



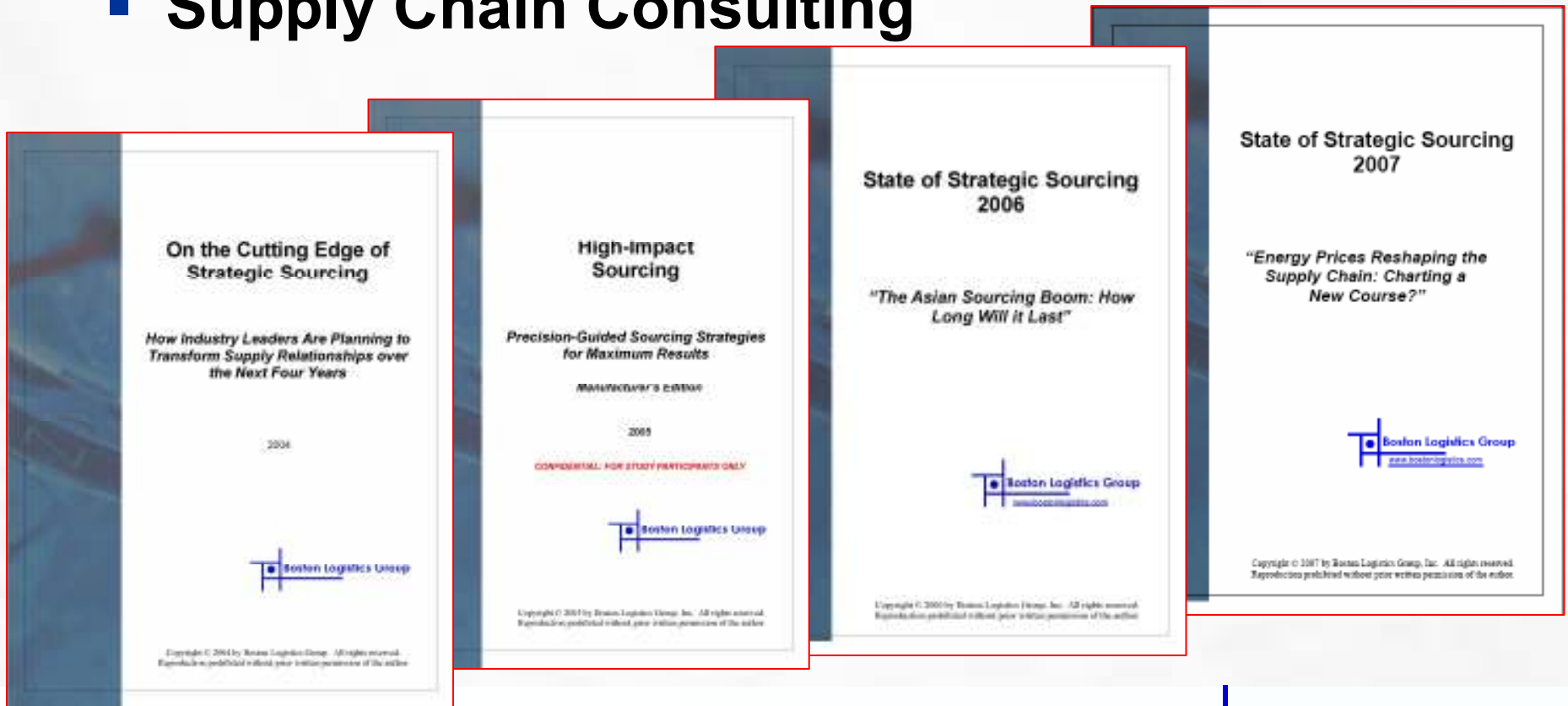
The Asian Sourcing Boom and what it means for chemical buyers

David Jacoby
Boston Logistics Group, Inc.
March 3rd, 2007



Who we are

- Supply Chain Research
- Supply Market Forecasts
- Supply Chain Consulting



Our clients



CROSS

New Zealand Rail



CANADIAN PACIFIC



Agenda

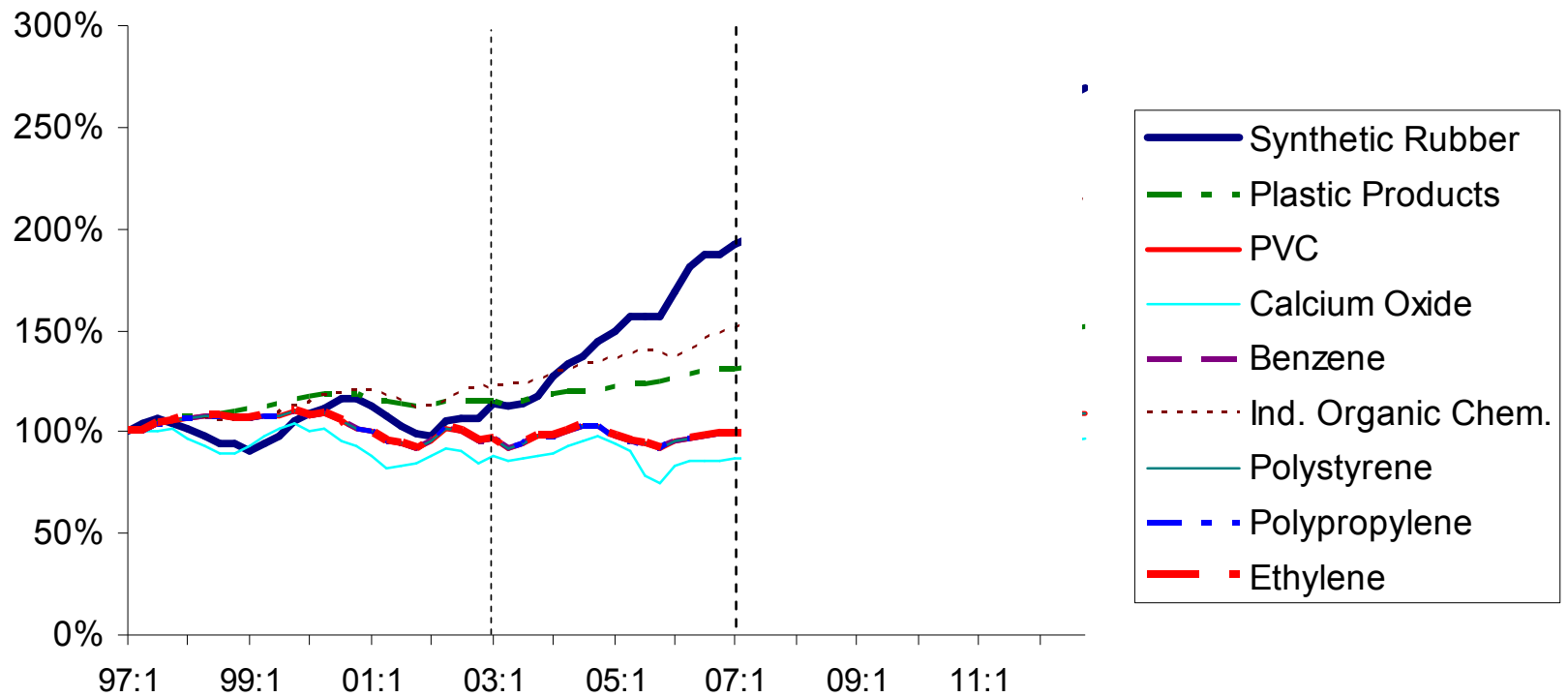
- **The way it was**
- **China awakening**
- **Energy prices**
- **Sourcing from China**
- **Managing price volatility**
- **Forecasts**
- **Conclusions**

The way it was

Relatively steady demand

US Demand

Index
(1997=1.0)

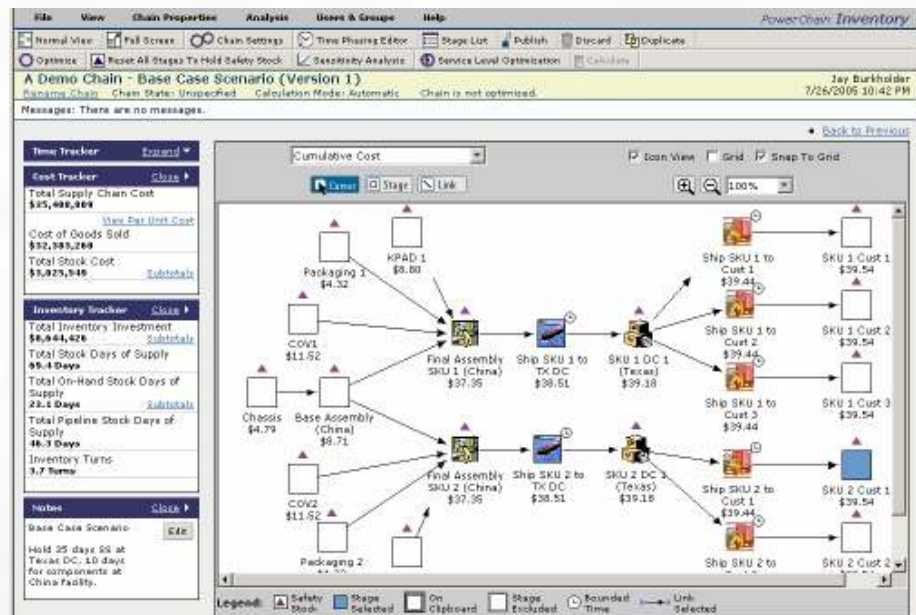


Source: Global Insight, Boston Logistics Group analysis

Comfortable supply

- Manufacturer and distributor channels
- Multiple distributors in same territory
- Abundant pipeline inventory

Network Consolidation

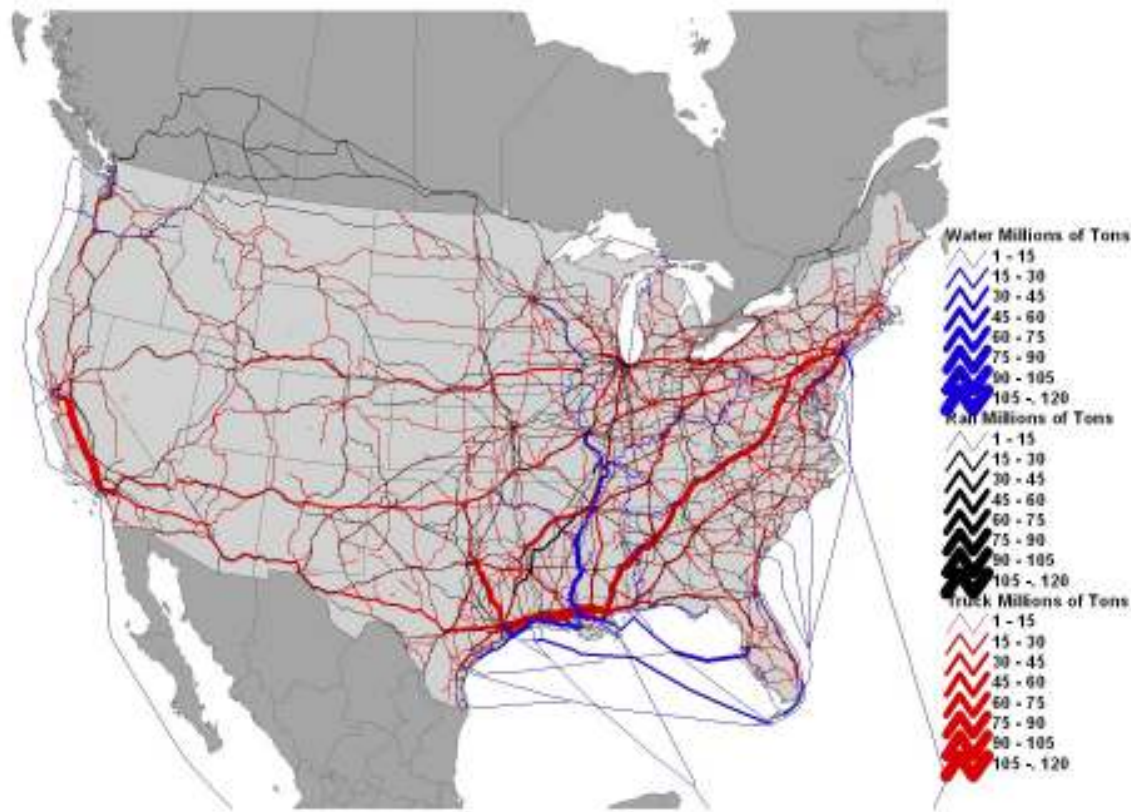


Note: Software depicted is Optiant PowerChain

Regional or national logistics

- Mostly truckload or LTL

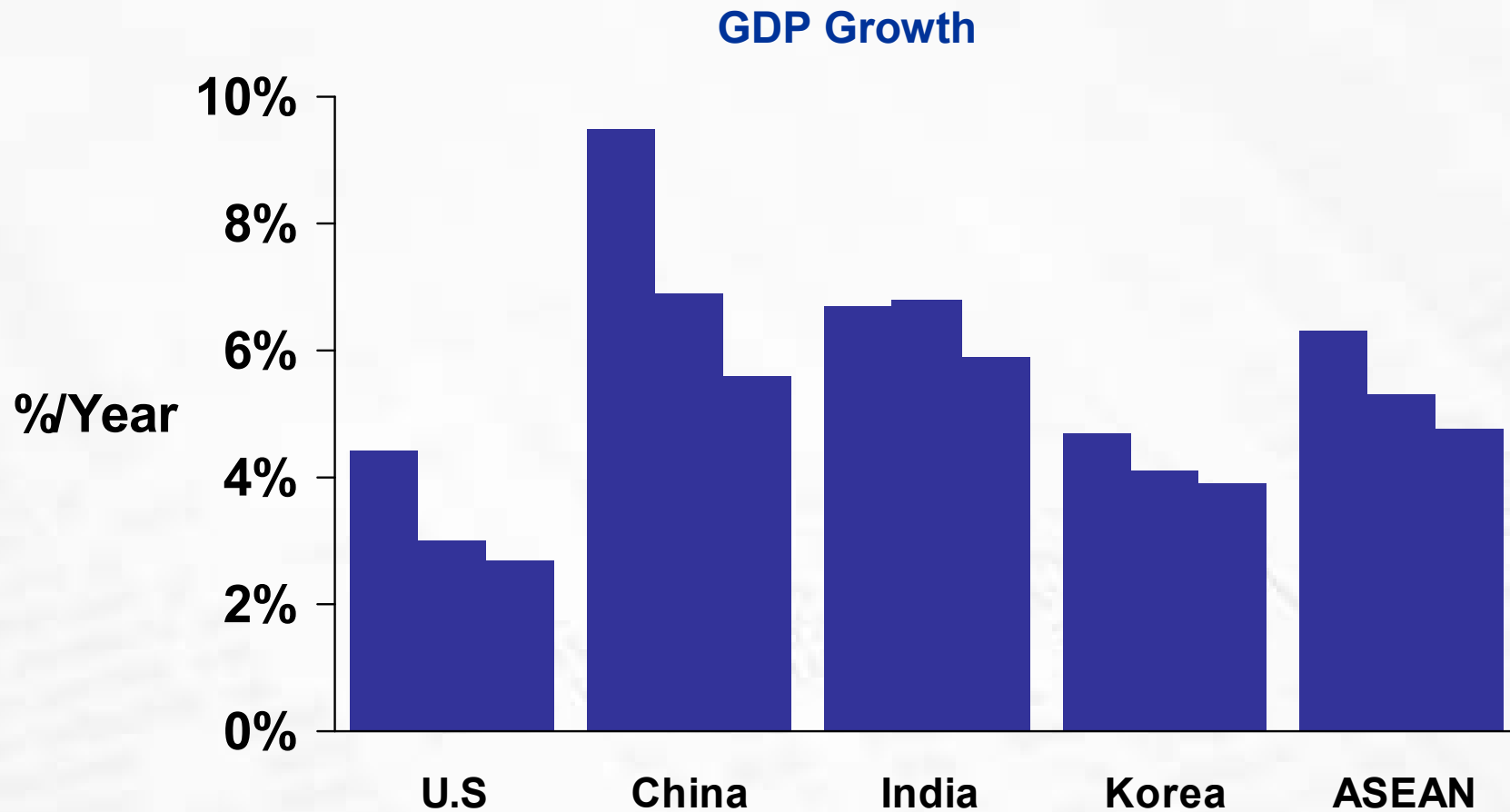
US Chemical Flows



Source: Global Insight

China awakening

Asia driving world growth



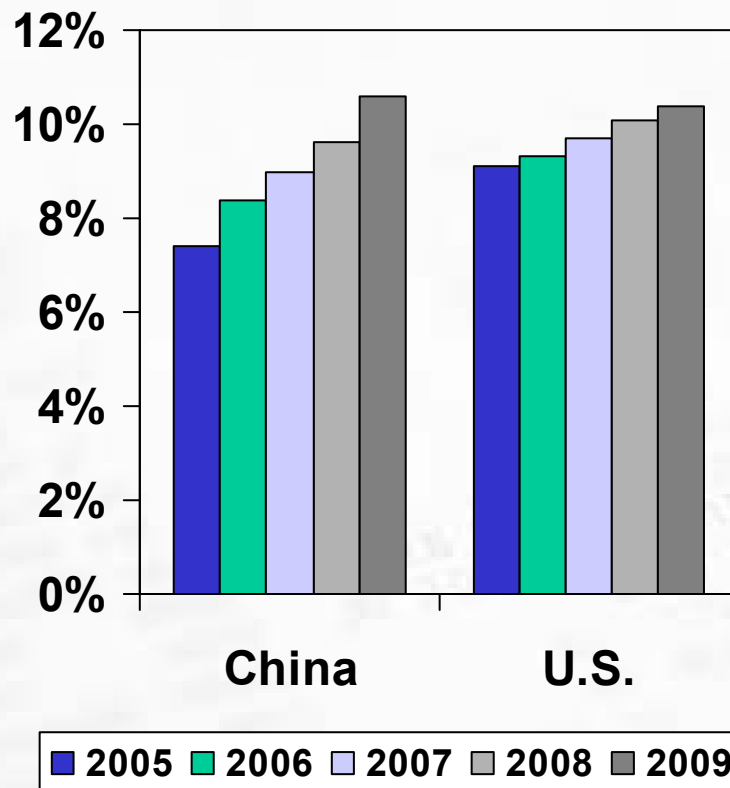
Source: Economist Intelligence Unit

■ 2004 ■ 2008 ■ 2030

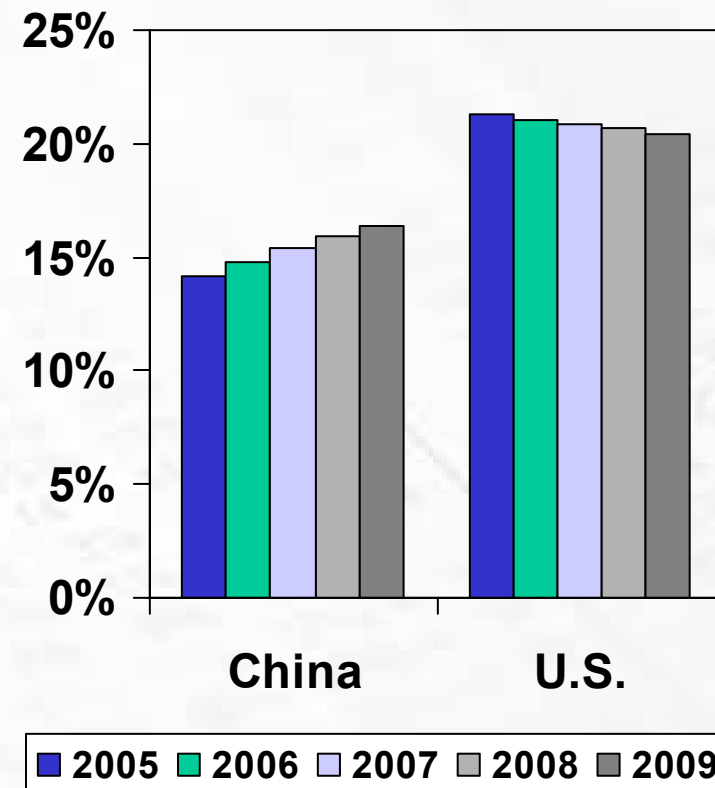
Notes: ASEAN includes Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam.

The West offshoring production

Share of World Consumption

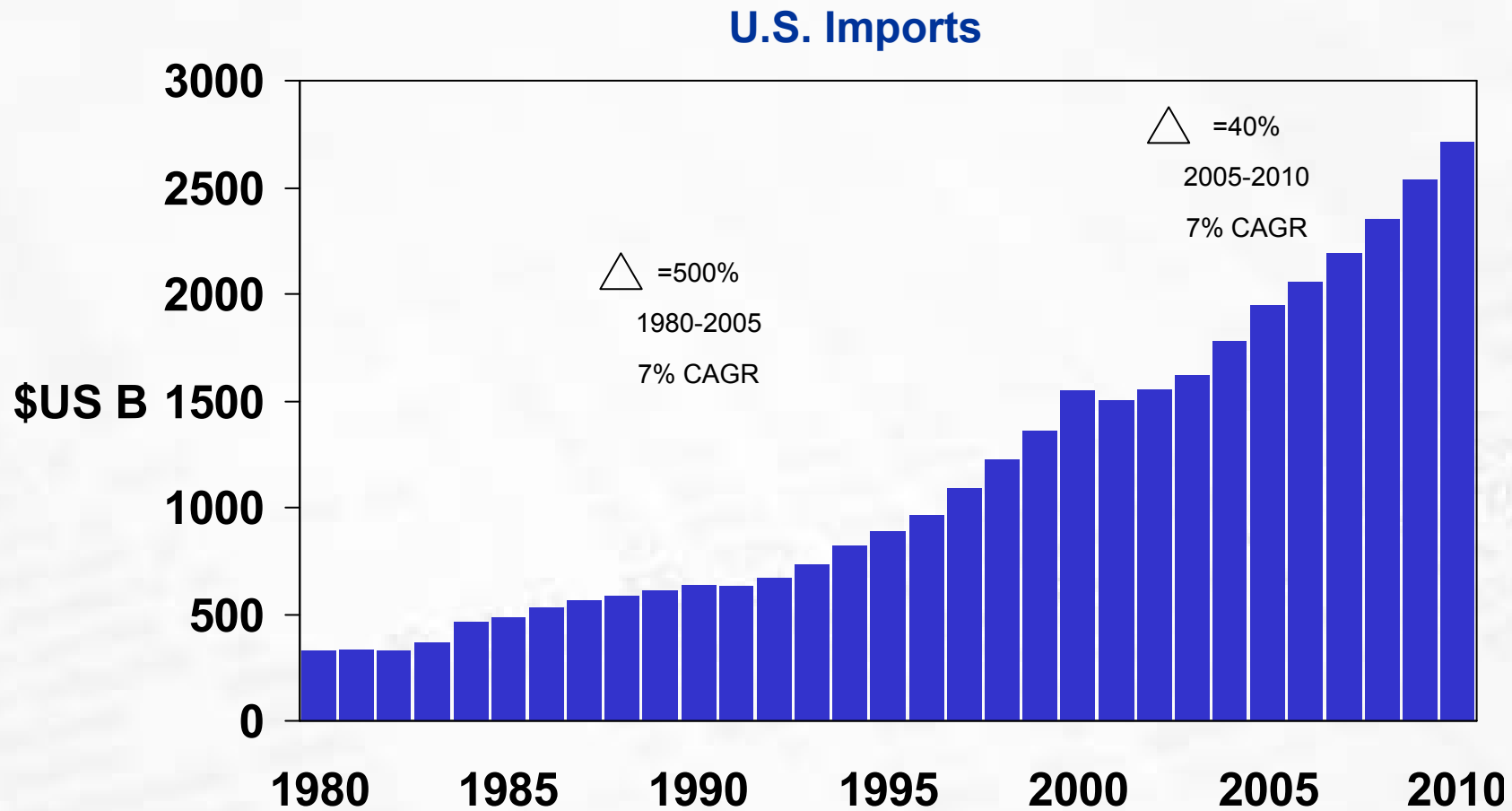


Share of World Production



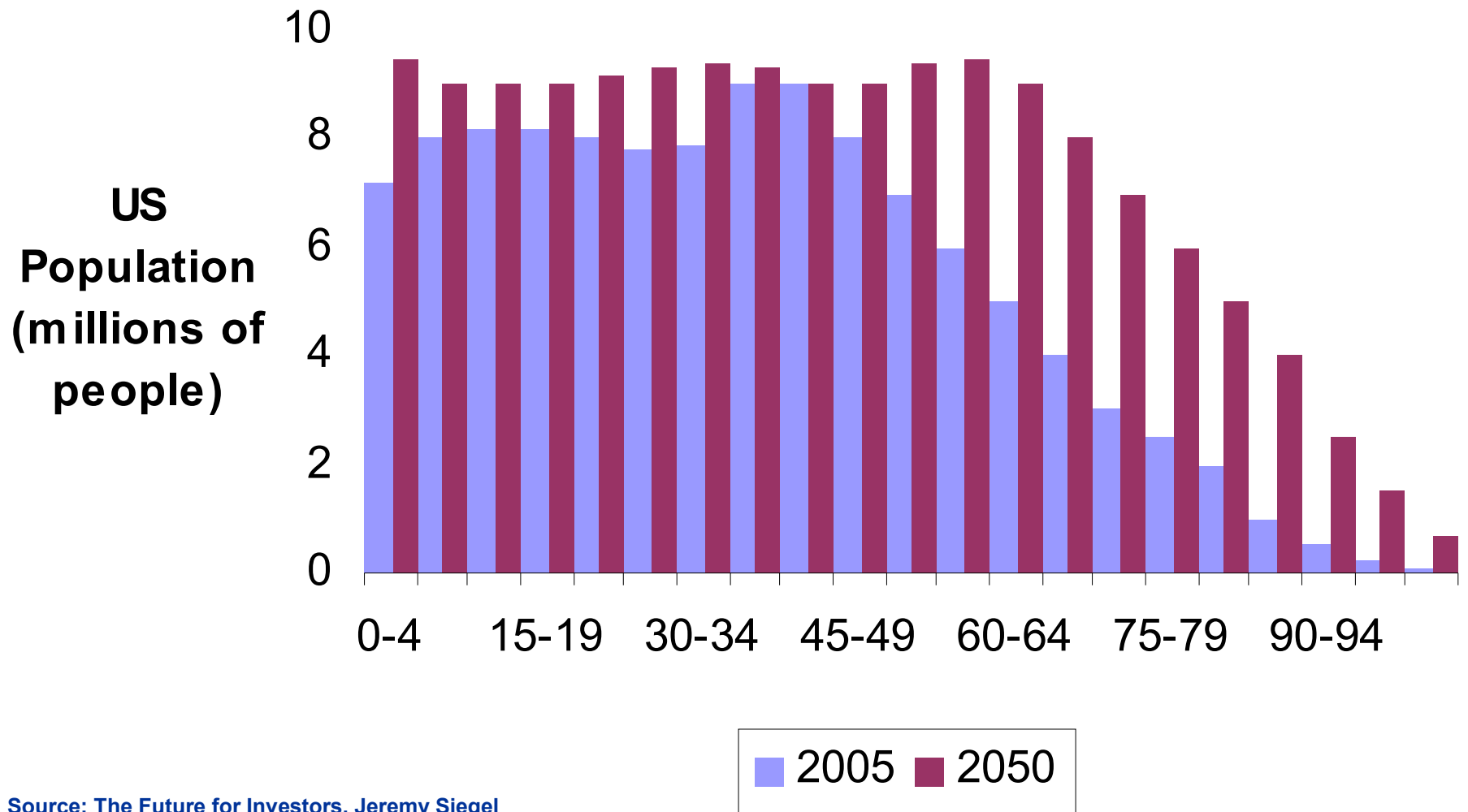
Source: Economist Intelligence Unit, Boston Logistics Group

...which is driving more imports



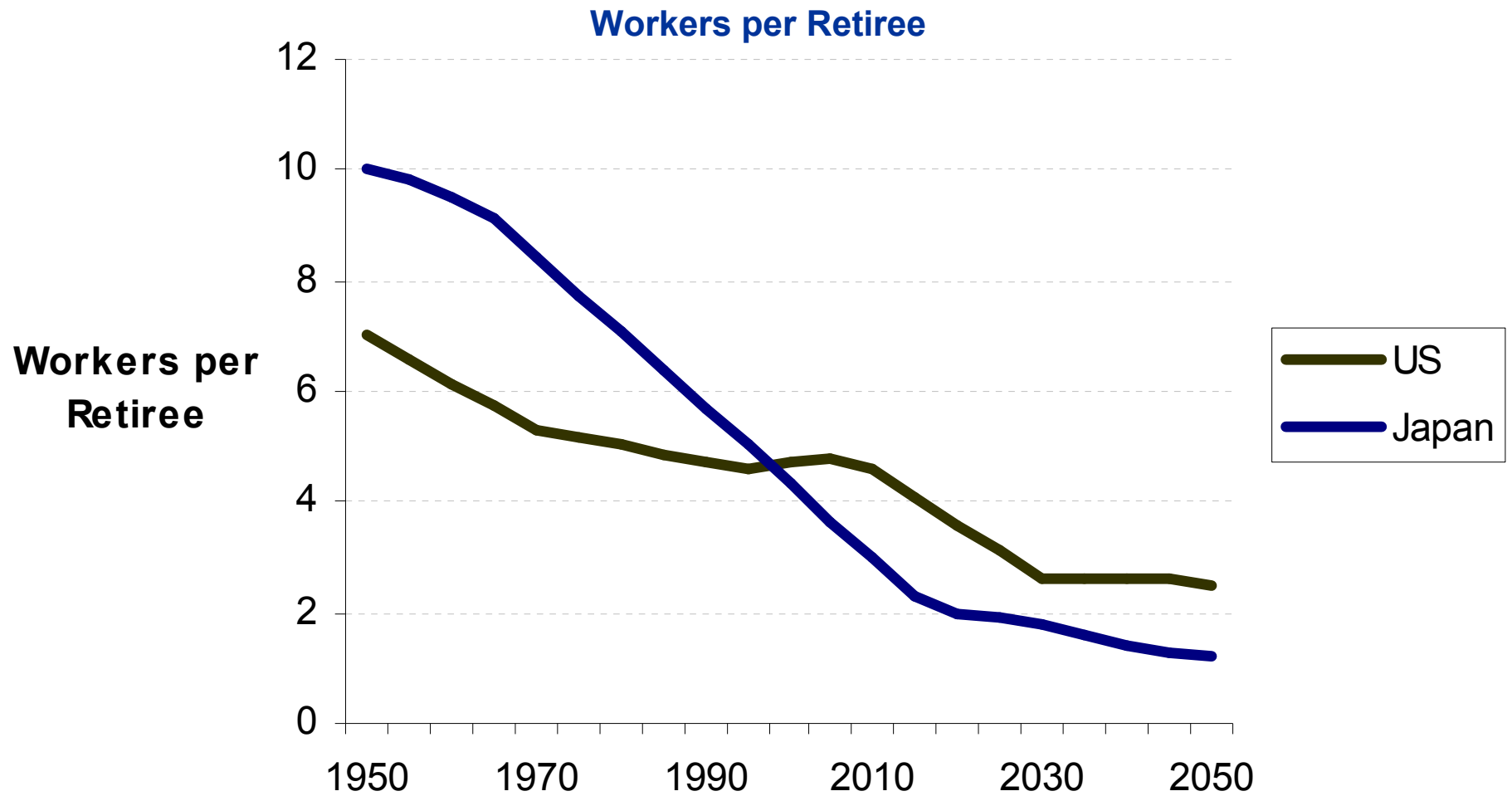
Sources: EIU WorldData

Major demographic shift



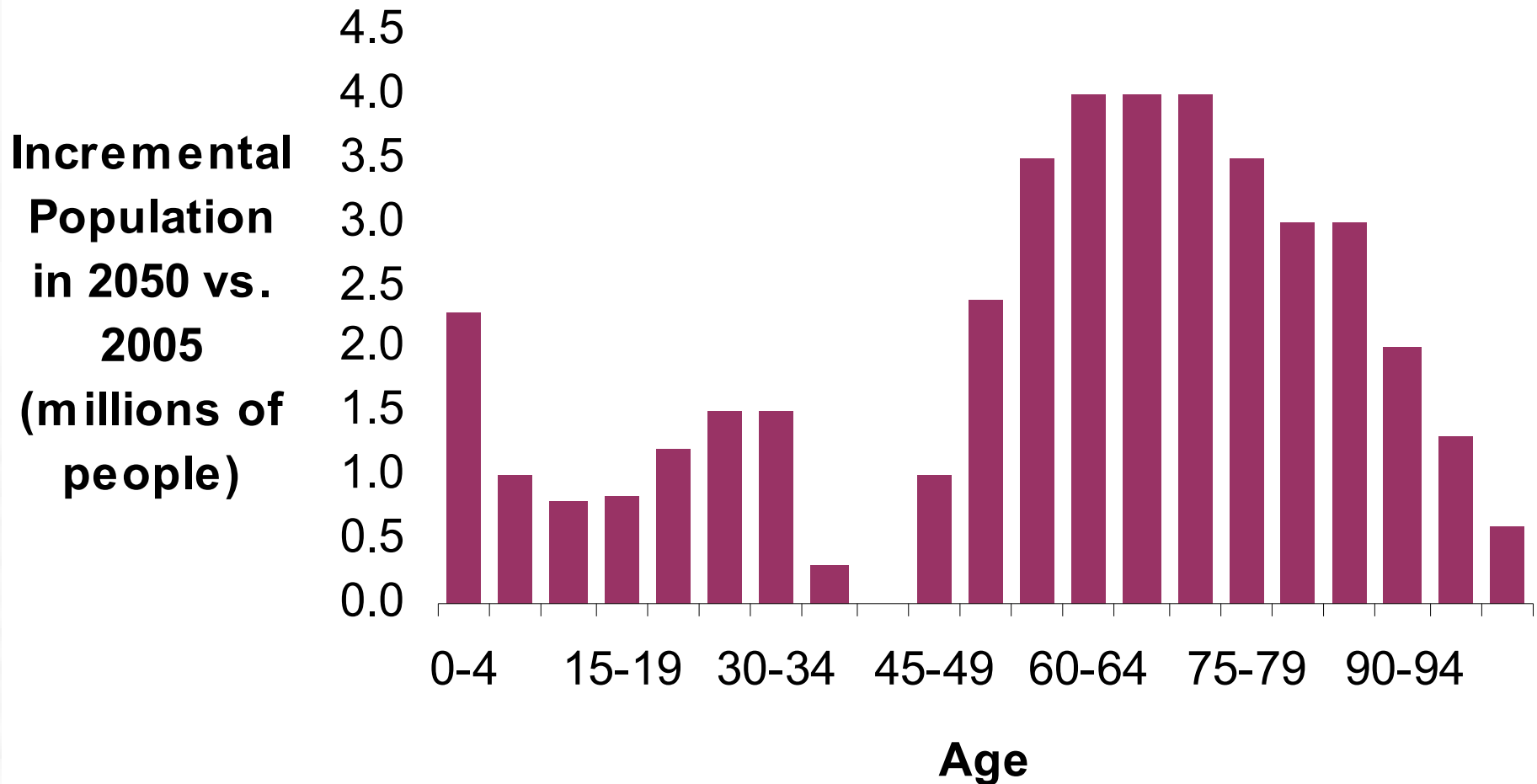
Source: The Future for Investors, Jeremy Siegel

Too much retirement



Source: The Future for Investors, Jeremy Siegel

Excess Liquidity

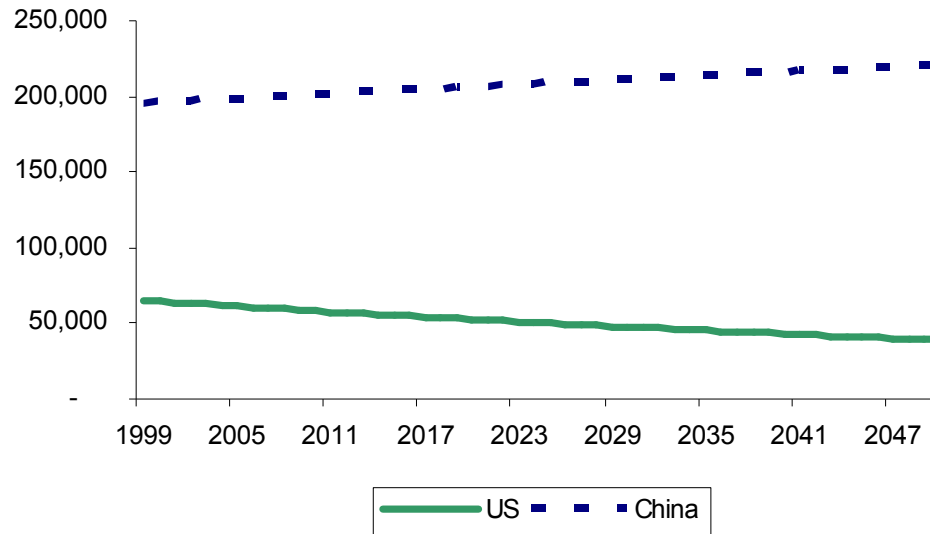


Source: The Future for Investors, Jeremy Siegel

Transfer of Know-How

- China graduating 3 times as many Engineers as the U.S. (44% of undergraduates vs. 2% in the US)
- Chinese population growth: 3.3M/year
- US engineering graduates declining by 1%/year

U.S. vs. Chinese Engineering Graduates



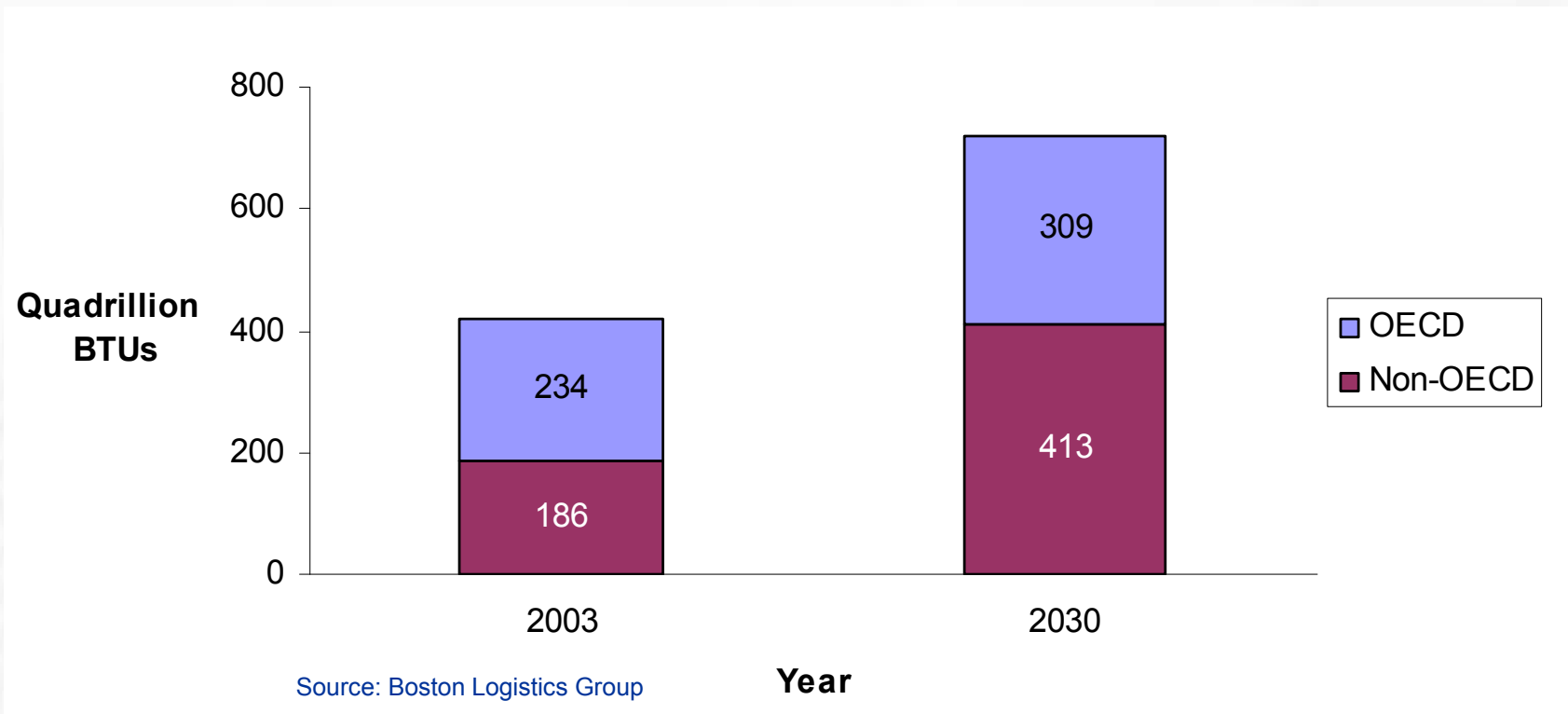
Sources: National Science Foundation, CIA Factbook, Boston Logistics Group analysis of UN data

Energy prices

World energy requirements increasing

- Energy consumption forecast to nearly double by 2030

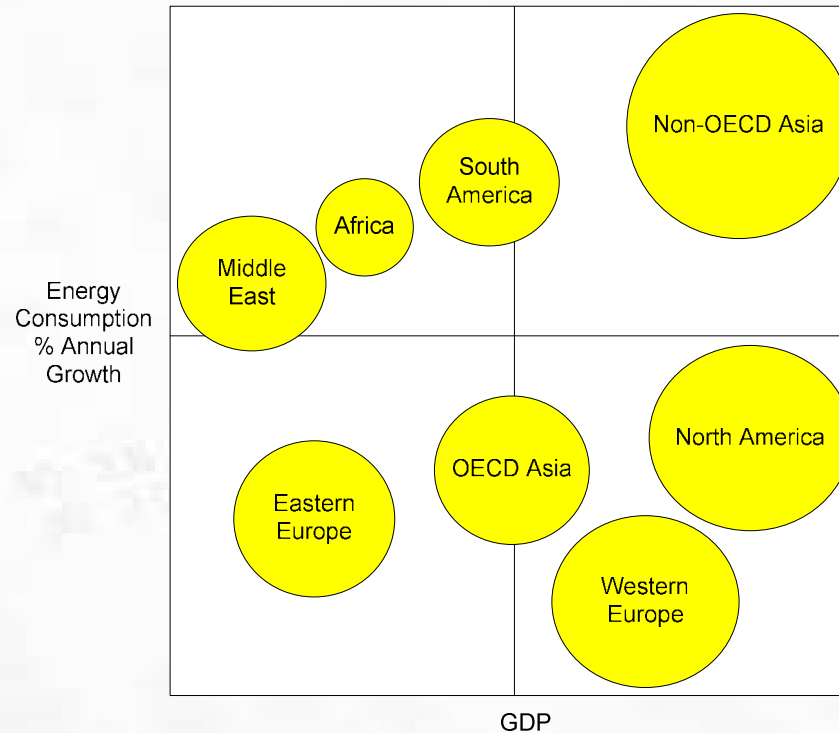
Growth in Global Energy Consumption, 2003 vs. 2030



Asia leading the growth

- Most demand growth from China
- Developed economies $\leq 1\%$ growth

Growth in Energy Consumption by World Area

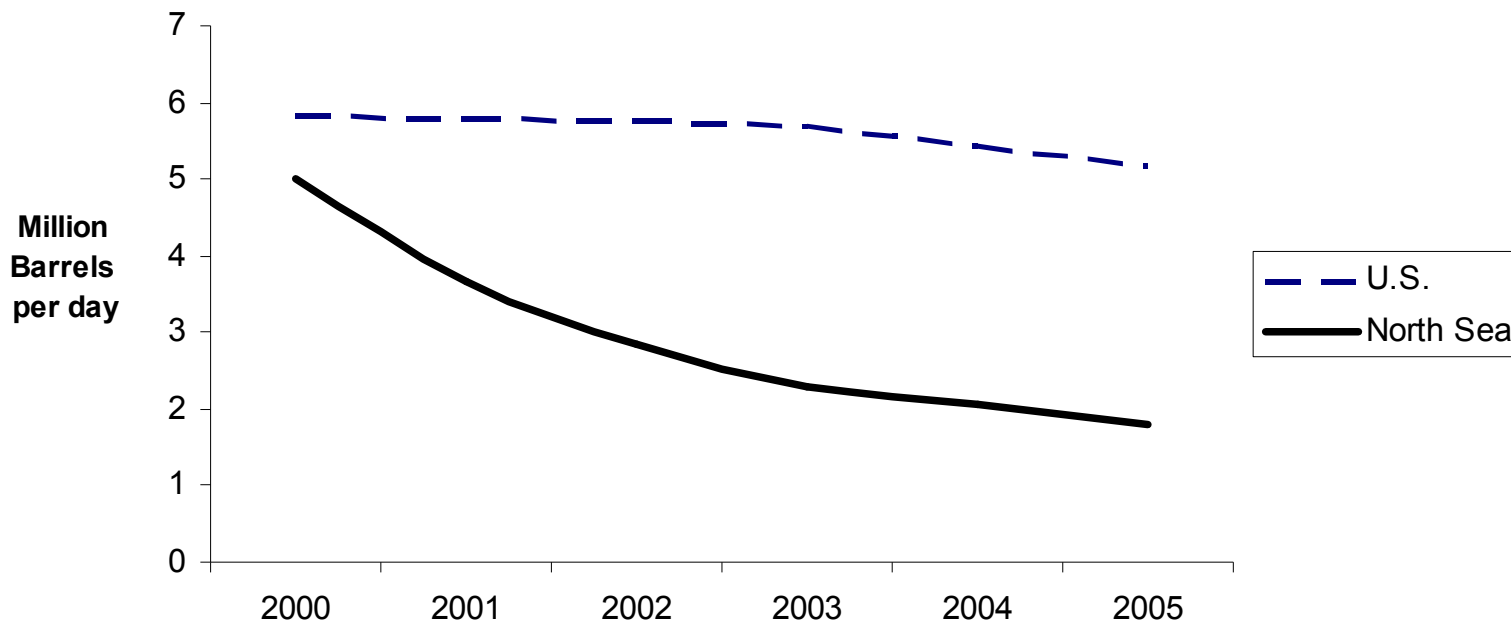


Note: Size of bubble proportional to actual energy consumption
Source: Boston Logistics Group

Production falling behind

- Global oil production nearly flat at less than 1.5% per year
- Many locations declining in production

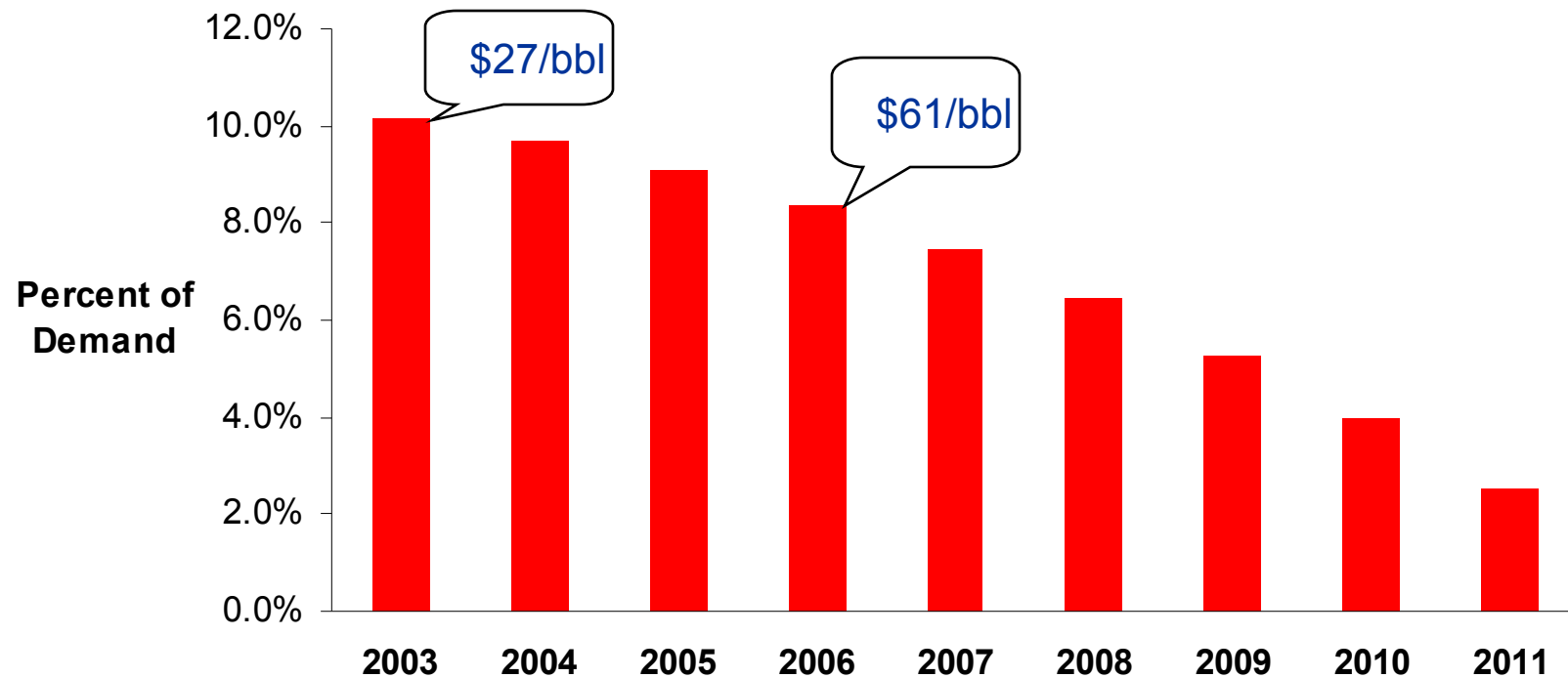
US and North Sea Oil Production



Source: Boston Logistics Group

Global oil supply vs. demand

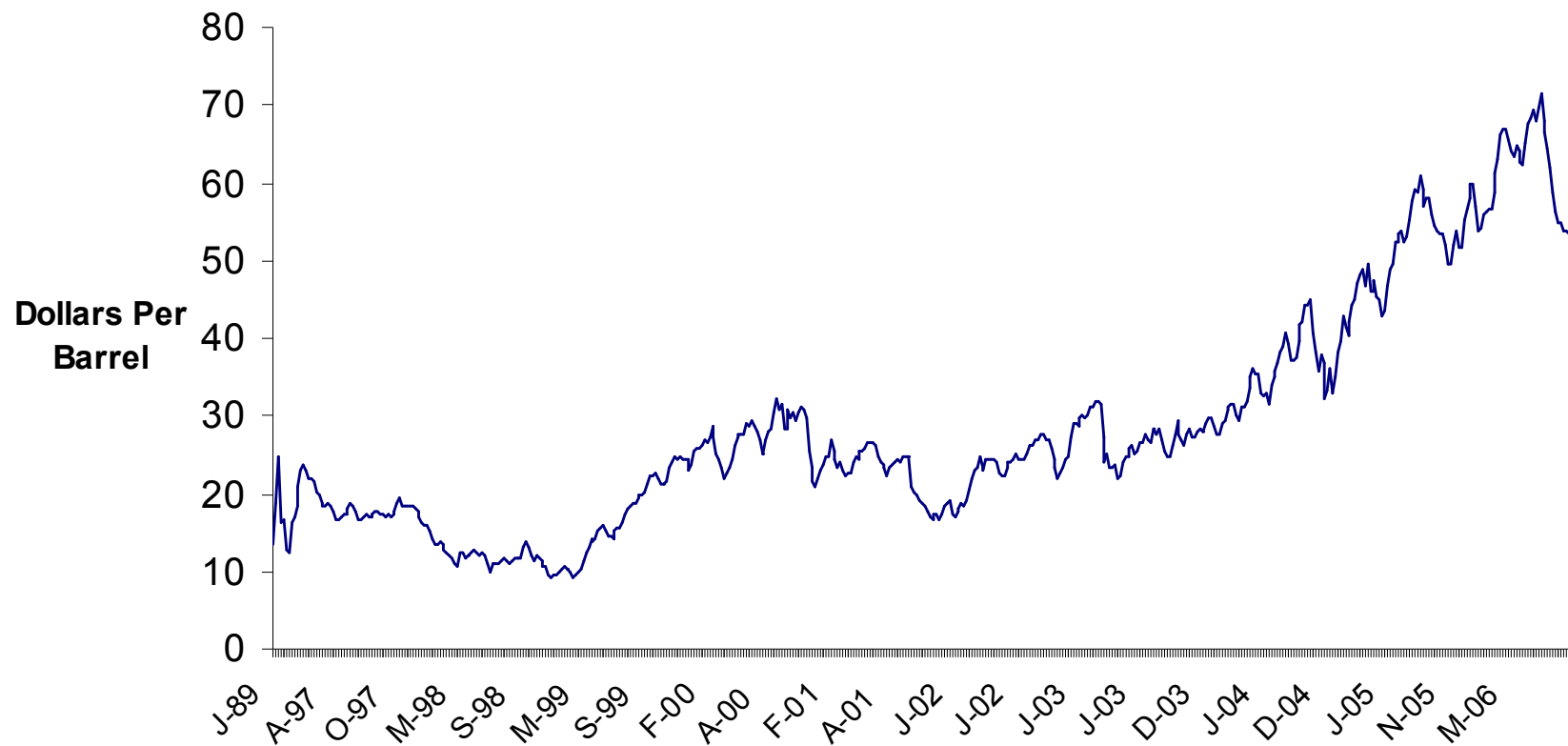
Gap Between Oil Demand and Oil Available



Source: Boston Logistics Group

Higher oil prices here to stay?

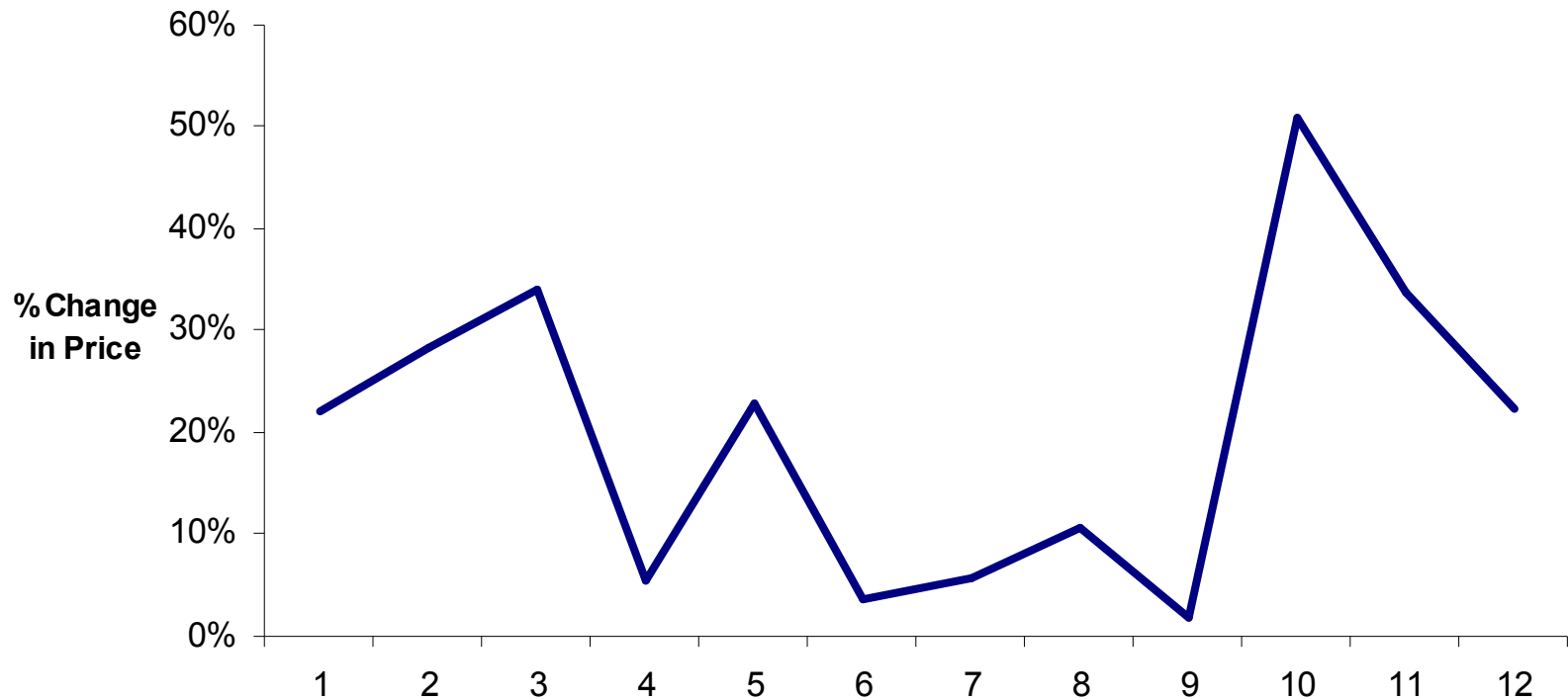
Weighted Average World Oil Spot Prices 1989-2006



Source: Boston Logistics Group

Natural gas prices escalating, volatile

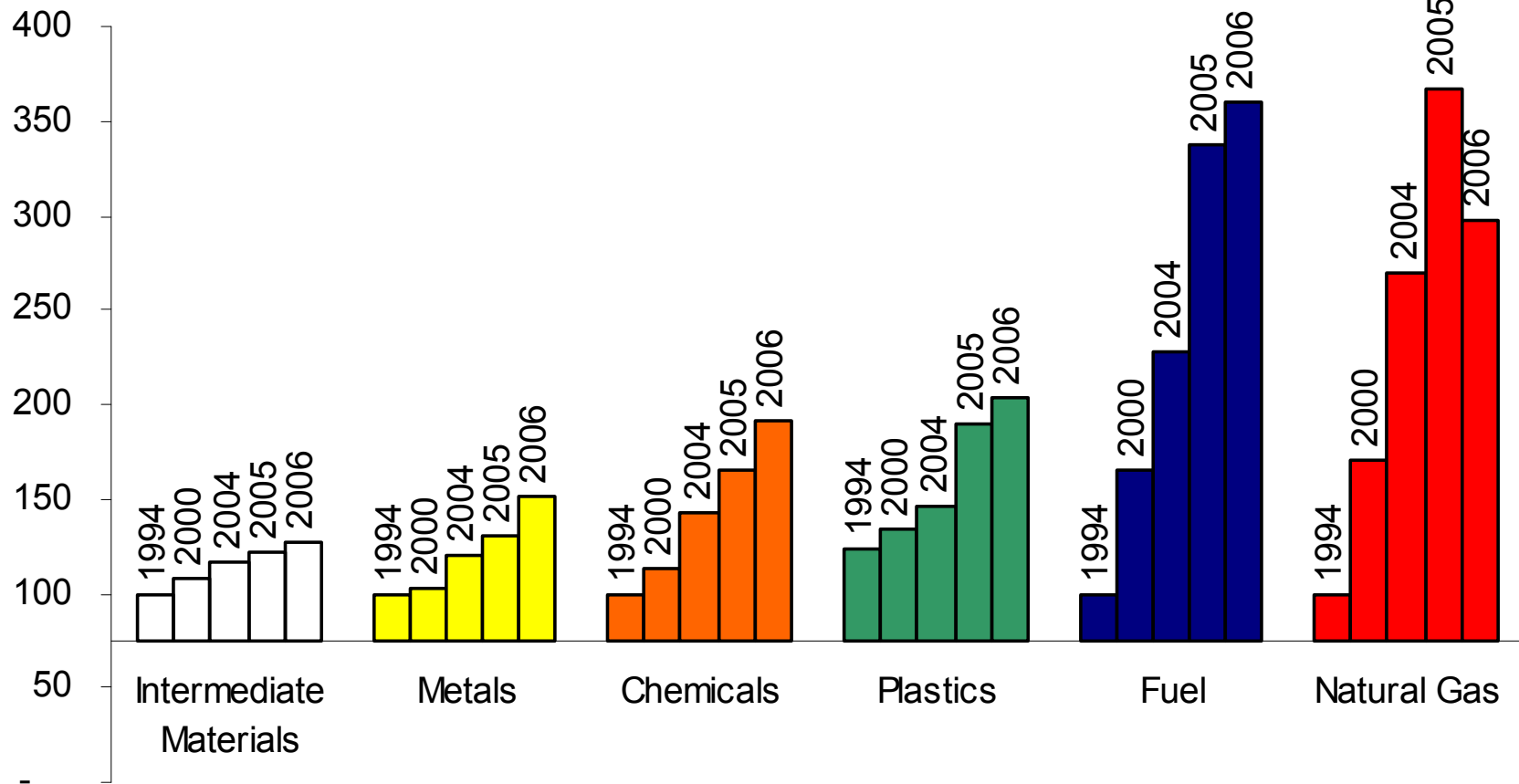
Natural Gas Price, November 2005-October 2006



Source: Boston Logistics Group

Raw material prices gone wild

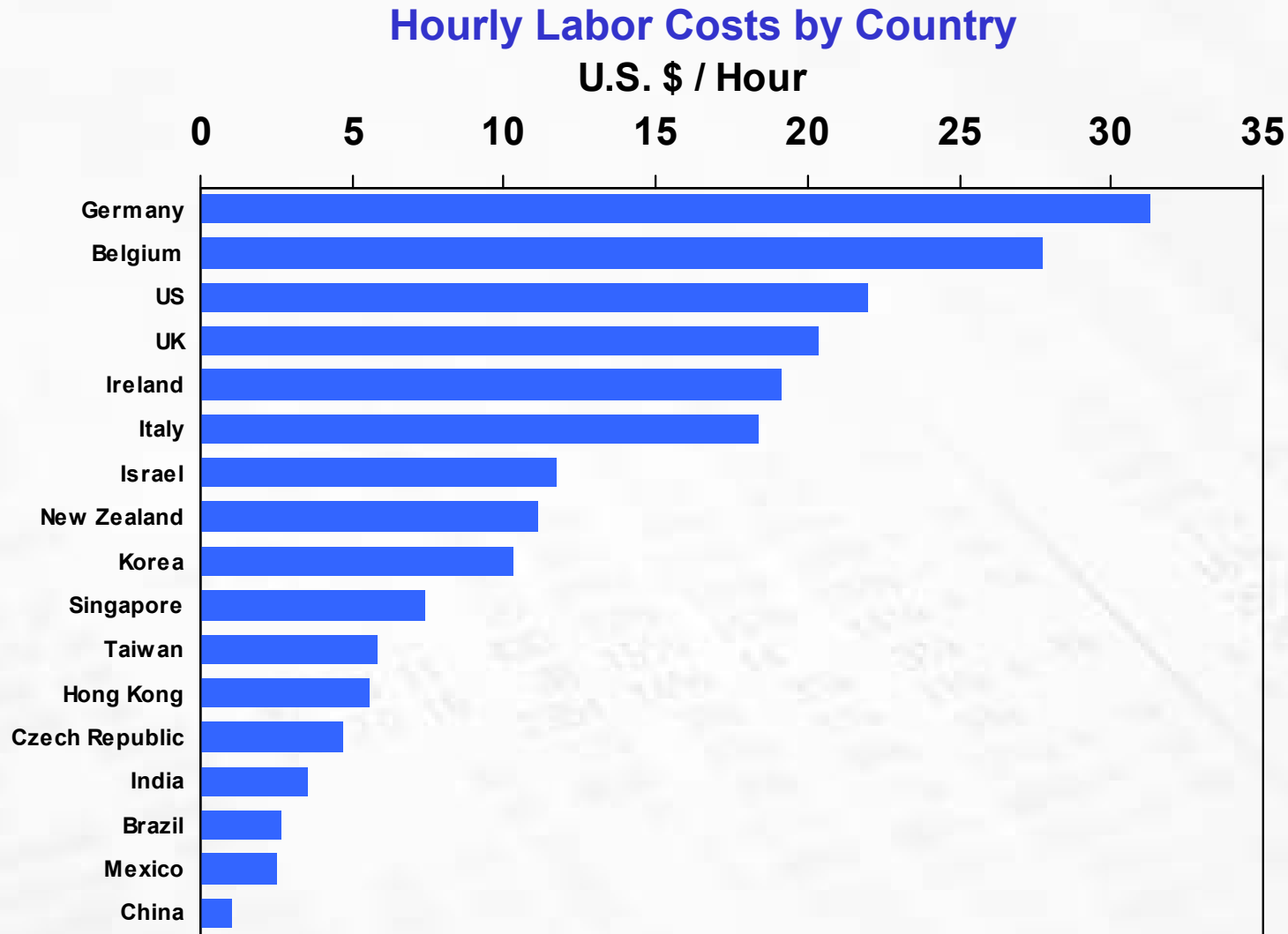
Selected Producer Price Indices (1994=100)



Source: Boston Logistics Group

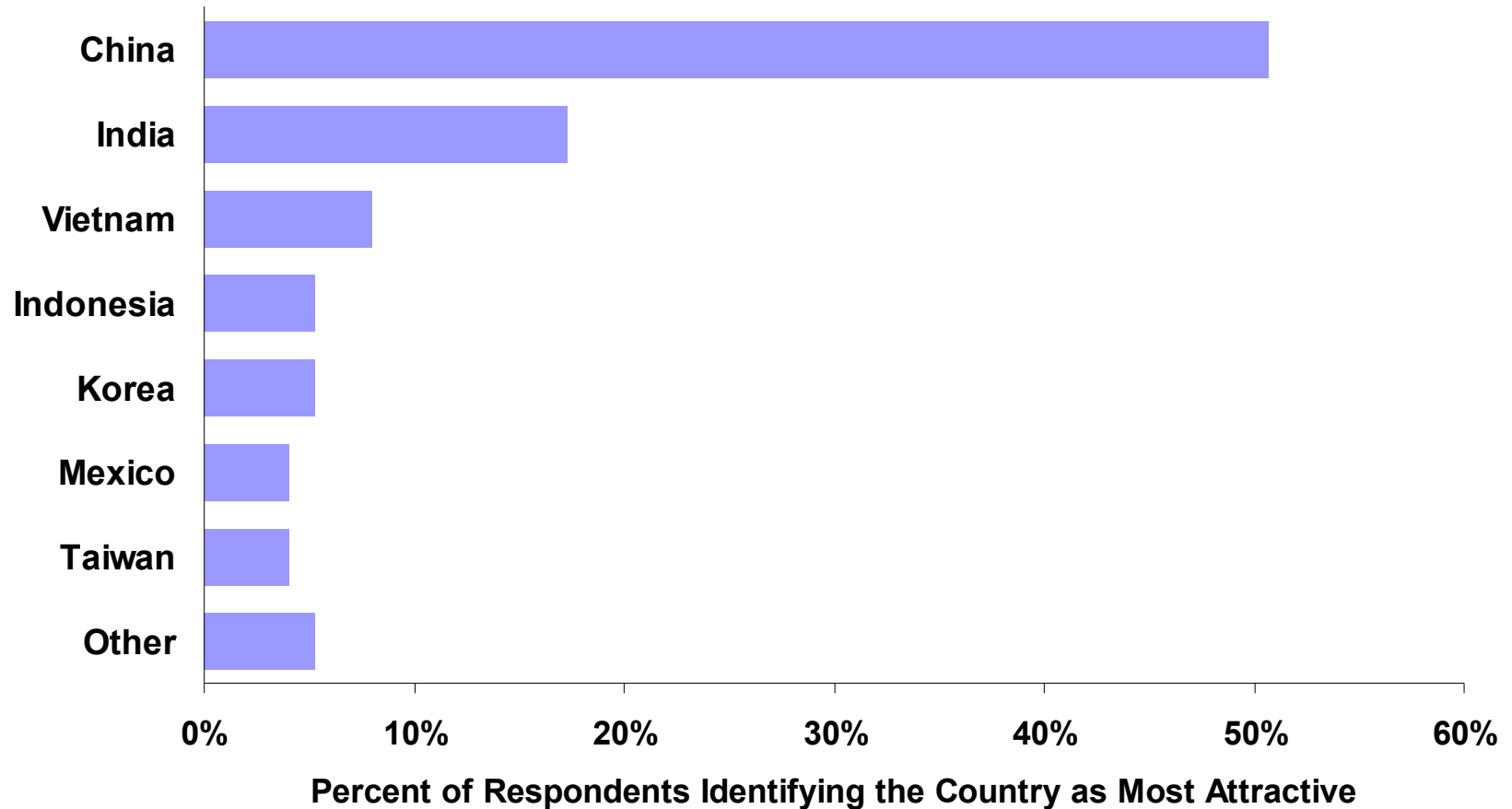
Sourcing from China

Large labor cost differentials



Sources: Bureau of Labor Statistics, Computerworld

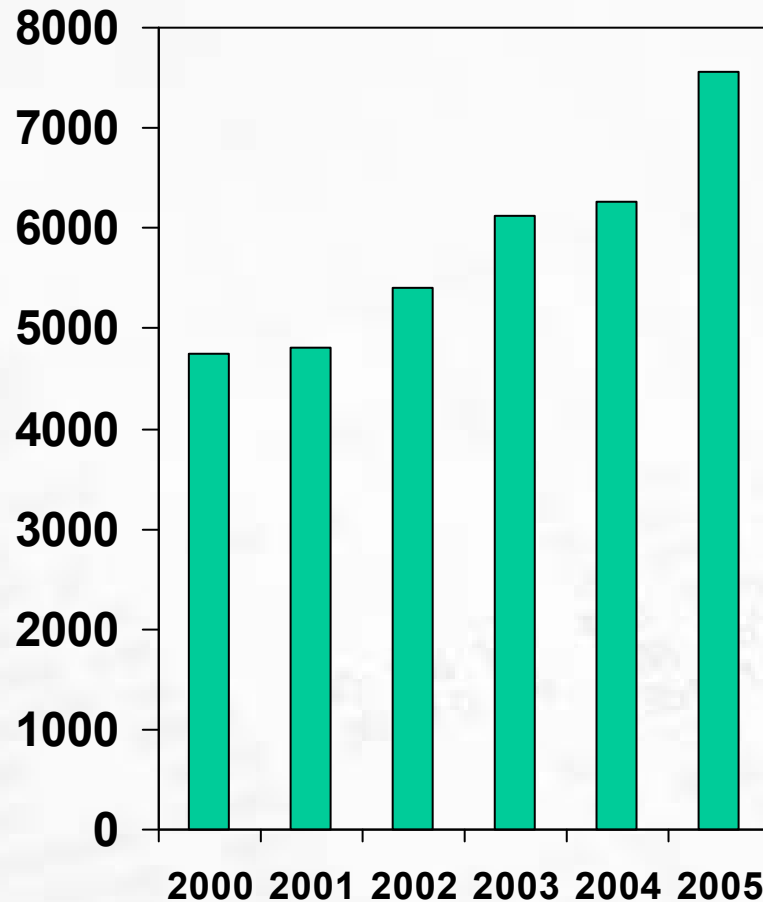
China, China, China



Source: Boston Logistics Group 2006 State of Strategic Sourcing Study: "The Asian Sourcing Boom: How Long Will it Last?"

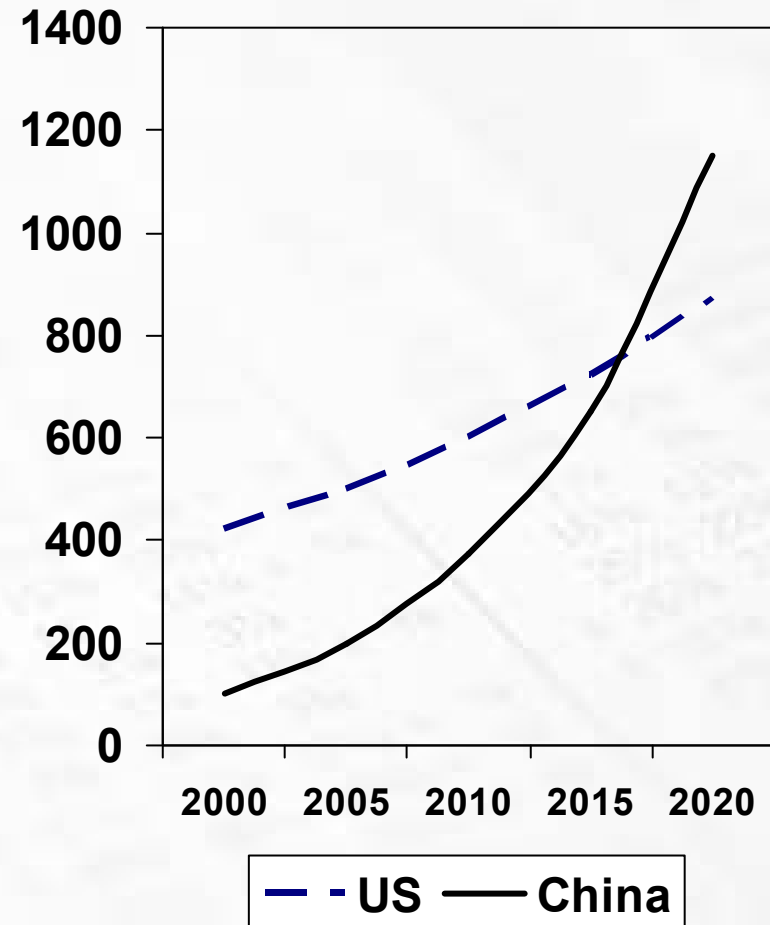
China's chemical market

Ethylene Output in China



Source: China National Chemical Information Center

Chinese vs. American Chemical Production



Source: Economist Intelligence Unit

Selected Chinese chemical suppliers

- **CNOOC**
- **SinoChem**
- **China National Chemical Corporation (ChemChina)**
- **Chinese Petroleum and Chemical Corporation (Sinopec)**
- **15,000 smaller chemical companies, and consolidating**

American manufacturer China strategies

- **Cabot**
- **Honeywell**
- **BASF**
- **Rohm & Haas**
- **R&D**
 - Dow
 - DuPont
 - GE Plastics

European manufacturer China strategies

- **Joint ventures and foreign direct investment**

- Shell-CNOOC
- Kuwait Petroleum-Sinopec
- Ciba
- Akzo Nobel

- **Acquisitions**

- Degussa
- DSM
- BASF

- **R&D**

- Bayer
- BP
- DSM

Largest Challenges

- 1. Developing a global sourcing process and staff**
- 2. Managing the communication, culture, or geographic knowledge gap**
- 3. Ensuring product or service quality**
- 4. Maintaining visibility and control over logistics and inventory**

Source: Boston Logistics Group 2006 State of Strategic Sourcing Study: "The Asian Sourcing Boom: How Long Will it Last?"

Managing price volatility

Potential strategies

Supply Chain Strategies

- 1. Centralize purchasing**
- 2. Join a buying consortium**
- 3. Sign long-term contracts at forecast rates**
- 4. Reduce consumption (value engineering)**

Financial Strategies

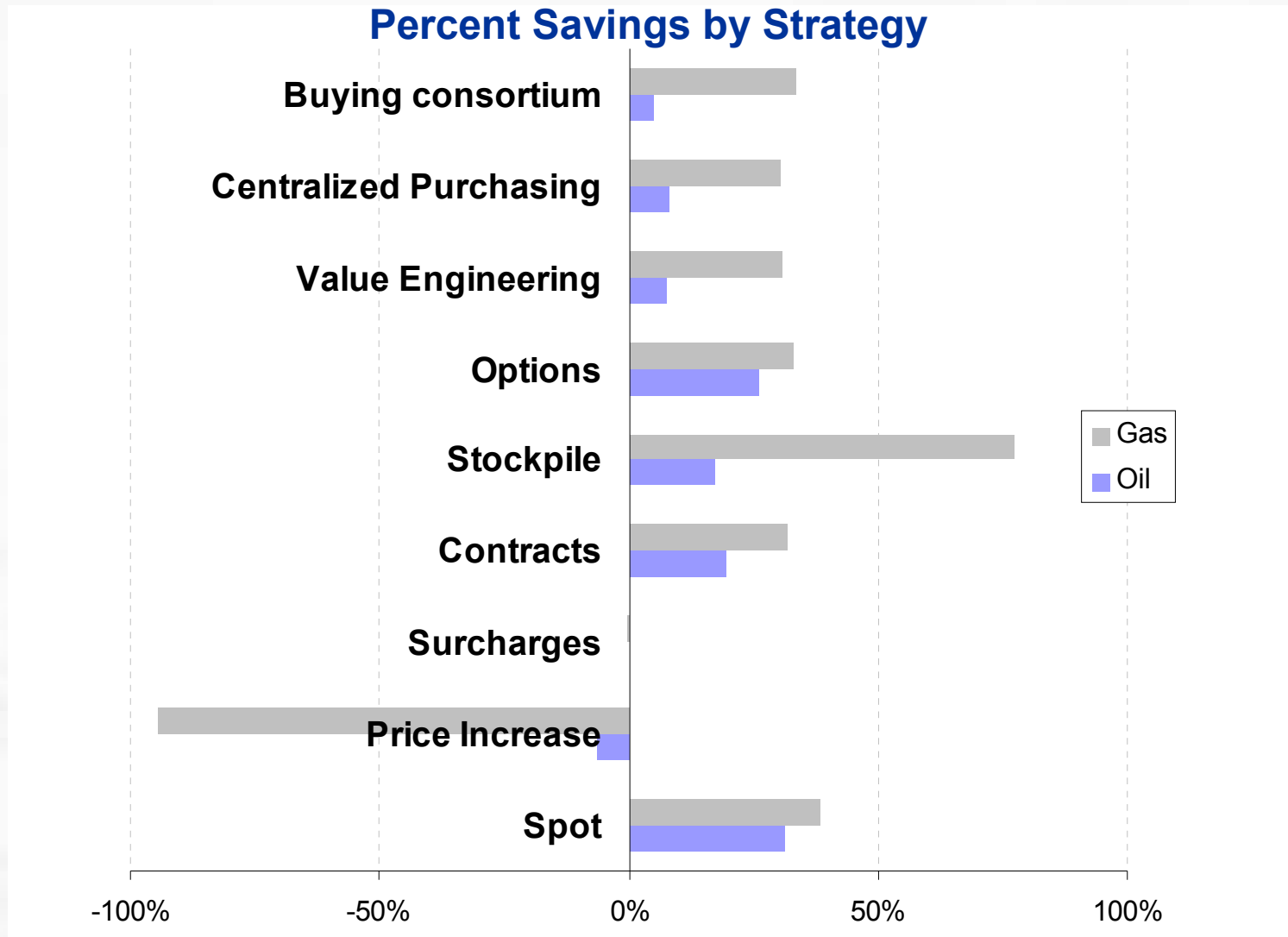
- 5. Buy in advance at the current price**
- 6. Buy options**

Pricing Strategies

- 7. Pass costs on via a floating surcharge**
- 8. Pass costs on & embed in the product price**

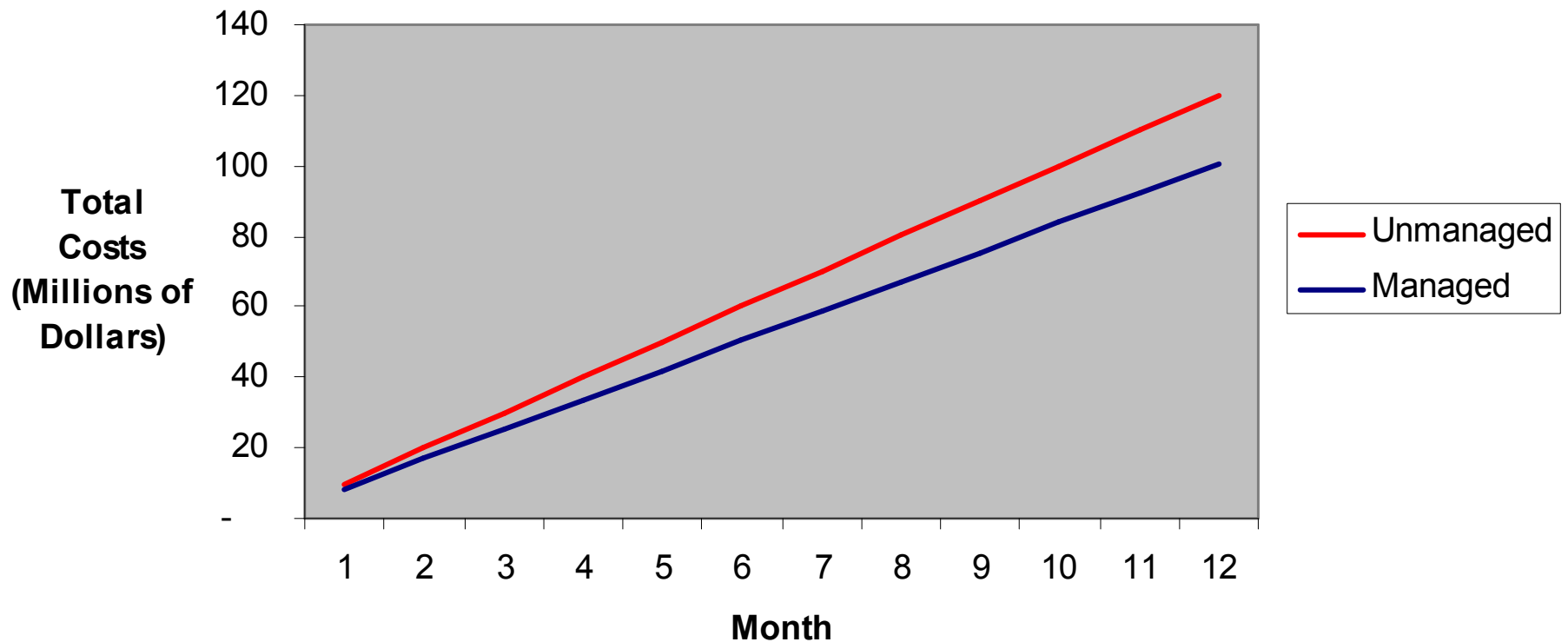
The best strategies

Percent Savings by Strategy



Hybrid strategy saves significantly

Cumulative Difference Between Managed and Unmanaged Approaches



Forecasts

Outlook

- **Stabilizing, but high input costs**
- **Productivity, competition driving prices**



Conclusions

Leverage Asian sourcing

- 18% savings on largest categories
- 70% increase in sourcing by 2011 for some
- China twice as attractive as other countries

Investment in Low-Cost Country Sourcing

Percent of Respondents	Investment
66%	0-1x
20%	1-2x
11%	3-5x
0%	6-10x
4%	>10x

Source: Boston Logistics Group

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Market Assessment and Forecast

MILL ROLLS 2006

Boston Logistics Group 445 Washington Street Wellesley, MA 02482 Phone: (1) (781) 283-5788 www.bostonlogistics.com e-mail: info@bostonlogistics.com

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Figure 1: Key Indicators

Indicator	2006-2008		2008-2010		2010-2012	
Order Leadtime	▲	8.2%	▼	-17.0%	▼	-62.6%
Prices	▼	-4.8%	▲	2.8%	▲	2.3%
Capacity Utilization	▼	-4.2%	▼	-12.5%	▼	-13.1%
Supplier Concentration	Low	0.3%	Low	-0.2%	Med	3.7%

1 Highlights

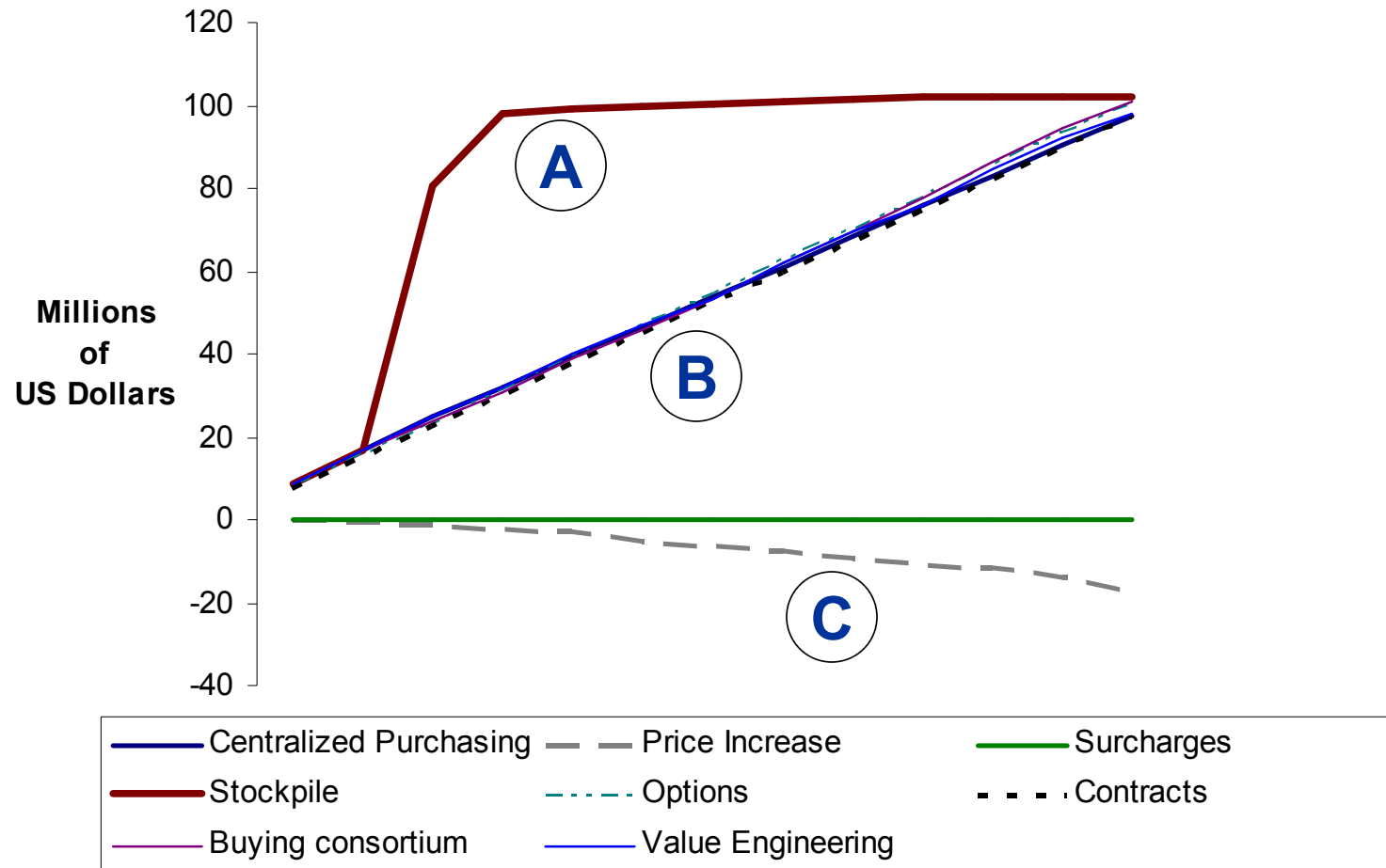
Demand: Mill roll demand will continue to grow through 2012, in step with robust capital investment in iron and steel production.

- Capital investments will grow at 10-12% per year from 2006-2012.
- Chinese demand will increase at an average of 10% per year over that period.
- Stainless steel and high-growth segments will fuel a demand for various specialized mills.

Supply: Suppliers are adding capacity, but the incremental capacity will not alleviate the current

Actively manage costs

- 10-100% savings from active management



Control your destiny

David Jacoby: tel: (781) 283-5788; djacoby@bostonlogistics.com

Boston Logistics Group helps supply chain executives make critical supply chain decisions that involve investment and risk by forecasting the evolution of supply markets and technologies. Our mission is to help our clients develop globally competitive supply networks that maximize Supply Chain Value.™ Our products and services include:

- **Supply Chain Research** that helps investors and policy makers quantify the benefit of emerging technologies and decide whether or not to invest in them
- **Supply Market Forecasts** that help purchasing managers decide how, where, and when to buy critical externally-purchased materials and services
- **Supply Chain Consulting** that supports high-stakes decisions such as acquisitions, outsourcing, off-shoring, and make-or-buy

Industries Served:

- **Supply Chain Solutions Providers:** Advanced Planning and Scheduling (APS), Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Location-Based Services (LBS), Transportation Management Systems (TMS), Warehouse Management Systems (WMS)
- **Discrete Manufacturing:** Machinery, Equipment, Vehicles, Parts, Mechanical and Electrical Devices
- **Process Manufacturing and Conversion:** Paper, Pulp, Energy, Packaging, Processed Minerals/Aggregates, Plastics, Metals, Chemicals
- **Transportation:** Railroads, Ocean Shipping Lines, Airlines, Trucking Companies, Package Delivery, Intermodal
- **Logistics:** Dedicated and Third Party Logistics, Ports, Stevedoring, Storage, Material Handling, Distribution, Maintenance, Retail