

Changes in Traditional Forest Product Markets

Peter J. Ince
US Forest Products Laboratory
Madison, Wisconsin



Wisconsin SAF Spring 2008 State Conference



Traditional Forest Product Markets:

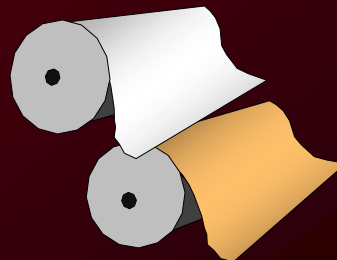
- **Lumber & Wood Panels**

(OSB logs, Chip-n-saw, Saw Logs, Veneer Logs)

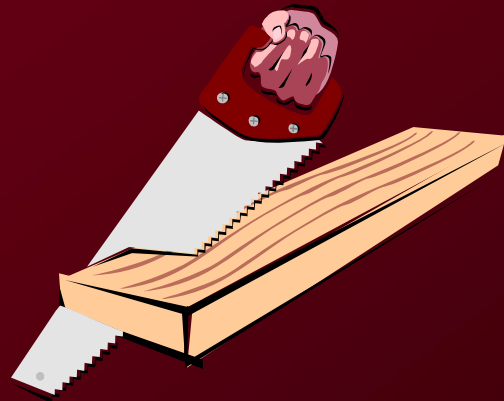


- **Paper, Paperboard & Wood Pulp**

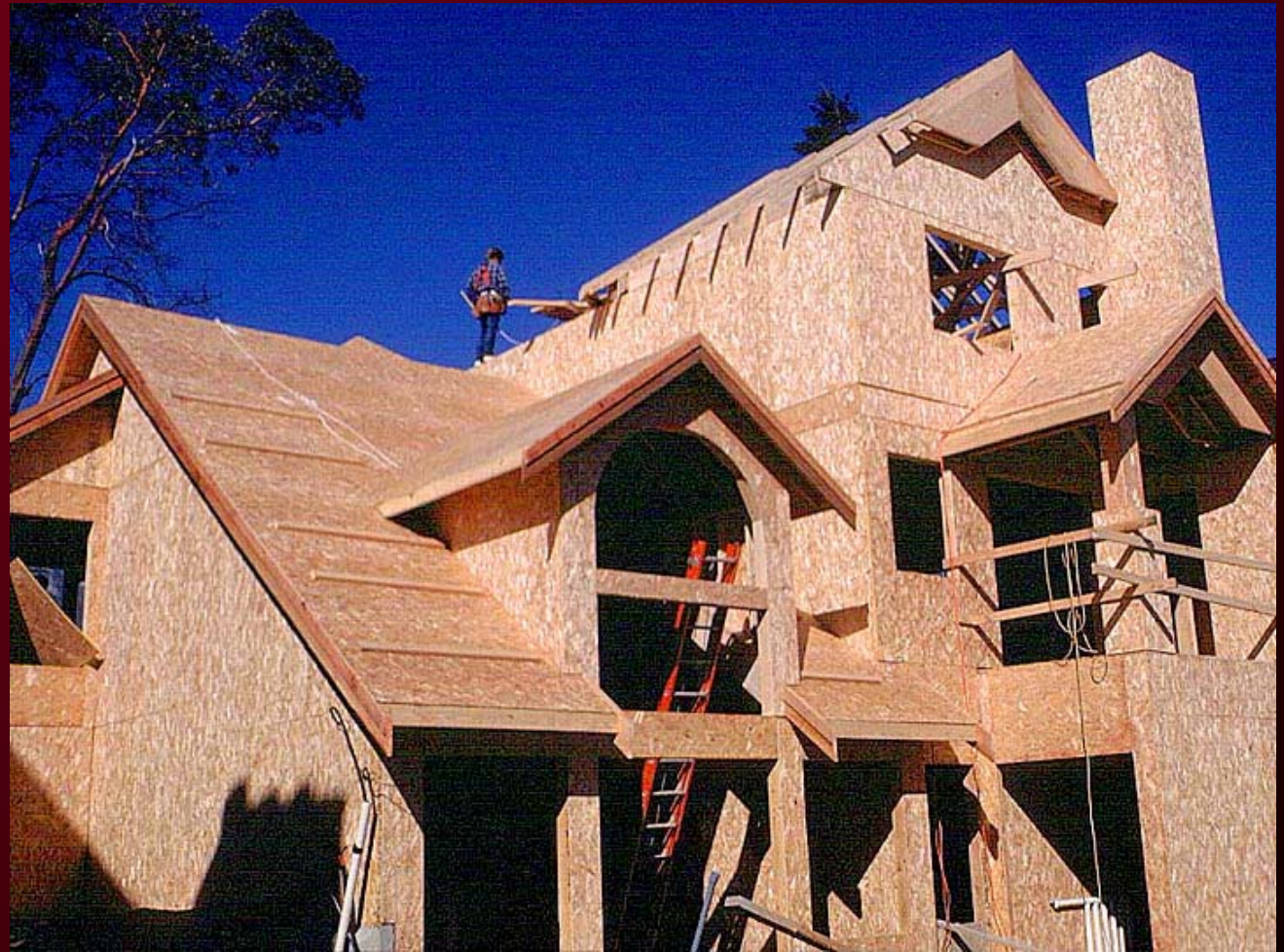
(Pulp logs, Wood Chips)



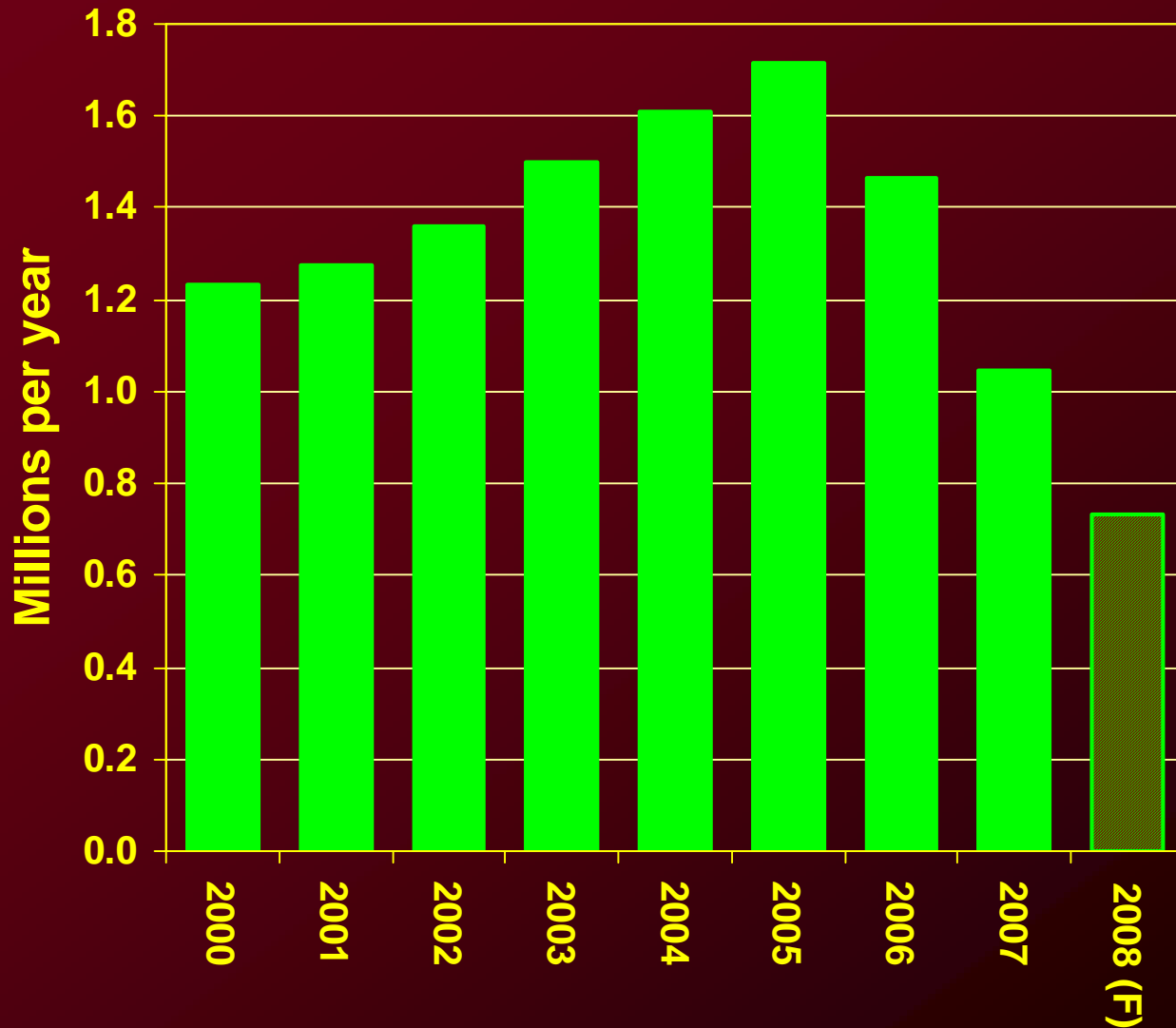
Lumber & Wood panels



Wood panel & lumber usage is tied to housing construction, so their markets are impacted by changes in housing demand . . .



Since 2005, the big change in lumber and wood panel demand was an end to the housing boom with a collapse in U.S. housing construction . . .



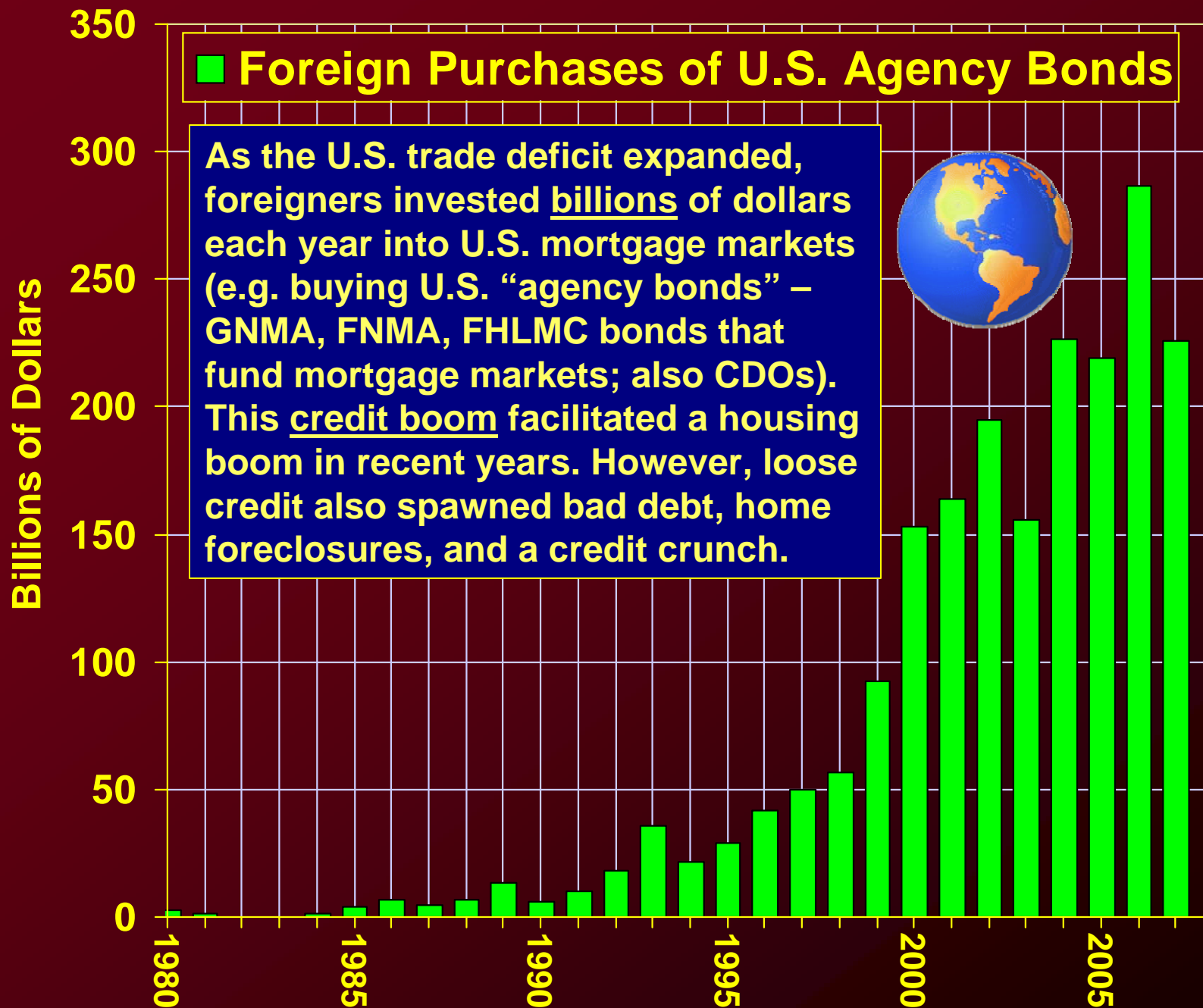
Single-family housing unit construction starts/year



Sources:
Data - U.S. Census Bureau
2008 Forecast - Merrill-Lynch

Strong global forces were behind the recent boom and bust in U.S. housing demand.



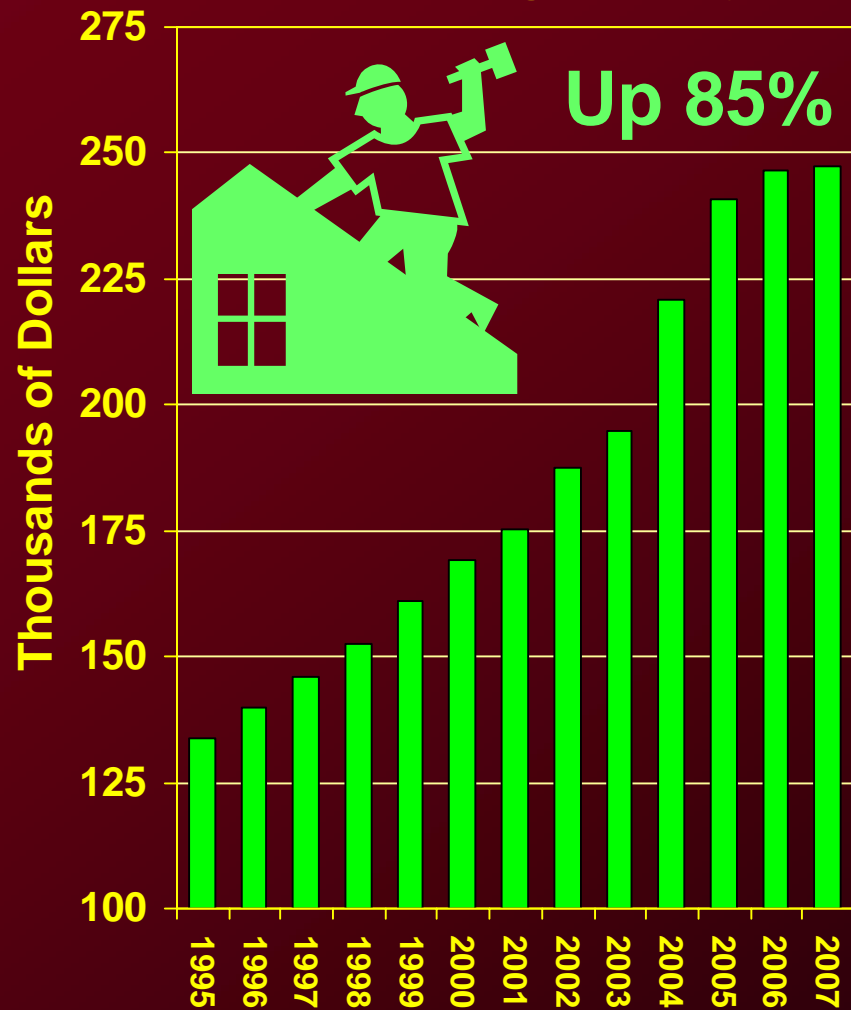


As the U.S. trade deficit expanded, foreigners invested billions of dollars each year into U.S. mortgage markets (e.g. buying U.S. “agency bonds” – GNMA, FNMA, FHLMC bonds that fund mortgage markets; also CDOs). This credit boom facilitated a housing boom in recent years. However, loose credit also spawned bad debt, home foreclosures, and a credit crunch.

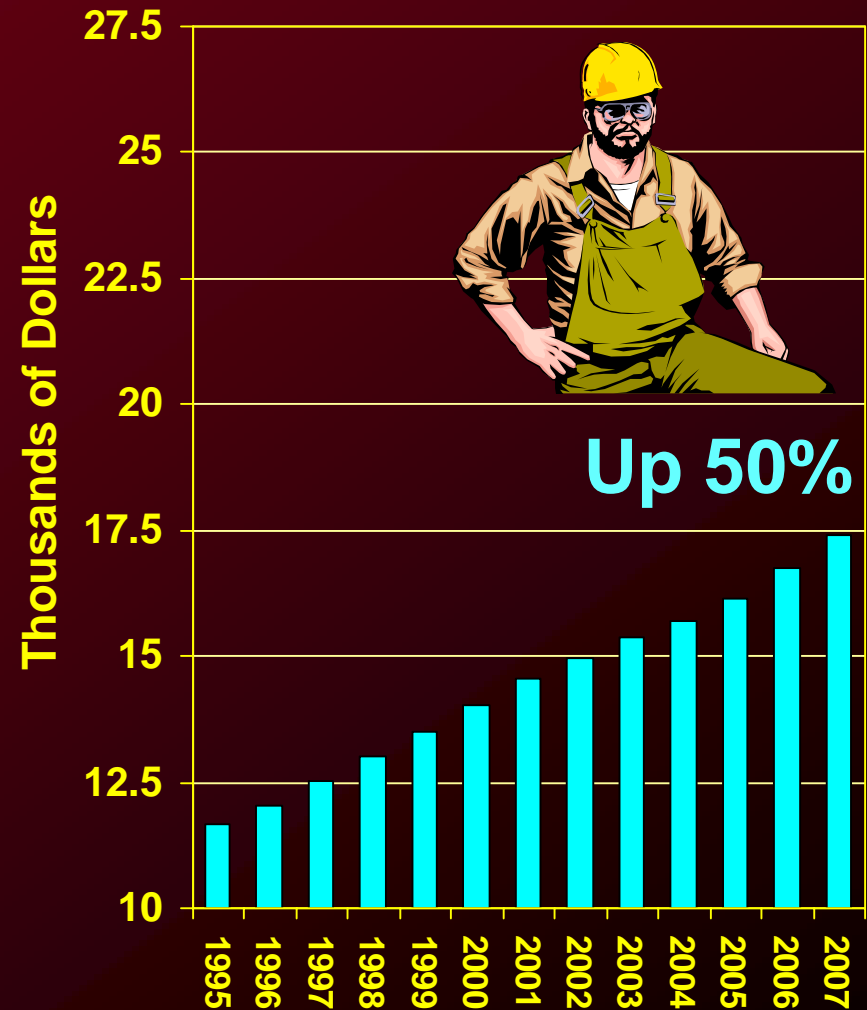


Booming credit, low interest rates, and high LTV (loan-to value) mortgages facilitated booming home prices, but U.S. average wage gains did not keep up with new home prices, so home affordability became an issue, especially after interest rates bottomed out in '05.

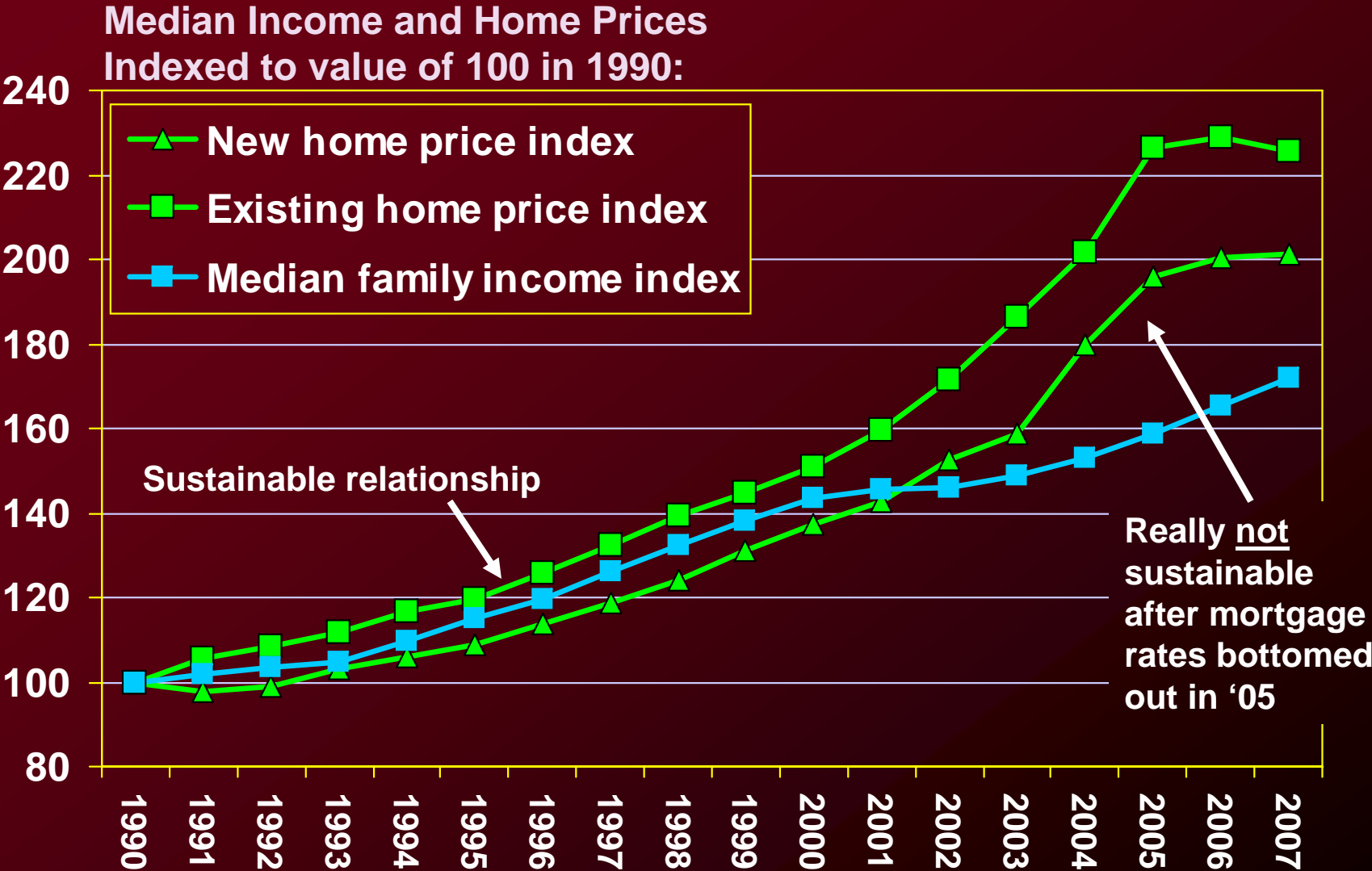
**Median New Home Price
(NAHB; Single-Family)**



**U.S. Average Wage of
Production Workers (BLS)**

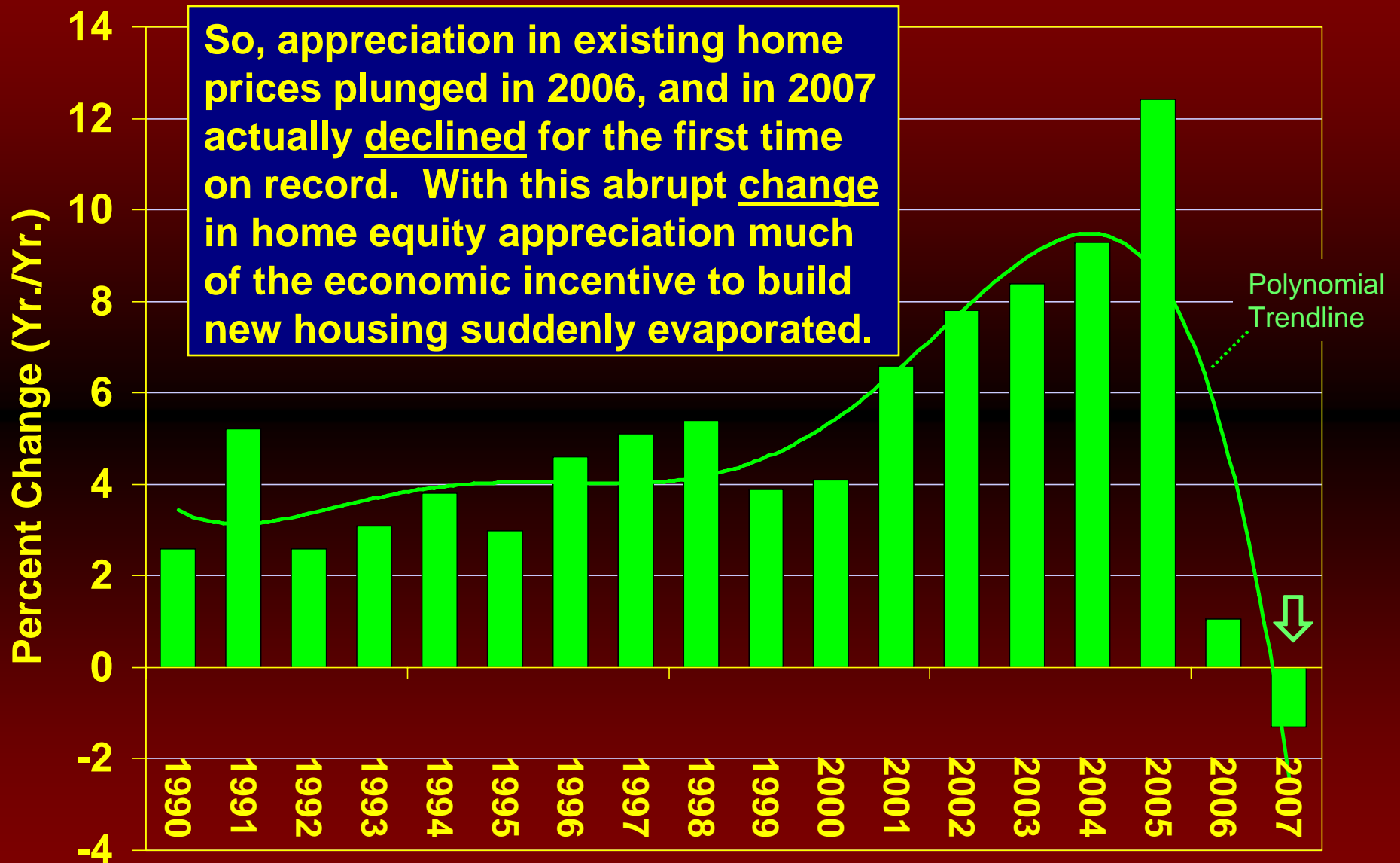


To maintain affordability, income needs to keep pace with home prices or else home price appreciation is not sustainable (unless interest rates keep declining) . . .



Sources: NAHB & NAR – Home prices; Census – Median Income (2007 estimate); chart by Al Schuler, USFS

Annual Change in Existing Home Sales Price



Source: National Association of Realtors (NAR) – U.S. median sales price of existing homes



Sources: U.S. Census Bureau, Seasonally Adjusted Annual Rate (SAAR), by month

**The credit boom drove home prices,
but wages did not keep pace.**

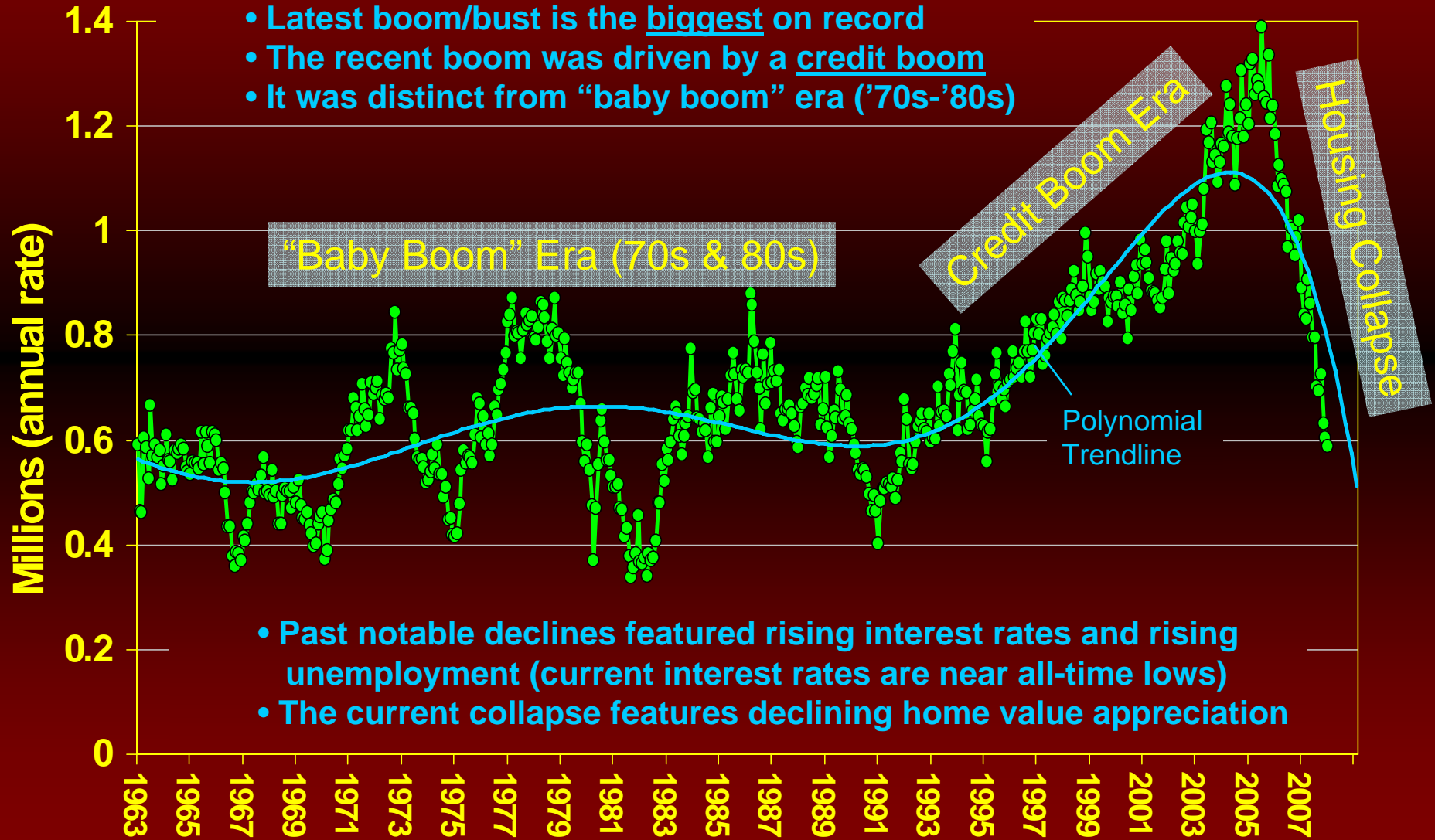


**Without the lure of home value appreciation
(equity gains) new home sales collapsed in
2006-2007. The housing boom ended, and
home foreclosures rose as equity declined.**

Monthly New Home Sales - Long History

Key points about new home sales history:

- Latest boom/bust is the biggest on record
- The recent boom was driven by a credit boom
- It was distinct from “baby boom” era ('70s-'80s)

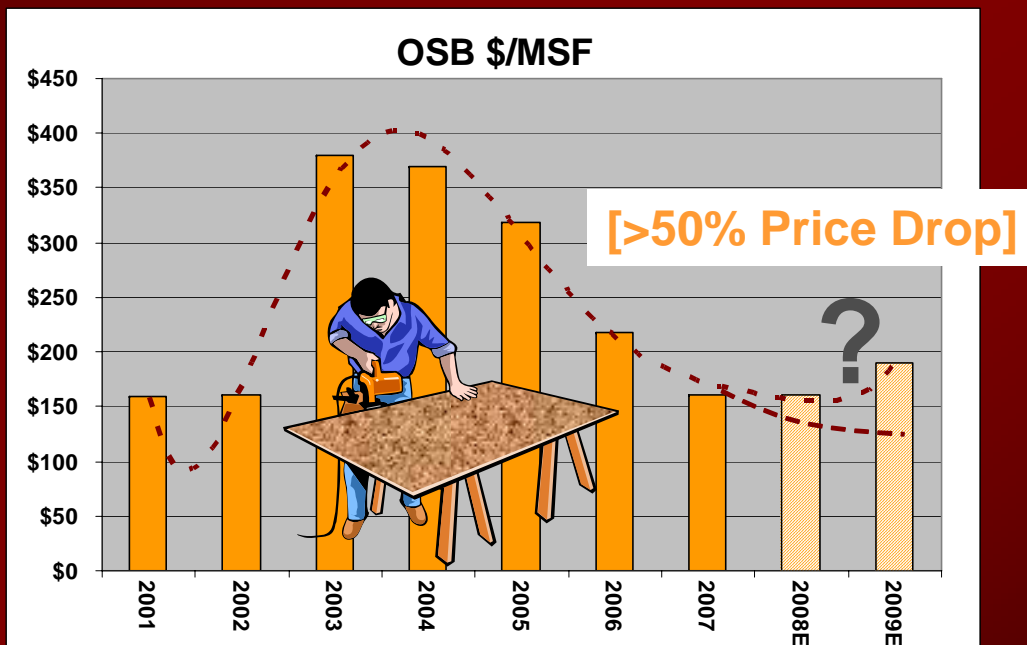
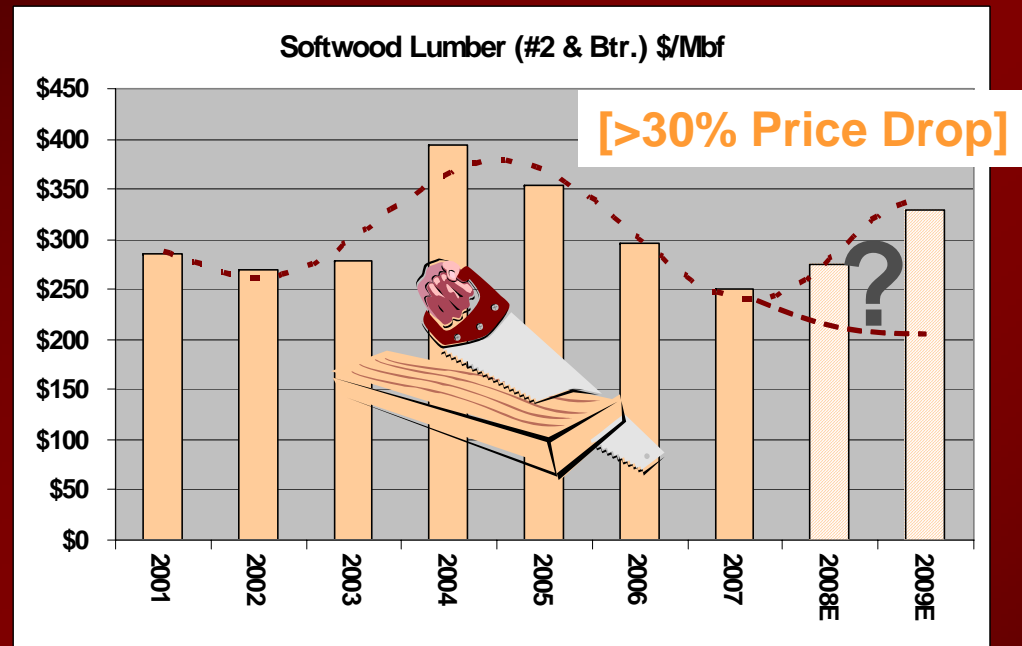


- Past notable declines featured rising interest rates and rising unemployment (current interest rates are near all-time lows)
- The current collapse features declining home value appreciation

Source: Lawrence Yun, NAR Research; NAHB and Census Bureau data

Market Prices

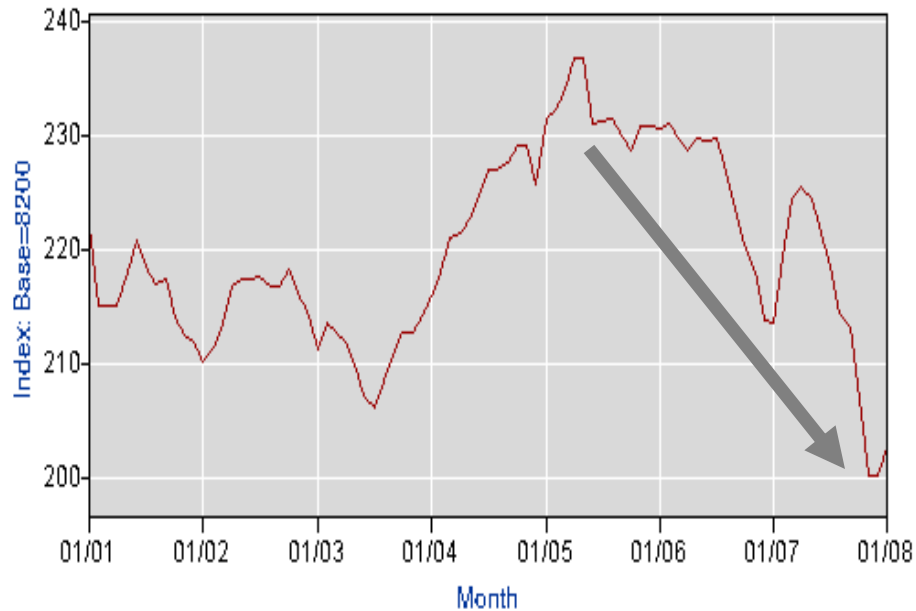
The collapse of the housing boom since 2005 heralded major changes for traditional U.S. forest product markets, as illustrated here by change in product prices.



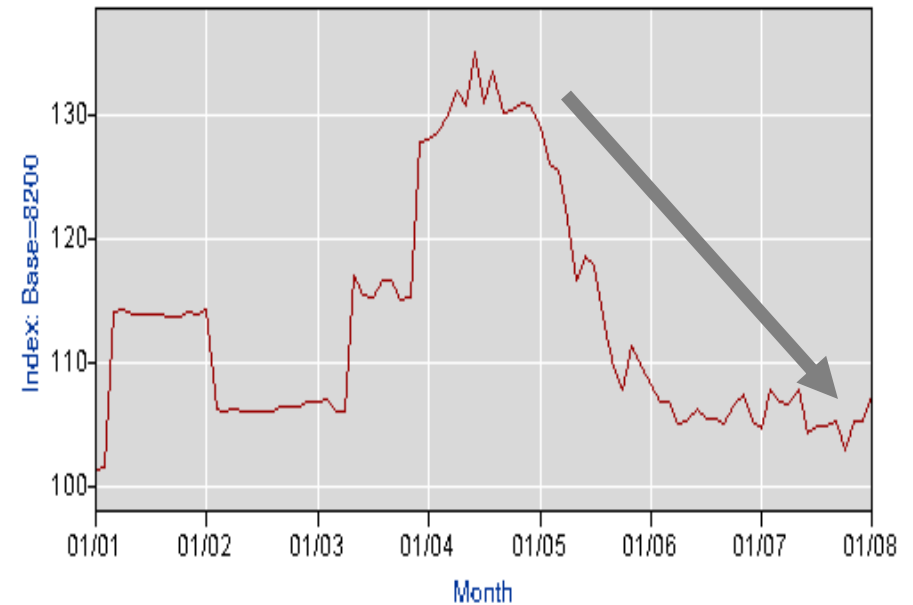
Any expectation of recovery hinges upon uncertain recovery (?) in housing demand.

U.S. Log Price Trends (2001 – 2007) . . .

Softwood log price index



Hardwood log price index



Log prices followed lumber and panel prices, pushing to recent peak levels in 2004-2005, and falling to lower levels with the collapse of housing construction activity in 2006-2007. However, log prices have not dropped as much as lumber prices – some suggest this may be a supply effect of declining forest industry timberland ownership.

What experts have said about how long the nation's housing doldrums will continue:

“ . . . for a long time ” (CNN, March 11, 2008)



Edward Leamer, Professor, UCLA
Author of “Housing Is the Business Cycle”

“ . . . the housing correction, what's going on in the housing market, this is not over, it's going to take longer ”



Hank Paulson, U.S. Treasury Secretary
(YouTube, February 12, 2008)

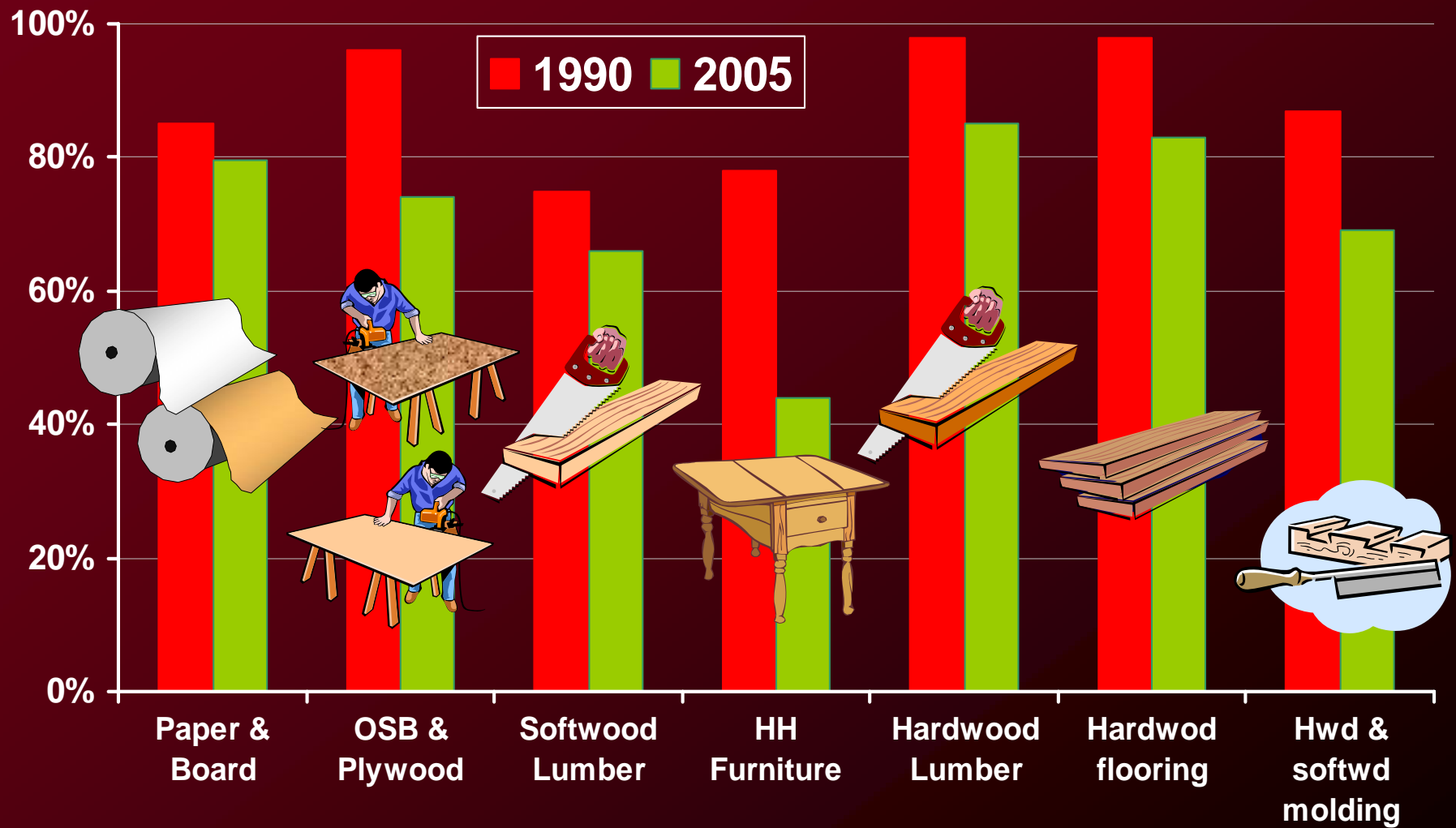
*Another
Global
Change . . .*



↓ \$ (lower value U.S. dollar)

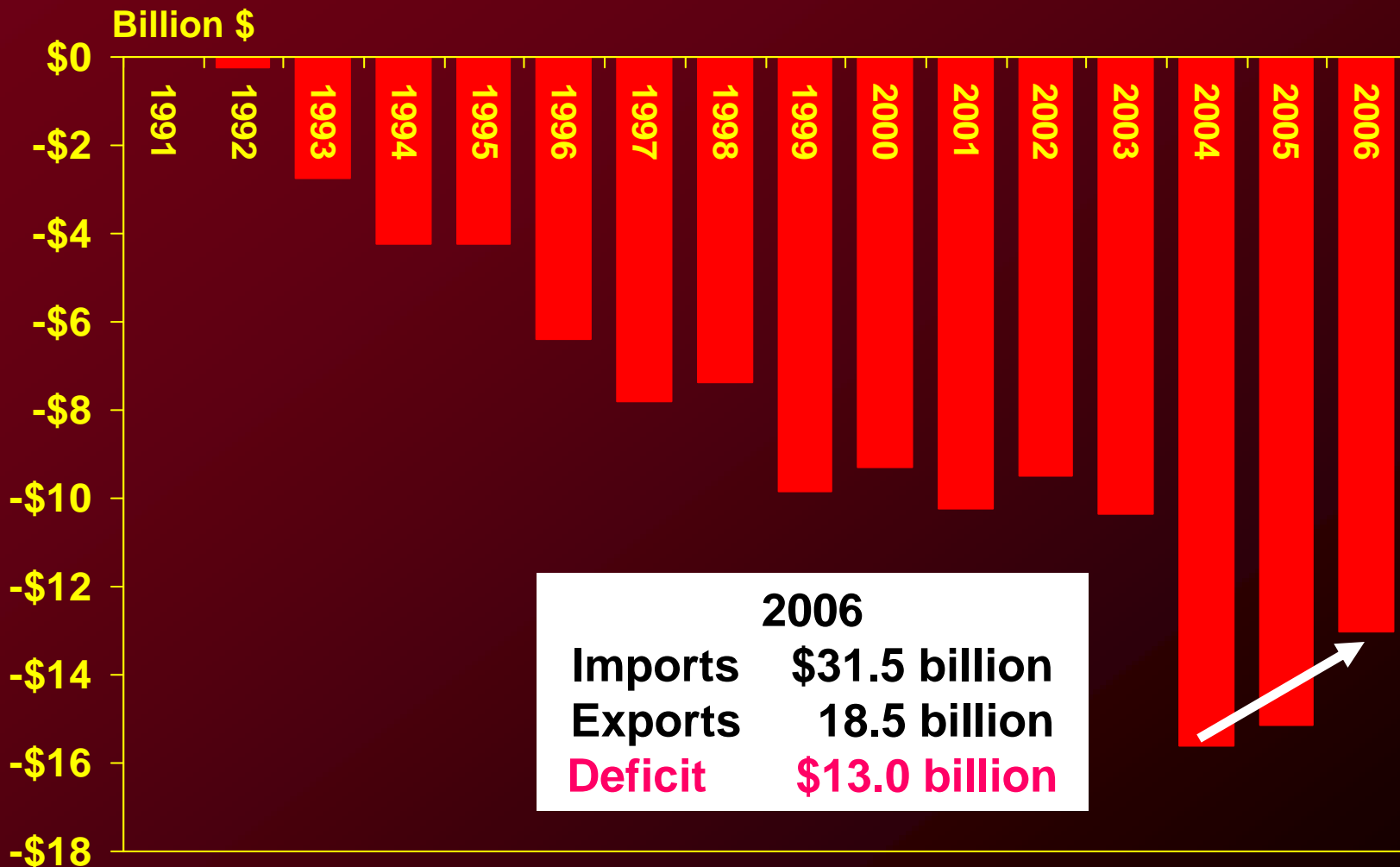
In addition to the credit boom and weak housing market, wood imports are beginning to change also in response to another important economic factor, the lower exchange value of U.S. dollar.

**Declines in domestically-produced shares of U.S. consumption:
 From 1990 to 2005, U.S. producers lost market share to imports in all wood products, especially labor-intensive products like plywood, furniture, and millwork. The dollar was strong for much of that period.**



Sources: Shipments : Dept Commerce, Bureau Census , ASM; Imports & Exports : FAS; Paper & Board: AF&PA

U.S. Forest Products Trade Imbalance: The U.S. forest products trade balance deteriorated with rising imports since the early 90s, but improved in the past several years, with a weak U.S. dollar (and weak housing) . . .



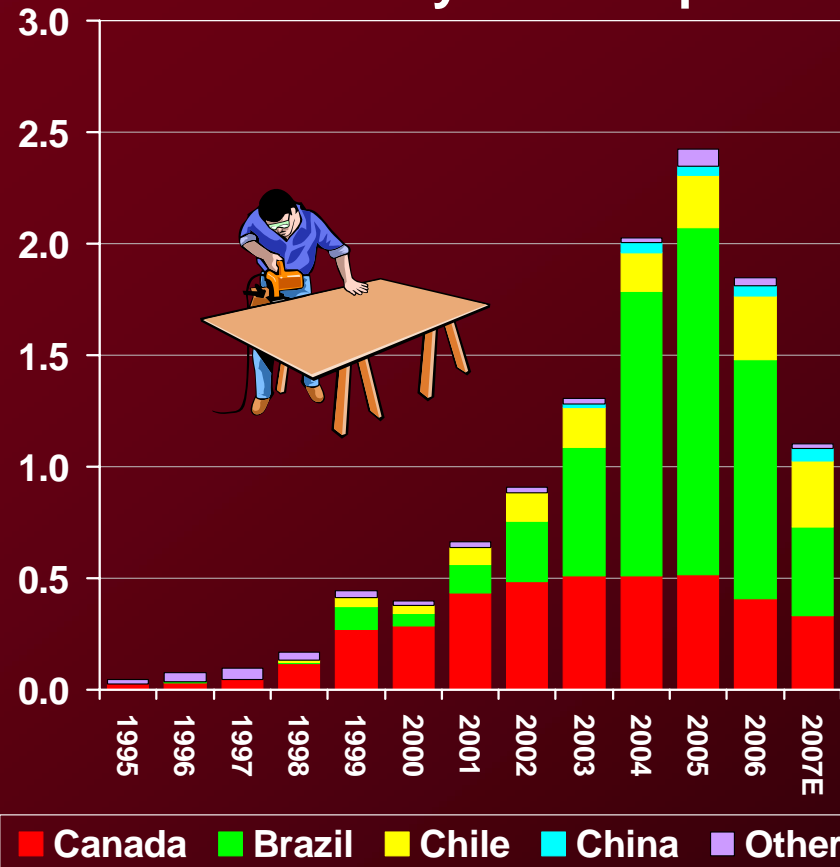
Source: FAOSTAT – includes Round wood, wood based panels, pulp, paper & paperboard (from Al Schuler, USFS)

Plywood and OSB imports have started to taper off

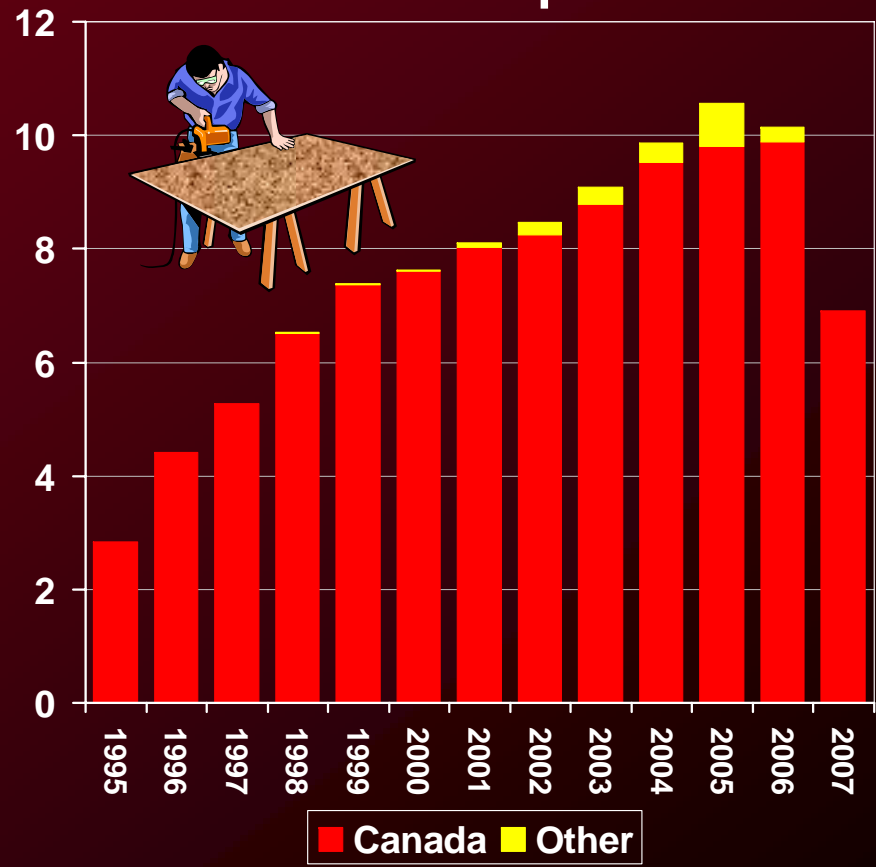
... (probably due to weak housing and maybe the weak dollar)

Billion Square Feet (3/8")

Softwood Plywood Imports



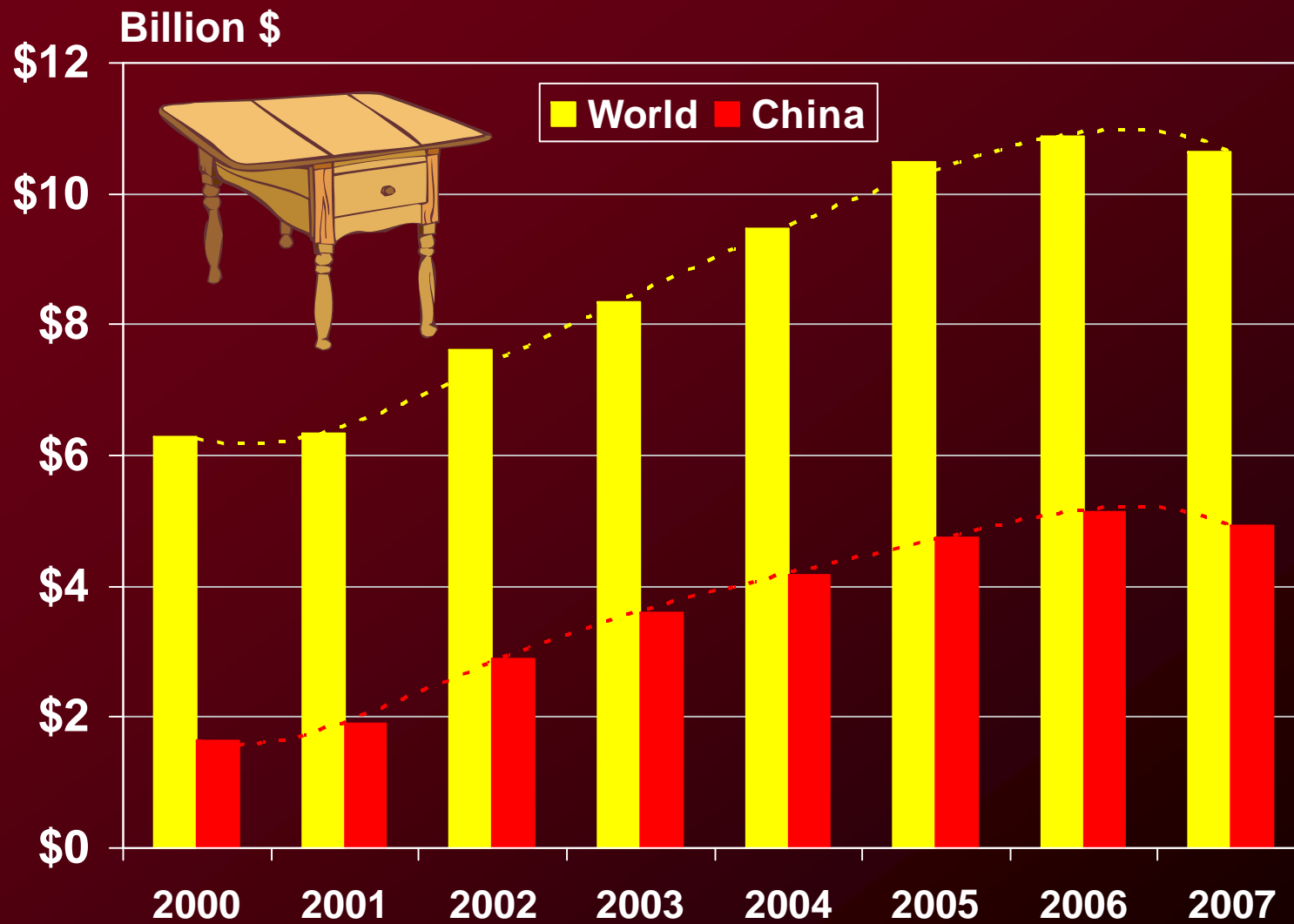
OSB Imports



Source: APA, The Engineered Wood Association

U.S. Wood Household Furniture Imports

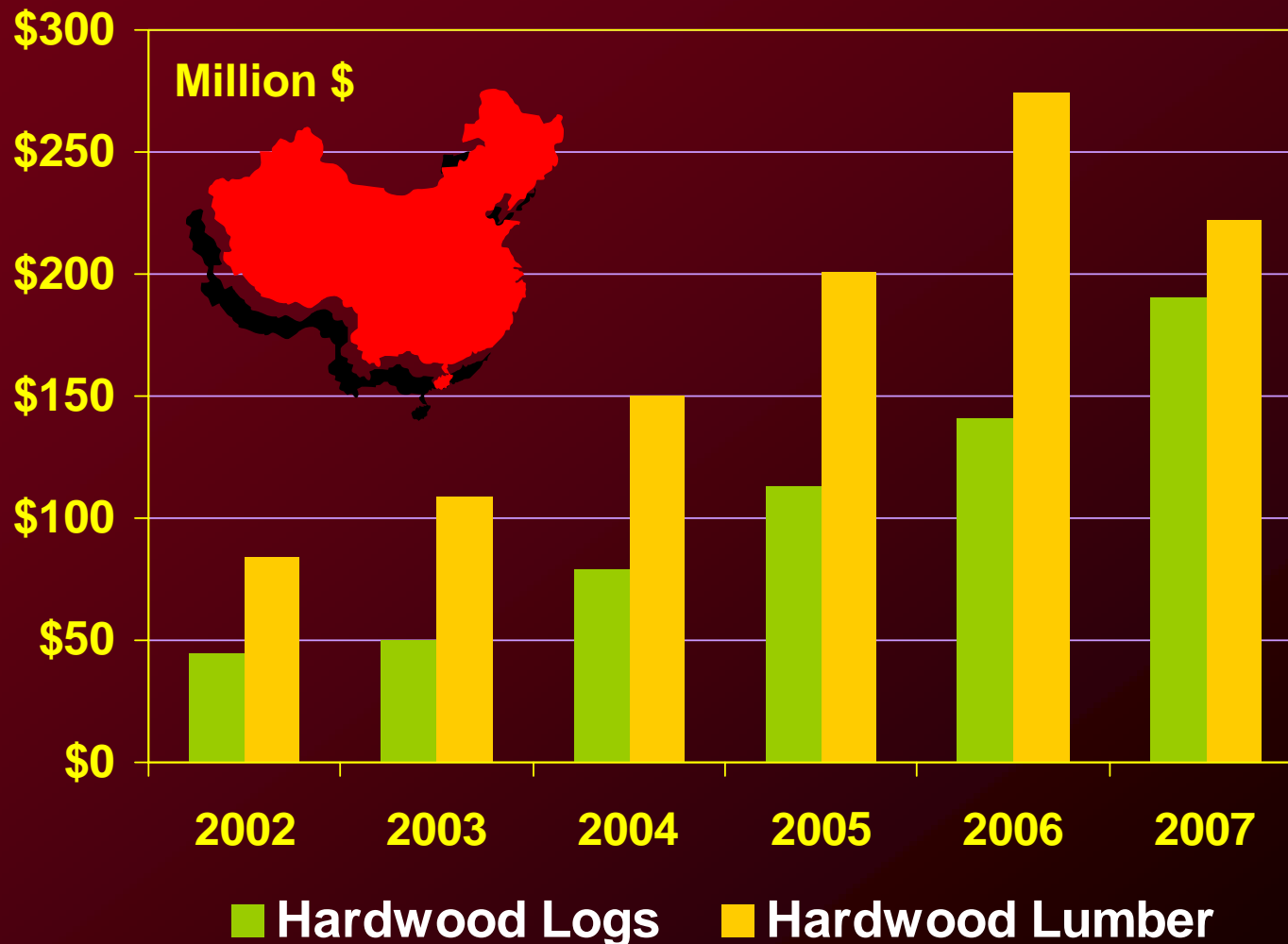
Weak dollar and weak housing are having an impact



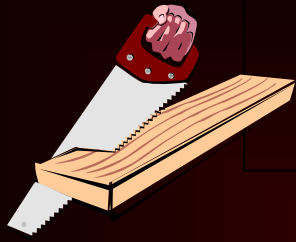
Source: Al Schuler, USFS

China is a magnet for raw materials – The value of U.S. hardwood log and lumber exports to China have increased.

Over the past five years, the net increase in value of log exports was twice the increase of lumber exports (logs +332%; lumber +165%)



Source: FAS

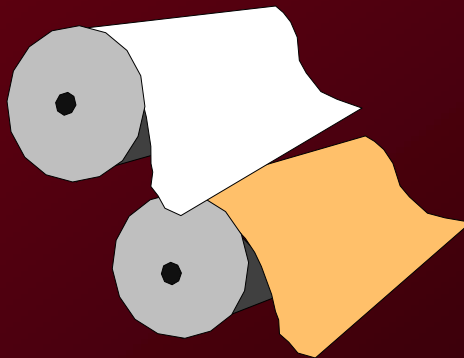


Summary points about change in lumber and wood panel markets

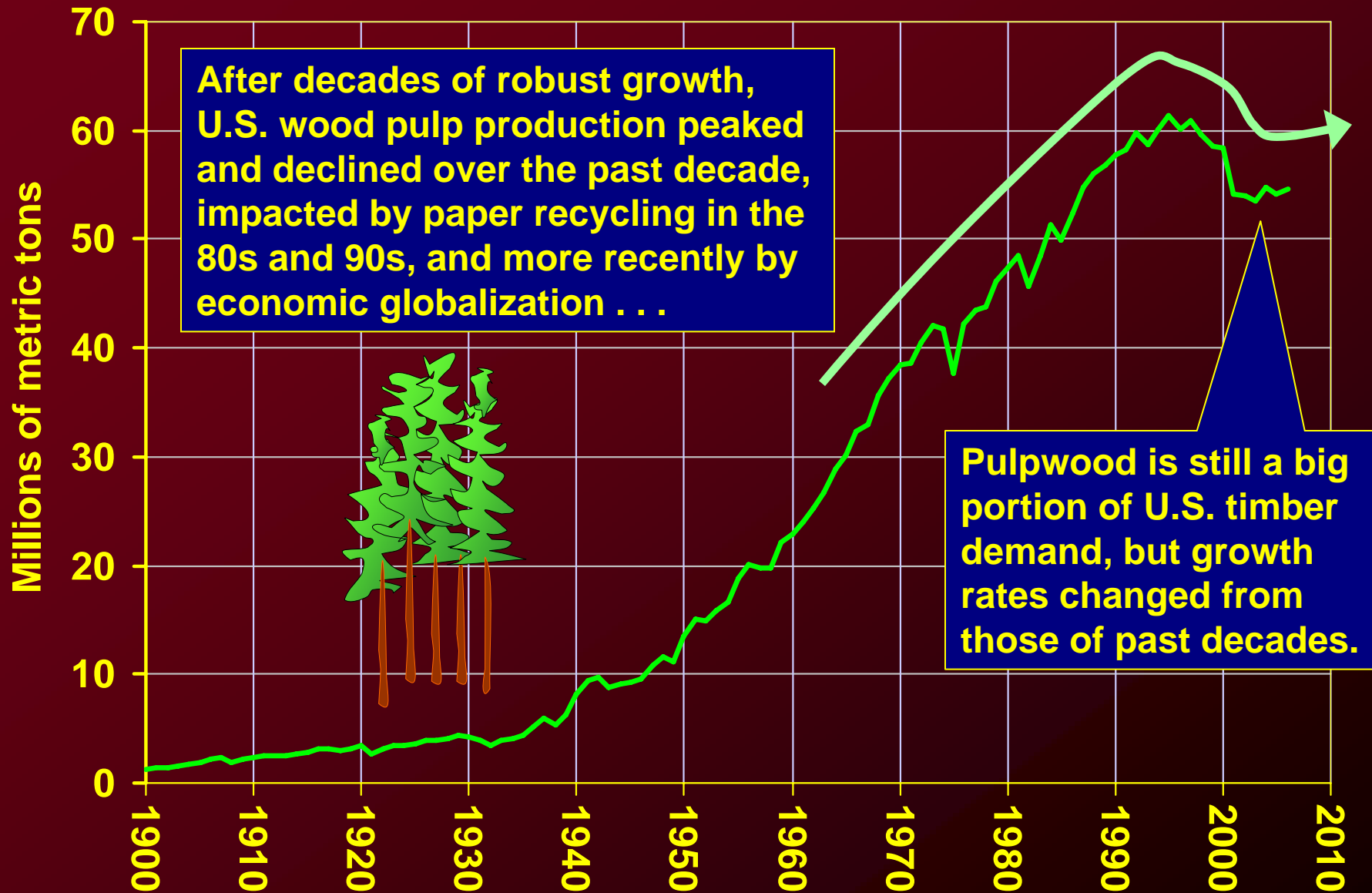


1. U.S. lumber and wood panel demands follow housing construction for obvious reasons (homes and furnishings are made of wood).
2. The U.S. housing market has experienced a collapse in demand, following the recent credit boom and peaking of home prices.
3. Since 2005 the collapse in housing has changed the market situation with lower demand and prices for lumber and wood panel products.
4. An upturn in U.S. markets for lumber and wood panels hinges upon an upturn in the housing market, the timing of which remains uncertain.
5. Although U.S. demands were crippled by the housing collapse, the weaker U.S. dollar has helped improve our wood trade balance.

Paper, Paperboard & Wood Pulp

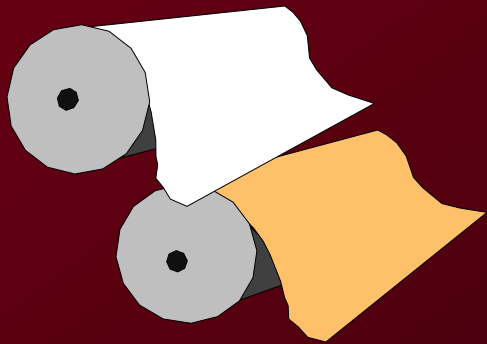


Change in U.S. Wood Pulp Production since 1900:



Source: AF&PA, API, Forest Service

Global economic forces were behind the change.



Global Forces



Trade liberalization (GATT → WTO)

Expanded global commerce (economic globalization)

Rise of manufacturing in China & developing countries

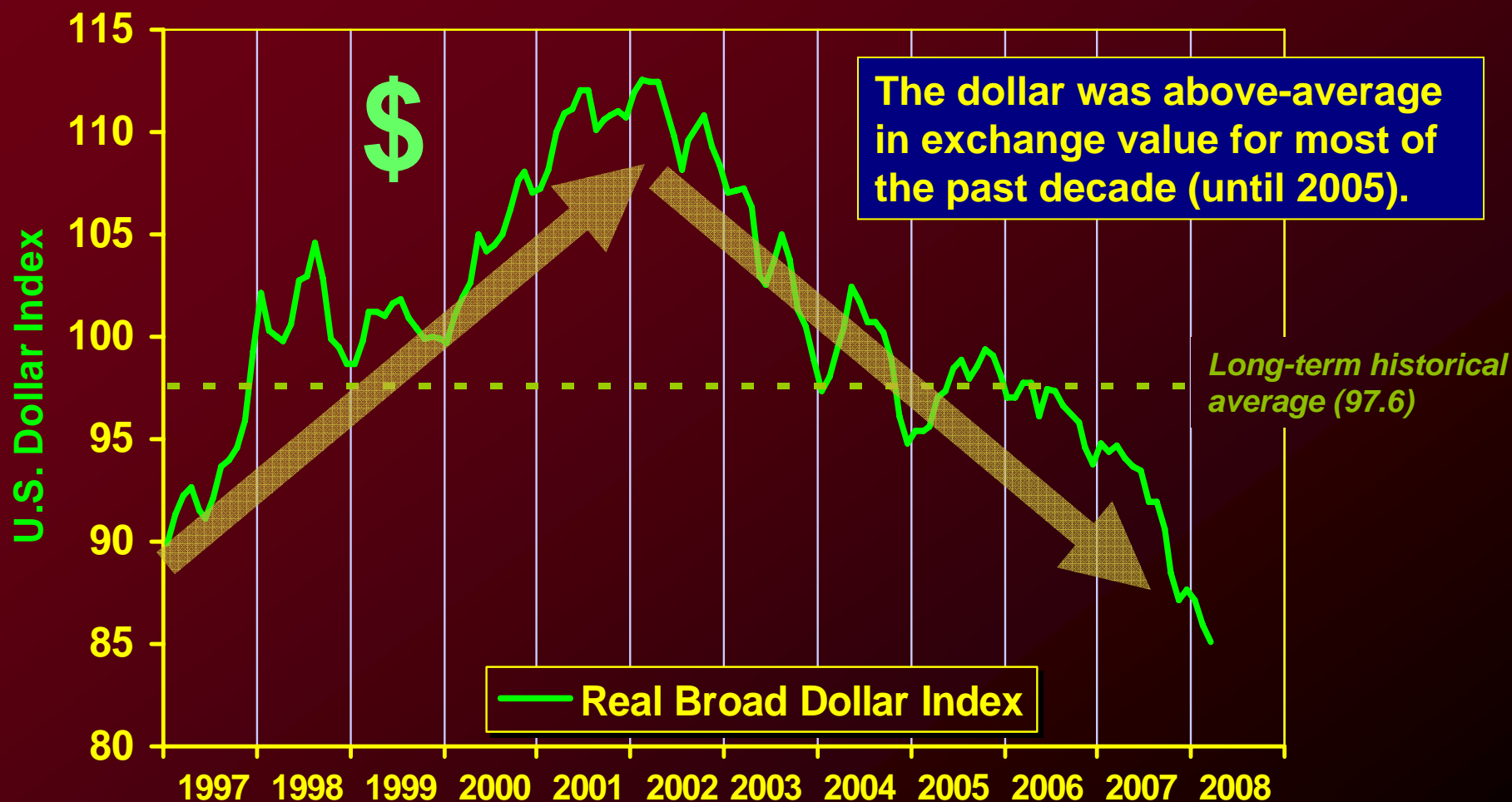
Increased importance of currency exchange rates

Expansion of competitive fiber plantations globally

Global Change



The competitive position of U.S. manufacturing changed over the past decade when the U.S. dollar soared to above-average levels:



Source: U.S. Federal Reserve (H.10 Real Broad Dollar Index)



Source: U.S. Bureau of Economic Analysis

U.S. industrial output collapsed as the dollar peaked in 2000-2001. As U.S. imports of goods increased, manufacturing capacity shifted to Asia and Europe. Growth in U.S. industrial production rebounded with a weaker dollar and lower interest rates, but remains below growth rates of the past:

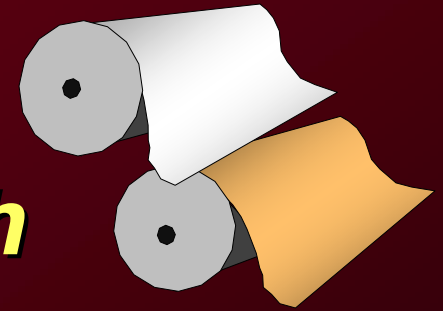


Source: U.S. Federal Reserve (G.17 Industrial Production)

***Global
Change***

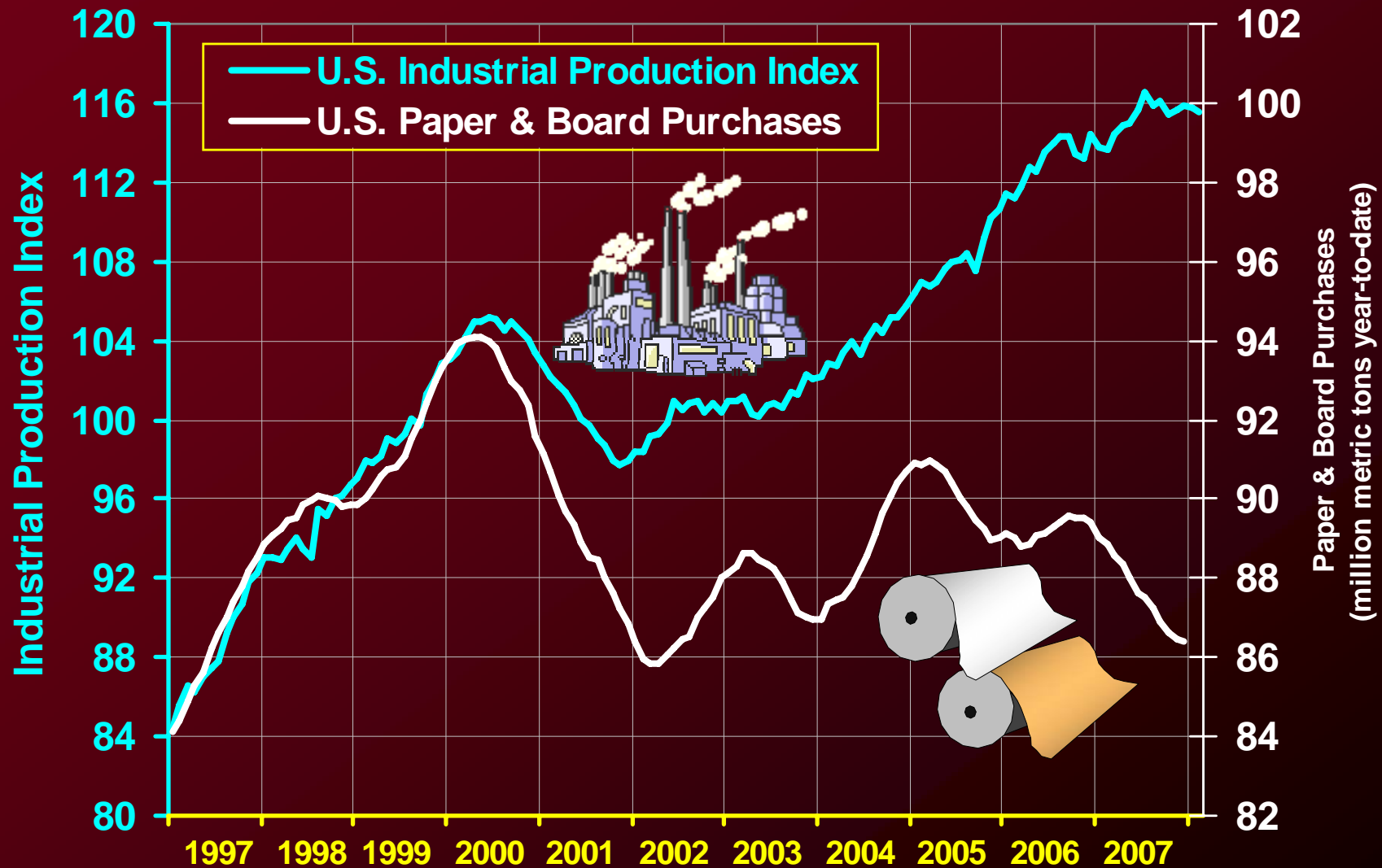


***Change
in Growth***



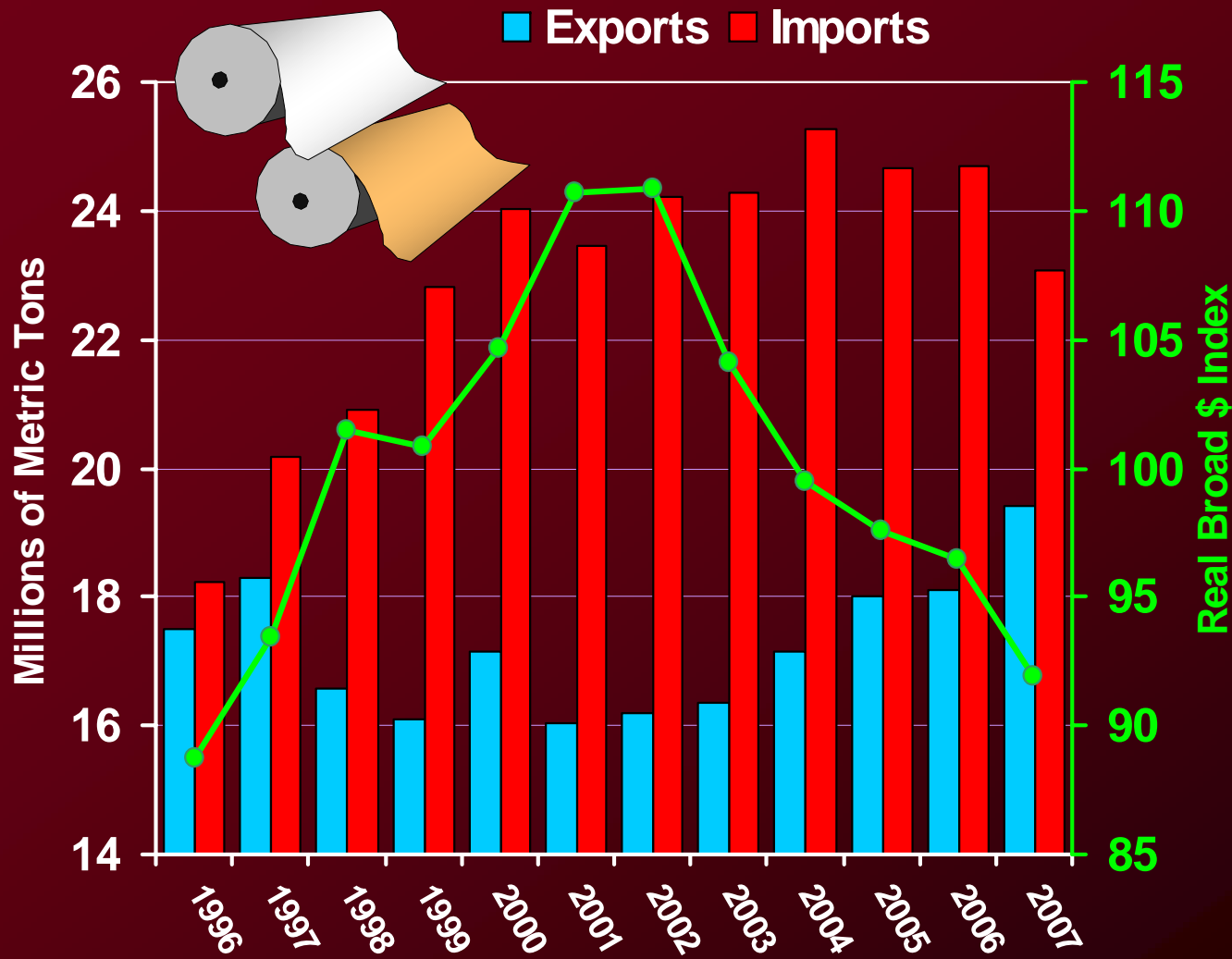
As manufacturing growth shifted to Asia and Europe, so did growth in paper and paperboard demands (following global demands for packaging, print media & print advertising).

Although U.S. industrial production has rebounded since the big downturn of 2000-2001, U.S. paper and paperboard purchases (demands) have only weakly followed that rebound:



Sources: U.S. Federal Reserve (G.17 Industrial Production); AF&PA (Paper and Board Purchases)

U.S. Pulp, Paper & Board Product Trade (Tonnage)



As the dollar surged from 1996 to 2002, the trade gap in pulp, paper and board also bulged to 8 million metric tons. The trade gap has narrowed to half that much with a weaker dollar.

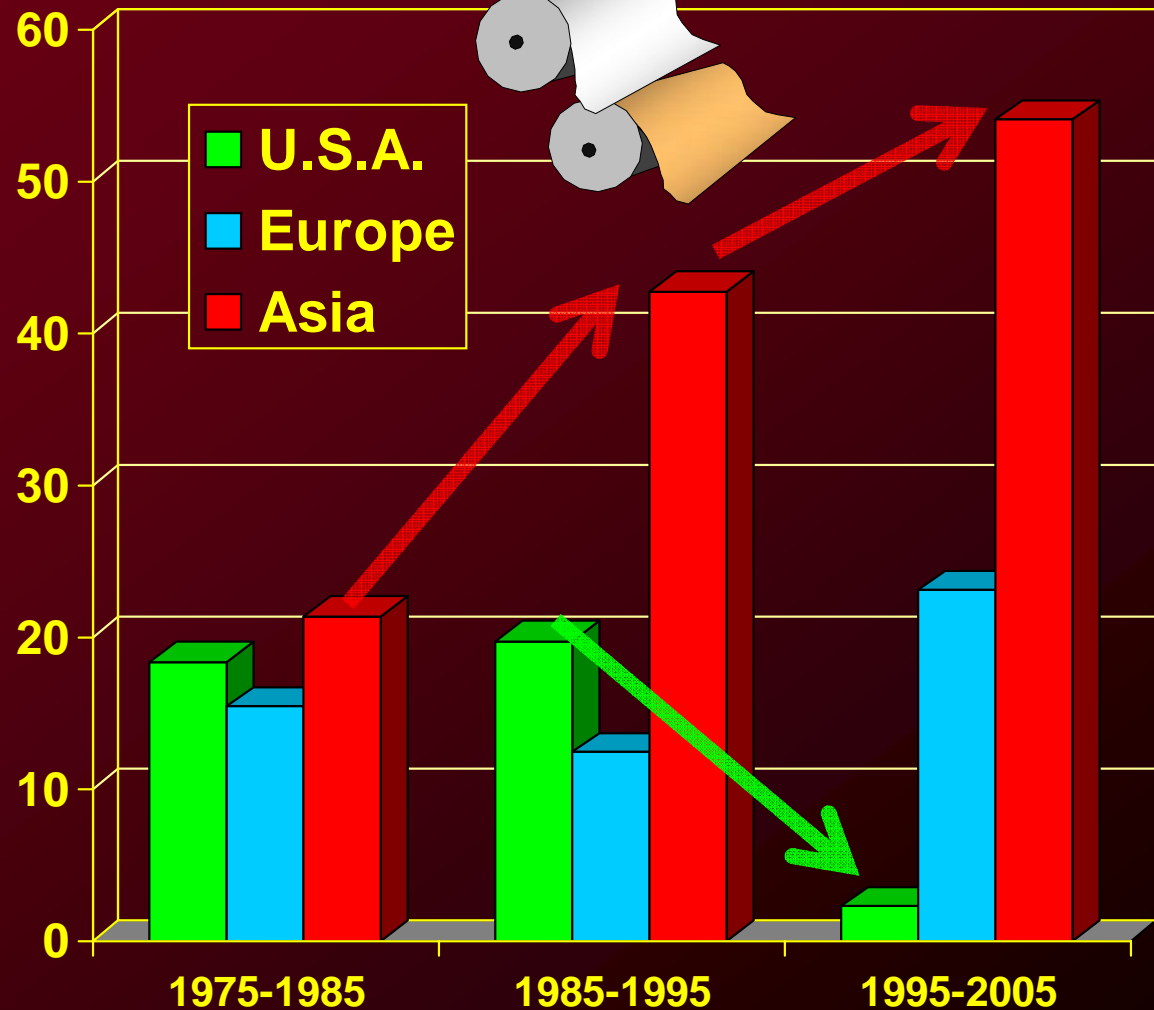
Data Sources: AF&PA, Commerce Dept. (trade statistics); Federal Reserve (dollar index);
[Data include paper and paperboard products and wood pulp shipments, and exclude recovered paper]

Change in Growth

Asia, Europe, and North America account for 90% of worldwide growth in paper & paperboard demand, and demand growth was sustained in Europe and increased in Asia. Demand growth in the USA diminished in the past decade.

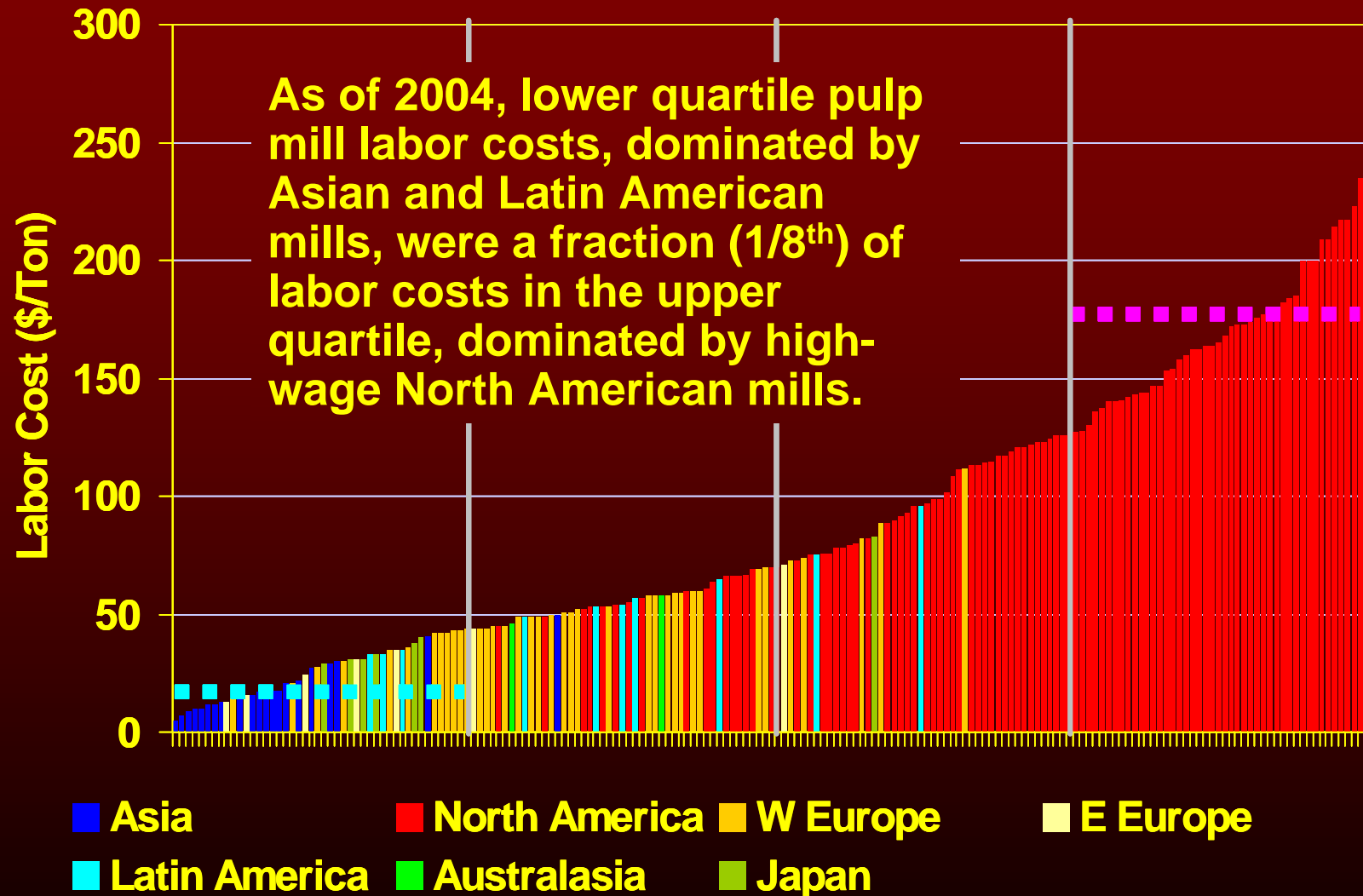
China has become the world's most rapidly expanding consumer and producer of paper and paperboard, likely to surpass the United States within the next decade.

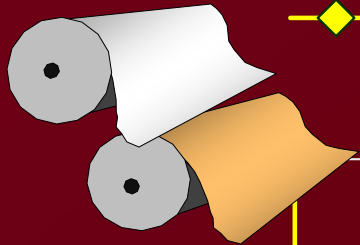
Changes in Paper & Board Consumption (million metric tons per decade)



Source: RISI Global Pulp & Paper Fact & Price Book, 2006

Labor costs were one reason for the shift of pulp & paper industry capacity growth to Asia and elsewhere . . .



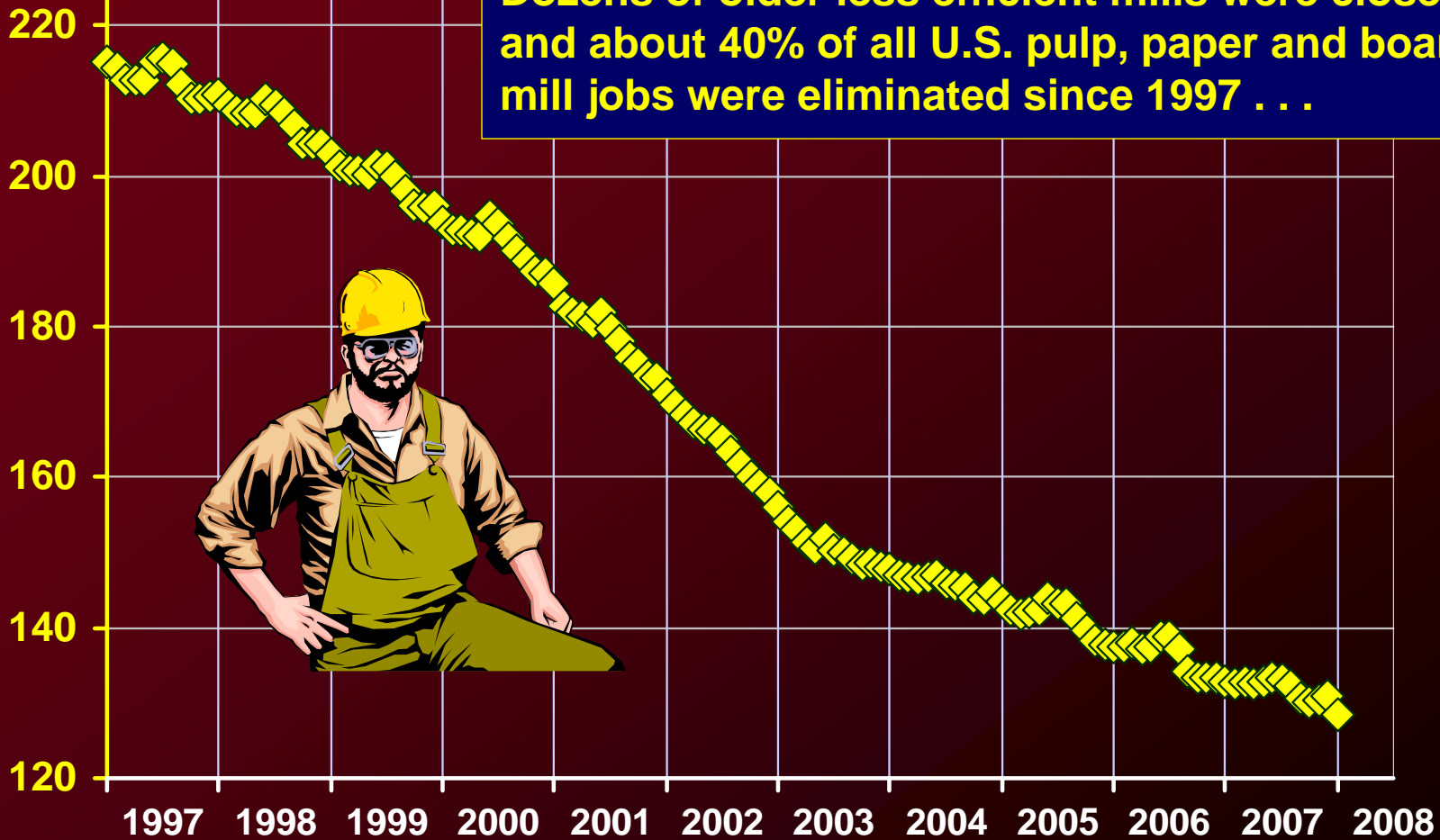


—◆— U.S. Pulp, Paper & Board Mill Employment

So, U.S. pulp, paper and board mills endured a decade of consolidation & labor downsizing . . .

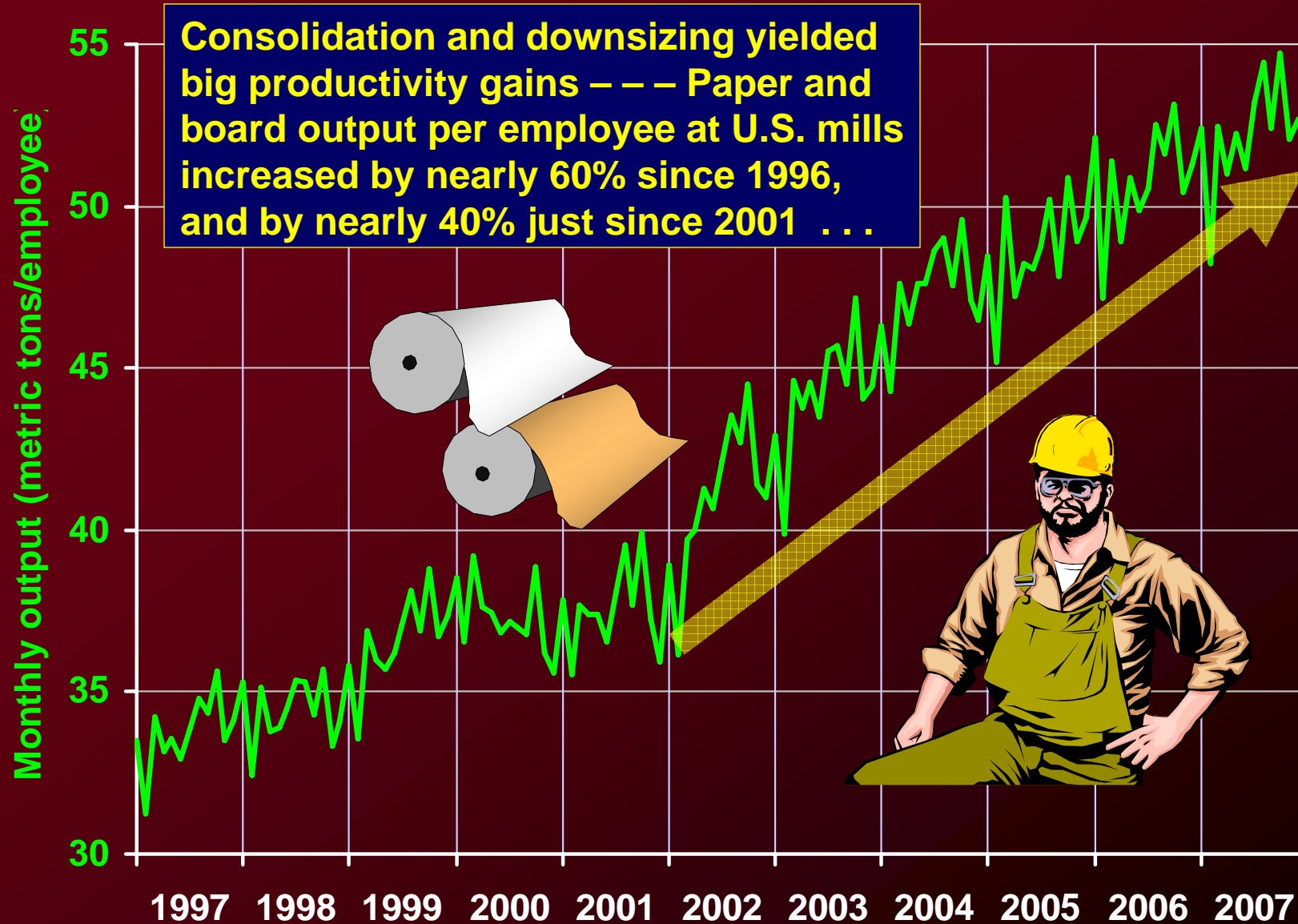
Dozens of older less efficient mills were closed, and about 40% of all U.S. pulp, paper and board mill jobs were eliminated since 1997 . . .

Mill Employment (thousands)



Sources: U.S. Bureau of Labor Statistics

U.S. Paper & Board Output per Mill Employee



Sources: U.S. Bureau of Labor Statistics (pulp, paper & board mill employment)
AF&PA (paper and paperboard production, in short tons)

U.S. Pulp & Paper - Return on Capital Trend

Return on Capital has improved since bottoming out in 2001:

Capital Turnover

X

After Tax Profit Margin

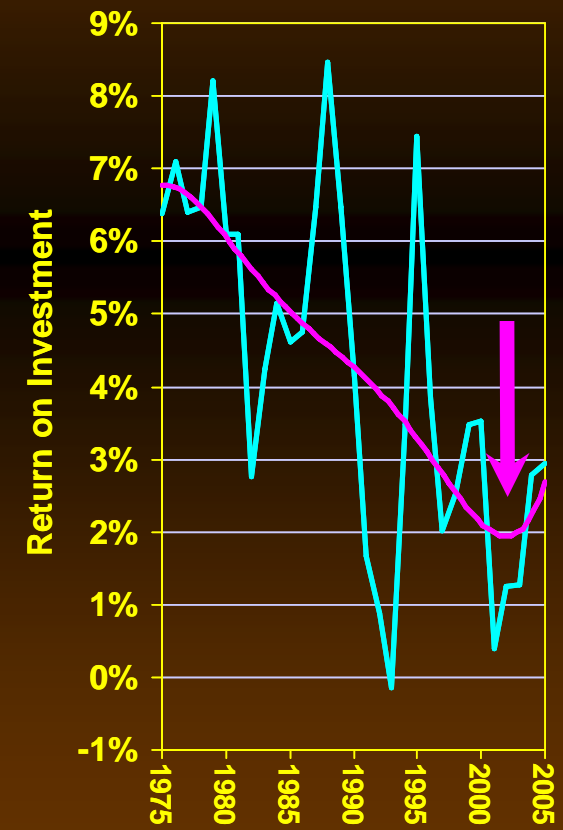
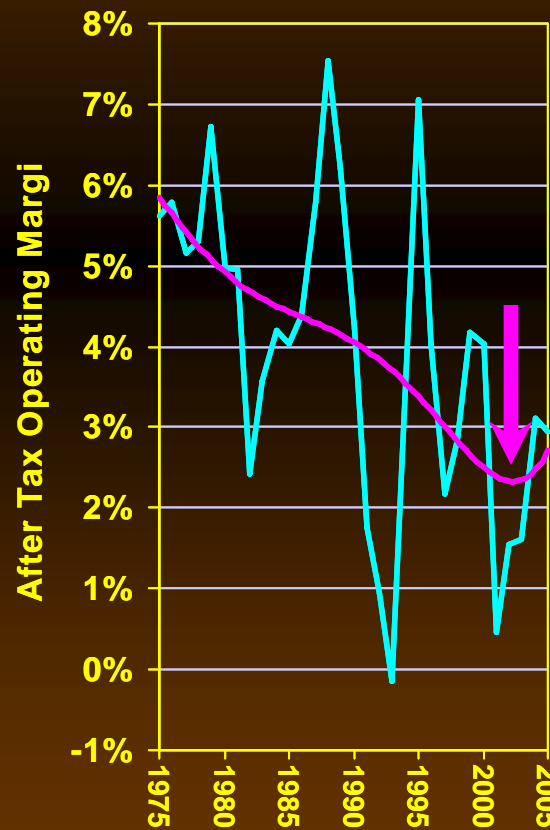
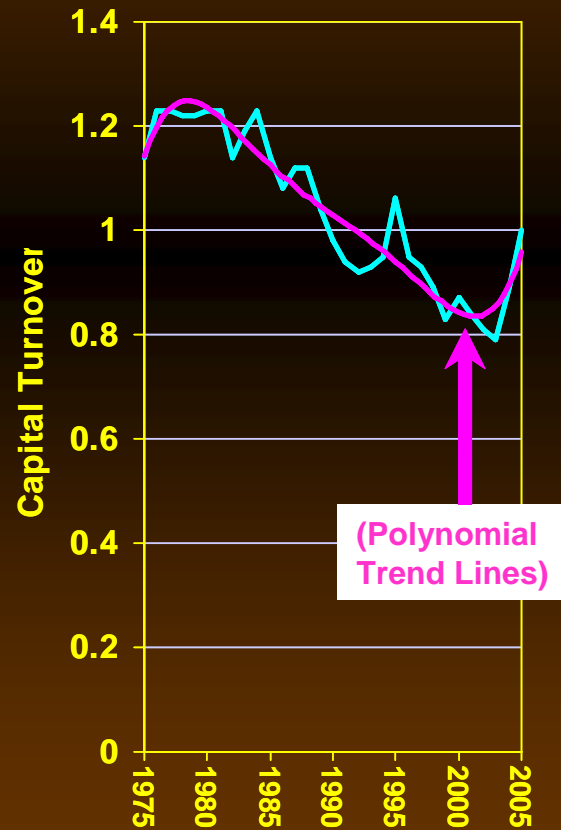
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Return on Capital

Net Sales
Total Assets

After Tax Profit
Net Sales

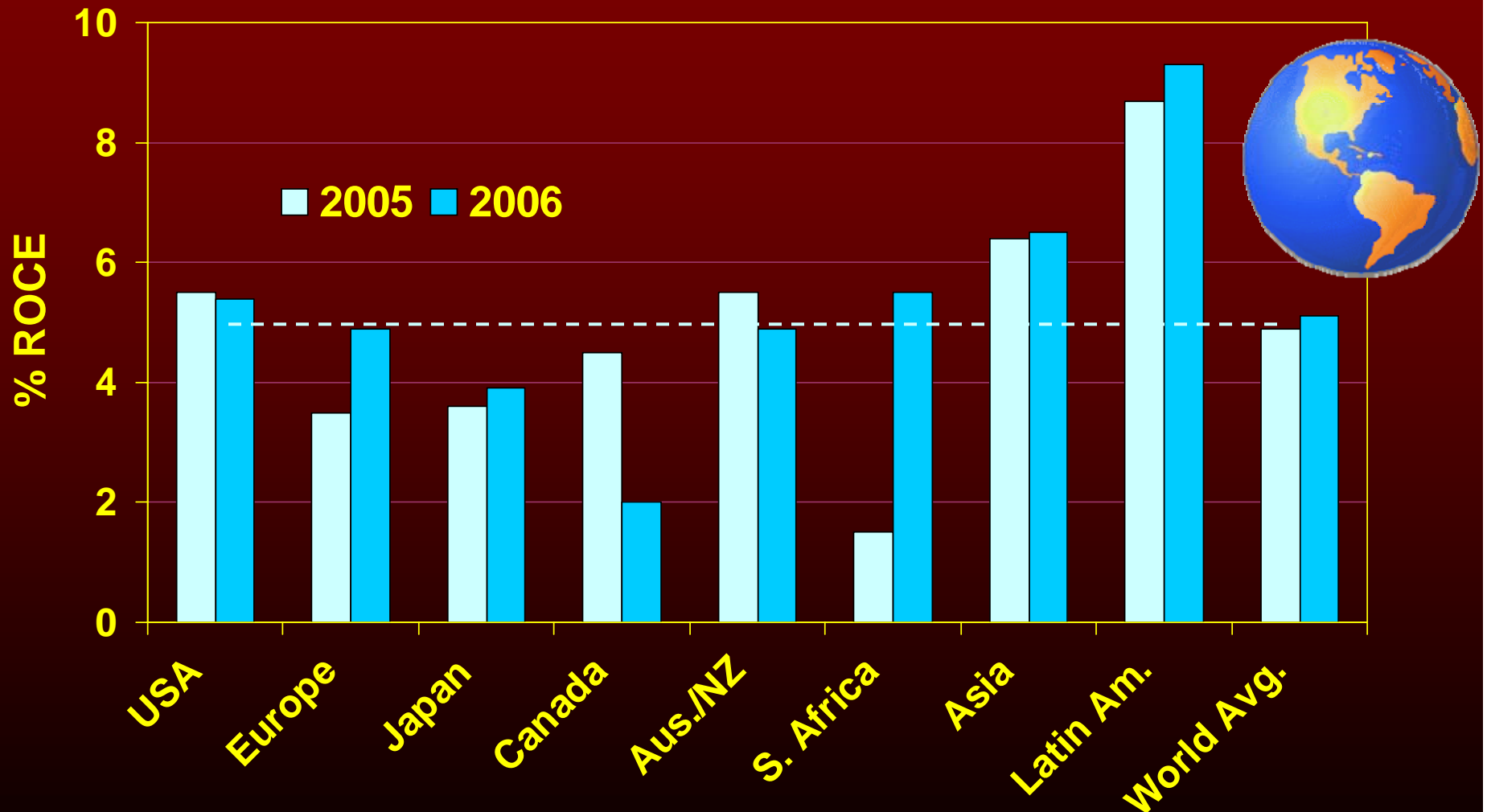
After Tax Profit
Total Assets



Data Source: AF&PA and Department of Commerce, Quarterly Financial Report for Manufacturing, Mining and Trade Corporations (format based on chart by Prof. Richard B. Phillips, NCSU)

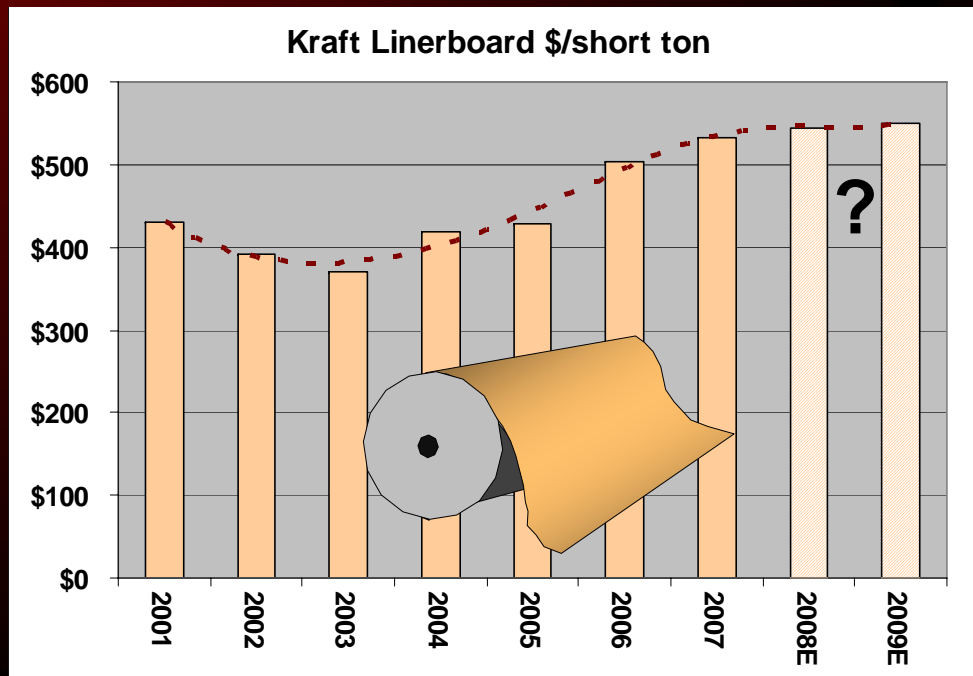
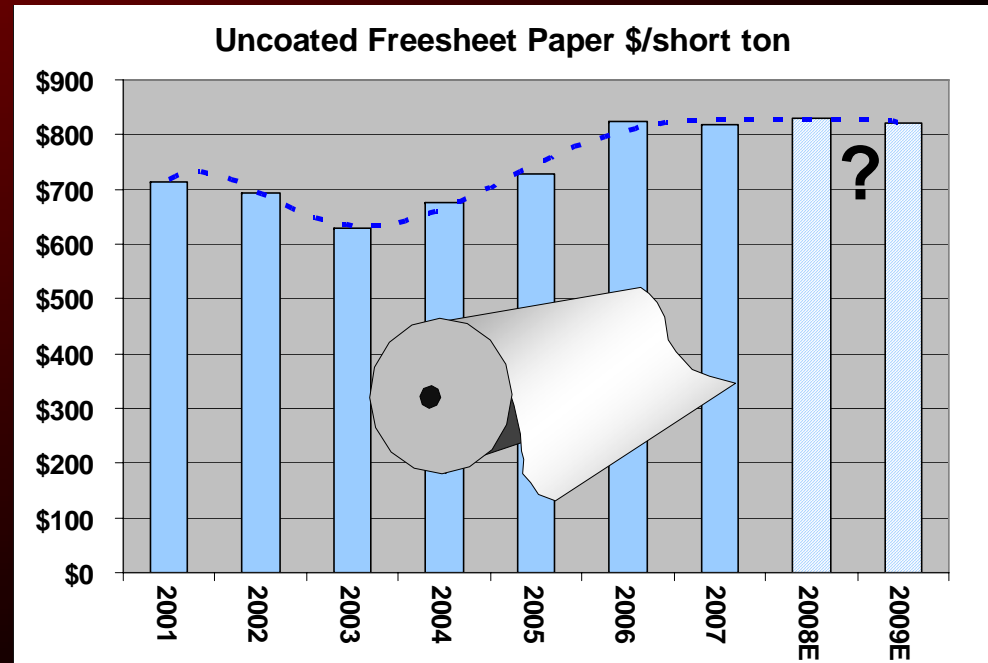
In 2005 - 2006, U.S. paper industry returns on capital were above the world average, but still lower than in Asia and Latin America . . .

Paper Industry Returns (ROCE) Globally . . .



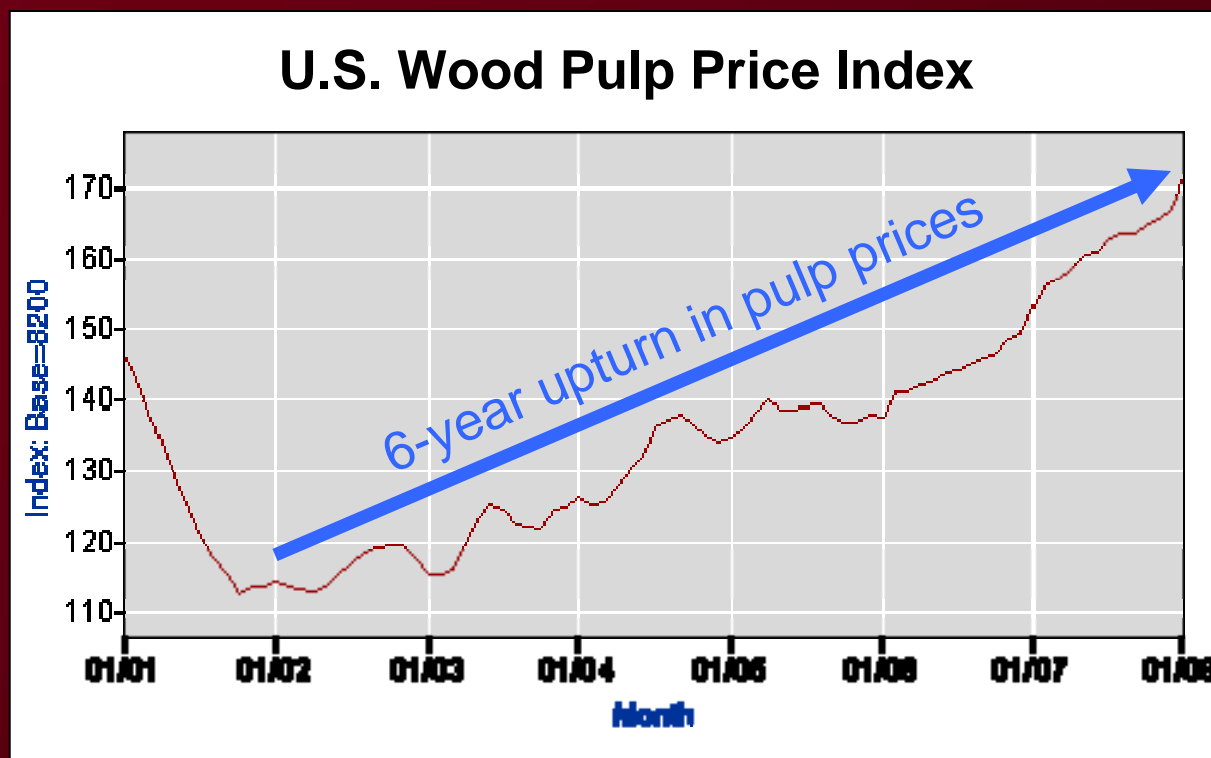
Source: Price Waterhouse Coopers Global Survey – 2007 Edition (Top 100 firms worldwide)

Pricing strength due to a weak dollar, consolidation, higher energy prices and overall economic growth all contributed to more robust price levels for paper and paperboard commodities in recent years . . .

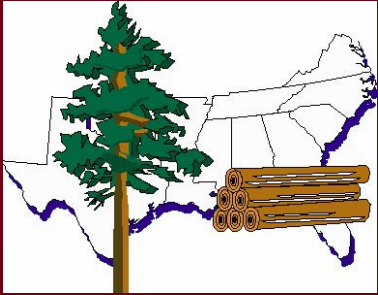


. . . however, slowing economic growth creates some uncertainty about near-term price trends.

U.S. Pulp Price Trend (2000 – 2007) . . .



U.S. wood pulp prices increased by more than 50% over the past six years, after bottoming out in 2001-2002. The pulp price trend is not yet impacted by slowing growth in the overall economy. The trend reflects high commodity prices, rising energy costs, and the weaker dollar effect on global commodity prices in general.



Timber Stumpage Price Trends in U.S. South (similar data not available for North)

PULPWOOD AND SAWTIMBER STUMPAGE moved in different directions in 2007, according to Timber Mart-South, Athens, Ga.

Pine sawtimber stumpage declined by 3% (2007 Southwide average versus 2006) and pine chip-n-saw stumpage fell 11%, in response to lower lumber production and ample timber supply.

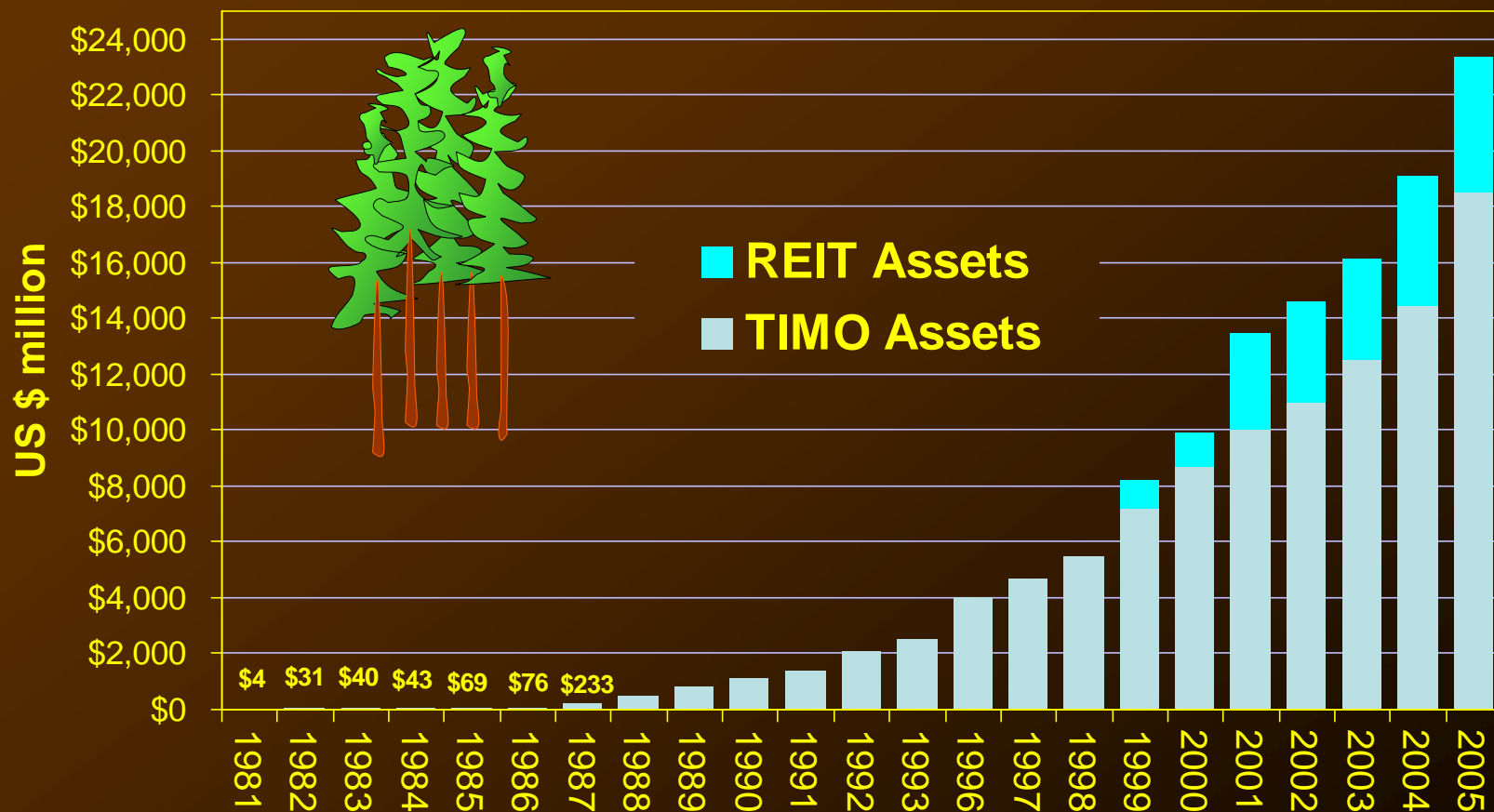
In contrast, pulpwood stumpage rose in 2007, by 20% for pine and 14% for hardwood, with relatively stable domestic and strong international pulp and paper markets. Lower lumber production also boosted pulpwood prices by reducing the amount of low-cost sawmill residue chips available for pulp production.

In Minnesota, unlike the South, pulpwood stumpage prices have declined over 30% since 2005 (and about 50% for aspen), probably a result of declining OSB demand (Minnesota 2007 Public Stumpage Price Review, MN DNR).

Other big impact of consolidation: *Land Divestiture by Forest Industry*

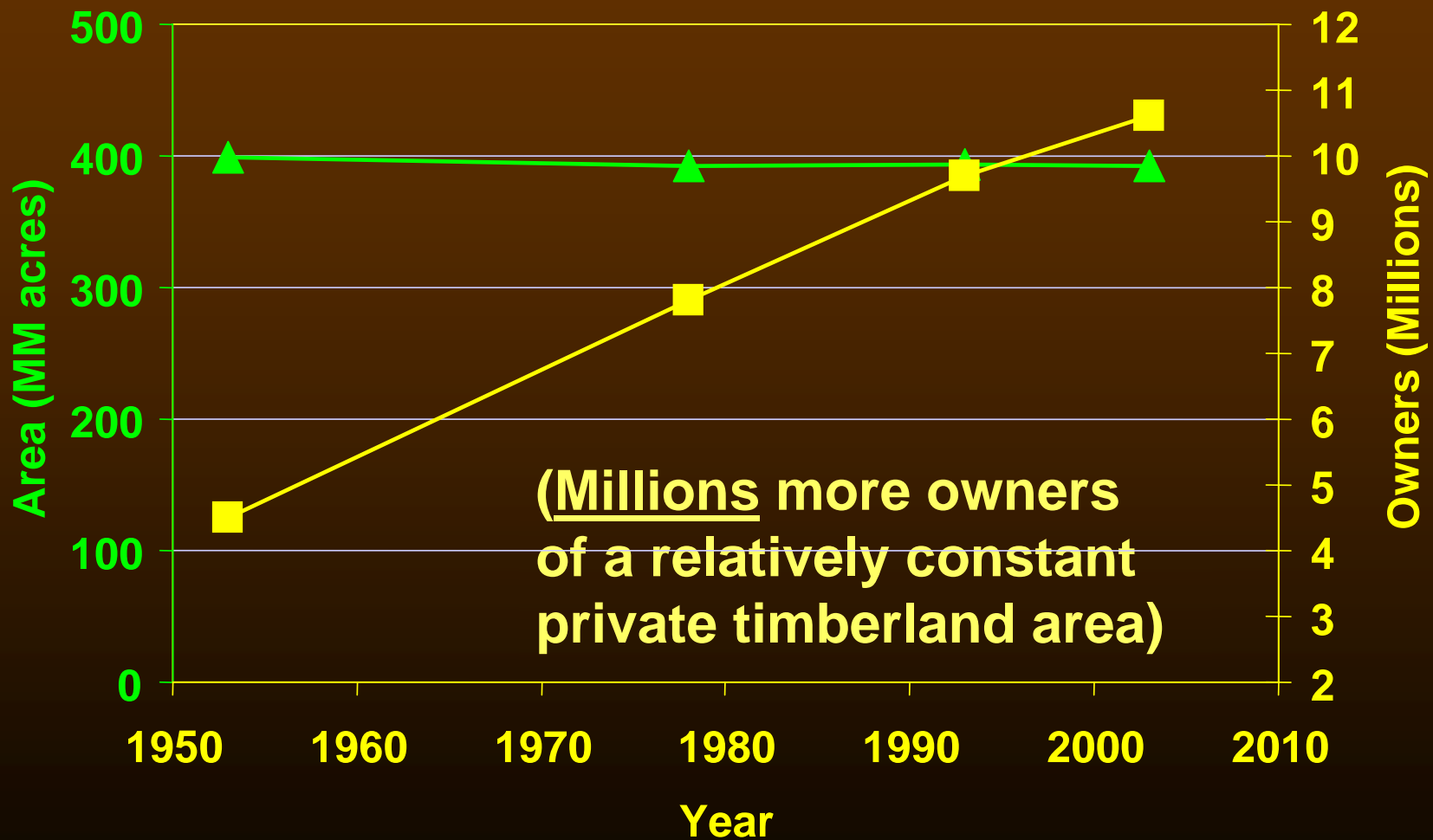
- More than 30 million acres of industry land divested nationwide since the mid-1990s
- Driven by various forces (Debt, Tax Code, Ample Private Timber, Weak Demand)
- Land buyers are TIMOs, REITS & others
- Implications for markets are unclear, but some suggest it will affect timber supply

Divestiture of industry timberland assets has resulted in expansion of institutional timberland ownership (TIMOs & REITs), but longer-term implications for timber markets are unclear:



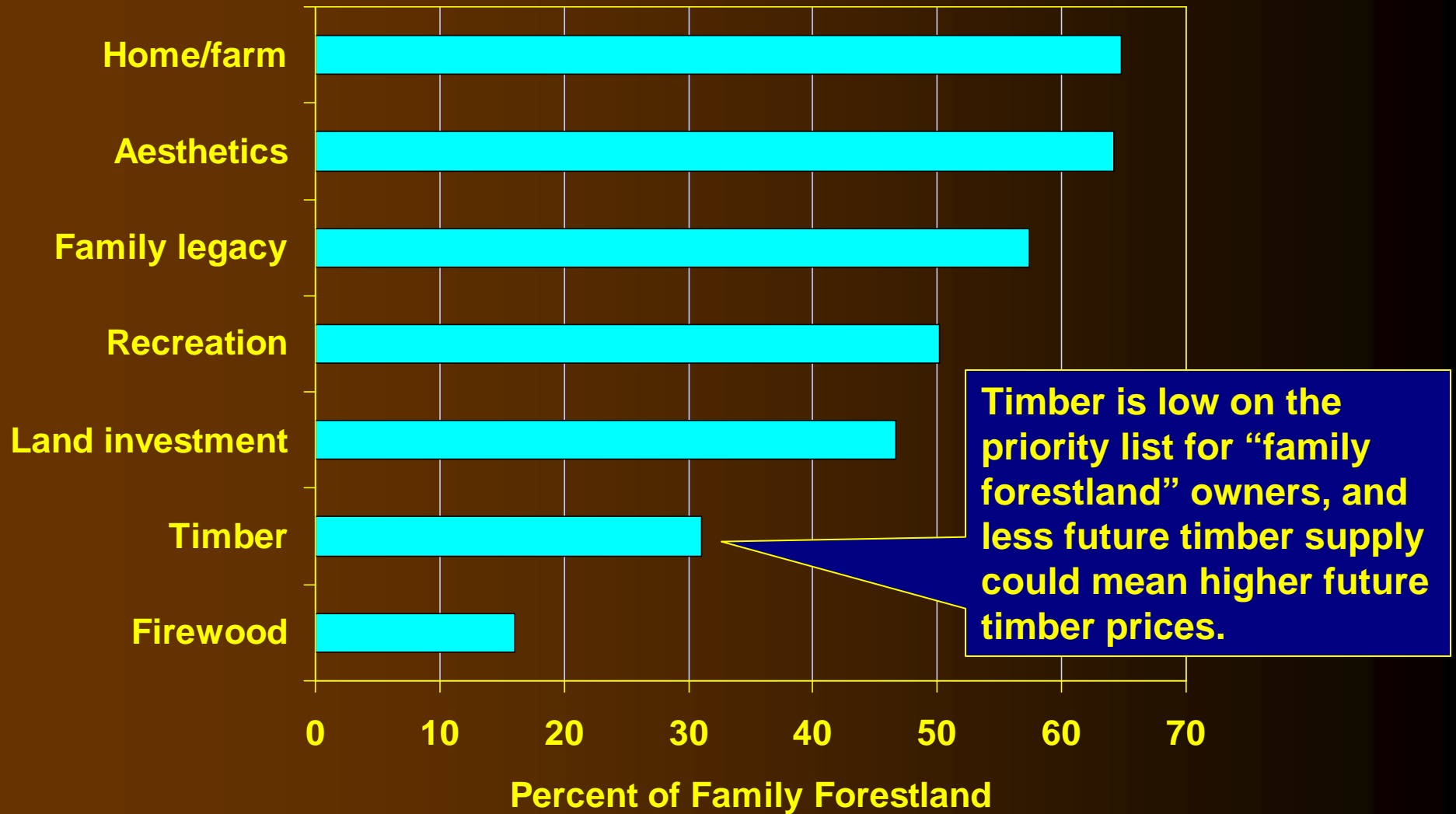
Source: John Greis, USFS

A continuing trend is expansion in the number of private timberland owners nationwide (1953 – 2003):



Source: John Greis, USFS

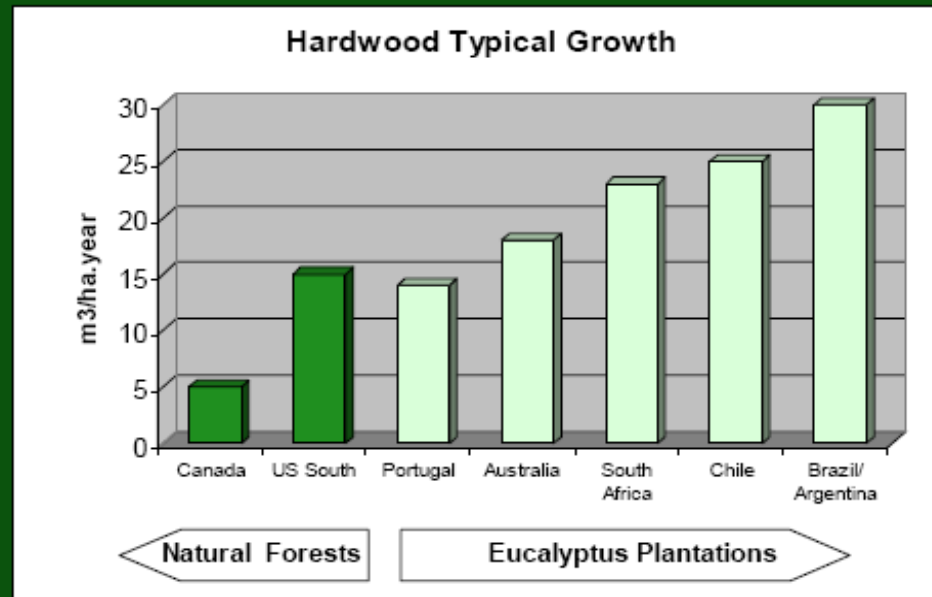
Why do all those owners own forestland?



One reason for spin-off of U.S. timberland by pulp & paper companies: Pulpwood grows much faster outside of North America (e.g. on hardwood plantations in warmer regions) . . .

Average Forest Growth Rates - Hardwoods

Exotic planted hardwoods forests are much more productive than natural forests.



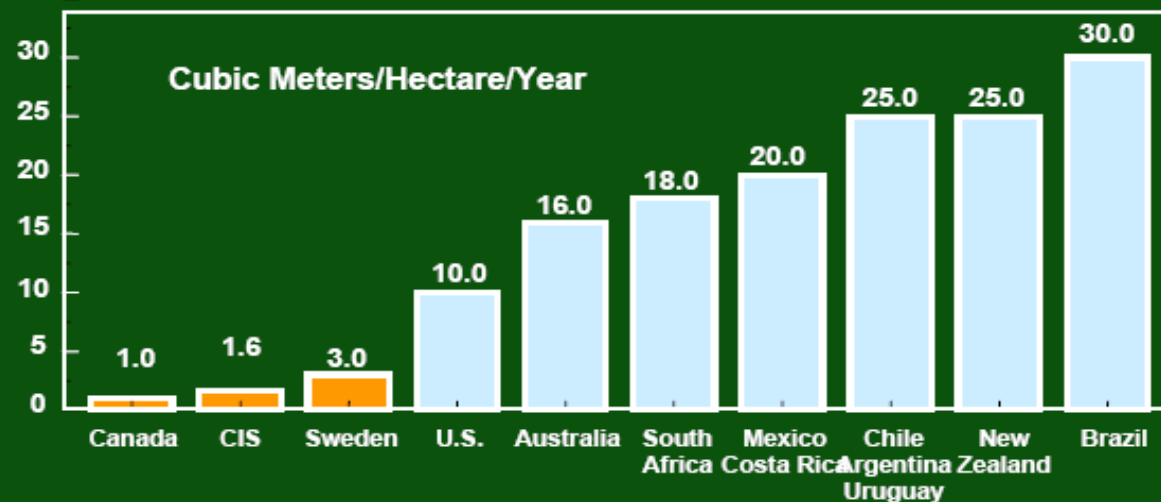
Sociedade Brasileira de Silvicultura, Flynn & Associates, Klabin

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Source: Klabin

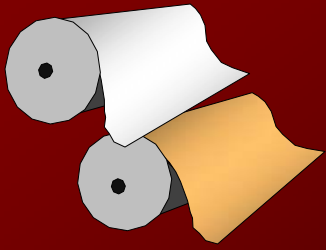
Softwood fiber also grows much faster on plantations outside of North America . . .

Average Forest Growth Rates - Softwoods



Source: UBS Timber Investors Research

Source: Klabin

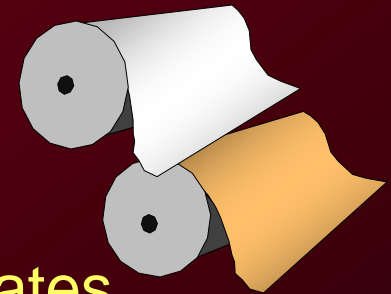


Summary points about paper industry trends

1. U.S. paper and paperboard markets have meager growth expectations *but industry return on capital may have bottomed out in 2001-2002.*
2. The U.S. industry faces profitability challenges, but so do others . . . We are now actually above the world average in paper industry profitability.
3. North American pulp and paper mills lost competitiveness to Asia due to their lower labor costs, and to Latin America due to their lower fiber costs (*but exchange rates keep altering the situation*)
4. Near-term outlook for paper & forest products sectors:
Weak Domestic Demand but Rising Global Demands
Capacity Closures and Value of US\$ are key market drivers
Possible timber price implications of industry land divestiture

Summary: In recent years global drivers contributed to *changes* in traditional forest product markets . . .

Global shifts in commerce and manufacturing along with the strong dollar changed market growth in pulp, paper and board. Growth has rebounded but remains slower than historical rates.



A credit boom from the early 90s to 2005 gave a big boost to housing, but the housing boom proved to be unsustainable, resulting in big changes in lumber and wood panel markets.



Traditional U.S. forest product markets will continue to change and may recover in the long run, but future growth is also likely to be slower than in past decades.

