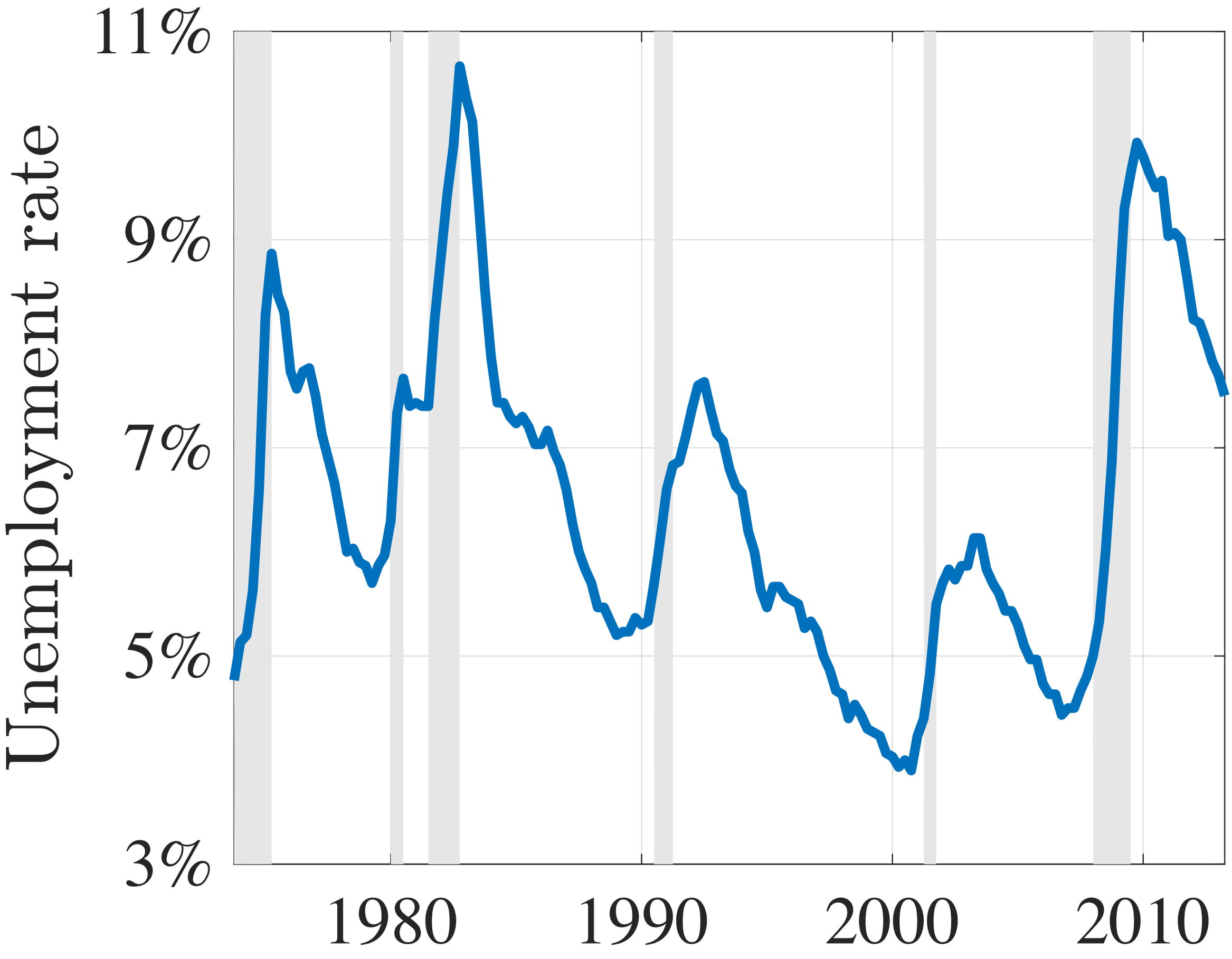
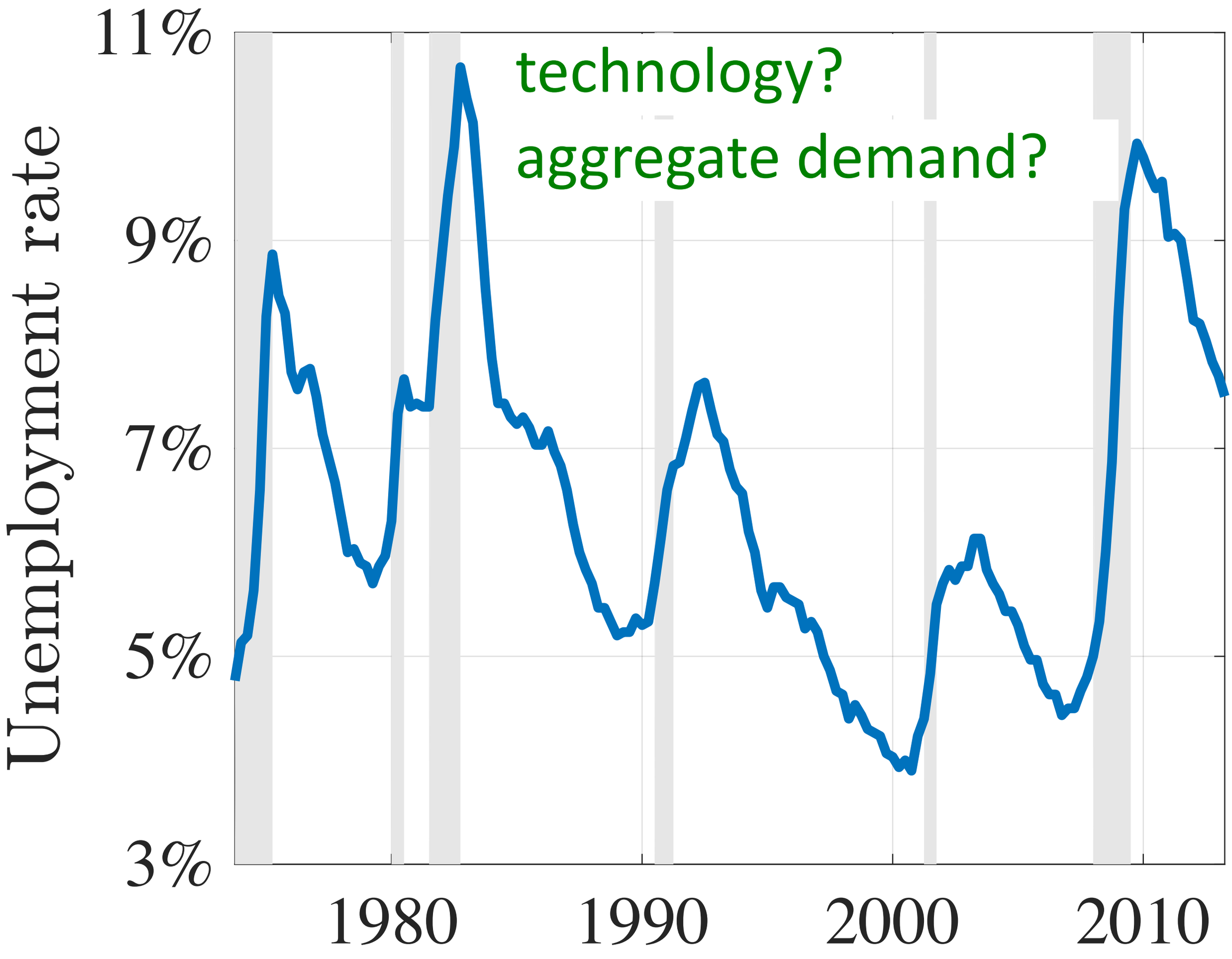
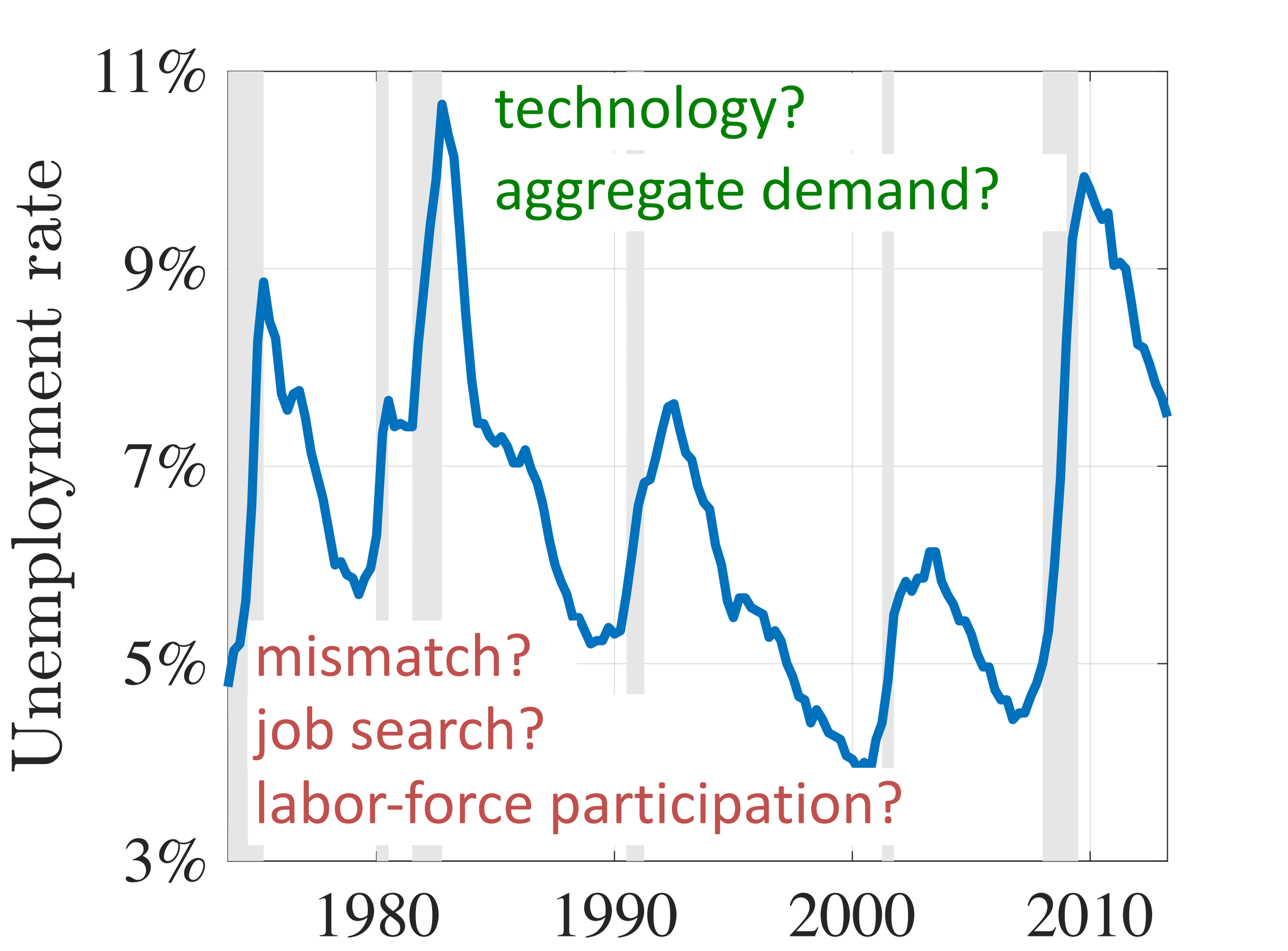
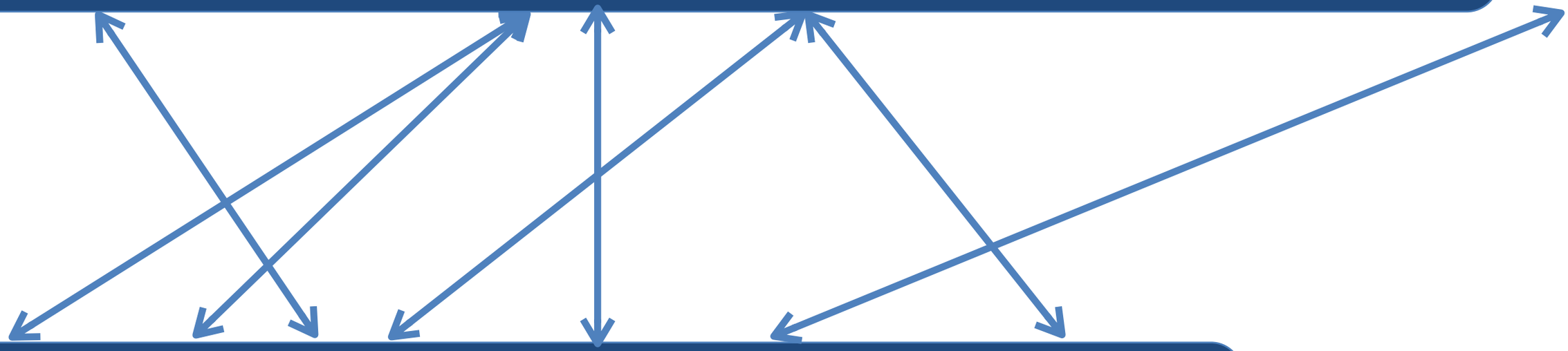

Unemployment rate
11%
9%
7%
5%
3%
1980
1990
2000
2010


technology?
aggregate demand?
Unemployment rate
11%
9%
7%
5%
3%
1980
1990
2000
2010


11%
9%
7%
5%
3%
Unemployment rate
1980
1990
2000
2010
technology?
aggregate demand?
mismatch?
job search?
labor-force participation?

k services



v visits

k services

sales

CRS matching function $h(k,v)$

purchases

v visits

tightness: $x = v / k$

k services

sales = $k \cdot h(1, x) \quad = \quad k \cdot f(x)$

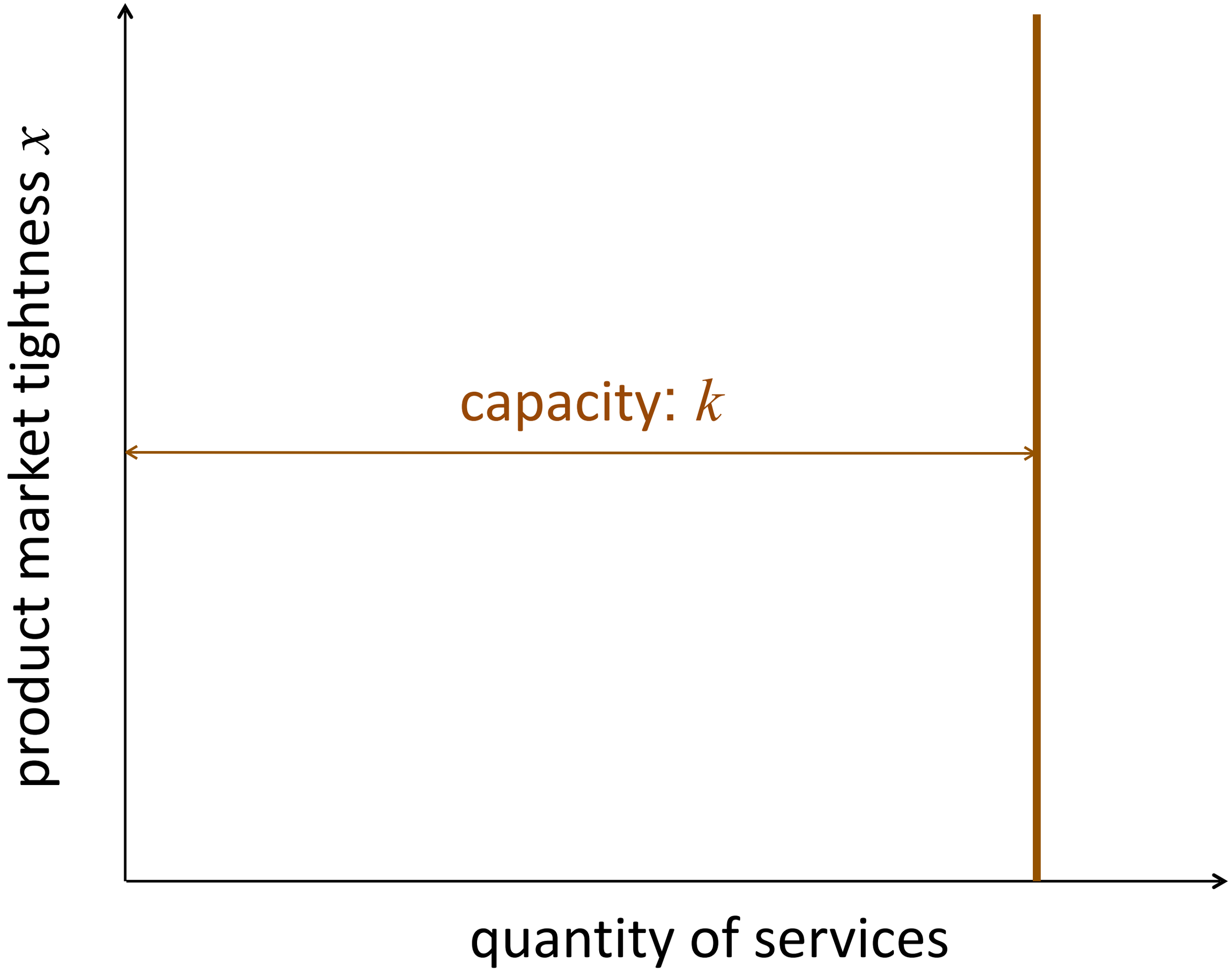
output: $y = h(k,v)$

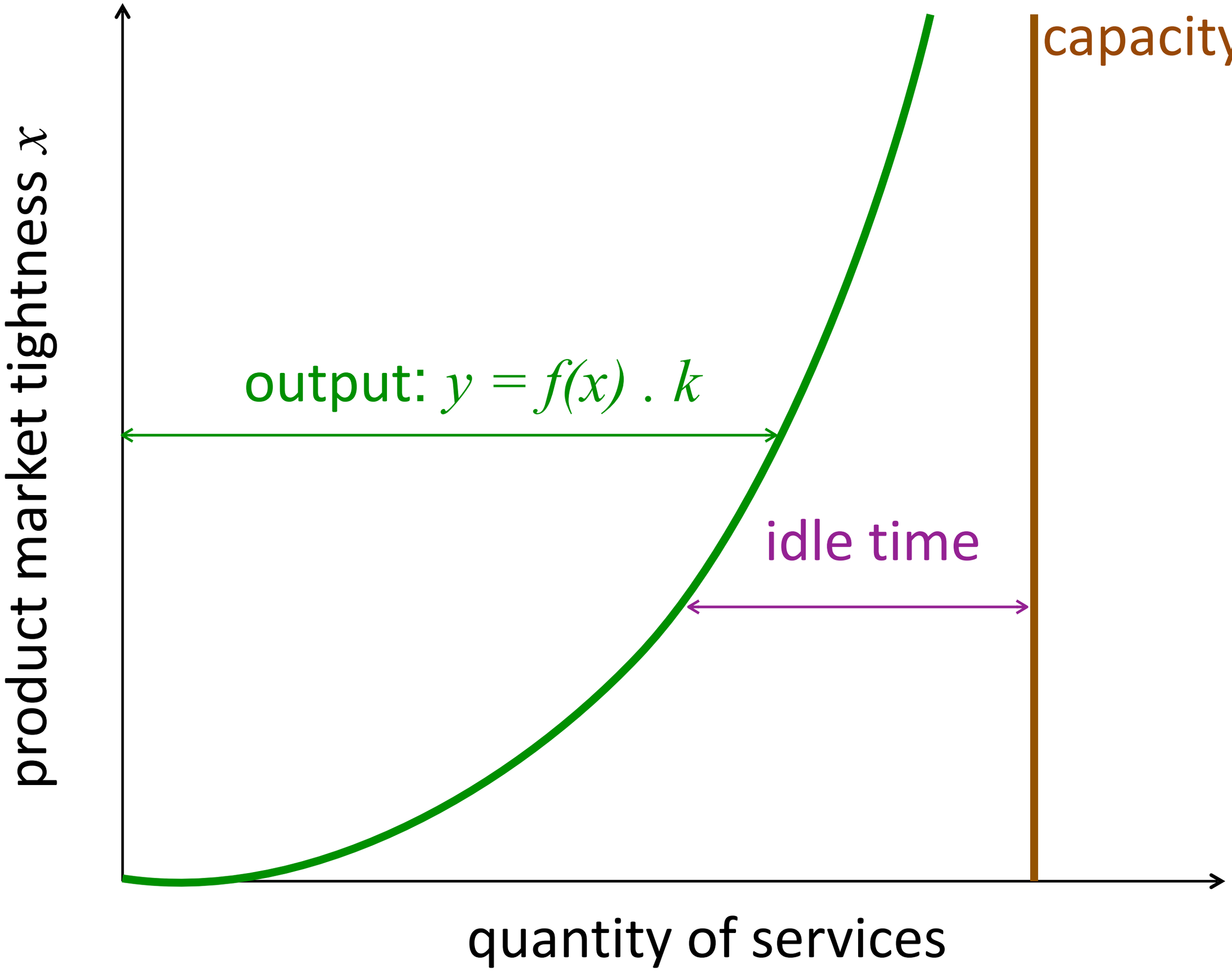
purchases = $v \cdot h\left(\frac{1}{x}, 1\right) = v \cdot q(x)$

v visits

Idleness, non-manufacturing
Idleness, manufacturing
Unemployment
30%
20%
10%
0%
1990
2000
2010


workers devoted to purchasing
(matching on product market)
workers devoted to recruiting
(matching on the labor market)
Thousands of workers
750
500
250
0
1997
2002
2007
2012


product market tightness x
capacity: k
quantity of services


product market tightness x
capacity k
output: $y = f(x) \cdot k$
idle time
quantity of services

output y

capacity k

matching cost

aggregate supply:

$$c^s(x) = [f(x) - \rho x]k$$

product market tightness x

quantity of services

aggregate supply $c^s(x)$

output y

capacity k

product market tightness x

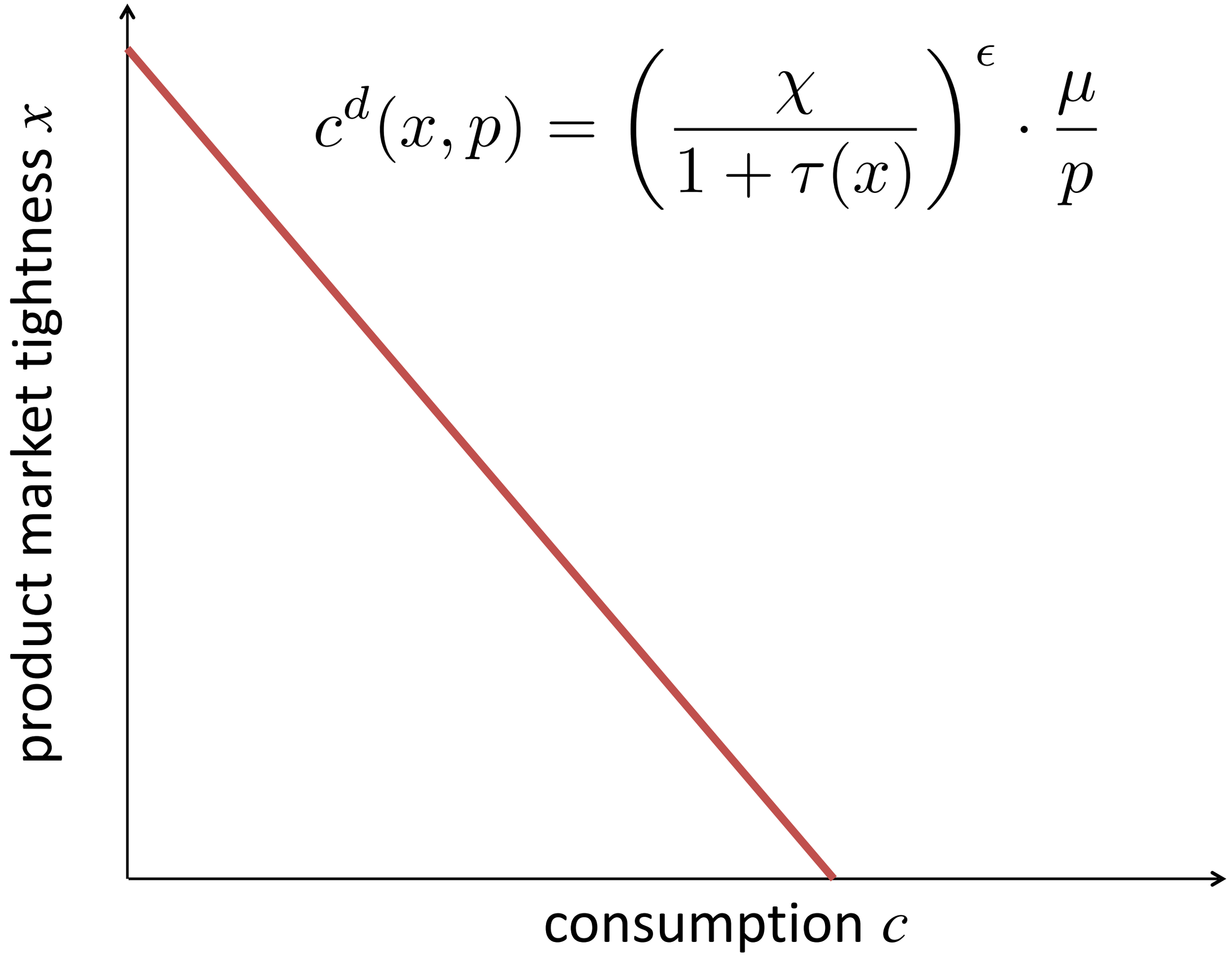
consumption

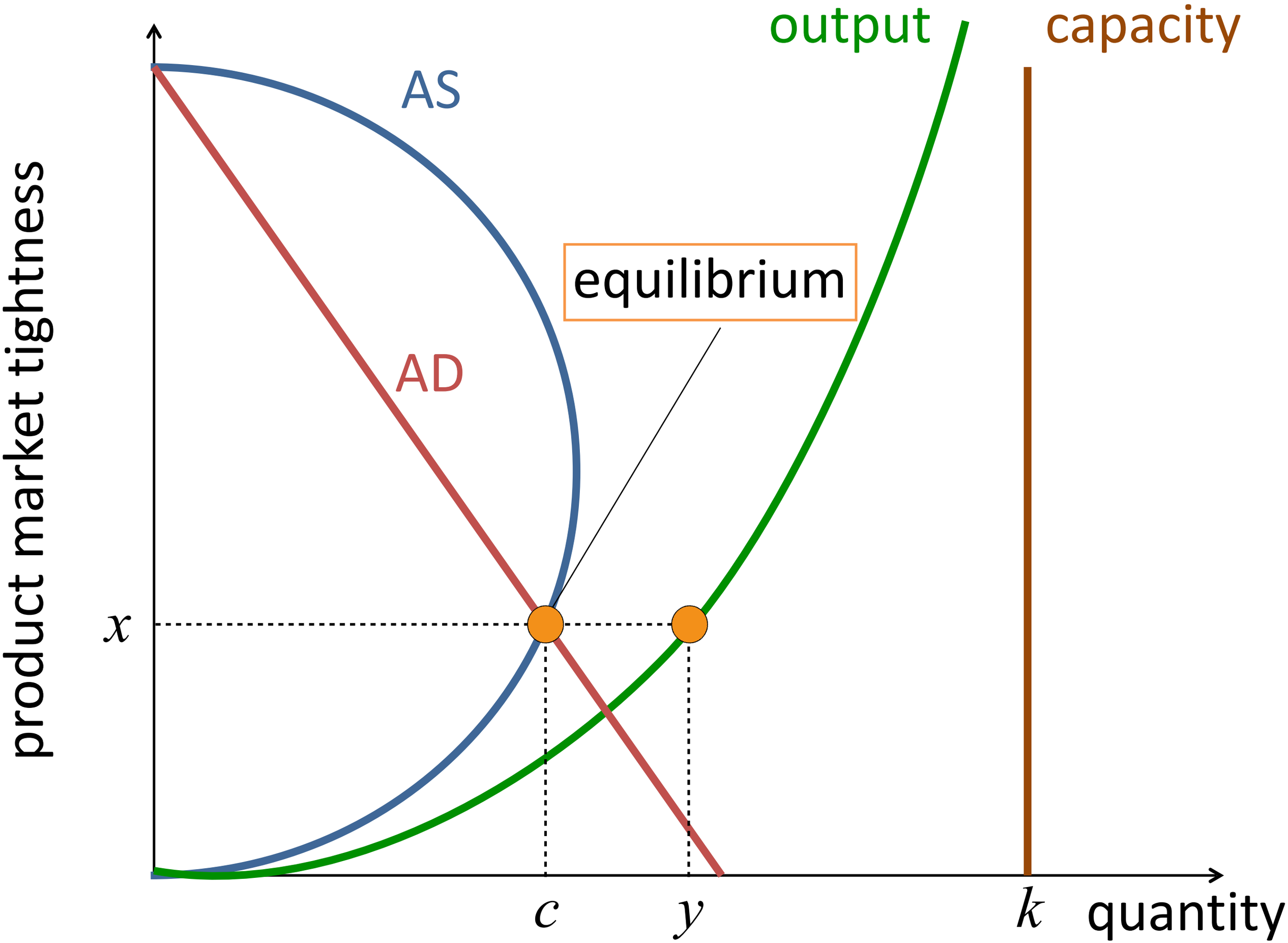
matching cost

idle time

quantity of services

$$c^d(x,p) = \left(\frac{\chi}{1+\tau(x)}\right)^{\epsilon} \cdot \frac{\mu}{p}$$




output
capacity
AS
AD
equilibrium
product market tightness
x
c
y
k
quantity

output

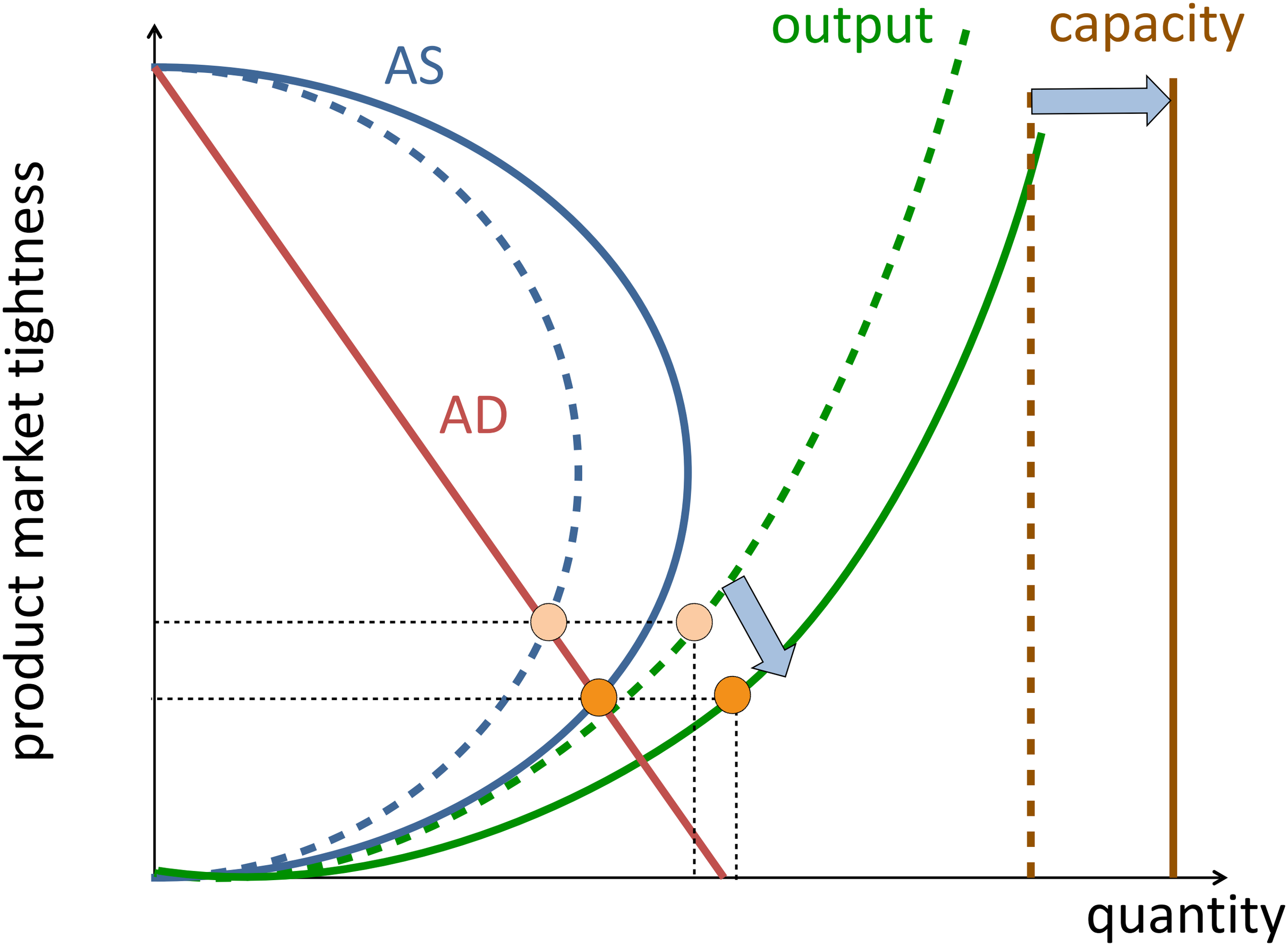
capacity

AS

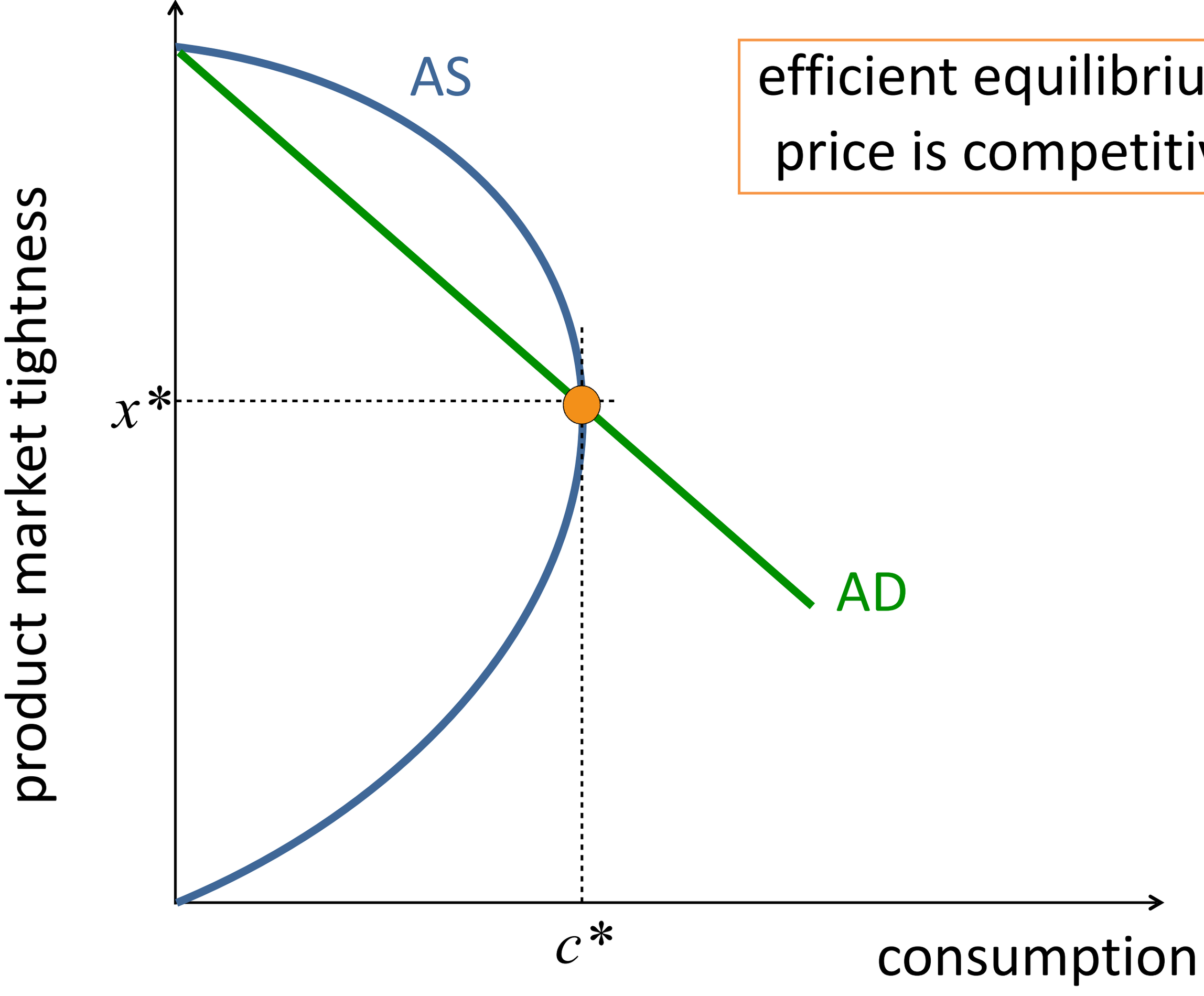
product market tightness

AD

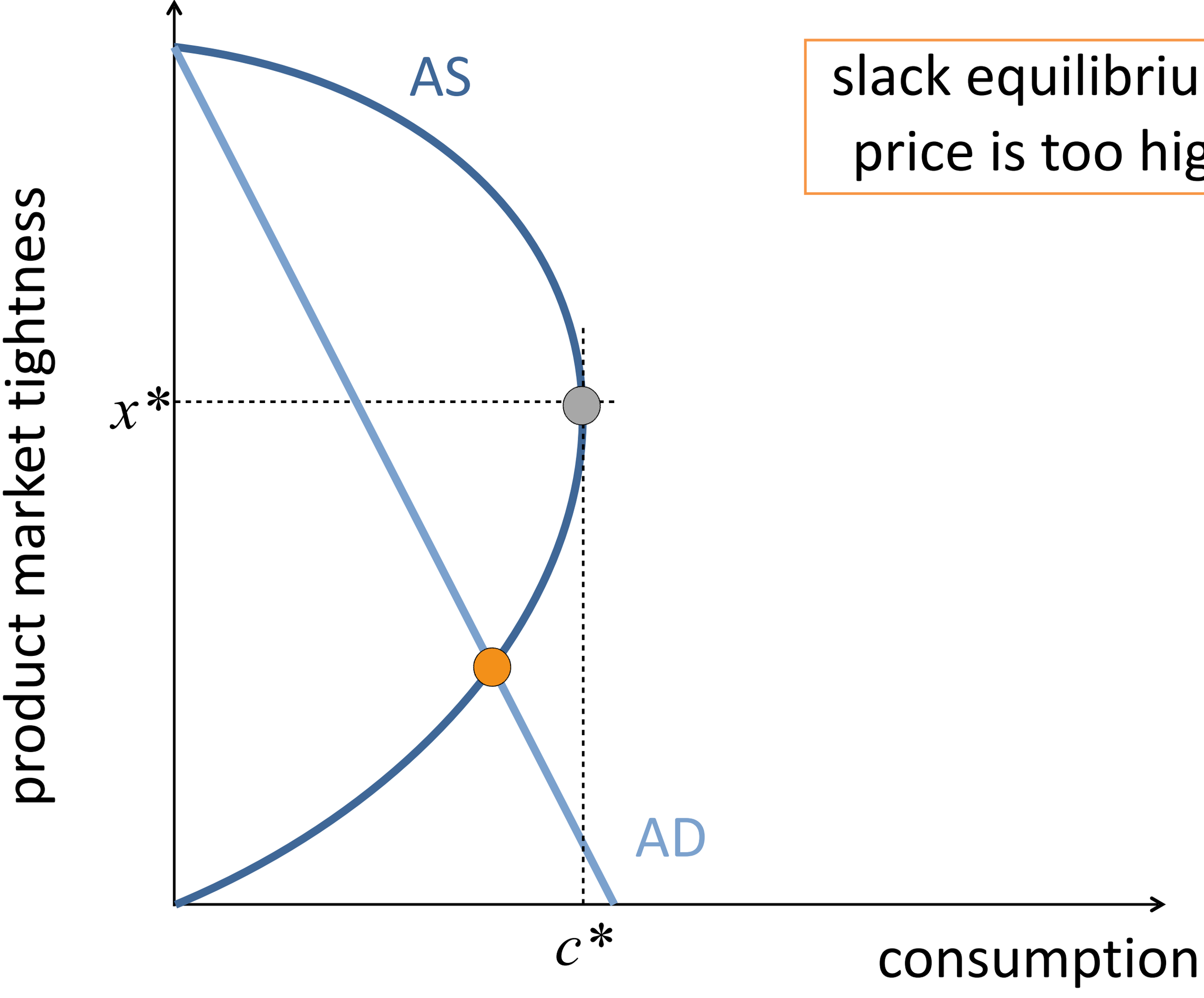
quantity


AS
AD
output
capacity
product market tightness
quantity

efficient equilibrium:
price is competitive



slack equilibrium:
price is too high



tight equilibrium:
price is too low

AS

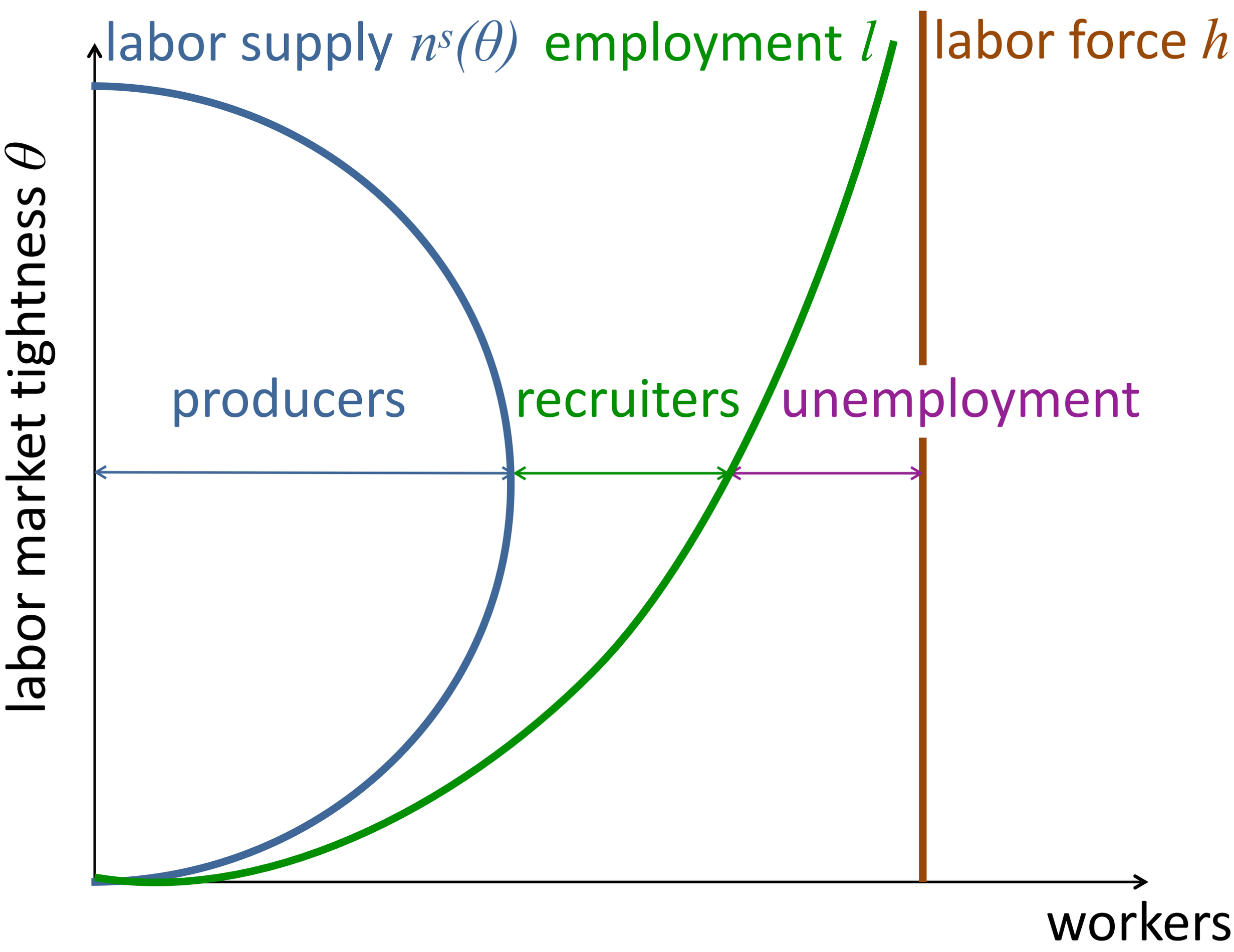
AD

$x*$

$c*$

product market tightness

consumption


labor supply $n^s(\theta)$
employment l
labor force h
labor market tightness θ
producers
recruiters
unemployment
workers

labor supply

employment

labor force

partial equilibrium

labor market tightness

θ

labor demand

n

l

h

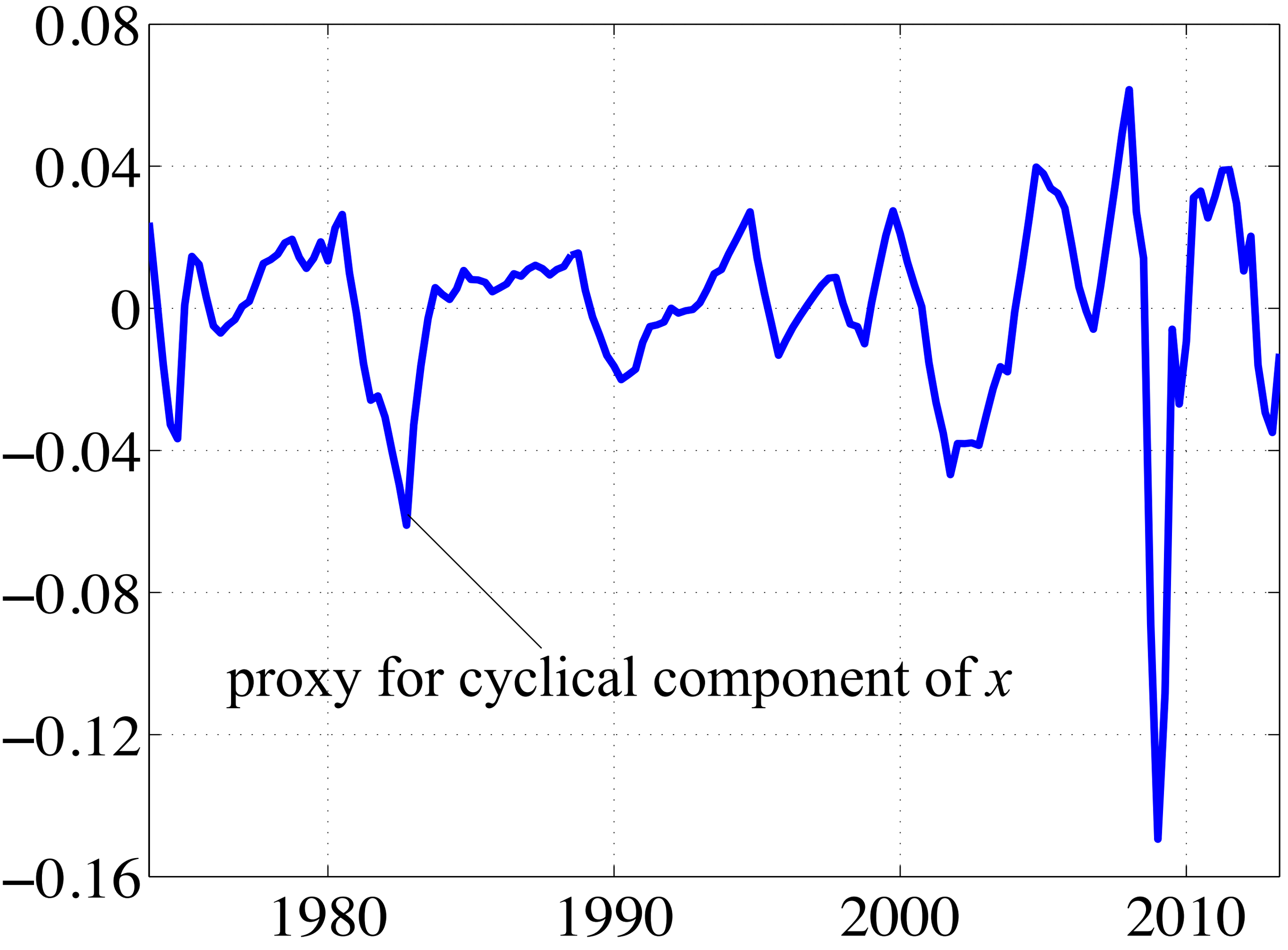
workers

Capacity utilization

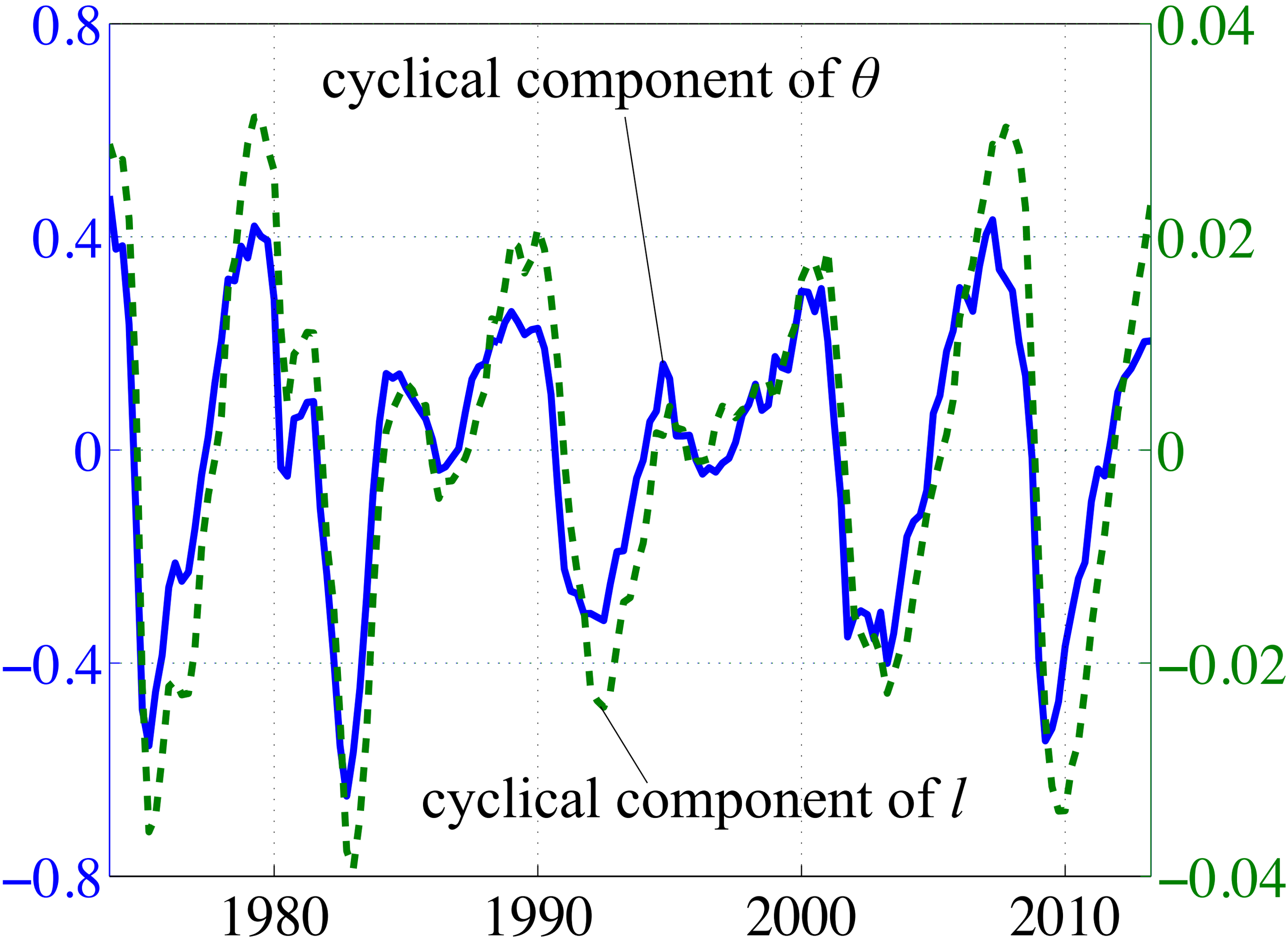
85%
80%
75%
70%
65%
60%
55%

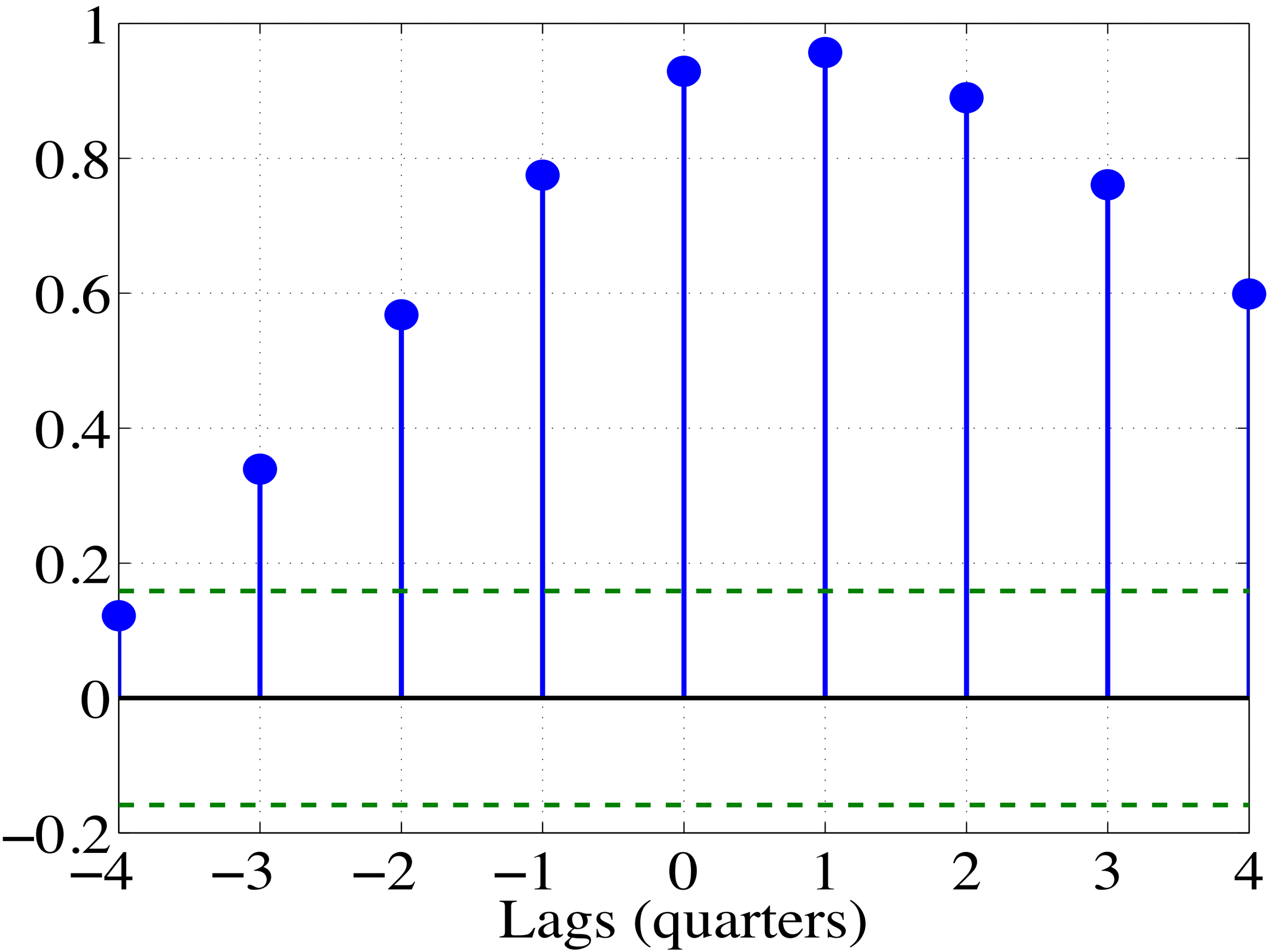
when utilization is low, it is hard to sell production, which indicates that product market tightness x is low

1980
1990
2000
2010

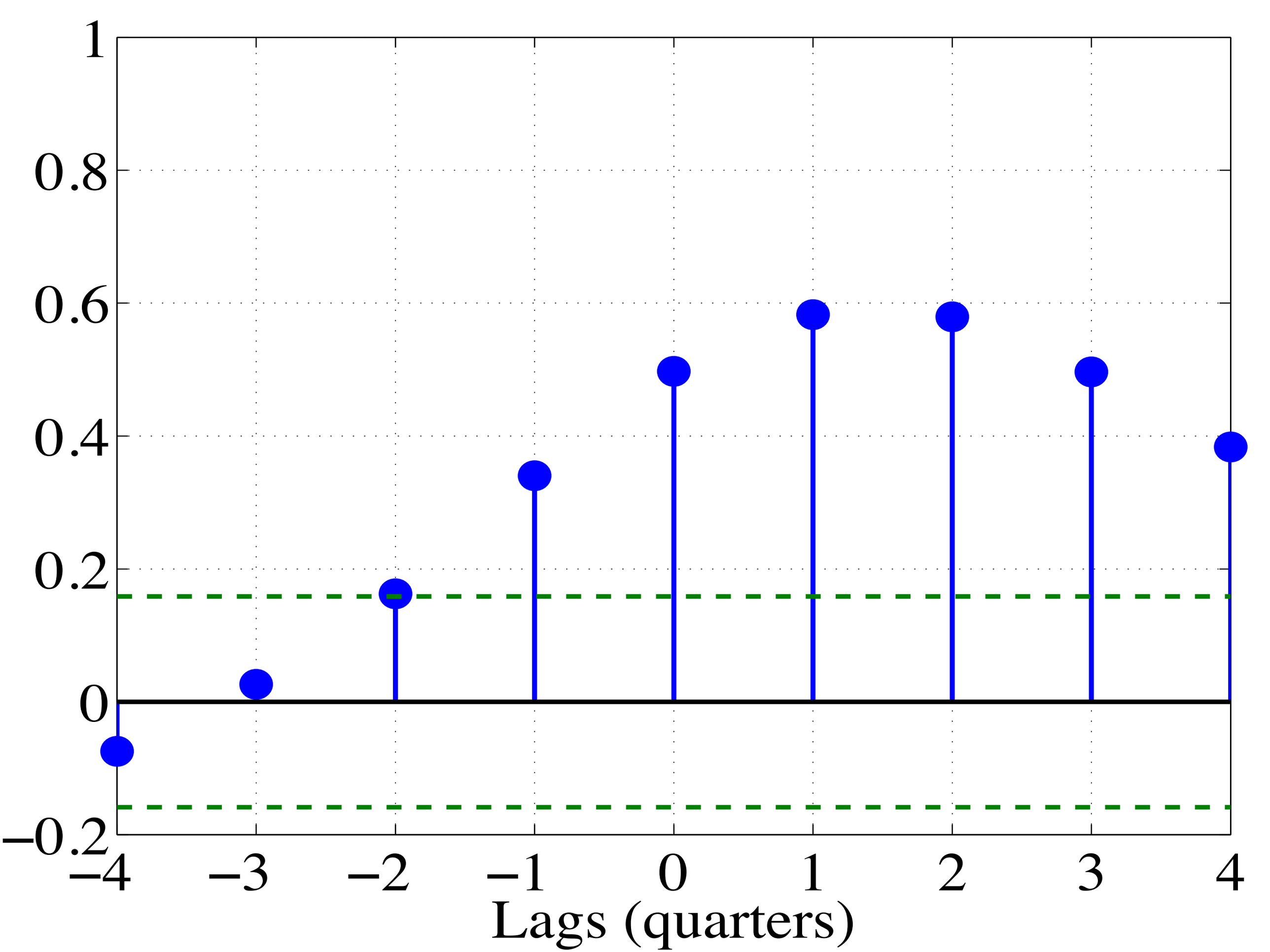

0.08
0.04
0
−0.04
−0.08
−0.12
−0.16
1980
1990
2000
2010
proxy for cyclical component of x

0.5
0.25
0
−0.25
−0.5
−0.75
1980
1990
2000
2010
cyclical component of θ

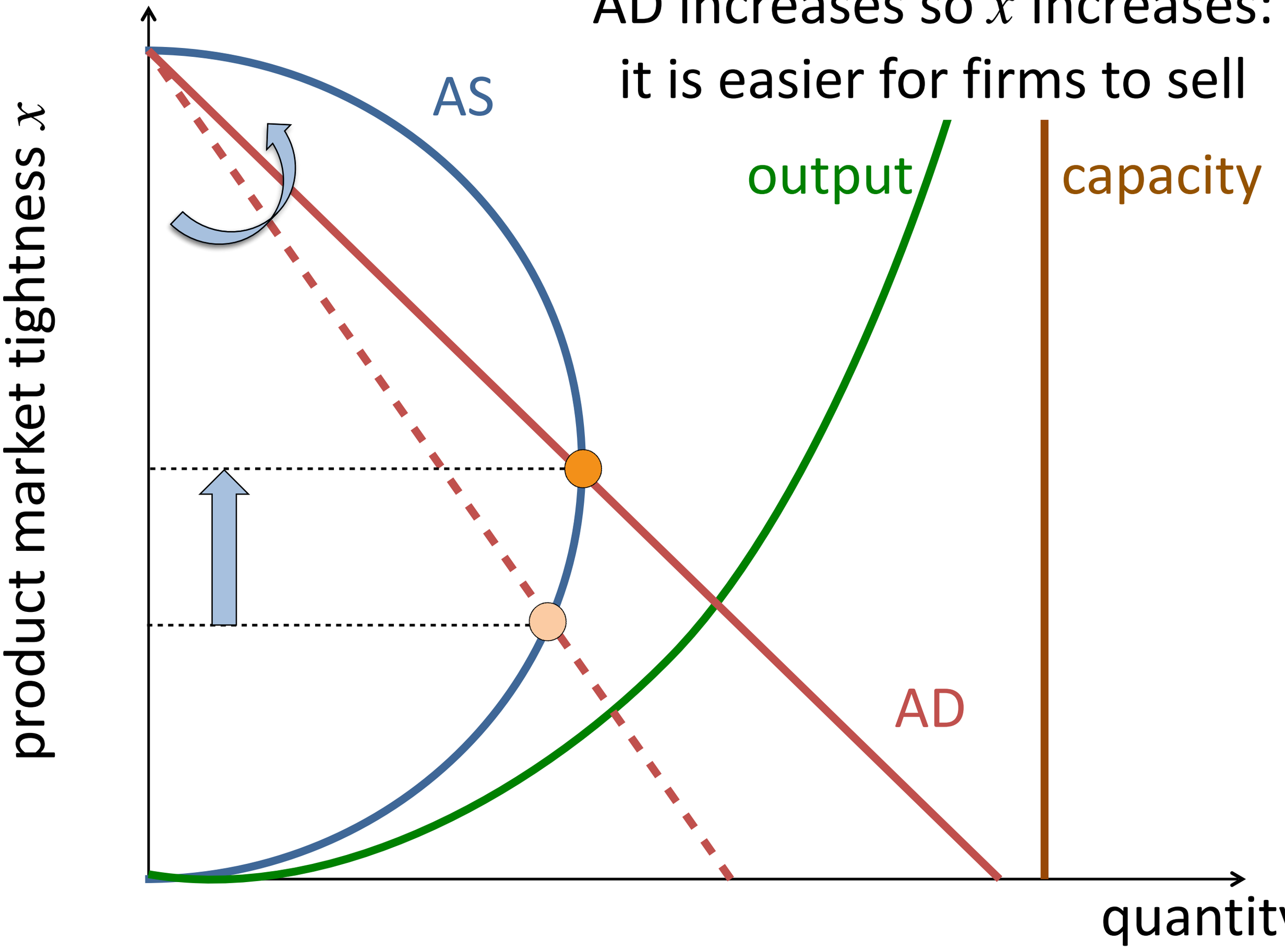

cyclical component of θ
cyclical component of l
0.8
0.4
0
−0.4
−0.8
0.04
0.02
0
−0.02
−0.04
1980
1990
2000
2010


1
0.8
0.6
0.4
0.2
0
−0.2
−4
−3
−2
−1
0
1
2
3
4
Lags (quarters)

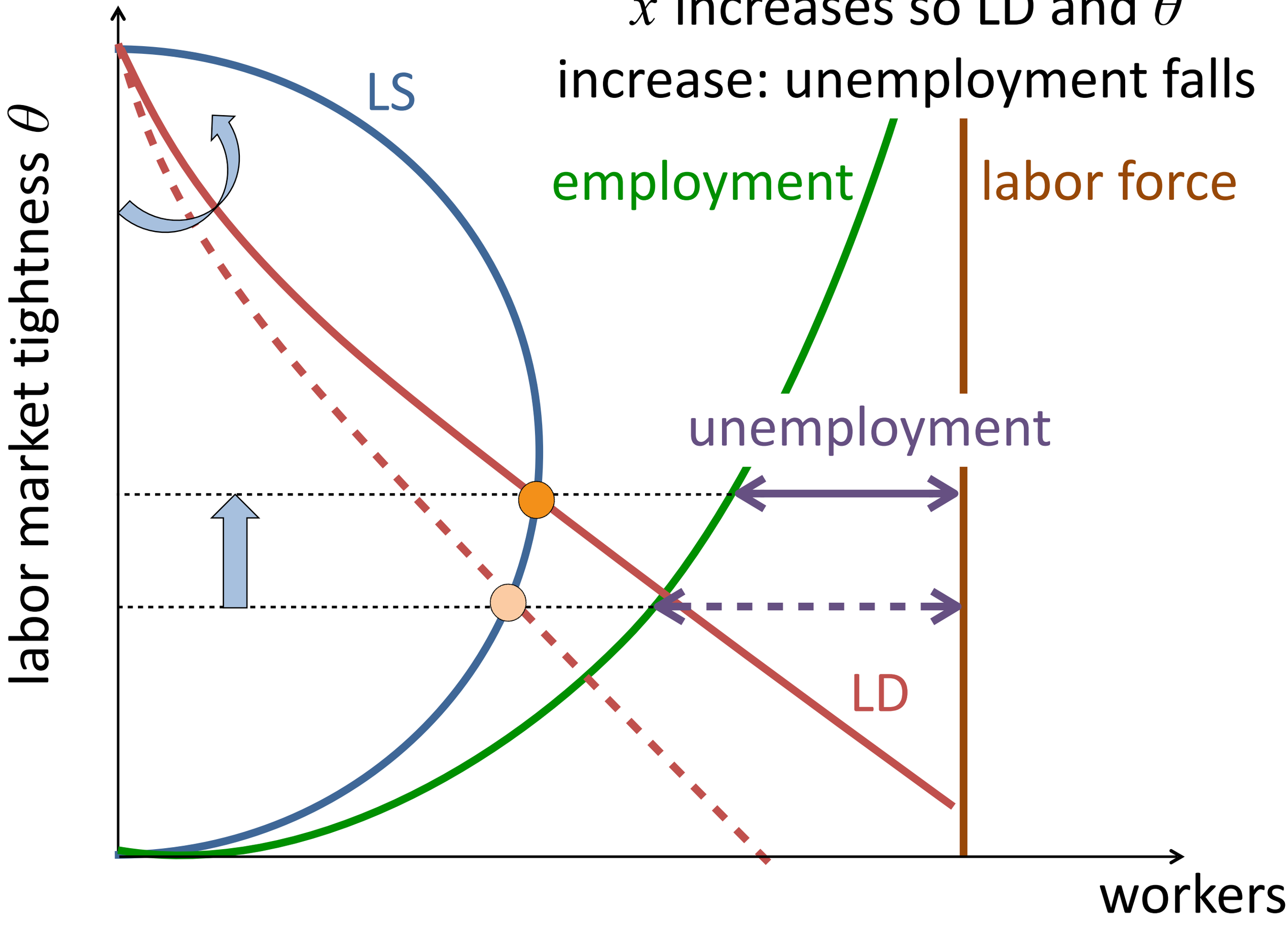
0.08
0
−0.08
−0.16
0.05
0
−0.05
−0.1
1980
1990
2000
2010
cyclical component of *y*
cyclical component of *x*


1
0.8
0.6
0.4
0.2
0
−0.2
−4
−3
−2
−1
0
1
2
3
4
Lags (quarters)

AD increases so x increases:
it is easier for firms to sell



x increases so LD and θ increase: unemployment falls



<u>possible feedback:</u> as employment changes, capacity and thus x may adjust, dampening or amplifying the initial change in x