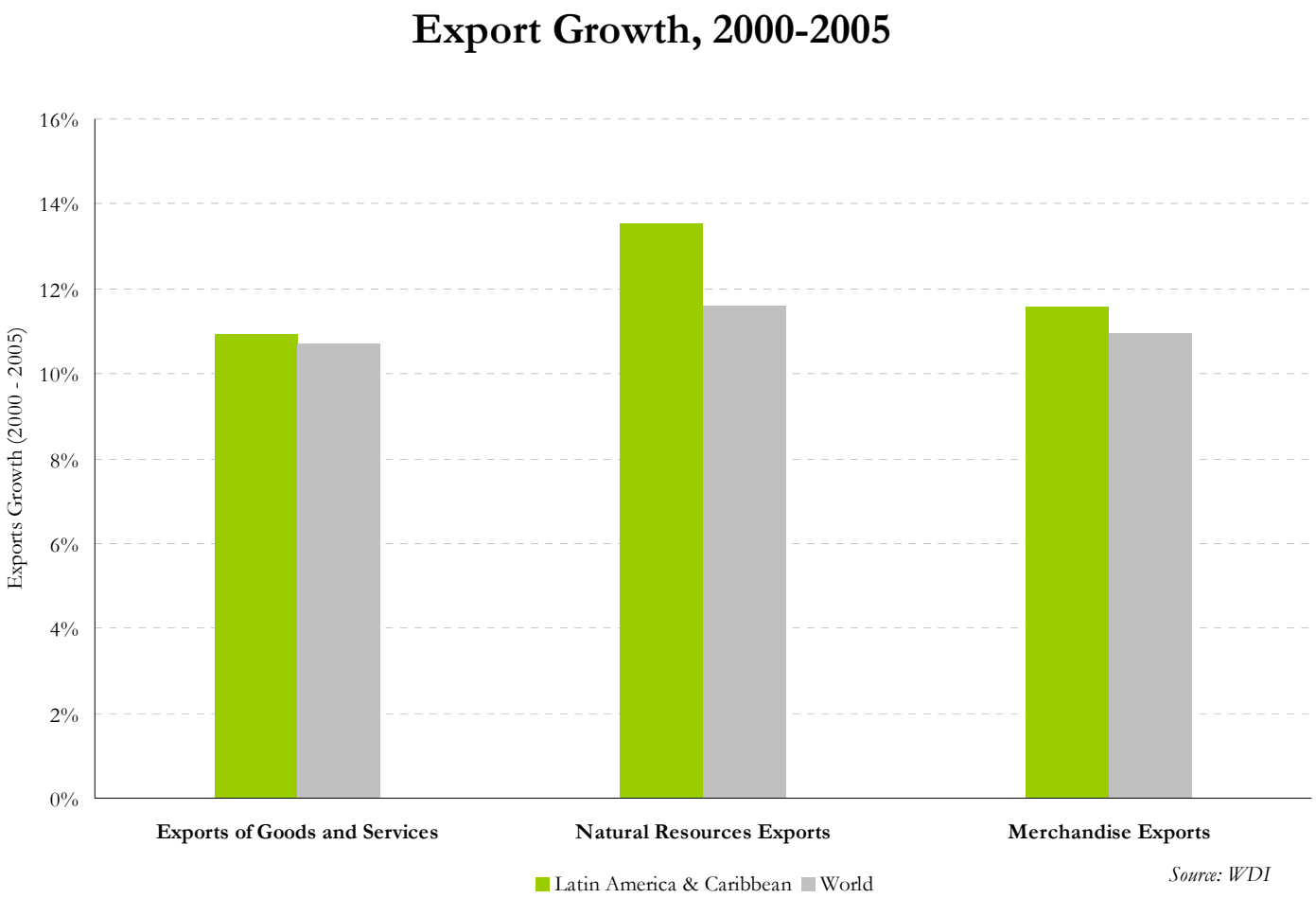
Exports in Latin America: Beyond “how much?” to “what?”

Bill Maloney
Office of the LAC Chief Economist

LACs export values have done relatively well



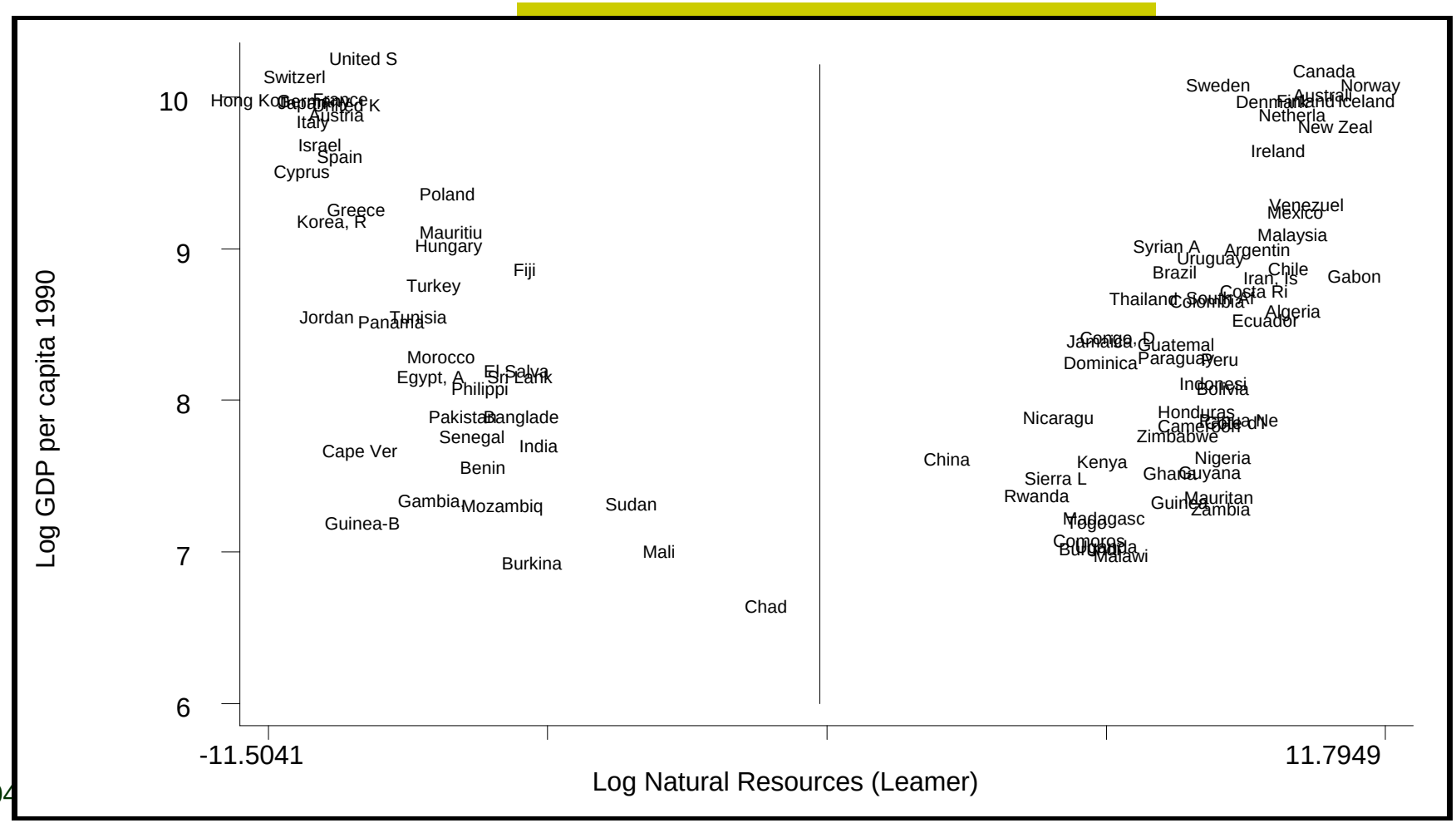
But does what you export matter?

- Sachs, Warner, Autey, etc.: NR are a curse.
  - NR abundant countries grow more slowly
- Hausmann, Rodrik,and others- What you export matters
  - Countries should be in goods that rich countries produce
  - Calculate the rich country income level corresponding to export basket (PRODY)
  - PRODY enters positively with growth

I. Are Natural Resources a Curse?

Econometric Evidence

High degree of endowment heterogeneity in development success



More rigorously…

- Basic growth model

$$\dot{y}_{i,t} = \gamma \ln y_{i,t-1} + \beta' X_{i,t} + \alpha NR_{i,t} + \mu_t + \mu_i + \varepsilon_{i,t}$$

- Cross sectional regressions and Dynamic panel regressions via GMM IV System (Blundell and Bond)
- Historical and contemporary regressions (Sachs Warner revisited)

Table 2.3a Estimated Effect of Trade Structure on Growth (Cross-Section, 1980–1999)

	Natural resource dependence		*Export concentration*			
	Net exports/labor force	*NRX/GDP*	*Export Herfindahl*		*NRX/total exports*	
Basic conditioning	−0.38	−0.89	−4.98	**	−3.66	***
+	(−0.20)	(−0.31)	(−2.02)		(−3.12)	
Capital accumulation	−0.12	−3.66	−5.80	***	−3.10	***
+	(−0.47)	(−1.44)	(−3.72)		(−3.65)	
Growth in terms of trade	−0.35	−3.01	−5.62	***	−3.09	***
+	(−0.15)	(−1.29)	(−3.28)		(−3.51)	
Macro stability	−0.09	−3.40	−6.50	***	−2.99	***
	(−0.878)	(−1.37)	(−3.92)		(−4.37)	
Additional Controls						
NRX/GDP			−6.52	***		
			(−3.93)			
Leamer index			−6.56	***		
			(−3.85)			
Export Herfindahl	0.45	0.05			−2.10	***
	(0.81)	(0.03)			(−2.69)	
NRX/total exports			−4.93	***		
			(−3.91)			
Intra-industry trade	1.40	−2.23	−6.03	***	−3.07	***
	(1.43)	(−1.02)	(−4.68)		(−3.11)	
IIT+export Herfindahl	1.56	* 0.92			−2.07	**
	(1.79)	(0.60)			(−2.32)	

Source:

Note: The dependent variable is the GDP per capita growth rate. Basic conditioning set includes the log of initial income of th
of openness (S&W). Capital accumulation includes average ratio of investment/GDP and log of years of schooling. Growth of te
growth of the ratio of price index to import price index over the period. Macro stability includes the standard deviation of the re
the period. T-statistics shown in parentheses. * significant at 10%, ** significant at 5%, *** significant at 1%

"Trade Structure and Growth" Lederman and Maloney

Sachs-Warner Revisited: Why can't we replicate their results?

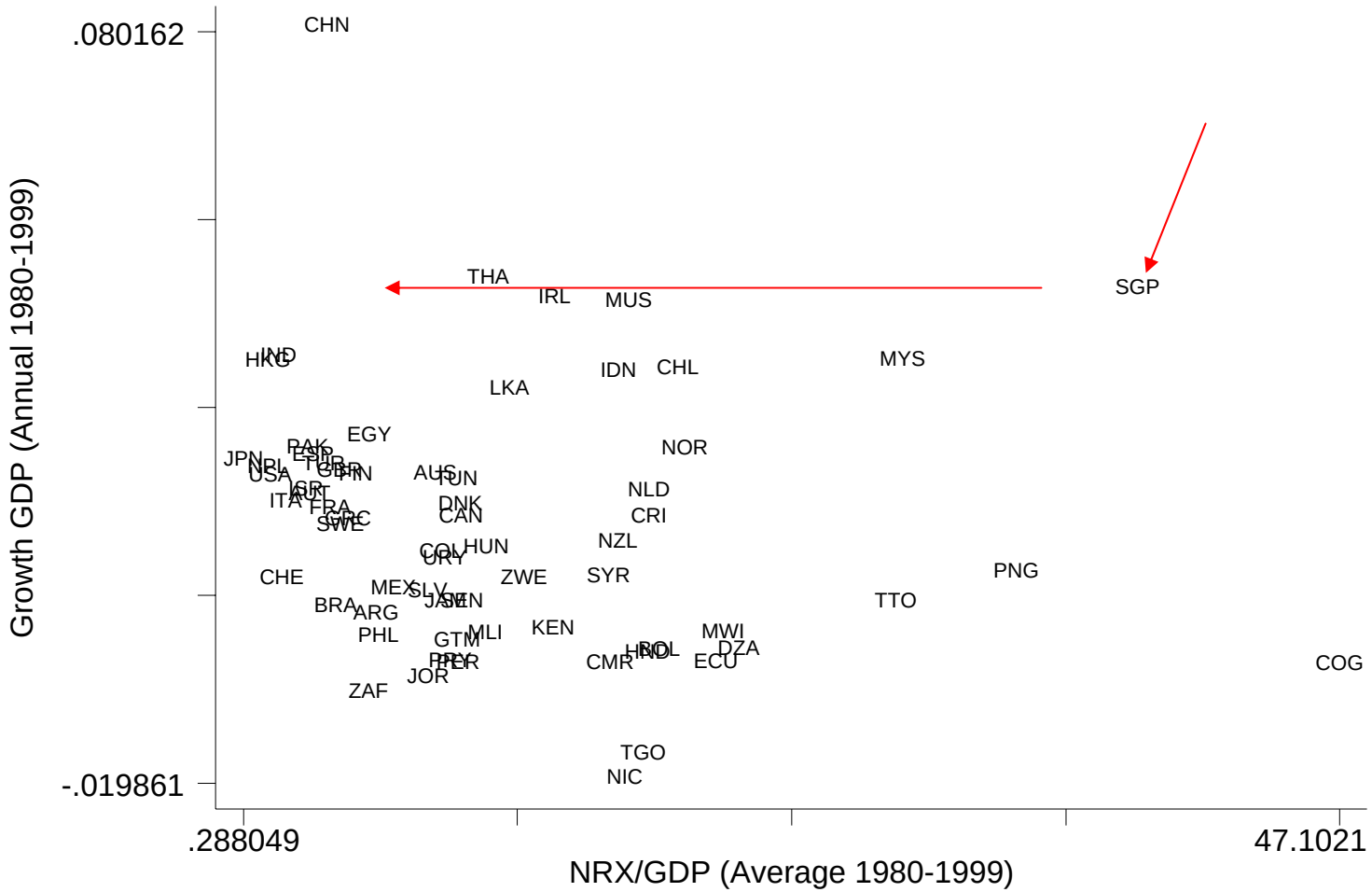


Table 2.3b Estimated Effect of Trade Structure on Growth (Panel Data [System Estimator], 1980–1999)

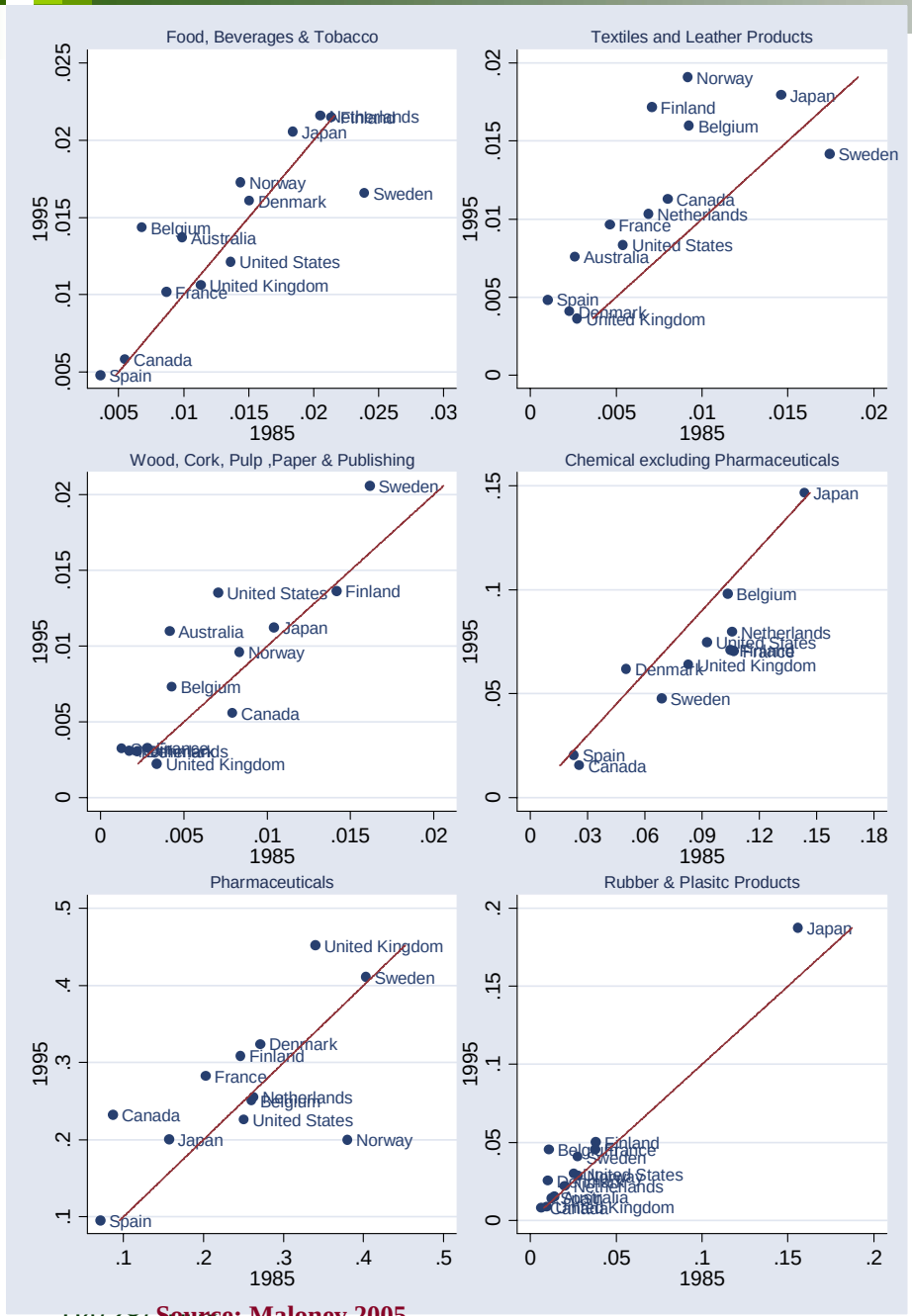
	Natural resource dependence						*Export concentration*					
	Net exports/labor force			*NRX/GDP*			*Export Herfindahl*			*NRX/total exports*		
		Sargan	*Serial corr.*		*Sargan*	*Serial corr.*		*Sargan*	*Serial corr.*		*Sargan*	*Serial corr.*
Basic conditioning	1.33	0.20	0.27	0.94 ***	0.48	0.49	−3.42	0.38	0.35	−0.12	0.17	0.34
+	(1.52)			(3.57)			(−1.18)			(−0.82)		
Capital accumulation	2.87 *	0.39	0.53	0.68 **	0.29	0.83	−11.40 ***	0.31	0.75	−0.57 ***	0.32	0.36
+	(1.93)			(2.49)			(−3.04)			(−2.67)		
Growth of terms of trade	3.50 **	0.45	0.48	0.65 **	0.40	0.71	−9.43 **	0.51	0.76	−0.36 **	0.37	0.60
+	(2.10)			(2.36)			(−2.48)			(−2.51)		
Macro stability	2.66 *	0.50	0.56	0.69 **	0.56	0.71	−8.79 **	0.52	0.72	−0.34 **	0.31	0.57
	(1.83)			(2.62)			(−2.30)			(−2.08)		
	Additional Controls									*Additional Controls*		
NRX/GDP							−10.32 ***	0.58	0.70			
							(−2.79)					
Leamer index							−9.70 ***	0.53	0.63			
							(−2.78)					
Export Herfindahl	3.05 **	0.42	0.61	0.65 **	0.35	0.62				−0.24	0.21	0.55
	(2.09)			(2.11)						(−1.53)		
NRX/total exports							−8.92 **	0.53	0.79			
							(−2.12)					
Intra-industry trade	4.46 **	0.33	0.71	0.64 **	0.52	0.79	−8.93 **	0.49	0.73	−0.21	0.29	0.77
	(2.40)			(2.36)			(−2.02)			(−0.88)		
IIT+export Herfindahl	4.41 **	0.32	0.66	0.62 **	0.36	0.68				−0.18	0.28	0.80
	(2.31)			(2.02)						(−0.85)		

Source:

II. Hausmann-Rodrik

Concerns about this approach

- Does it make sense to be in industries where rich countries already are?
  - Demand elasticities: Ever by a Nokia TV?
  - Suppose Marshallian externality. Have rich countries already exploited them and driven the price down? (Rodriguez-Clare)
- Is PRODY telling a pro-manufactures story? Largest PRODY values:
  - H-R: Flat rolled iron, sheet piling of iron or steel, iron or non-alloy steel, tyre cord fabric of viscose rayon, foil of refined copper.
  - Chandra et al: Electronic Microcircuits.. and Bacon
- Is it telling us which “goods” have the potential for productivity growth? Do we “move through” goods?



Source: Maloney 2005

- There are a range of R&D intensities to produce any good
- OECD- in most countries increased intensity as/more important than shift to high tech products

And little evidence for evolution through commodity groups.

Table 3: Discovery & GDP by Leamer (1984) Commodity Groups

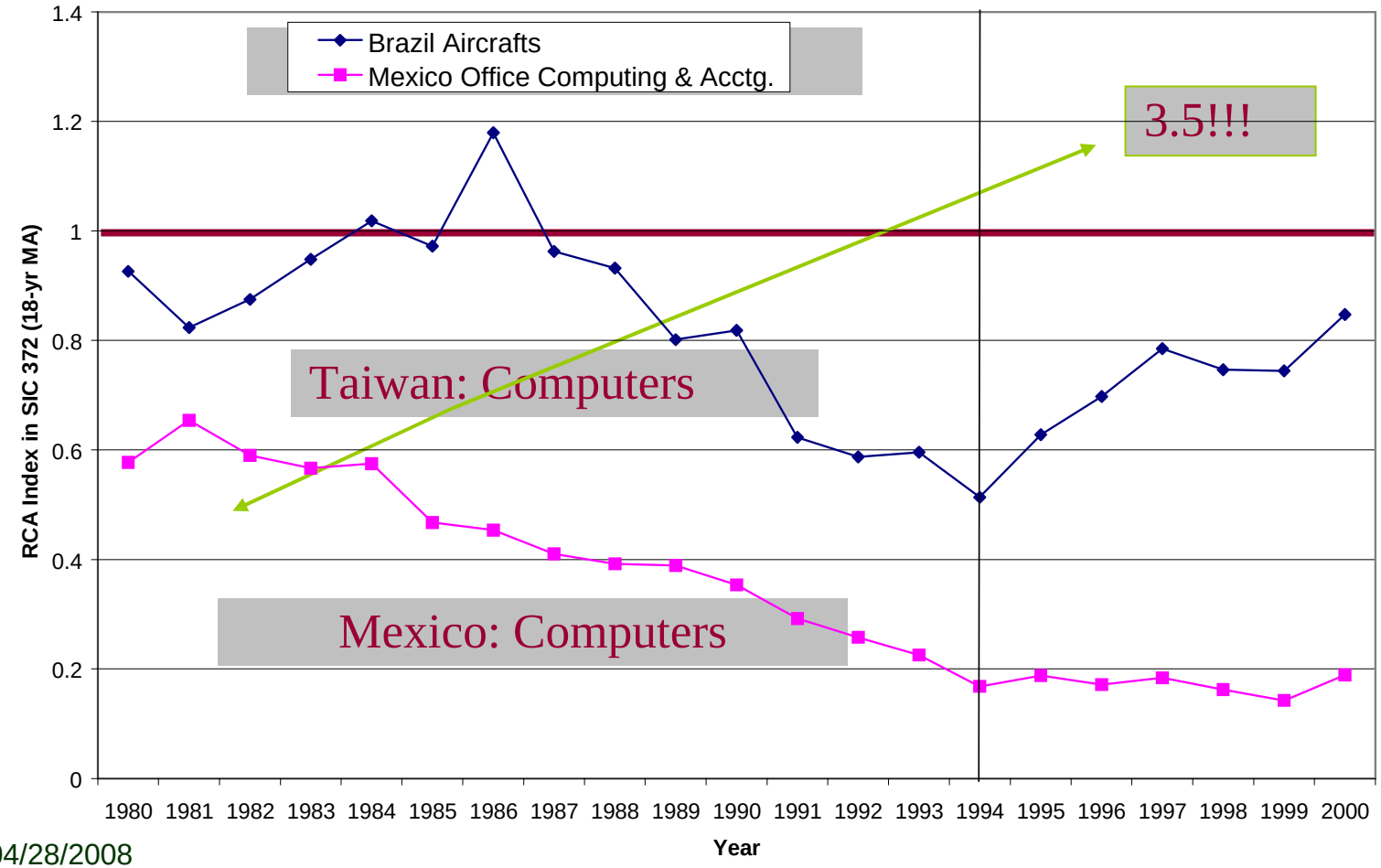
Leamer Commodity Group	Number of Discoveries[N1]	Discovery Curve Maximum Point (GDP per capita)
Petroleum	1.17	2052**
Raw Materials	0.85	4901***
Forest Products	0.73	4416***
Tropical Agriculture	0.49	4486***
Animal Products	0.73	4109***
Cereals, etc.	0.72	4055***
Labor Intensitve	0.38	3626***
Capital Intensive	0.56	4546***
Machinery	0.61	4578***
Chemical	0.78	6838***

N1: normalized by the number of lines in the HS 1989/1992 nomenclature composing that category. ** significant at 5%; *** at 1%. Source: Author's Calculations.

Klinger Lederman (200?)

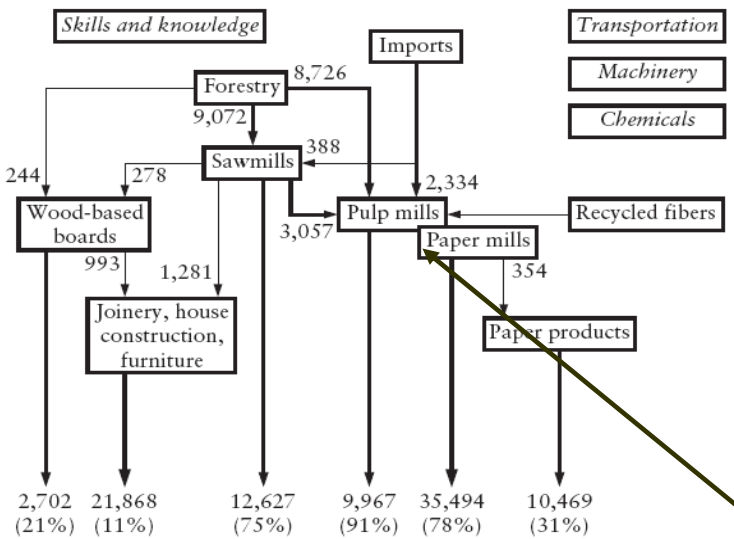
LAC manages to produce “high tech goods badly

Comparative Advantage in Innovation



Innovation is Central: Forestry remains a dynamic sector in Sweden, Finland- Is Chile Losing Salmon?

Figure 8.1 The Swedish Forest Industry Cluster



Source: Authors' calculations.
Note: Resource flows in million SEK. Figures in parentheses denote export shares.

Table 8.4 Participants in the Knowledge and Skill Cluster in the Paper and Pulp Industry (1990)

	Generation	*Dissemination*
Skills (Education)	Royal Technical University Chalmers Technical University University of Karlstad Swedish Pulp and Paper Research Institute	Swedish Pulp and Paper Research Institute
Knowledge (Research)	Royal Technical University Chalmers Technical University University of Karlstad Swedish Pulp and Paper Research Institute Institute of Surface Chemistry Graphical Research Laboratory Swedish Packaging Research Institute Swedish Newspaper Mills' Research Laboratory	Swedish Pulp and Paper Research Institute Institute of Surface Chemistry Graphical Research Laboratory Swedish Packaging Research Institute Swedish Newspaper Mills' Research Laboratory

Sources: Ds 1991:62, Statistical Yearbook of Forestry 1993, Handbook of the Northern Wood Industries 1991/92.

Nokia: Site of an early pulp mill in Finland

Learn how to learn