



# Roundtable on Technology, Innovation, and American Primacy

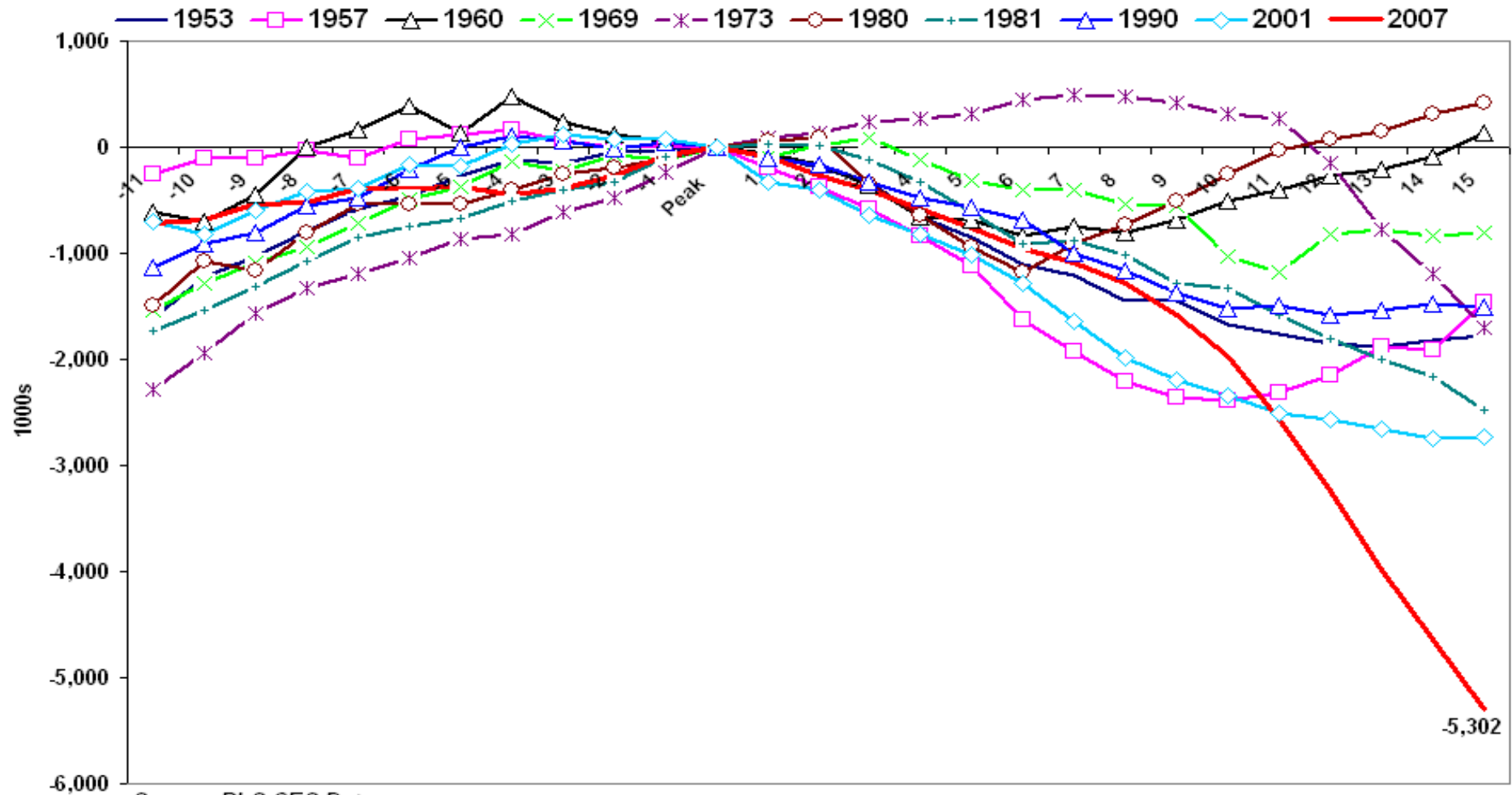
Jacob F. Kirkegaard  
CFR – New York  
April 23<sup>rd</sup> 2009

# Outline

- 1. The US IT Labor Market Until Q1 2009**
- 2. The High-Skilled Immigration System in the Recessions of 2001 and 2008-?**
- 3. Is Distance Really Dead In IT Services Supply?**
  - Preferred WTO Modes of Supply**
  - Revealed Comparative Advantage in US IT Services Trade**
  - Trade vs. Automation**
- 4. Concluding Remarks**

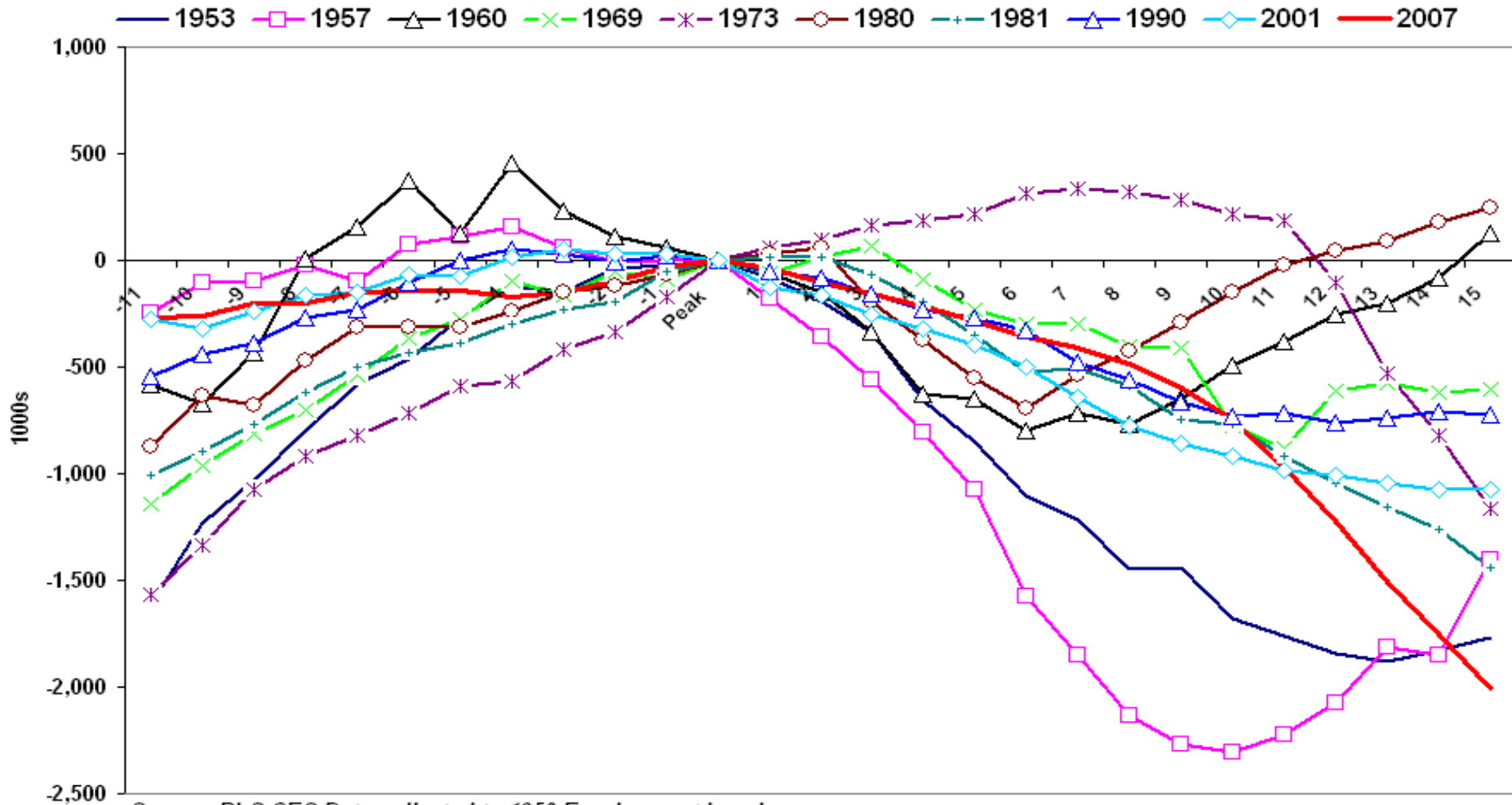
# This Is NOT a Normal Recession in the Labor Market

## US Private Non-Farm Employment in Last 10 NBER Recessions



# This Is NOT a Normal Recession in the Labor Market

## US Private Non-Farm Employment in Last 10 NBER Recessions

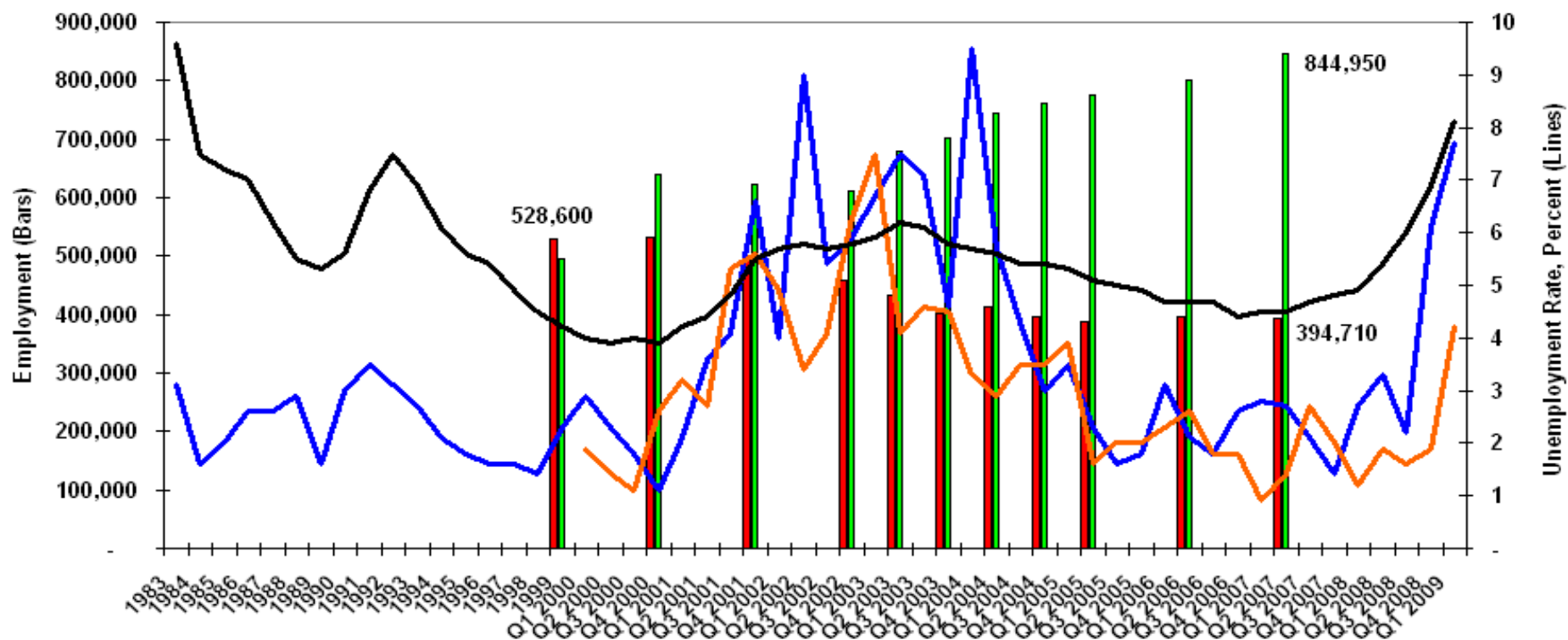




# This Is Not The 2001 Tech-Bust (...Yet?)

## US "Software Employment and Unemployment", 1983- Q4 2008

- Employment - Computer Programmers
- Employment - Software Engineers
- Unemployment - Computer Programmers
- Unemployment - Software Engineers
- Unemployment - Total Economy



Note: Annual data 1983-1999, quarterly data 2000-2009; "Software engineers" includes both applications and systems software engineers. Employment Data do not include selfemployed workers. Source: NSF; BLS CPS and OES Data



# The US High-Skilled Immigration System – Multiple Uses For the Same Visas



## Top-25 Company Recipients of L-1 and H-1B Visas in FY 2006. By Sector and Home Country

The Top 25 L-1 Employers Of 2006					The Top 25 H-1B Employers Of 2006				
Rank	Company	Sector	Home Country	No. of Visas	Rank	Company	Sector	Home Country	No. of visas
1	Tata Consulting Systems	IT Services/Software	India	5,408	1	INFOSYS TECHNOLOGIES LIMITED	IT Services/Software	India	4,908
2	Cognizant Technology Solutions	IT Services/Software	India	1,888	2	WIPRO LIMITED	IT Services/Software	India	4,002
3	Wipro Limited	IT Services/Software	India	1,187	3	MICROSOFT CORPORATION	IT Services/Software	US	3,117
4	IBM	IT Services/Software	US	614	4	TATA CONSULTANCY SERVICES LIMITED	IT Services/Software	India	3,046
5	Hewlett-Packard	IT Hardware	US	417	5	SATYAM COMPUTER SERVICES LTD	IT Services/Software	India	2,880
6	Satyam Computer Services	IT Services/Software	India	336	6	COGNIZANT TECH SOLUTIONS U S CORP	IT Services/Software	India	2,226
7	Intel Corporation	Semiconductors	US	314	7	PATNI COMPUTER SYSTEMS INC	IT Services/Software	India	1,391
8	Caritor, Inc.	IT Services/Software	US	280	8	IBM CORPORATION	IT Services/Software	US	1,130
9	Ernst & Young	Business Services	US	249	9	ORACLE USA INC	IT Services/Software	US	1,022
10	HCL Technologies	IT Services/Software	India	244	10	LARSEN & TOUBRO INFOTECH LIMITED	IT Services/Software	India	947
11	Infosys Technologies, Inc	IT Services/Software	India	235	11	HCL AMERICA INC	IT Services/Software	India	910
12	Patni Computer Systems, Inc	IT Services/Software	India	221	12	DELOITTE & TOUCHE LLP	Accounting	US	890
13	Schlumberger	Oil Services	France	198	13	CISCO SYSTEMS INC	ICT Hardware	US	828
14	Syntel	IT Services/Software	US	197	14	INTEL CORP	Semiconductors	US	828
15	M&E Group, Inc	N/A	N/A	194	15	I-FLEX SOLUTIONS INC	IT Services/Software	India	817
16	Exxon-Mobil	Oil	US	187	16	ERNST & YOUNG LLP	Accounting	US	774
17	Kanbay, Inc.	IT Services/Software	India	178	17	TECH MAHINDRA AMERICAS INC	IT Services/Software	India	770
18	Halliburton	Oil Services	US	157	18	MOTOROLA INC	ICT Hardware	US	760
19	PriceWaterhouseCoopers	Business Services	US	152	19	MPHASIS CORPORATION	IT Services/Software	India	751
20	Oracle, Inc	IT Hardware	US	148	20	DELOITTE CONSULTING LLP	Consulting	US	665
21	Nokia	Mobile Telephony	Finland	141	21	LANCESOFT INC	IT Services/Software	US	645
22	Microsoft	IT Services/Software	US	133	22	NEW YORK CITY PUBLIC SCHOOLS	Education	US	642
23	Perot Systems	IT Services/Software	US	121	23	ACCENTURE LLP	Consulting	US	637
24	Deloitte	Business Services	US	112	24	JPMORGAN CHASE & CO	Financial Services	US	632
25	HSBC	Financial Services	UK	103	25	POLARIS SOFTWARE LAB INDIA LTD	IT Services/Software	India	611

Source: Office of US Senator Chuck Grassley, as described in Kirkegaard (2007); Author

**There's the Top-10 companies (which gets all the press and Congressional attention), and then the rest of the country**

# The US High-Skilled Immigration System In The Last Two Recessions



## 2001 Recession (A little bit of data)

### H-1B Petitions Granted By US Immigration FY2000-FY2005, Initial and Continuing Employment by Select Characteristics

		FY2000	FY2001	FY2002	FY2003	FY2004	FY2005
Line	H-1B Cap Legislated by Congress	115,000	195,000	195,000	195,000	65,000	85,000 (1)
1	Total number of H1B petitions granted by USCIS	257,640	331,206	197,537	217,340	287,418	267,131
2	- of which: Number of H1B petitions granted for Continuing Employment	120,853	130,127	93,953	112,026	156,921	149,932
3	- of which: Number of H1B petitions granted for initial employment	136,787	201,787	103,584	105,314	130,497	116,927
4	- of which: Alien were outside the US at the time of employer petition	75,785	115,759	36,494	41,895	60,271	54,635
5	- of which: Alien were inside the US at the time of employer petition	61,002	85,320	67,090	63,419	70,226	62,292
6	- Of which were from India	60,757	90,668	21,066	29,269	60,062	57,349
6a	- Of which were <b>not</b> from India	76,030	111,119	82,518	76,045	70,435	59,578
7	- Of Which Started Working in Computer-related Occupations	74,551	110,713	25,637	28,879	56,559	52,353
7a	- Of Which <b>did not</b> Start Working in Computer-related Occupations	62,236	91,074	77,947	76,435	73,938	64,574
8	- Of which Started Working in IT Services Industry	N/A	88,613	17,803	19,347	47,362	44,644
8a	- Of which <b>did not</b> Start Working in IT Services Industry	N/A	113,174	85,781	85,967	83,135	72,283
9	FY Average Unemployment Rate For Computer Programmers (2)	2.3	2.7	6.3	6.8	6.0	2.6

Notes: 1) Includes 20,000 H-1Bs for foreign graduates from US universities. 2) Estimated as the average Q4 (previous year)-Q3 (current year). Source: USCIS Annual H-1B Data Releases FY2000-2005

## 2008-? Recession (Virtually no data)

Employer Petitions Towards Next FY H-1B Quota			
	1-Apr-07	Apr-08	Apr-09
Employer Petitions For H-1B Visas Under the 65,000 Cap	~106,000	~132,000	~42,000
Employer Petitions For H-1B Visas Under the 20,000 Graduates Cap	~13,000 (1)	~31,000	~20,000

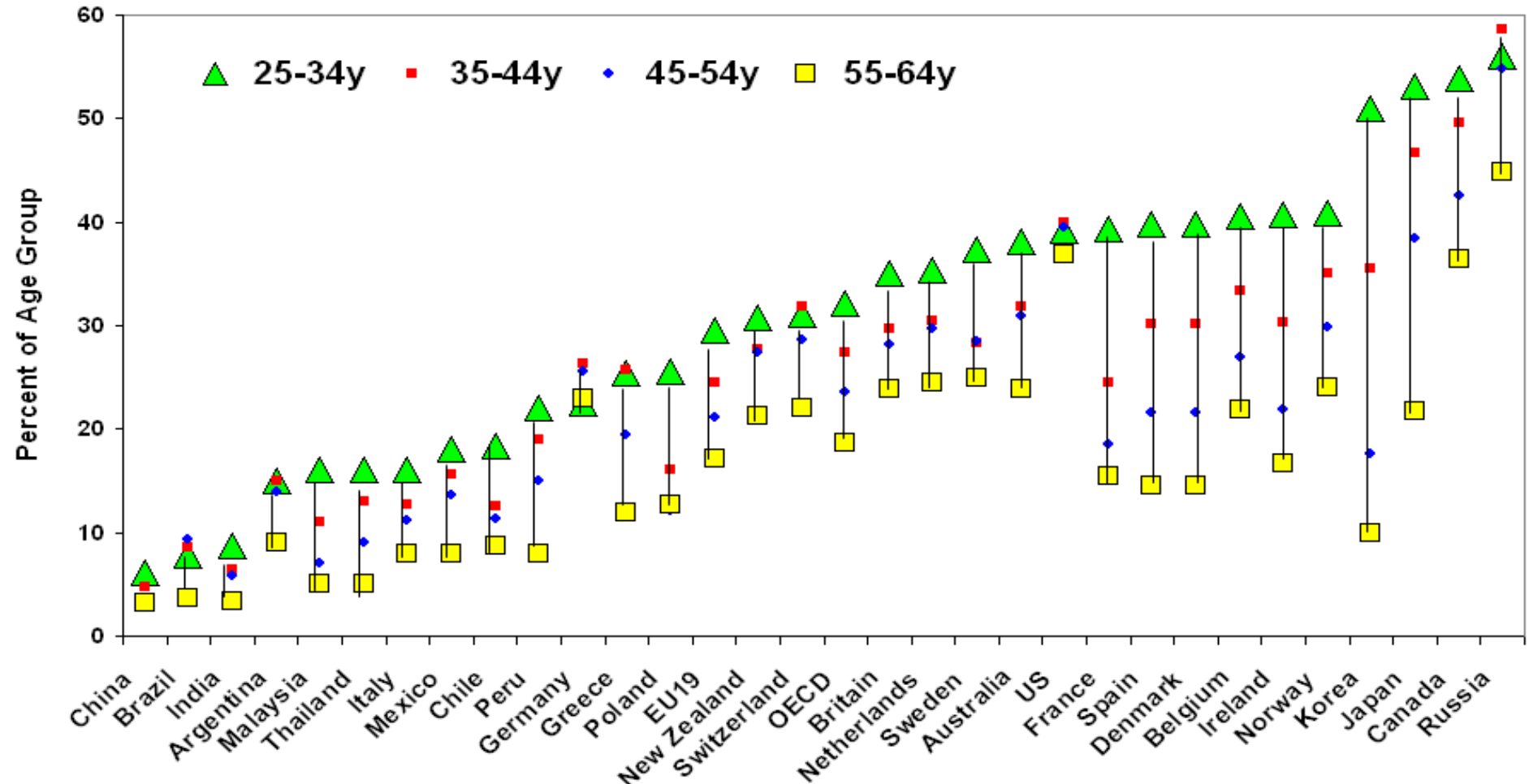
1) 20,000 reached in early May 2007. Source: USCIS Press Releases



# High-Skilled Workforces Around the World; What Has Been Happening?



## Share of Population With Tertiary Education, By Age, 2005

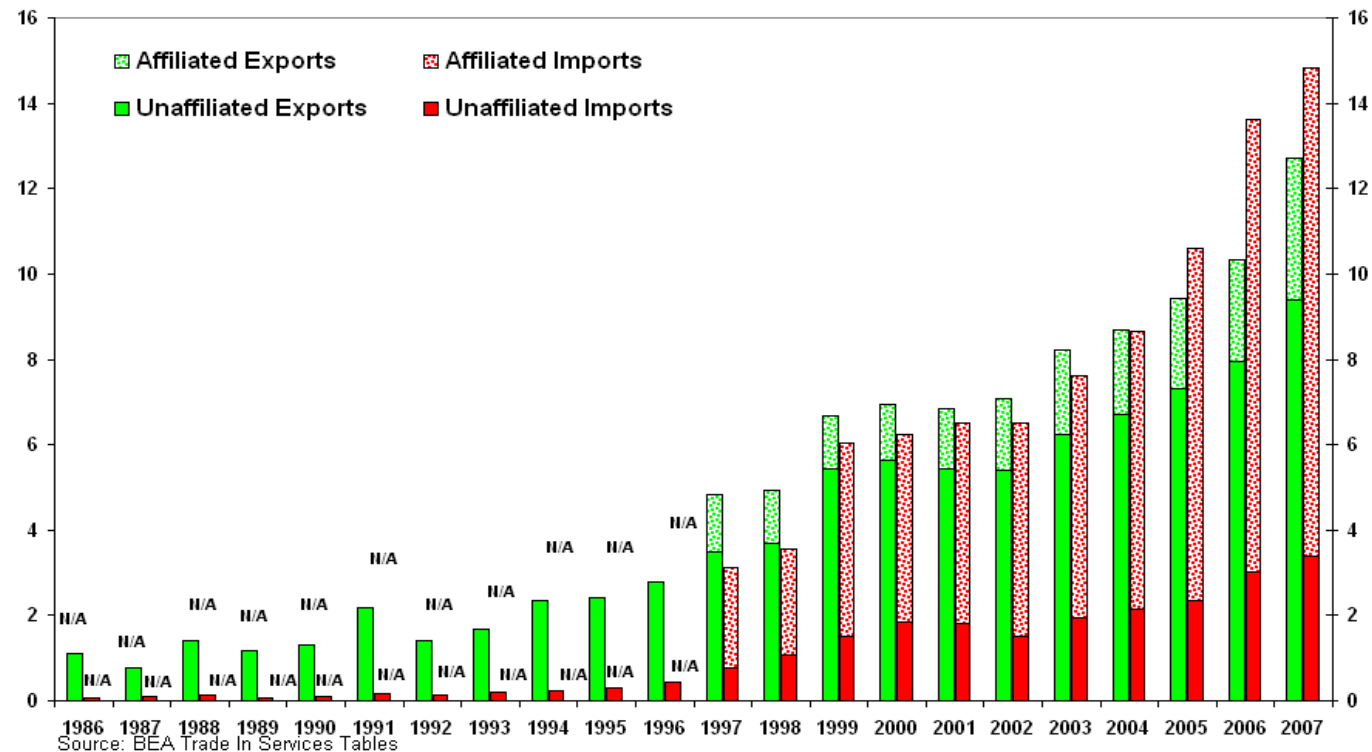


Note: 2005 or latest available from 2003/04. Source: UNESCO/OECD World Education Indicators; OECD Education at a Glance (2007), China Statistical Yearbook 2005 for China; and the 61st NSS Round for India.

# Is Distance Really Dead?

- Cross-border trade (Mode 1) in Computer and Information Services have risen rapidly in recent years
- US has run a deficit since 2005 (which is extremely rare in services trade)

US Mode I Trade in Computer and Information Services, By Corporate Ownership 1992-2007, \$USbn

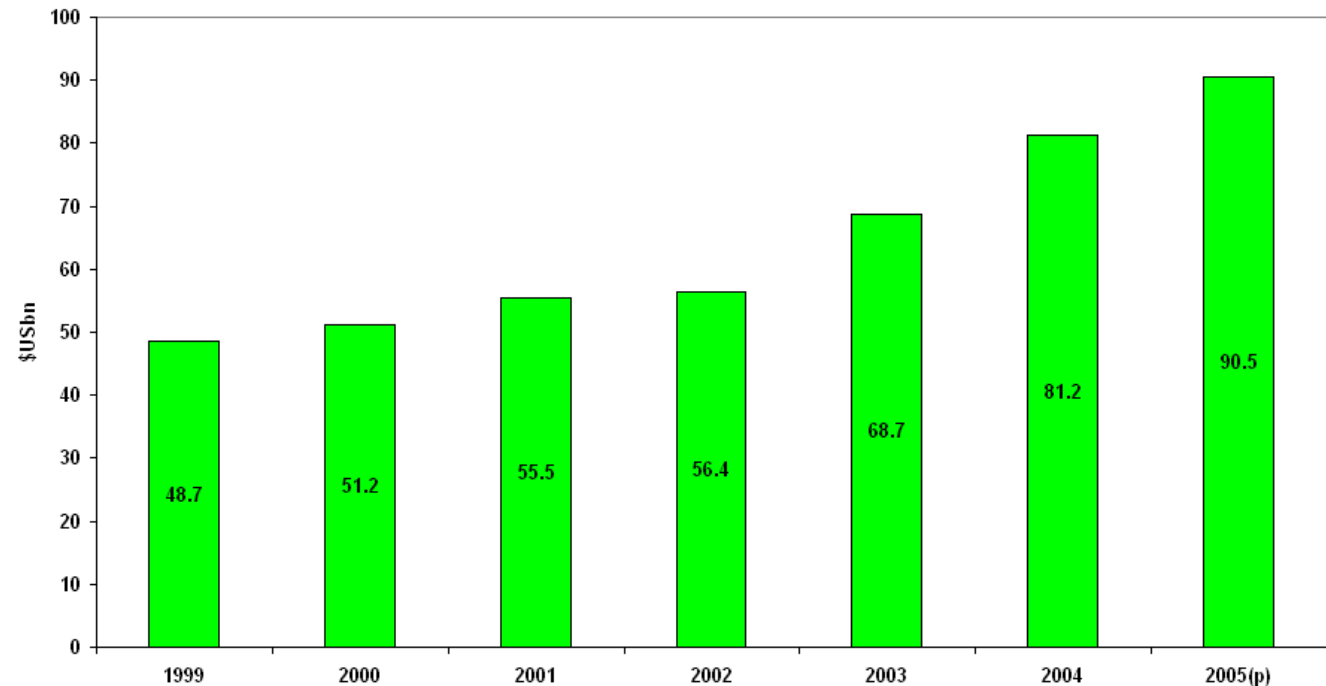


- Adding intra-firm trade has a different impact on US X and M
- Traditional HQ Services Effect Inverted in IT services
- (Note the magnitudes! NASSCOM = GAAP Revenues  $\neq$  trade data)

# Is Distance Really Dead?

- Cross-border exports went up
- But local sales by US MNCs properly measured are MUCH larger and rising even faster
- Implication is that the “relative tradability” of US companies’ IT services products may have declined, rather than risen

US Mode III C&IS Exports - "Local Services Sales" By US Foreign Affiliates in Computer Services Industries 1999-2005, by Industry of Affiliate, \$USbn

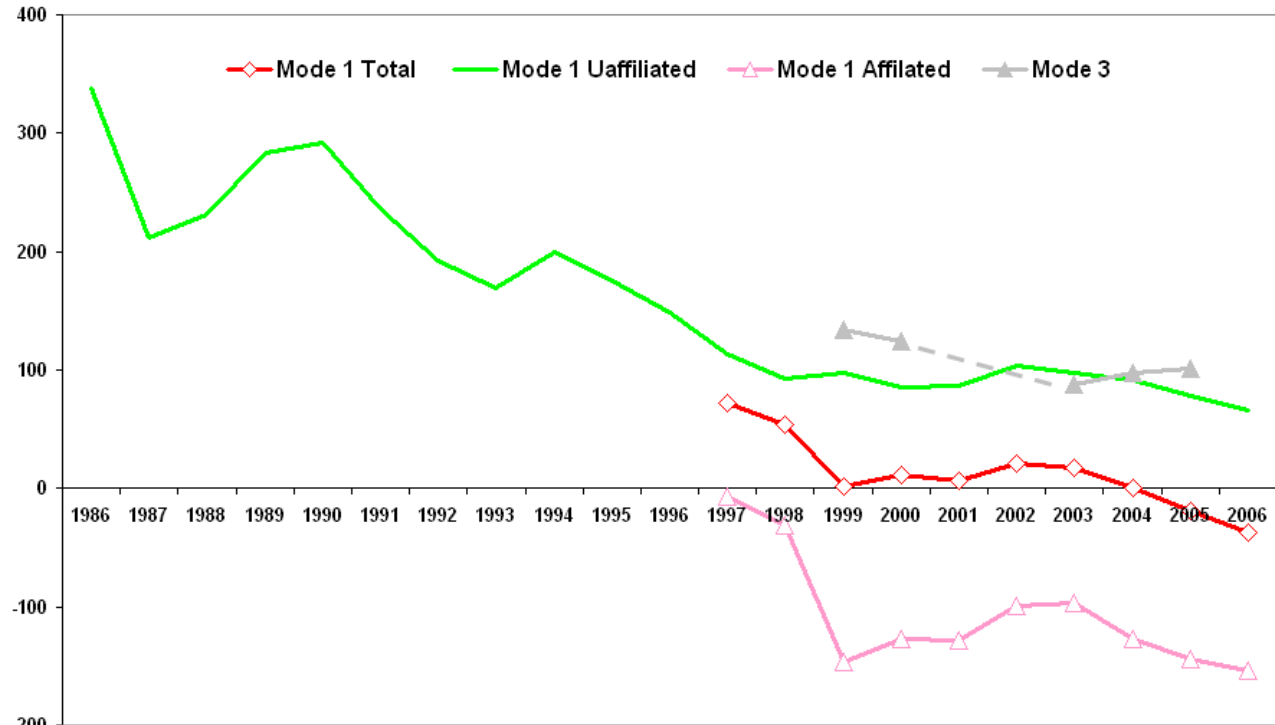


Notes: Included industries are 5112, 5415 and Internet and Information Services. NAICS 1997/2002 break is between 2003 and 2004. No NAICS based data available before 1999. Source: BEA Comprehensive Financial and Operating Data, Table III A2. Kirkegaard (2008)

# Is Distance Really Dead?

- RCA (a measure of relative export performance by a given country in a given commodity) in cross-border supply has been declining steadily
- Meanwhile limited data suggests that RCA for supply via mode 3 is stable
- Hopes for IT services as a future traditional US “export success” not high

Revealed Comparative Advantage in US C&IS Trade  
1986-2006



Source: Kirkegaard (2008) based on BEA Data

# Is Distance Really Dead?

- Most of what can be digitized and traded cross-border (i.e. outsourced/offshored) can also be automated for even larger cost-savings

- What cannot be digitized will be delivered on-site through the local presence of MNCs

Recent Consumer Services Interaction Trends			
Type of Consumer Interaction	Average Cost of Consumer Services Per Interaction, 2004	Implied Cost Savings in 2004	Developments Since 2004
Call to OECD Country Agent	~\$6		
Call to India-Based Agent	~\$3	~50%	Indian Wages Up ~15% p.a.
E-Mail Based Correspondence	~\$2.50	~60%	Global internet usage continues to rise exponentially (1.4bn in feb '08)
Interactive Voice Response (IVR)	~\$1.80	~70%	IVR/Automated Speech Response Reach 50% of US/EU Companies in 2007
Automated Speech Response	~\$0.75-\$1.50	~75-80%	
Web-Based Self-Service	~\$0.60-\$0.75	~80-90%	Global internet usage continues to rise exponentially (1.4bn in feb '08)

Source: IBM, Forrester, Gartner, Avaya, Author

# Concluding Remarks

- The outsourcing/offshoring scare will not return in this recession – there are far more credible “economic losers” than IT workers this time
- The very large decline in global trade in this recession is a “natural result” of outsourcing/offshoring and international production networks – final demand disappears, whole network stops (gross trade flows vs. value-added)
- US high-skilled immigration laws are evermore outdated (while other OECD are rapidly liberalizing), but remain hostage to the general “immigration policy stalemate”
- Digitalization’s impact on trade is overrated - computer and information services (as well as other high-skilled services) are unlikely to provide many traditional “export oriented jobs” anywhere
- “Trade in services” and associated job generation will be concentrated in other modes of supply (mode 3 and 4)