INTERMEDIATE MACROECONOMICS

SOLOWIAN MODEL OF GROWTH

26. OUTPUT PER WORKER IN THE SOLOWIAN MODEL

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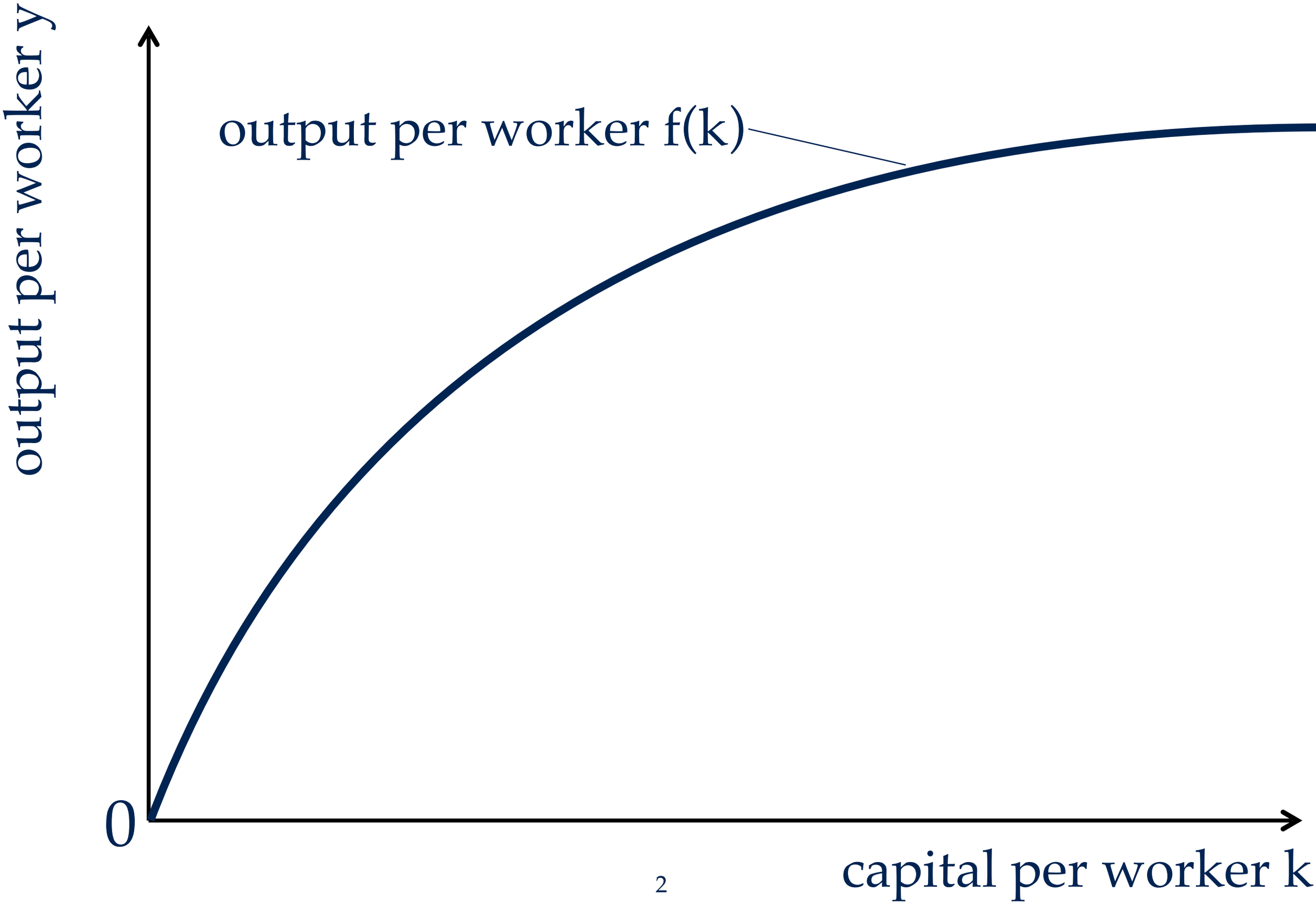
EQUILIBRIUM IN THE SOLOW MODEL



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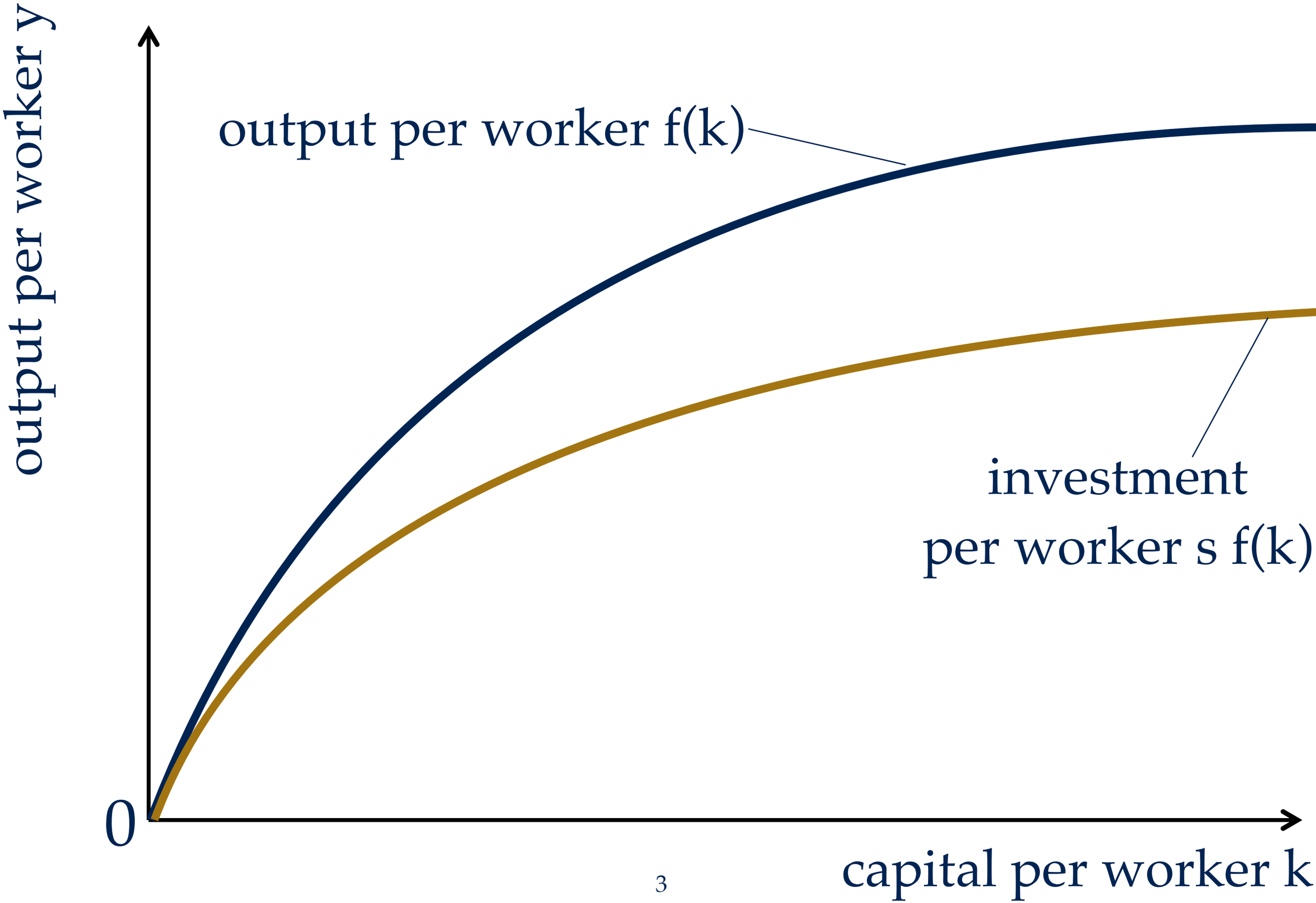

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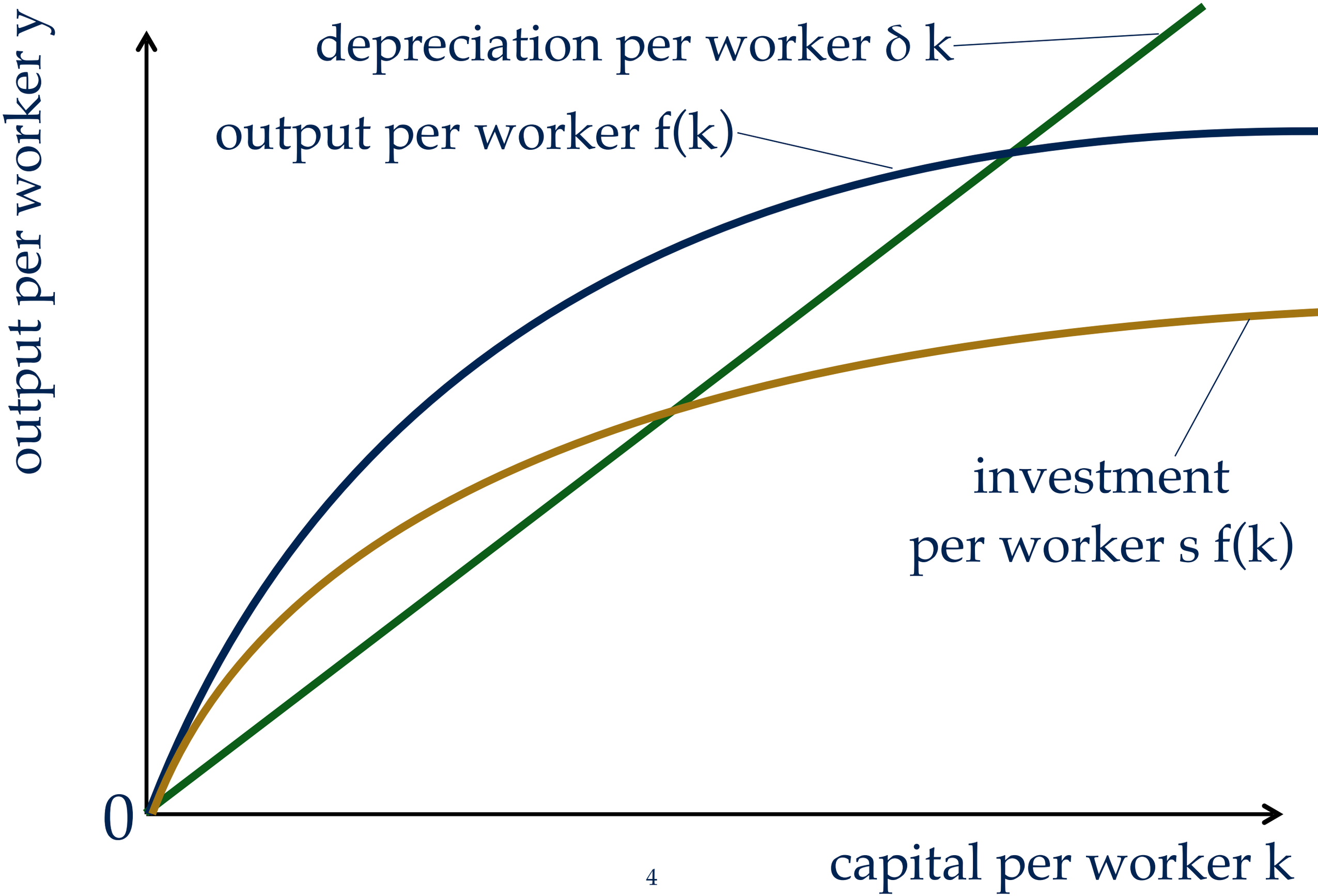

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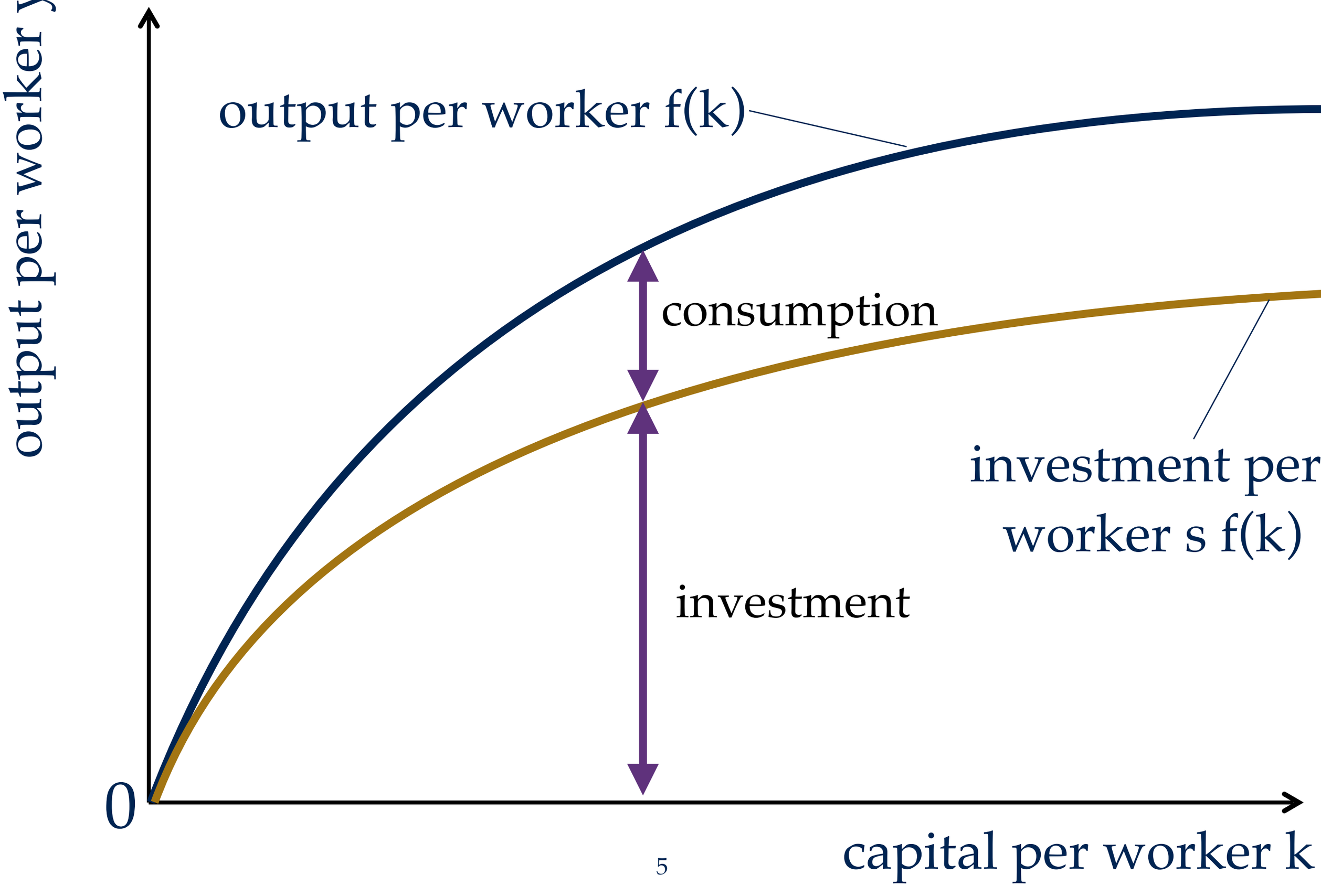

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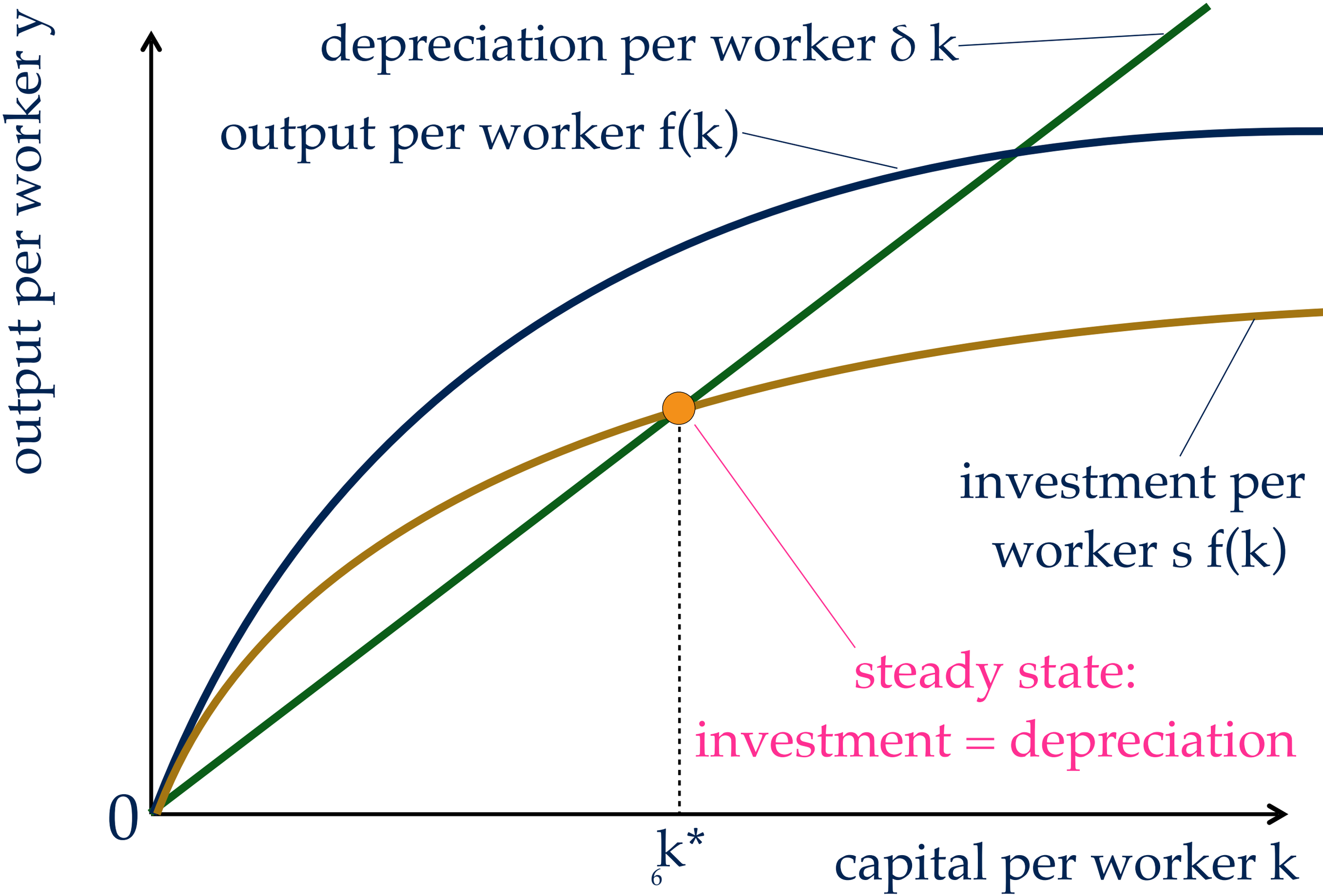

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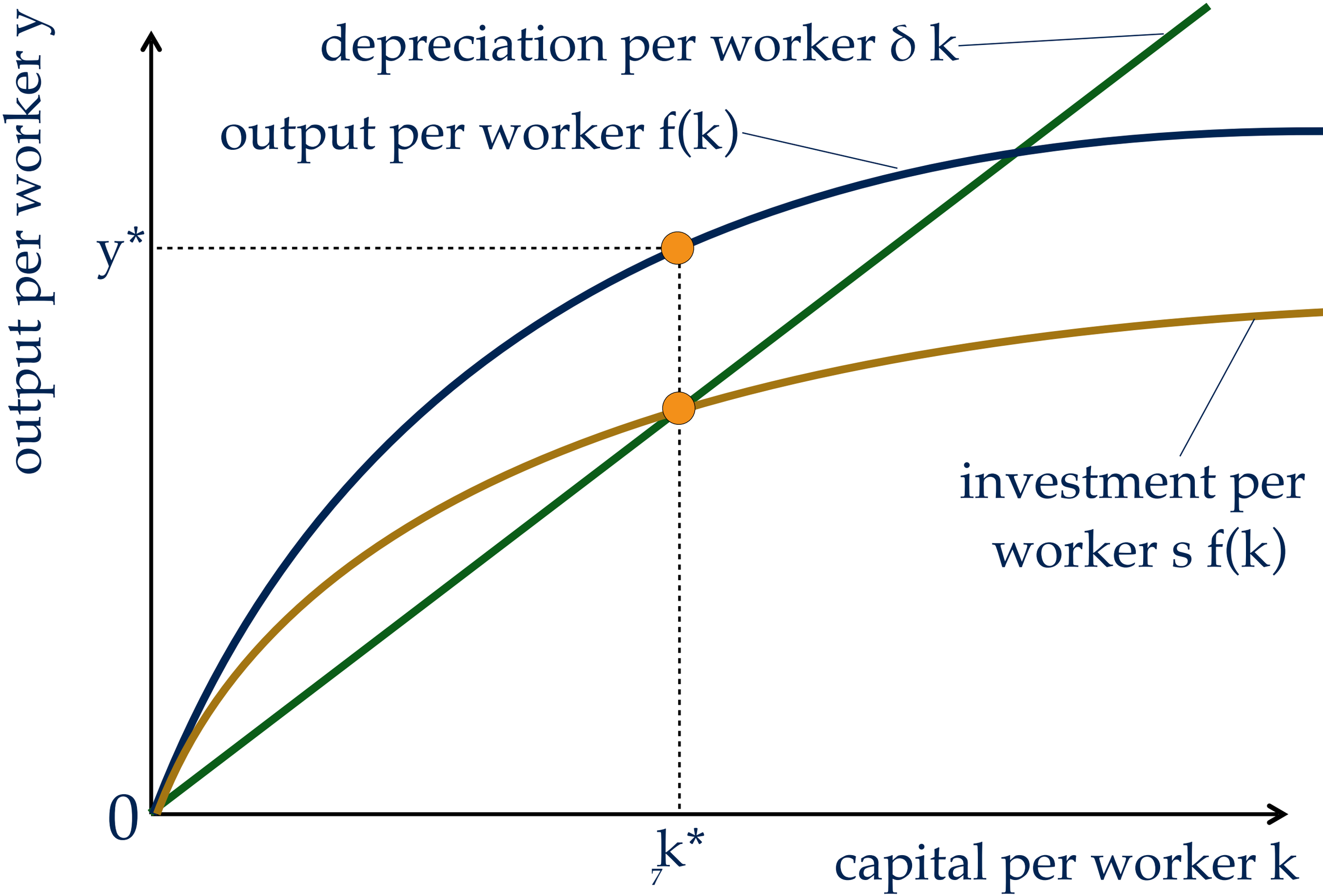

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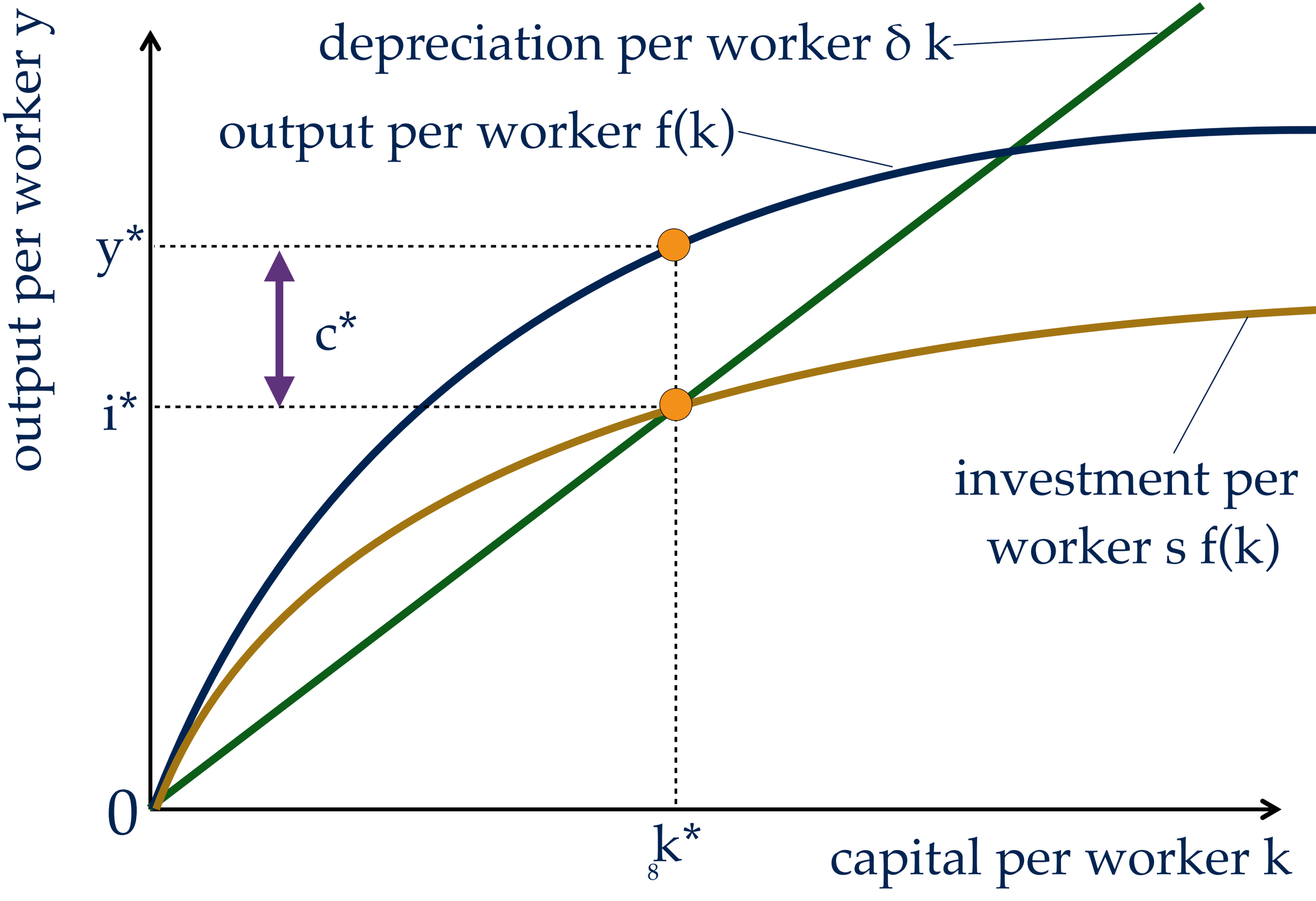
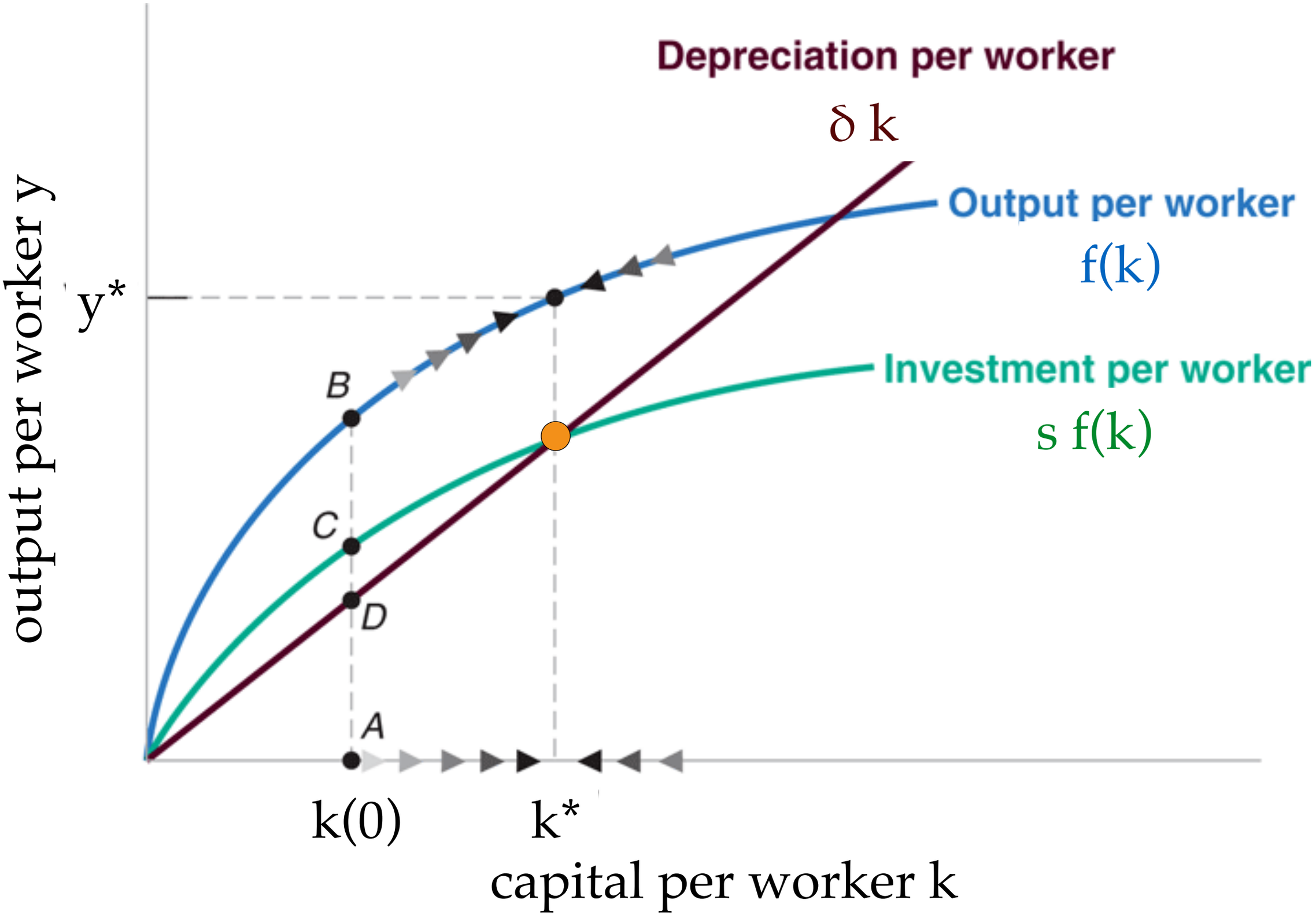


LAW OF MOTION OF CAPITAL



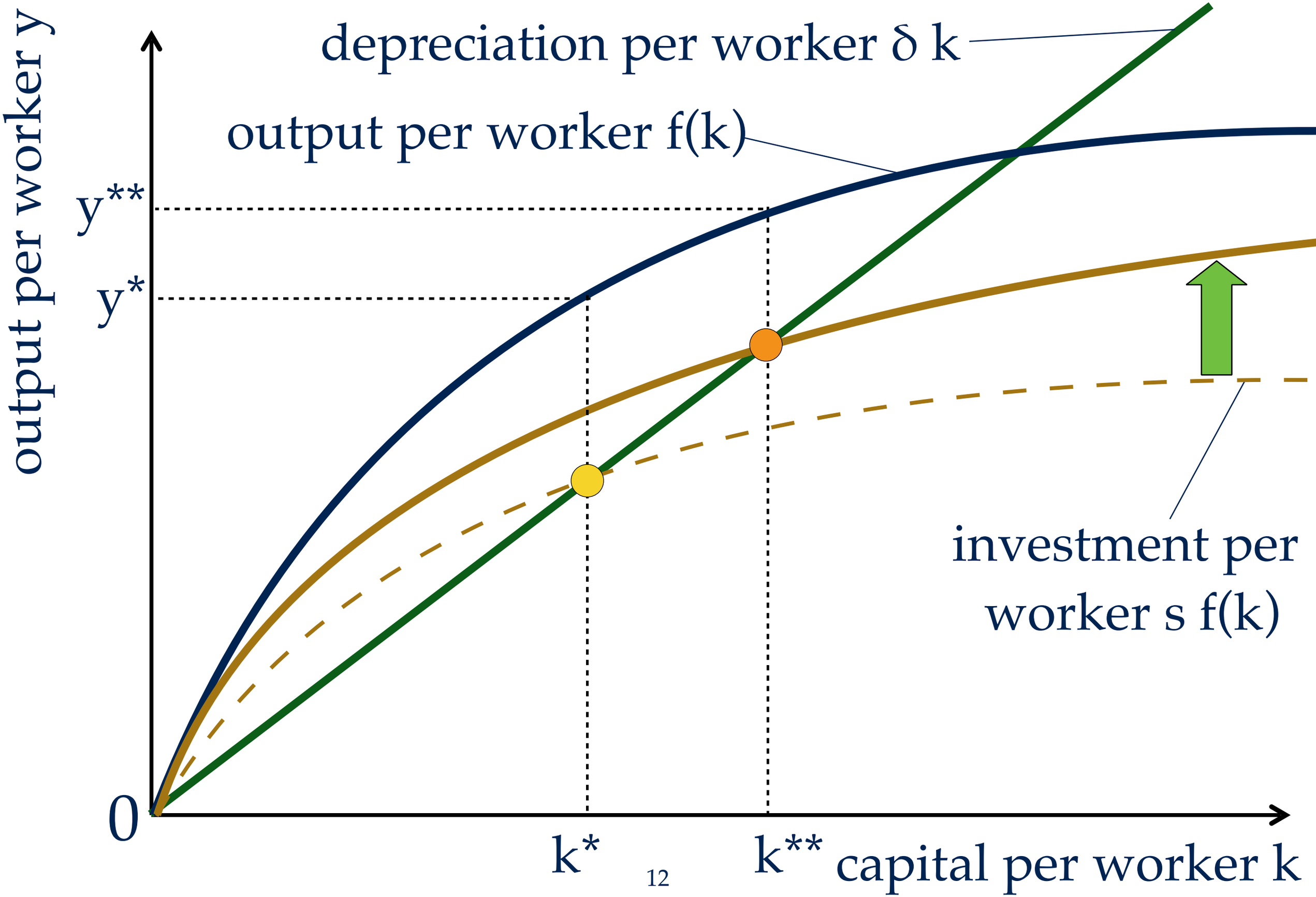
EXPLAINING THE MOTION OF CAPITAL

- when capital per worker k is below steady state:
  - output per worker y = f(k) is somewhat low, so investment per worker s f(k) is somewhat low
  - but depreciation per worker δ k is even lower than investment per worker
  - since investment is above depreciation: capital increases

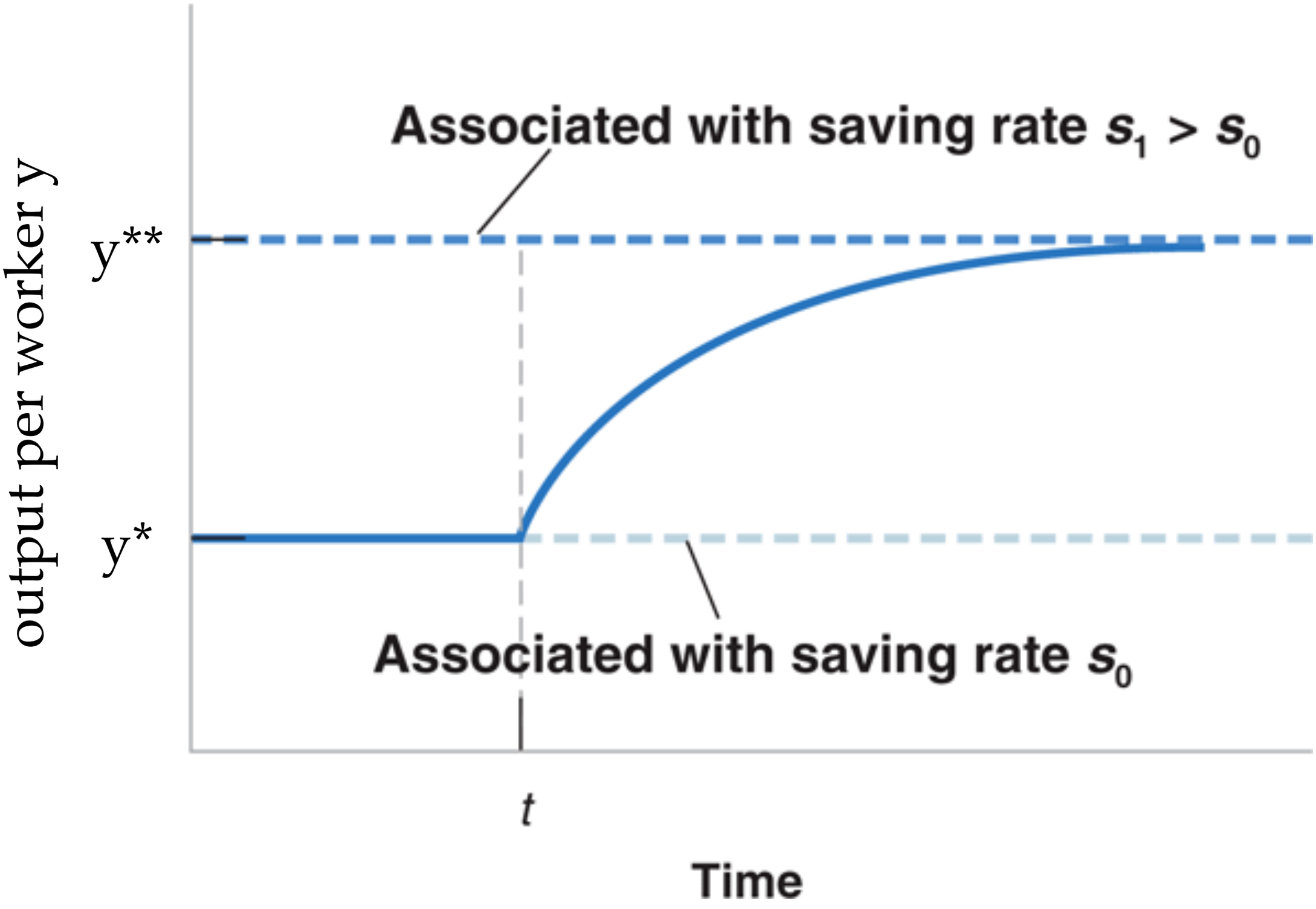
EXPLAINING THE MOTION OF CAPITAL

- when capital per worker is above steady state, the opposite holds:
  - investment per worker is somewhat high
  - but depreciation per worker is even higher than investment per worker
  - since investment is below depreciation: capital decreases

INCREASE IN SAVING RATE: STEADY STATE



INCREASE IN SAVING RATE: DYNAMICS



EFFECTS OF THE SAVING RATE

- a higher saving rate leads to positive growth of output per worker for some time, but not forever

- the saving rate has no effect on the growth rate of output per worker in the long run

  - in steady state: growth rate of output per worker=0

- but a higher saving rate leads to higher output per worker and higher capital per worker in the long run

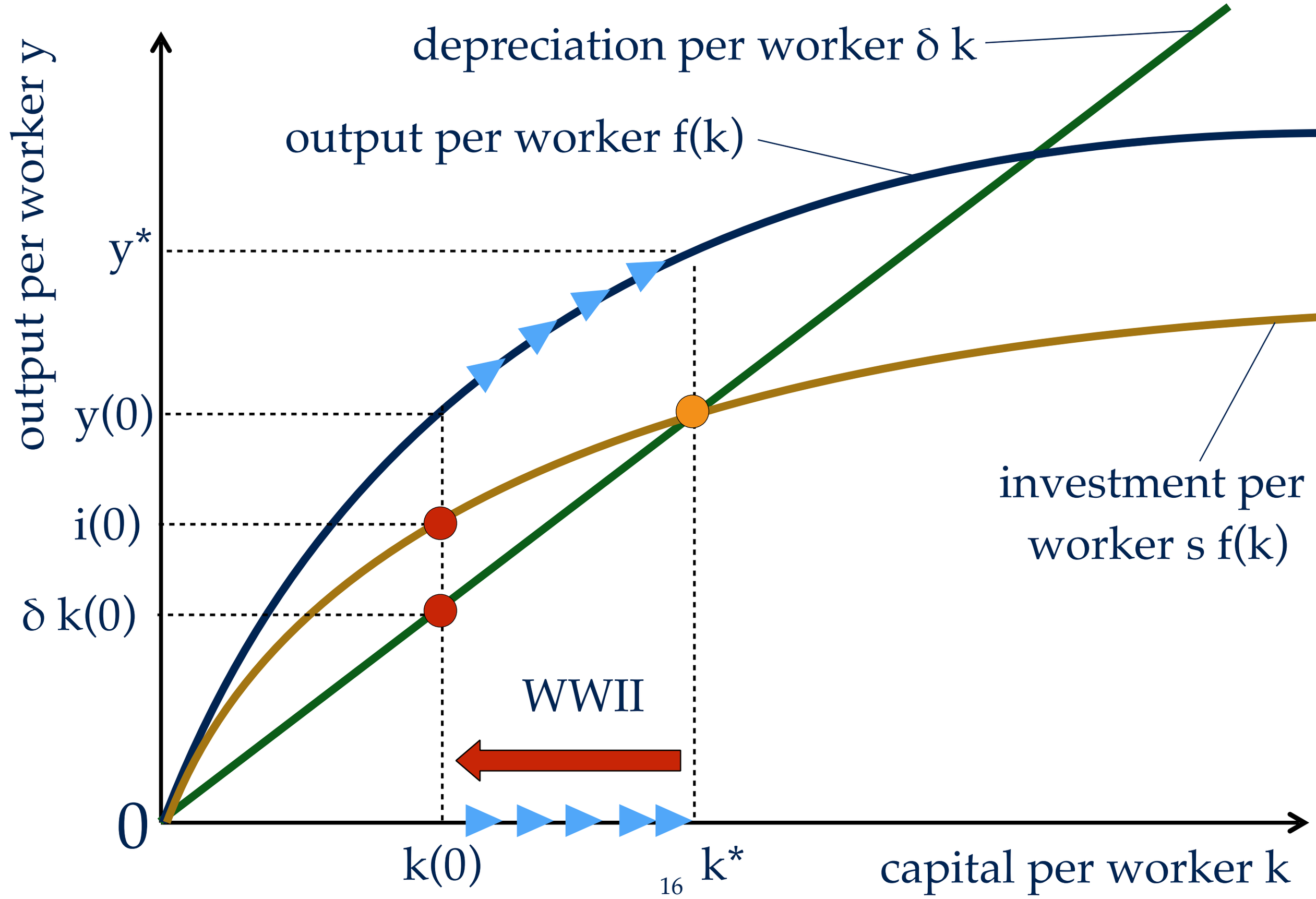
DESTRUCTION OF CAPITAL: FRANCE AFTER WWII

- France suffered heavy destruction of its capital stock during World War II

- proportion of the French capital stock destroyed in 1945:

Railways	Tracks	6%	Rivers	Waterways	86%
	Stations	38%		Canal locks	11%
	Engines	21%		Barges	80%
	Hardware	60%	Buildings	(numbers)	
Roads	Cars	31%		Dwellings	1,229,000
	Trucks	40%		Industrial	246,000

DESTRUCTION OF CAPITAL: FRANCE AFTER WWII



DESTRUCTION OF CAPITAL STOCK: FRANCE AFTER WWII

- the Solow model predicts that France would experience high capital accumulation and high output growth for some time
- indeed, from 1946 to 1950, French real GDP grew at 9.6% per year!
- this is because investment is much higher than depreciation when the capital stock is below steady state
  - this leads to rapid capital accumulation and rapid growth of output