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# **Globalization, Offshoring, and Economic Convergence: A Synthesis**

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**California Policymaker Education Program**

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## Background

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- Co-Chair (Research Director), Fisher Center for Real Estate and Urban Economics, at UC Berkeley
  - <http://groups.haas.berkeley.edu/realestate>
  - Staff economists, Ashok Bardhan & Cynthia Kroll
- UC Berkeley Conference: “Globalization Comes Home: How Globalization is transforming the West”
  - » I. Politics and Law (February 1)
  - » II. Business and the Economy (February 2)
- Terminology: Offshoring versus Outsourcing

## The Offshoring Debate

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- The economic impact of offshoring on employment is highly debated at both US and CA state levels.
  - Economists generally consider globalization and offshoring to be beneficial, based on free trade.
  - Labor unions and workers, whose jobs are lost abroad, in contrast, oppose these changes.
  - The policy issues are particularly critical to CA:
    - » High-tech industries (for good or bad),
    - » Pacific rim location (for good or bad).
  - Locational choice: specific case of Eric's talk.

## Key Offshoring Questions

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- Does offshoring actually reduce US employment?
  - What are the implications for economic policy, ranging from “buy US” to worker retraining?
- Will offshoring reduce US wage rates/income?
  - What are the implications for economic policy?
- Can offshoring create forces that will challenge the US leadership in high-tech industries?
- What policy responses are available to California?

# Job Losses as the Metric for the Cost of Offshoring

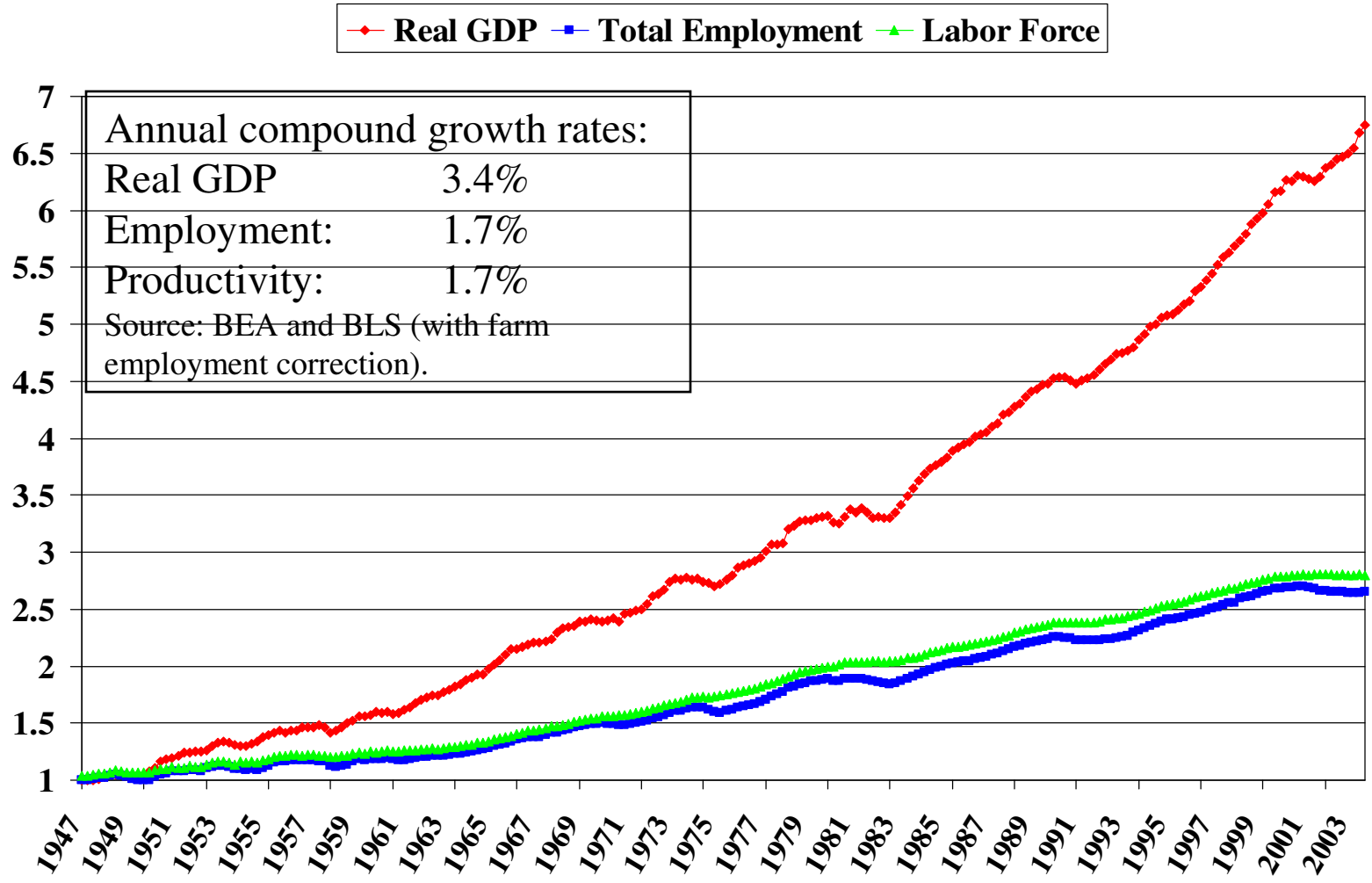
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- Why press focuses on jobs lost to offshoring, while most economists think labor markets equilibrate:
  - 1) Job losses occur first; often as large layoffs.  
New jobs come later, often one job at a time.
  - 2) The job replacement process is not transparent.

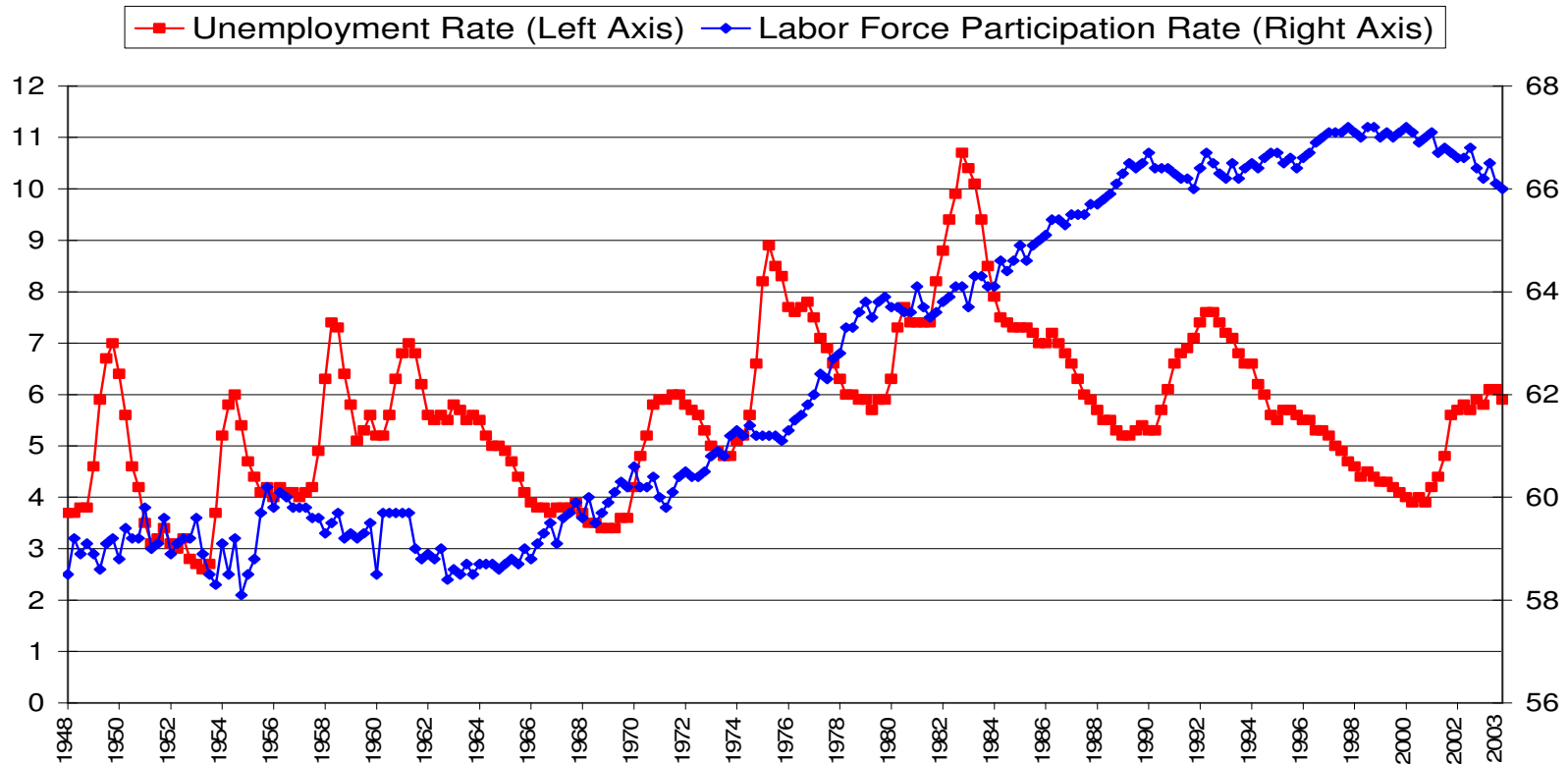
**Adam Smith's Invisible Hand** may not be convincing in the face of real-world job losses.

Tiebout Hypothesis applied to labor market
- But I will show that laid-off workers generally find new jobs. The paper looks at several data sets.

# Real GDP, Employment, and Labor Force: (Index: 1947-1 = 1.00)

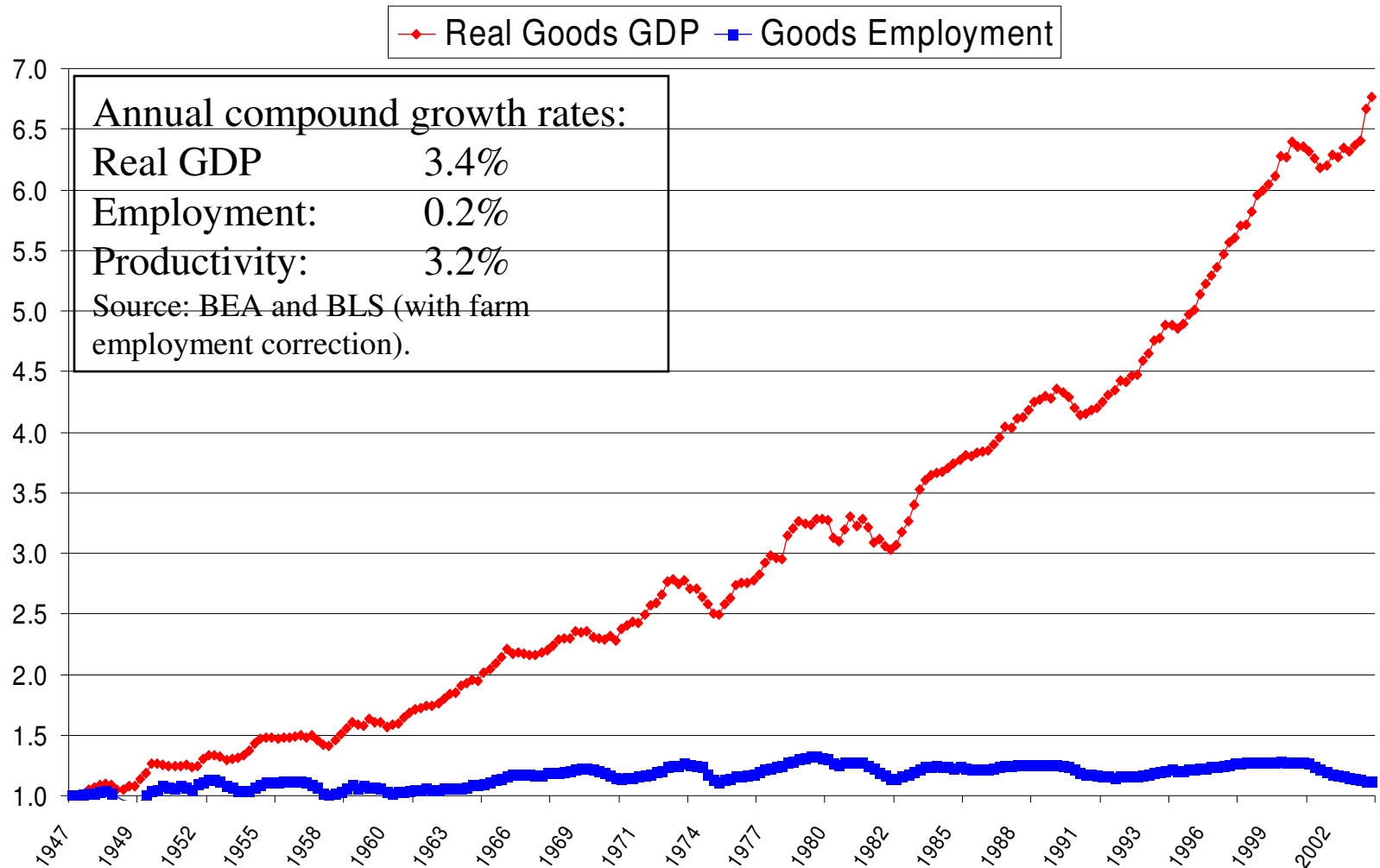


# Last 55 Years: Stable Unemployment Rate and Rising Labor Force Participation



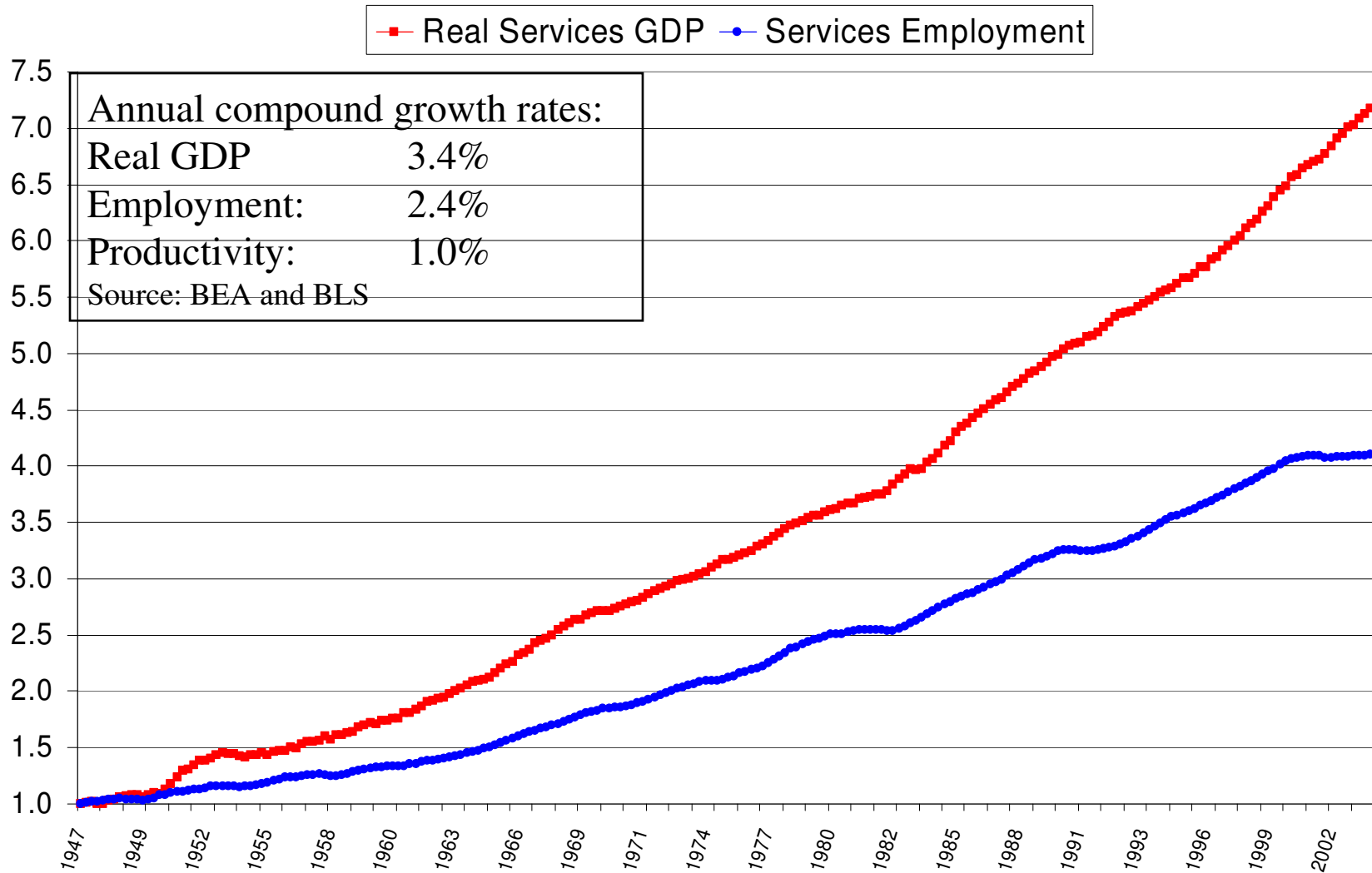
Displaced workers have left no trace in terms of a rising unemployment rate or a falling labor participation rate.

# Goods Sectors: Real GDP and Employment (Index: 1947-1 = 1.00)





# Service Sectors: Real GDP and Employment (Index: 1947-1 = 1.00)



## The Observational Equivalence of Technological Change and Offshoring

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- Although the US experience of last 55 years is dominated by technological change, not offshoring, they are observationally equivalent.
- Robert Feenstra demonstrates that technological change and imported intermediate imports have identical effects in raising labor productivity.
- Paul Krugman parable tells of US entrepreneur creating consumer goods from wheat and lumber.
- Moral: same result with technology or offshoring.

# Bilateral International Trade: Countries Cooperate, Only Firms Compete

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- You might hear that we are in a trade war with Japan, or China, or whoever is the foe of the day.
  - But trade must be jointly beneficial. Both parties must benefit, or they would not trade.
  - China is selling us low-cost goods and accumulating Treasury bonds in exchange. Not much of a war.
  - Ford and Toyota fight compete over who sells cars to US consumers.
  - The fact that Ford is American and Toyota is Japanese is irrelevant. This is especially clear as Ford closes US plants, while Toyota opens new ones.

High-technology and globalization are arguably the two most important forces driving the US economy today. This book analyzes how they interact and the implications of that interaction. The methodology applies data and statistical analysis to determine the impact of these forces over a broad spectrum of the US economy. Key topics addressed include why the US economy runs a continuing trade deficit in manufactured high-tech goods, why high-tech firms steadily lose manufacturing jobs, while creating professional jobs, and why high-tech industries rely on foreign outsourcing for much of their manufacturing.

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GLOBALIZATION AND A HIGH-TECH ECONOMY  
California, the United States and Beyond

Bardhan, Jaffee, Kroll



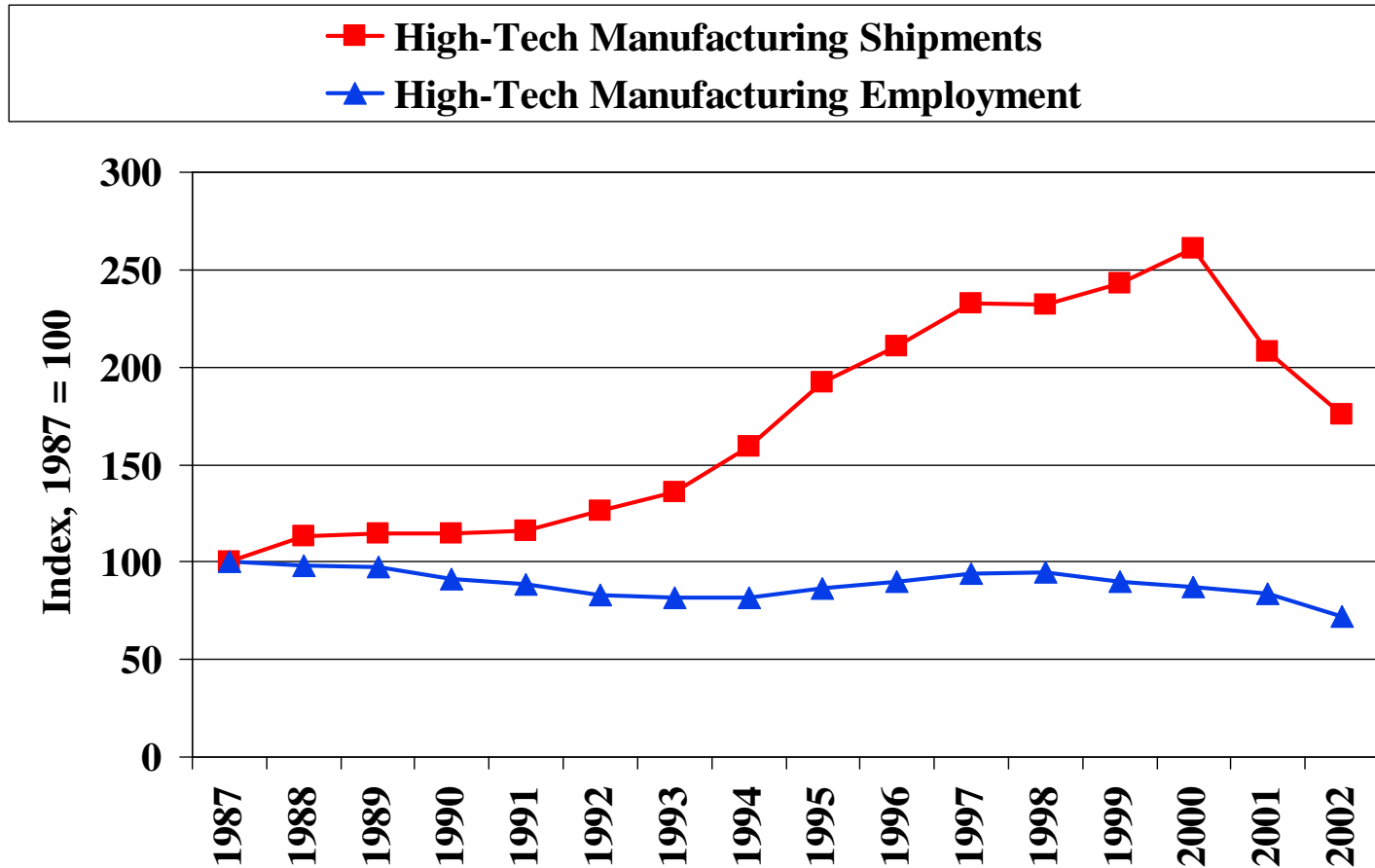
# GLOBALIZATION AND A HIGH-TECH ECONOMY

California, the United States  
and Beyond

ASHOK DEO BARDHAN  
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KLUWER ACADEMIC PUBLISHERS

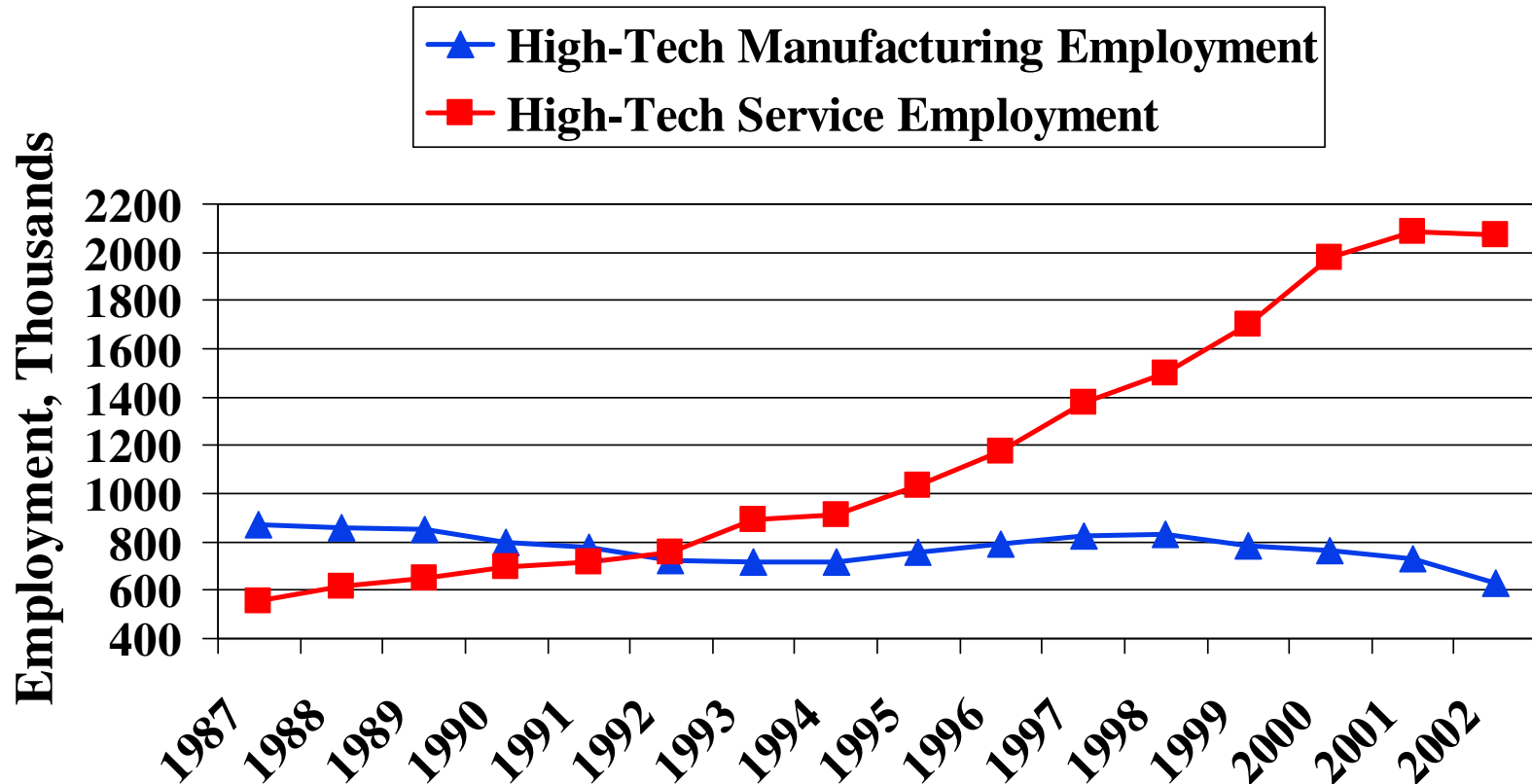
# High-Tech Manufacturing Sales Rose Sharply, but Corresponding Employment Dropped



High-Tech Sectors = Computers (NAIC 3341) + Semiconductors (NAIC 3444)

Source: Bardhan, Jaffee, and Kroll, *Globalization of a High-Tech Economy*, Kluwer.

# High-Tech Service Jobs Amply Replace Manufacturing Jobs



6 service jobs replaced each lost manufacturing job:

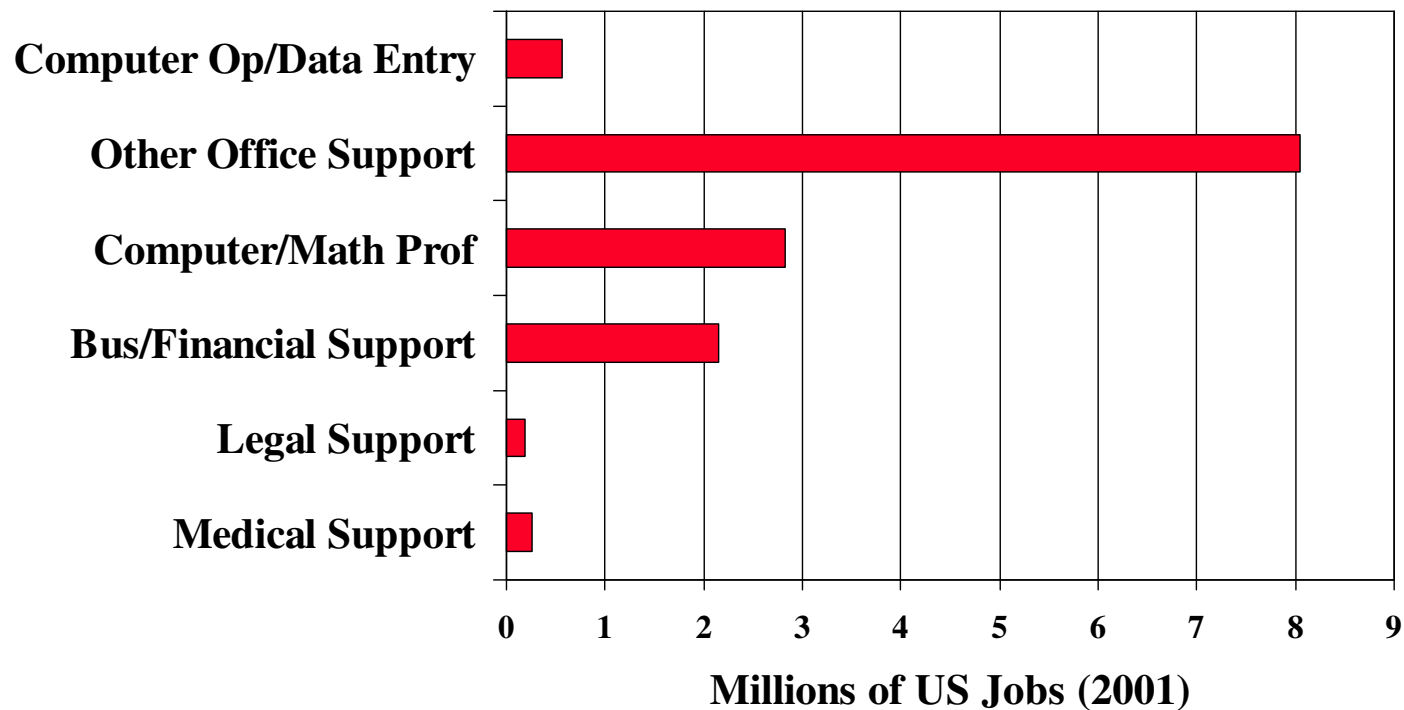
Source: Bardhan, Jaffee, and Kroll, *Globalization of a High-Tech Economy*.

## Service Sector Jobs Lost to Offshoring

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- Our book demonstrated that 6 service jobs were created for every production job lost in US computer manufacturing.  
But are we now losing these service jobs?
- Service offshoring uses occupations, not industries.  
E.g.: call center operators, software developers, etc.
- Core features of jobs “at risk” to offshoring:
  - Face to face contact not required.
  - Communication based on telephone or broadband.
  - Scripted or data related services.

# Occupations At-Risk of Outsourcing: -The Outer Envelope-



Total Jobs at risk = about 14 million or 11% of all US jobs. If 25% are actually lost over next 10 years (comparable to high-tech manufacturing), this is 3.5 million jobs, or about 350,000 a year, in line with the Forrester forecast.



## Employment in “At-Risk” Occupations is Steadily Rising Relative to Total

<b>Occupations <sup>1</sup></b>	<b>Code</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>(May) 2003 <sup>2</sup></b>
Business/Finance Support	13-xxxx	1,996,550	2,138,510	2,153,480	2,198,750	2,290,970
Computer and Mathematica	15-xxxx	2,620,080	2,932,810	2,825,870	2,772,620	2,827,010
Graphics/Design/Writing	17-, 27-xxxx	317,430	334,990	341,840	349,710	358,680
Office Support	43-xxxx	8,639,510	8,729,670	8,637,900	8,594,520	8,586,050
Medical/Legal/Sales	Misc	936,630	910,630	883,390	885,740	881,690
<b>Total At-Risk Employment</b>		<b>14,510,200</b>	<b>15,046,610</b>	<b>14,842,480</b>	<b>14,801,340</b>	<b>14,944,400</b>
<b>Total Employment, All Occupations</b>		<b>127,274,000</b>	<b>129,738,980</b>	<b>127,980,410</b>	<b>127,523,760</b>	<b>127,567,910</b>
<b>At-Risk Employment as Share of Total</b>		<b>11.40%</b>	<b>11.60%</b>	<b>11.60%</b>	<b>11.61%</b>	<b>11.71%</b>

Rising “at-risk” employment share implies jobs lost to offshoring are replaced in same occupations; not due to industry shifts. At-risk” employment might have grown even faster in absence of offshoring, but this is market signal to leave these occupations.

## Other US Data are Limited, but They Too Suggest Limited Net Loss of Jobs to Offshoring

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- 2004 GAO report found little information exists concerning service sector jobs lost to offshoring.
- BLS Business Employment Dynamics data show that gross jobs lost and gained swamp net losses; but not specific to offshoring.
- BLS Mass Layoff Survey indicates “overseas relocations” create < than 2% of layoffs, but data inconsistent with press counts of offshoring layoffs.
- US data for service imports also appear to undercount the extent of such offshoring.

# Jobs Lost to Technological Change or Offshoring: Conclusions

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- Job losses are essential response to technological change (Schumpeter's "creative destruction") and to offshoring (Rodrik's "no pain, no gain").
- US labor markets reveal remarkable flexibility in creating new jobs in response to jobs lost to the forces of technological change and offshoring.
- US policy must continue to respond to the pain at individual level, with unemployment insurance, worker retraining, trade adjustment assistance, etc.

# Wages and Income as Result of Globalization and Offshoring

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- Beyond lost jobs, the key question is the wage rate.
- Gomory & Baumol, Bhagwati, & Samuelson use single factor model: start with free trade (dominates no trade).
- Let productivity rise in developing country (DC):
  - *DC* generally benefits when its own productivity rises.
  - If productivity rise is in goods imported by developed country *US*, then *US* will also generally benefit.
  - If productivity rise is in goods exported by *US*, then *US* may suffer a loss of real income.
  - If productivity rise is in untraded goods, then *US* benefits except for adverse terms of trade effects.

## Trade Theory, Continued

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- Multi Factor, Heckscher-Ohlin, Models:
  - Models allow a factor of production to lose income, even if national income rises.
  - Factor price equalization:  
goods trade may substitute for factor trade.
- We see falling relative wages of unskilled workers:
  - Debate whether due to technological or trade factor.
  - Within industry productivity suggested technology.
  - Feenstra and Hanson show that trade may still be source due to imported intermediate inputs.

## No Empirical Effects (yet) on Wages in “At-Risk” Occupations

<b>Table 5</b>		<b>Average Annual Wage, At-Risk and Total Occupations</b>						
<b>Occupations</b>	<b>Code</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>May 2003</b>		
<b>All Occupations</b>		31,571	32,890	34,020	35,560	36,210		
<b>At Risk Occupations, Total</b>		35,035	37,724	39,162	40,380	41,486		
Business/Finance Support	13-xxxx	46,934	50,049	52,559	55,517	57,775		
Computer and Mathematical	15-xxxx	54,930	58,050	60,350	61,630	63,240		
Graphics/Design/Writing	17-, 27-xxxx	38,999	40,742	42,023	43,268	43,419		
Office Support	43-xxxx	26,966	28,741	29,791	30,561	30,951		
Medical/Legal/Sales	Misc.	27,107	28,319	29,249	30,411	31,211		
		<b>Wages relative to US All Occupations</b>						
<b>At Risk Occupations, Total</b>		<b>1.11</b>	<b>1.15</b>	<b>1.15</b>	<b>1.14</b>	<b>1.15</b>		
Business/Finance Support	13-xxxx	1.49	1.52	1.54	1.56	1.60		
Computer and Mathematical	15-xxxx	1.74	1.76	1.77	1.73	1.75		
Graphics/Design/Writing	17-, 27-xxxx	1.24	1.24	1.24	1.22	1.20		
Office Support	43-xxxx	0.85	0.87	0.88	0.86	0.85		
Medical/Legal/Sales	Misc.	0.86	0.86	0.86	0.86	0.86		

**Source: Occupation Employment Survey (OES), Bureau of Labor Statistics**

There is no sign (yet) that offshoring is creating falling wages (either absolute or relative) in “at-risk” occupations

## Likely Developments over the Next Decade

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- Offshoring is unlikely to create adverse US income effects in, say, the next decade:
- The experience with US high-tech manufacturing goods offshoring over last two decades is instructive:
  - Production jobs lost slowly, but steadily, over more than a decade. Ultimately, about 25% of the jobs were lost, implying 250,000 jobs lost/year.
  - Offshoring meant rising profits and growth for US firms, creating even larger increase in service jobs.
- Factors creating offshoring also create inshoring.
- US comparative advantage is not short-term risk.

## **Risks and Opportunities over Longer Spans**

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- Over longer time spans, say 50 years, a country's comparative advantage becomes endogenous.
  - This was the theme of The New Trade Theory developed in early 1980s.
  - Government intervention however, may reduce freed trade benefits if it impedes trade.
- Ultimately, globalization will imply wage convergence, meaning that the wage paid an occupation will depend on the skills, not location.



# Some Guidelines for Long-Term US Policy: How We Got Where We Are

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- 1) Tradition of honoring/rewarding entrepreneurship and invention encourages risk-taking and innovation.
- 2) Large investments in R&D reflect faith in science (research) and technology (development).
- 3) Education has created reservoir of human capital.
- 4) Immigration policy has augmented human capital.
- 5) Government economic policy set useful rules for law, taxes, and regulation. Also social safety nets.
- 6) Due to factors (1) to (5), US has been a location of choice for development of discoveries made abroad.

# Some Guidelines for Long-Term US Policy: Where We Should Be Going

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- Free trade, including trade in intellectual property.
- Wage rates by occupations are converging, so pay will be based on what, not where, you are. This requires more education to augment human capital.
- Rest of the world is catching up in business/social climate, as well as R&D, in good part by emulating the US method. The effect is slow, but sure.

To maintain comparative advantage in high-tech industries, US will have to augment its existing assets, especially human capital, infrastructure, and R&D.

# What Policy Responses Are Available For CA

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- 1) Worker adjustment:
  - transitions for skilled, service, workers,
  - career path opportunities for low skill/entry workers
- 2) Business-friendly climate: law, taxes, regulation. Must encourage entrepreneurship and invention.
- 3) Education to develop human capital.
- 4) Immigration policy to affect human capital.
- 5) Policies to promote service exports.

## Policy Responses For CA

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- Centers for International Trade Development
  - Globalization--reflecting lower costs of transportation and communication should work in both directions.
  - CITD have goal of dispensing information to stimulate CA services exports.
- Education--Enrolling foreign students in US
- Environmental Services
- Technical, Engineering and Scientific Services
- Real Estate Services