

Paper & pulp markets & forecasts

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**Joint UNECE Timber Committee and
FAO European Forestry Commission
Market Discussions, 21-22 October 2008**



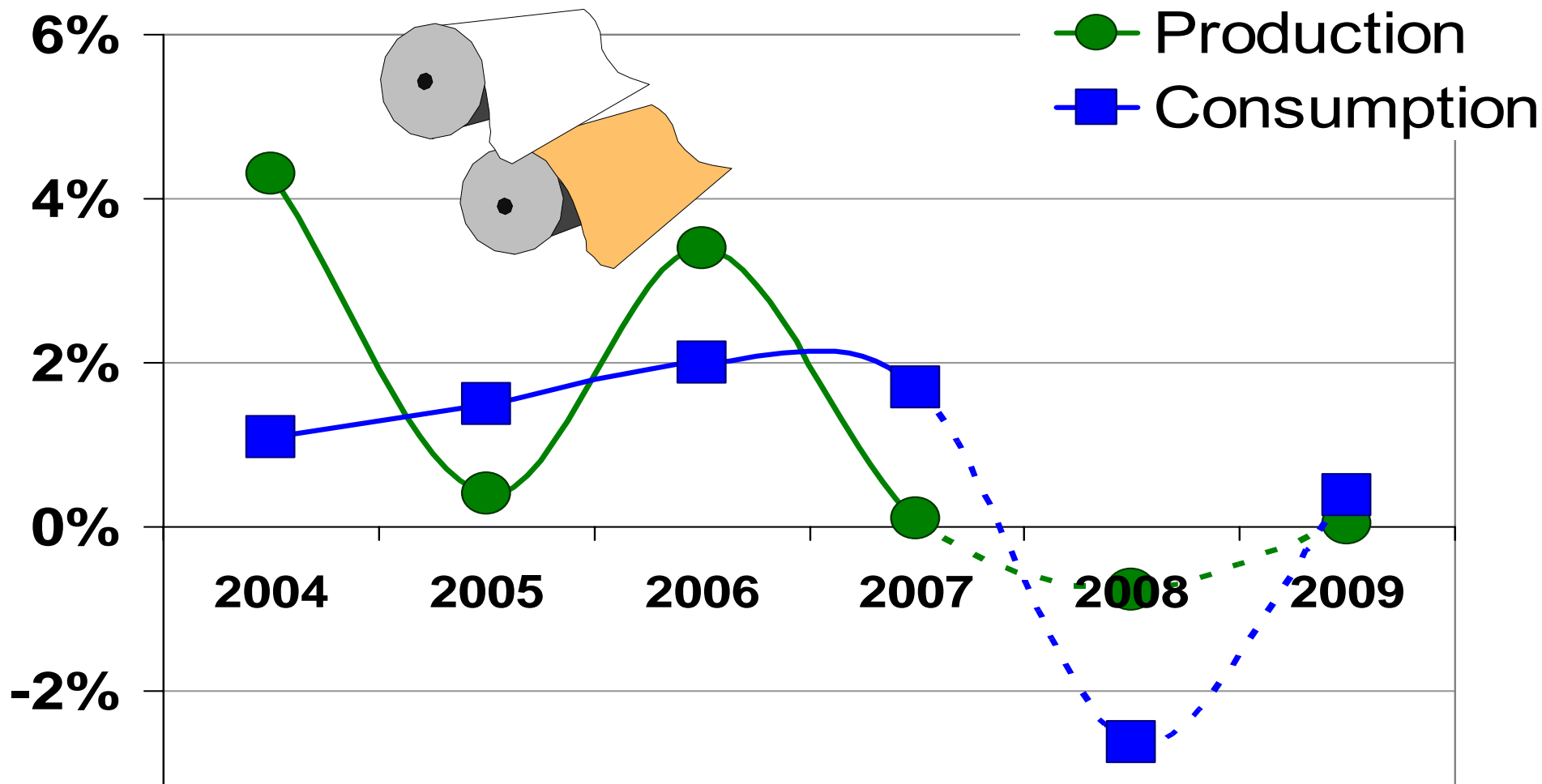
Highlights – paper, paperboard & wood pulp

- Markets peaking in 2008 as demand weakens
- Demand increased in Europe but production leveled out as imports increased
- U.S. net exports surged but Canada declined due to relative dollar exchange values
- Profits were eroded by sharply higher costs for energy, fibre, chemicals & transport
- China's expansion had big impact on markets but sustained growth seems questionable
- Bio-energy and biorefining = fibre competition but also growth opportunity for pulp mills



EU – Paper & paperboard trends

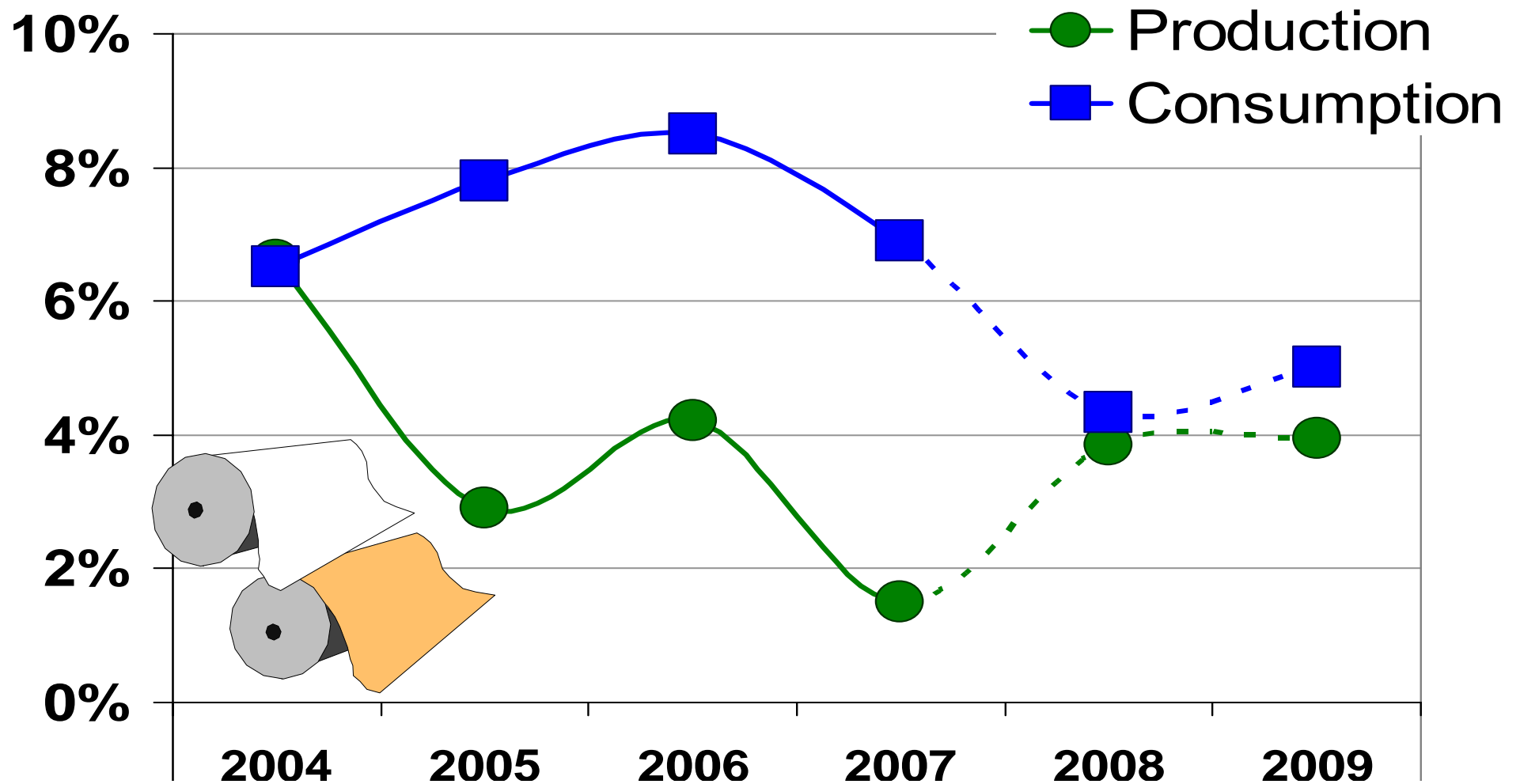
Change from one year earlier



Production leveled out as imports increased



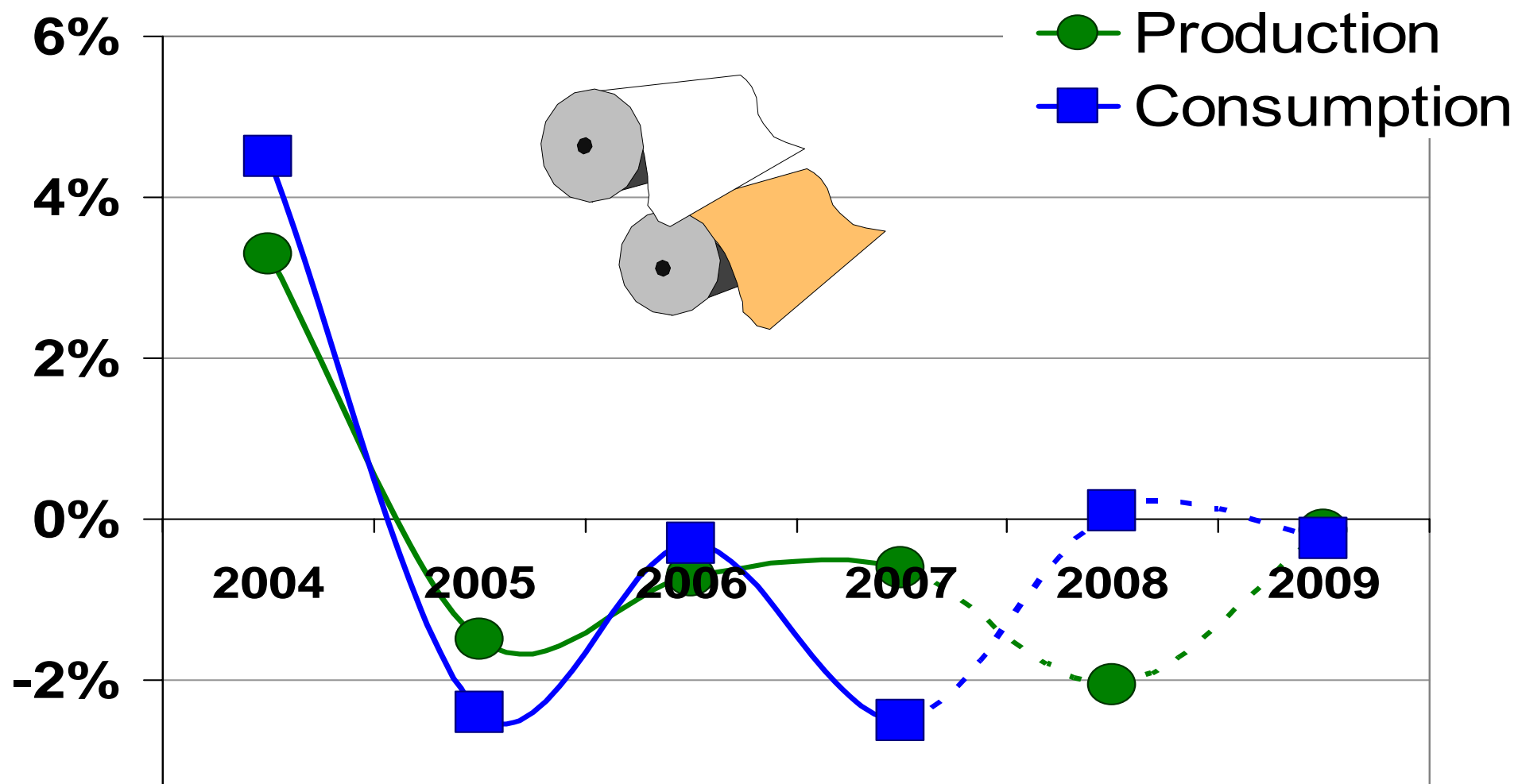
CIS – Paper & paperboard Change from one year earlier



Growth slowed in production & consumption



North America – Paper & paperboard Change from one year earlier



Decline continued, but U.S. exports increased

Growth Trends . . .

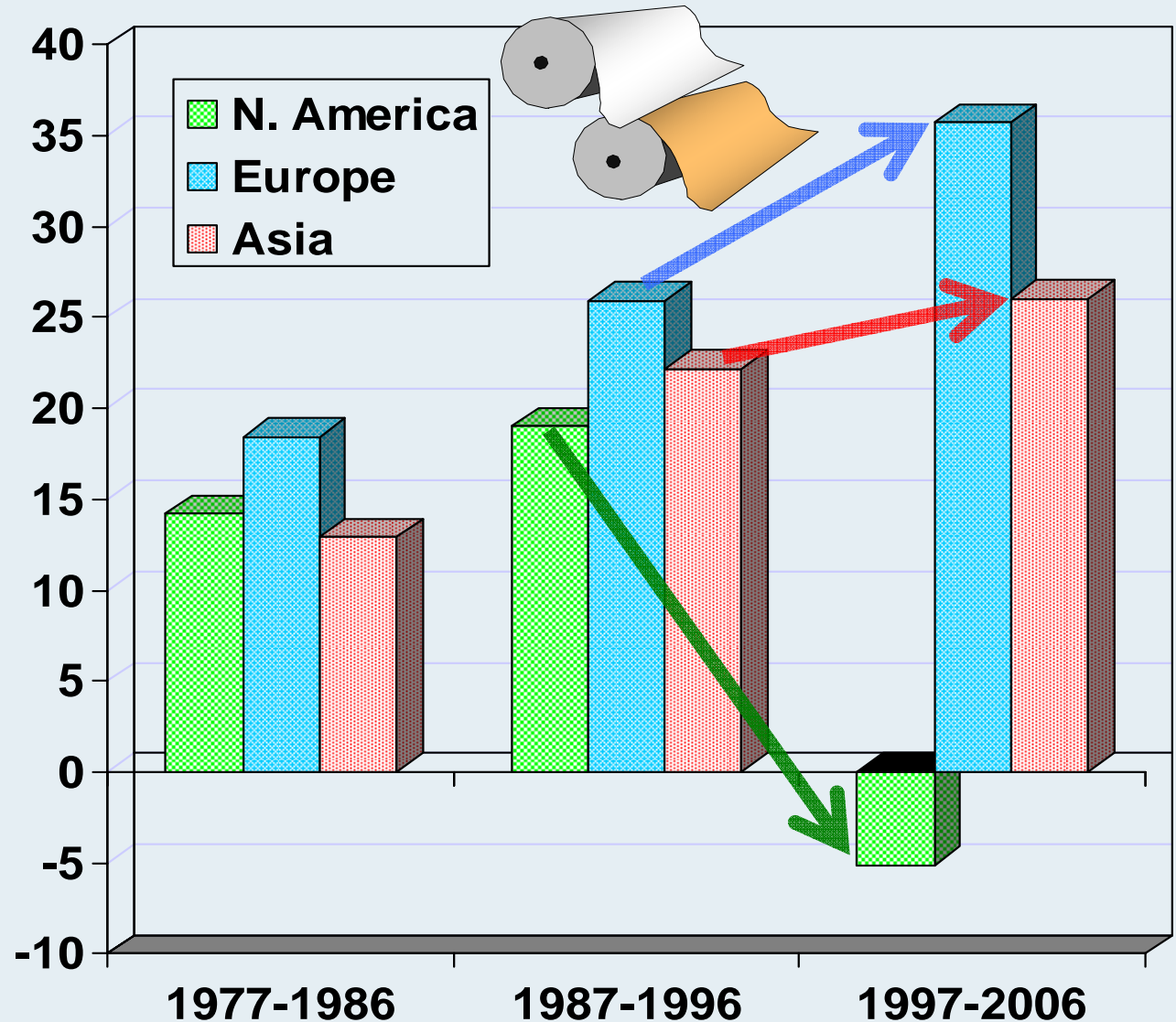
Asia, Europe, and North America account for 92% of worldwide paper & paperboard output.

Over the past decade growth expanded in Europe and Asia, but production declined in North America.

China became the world's most rapidly expanding producer and consumer of paper and paperboard.

What happened in North America, and can growth in Europe and Asia be sustained?

Change in Paper & Board Production (million metric tons per decade)



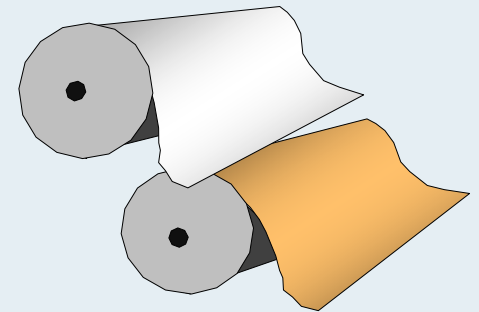
Source: FAOSTAT

North America's decline in the past decade resulted from economic globalization and shifts in industrial production . . .

***Global
Change***

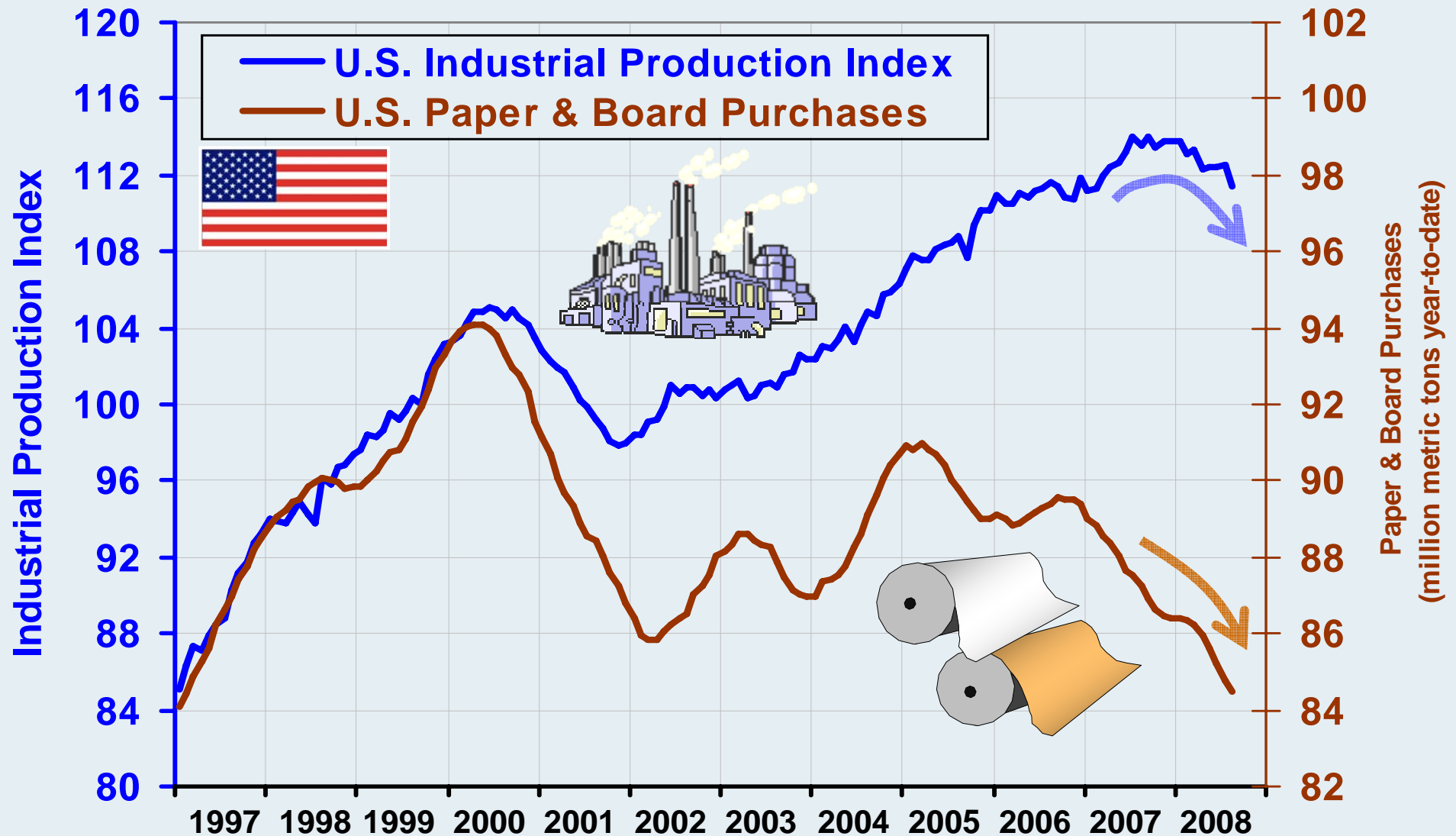


***Change
in Growth***



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

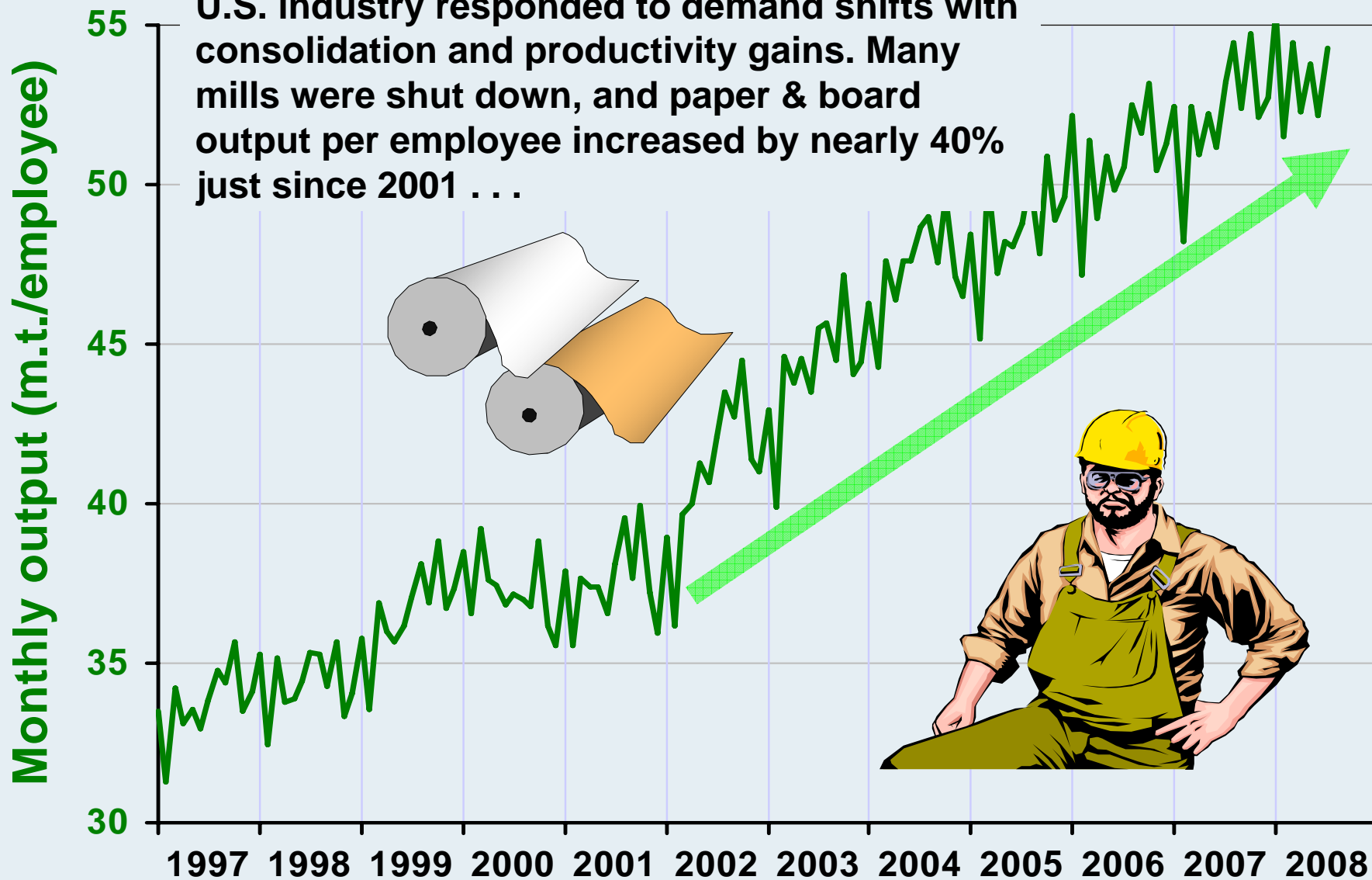
U.S. paper and board demands never fully recovered after the 2001 recession, and are receding again in 2007-2008 along with another downturn in U.S. industrial production:



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

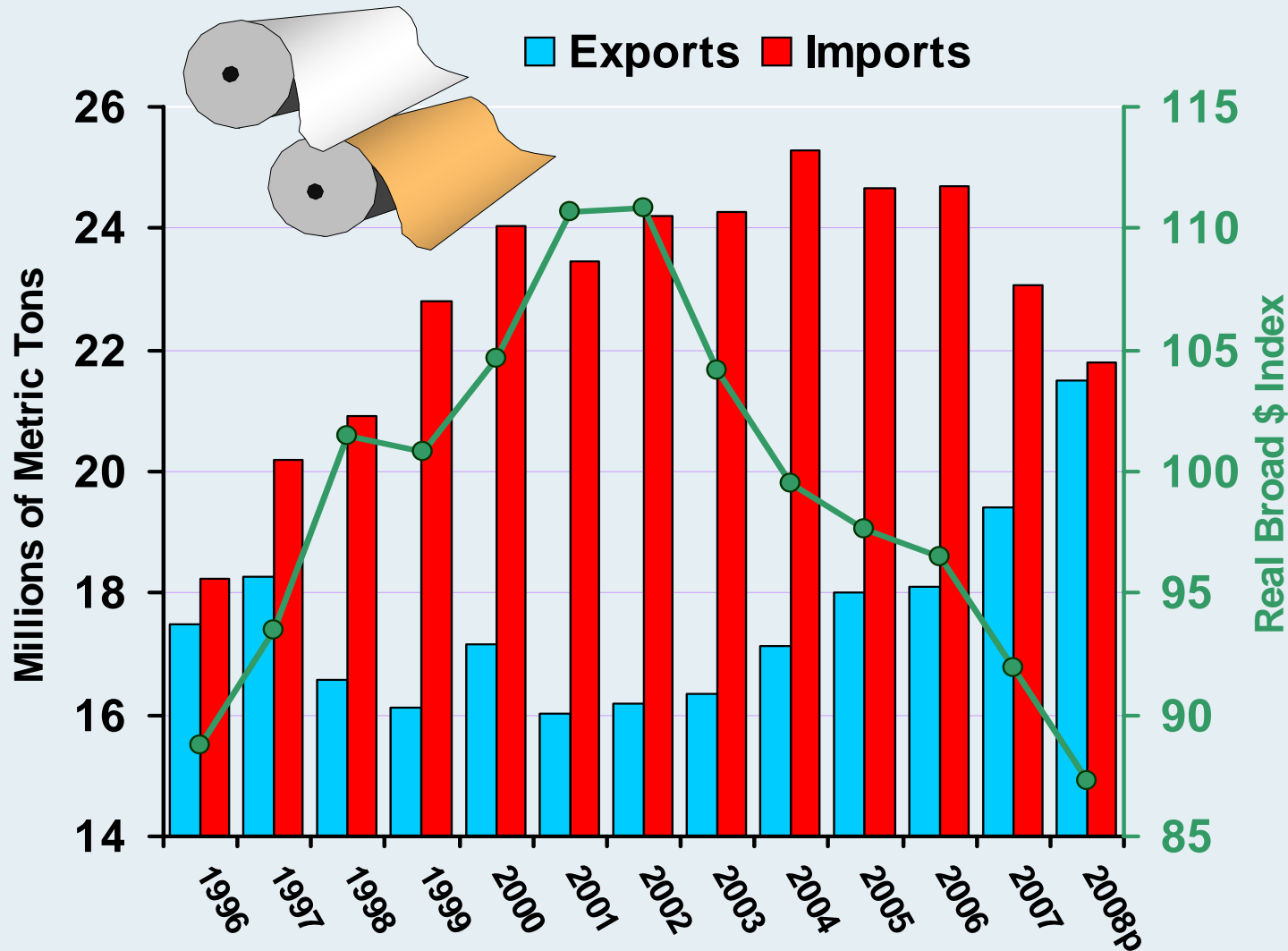
U.S. Paper & Board Output per Mill Employee

U.S. industry responded to demand shifts with consolidation and productivity gains. Many mills were shut down, and paper & board output per employee increased by nearly 40% just since 2001 . . .



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

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



The U.S. trade gap in pulp, paper & board peaked at around 8 million tons per year in 2002-2004.

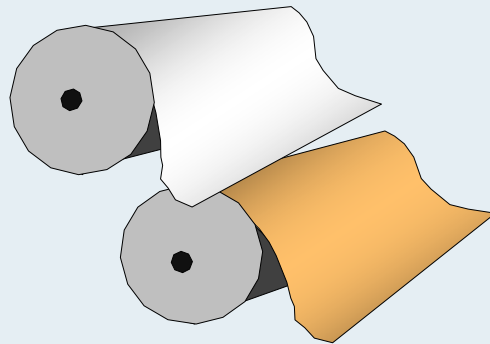
But productivity gains and a weak dollar helped cut the trade gap in half by 2007, and the gap is nearly closing in 2008.

U.S. exports are increasing and imports declining.

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]

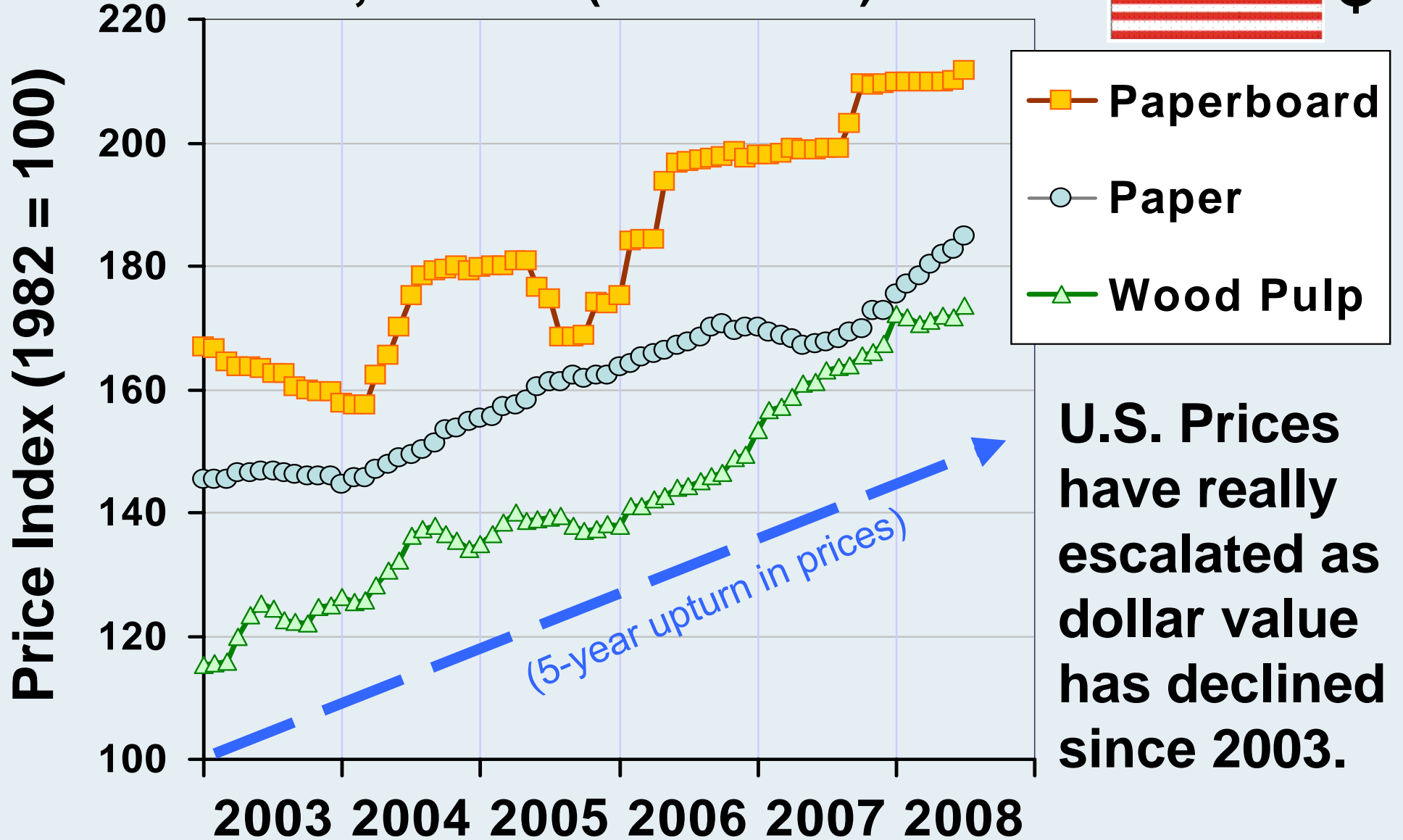
Pulp, paper & paperboard prices reach high levels in 2007-2008:

Since the 2001-2002 economic downturn, prices for pulp, paper and paperboard have climbed to the highest levels seen since the mid-1990s.



Global demand increased (mainly in Asia and Europe) while supply growth was limited by consolidation (mainly in North America). Higher input costs also pushed prices higher.

Price Trends, USA – (2003 – 2008)

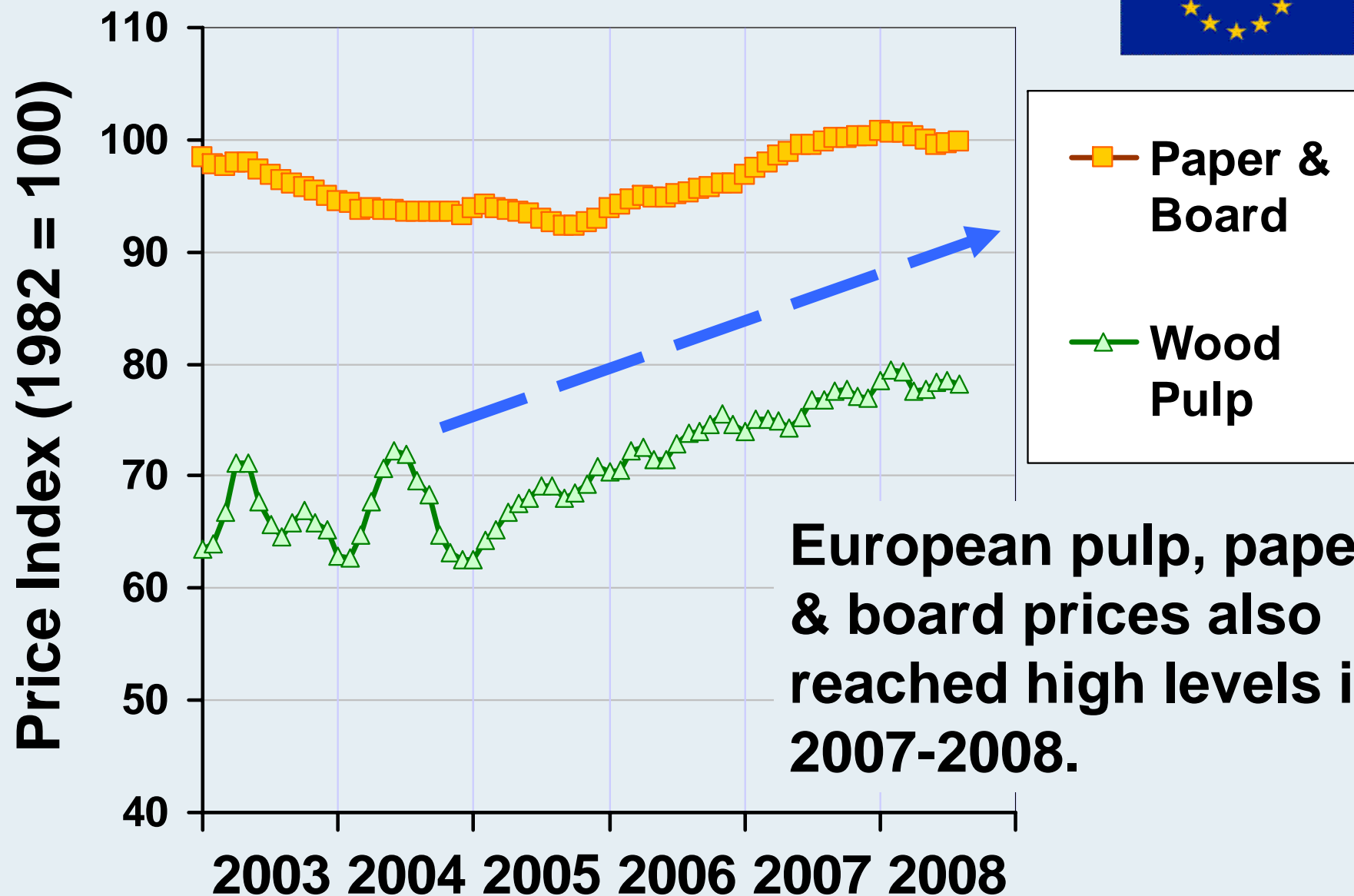


Source: U.S. Bureau of Labor Statistics, Producer Price Indexes; Data through July 2008

Price Trends, Europe – (2003 – 2008)



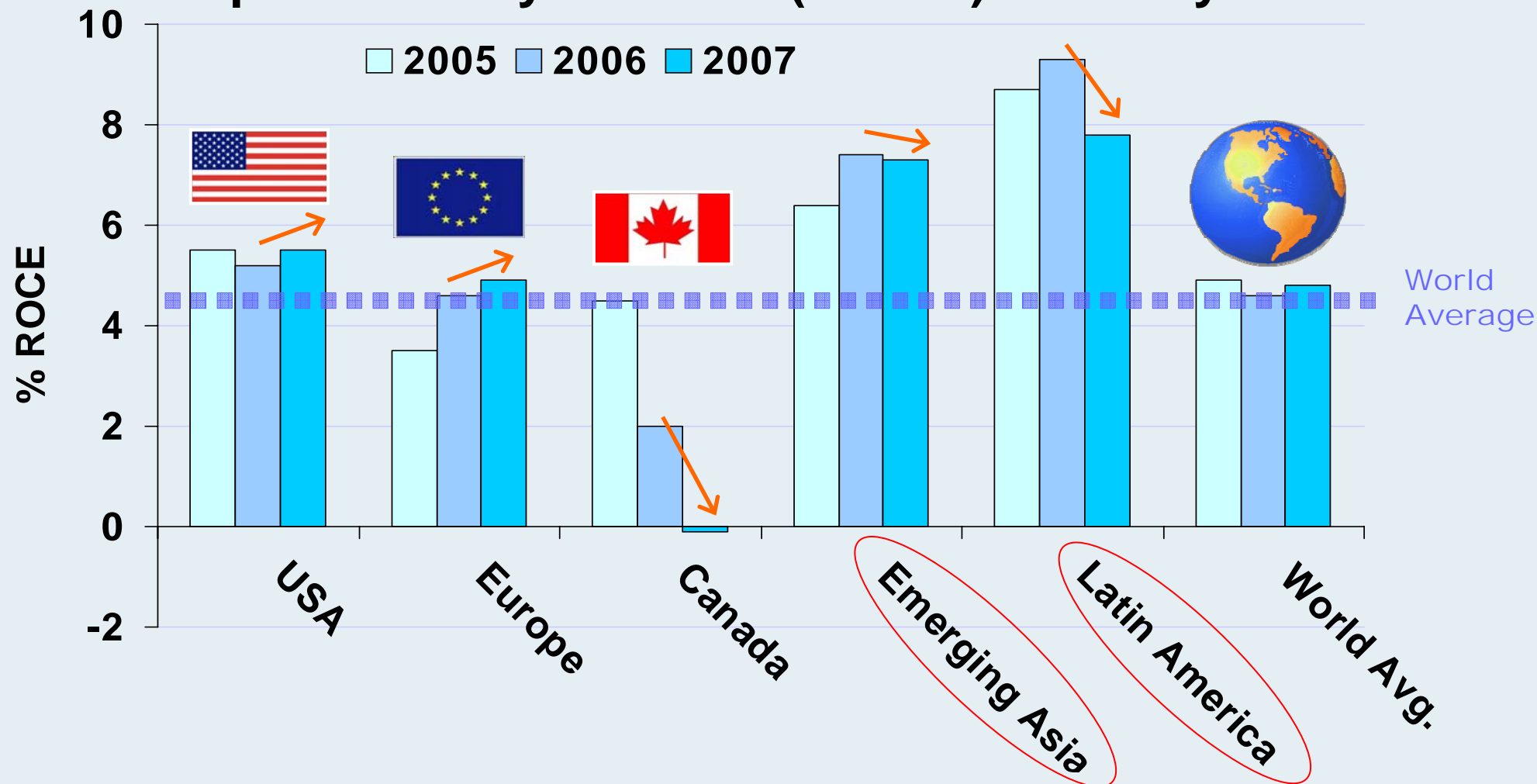
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Source: EUROSTAT, Domestic Producer Price Indexes; Data through August 2008

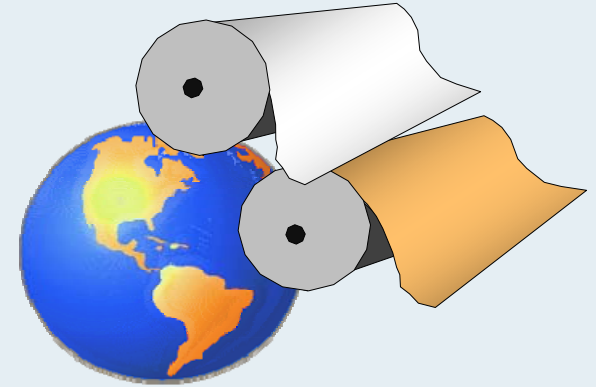
In 2005-2007, U.S. paper industry profits were above the world average. Profits in Europe climbed to just above the world average. Profits in Canada were crushed by a stronger Canadian dollar, while profits in Asia and Latin America declined but remained well above average . . .

Paper Industry Returns (ROCE) Globally . . .



Source: Price Waterhouse Coopers Global Survey – 2007, 2008 Editions (Top 100 firms worldwide)

Can current market conditions be sustained?

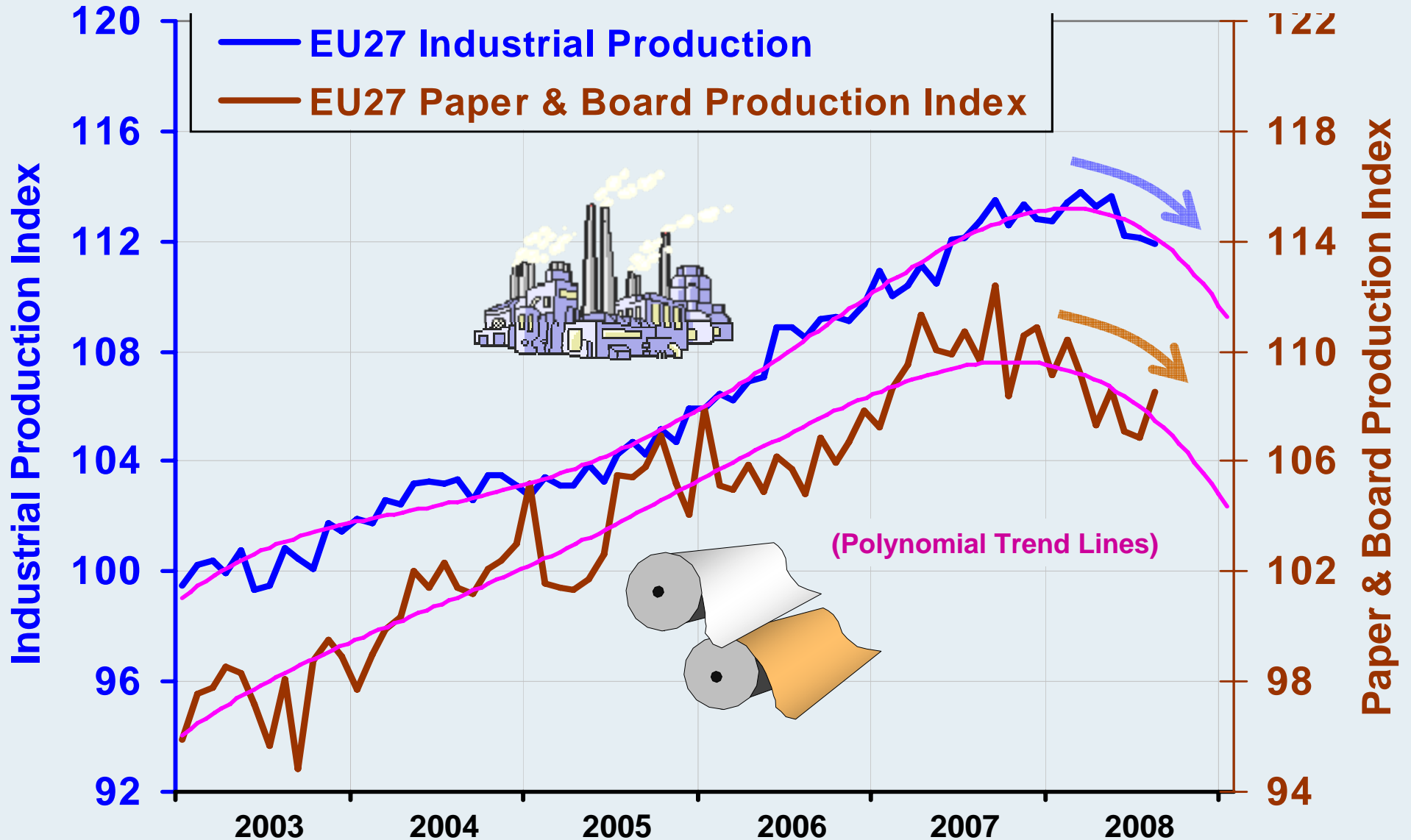


Our answer - Ch. 8, FPAMR (Mid-2008):

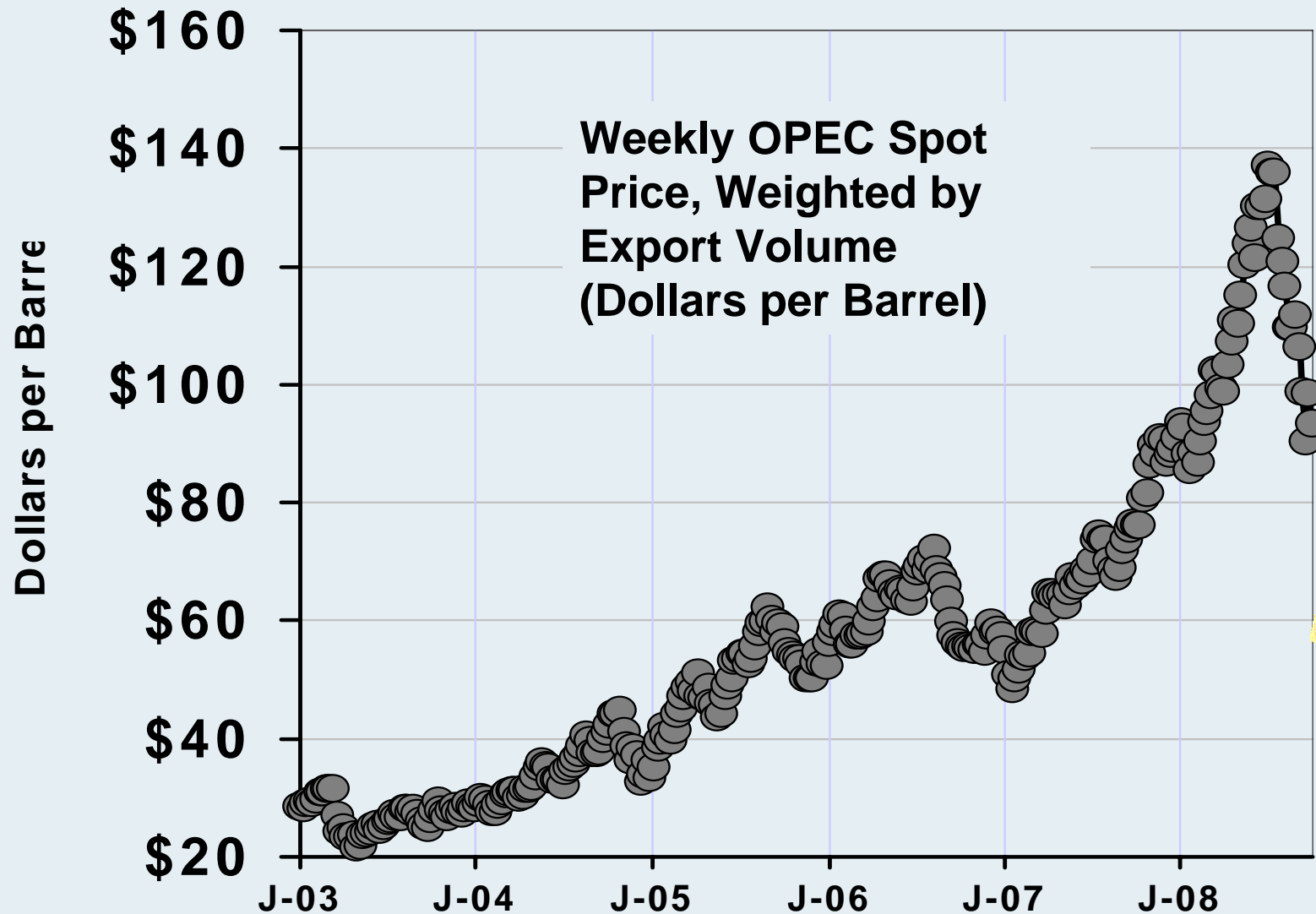
“Pulp and paper markets peaking amid slowing economy, rising input costs, and erosion of profits . . . global demand conditions weakening”



European paper and paperboard output is now also declining along with industrial production:



The 2008 spike in oil prices led to sharply higher costs for fibre, fuels, and chemicals, which caused erosion of profits despite peak product prices . . .



Source: U.S. Energy Information Administration

World market pulp inventory has jumped, another sign of weakening global demand in pulp & paper markets . . .



**World
Producer
Pulp
Inventory**

Source: PPRC



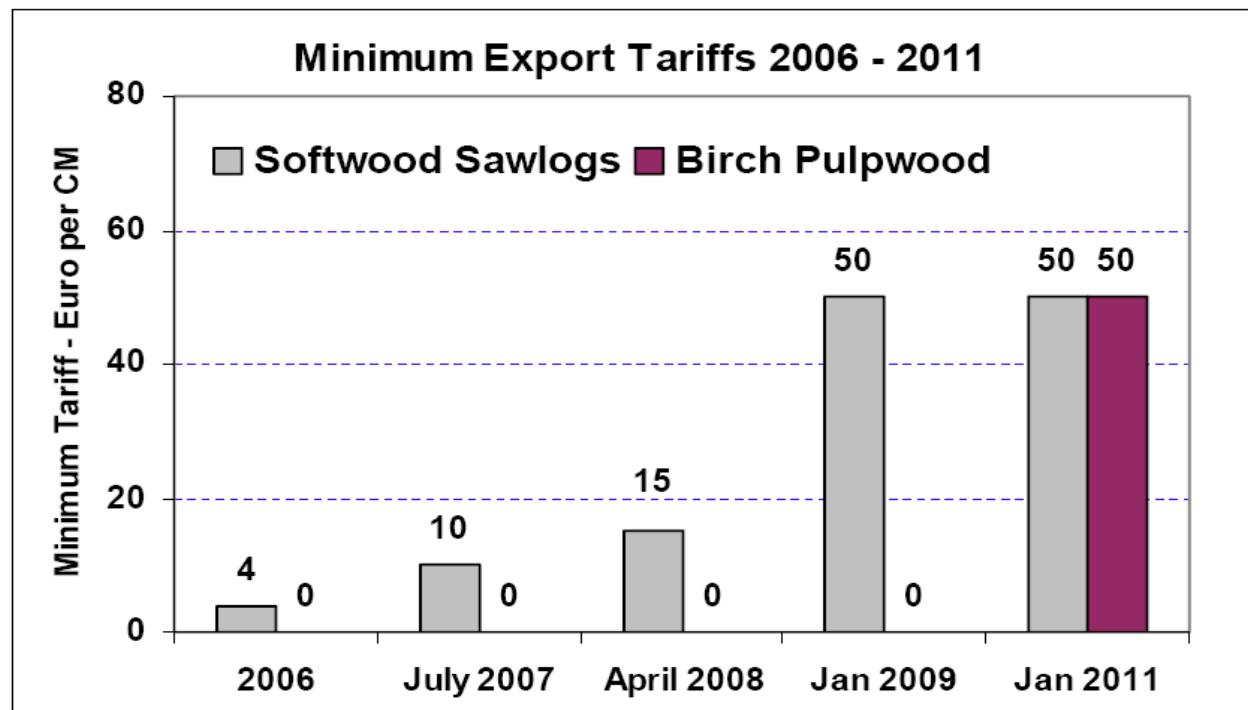
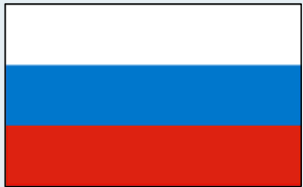
These were the major concerns in 2008* related to global pulp & paper industry profitability:

- **Energy Costs**
- **Currency Exchange Rates**
- **Fibre Supply**
- **Transportation Costs**

Also, majority opinion was that “major consolidation” of Western European paper industry is likely within the next five years

***Results of 2008 online industry executives poll by PricewaterhouseCoopers**

Another cause for concern . . . pulp producers in Europe and Asia that rely on wood imports from Russia will begin to experience a new squeeze on profits from Russia's wood export tax, with birch pulpwood taking a €50/cu. m. hit in 2011 . . .

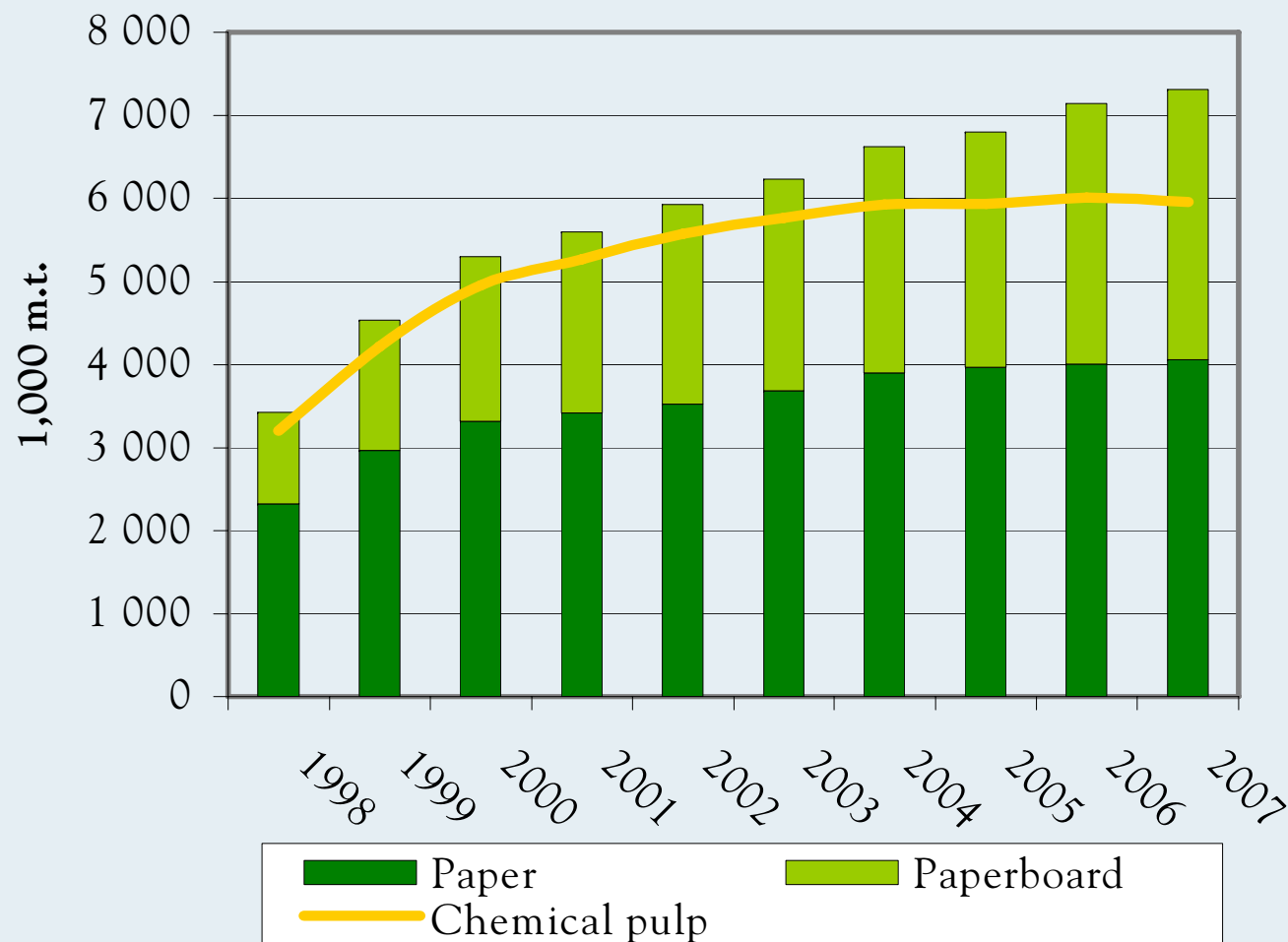


Source: Prof. Eduard L. Akim



Production of pulp, paper and paperboard in the Russian Federation, 1998-2007

The wood export tax aims to keep production capacity in Russia, where growth in pulp, paper and board output are leveling out . . .



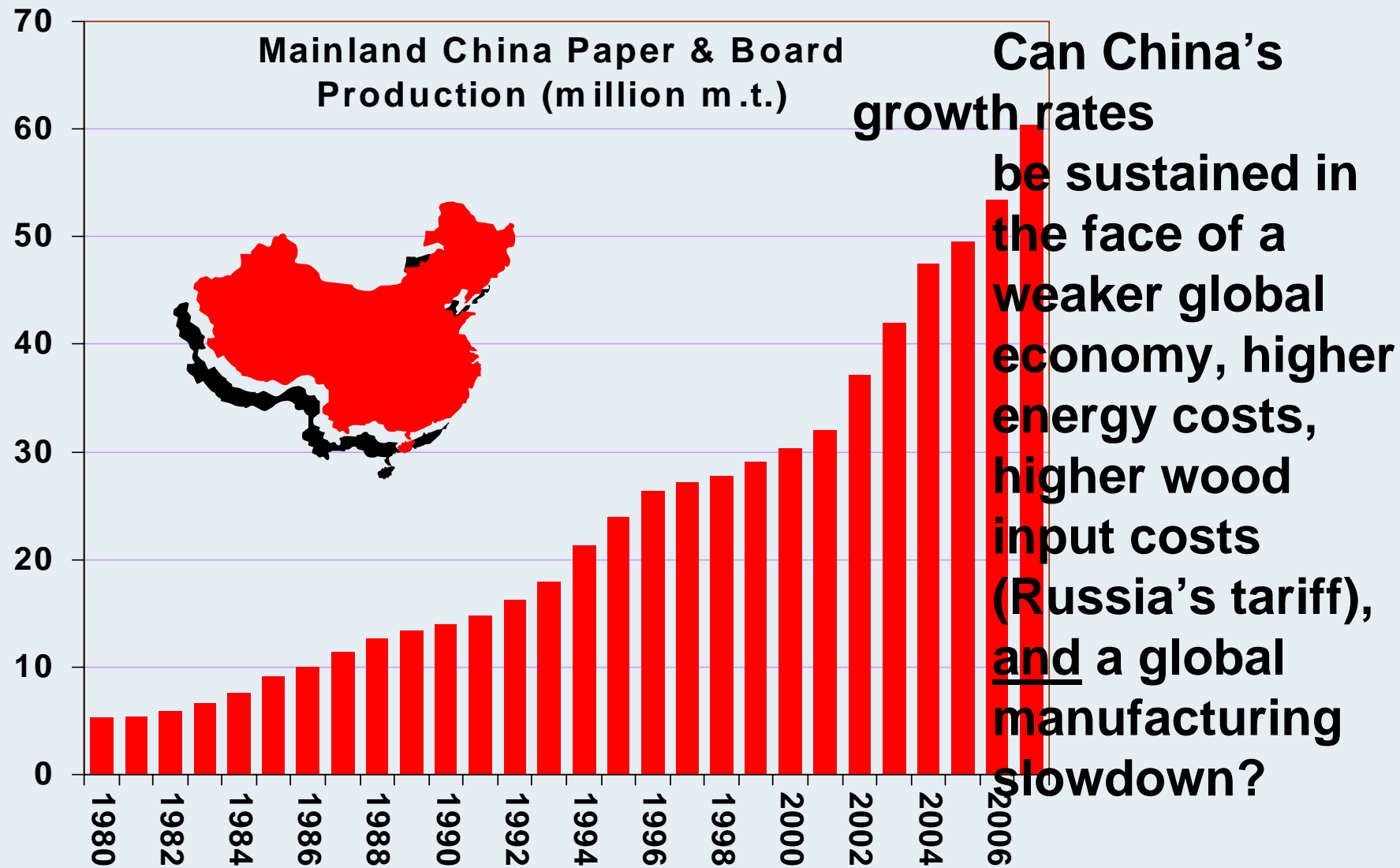
Sources: Goscomstat of the Russian Federation, PPB-express, and author's data interpretation, 2008.

Major importers of roundwood from the Russian Federation, million cu. m. (2007)



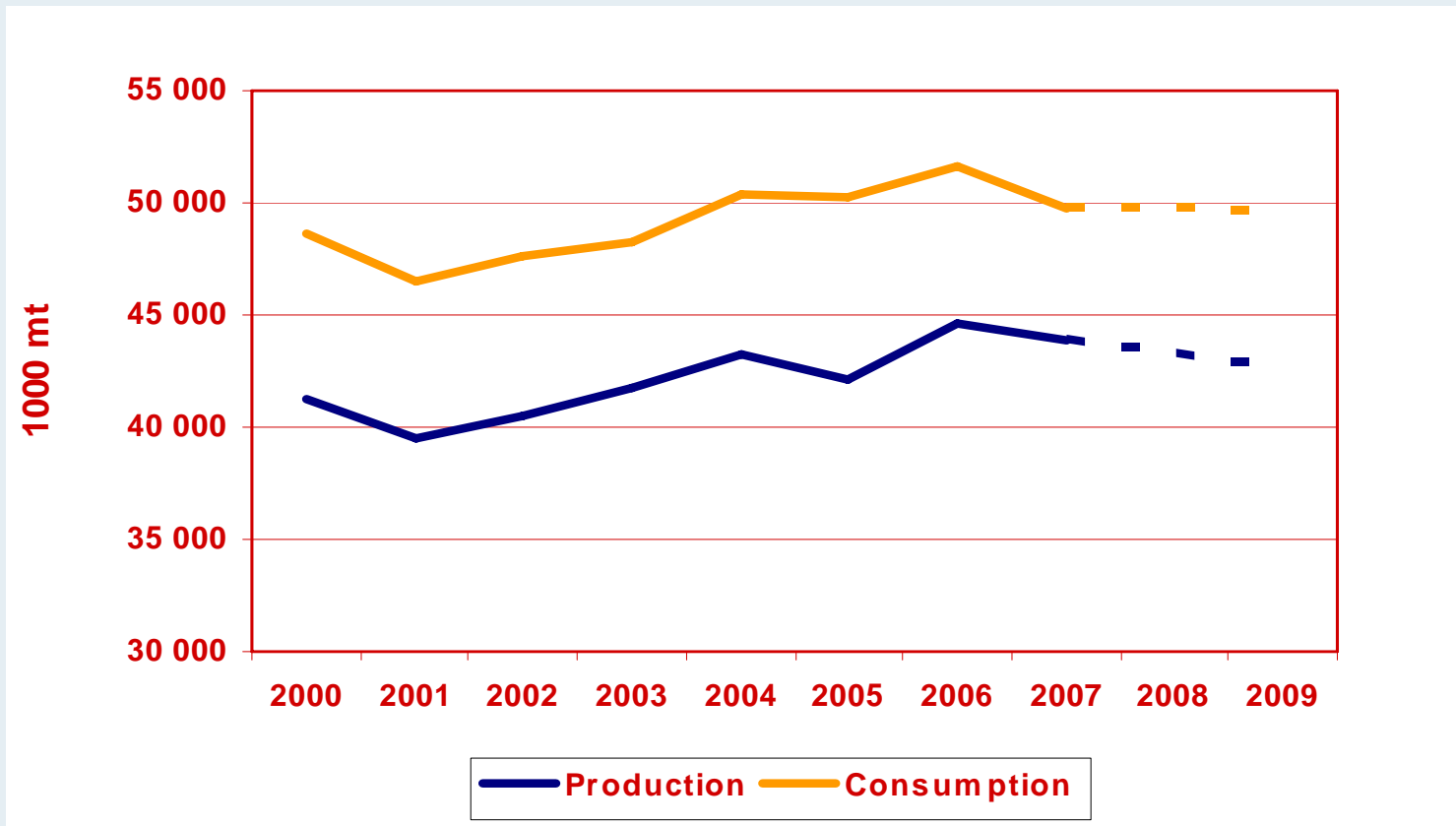
Source: Prof. Eduard L. Akim

China's growth in paper and board output has been really enormous, correlated with expansion in manufacturing.



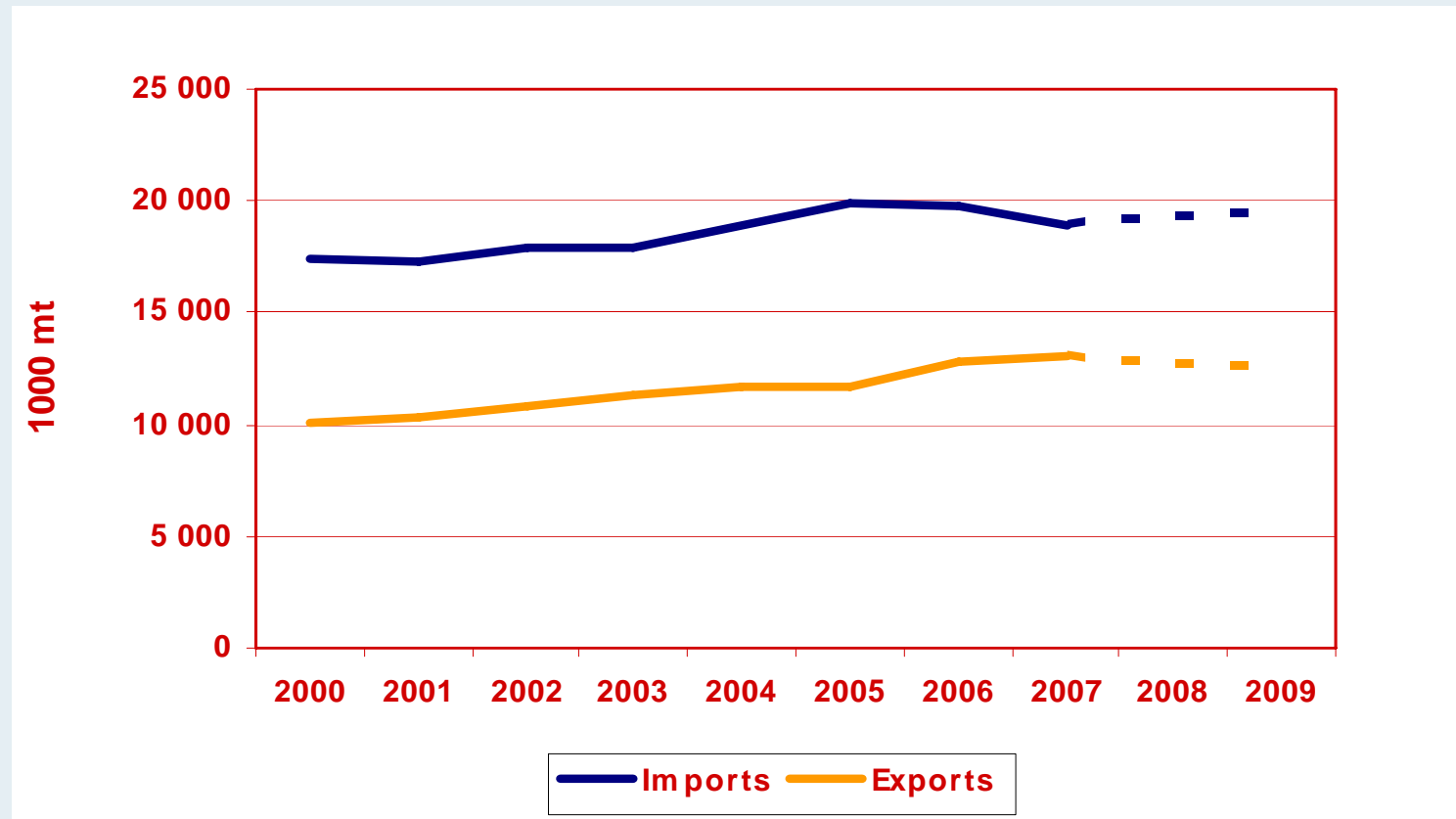
Source: FAOSTAT through 2006, with 13% growth in 2007 as reported by China Paper Association (CPA);
Note that tonnage data reported by CPA (at 73.5 million m.t. in 2007) are higher than FAOSTAT data for mainland China.

Wood Pulp - Europe



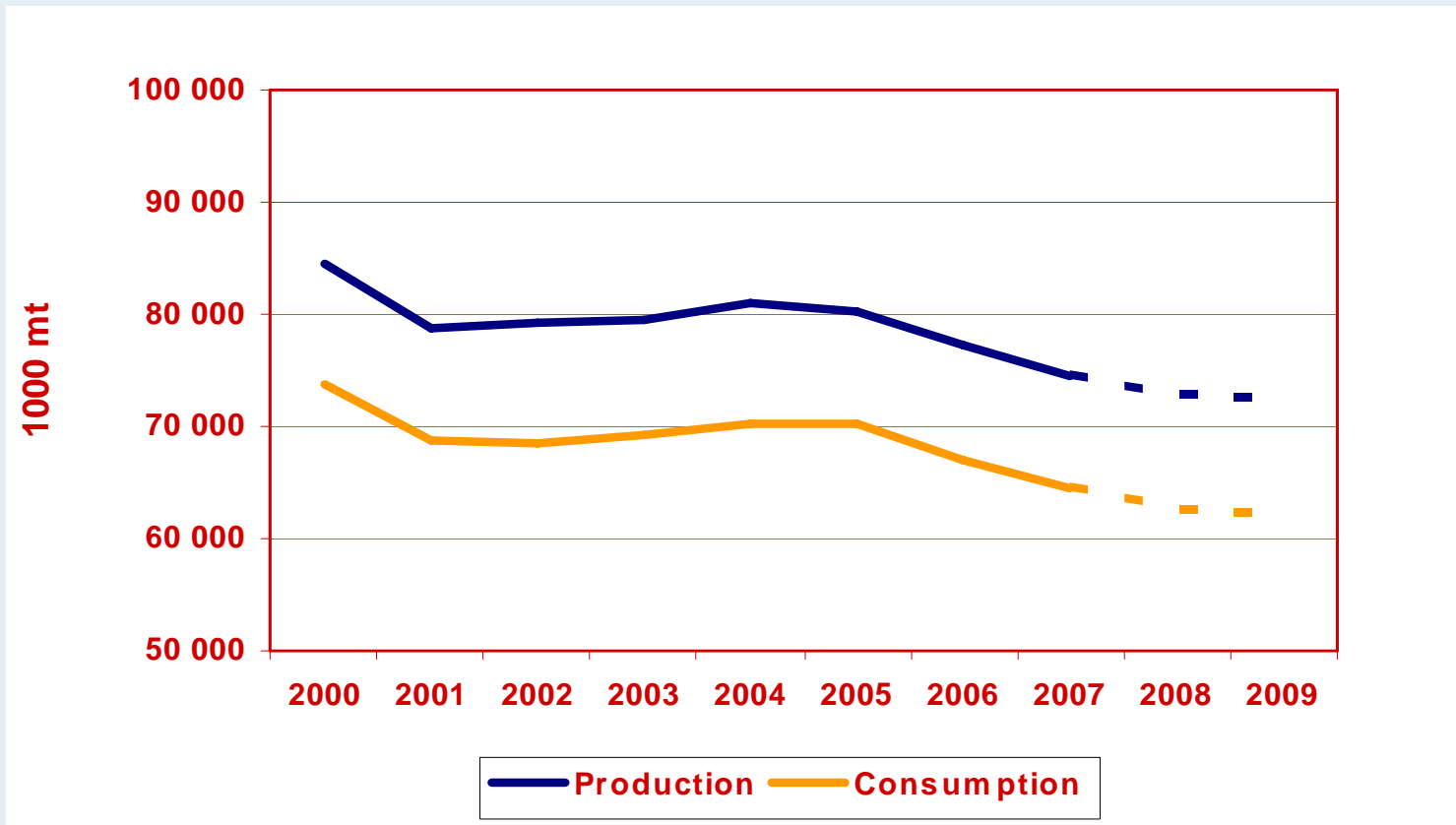
Source: UNECE/FAO TIMBER database, 2008

Wood Pulp - Europe



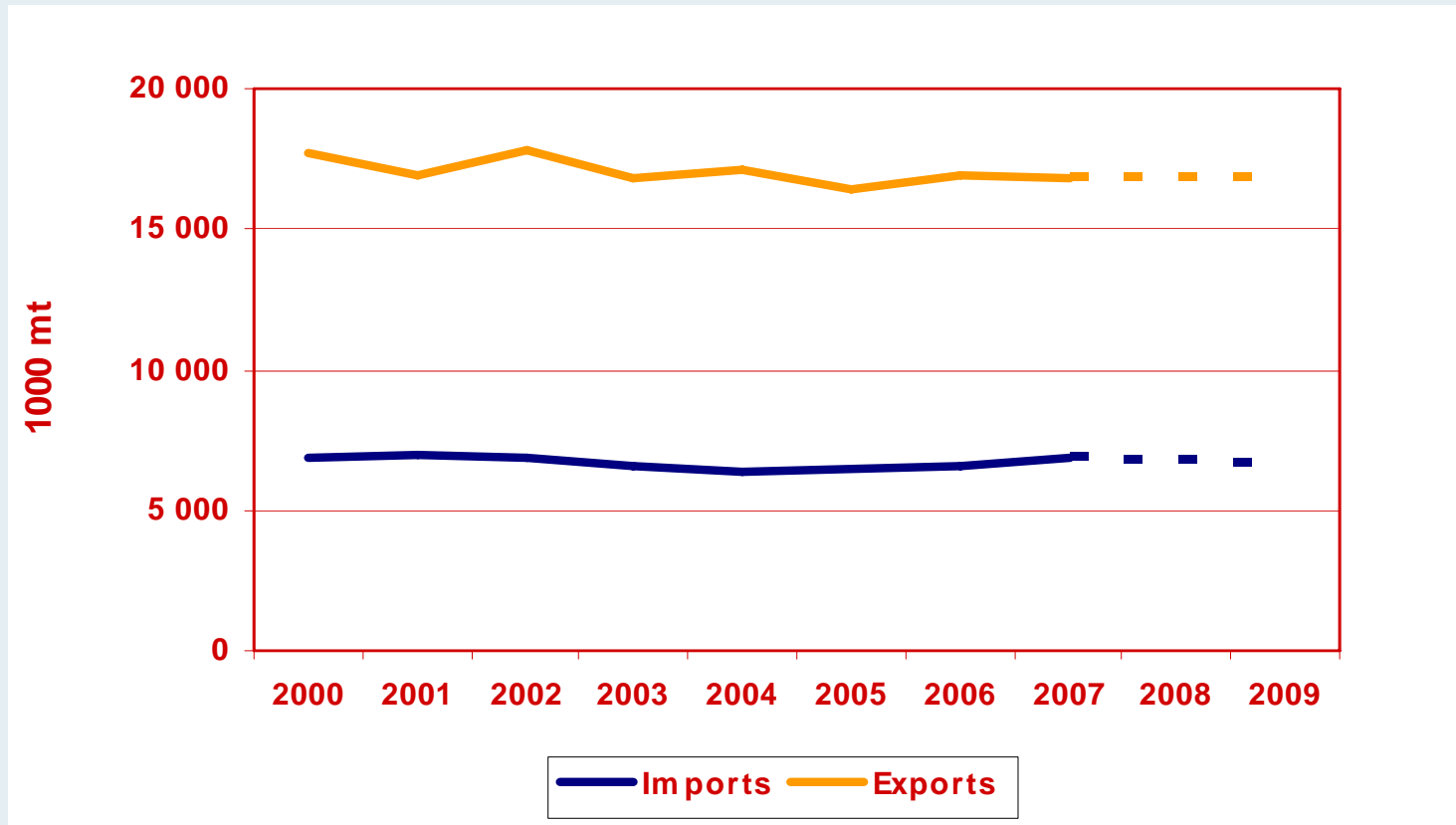
Source: UNECE/FAO TIMBER database, 2008

Wood Pulp - North America



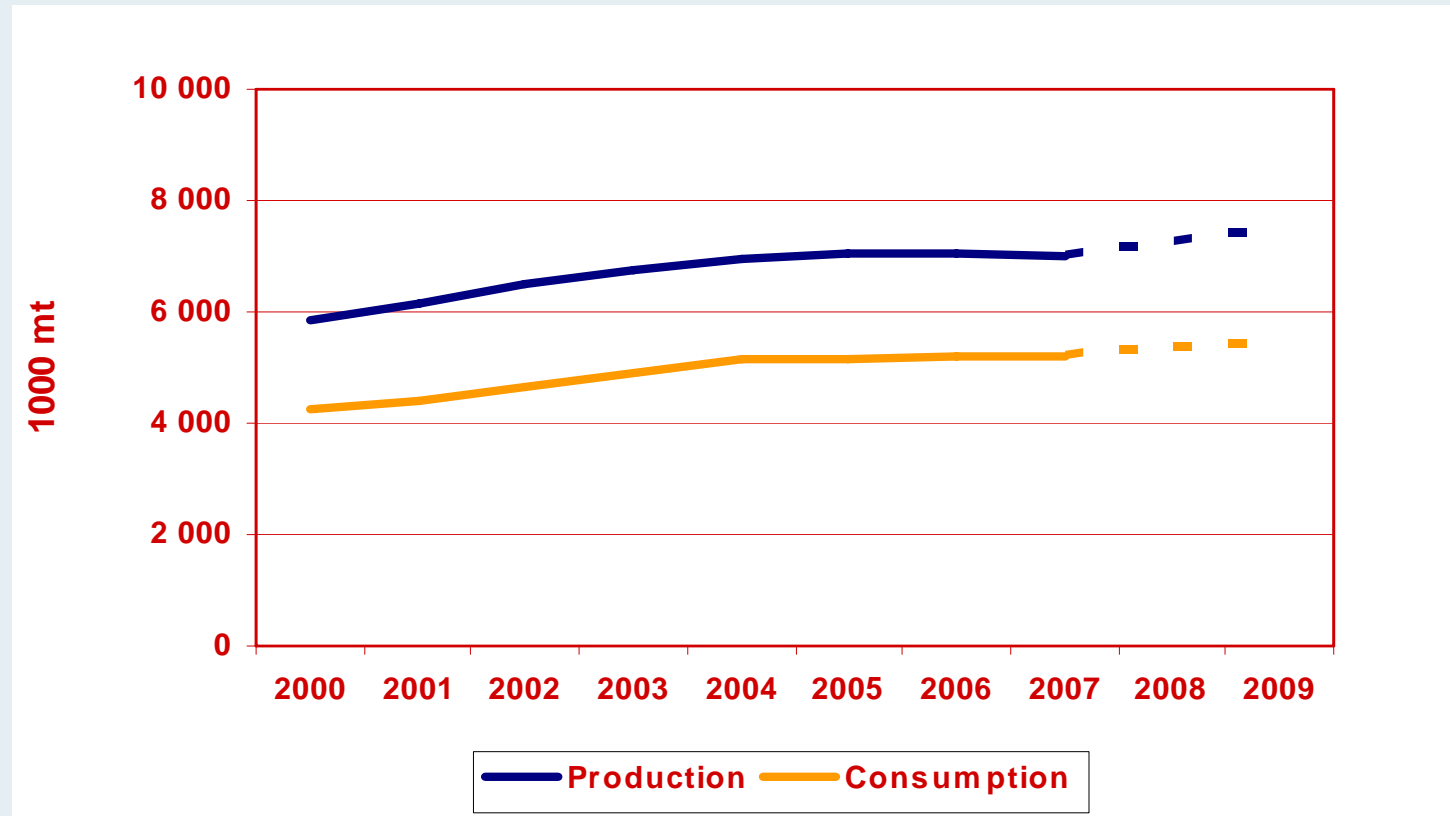
Source: UNECE/FAO TIMBER database, 2008

Wood Pulp - North America



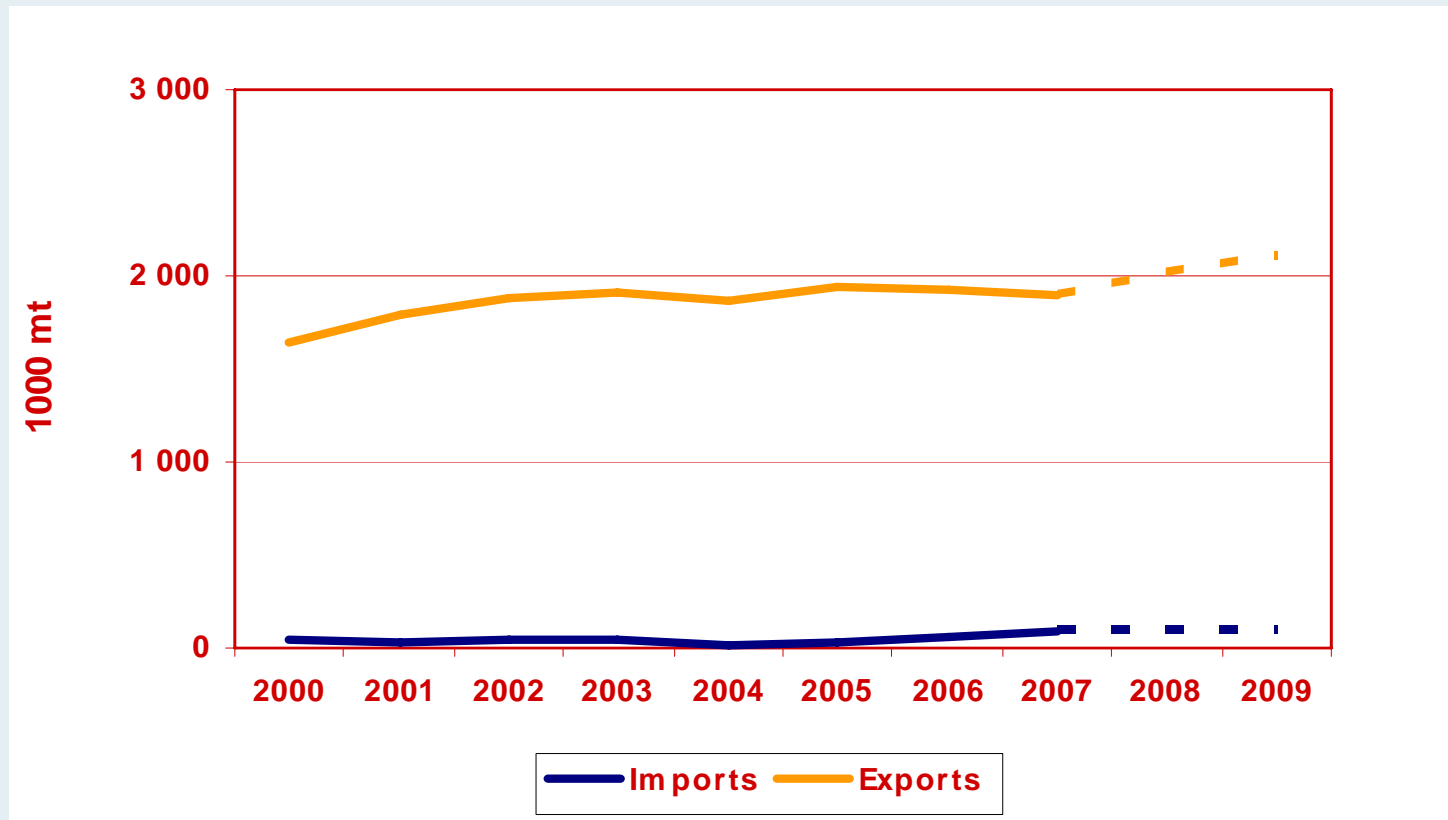
Source: UNECE/FAO TIMBER database, 2008

Wood Pulp - Russian Federation



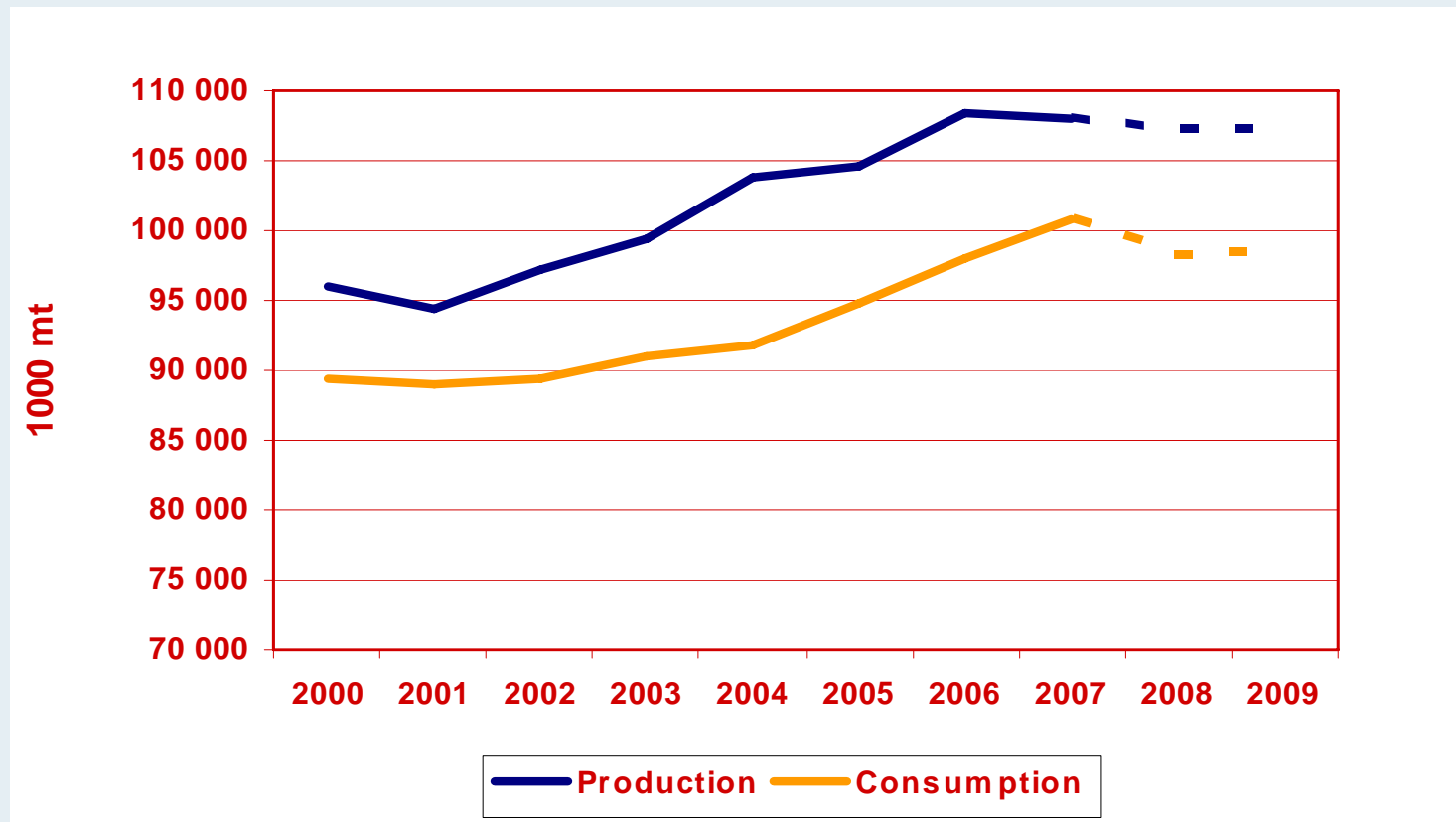
Source: UNECE/FAO TIMBER database, 2008

Wood Pulp - Russian Federation



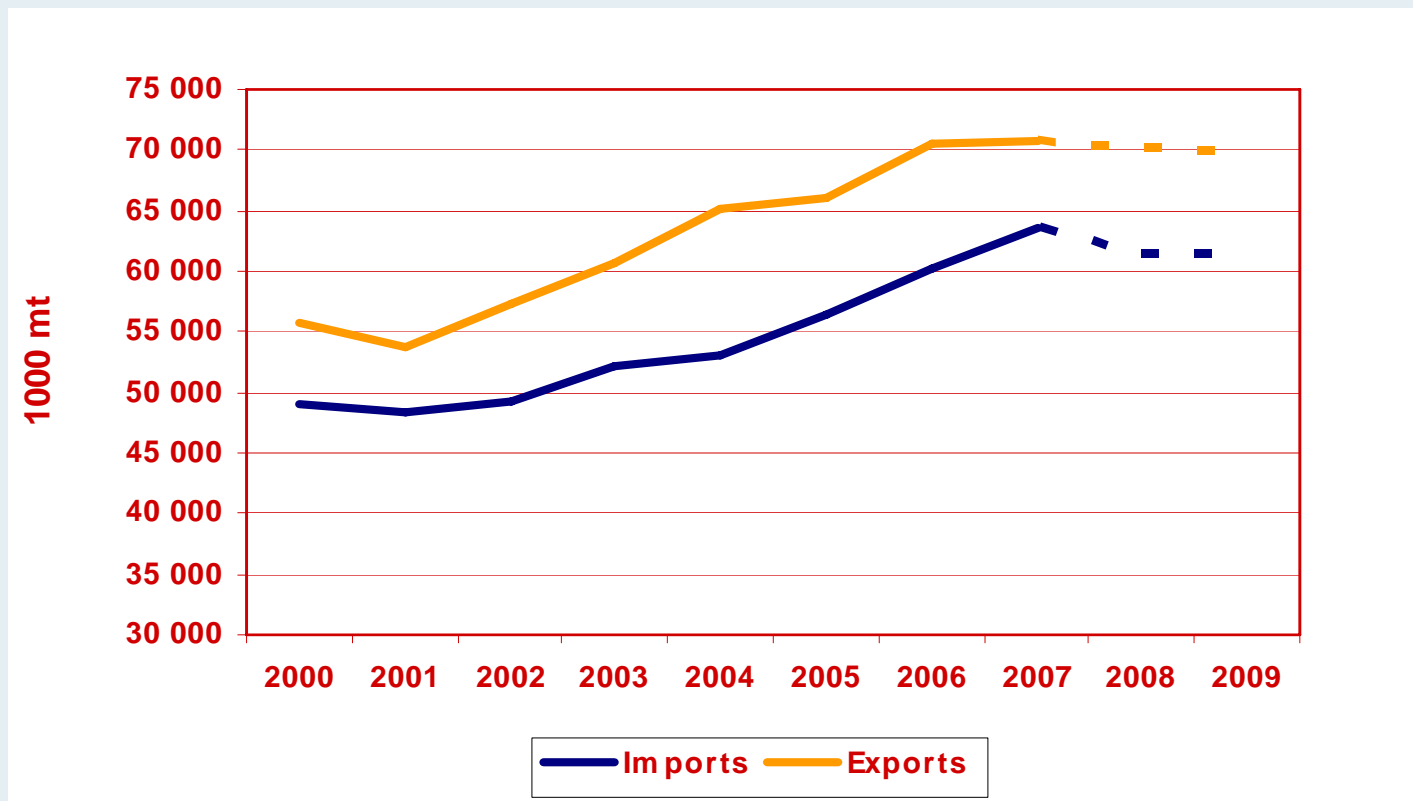
Source: UNECE/FAO TIMBER database, 2008

Paper and Paperboard - Europe



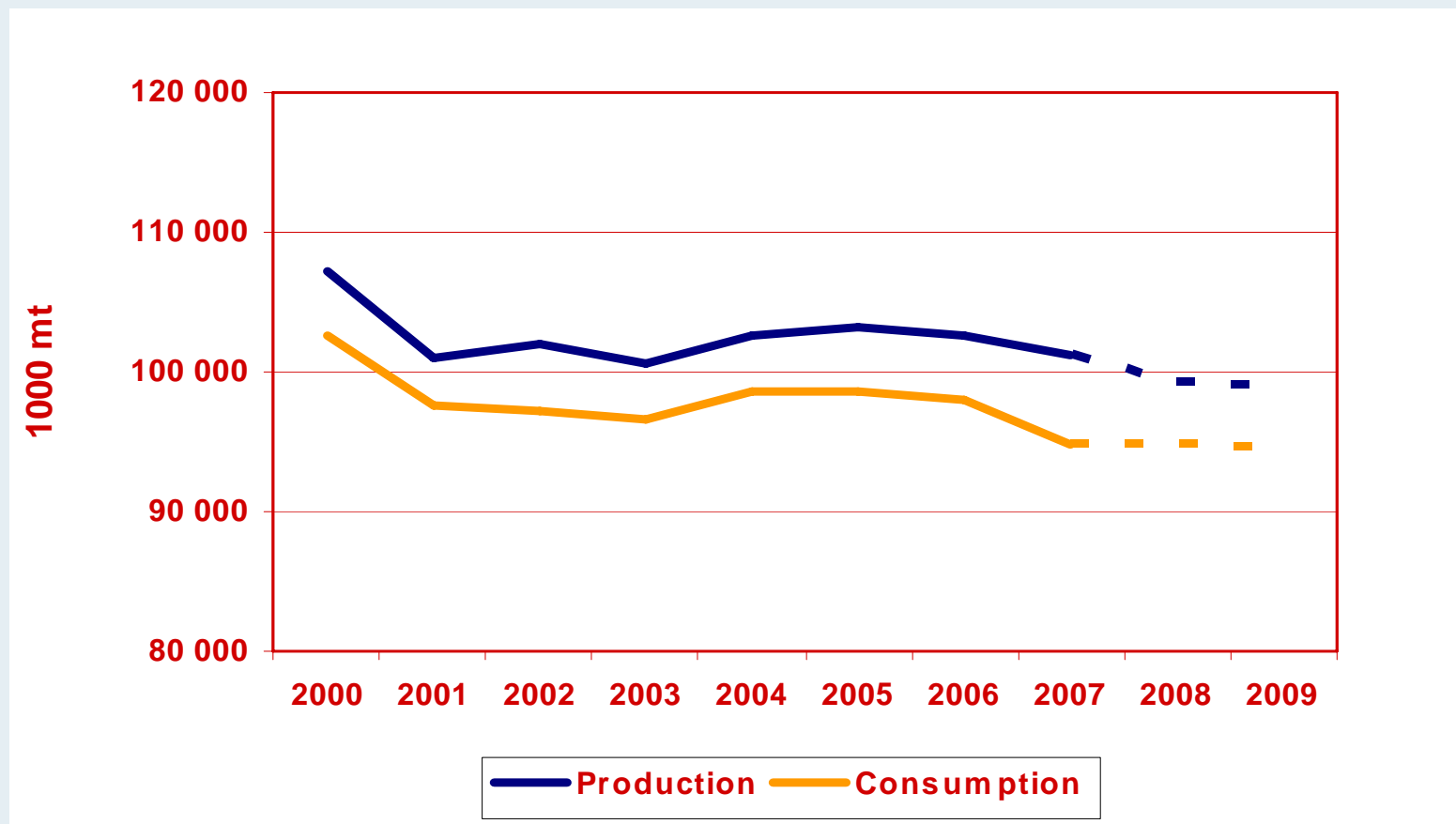
Source: UNECE/FAO TIMBER database, 2008

Paper and Paperboard - Europe



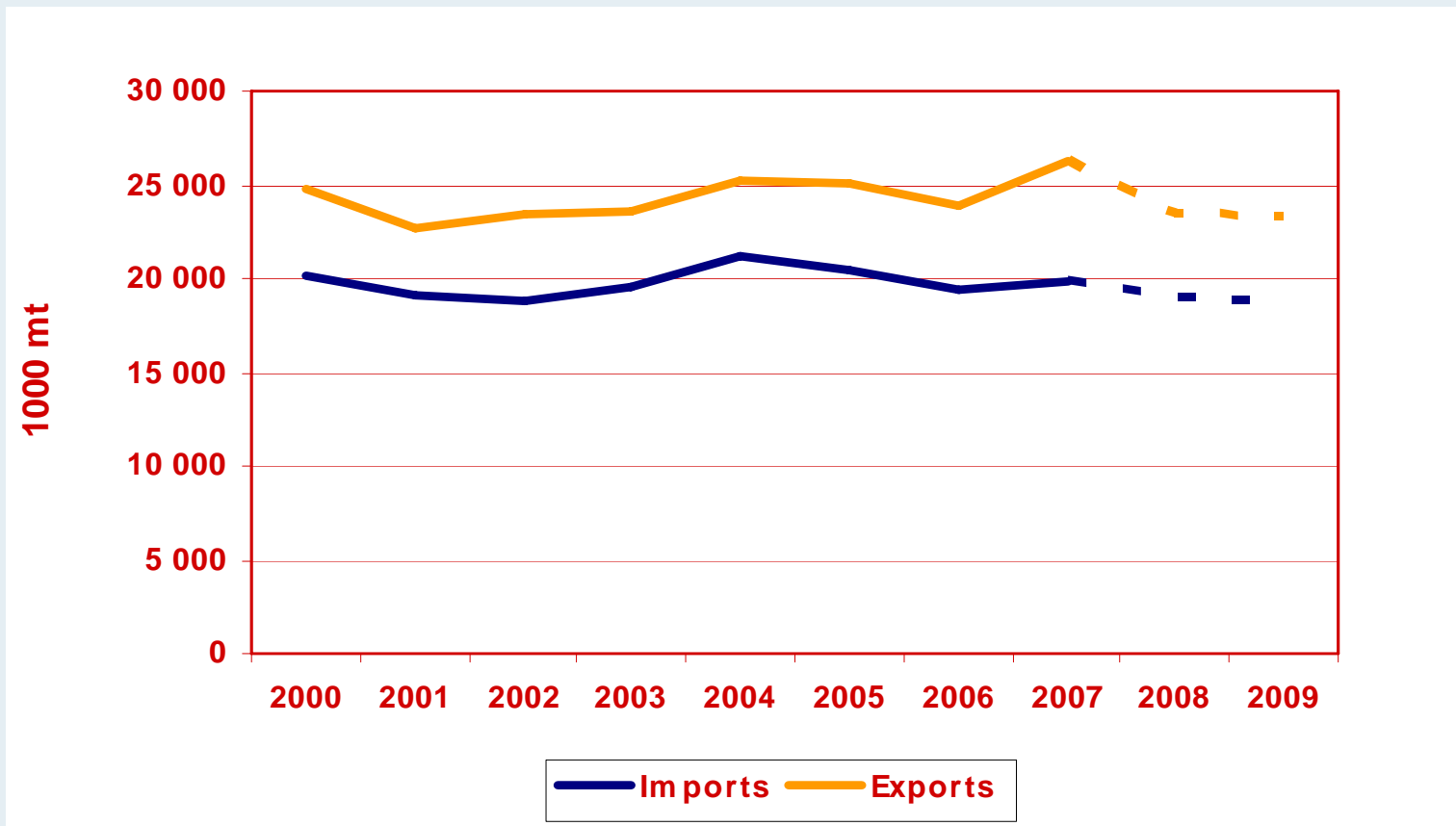
Source: UNECE/FAO TIMBER database, 2008

Paper and Paperboard – North America



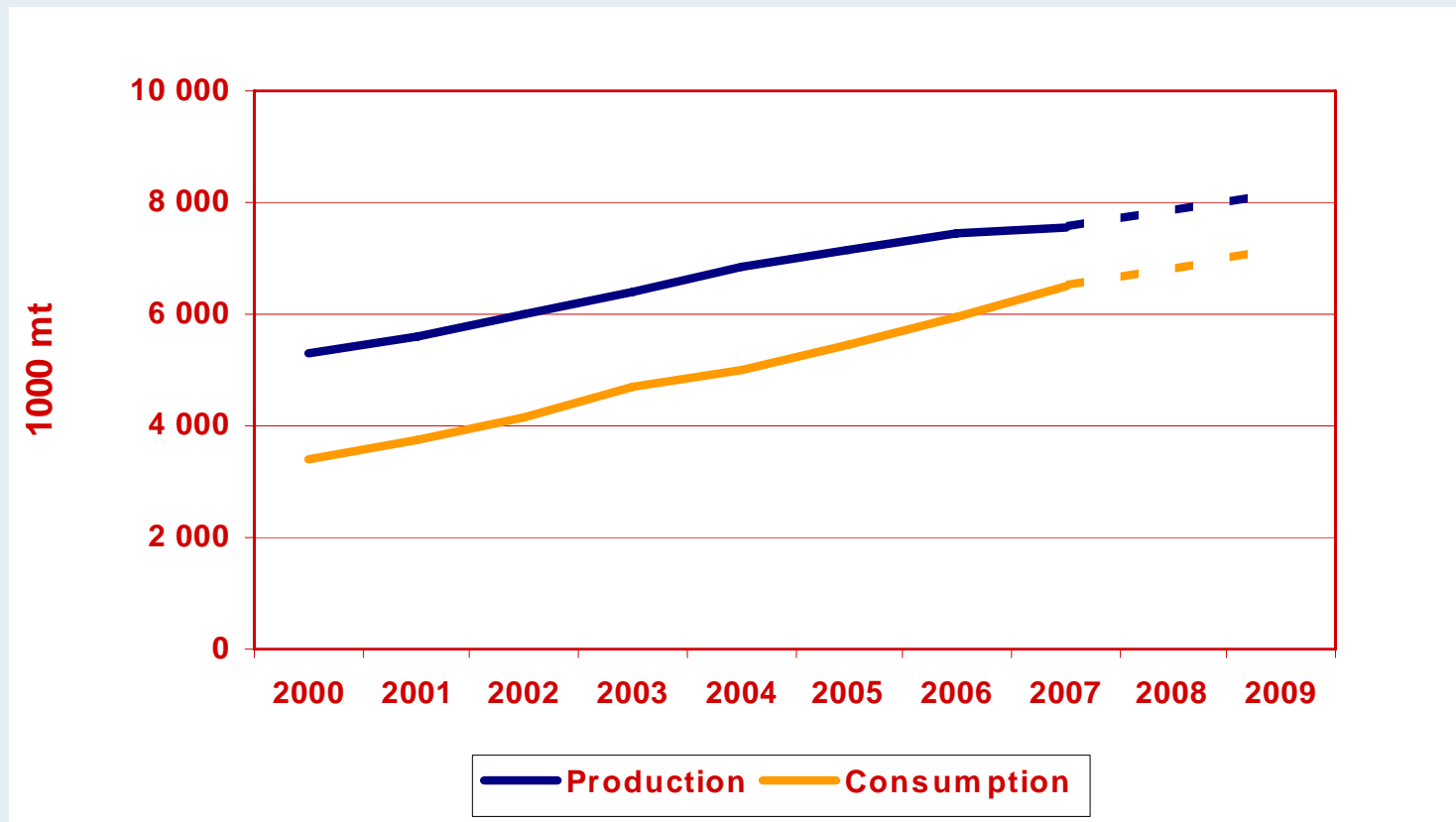
Source: UNECE/FAO TIMBER database, 2008

Paper and Paperboard – North America



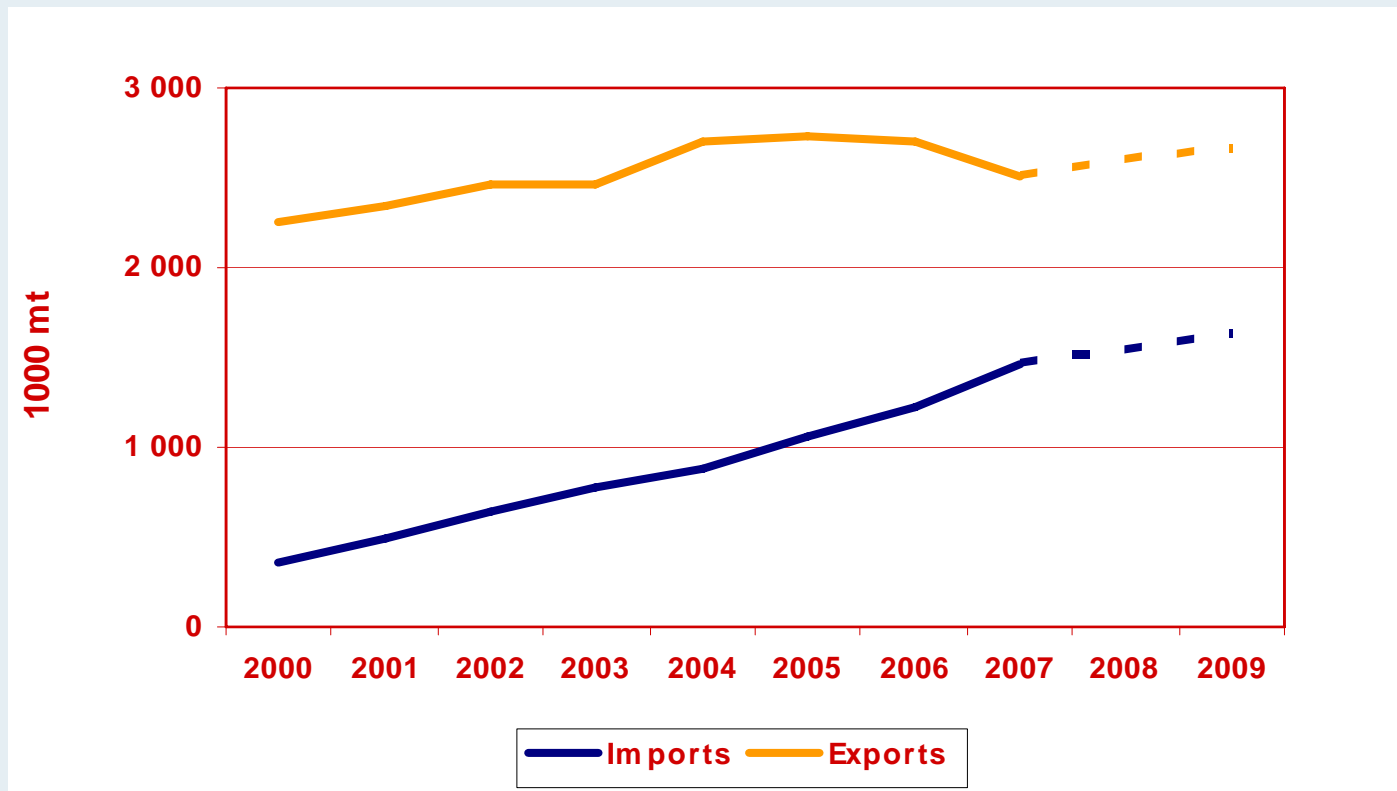
Source: UNECE/FAO TIMBER database, 2008

Paper and Paperboard – Russian Federation



Source: UNECE/FAO TIMBER database, 2008

Paper and Paperboard – Russian Federation



Source: UNECE/FAO TIMBER database, 2008

Lastly, bioenergy development –

**Two aspects related to pulp & paper . . .
(with different impacts)**

● Potential future bioenergy demand draws industry attention to competition for fibre from biofuels (-)

● Integrated biorefinery and bio-energy concepts are being explored at pulp mills in Europe and North America (+)

A popular notion is that bioenergy demands will be limited to low-grade biomass resources, such as “slash and thinnings” . . . (not competing with fibre demand)





However, if bioenergy places demands on wood fibre or land areas used for fibre production, then wood fibre competition is inevitable.



If government targets are to be met (e.g. >10% biofuel in vehicle fuels after 2020), then probably much more than just “slash and thinnings” will need to be mobilised.

The European paper industry (CEPI) has taken a position on bio-energy and biomass . . .

“Bio-energy policies should focus more on and include incentives for the mobilisation of existing biomass resources and the activation of new biomass sources whilst taking into account the existing sustainable and environmentally friendly industries.”

(Joint CEPI and AEBIOM position on national energy plans)



Current and prospective demand growth for wood bio-energy:

- ✓ **Wood Pellets (now rapidly growing)**
- ✓ **Thermal, Electric Power and CHP (largest current uses; expanding)**
- ✓ **Biofuels for Transport and Biorefineries (subsidized now, but huge potential)**

Business concepts integrated to pulp mills are being explored in these areas (in Europe, North America and elsewhere)



Major DOE Biofuels Project Locations

Geographic, Feedstock, and Technology Diversity



- ★ Nine Small-Scale Biorefinery Projects ✓
- ✦ Four Commercial-Scale Biorefinery Projects ✓
- ⊛ Four Improved Enzyme Projects
- ✦ Five Projects for Advanced Organisms
- ★ Five Thermochemical Biofuels Projects
- ★ Three Bioenergy Centers
- DOE Joint Solicitation Biomass Projects

Wood Using Biorefineries:

Pulp Mills

Others

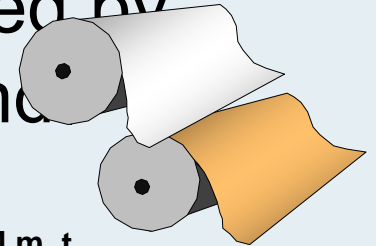
- Regional Partnerships**
- South Dakota State University, Brookings, SD
 - Cornell University, Ithaca, NY
 - University of Tennessee, Knoxville, TN
 - Oklahoma State University, Stillwater, OK
 - Oregon State University, Corvallis, OR

http://www.energy.gov/media/Biofuels_Project_Locations.pdf



Summary . . .

1. Pulp, paper and paperboard prices reached decadal highs in 2008, but profit margins were eroded by higher costs for energy, chemicals, fibre and transport.



2. Markets likely peaked with demand in 2008.

3. Longer-term consolidation is likely if Europe or Asia follow North American pattern . . .

4. Wood bioenergy demands and biorefining = future fibre competition and growth opportunity

