Forest Industry Update

Scott Bowe
Professor and Forest Products Extension Specialist

Healthy Forests, Healthy Economies

12th Annual Sustainable Forestry Conference

April 21, 2016

Florence, Wisconsin

THE UNIVERSITY of WISCONSIN MADISON

Department of Forest and Wildlife Ecology


It's been that long?

Outline

- Economic Impact
- Name that Product!
- Pulp & Paper
- Hardwood Lumber
- Housing Market

Economic Impact

THE UNIVERSITY of WISCONSIN MADISON

Department of Forest and Wildlife Ecology

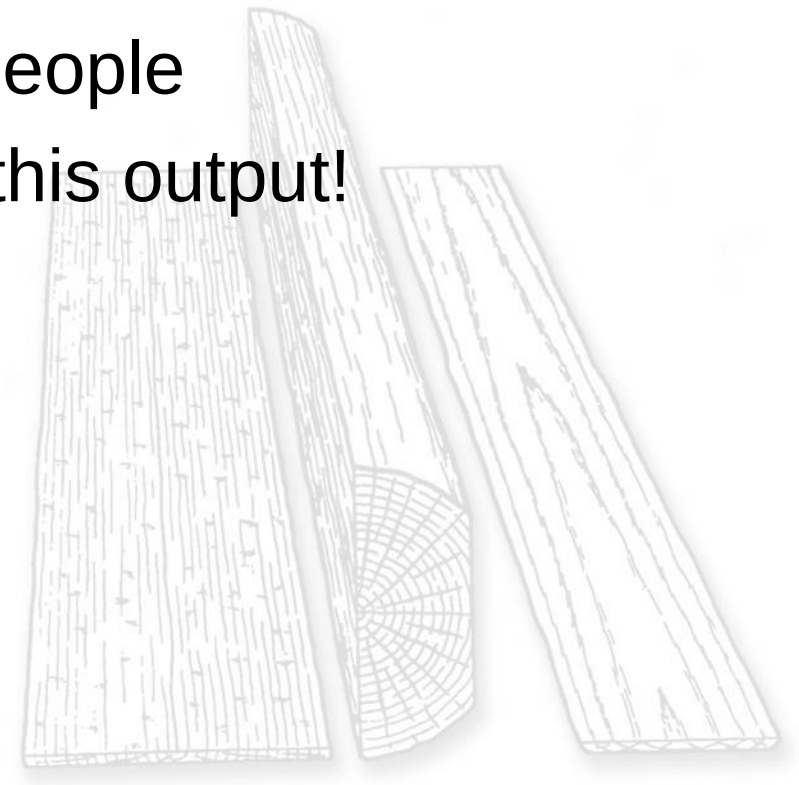
Economic Impact

- What is the forest industries annual output in Wisconsin?
  - $24.7 billion
  - Employs 64,896 people

- For every 10 statewide jobs in the forest related industries an additional 19 jobs are produced in other sectors of the state's economy as a result of forest industry purchases and their employee's household purchases. By comparison, for every 10 jobs in the service industry only 7 jobs are produced in other economic sectors.

Economic Impact

- What is the forest industries annual output in the USA?
  - $362.5 billion
  - Employs 1.2 million people
  - Wisconsin is 14% of this output!



THE UNIVERSITY of WISCONSIN MADISON

Name that Product

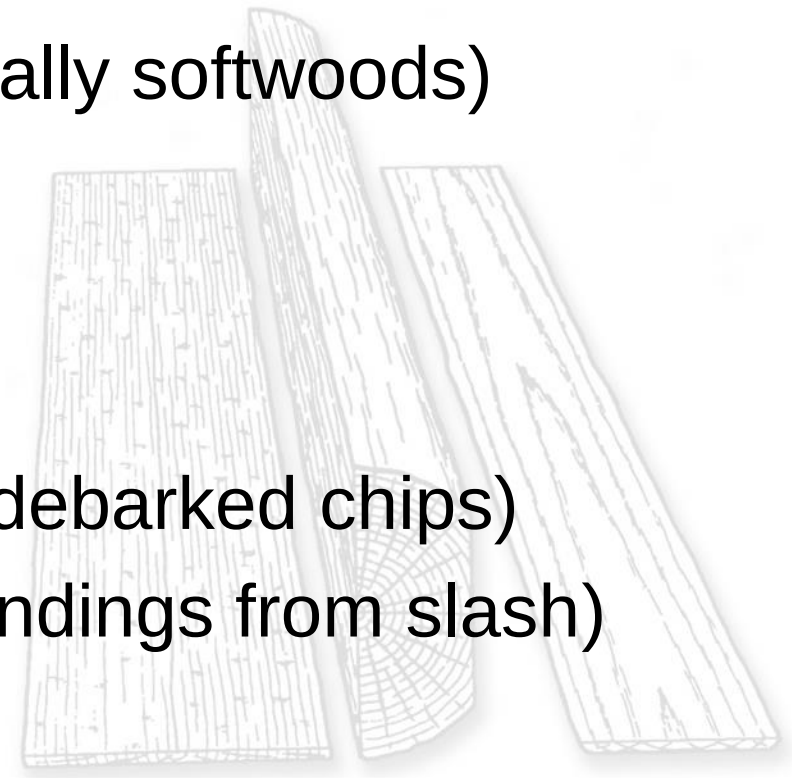
Department of Forest and Wildlife Ecology

Name that Product

- Forest Raw Materials

Name that Product

- Forest Raw Materials
  - Veneer Logs
  - Sawlogs
  - Specialty Logs (normally softwoods)
  - Boltwood
  - Pulpwood
  - Fuel Rods
  - Chips (whole tree or debarked chips)
  - Biomass (chips or grindings from slash)



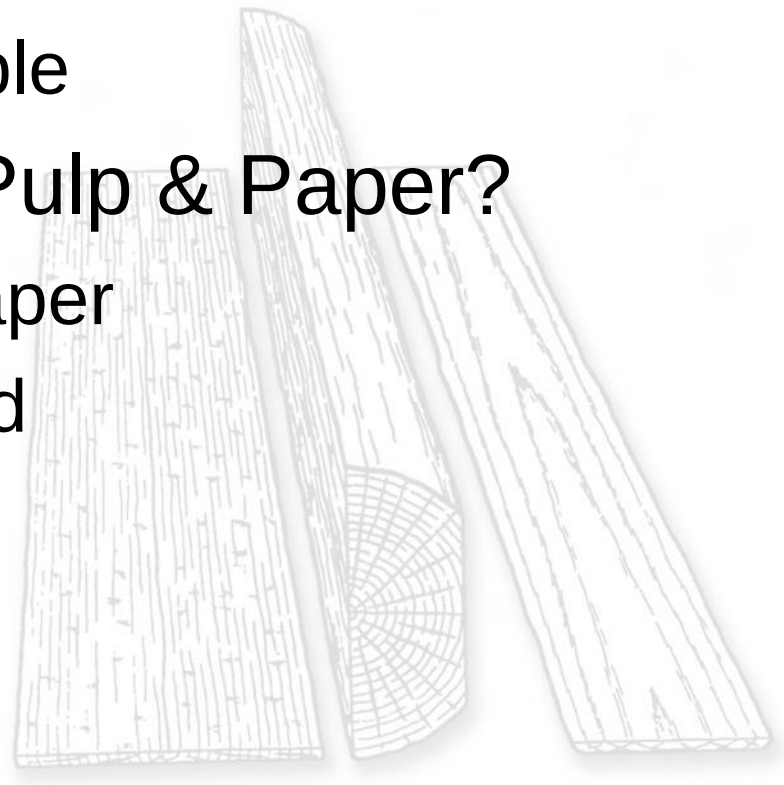
THE UNIVERSITY of WISCONSIN MADISON

What does the future hold?
Pulp and Paper

Department of Forest and Wildlife Ecology

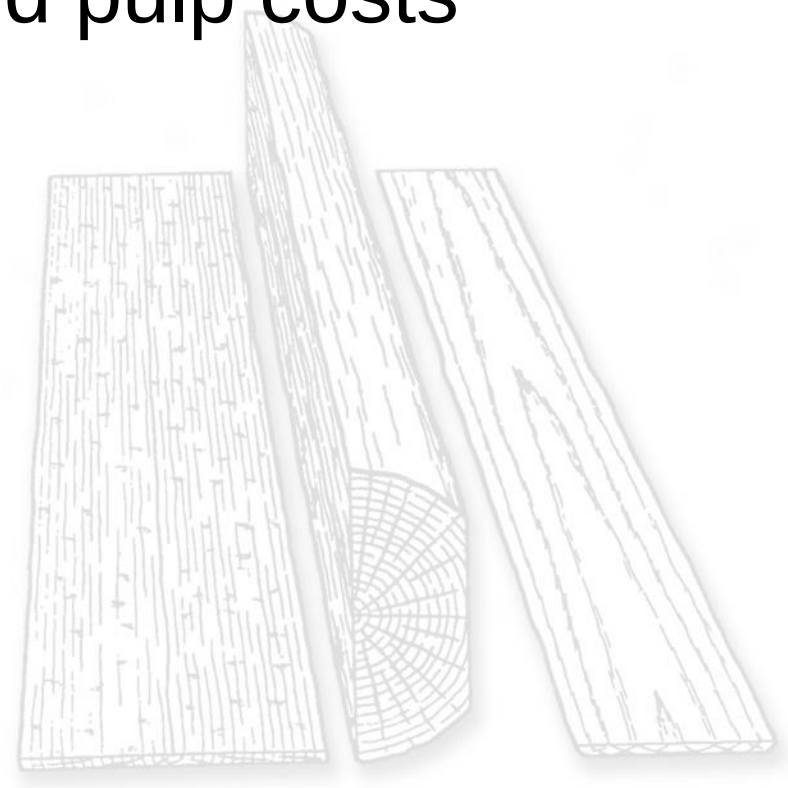
Pulp & Paper

- What is the forest industries annual output in Wisconsin?
  - $24.7 billion
  - Employs 64,896 people
- What percentage is Pulp & Paper?
  - About 75% Pulp & Paper
  - About 25% solid wood



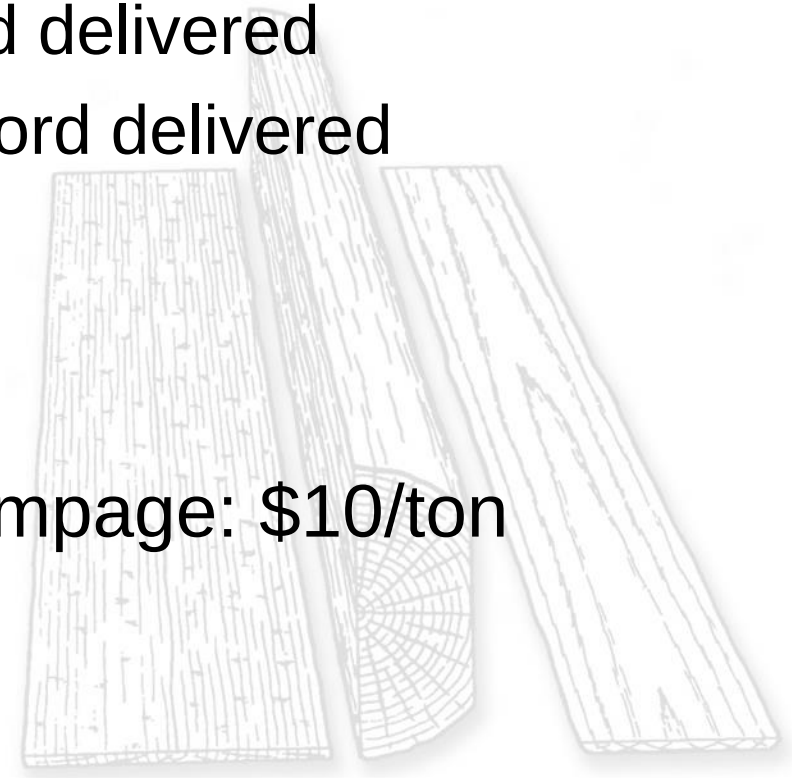
How can we compete in Pulp & Paper?

- Wisconsin pulpwood costs
- Southern pulpwood costs
- Foreign pulpwood and pulp costs
- Foreign competition
  - Paper
  - Paper board
  - etc.



Domestic Pulp & Paper Issues

- Wisconsin - Overall pulpwood dropping in recent weeks:
  - Hardwood bolts $125/cord delivered
  - Aspen under $100/cord delivered
  - Hardwood pulp $100/cord delivered
    - $25/cord cut & skid
    - $25 to $30/cord haul
    - $10/cord marking
- Southern Pine Pulp Stumpage: $10/ton (~$22/cord)



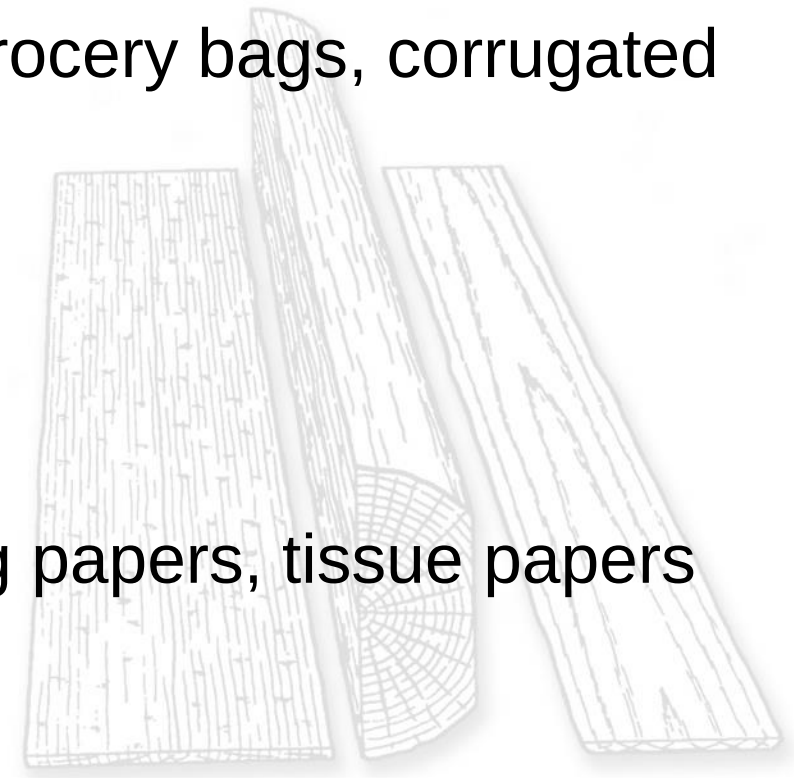
International Pulp & Paper Issues

- Brazil:
  - Growing Eucalyptus on 8 year rotations
  - Manufactured, dried, and baled pulp coming to Wisconsin mills.

(Image Source: http://farm1.static.flickr.com/40/97863402_a6b08836a1.jpg)

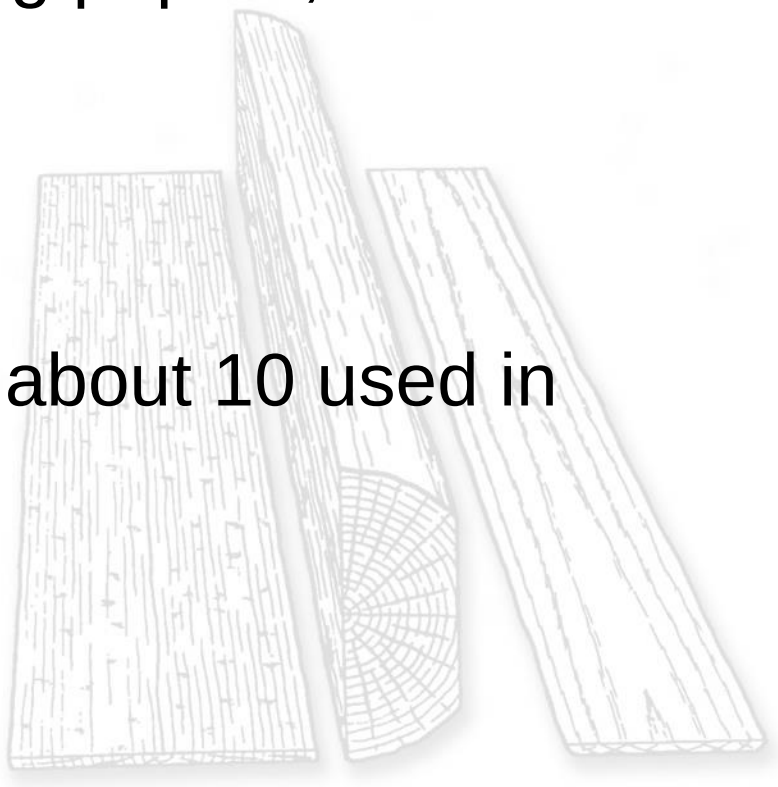
All pulpwood is not equal!

- Pine pulp:
  - Long fiber (3mm)
  - Don’t bond as well but higher tensile strength
  - Shipping containers, grocery bags, corrugated boxes
- Hardwood pulp:
  - Short fiber (1mm)
  - Bonds well
  - Writing papers, printing papers, tissue papers



All pulpwood is not equal!

- Eucalyptus (Hardwood) pulp:
  - Short fiber (1mm)
  - Writing papers, printing papers, tissue papers
  - Thicker walled
  - Extractives
  - Hundreds of species, about 10 used in production



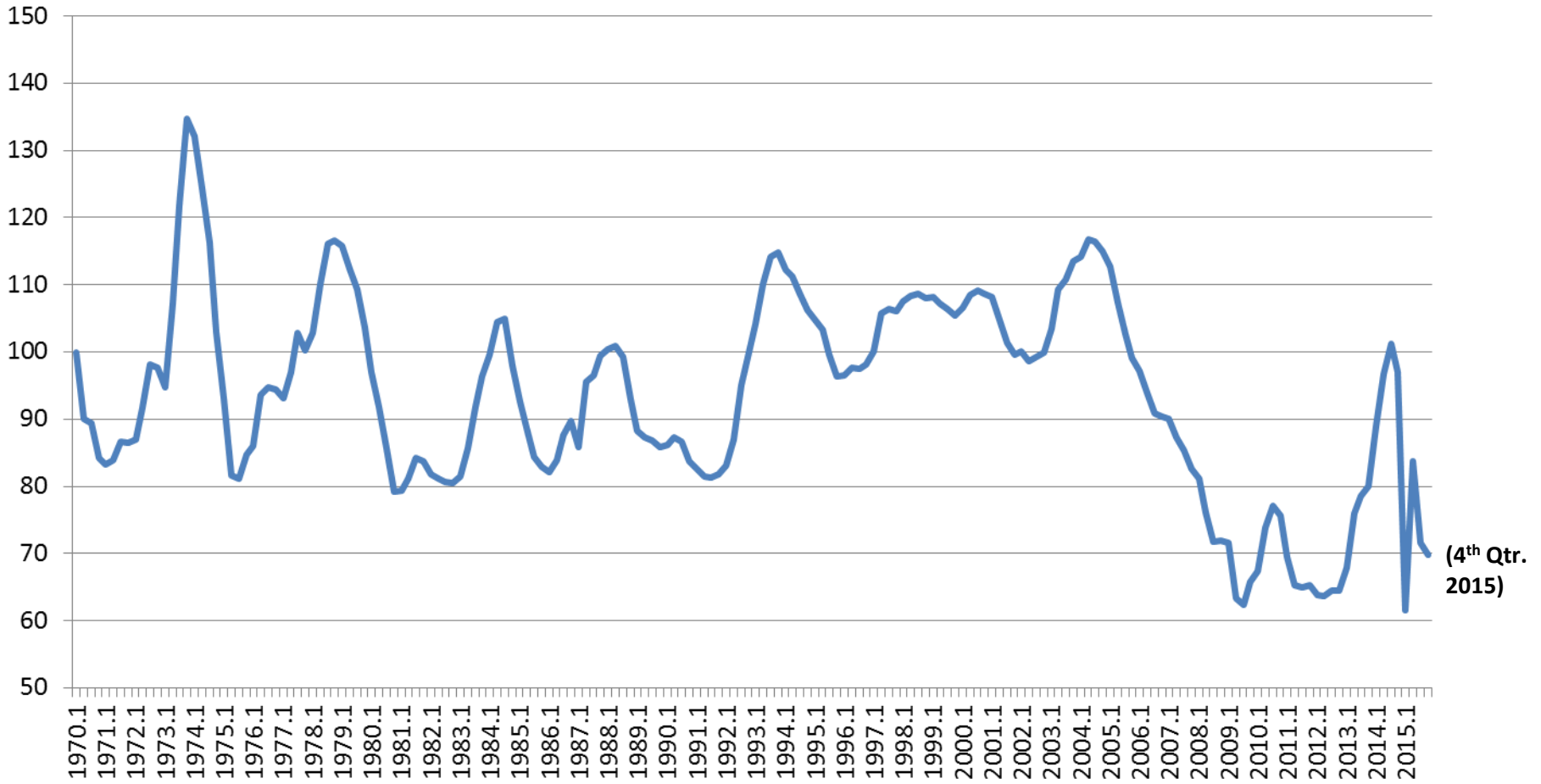
What does the future hold? Hardwood Lumber

THE UNIVERSITY of WISCONSIN MADISON

Department of Forest and Wildlife Ecology

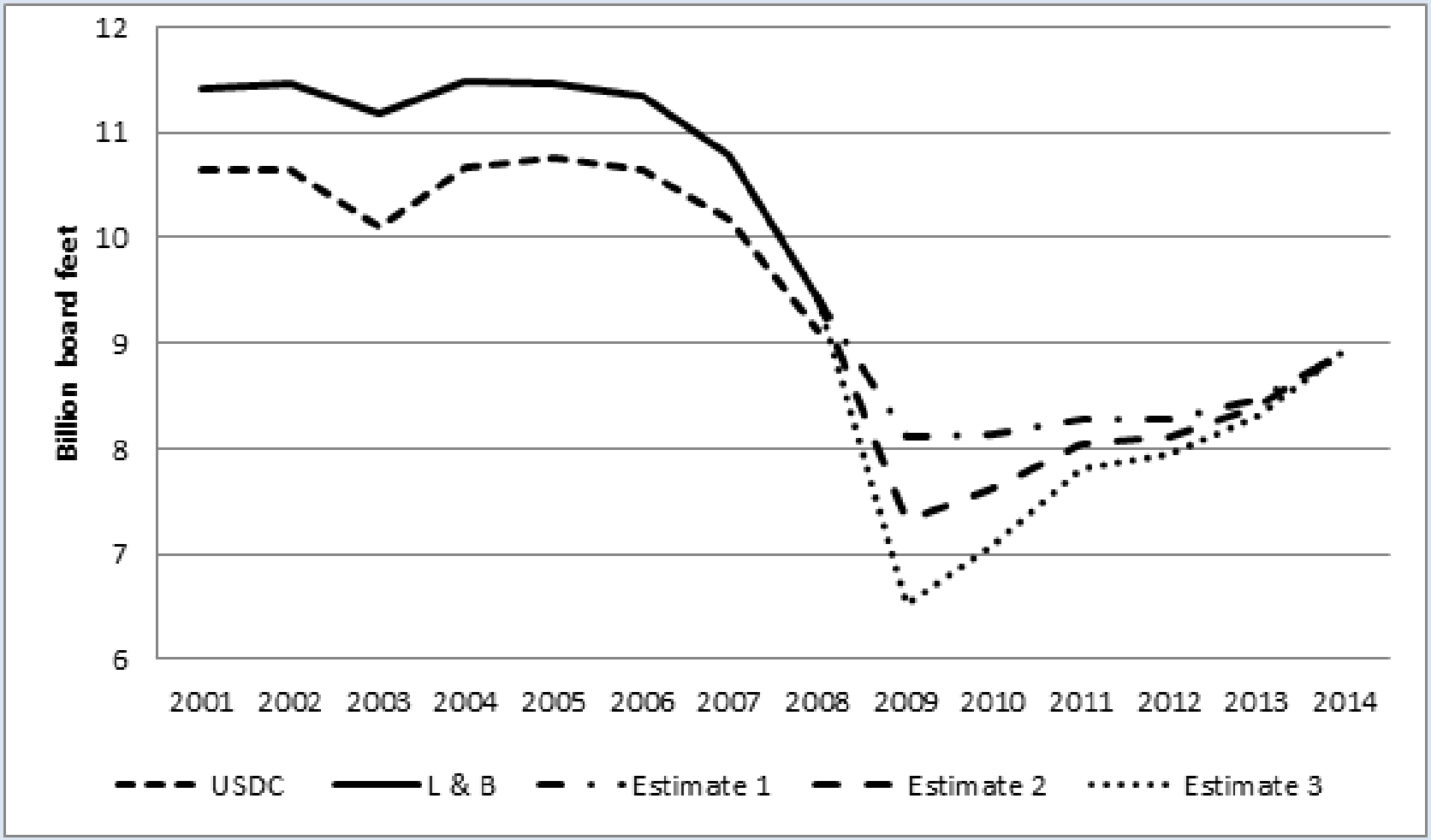
Aggregate price index for green No. 1 Common Appalachian hardwood lumber

(inflation-adjusted and indexed, 1970 = 100)



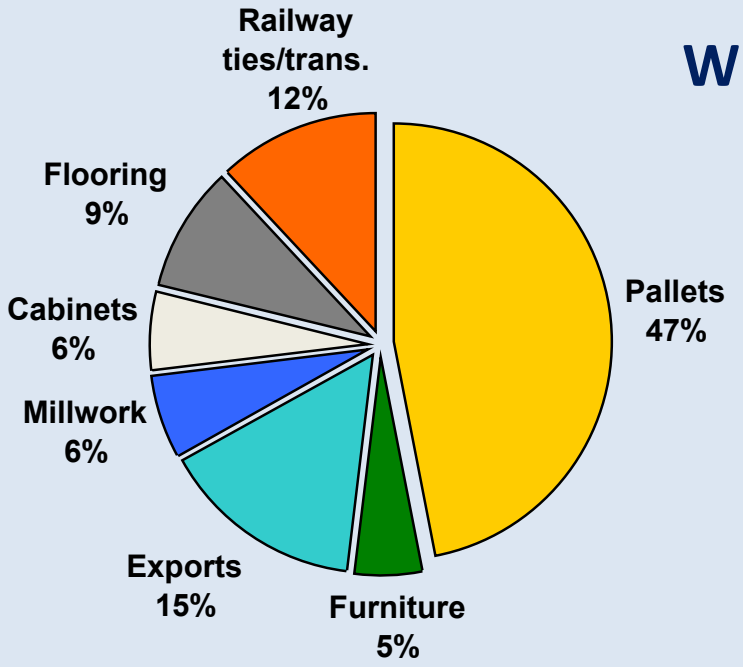
W. Luppold, U.S. Forest Service

U.S. hardwood lumber production



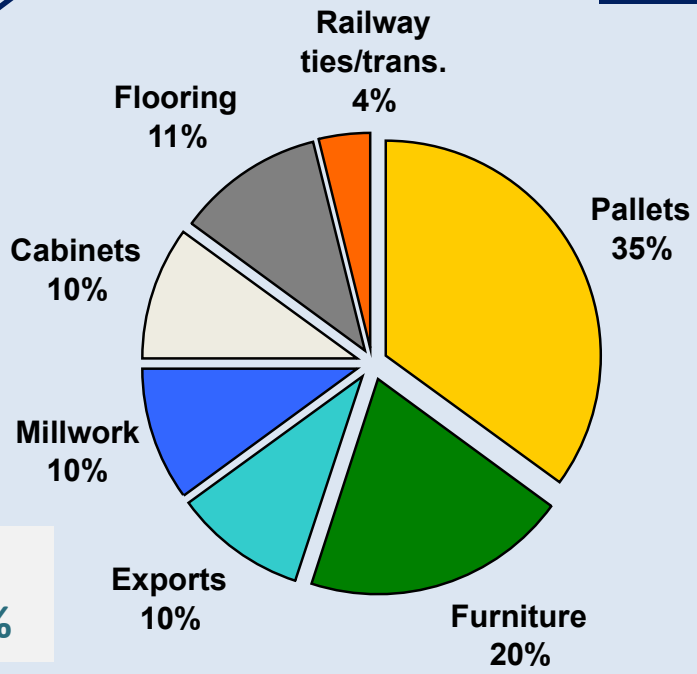
W. Luppold, U.S. Forest Service

Where the hardwood lumber went, 2010



Industrial uses ~ 59%
Appearance-based uses ~ 41%

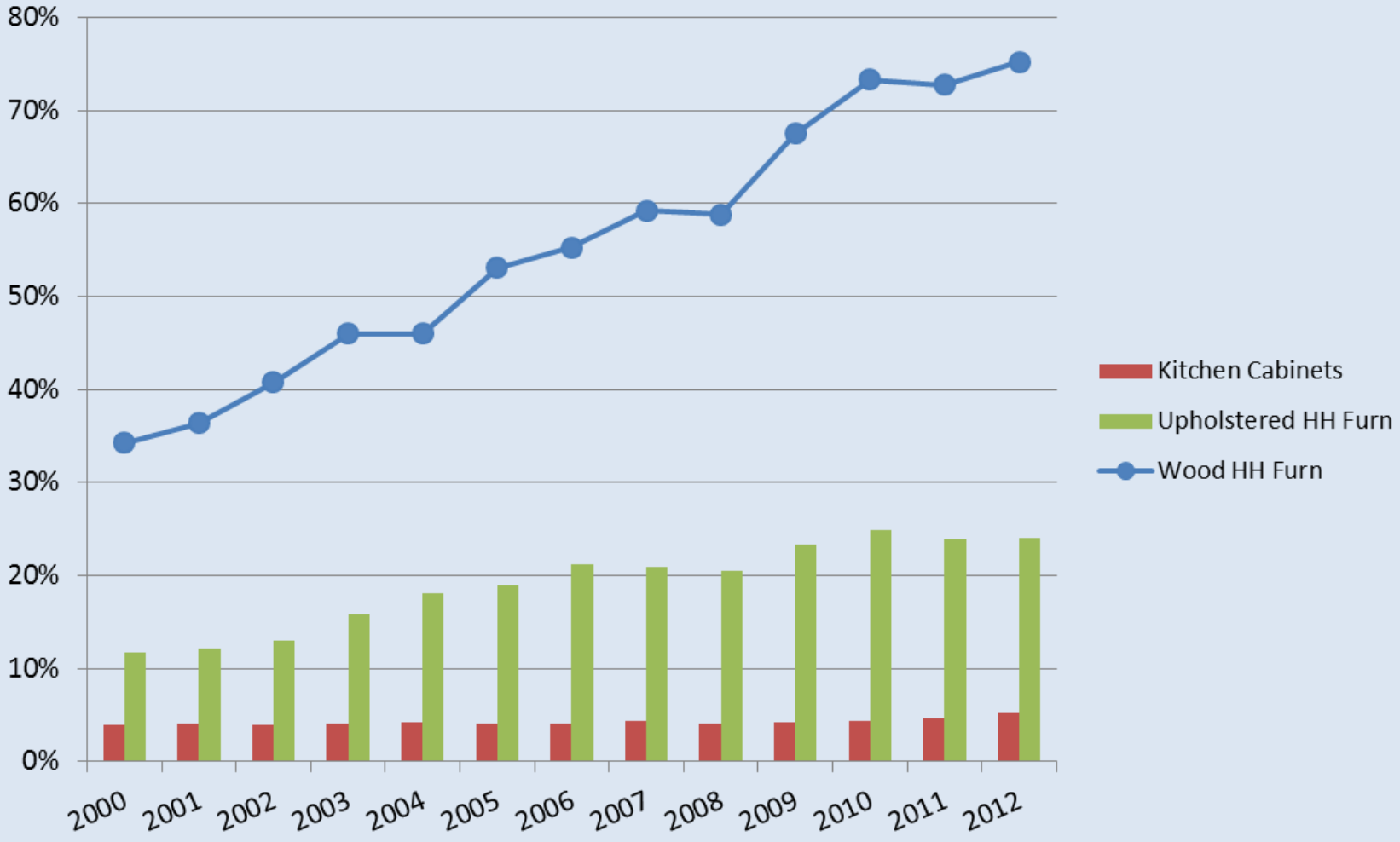
Where the hardwood lumber went, 2000



Industrial uses ~ 39%
Appearance-based uses ~ 61%

Data source:
Hardwood Market Report

Market share estimates of imports in the U.S.

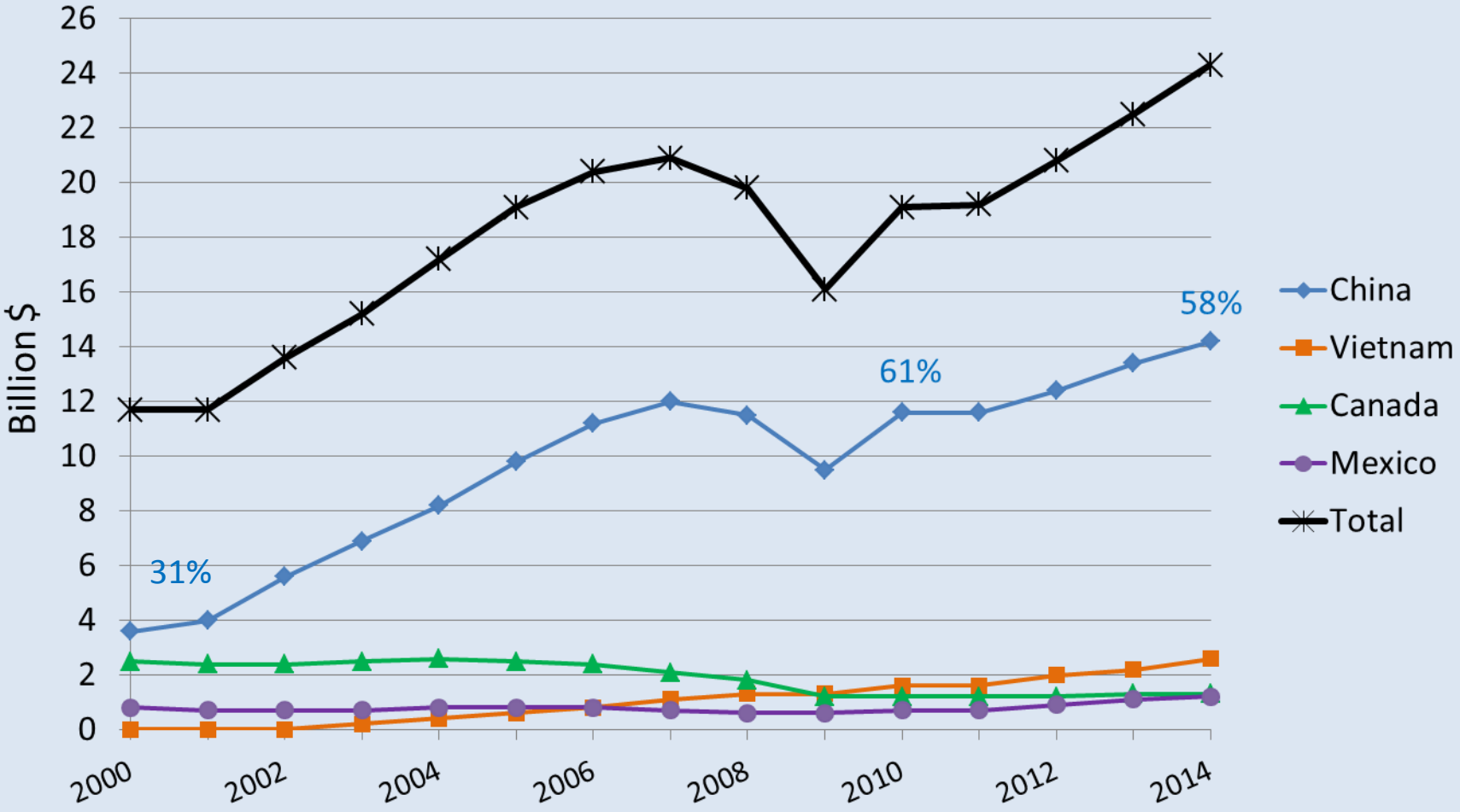


Consumption = value of shipments + imports – exports
Import share = imports/consumption

Data sources: U.S. Census Bureau; International Trade Admin.

Major U.S. Import Sources

Household & institutional furniture & cabinets (NAICS 3371)



Data source: International Trade Administration

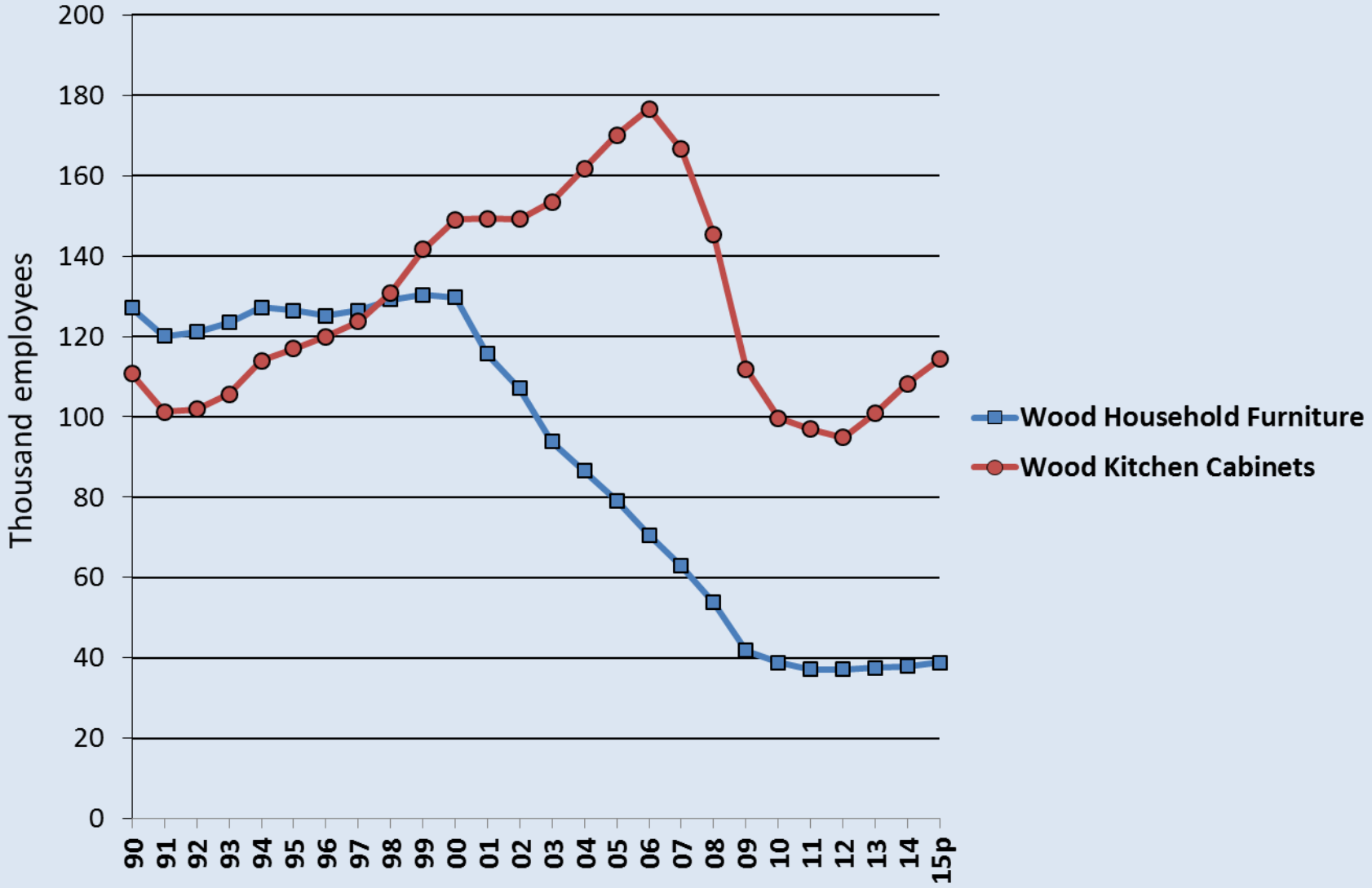
Made in the U.S.

Production Cost: US$ 42.25

Made in India

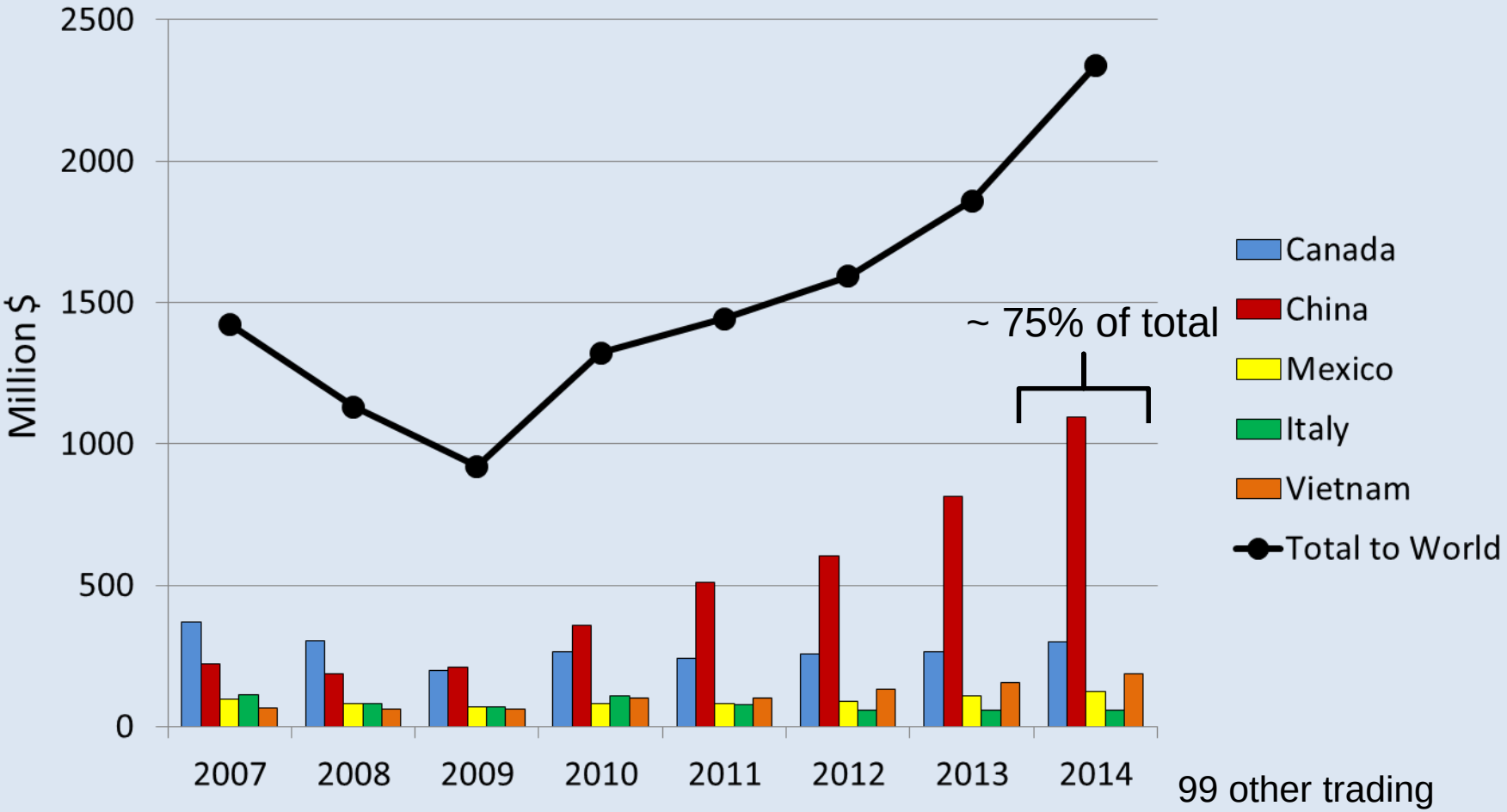
Sales Price in U.S.: US$ 4.50

Employment trends – furniture vs. cabinets



Data source: Bureau of Labor Statistics

U.S. hardwood lumber exports
(Top 5 destinations)

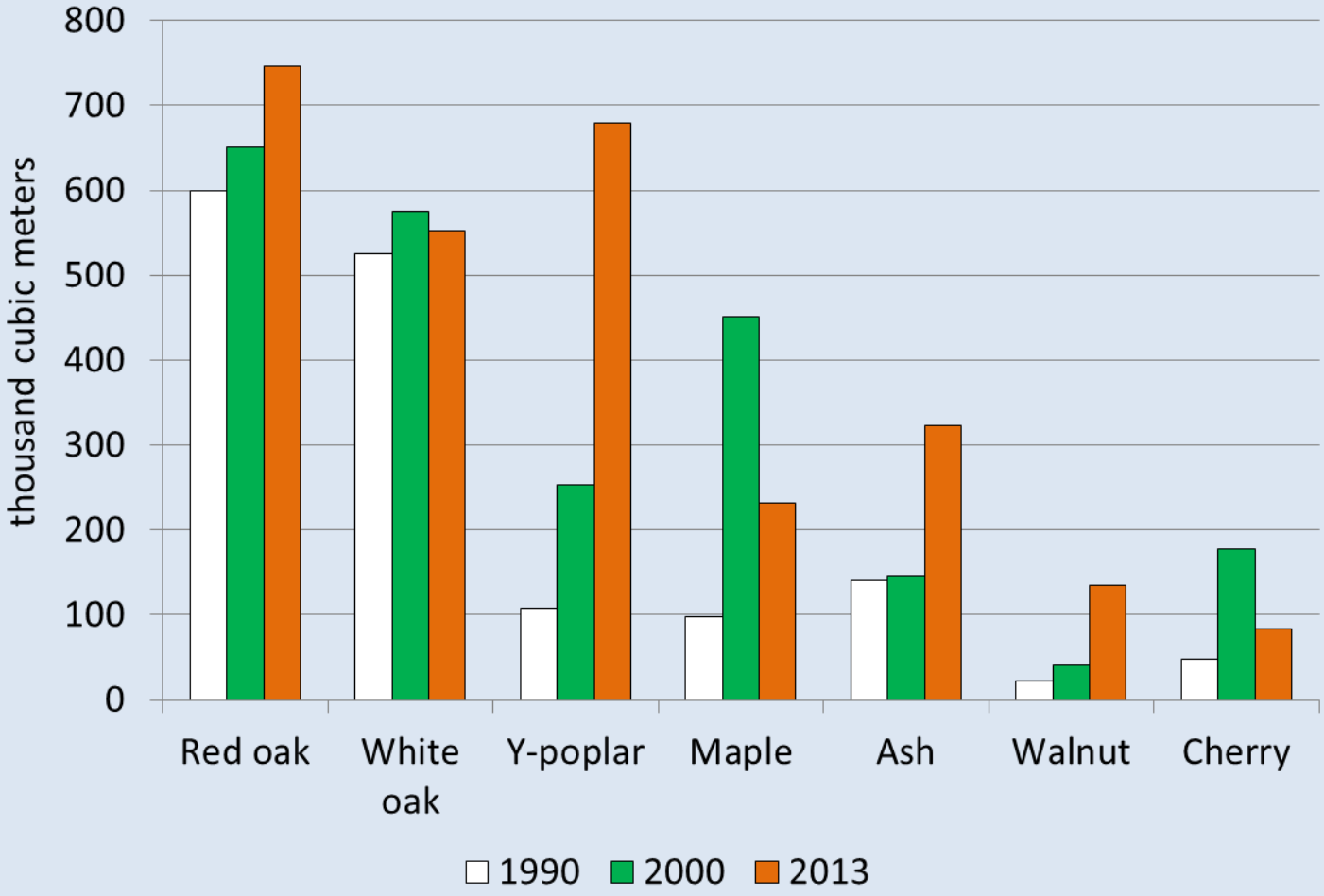


99 other trading partners account for the remaining 25%

- Japan and the UK were slightly higher than Italy starting in 2012, dropping Italy to 7th

Data: USDA Foreign Agricultural Service

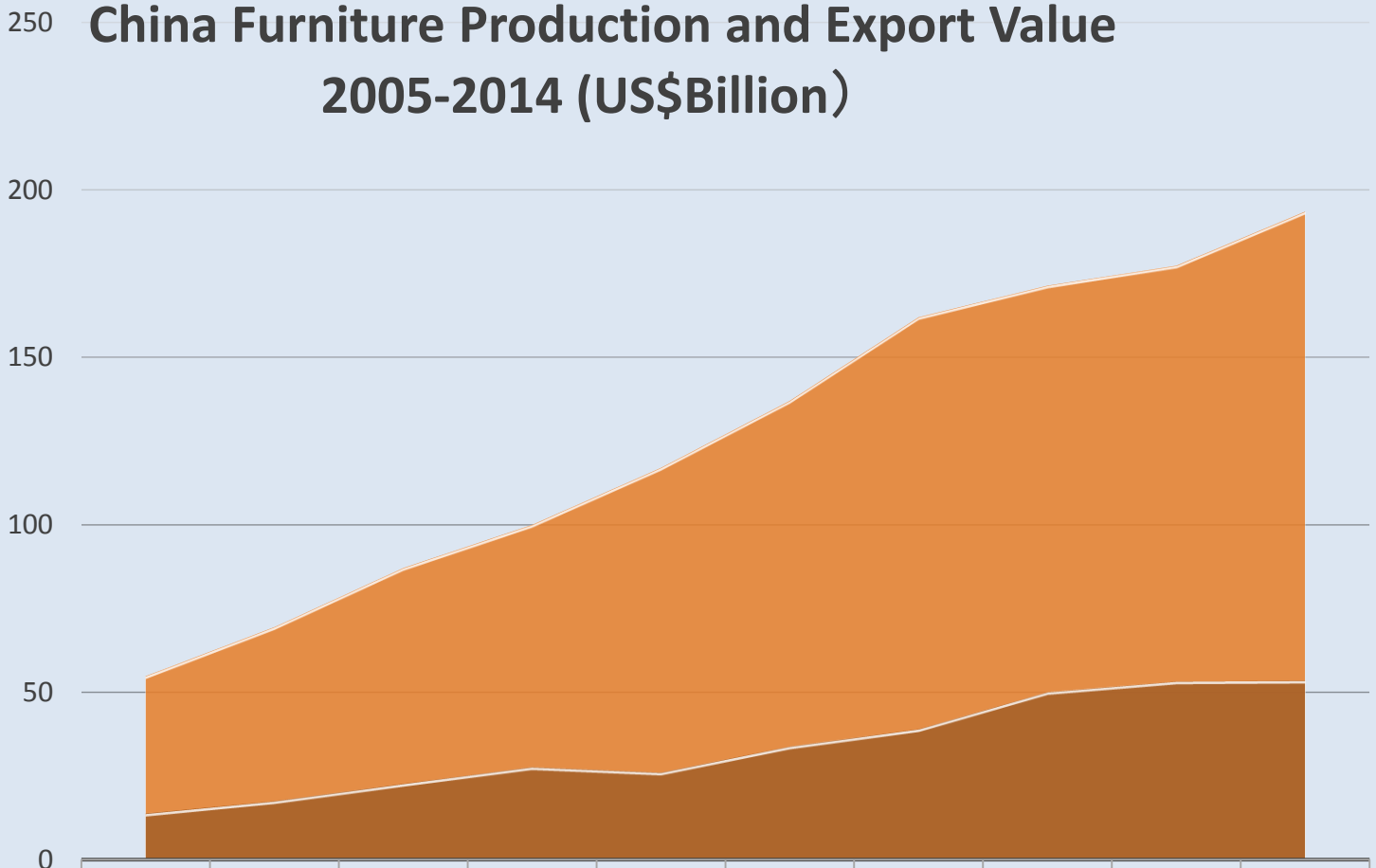
U.S. hardwood lumber exports by species



- Yellow-poplar increased by 535% from 1990 to 2013, rivaling the oaks
- Walnut increased by 500%
- Ash increased by 130%

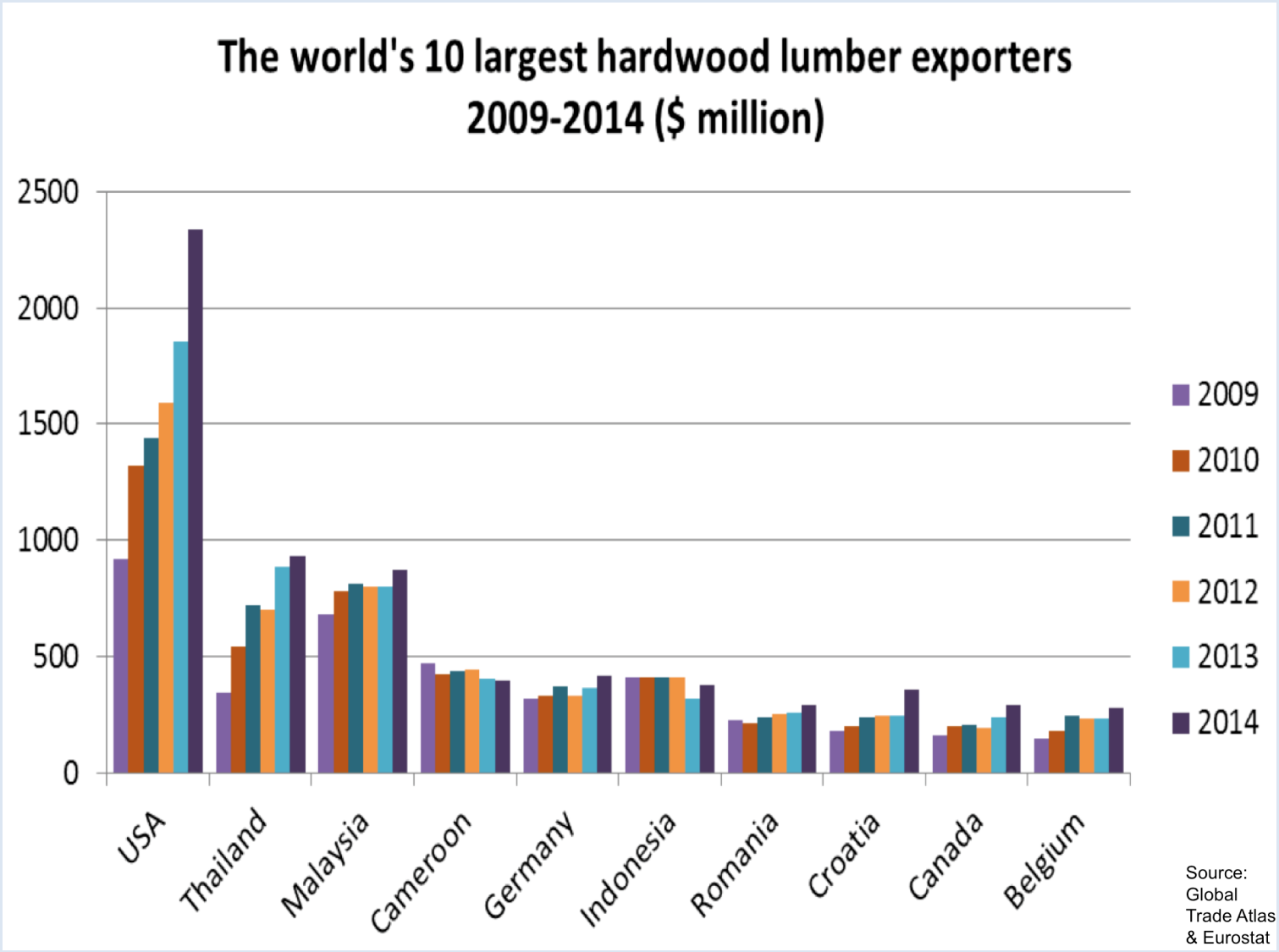
Data source: USDA Foreign Agricultural Service

China Furniture Production and Export Value 2005-2014 (US$Billion)

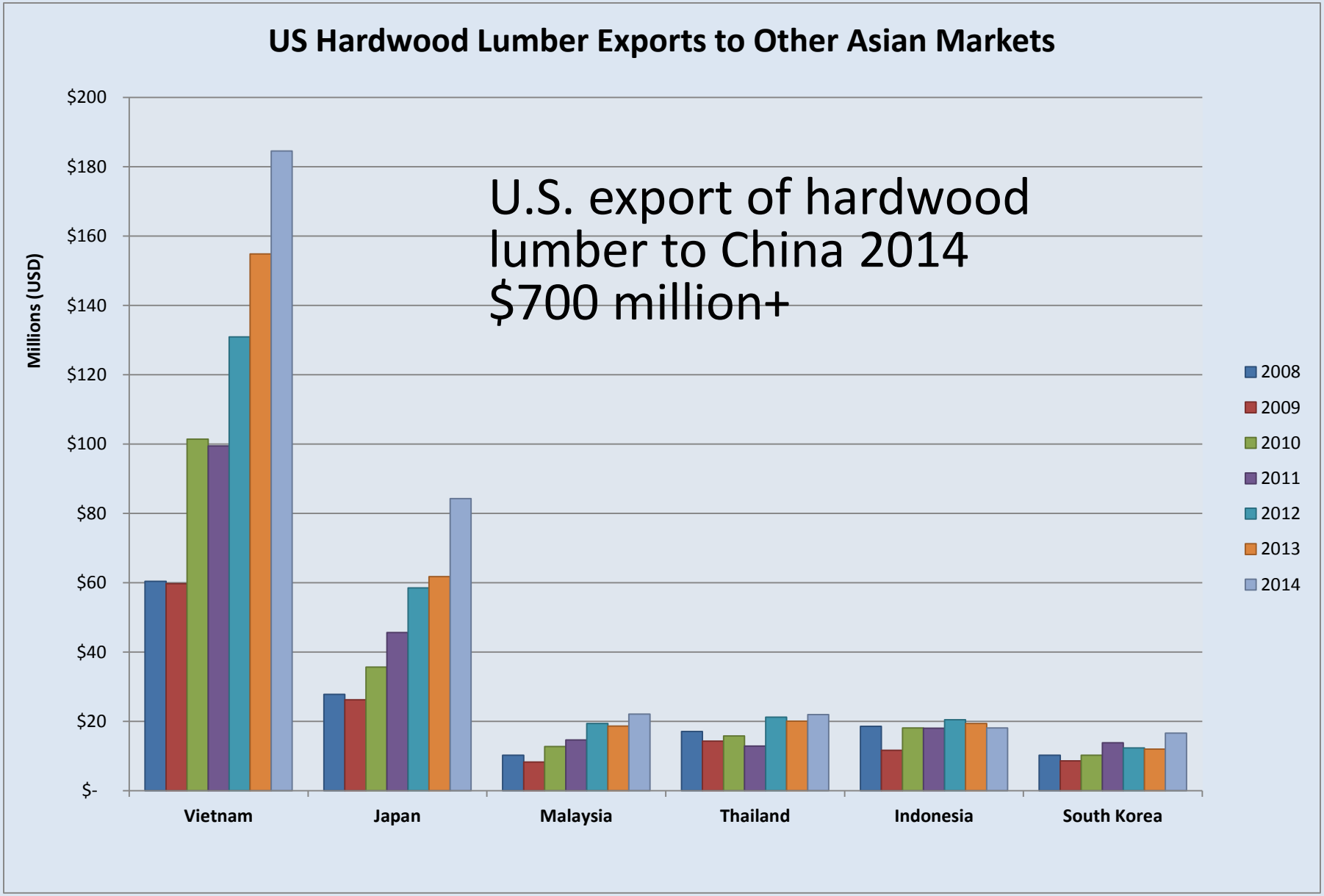


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Production Value	54.8	$69.40	$87.10	$100	$117	$137	$162	$171.40	$177.40	$193.50
Export Value	13.767	17.465	22.617	27.583	25.958	33.723	38.882	49.96	53.1	53.416

Source: M. Snow, AHEC; China National Furniture Association



Source: M. Barford, NHLA



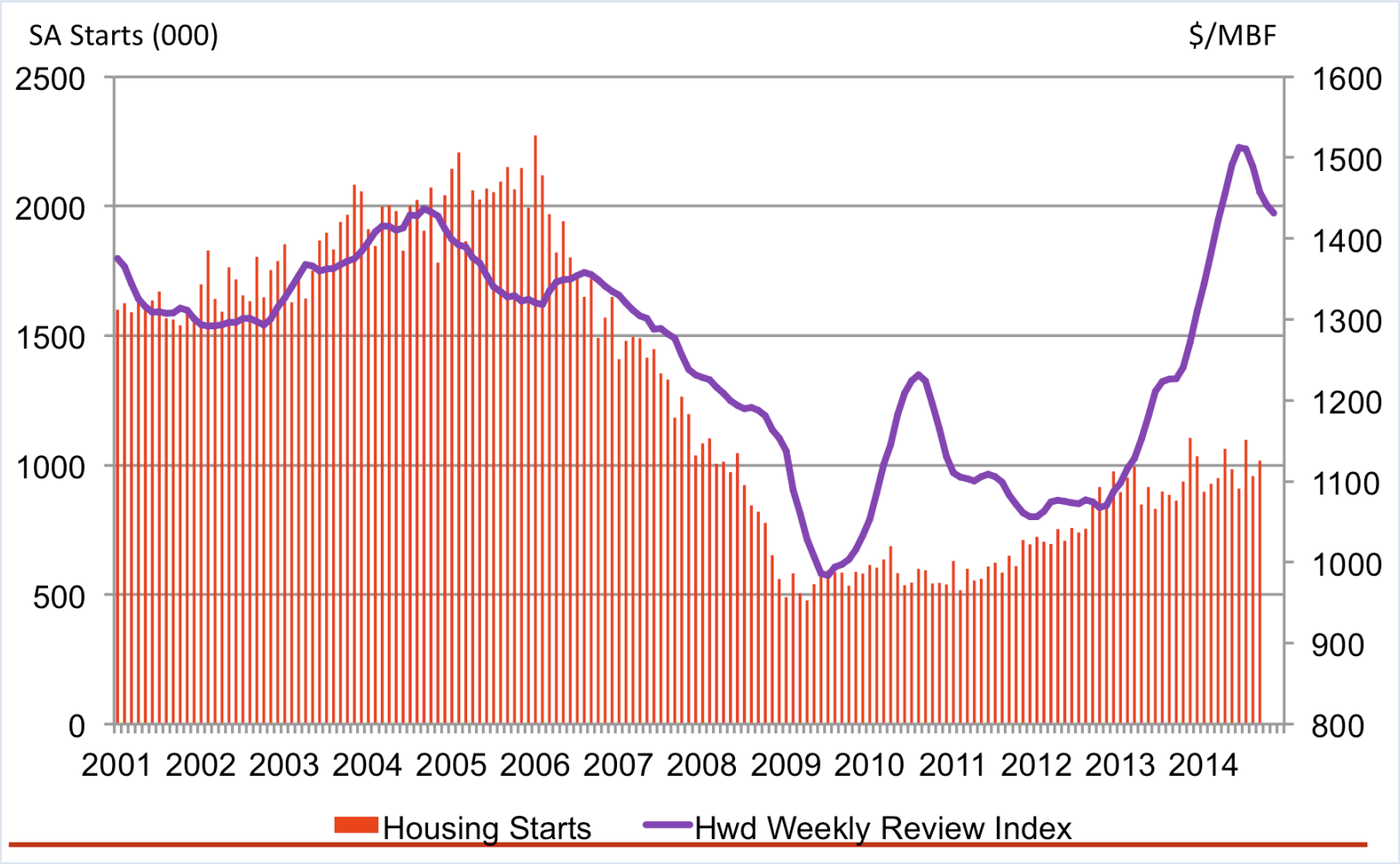
Source: M. Snow, AHEC; USDA GATS

What does the future hold?
Housing Market

THE UNIVERSITY of WISCONSIN MADISON

Department of Forest and Wildlife Ecology

Housing Starts and Hardwood Prices



Source: M. Snow, AHEC; Census Bureau; Hardwood Weekly Review

February 2016
Housing Scorecard

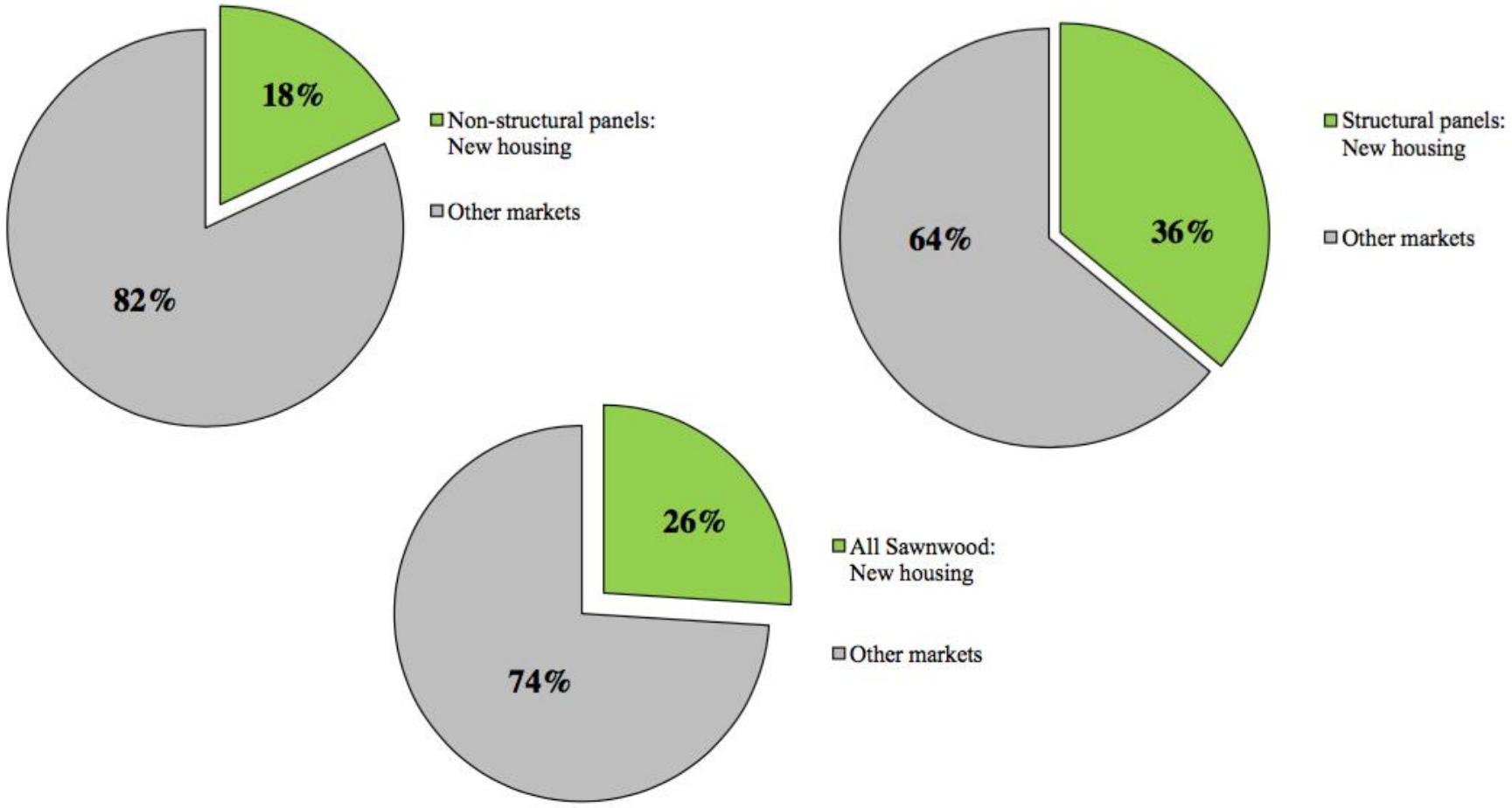
	M/M	Y/Y
Housing Starts	Δ 5.2%	Δ 30.9%
Single-Family Starts	Δ 7.2%	Δ 30.7%
Housing Permits	∇ 3.1%	Δ 6.3%
Housing Completions	∇ 4.2%	Δ 17.5%
New Single-Family House Sales	Δ 2.0%	∇ 6.1%
Existing House Sales[1]	∇ 7.1%	Δ 2.2%
Private Residential Construction Spending	Δ 0.9%	Δ 10.7%
Single-Family Construction Spending	Δ 1.2%	Δ 10.6%

M/M = month-over-month; Y/Y = year-over-year

Source: U.S. Department of Commerce-Construction; [1]National Association of Realtors® (NAR®)

Return TOC

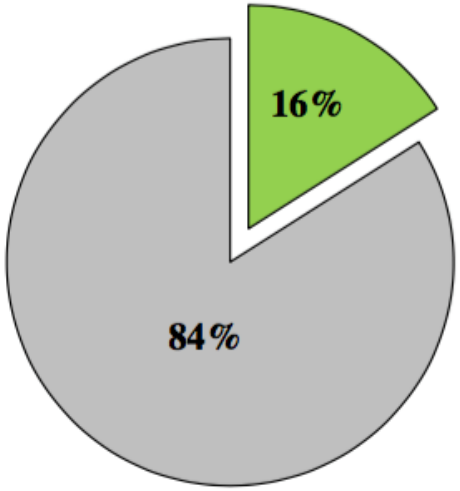
New Construction's Percentage of Wood Products Consumption



Source: U.S. Forest Service. Howard, J. and D. McKeever. 2015. U.S. Forest Products Annual Market Review and Prospects, 2010-2015

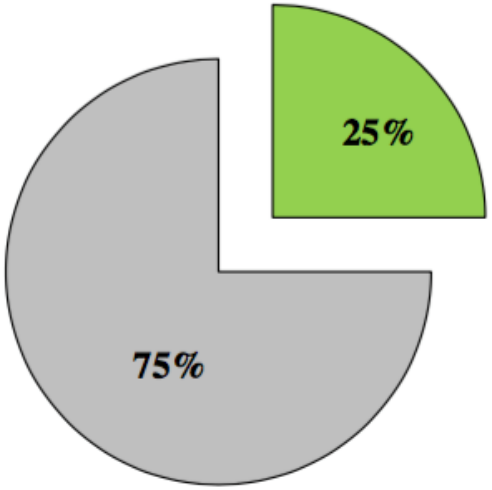
Return TOC

Repair and Remodeling's Percentage of Wood Products Consumption



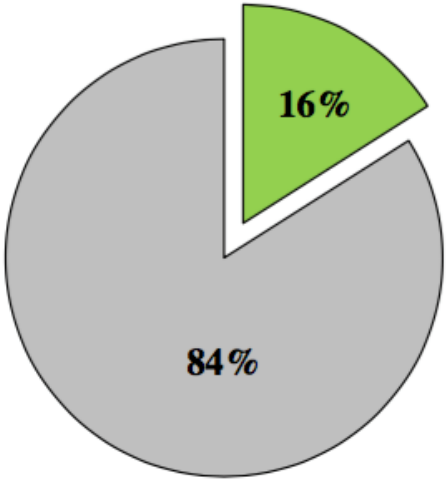
Non-structural panels: Remodeling

Other markets



All Sawnwood: Remodeling

Other markets



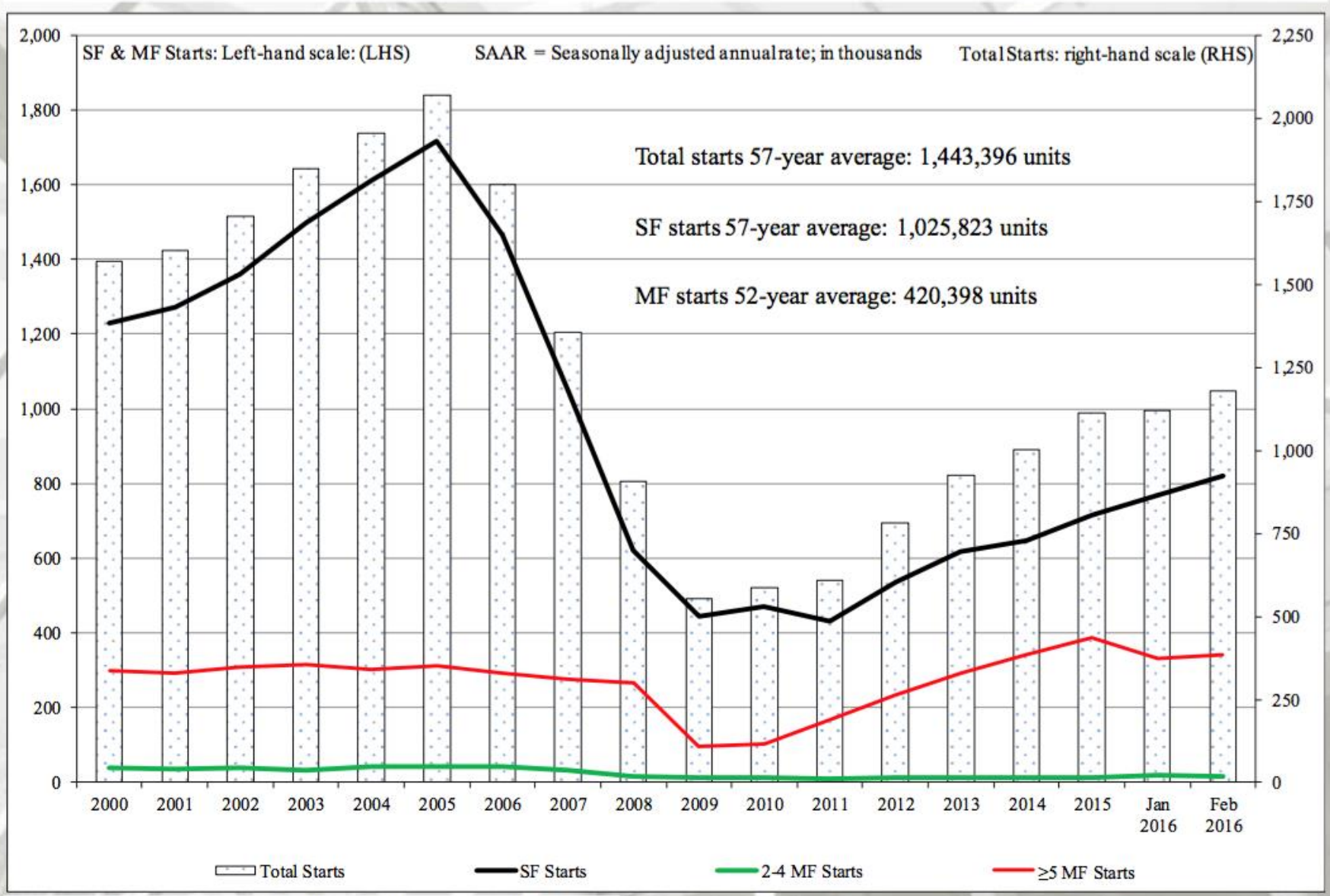
Structural panels: Remodeling

Other markets

Source: U.S. Forest Service. Howard, J. and D. McKeever. 2015. U.S. Forest Products Annual Market Review and Prospects, 2010-2015

Return TOC

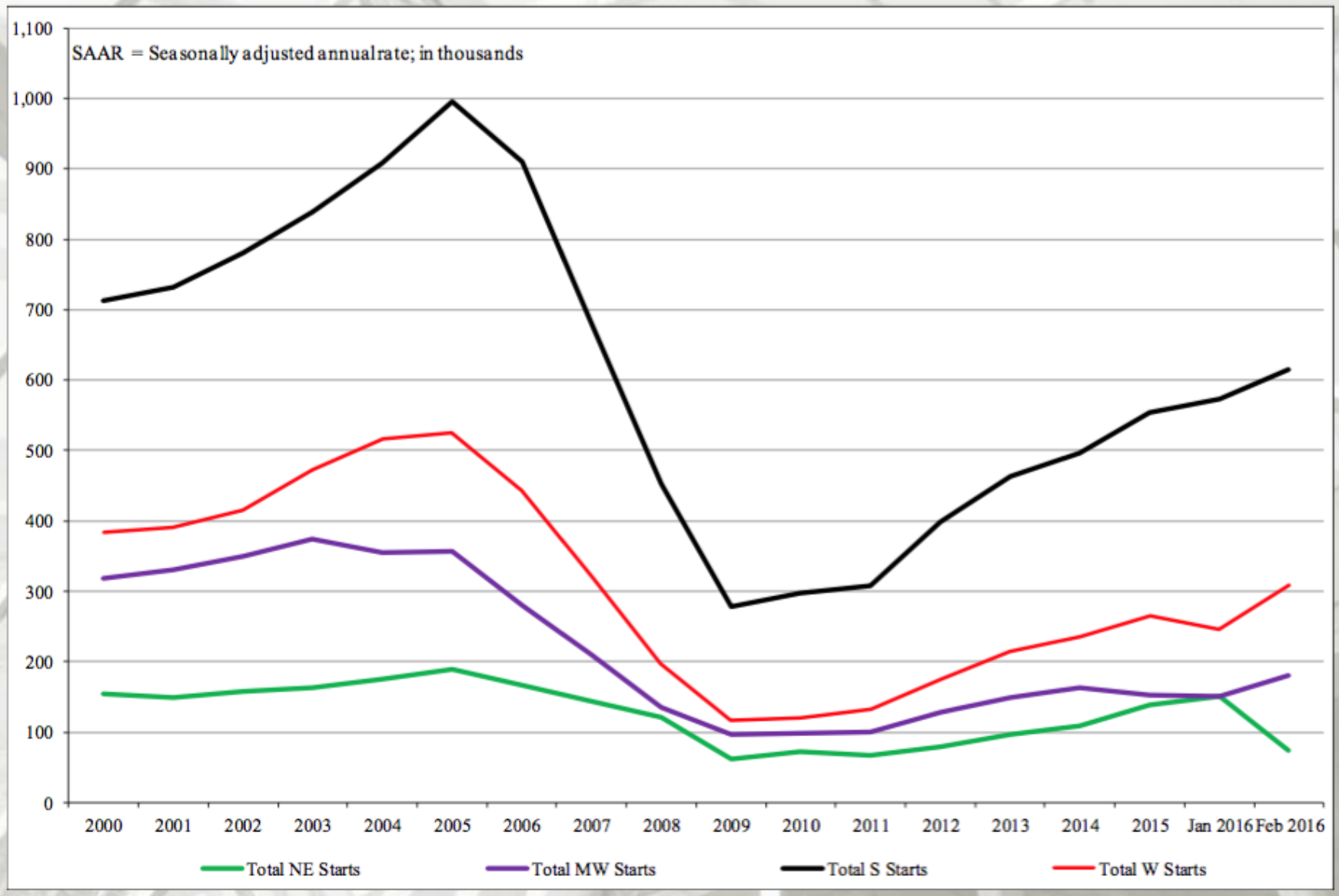
Total Housing Starts



Source: http://www.census.gov/construction/nrc/pdf/newresconst.pdf; 3/16/16

Return TOC

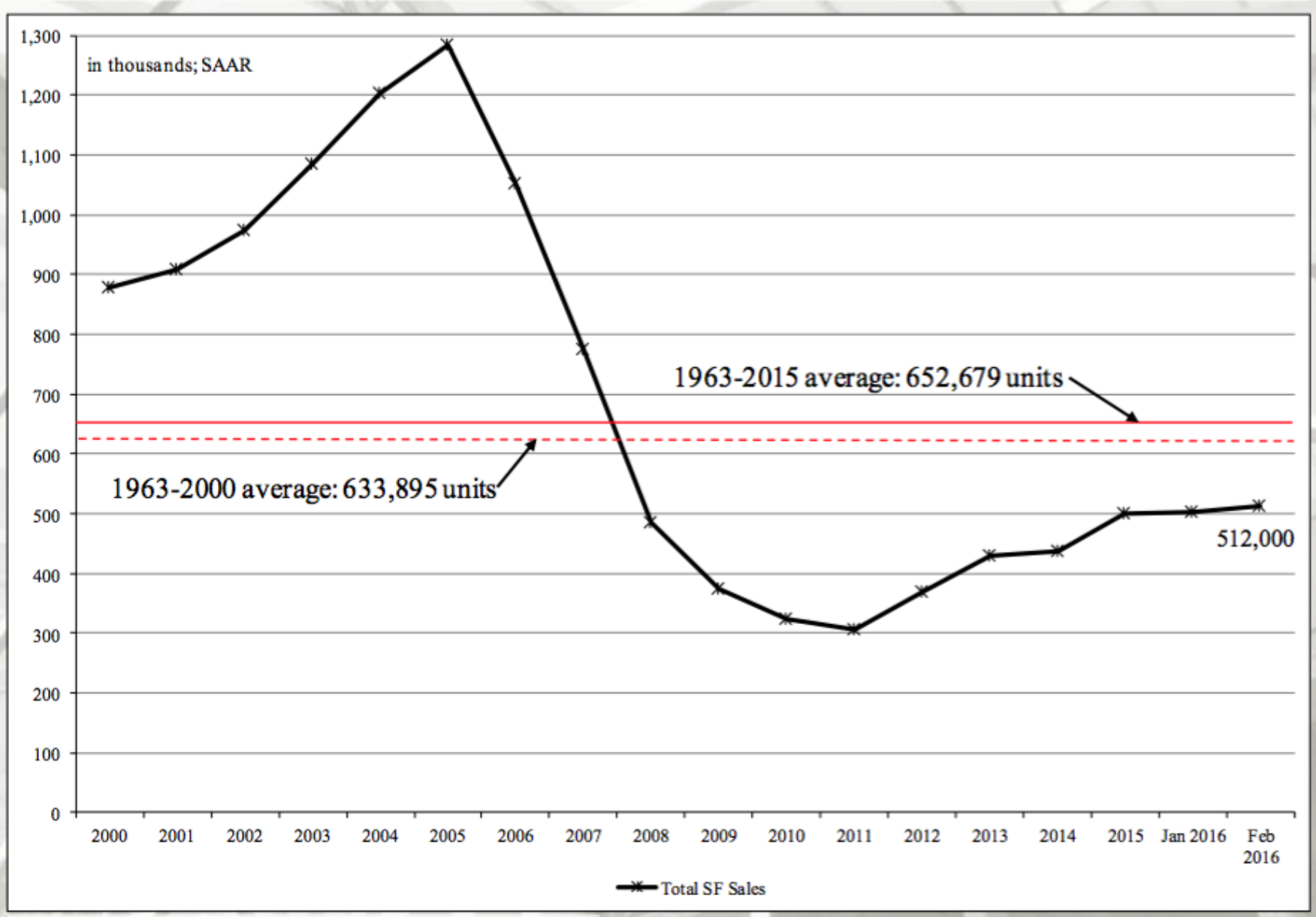
Total Housing Starts by Region



Source: http://www.census.gov/construction/nrc/pdf/newresconst.pdf; 3/16/16

Return TOC

New SF House Sales



Source: http://www.census.gov/construction/nrs/xls/newressales.xls; 3/23/16

Return TOC

Extraordinary Development and Compliance Costs Stifle New Home Construction

"New regulations to protect the environment and to shore up local city finances have made it extremely difficult for home builders to build affordable homes. Now, more than ever, the demand for affordable entry-level housing will need to be met by the resale market, since new homes have become permanently more expensive to build.

After hearing many horror stories of cost increases that were far more than just materials and labor, we formally surveyed more than 100 home building executives across the country for specific examples of new home construction costs that did not exist 10 years ago. We were overwhelmed by the reply as well as the builders' level of frustration. Many of our private equity clients who work with builders all over the country tell us that every project has experienced cost overruns!

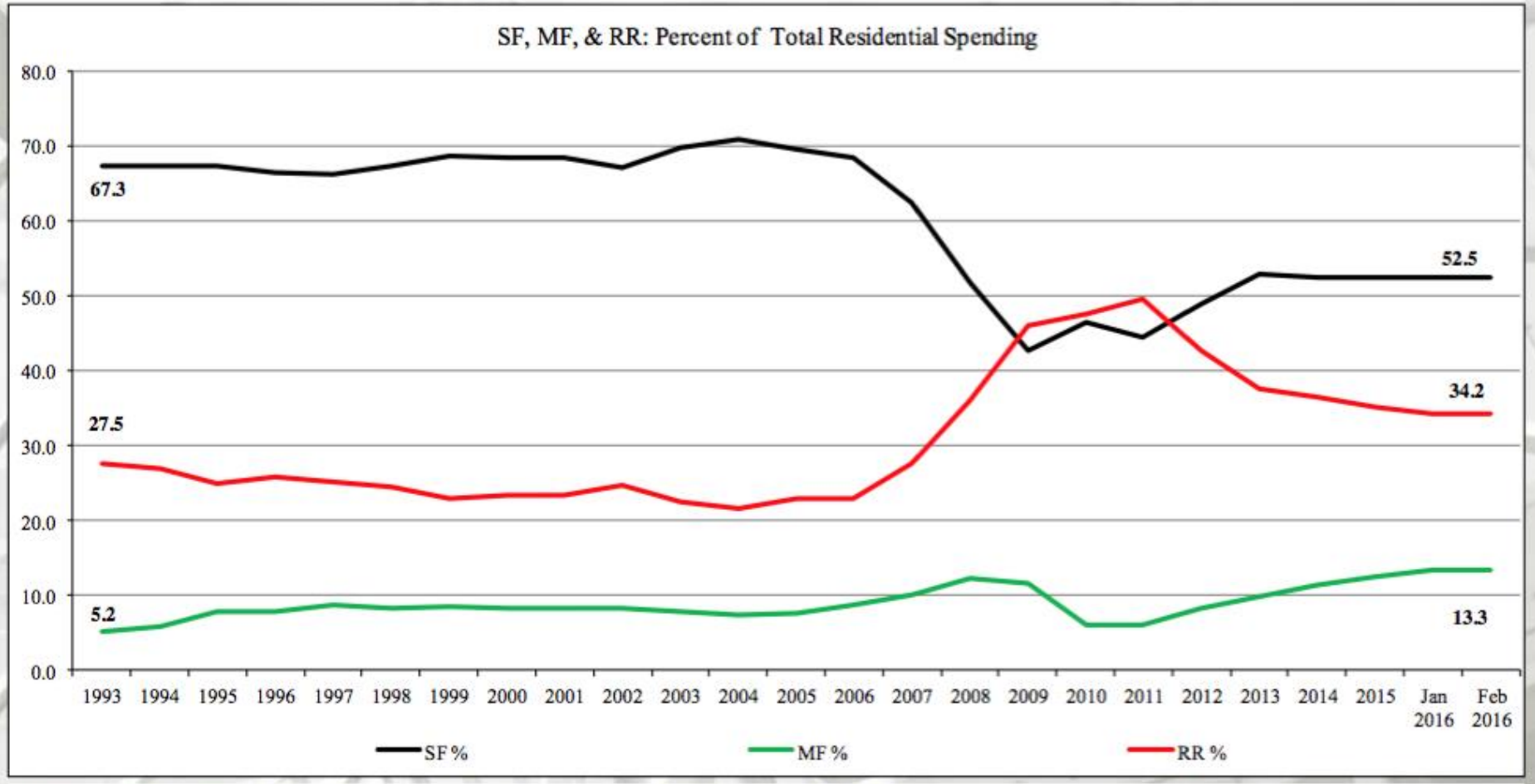
National Issues (mentioned over and over)

- **$5,000+ per house erosion control costs**. Stormwater Pollution Prevention Plan (SWPPP) compliance costs, even in areas that rarely get rain, can now total $5,000+ per home plus fines for noncompliance. Many builders hire newly formed companies to plan, sandbag, sweep, monitor, photograph, and clean up the entire development every day, regardless of the weather forecast.
- **$2,500+ energy code costs**. Several builders in Florida, Illinois, Minnesota, Pennsylvania, and California cited $8,000 or more per house in new energy code costs.
- **$750+ mortgage documentation and closing costs**. While we expect the cost to comply with new mortgage documentation requirements to exceed $750 per home, one builder noted that the new TRID mortgage compliance rules alone have added at least that much.
- **$5,000+ fire sprinkler costs**. In at least 7 markets that we could identify, builders mentioned new requirements to install sprinklers in townhomes, as well as in single-family homes, at a cost of $5,000–$10,000 per home.
- **Understaffed jurisdiction offices**. Many planning and permit offices continue to operate with reduced staffing from the bottom of the housing correction, causing costly delays in plan approvals, building permits, and inspections.
- **Utility company delays**. Builders across the country complain of much longer than usual delays and rising costs associated with connecting electric, gas, phone, and cable services to new communities." – Jody Kahn, Senior Vice President, Research, John Burns Real Estate Consulting LLC

Source: http://realestateconsulting.com/extraordinary-development-and-compliance-costs-stifle-new-home-construction/; 4/5/16

Return to TOC

Construction Spending Shares: 1993 to February 2016



SF spending: 69.2 % of total residential spending: 1993 through 2006;
MF spending: 7.5 %;
RR spending: 23.3 % (all weighted averages; SAAR).

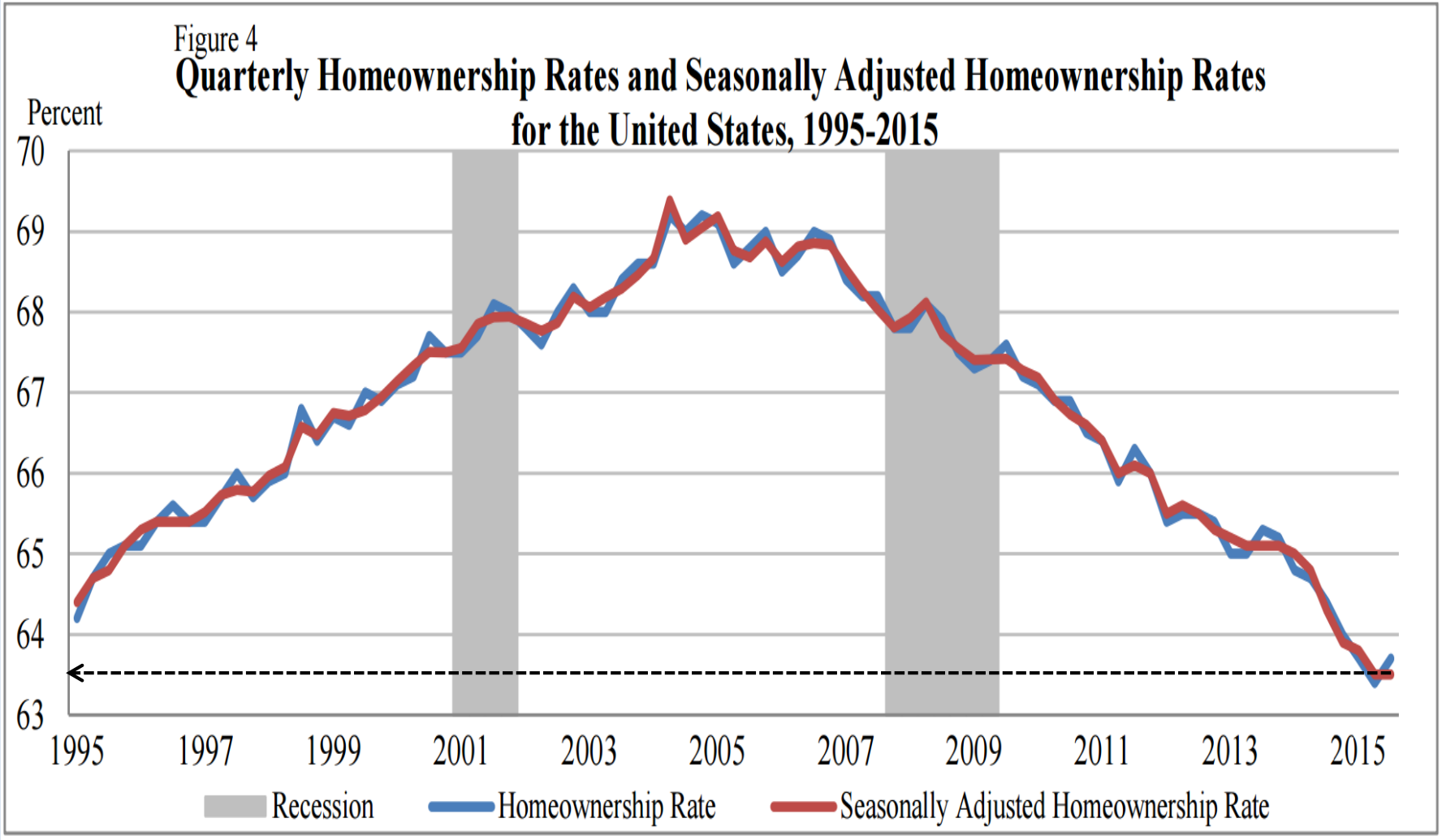
Note: 1993 to 2015 (adjusted for inflation, BEA Table 1.1.9); January-February 2016 reported in nominal US$.

Source: http://www.census.gov/construction/c30/pdf/privsa.pdf and http://www.bea.gov/iTable/iTable.cfm; 4/1/16

Return TOC

United States Housing

Home ownership rate: 63.7%

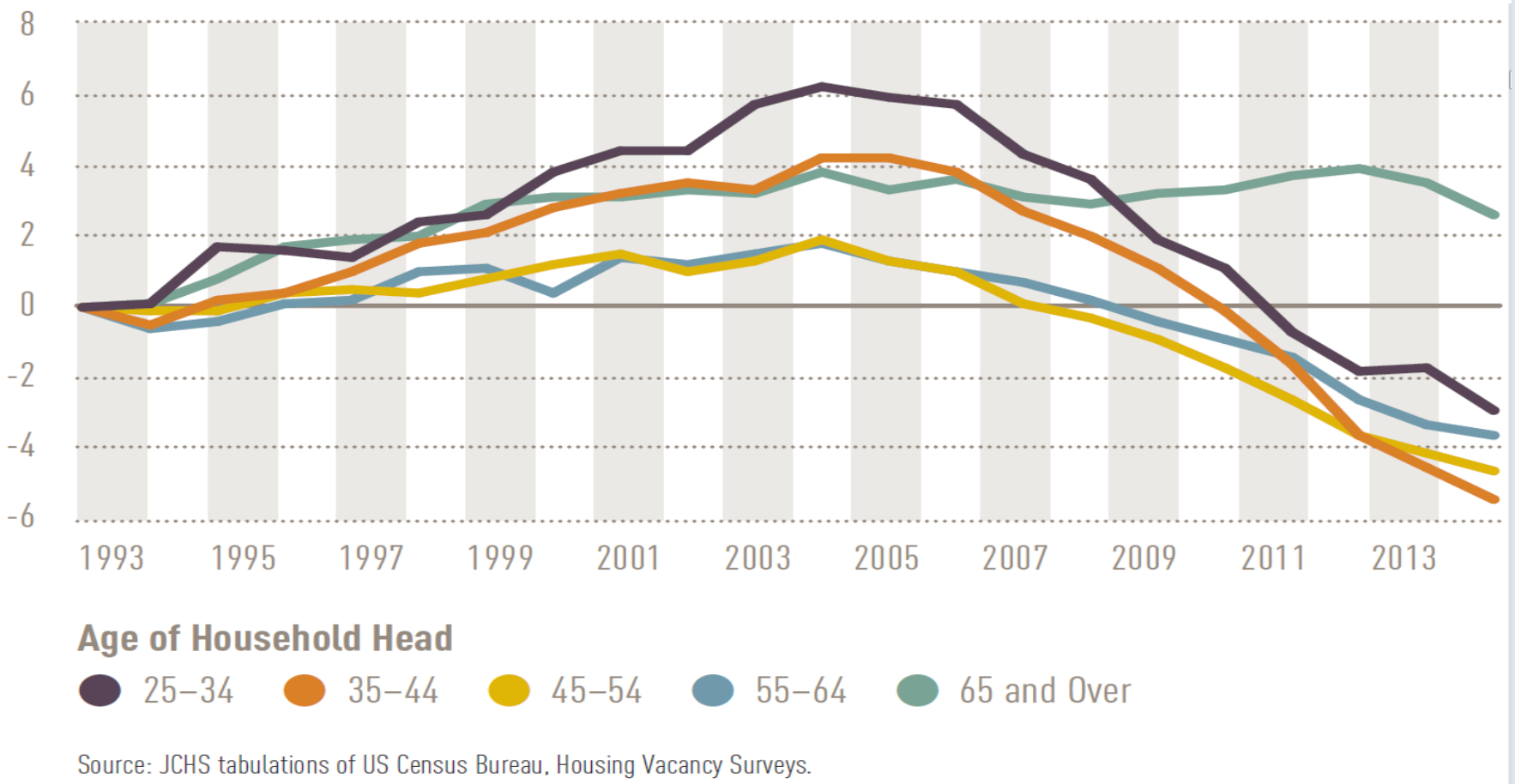


Source: https://www.census.gov/housing/hvs/files/currenthvspress.pdf

United States Housing

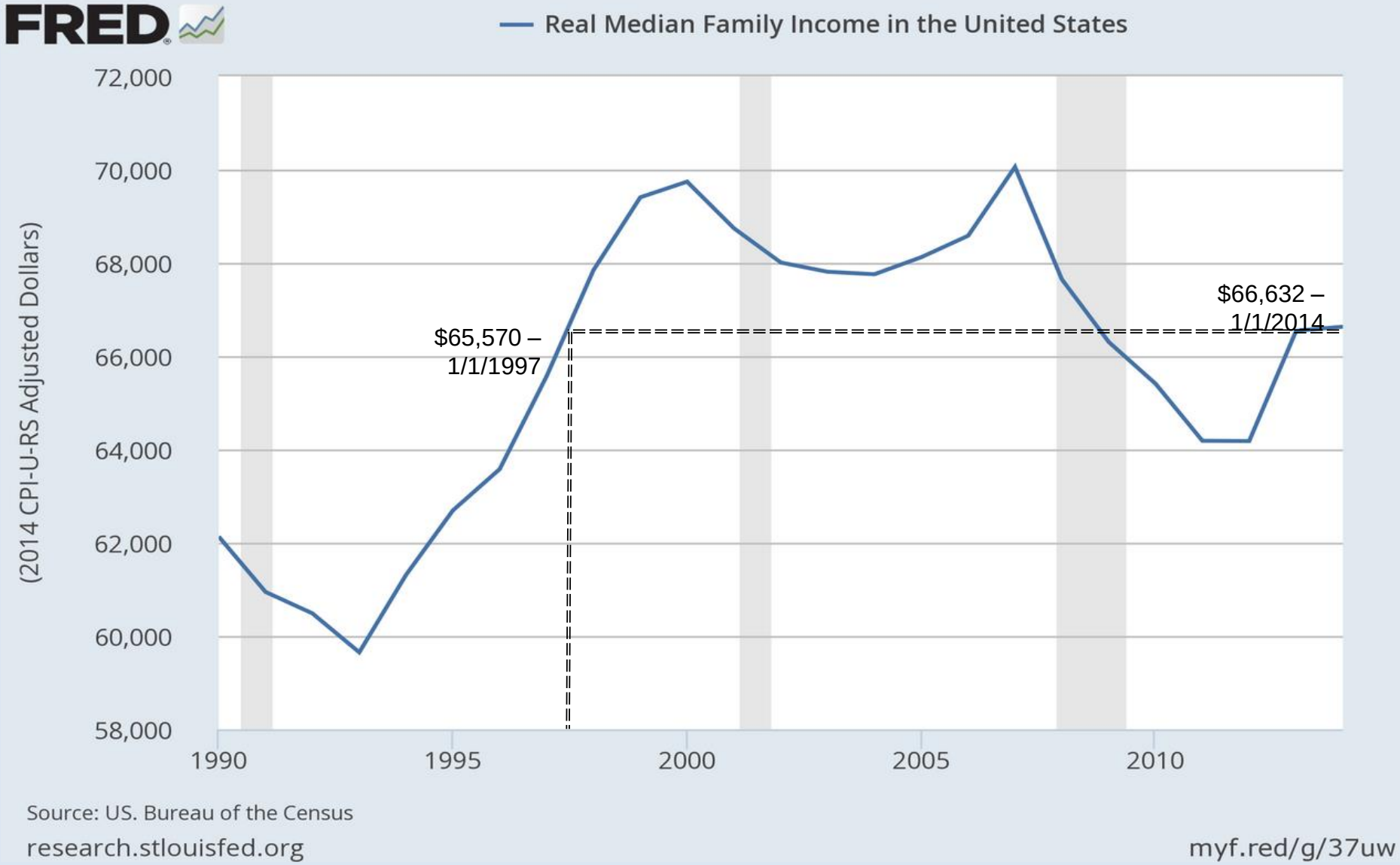
"… BUT Rates for Most Age Groups Are Well Below That Point.

Change in Homeownership Rate (percentage points)"



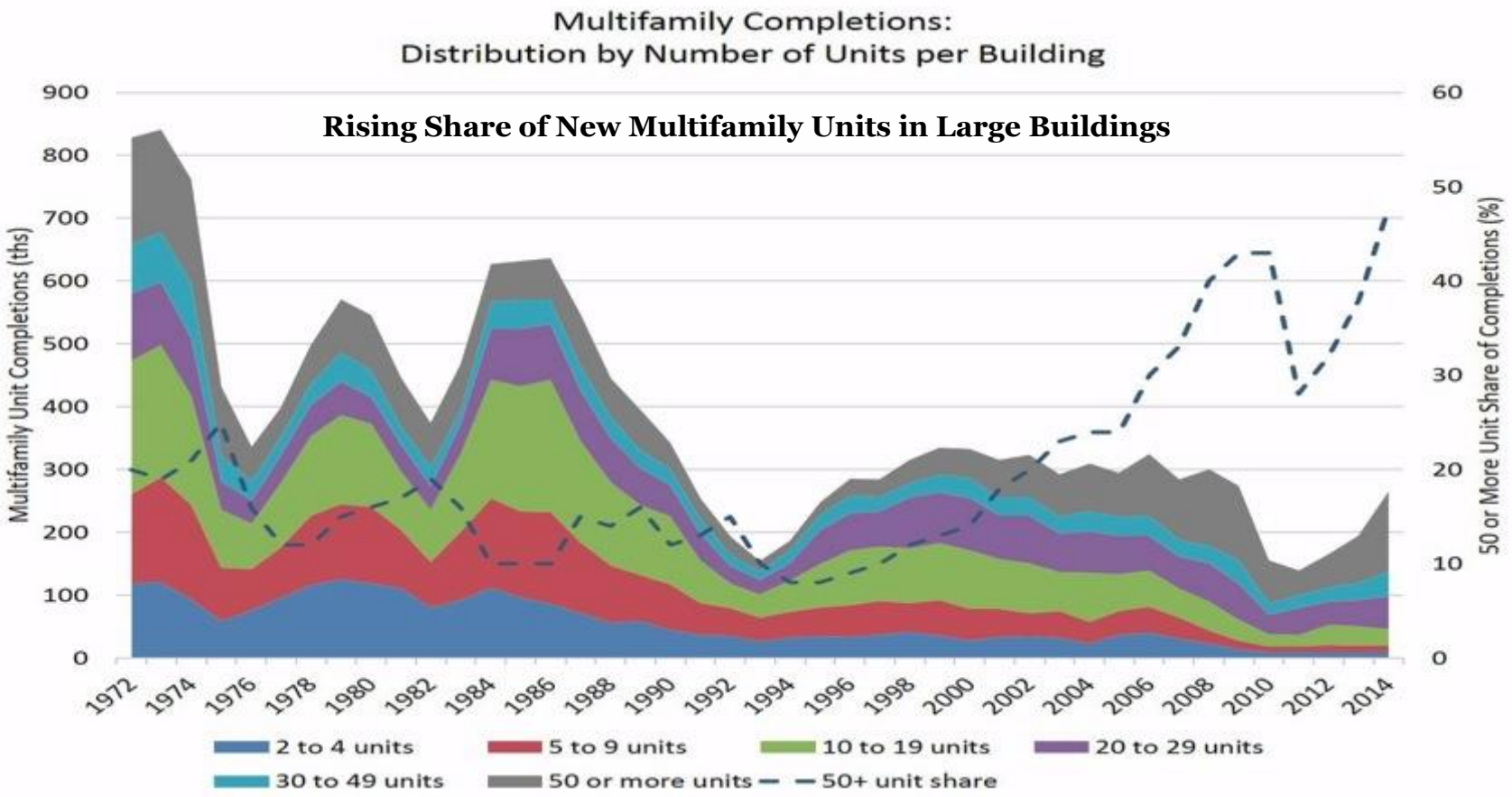
Source: http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/jchs-sonhr-2015-full.pdf; 6/29/15

United States Housing



Source: http://research.stlouisfed.org/fred2/series/MEHOINUSA672N

Multifamily



"An increasing number of newly-built multifamily units are found in larger buildings, as measured by the number of apartments per building. According to Census Bureau data of multifamily completions, the share of new multifamily units in buildings with 50 or more units reached a data series high of 48% during 2014.

The share of new units in large buildings (50+ units or more) has been rising steadily since 1996, after reaching a data series low of 8% during 1994 and 1995, albeit with one exception. The share declined to 28% in 2011 after recording a 43% mark for 2010." -- Robert Dietz, Ph.D., Vice-President, Tax and Market Analysis, NAHB

Source: http://eyeonhousing.org/wp-content/uploads/2015/10/MF-unit-distributions.jpg; 10/5/15

Summary

In summary:

Aggregate housing data were typical for this time period. Multifamily construction spending is at the greatest level reported since construction spending has been reported. New sales are steady, though they remain well below the historical average. Existing house sales were disconcerting for the first quarter; construction and sales of new single-family houses in the upper price echelons are solid; and improvement or remodeling expenditures remain positive on a nominal basis.

Housing in the majority of categories continue to be less than their historical averages. The new housing sector is where the majority of forest products are used and this housing sector has room for improvement.

Pros:

1) Historically low interest rates are still in effect;
2) As a result, housing affordability is good for most of – but not all of the U.S.;
3) Household formations increased in Q1 and 2 2015, but decreased sharply in Q3 and Q4 (occupied housing data from the Current Population/Housing Vacancy surveys);
4) Some builders are beginning to focus on entry-level houses; and
5) Consumer attitudes towards housing are improving.

Cons:

1) Lot availability and building regulations;
2) Changing attitudes towards SF ownership and "gentrification";
3) Job creation is consistent but some economists question the quantity and types of jobs being created;
4) Stagnant real median household incomes;
5) Strict home loan lending standards, including TRID; and
6) Global uncertainty?

Return TOC

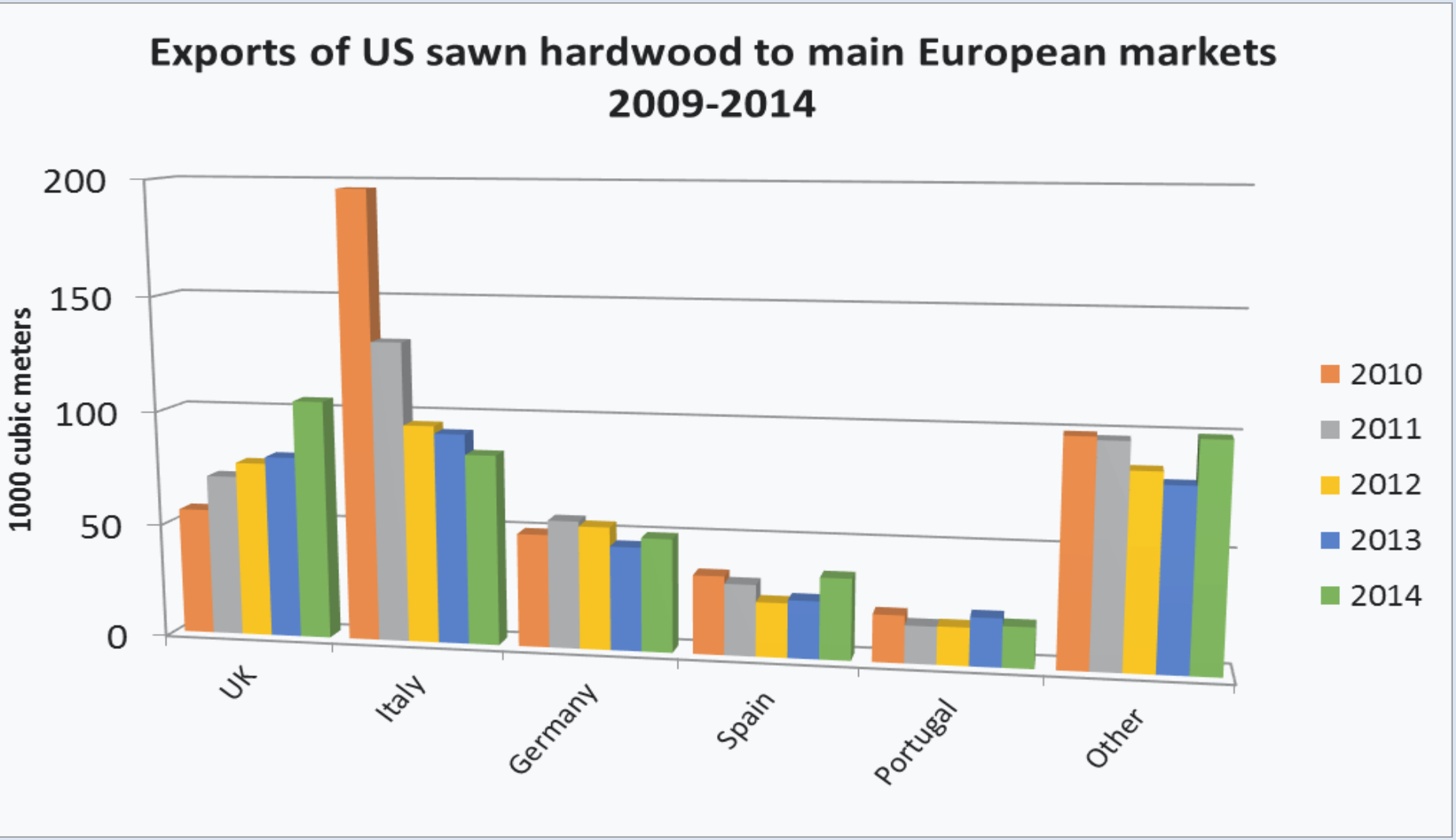
Opportunities

- Forest resource
- Productive workforce
- Specialty paper markets
- Housing improvement

Questions?

Contact Information

Scott Bowe
Director, Kemp Natural Resources Station
Professor and Wood Products Specialist
Department of Forest and Wildlife Ecology
College of Agricultural and Life Sciences
University of Wisconsin-Madison
9161 Kemp Road
Woodruff WI 54568
715-892-0391
sbowe@wisc.edu



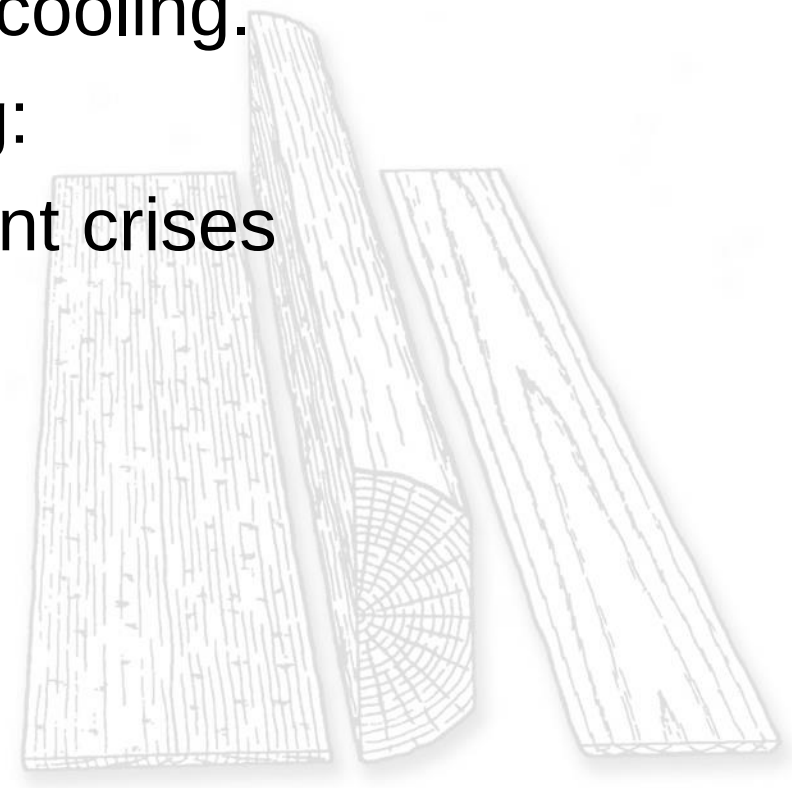
Source: M. Snow, AHEC; USDA GATS

The U.S. Economy

- Strong employment numbers, but lack of high paying jobs with benefits.
- Mostly positive housing numbers, however, at levels far below "normal."
- Not so favorable household income numbers (non-existent wage growth).
- Challenges with our debt (national, student).
- Political gridlock, no common sense present anymore.
- What will the rising Dollar exchange rate do to our exports?

The World Economy

- China's potential fiber supply gap (difference between demand and domestic supply) is estimated to be $150x10^6$ m^3., yet China is slowing and demand is cooling.
- Europe is a "mixed" bag:
- The Euro and the migrant crises



The World Economy

- Scandinavia, Germany, Benelux and France are doing OK
- Spain, Portugal, Greece, and some Eastern European countries are facing challenges
- South America is struggling, Brazil is in a deep recession
- Australia is, due to lackluster commodity markets, facing challenges

Veneer Logs

- Veneer Logs
  - Veneer mills, rotary and sliced
  - Export markets


Power Tape
KOMELON
25 ft.

Sawlogs

- Sawlogs
  - Sawmills (permanent and portable)
  - Export markets

5013-91

Specialty Logs

- Specialty Logs (normally softwoods)
  - Log Cabin Manufacturers
  - Utility Pole Manufacturers
  - Post Manufacturers

Boltwood

- Boltwood
  - Bolt mills

Pulpwood

- Pulpwood
  - Pulpmills
  - EWP mills, eg. OSB
  - Pellet mills
  - Excelsior mills

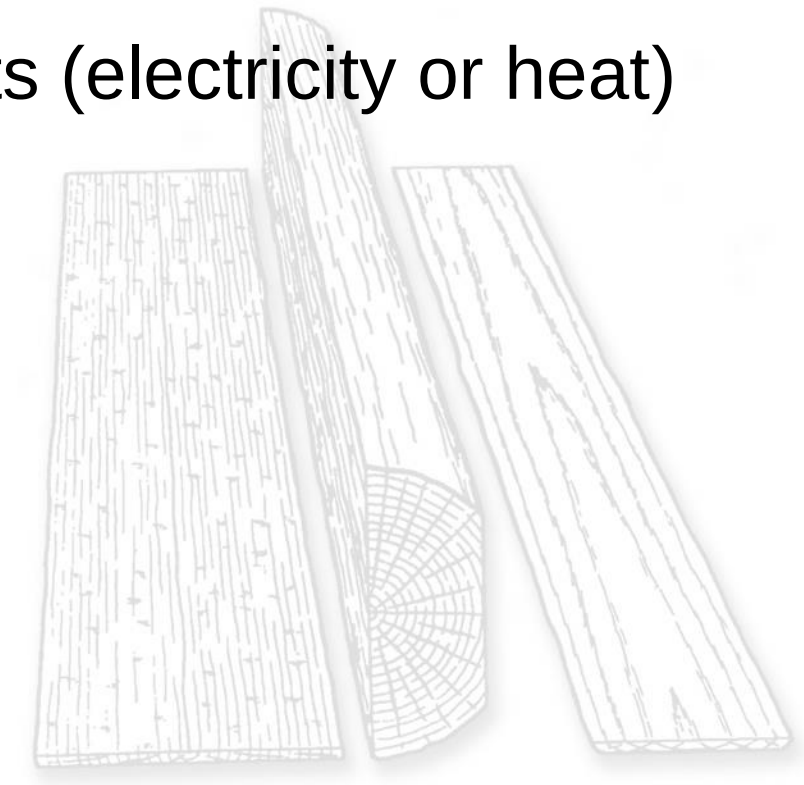
(Image Source: https://www.texashomeexteriors.com/wp-content/uploads/2014/11/LpLapSiding.png and http://ihcsiding.com/wp-content/uploads/2014/05/Louisana_Pacific_Smart_Siding.png

Fuel Rods

- Fuel Rods
  - Biomass power plants (electricity or heat)

Chips

- Chips (whole tree or debarked chips)
  - Pulpmills
  - Pellet Mills
  - Biomass power plants (electricity or heat)




MORBARK
MORLIFT-500
MORBARK
MORBARK
MORBARK

Biomass

- Biomass (chips or grindings from slash)
  - Biomass power plants (electricity or heat)
  - Pellet plants (potentially for industrial pellets)


PONSSE


ROTOCHOPPER
MC266


MC266


BIOBALER

Name that Product

- Forest Raw Materials
  - Veneer Logs
  - Sawlogs
  - Specialty Logs (normally softwoods)
  - Boltwood
  - Pulpwood
  - Fuel Rods
  - Chips (whole tree or debarked chips)
  - Biomass (chips or grindings from slash)