



The Global Firm

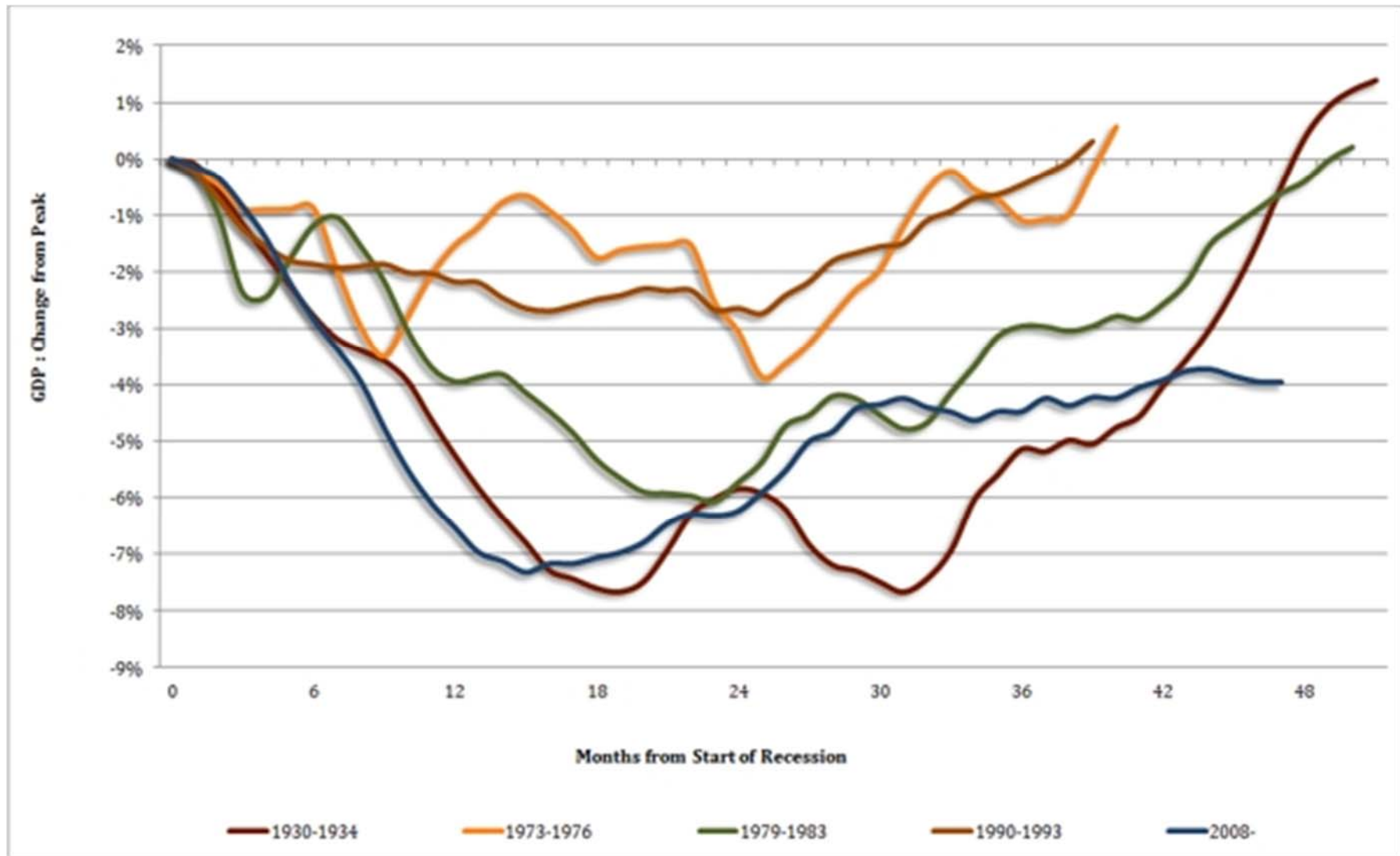
Lecture 8

Do Domestic Firms Benefit from FDI?

Paul Deng
March 20, 2012

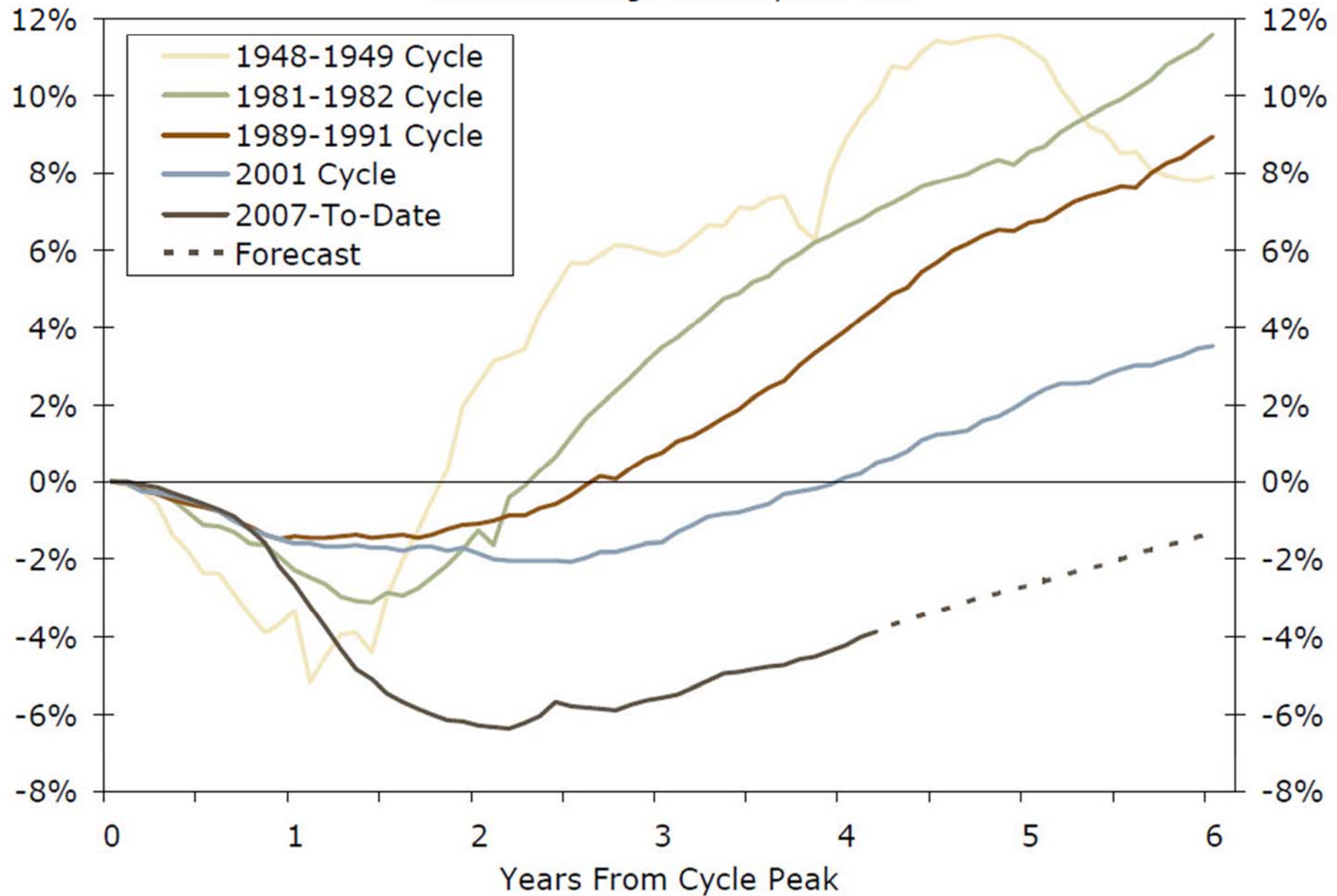
Big Picture

Compare economic recovery across business cycles: GDP

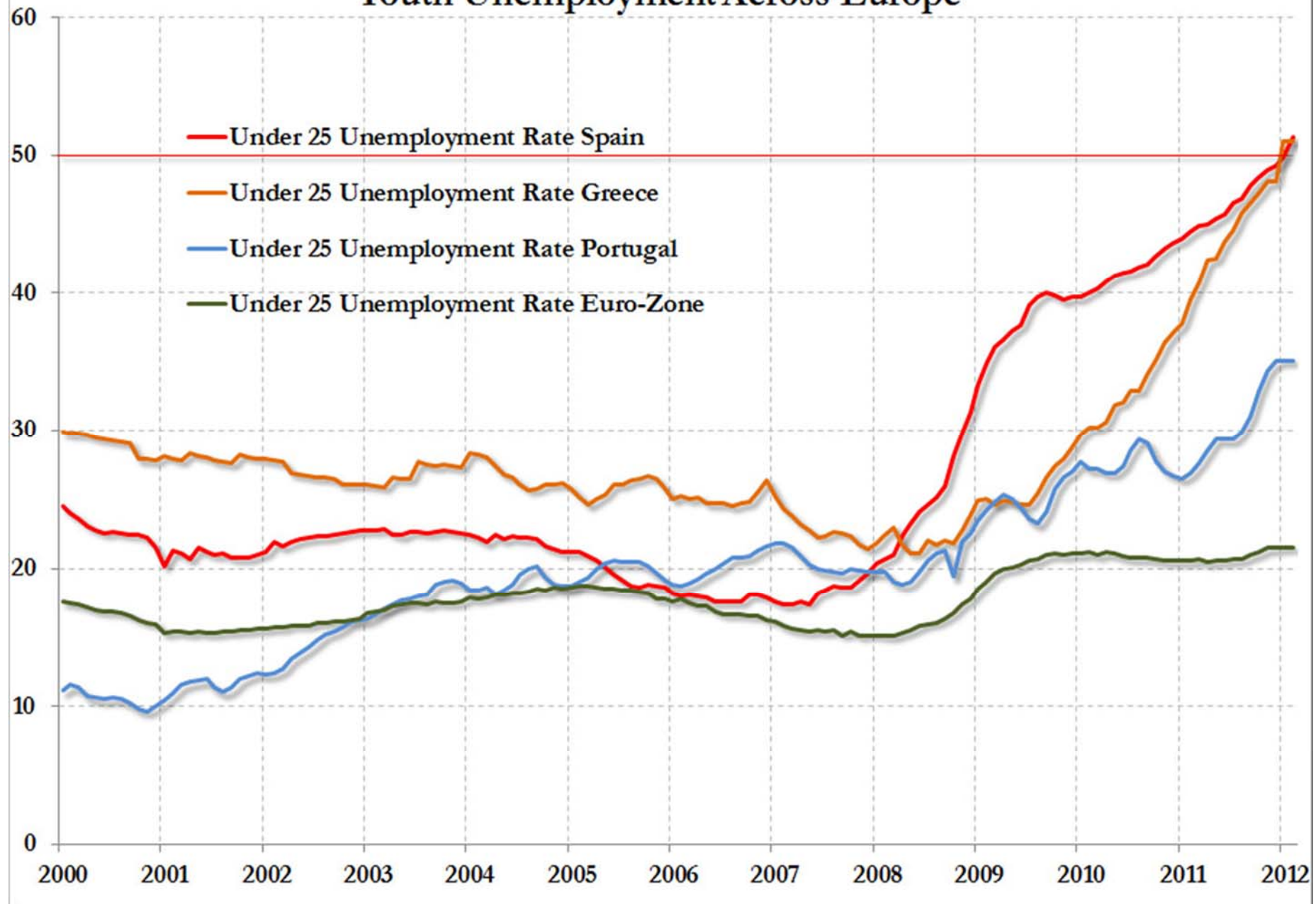


Employment Cycles

Percent Change from Cycle Peak

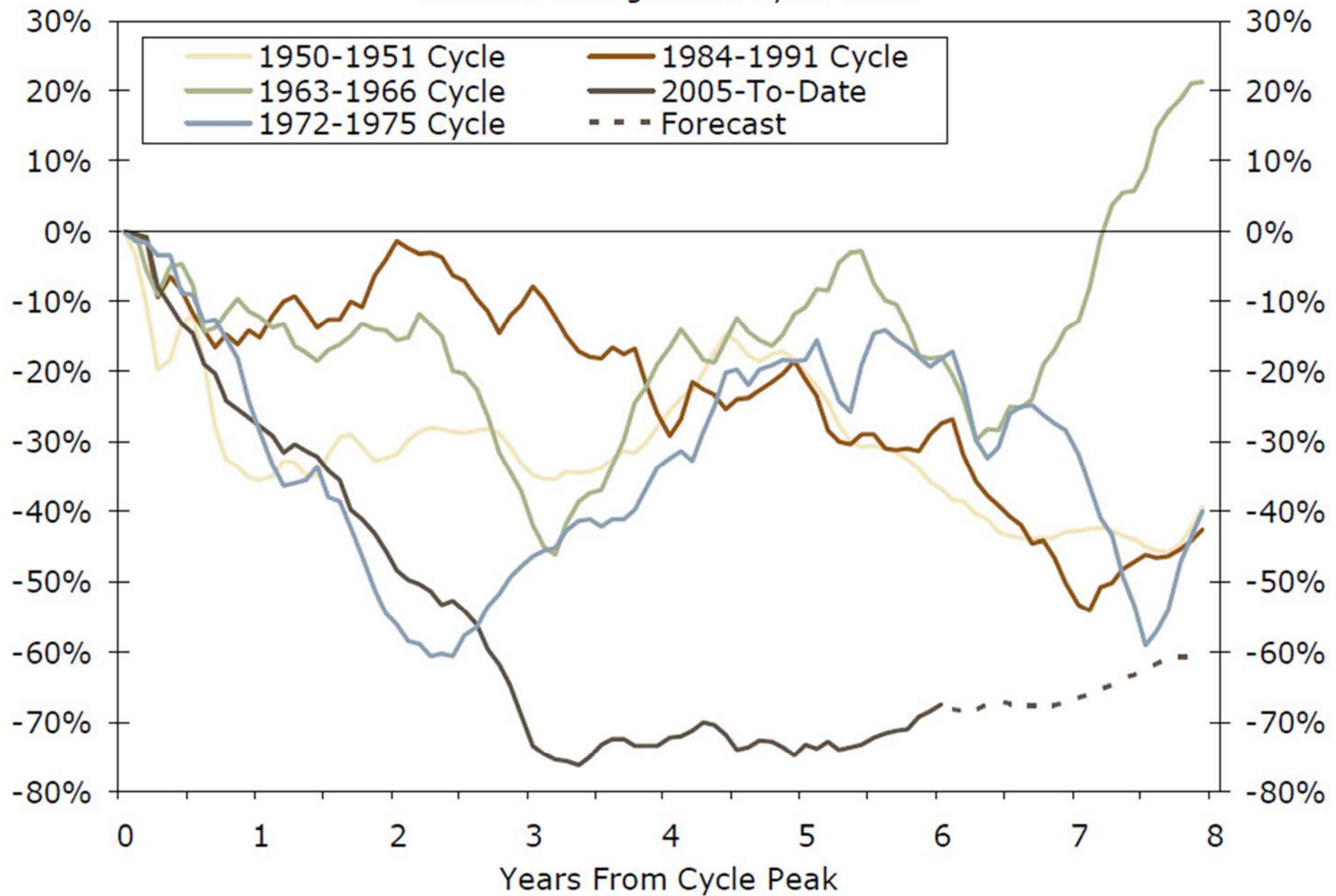


Youth Unemployment Across Europe



Housing Starts Cycles

Percent Change from Cycle Peak






The Impact of FDI on Host Countries, II

- So far, we have discussed a few channels for FDI spillovers:
 - Horizontal linkage (foreign → domestic within the same industry)
 - Vertical linkages: either backward and forward in vertical FDI
 - We find that spillover tends to work most effectively through backward linkage

- Now we need to dig a bit deeper into spillovers within the same industry. Specifically,
 - we analyze the trade-off between spillover and competition effect (Aitken & Harrison, 1999);
 - Later on, we also look at whether competition effect is unanimously negative (Deng and Jefferson, 2009)



Aitken-Harrison (1999): Research Question

Using firm-level data from Venezuela, Aitken & Harrison (AH) investigate whether there is a positive spillover effect from the following three perspectives:

- 1) Within the firm with foreign direct investment
 - Strictly speaking, this is not the real 'spillover'
- 2) Across firms, i.e., between foreign-invested firms and domestic firms (in the same industry)
- 3) And what is the overall effect (from 1 and 2) of FDI to the host country?

AH (1999): Estimation Equation

$$\begin{aligned}
 (1) \quad Y_{ijt} = & C + \beta_1 DFI_Plant_{ijt} \quad \rightarrow \text{Within-firm spillover} \\
 & + \beta_2 DFI_Sector_{jt} \quad \rightarrow \text{across-firm spillover *pure domestic* firms within the same industry} \\
 & + \beta_3 DFI_Plant_{ijt} * DFI_Sector_{jt} \quad \rightarrow \text{a rather strange interaction} \\
 & + \beta_4 \mathbf{X}_{ijt} + \varepsilon_{ijt}.
 \end{aligned}$$

DFI_Plant is defined as the percentage of capital owned by foreign investors, within a firm.

DFI_Sector is the average foreign equity share, weighted by firm's employment share within the sector

$$\Rightarrow FS_{jt} = \frac{\sum_i FS_{ijt} * Emp_{ijt}}{\sum_i Employment_{ijt}}. \quad (2)$$

Control variables X_s , including input factors such as labor (L), materials (M) and capital (K).



AH (1999): Data

- Firm-level data from Venezuela's National Statistics Bureau
- The years span from 1976 to 1989, excluding 1980, for a total of 13 years (ie, $t=13$)
- Unbalanced panel data, with 4,000 firms per year on average, after data cleaning process
- In general, firm-level data enables researcher to conduct much more sophisticated analysis – better than industry level or country level data – of course, it also depends on research question

AH (1999): Estimation Results

	Impact of direct foreign investment (DFI) on productivity		Impact of DFI on output	
	OLS with industry dummies ^b (1)	OLS without industry dummies (2)	Weighted least squares ^c (3)	OLS with industry dummies and no factor inputs ^d (4)
Foreign ownership in the plant (<i>Plant_DFI</i>)	0.105 (0.027)	0.158 (0.028)	0.142 (0.039)	2.176 (0.124)
Foreign ownership in the sector (<i>Sector_DFI</i>)	-0.267 (0.061)	0.058 (0.030)	-0.206 (0.155)	-1.258 (0.232)
<i>Plant_DFI</i> * <i>Sector_DFI</i>	0.356 (0.181)	-0.212 (0.189)	0.314 (0.226)	5.003 (0.810)
Number of plants	10,257	10,257	10,257	10,372
Number of observations	43,010	43,010	43,010	46,947
Hausman test ^f	38.4	—	82.9	—
R^2	0.96	0.95	0.96	0.32

AH (1999): Estimation with Firm Fixed Effects

Impact of DFI on change in productivity				
	First differences ^e ($Y_t - Y_{t-1}$) (5)	Second differences ^e ($Y_t - Y_{t-2}$) (6)	Third differences ^e ($Y_t - Y_{t-3}$) (7)	Fourth differences ^e ($Y_t - Y_{t-4}$) (8)
Foreign ownership in the plant (<i>Plant_DFI</i>)	0.003 (0.037)	0.018 (0.039)	0.042 (0.043)	-0.011 (0.049)
Foreign ownership in the sector (<i>Sector_DFI</i>)	-0.238 (0.067)	-0.302 (0.065)	-0.248 (0.071)	-0.320 (0.083)
<i>Plant_DFI * Sector_DFI</i>	0.262 (0.223)	0.420 (0.246)	0.384 (0.252)	0.658 (0.288)
Number of plants	9,489	7,158	5,132	3,607
Number of observations	32,521	23,136	16,100	11,045
Hausman test ^f	—	—	—	—
R^2	0.53	0.60	0.64	0.65

AH (1999): Results Discussion

- The importance of including industry dummies in the estimation – to tackle the *potential endogeneity problem*
- The endogeneity problem could arise because foreign firms' entry decision may depend on the existing industry-level productivity:
 - First, foreign firms may prefer to enter industries with higher level of productivity - an indication that the industry is more competitive, with less monopoly power and entry barrier
 - Second, foreign firms may enter industries with lower level of productivity, because foreign firms anticipate they can out-compete the domestic firms - the "market-stealing" effect

AH (1999): Results Discussion

■ Biased estimator

- In the first scenario, we may *overestimate* spillover effect because domestic firms are more productive even before foreign entry;
- In the second senario, we may *underestimate* the spillover effect, because domestic firms are less productive to begin with

So, what's the story?

The robust negative coefficient on sectoral FDI share indicates “market-stealing” effect dominates, at least in Venezuela case. We show this effect in a diagram:

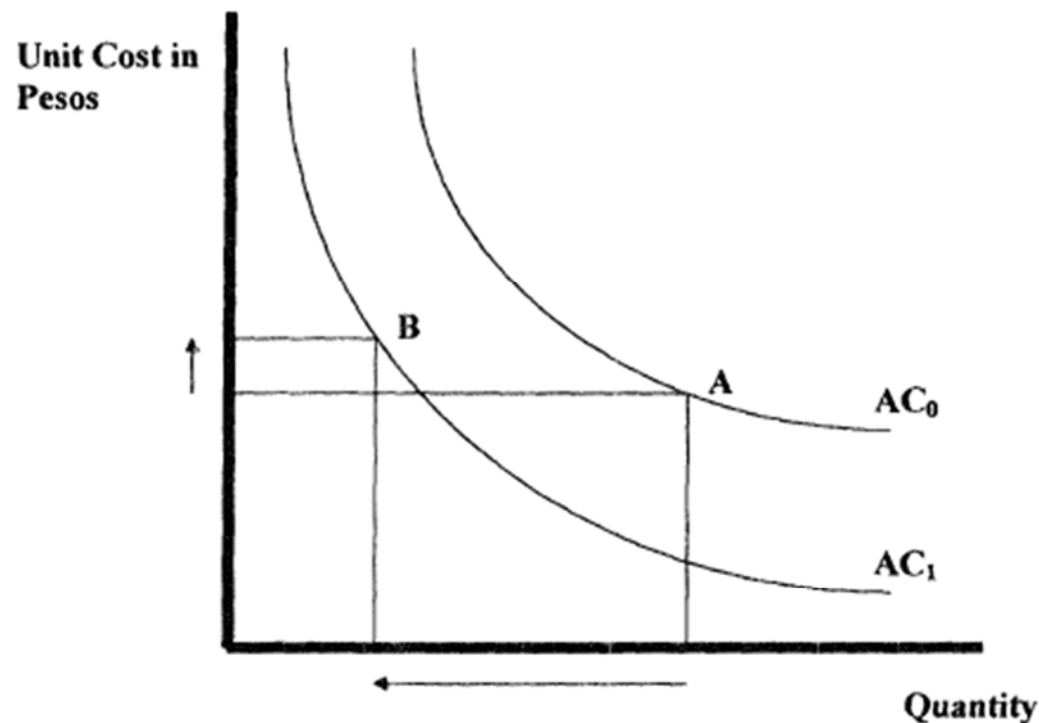


FIGURE 1. OUTPUT RESPONSE OF DOMESTIC FIRMS TO FOREIGN ENTRANTS

Foreign entry first could have positive technology spillover, pushing down average cost curve from AC_0 to AC_1 – a positive effect

But because foreign firms may outcompete domestic firms, domestic firms *may* end up with smaller quantity produced – move along AC_1 - a negative effect

At point B, domestic firms are worse off compared to their initial position at A. They may shut down or exit eventually.

AH (1999): Main Empirical Findings

- First, increase in foreign equity share is correlated with increase in productivity for small plants (under 50 employees), but not for large plants (≥ 50) – This is quite puzzling.
- Second, increase of foreign ownership had a negative effect on the productivity of purely-domestic firms (i.e., without foreign share) in the same industry.
 - Note: control for industry differences matters a lot
- Third, the net effect is still slightly positive
 - See Table 4 in the article



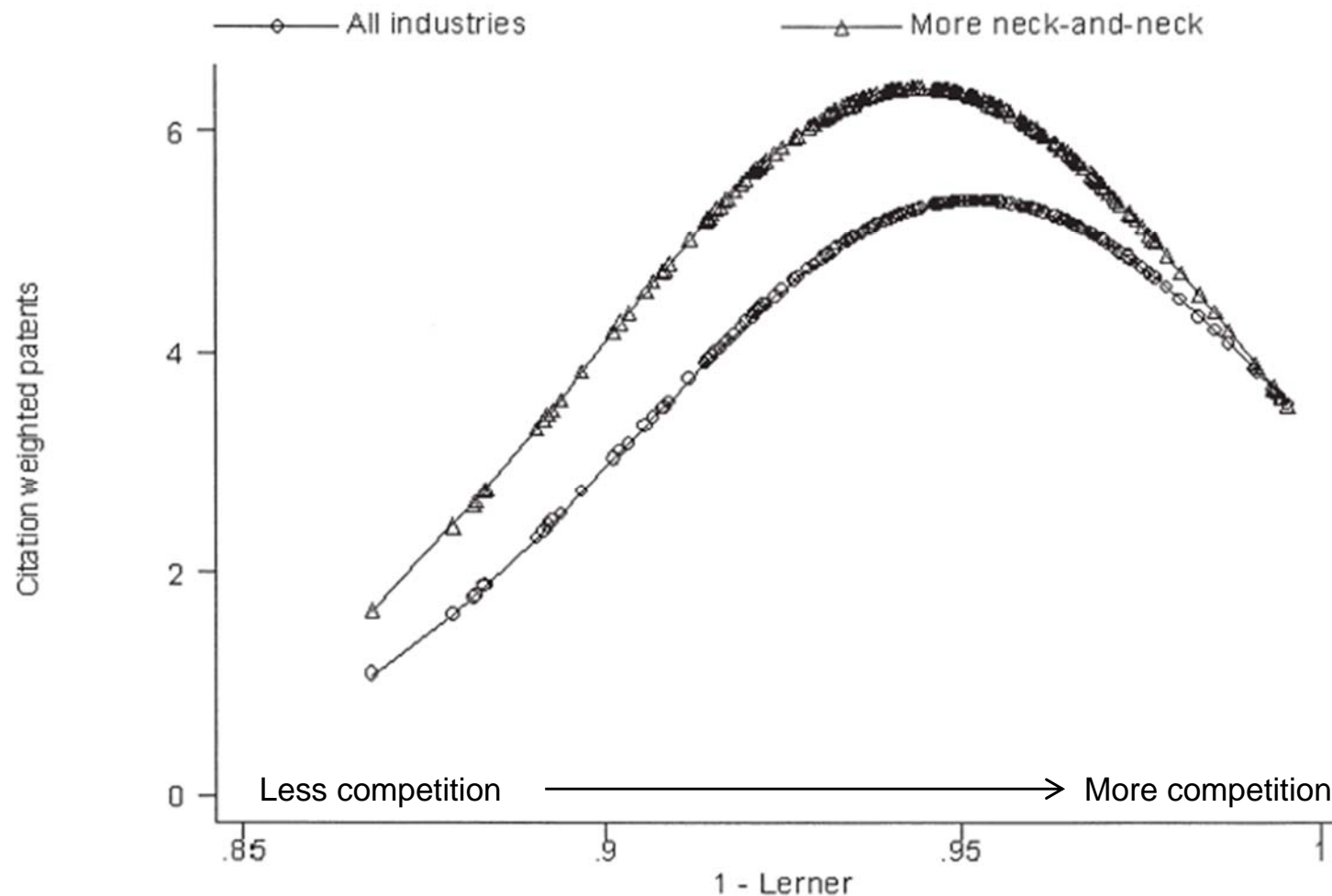
Some Further Thoughts

- How should we think about competition effect?
 - The negative effect (market-stealing) may be due to the fact that there existed a big gap (on average) between productivity of foreign firms and that of domestic firms, especially true for Venezuela.
 - What if we differentiate domestic firms by their productivity level? i.e., will foreign competition have heterogeneous impact toward the two different groups:
 - more productive vs. less productive domestic firms
 - See Deng and Jefferson (2009)

Some Further Thoughts

- More fundamentally, the entry of foreign firms may help generate the so-called “dynamism” in host country, resulting in a more competitive market, benefiting consumers and raising the average industry level productivity
 - Initially, low productivity domestic firms may drop out due to intensified foreign competition
 - But more productive domestic firms tend to compete *neck-to-neck* with foreign firms
 - Foreign and productive domestic firms are also likely to engage in a race on innovation and productivity improvement, further raising the industry-level productivity

Competition and Innovation: another “inverted U”



Innovation and Competition: The Neck-and-Neck Split

Source: Aghion, P. et al. (QJE, 2005)

Some Further Thoughts

- How technology spillover is related to a country's development level?
 - The capacity to adopt and absorb foreign technology
 - How is absorptive capacity determined?

- Impact of FDI: short term vs. long term
 - So far, we haven't introduced time structure in our estimation, i.e., FDI is estimated to have only contemporaneous effect on domestic firms.

 - It's reasonable to believe that FDI's impact on domestic firms, either through technology or knowledge spillover, will take some time to be realized

 - To investigate the effect of FDI in longer term, we could use FDI (t-1), FDI (t-2)... FDI(t-n) in our estimation – a very promising research area.



End Notes

- Niels to take over next week
- I hope you have so far learned something about MNEs; also a bit more about the positive approach to economic research
- For those who are interested in seeing more similar charts and graphs as you've seen in the Big Picture series, you're welcome to subscribe to: economistonline.muogao.com
- Finally, I wish you all the very best!