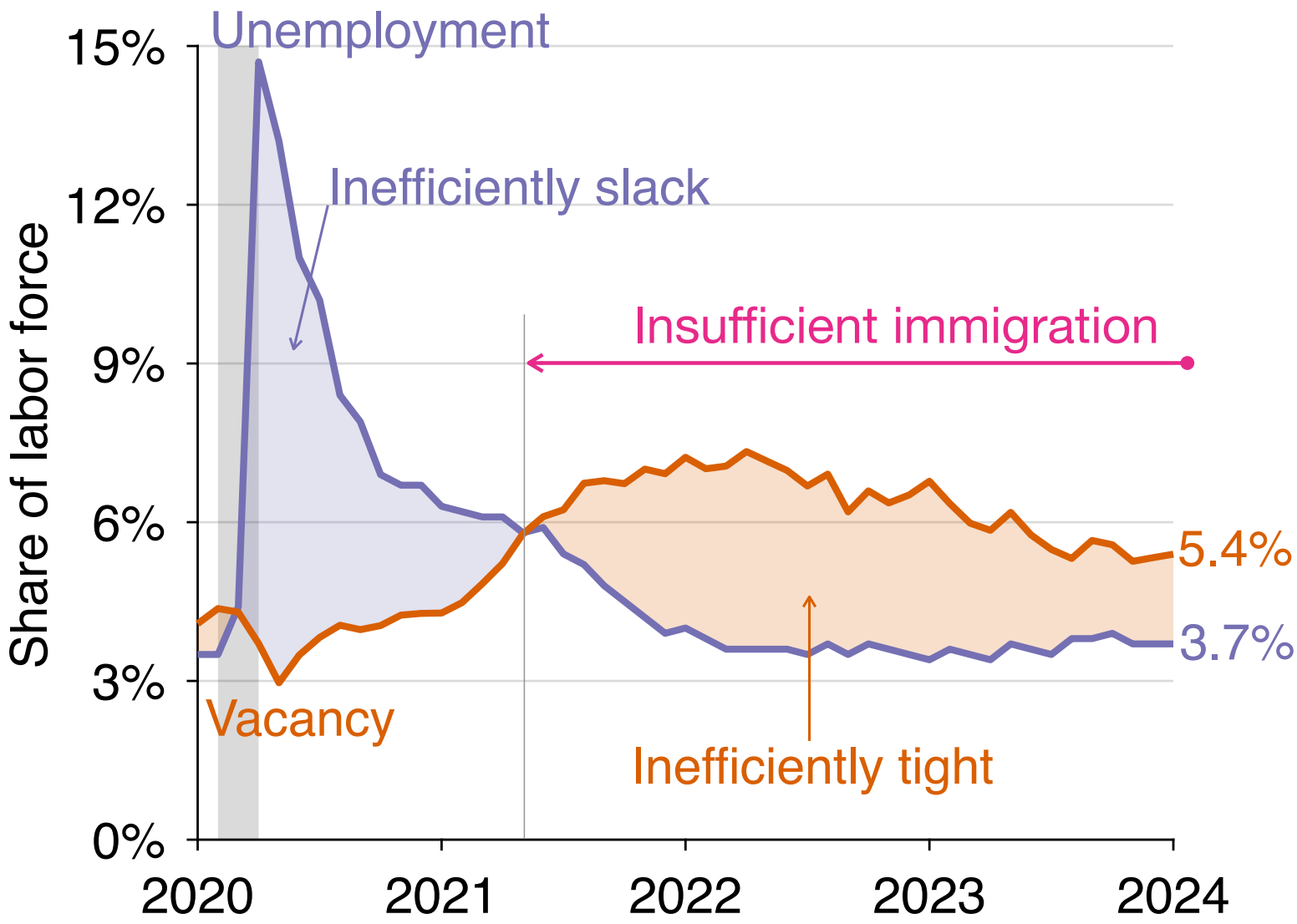
SOME POLITICAL PREDICTIONS

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

IMMIGRATION AS STABILIZATION POLICY

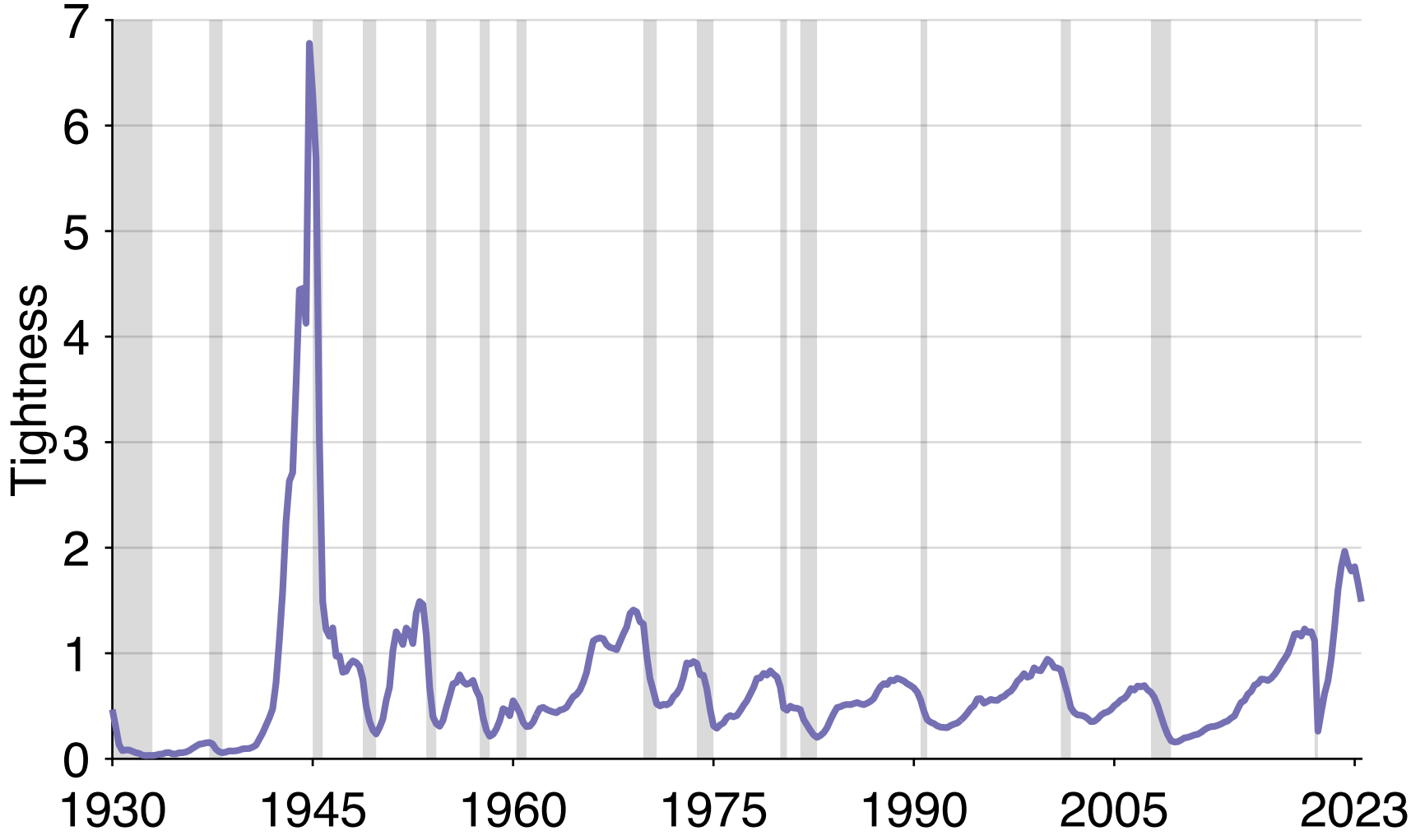
- immigration improves native welfare in inefficiently tight labor market
  - by reducing tightness, immigration raises firm profits more than it lowers native labor income
- to maximize native welfare, immigration should lower tightness until labor market is inefficiently slack
- immigration might complement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

LACK OF IMMIGRATION AFTER CORONAVIRUS PANDEMIC

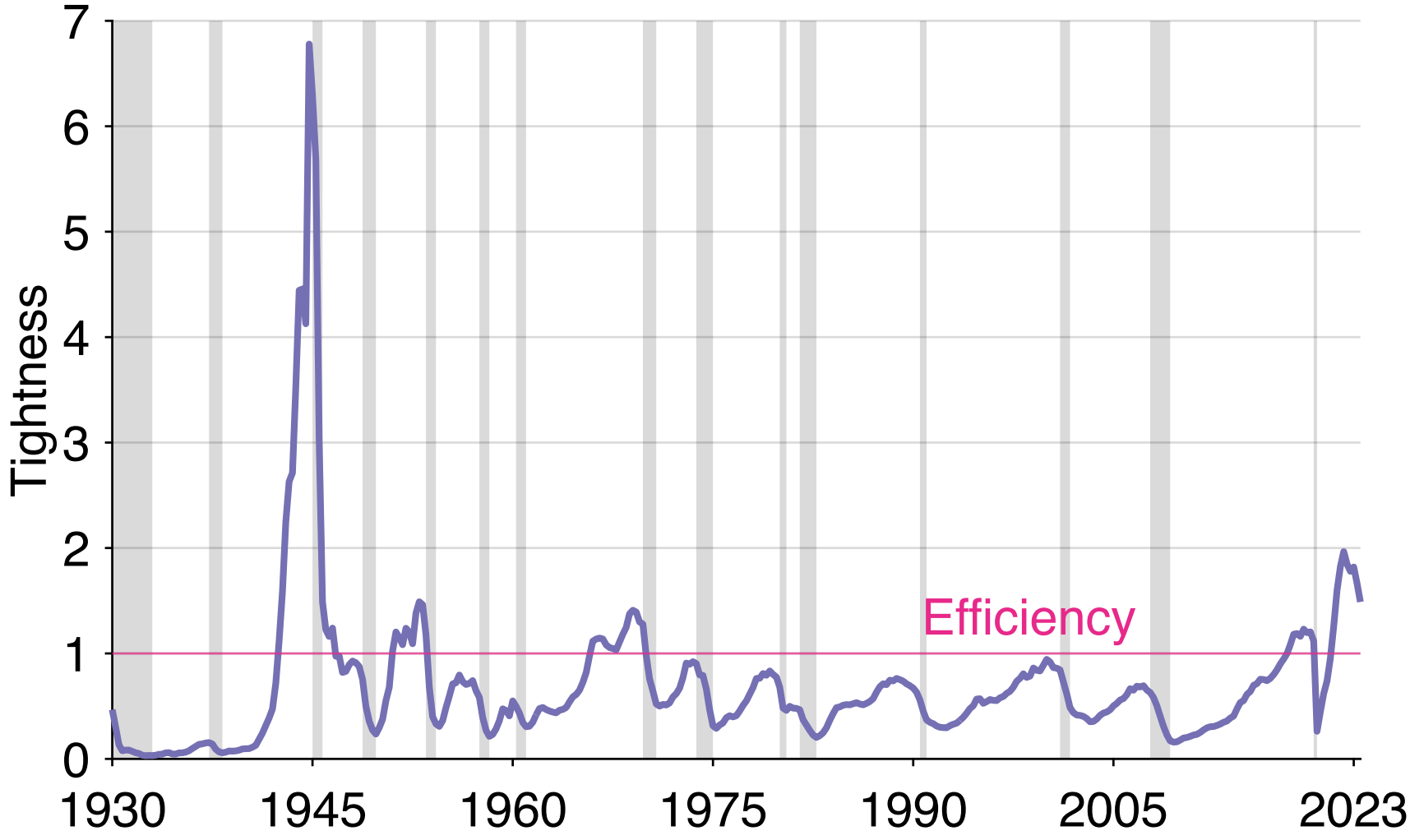


OTHER LABOR-SUPPLY SHOCKS

LOW LABOR SUPPLY $\Rightarrow$ INEFFICIENTLY TIGHT ECONOMY



LOW LABOR SUPPLY ⟹ INEFFICIENTLY TIGHT ECONOMY



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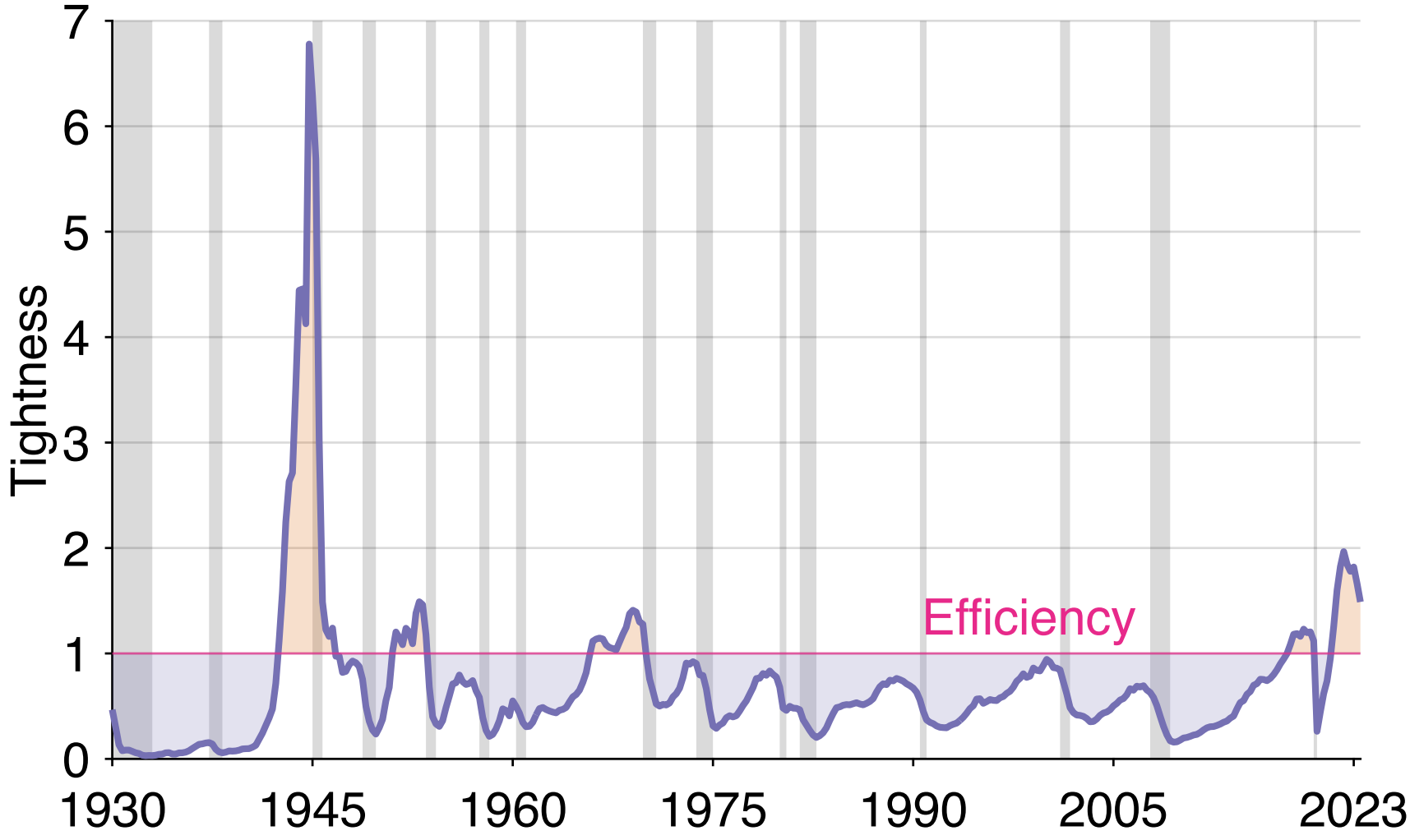

LOW LABOR SUPPLY ⟹ INEFFICIENTLY TIGHT ECONOMY