

N. Gregory Mankiw

Macroeconomics

Sixth Edition

Chapter 7:

**Economic Growth I: Capital Accumulation
and Population Growth**

TABLE 7-1

International Differences in the Standard of Living

Country	Income per Person (2004, in U.S. dollars)	Country	Income per Person (2004, in U.S. dollars)
United States	\$39,710	Philippines	4,890
Japan	30,040	Indonesia	3,460
Germany	27,950	India	3,100
Russia	9,620	Vietnam	2,700
Mexico	9,590	Pakistan	2,160
Brazil	8,020	Bangladesh	1,980
China	5,530	Nigeria	930

Source: World Bank.

Table 7.1

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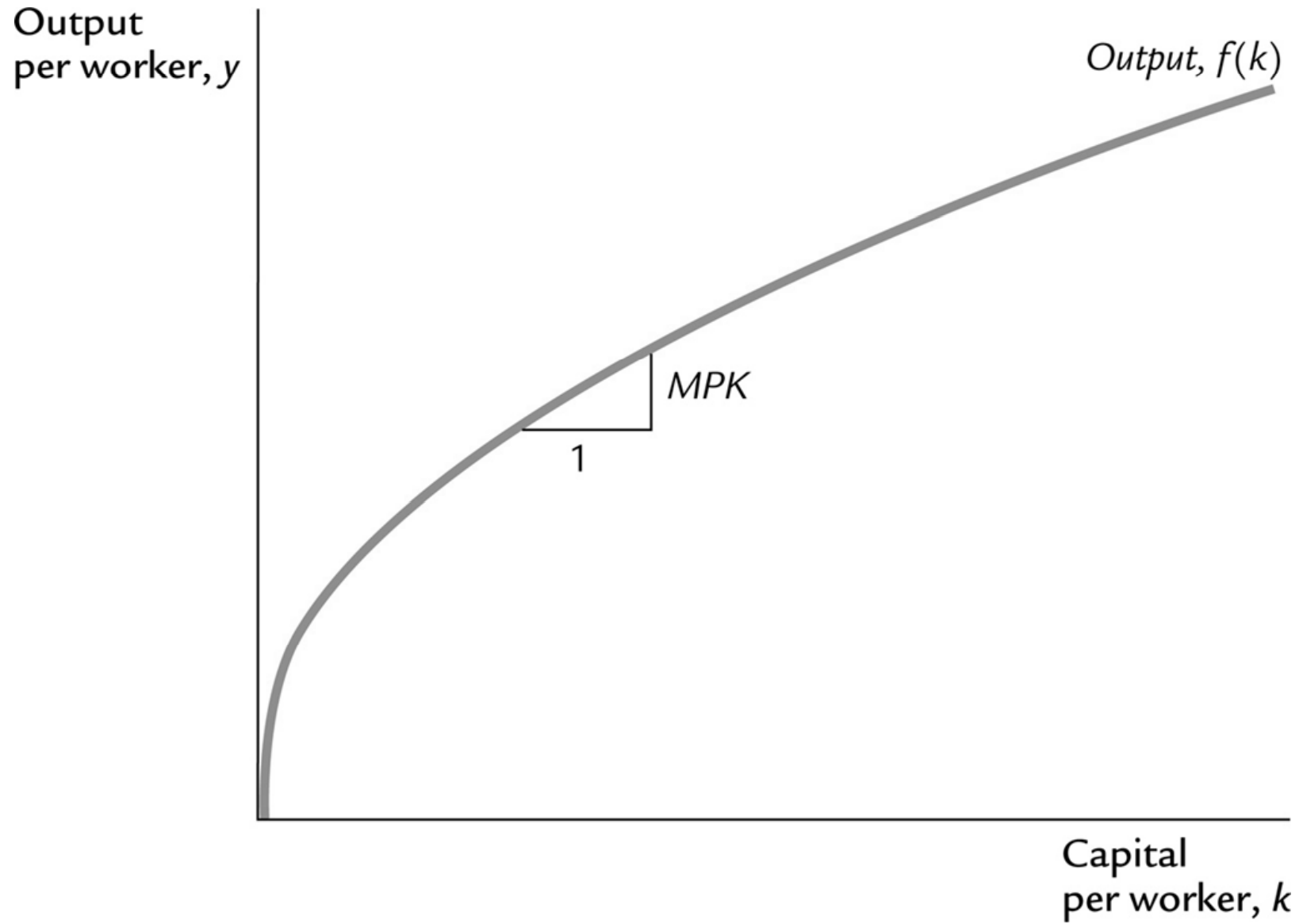


Figure 7.1 The Production Function
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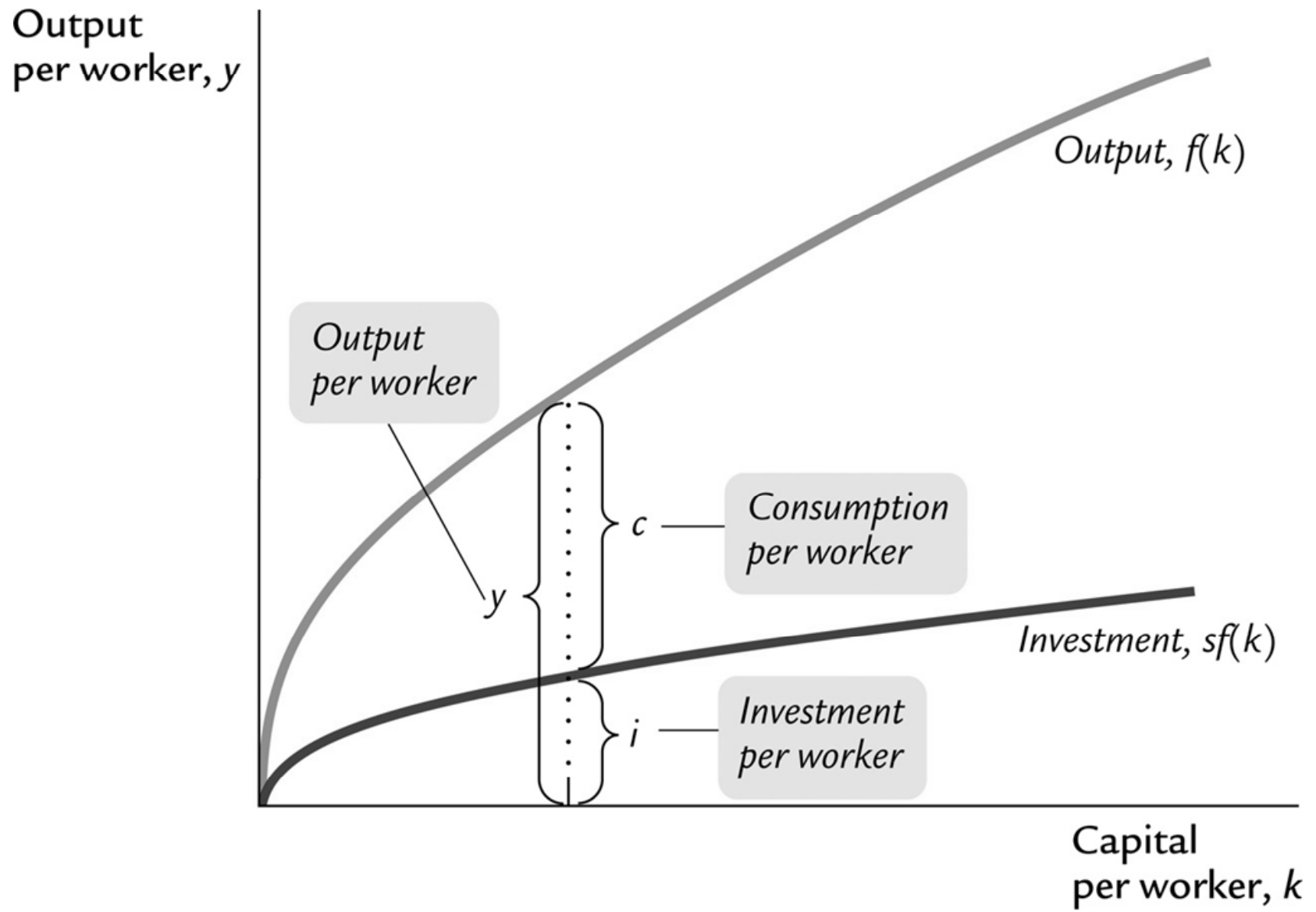


Figure 7.2 Output, Consumption, and Investment
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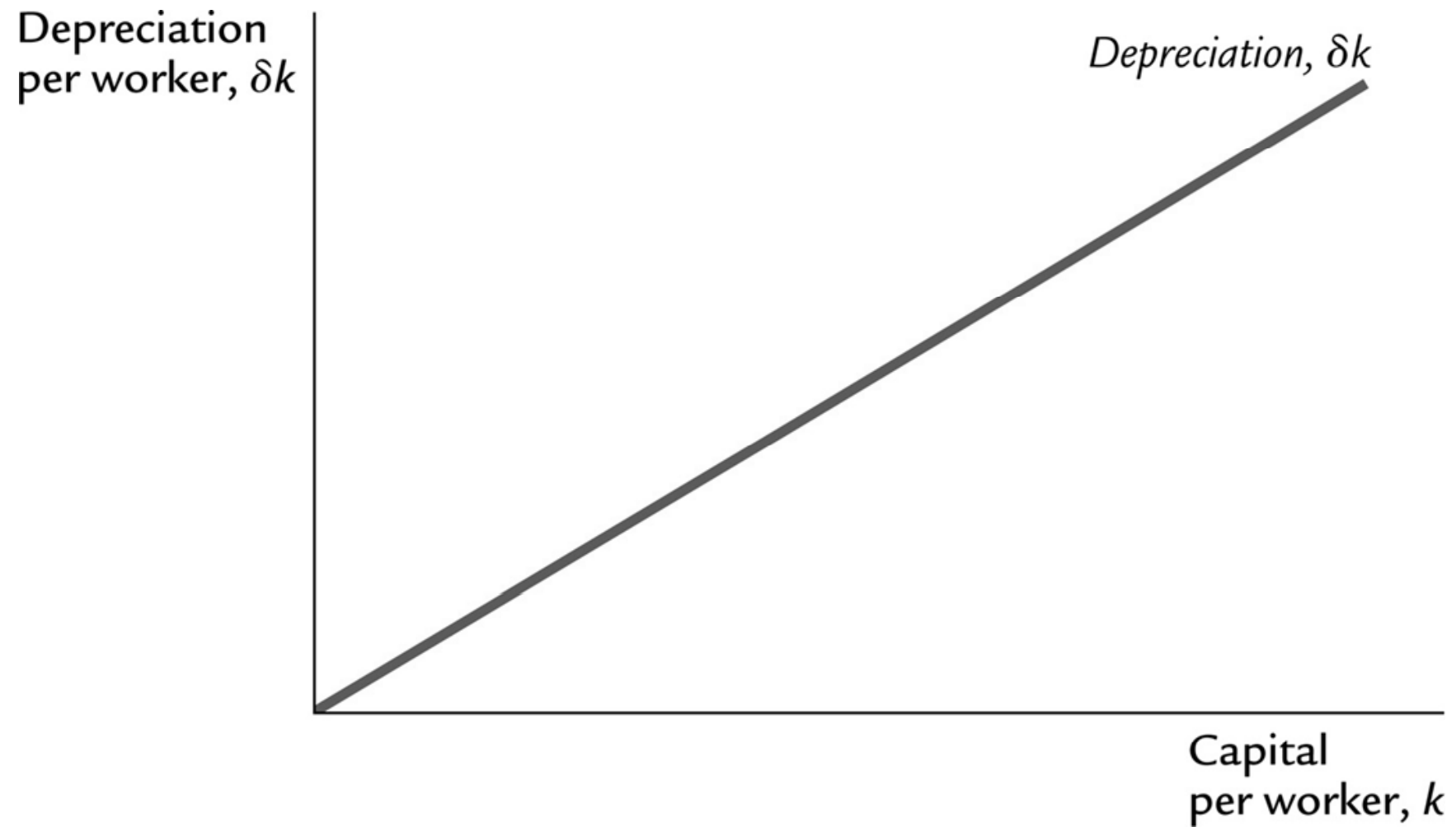


Figure 7.3 Depreciation
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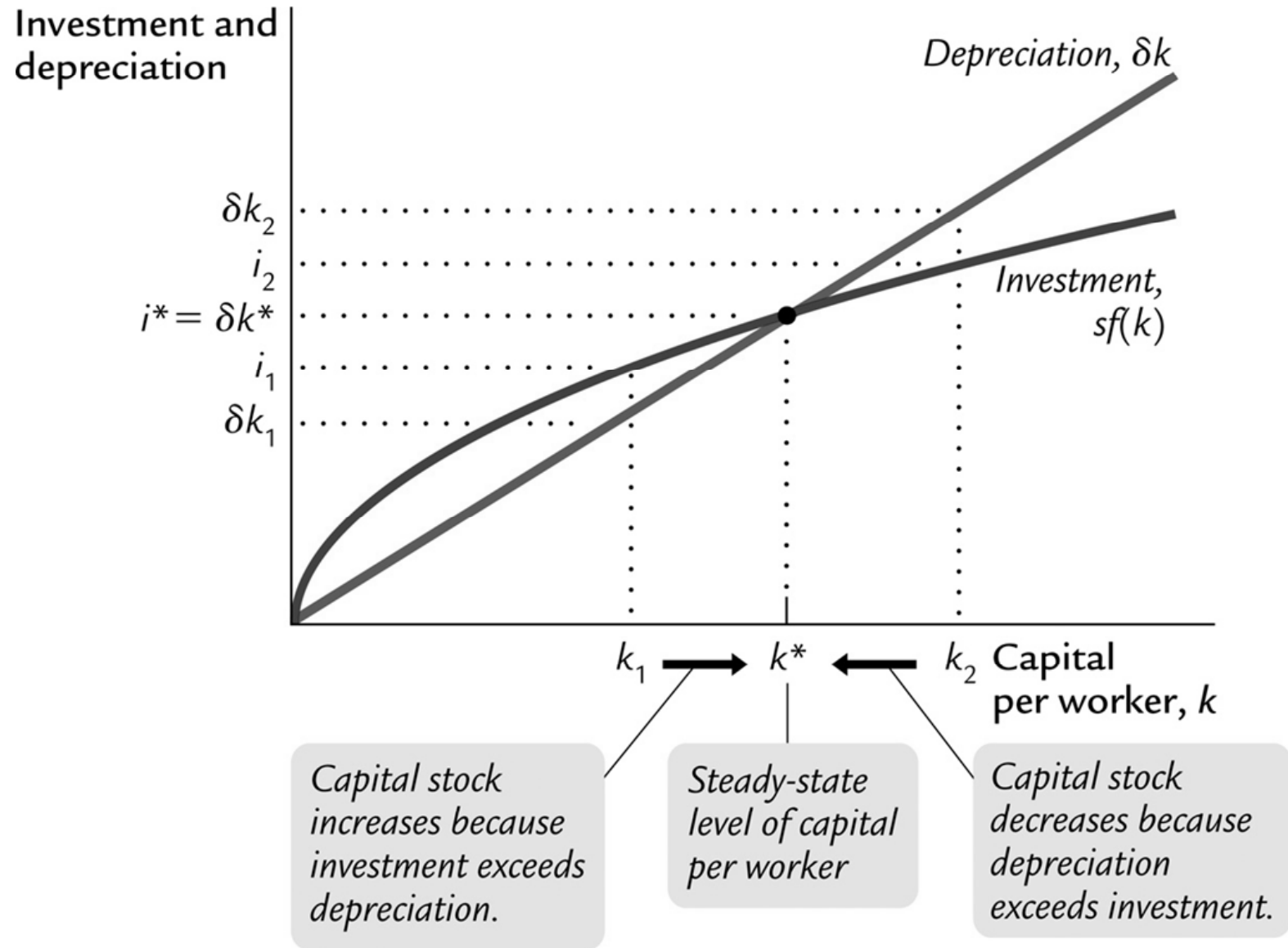


Figure 7.4 Investment, Depreciation, and the Steady State
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TABLE 7-2

Approaching the Steady State: A Numerical Example

Assumptions: $y = \sqrt{k}$; $s = 0.3$; $\delta = 0.1$; initial $k = 4.0$

Year	k	y	c	i	δk	Δk
1	4.000	2.000	1.400	0.600	0.400	0.200
2	4.200	2.049	1.435	0.615	0.420	0.195
3	4.395	2.096	1.467	0.629	0.440	0.189
4	4.584	2.141	1.499	0.642	0.458	0.184
5	4.768	2.184	1.529	0.655	0.477	0.178
.						
.						
.						
10	5.602	2.367	1.657	0.710	0.560	0.150
.						
.						
.						
25	7.321	2.706	1.894	0.812	0.732	0.080
.						
.						
.						
100	8.962	2.994	2.096	0.898	0.896	0.002
.						
.						
.						
∞	9.000	3.000	2.100	0.900	0.900	0.000

Table 7.2

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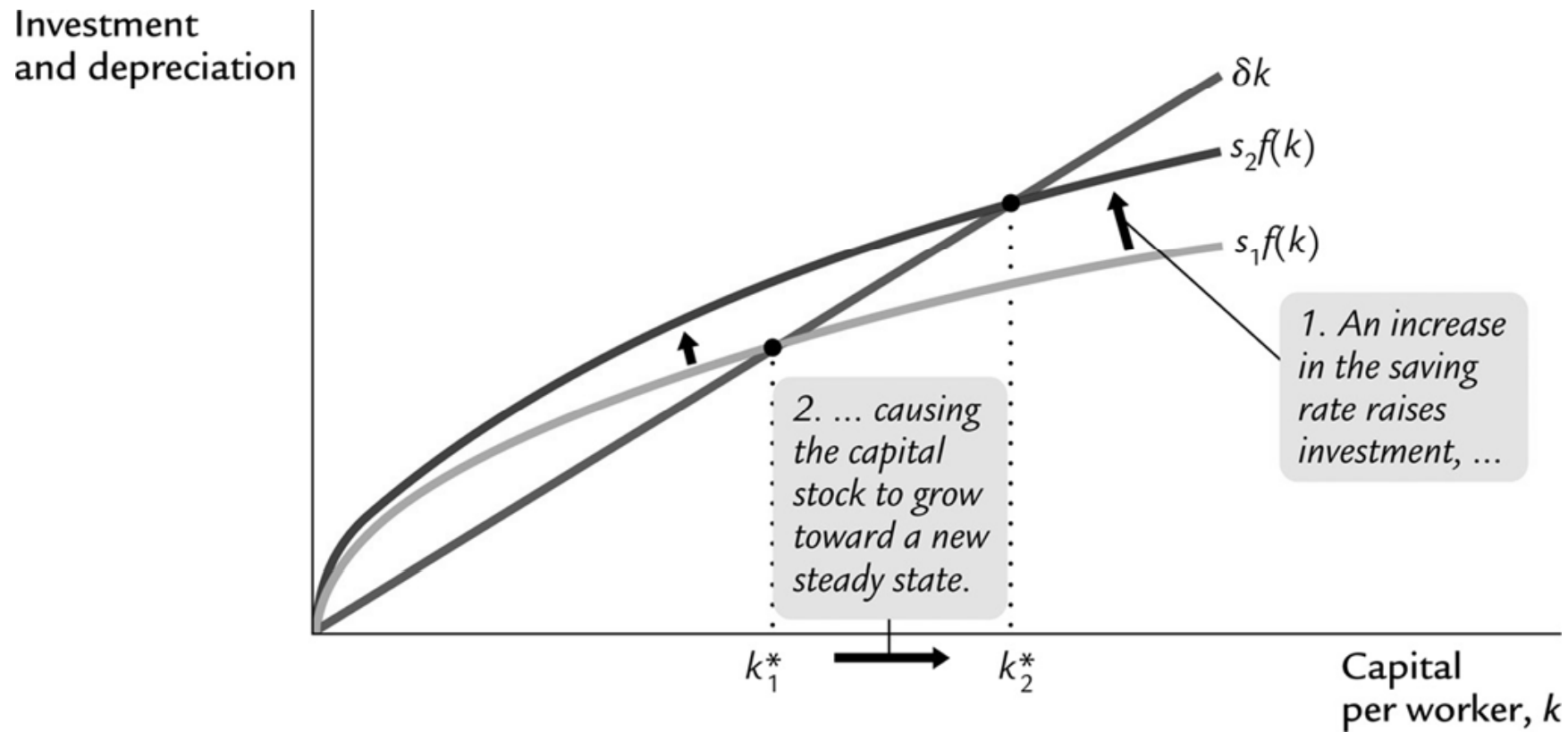


Figure 7.5 An Increase in the Saving Rate
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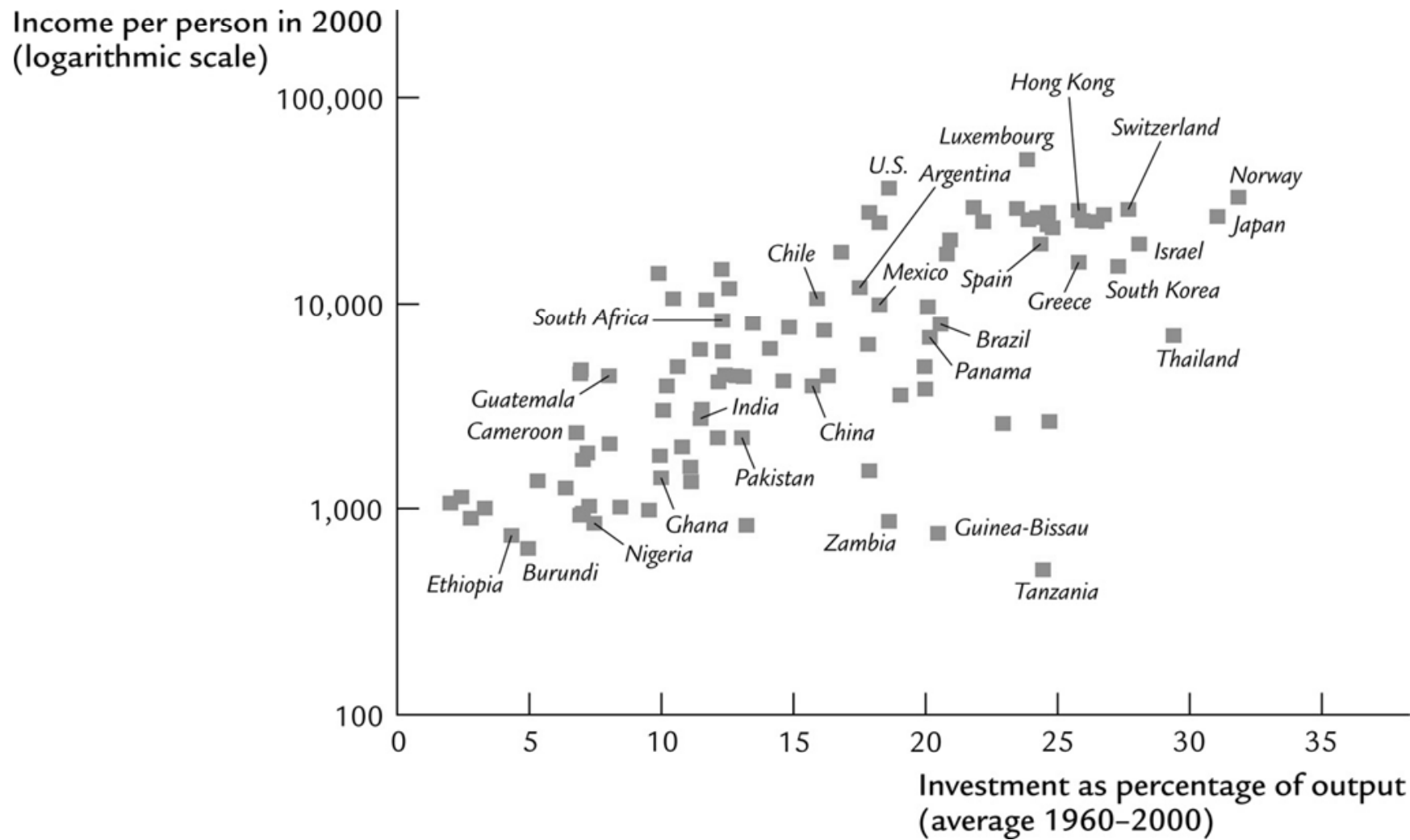


Figure 7.6 International Evidence on Investment Rates and Income per Person
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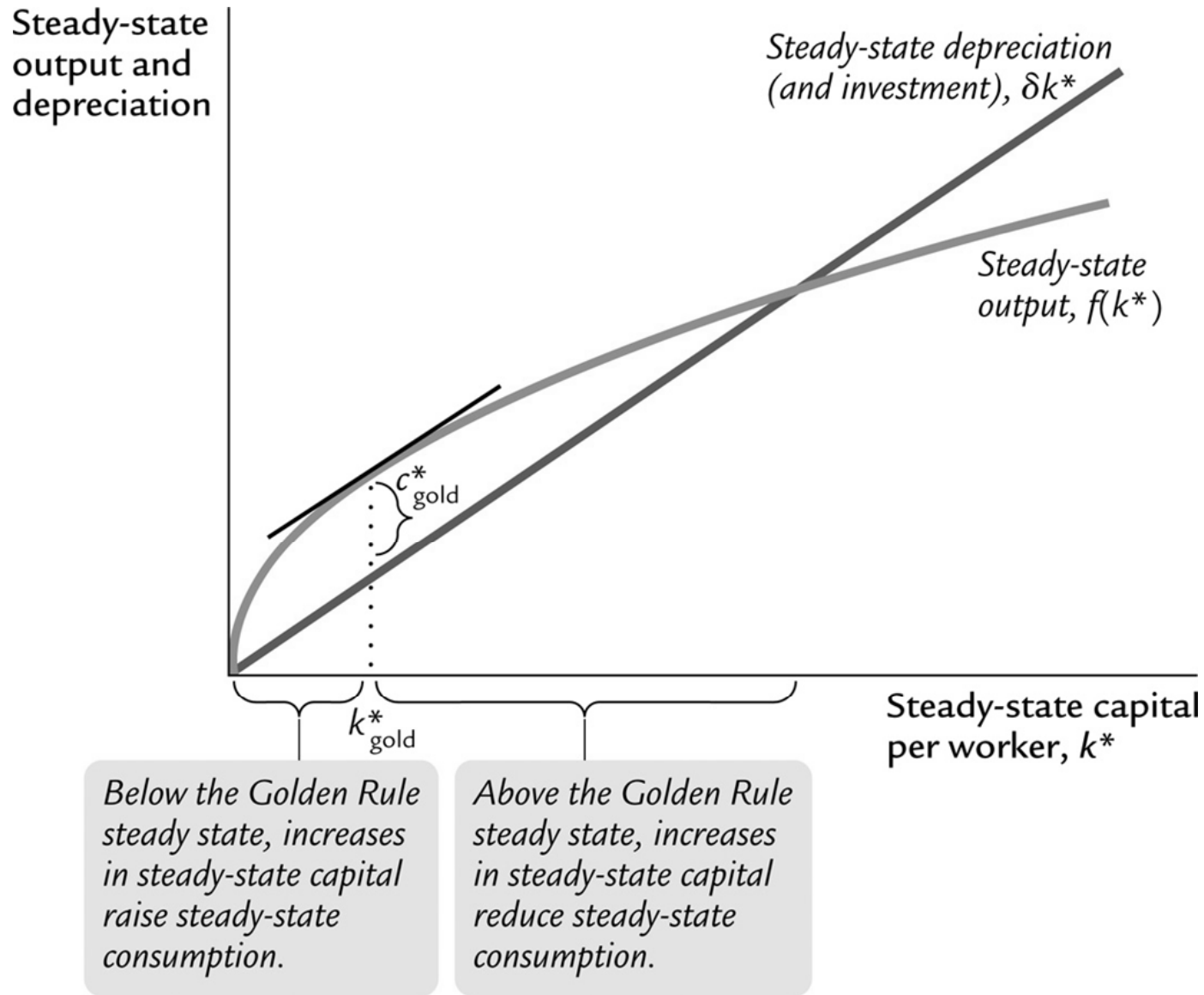
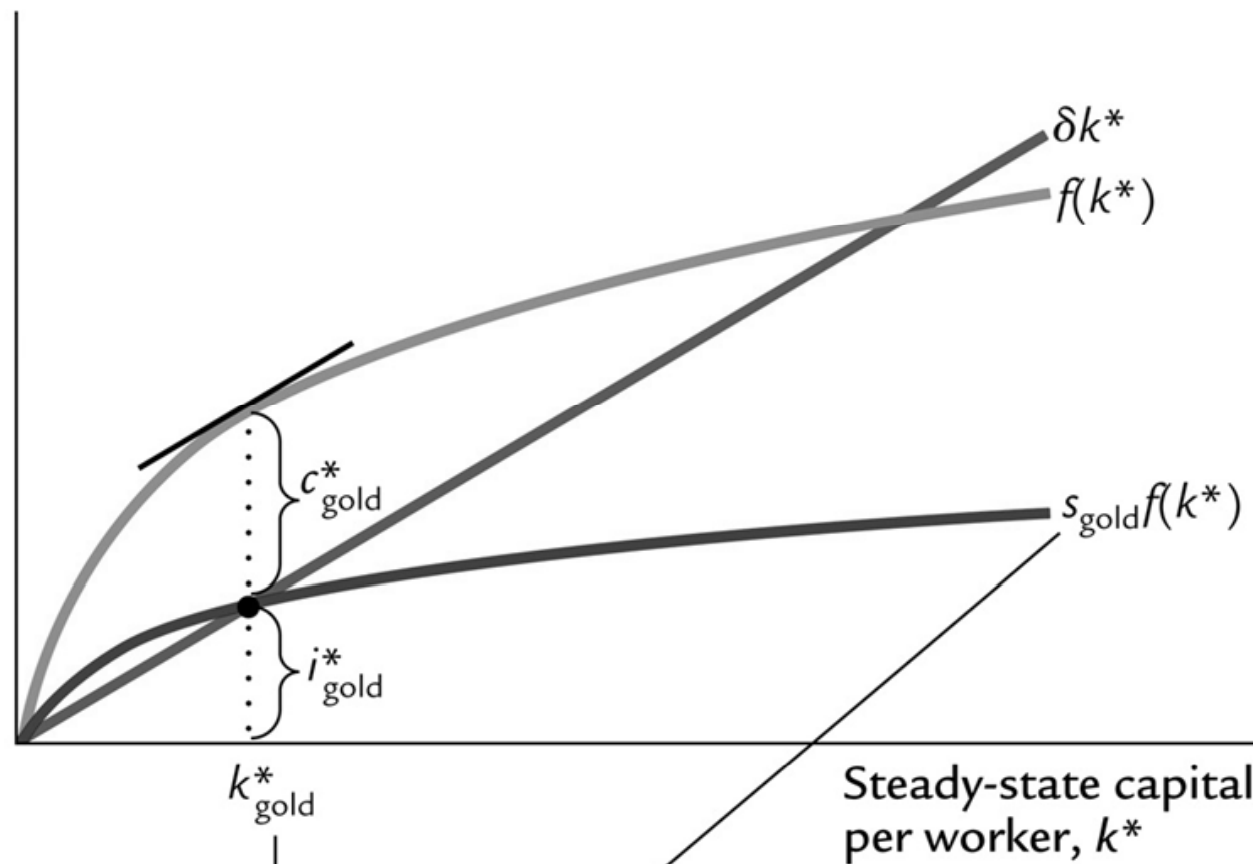


Figure 7.7 Steady-State Consumption
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Steady-state output, depreciation, and investment per worker



1. To reach the Golden Rule steady state ...

2. ...the economy needs the right saving rate.

Figure 7.8 The Saving Rate and the Golden Rule
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TABLE 7-3

Finding the Golden Rule Steady State: A Numerical Example

Assumptions: $y = \sqrt{k}$; $\delta = 0.1$

s	k^*	y^*	δk^*	c^*	MPK	$MPK - \delta$
0.0	0.0	0.0	0.0	0.0	∞	∞
0.1	1.0	1.0	0.1	0.9	0.500	0.400
0.2	4.0	2.0	0.4	1.6	0.250	0.150
0.3	9.0	3.0	0.9	2.1	0.167	0.067
0.4	16.0	4.0	1.6	2.4	0.125	0.025
0.5	25.0	5.0	2.5	2.5	0.100	0.000
0.6	36.0	6.0	3.6	2.4	0.083	-0.017
0.7	49.0	7.0	4.9	2.1	0.071	-0.029
0.8	64.0	8.0	6.4	1.6	0.062	-0.038
0.9	81.0	9.0	8.1	0.9	0.056	-0.044
1.0	100.0	10.0	10.0	0.0	0.050	-0.050

Table 7.3

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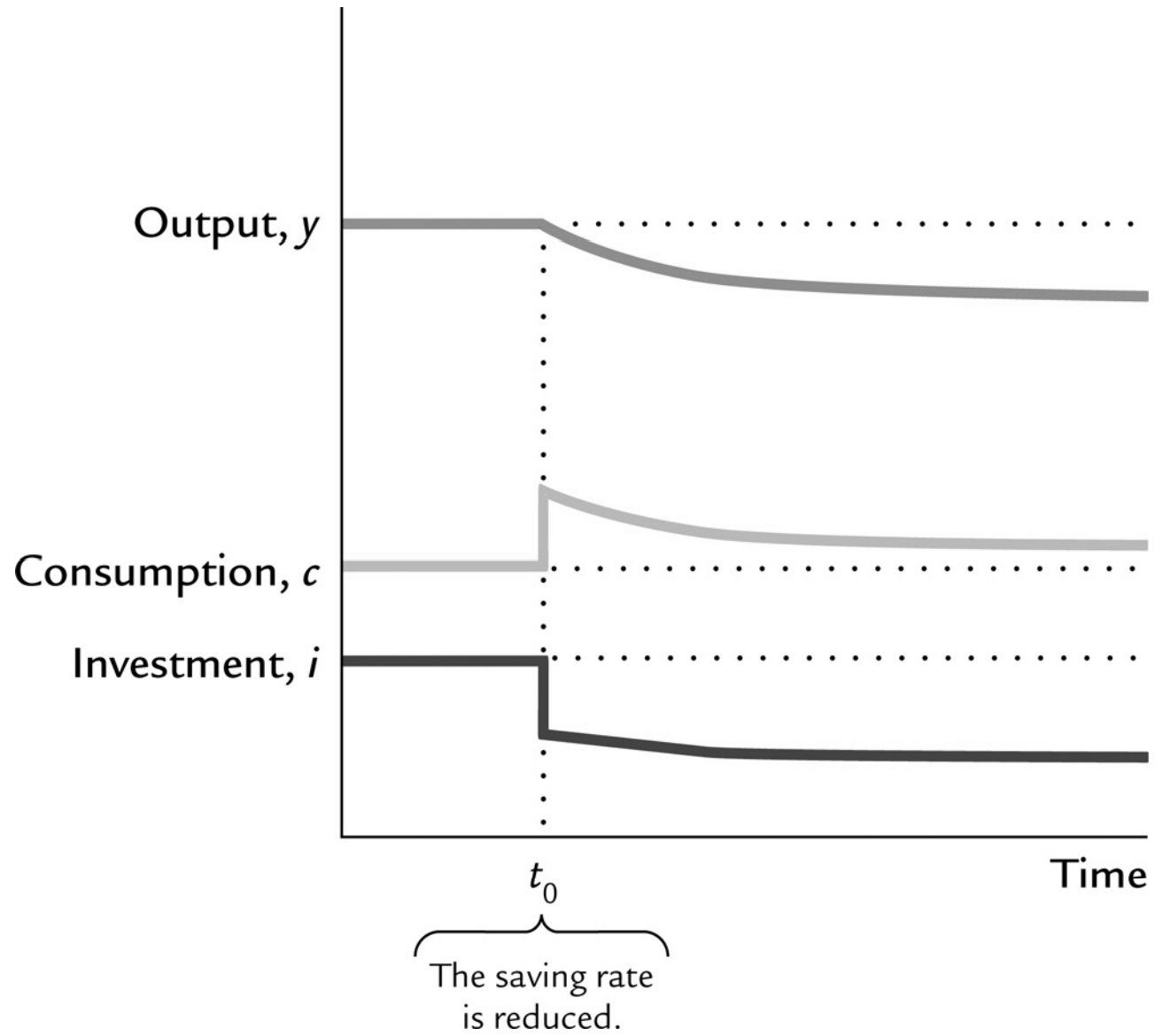


Figure 7.9 Reducing Saving When Starting With More Capital Than in the Golden Rule Steady State
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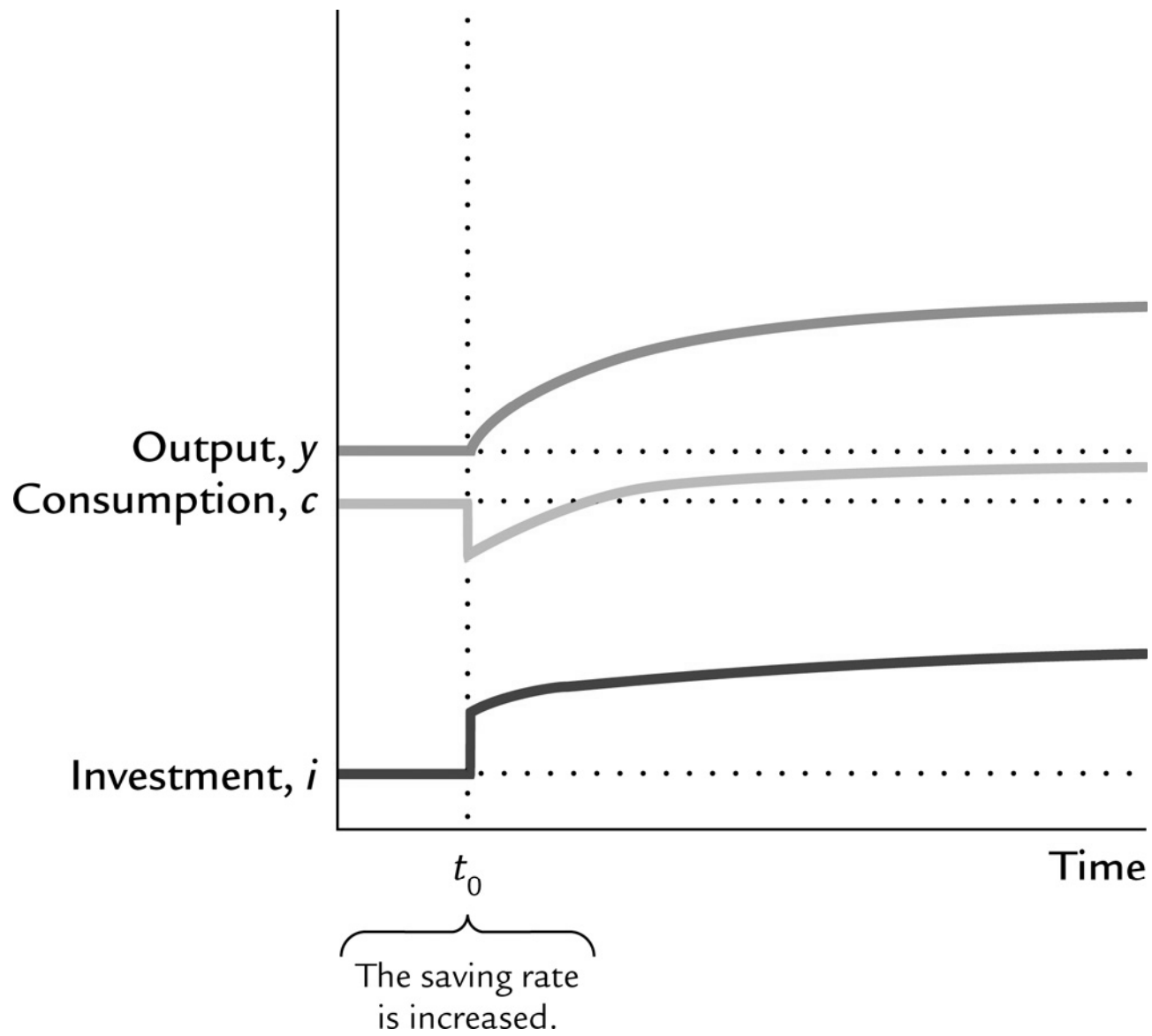


Figure 7.10 Increasing Saving When Starting With Less Capital Than in the Golden Rule Steady State
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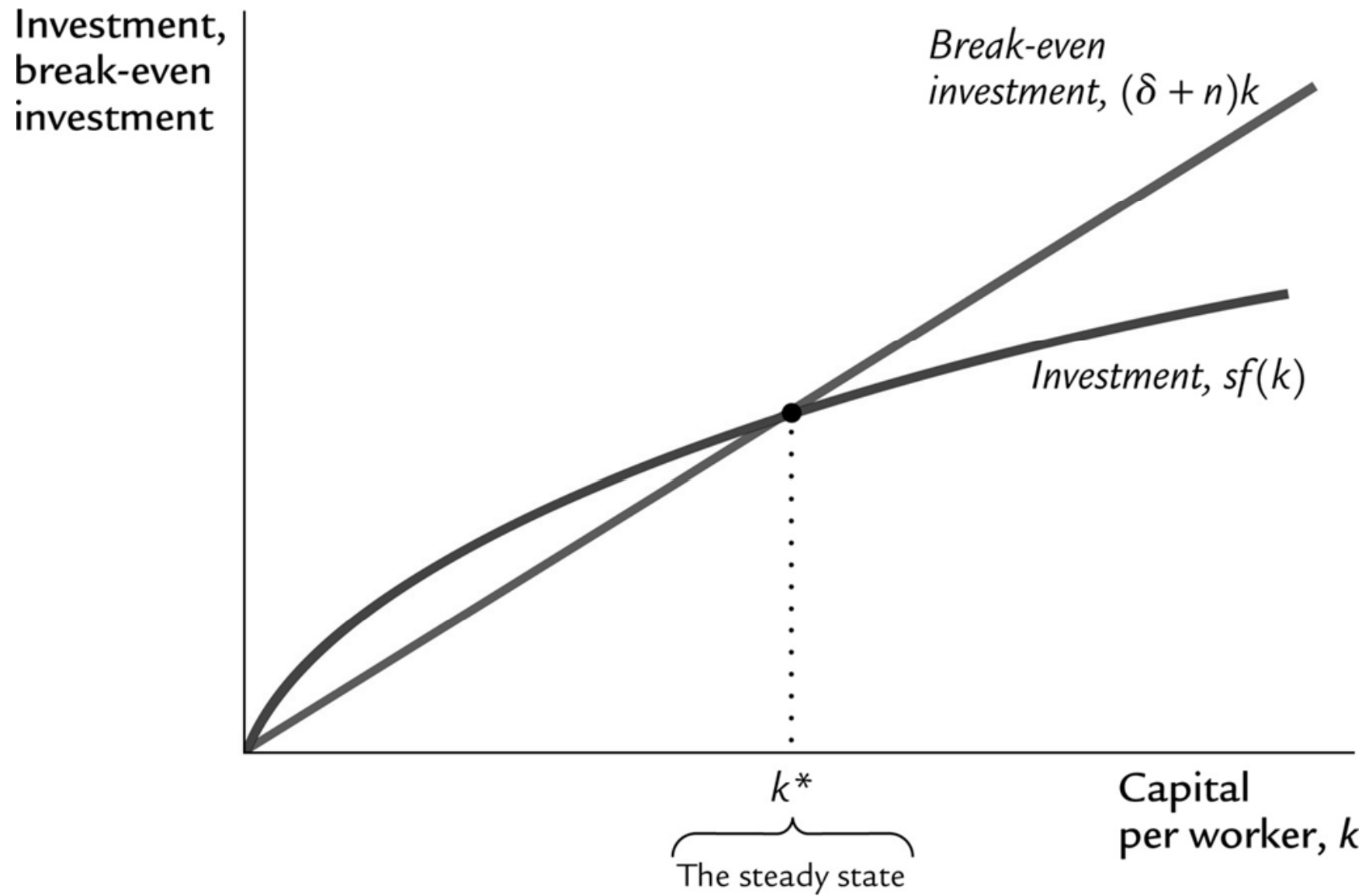


Figure 7.11 Population Growth in the Solow Model
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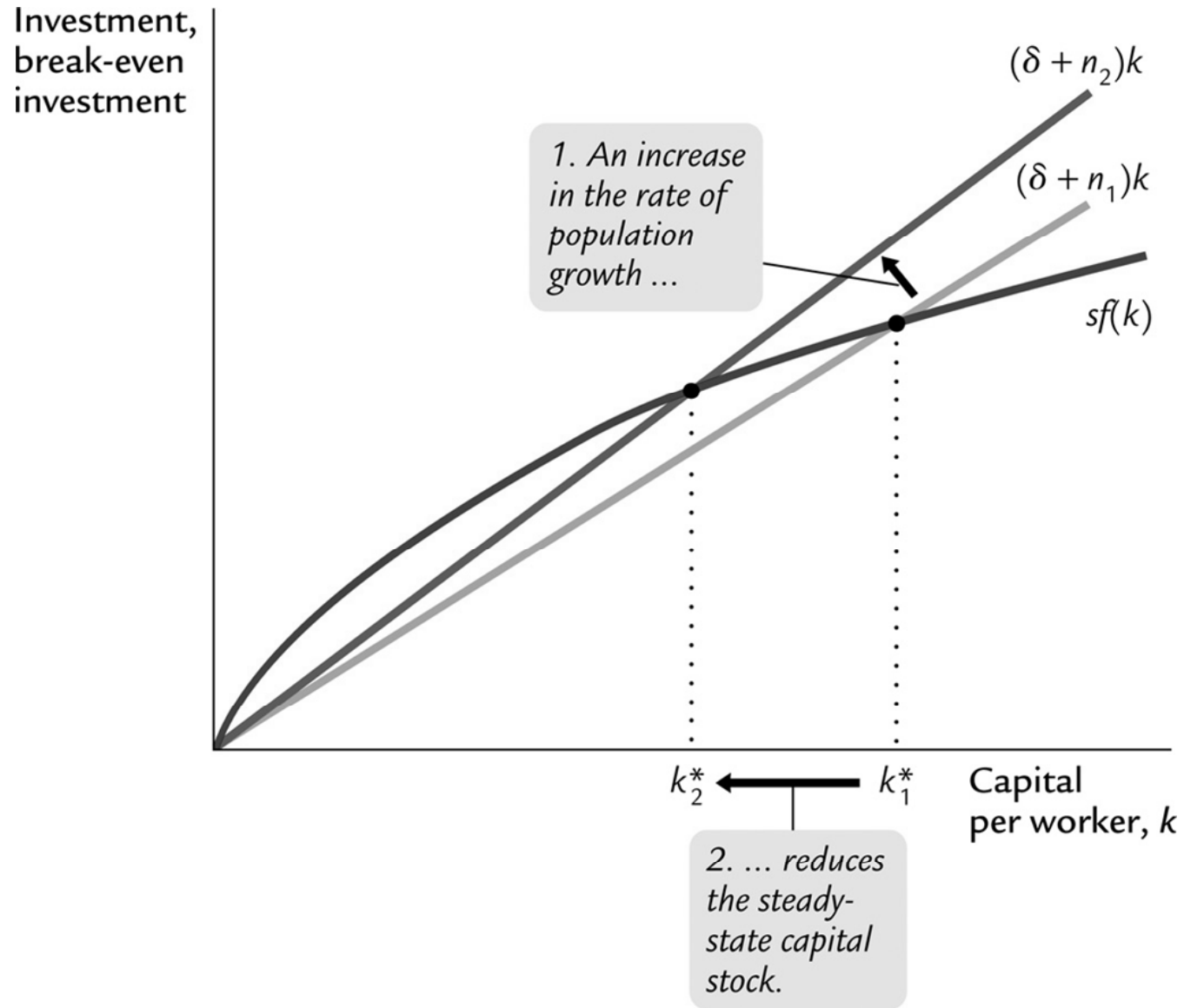


Figure 7.12 The Impact of Population Growth
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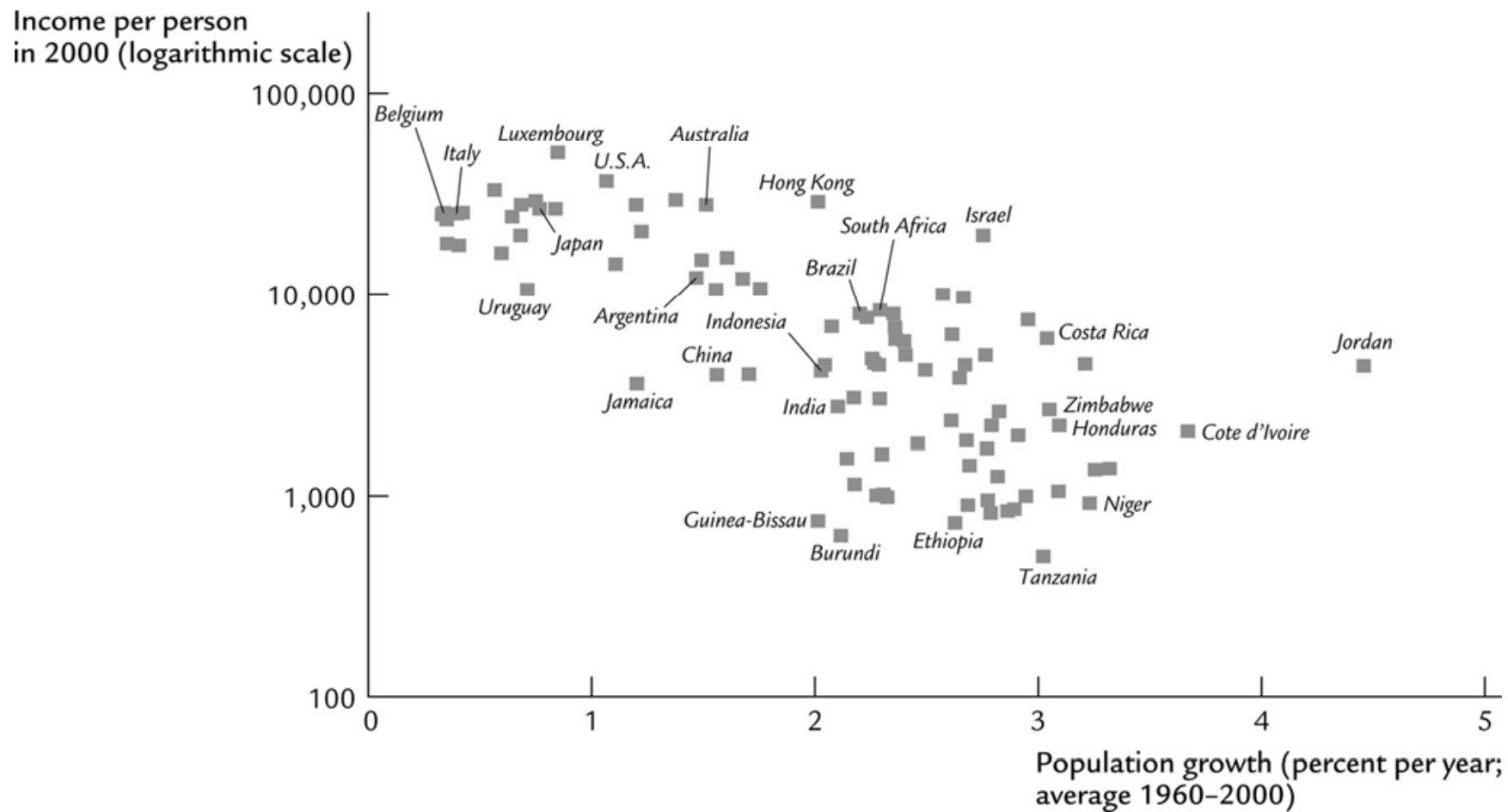


Figure 7.13 International Evidence on Population Growth and Income per Person
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