

## Study 2: Competitive Position

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**Introduction**

Washington’s competitive environment has changed dramatically over the past 15 years. The sector is at a record low harvest level in terms of amount of timber that is available. Timber now comes from private ownerships, both large and small, that do not possess milling facilities. The harvest level from State forestlands is as high as the small private ownership. Federal timber is largely unavailable. Tribal resources remain a major source of timber.

Markets for Washington forest products have changed rapidly. Export markets for forest products have declined, while North America remains the largest softwood market globally. Washington historically derived value from a diverse source of products and markets. The wood products industry has been forced to adjust to historically low harvest levels. As a consequence of the new harvest level and changes in export markets, Washington’s forest products industry today is producing primarily a commodity product for the domestic market, with niche markets, such as alder, small but prosperous. Major forest products companies follow a commodity production business model. The business cycle in the forest products sector is now more important as a determinant of profitability.

The study analyzes the competitiveness of the forest products sectors in Washington. It provides an overview of the global market for forest products, including consumption, production, capacity, and trade trends. It describes the Washington state forest products industry and other major U.S. and foreign forest products industries in North America and elsewhere. It includes recent changes in production, capacity, and market shares.

The study examines the demand and supply factors important in determining competitiveness. We briefly explain exchange rate influences and analyze tax impacts in more detail. We provide cost estimates for competing regions and examine end-use market trends for Washington products.

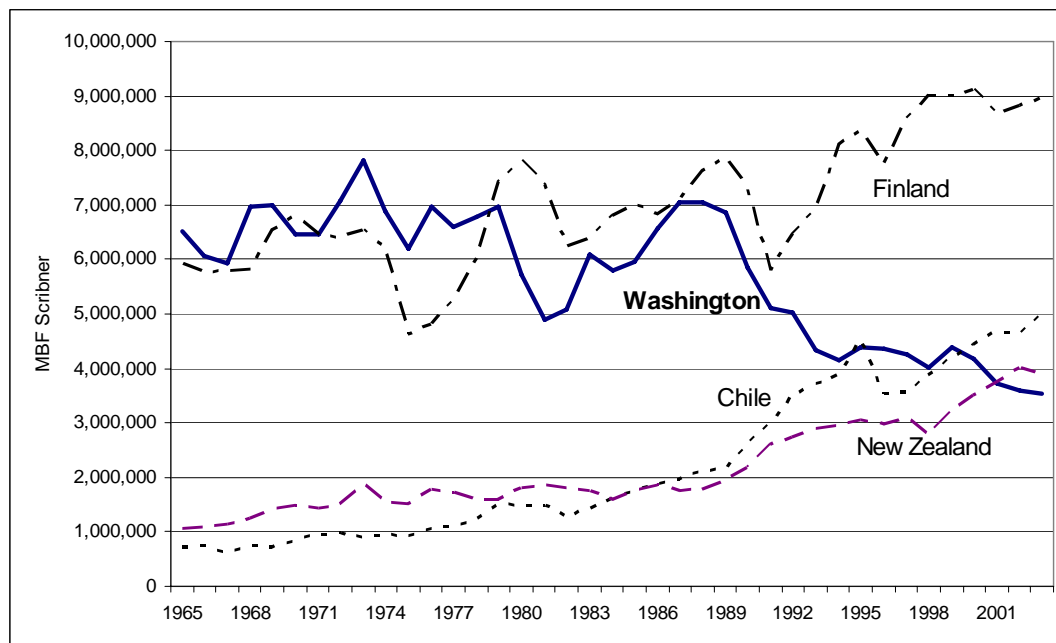
**General Overview of Washington’s Forest Sector**

Currently, Washington produces primarily lumber and paper products. In 2004, according to the Washington Department of Natural Resources (DNR), sawmills consumed 67 percent of the log volume in Washington. Nearly 6 million bone dry tons of residues were produced by Washington mills, of which 2.6 million were used in pulp manufacture, amounting to 70 percent of their raw material input.

The main products produced by Washington pulp mills in 2004 were bleached and unbleached paper. Nearly 57 percent of pulp products were these two papers. Newsprint production has been in decline and amounted to 13 percent of total products.

Log exporting is the second most important destination of logs in Washington, but it has declined substantially over the past 15 years. In 2004, nearly 0.9 billion board feet flowed out of Washington ports. Over 0.5 billion board feet were produced by Washington forestlands. Chipping mills consumed over 0.25 billion board feet of logs, nearly matching the 0.3 billion consumed by veneer and plywood plants. These chipping mills have become an important source of raw material for pulp manufacture.

Access to raw materials is crucial to the establishment and continued operation of a forest products industry. Domestic public policy regarding access to timber supply affected the industry’s competitive edge. While our timber harvest levels have declined, other regions have expanded theirs. Figure 2.1 charts Washington’s harvest levels to those of other important timber producing regions.



**Figure 2.1: Timber harvest levels in Washington, Chile, New Zealand, and Finland: 1965-2003.**

Figure 2.1 illustrates harvest levels and how they have declined in Washington while emerging plantation regions in Chile and New Zealand have expanded their harvest levels. These two nations compete with Washington timber producers in Asian and other wood product markets. Finland has also increased its harvest levels and competes with Washington producers in Asian and other markets. The increased levels from these and other regions have put Washington producers at a competitive disadvantage in international markets.

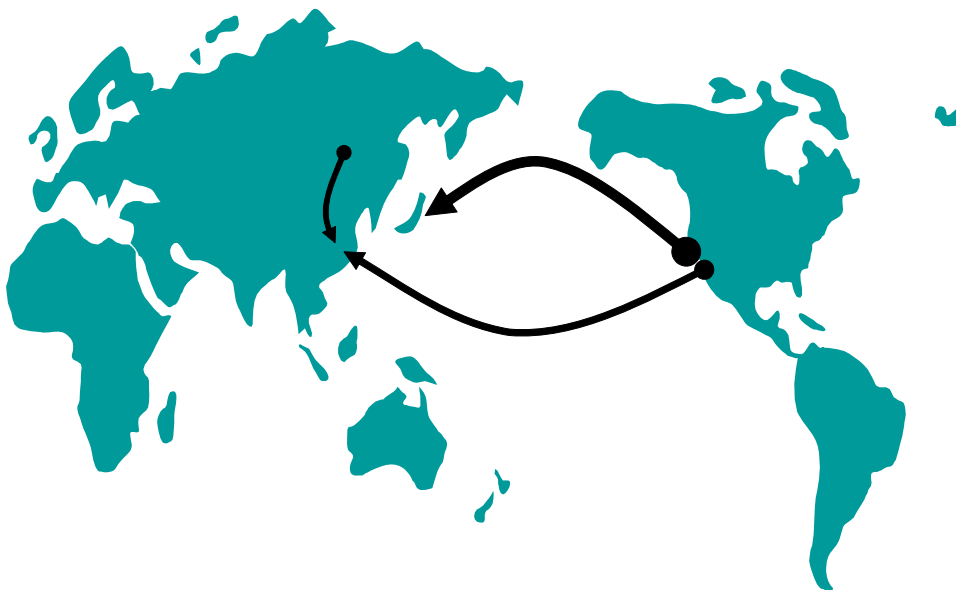
At the same time, U.S. projected growth in lumber consumption is expected to be over 8 billion board feet over the next 3 decades (Perez-Garcia 2003). The reduced competitiveness in international markets and a strong demand projection for U.S. lumber consumption has produced a shift in production emphasis from international markets to domestic ones.

## Washington's Competitiveness

There are many factors that influence a company's ability to compete. In this analysis we focus on several of them. In particular we examine end-use market behavior, availability of timber supply and taxes. We also consider the cost structure of the softwood lumber producers servicing the North American markets. We start by examining the changes that have occurred since the early 1990s in Washington.

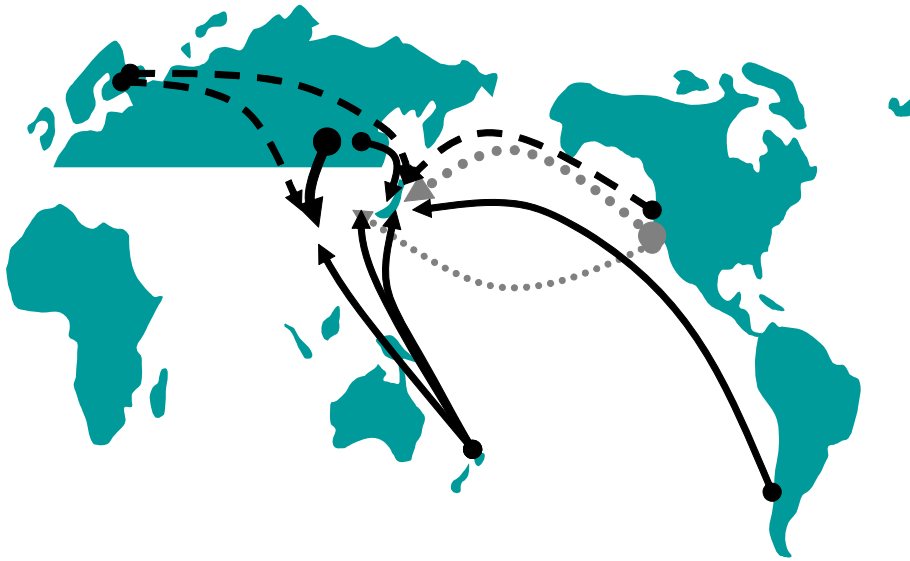
### Changes over the Past 15 Years

Figure 2.2 generalizes the major product flows that occurred in the late 1980s and early 1990s. The major flows out of Washington, and the Pacific Northwest for that matter, were logs destined for Japan, Korea and China. Other flows existed but these were the principal ones.



**Figure 2.2: Major trade flows from Washington pre 1993.**

Access to timber supply was restricted in the early 1990s due to the enforcement of environmental regulations. The increase in log cost and subsequent changes in the competitive environment for Washington companies led to major structural changes in the sector. Log exports declined or disappeared completely (Grey arrows in Figure 2.3). New log export flows were started or existing ones expanded (Black solid arrows in Figure 2.3). In addition, lumber flows from other regions (including some companies from Washington) began to fill the void left by our log exports.



**Figure 2.3: Trade flows and their changes post 1994**

In 1997 however, the financial crisis in Asian abruptly put an end to the expansion of the Asian wood basket and other sectors. Log exports almost disappeared (light grey arrows in Figure 2.4), with a few exceptions, notably Russian logs to China and Japan. Lumber exports to Asia declined dramatically and emphasis was shifted to North America.

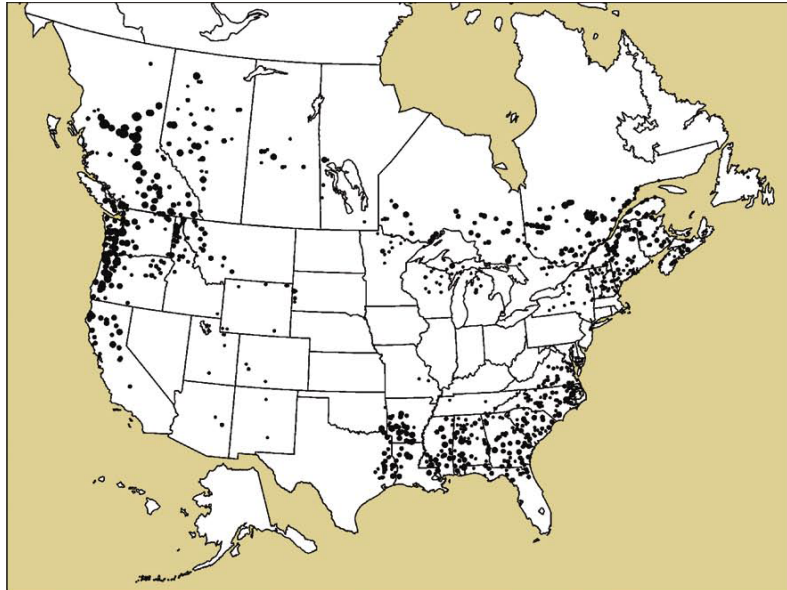


**Figure 2.4: Trade flows and their changes post 1997**

### North American Lumber Market

The shift from servicing Asian markets to the North American market was promoted by strong housing starts in the U.S. and weak market demands in Asia. The sawmilling sector in Washington, once a minor component of log end-use, is now the major end users of logs in Washington. The sawmilling sector is likely to continue to be so into the future. As such, we focus a part of our analysis of competitiveness on the sawmilling sector in Washington.

There are many sawmills in Washington, and elsewhere in the U.S., Canada and internationally. The strong growth in U.S. housing has made the North American softwood lumber market the principal market globally. The principal competitors to Washington mills outside the Pacific Northwest region are U.S. southern mills and Canadian mills. Within the Pacific Northwest, Oregon mills are closer to the California markets and Idaho mills are closer to the Midwest and Northern U.S. markets. Figure 2.5 maps the location of Canadian and U.S. softwood sawmills (Spelter and Alderman2005)



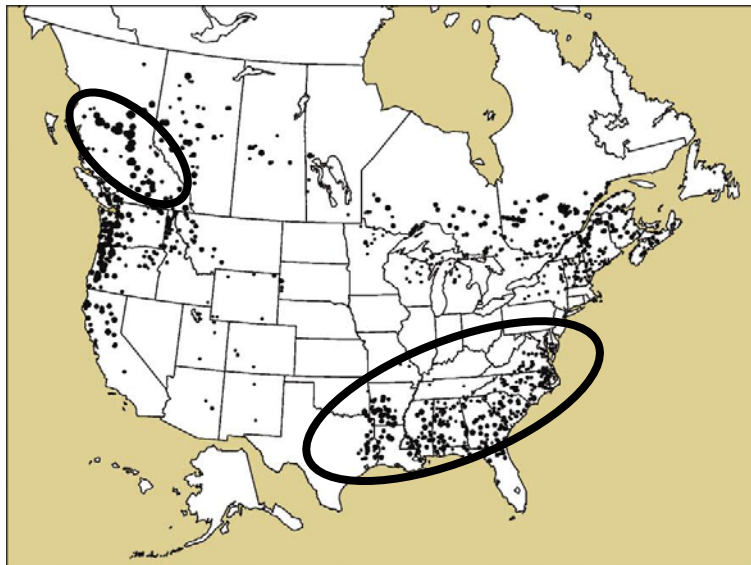
**Figure 2.5: Sawmill production facilities in North America (Spelter and Alderman 2005)**

The North American softwood lumber market is characterized by fairly large mills in the Interior region of British Columbia to smaller mills spread throughout the Southeast U.S. (Spelter and Alderman 2005). Mills on the coastal region in Washington and Oregon have been transitioning from a diversity of mill sizes that reflected the diversity of the fiber coming from federal, state and private forestlands to nationally competitive mills similar in sizes to the Canadian mills. Numerous medium and small mills in Washington and Oregon were dependent on Federal timber and many closed as the Federal timber harvest levels were reduced. Washington’s softwood lumber producing sector is now characterized as a highly competitive sector with several recent investments in larger, modern mills capable of producing over 350 million board feet of lumber a year.

The North American market for softwood lumber is considered a single market. This means that no one mill has any pricing power over product prices. There is sufficient competition so that no single company can manipulate prices. The prices of lumber that Washington mills sell must be competitive with lumber from any other region in Canada and the U.S. South.

Recent data on costs of delivered log to mills describe the cost structure for Washington mills. Interior B.C. mills are home to some of the most productive softwood mills in North America. Their distance to major U.S. markets requires them to be so. On a log cost comparison, these Interior B.C. mills are on average 30 percent of the log costs that Washington mills face. U.S. southern mills are on average 44 percent of the average Washington mill log costs. Washington log costs increased substantially during the 1990s due to increased regulations that reduced harvest levels and the subsequent increase in management and harvesting costs. Competitive sawmills in Washington and Oregon were able to utilize some of the previously export-oriented logs domestically when Asian markets failed. This led to downward pressure on the high log prices that resulted from spotted owl habitat conservation. Figure 2.6 locates the cost competitive mills in Interior

B.C. and U.S. South indicating the relative percentage harvest and delivery costs of logs in each region to Washington's costs.



**Figure 2.6: Sawmill production facilities in North America with the Interior B.C. and U.S. Southern mills highlighted.**

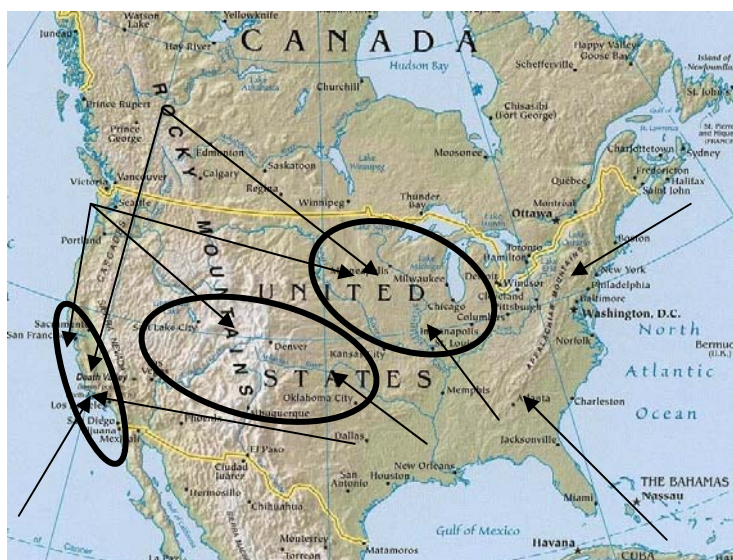
Even with the higher log costs, Washington mills are competitive in placing softwood lumber in several U.S. regions (Figure 2.7). An assessment of cost competitiveness completed with the CINTRAFOR Global Trade Model indicates that Western mills in Oregon and Washington can meet an additional 1.8 billion board feet in lumber demand over the next 3 decades. U.S. southern mills have the advantage over Interior B.C. up to an additional 3 billion board feet. Demand growth in excess of 3 billion board feet is serviced primarily by Interior Canadian mills.

Globally there are international regions with lower log costs, but transporting their products to U.S. markets makes them less competitive than U.S. and Canadian producers. For western markets, New Zealand has a cost competitive log price that can service part of the west coast demand. Model runs also indicate that European producers in Finland, Sweden and Europe have the potential to place softwood lumber into U.S. eastern markets. Exchange rates will play a key role in the development of these trade flows and are briefly discussed below.

Figure 2.7 illustrates the principal markets for Washington sawmills and their competitors. Two markets of interest to Washington producers are the interior west and midwest markets. Together the two markets purchased 60 percent of Washington's softwood lumber production. The two markets are also serviced by U.S. southern and interior Canadian mills.

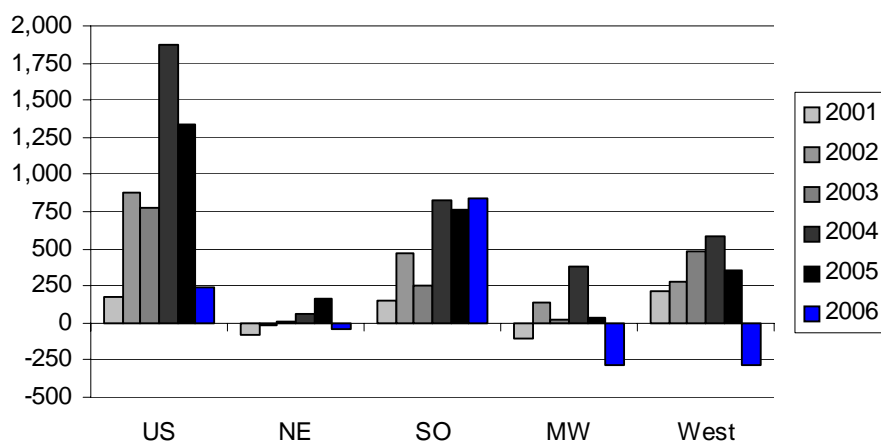
The California market is also serviced by several of our competitors. In 2005 California consumed an estimated 6 billion board feet (bbf) of lumber. Oregon shipped 30 percent of their product and Washington sent 19 percent of its lumber production volume. Imports come from regions outside of the U.S. as well.

Finally, note that Washington sits in the northwest corner of the U.S. We currently service the U.S. market, whereas previously we serviced Asian markets. Washington's housing sector consumed an estimated 1.5 bbf in 2005. Sawmills in Washington produced 5.7 bbf, and excess lumber in Washington is estimated at 4.2 bbf.



**Figure 2.7: Washington softwood lumber principal markets (ovals) and competitors in these markets (arrows).**

The surprising strength of the U.S. housing market during the past decade has weakened substantially in 2005 and 2006. Figure 2.8 graphs the year-to-year change in estimated lumber consumption in privately owned housing units completed in the U.S. New residential construction is about one half of the demand for lumber. The other half comes from repair and remodeling activity. What’s important to note in the figure is the decline in the Midwest (MW) and West regions of the U.S., the principal markets for Washington sawmills. The surprising strength of the southern markets is good news for western producers since it alleviates some downward price pressures on them. It was estimated that over 0.5 bbf of demand has declined due to the slumping housing markets.



**Figure 2.8: Year to year change in lumber demand (million board feet) associated with new privately owned housing units completed in the U.S. (NE is Northeast, SO is South, MW is Midwest)**

The major factor that will determine the competitiveness of Washington sawmills will be availability of fiber. On the Westside, fiber availability is affected by regulations and land-use changes. These two determinants are the major issues associate with the competitiveness of these mills. Also impacting the availability of fiber are tax issues, to which we now turn.



## Tax Burdens on Timber Corporations and Investors

The business model for industrial forest land owners has changed dramatically over the past two decades. The majority of the industrial forestlands are now under alternative tax structures. In order to compare the tax burden of traditional, profit-oriented class-C corporations (C-Corps) with institutional timber owners, such as timber investment management organizations (TIMOs) and real estate investment trusts (REITs), we can look at one entity of each type, assuming identical land holdings, property tax rates, timber production and revenues, and business-related costs. By then assessing known taxes to each one, we can arrive at figures that reveal relative tax burdens.

A spreadsheet model was prepared to evaluate the differences in the tax structures for alternative forestland holding options. The model assumes timber ownerships identical in every way except in their business designation, and thus, their federal tax burden. This means that each has the same total acreage, harvested acreage, sales revenue, property taxes, operating costs, and number of investors. By following the revenues through state and federal taxes, we can compare the percentage of timber revenue retained by each business type.

State-estimated stumpage prices are meant to account for direct costs of logging, so the revenue calculation is the appropriate figure for calculating both the timber severance tax and the Washington State B&O tax. We assumed identical company parameters; each entity therefore faces the same state tax burden and has the same taxable federal income.

**Table 2.1: Tax burdens under alternative tax structures for forest land owners in Washington.**

		Land Base Acres	Acres Harvested	MBF/Acre	\$/MBF (net sales price)
Assumptions		125,000	2,500	40	\$252
		<u>TIMO</u>	<u>REIT</u>	<u>C-Corp</u>	<u>S-Corp or LP</u>
Gross Revenue		\$25,200,000	\$25,200,000	\$25,200,000	\$25,200,000
Revenue minus operating costs		\$21,420,000	\$21,420,000	\$21,420,000	\$21,420,000
Timber Severance Tax	-	\$1,058,400	\$1,058,400	\$1,058,400	\$1,058,400
Property Tax	-	\$224,089	\$224,089	\$224,089	\$224,089
<u>B&amp;O taxes</u>	-	<u>\$106,722</u>	<u>\$106,722</u>	<u>\$106,722</u>	<u>\$106,722</u>
Revenue after State Taxes (Taxable Federal Income)	=	\$20,030.789	\$20,030.789	\$20,030.789	\$20,030.789
Maximum Corporate Income Tax (%)	-	0%	0%	35%	0%
<u>Corporate Income Tax</u>	=	<u>\$ -</u>	<u>\$ -</u>	<u>\$7,010,776</u>	<u>\$ -</u>
Revenue after Corp. Income Tax	=	\$20,030.789	\$20,030.789	\$13,020,013	\$20,030.789
Net Revenue/ Share <sup>1</sup>		\$0.20	\$0.20	\$0.13	\$0.20
Maximum Capital Gains Tax Rate applied to Dividend Income	15%	\$0.03	\$0.03	\$0.02	\$0.03
After Tax Revenue/Share	=	\$0.17	\$0.17	\$0.11	\$0.17

<sup>1</sup> based on 1 million shares

Although TIMOs, REITs, and C-Corps face distinct tax burdens at the federal level, they are the same for the purpose of Washington State taxes. Washington does exempt some non-profits from property and B&O taxes, but TIMOs do not qualify for these exemptions. Thus the revenue, cost, and tax figures for each concern are identical up to the point where we look at the assessment of federal corporate income tax.

The federal tax code specifies an allowance for depletion of standing timber on purchased land. For the purpose of simplification, we will assume that all the land was purchased as bare land.

### ***C-Corps***

C-Corps face what is called a double tax burden. That means that the company faces corporate income taxes on its profits, and dividends to shareholders are then taxed again as interest income. Thus, the federal income tax rate on the C-Corp is 35 percent, whereas the effective income tax rate on the other organizations is 0 percent.

### ***REITs***

REITs are required by law to distribute at least 90 percent of their taxable income to shareholders as dividends. For the purpose of simplifying the analysis, we assume the REIT distributes 100% of its taxable income to shareholders, though one can examine the impact of varying the percentage of income distributed as dividends as well as that of varying the specific alternative use of that income. Note that for REITs, dividend distributions for tax purposes are allocated to (a) ordinary income, (b) capital gains and (c) return of capital, each of which may be taxed at a different rate. It is unknown what determines the specific proportion that is allocated to each, and likely it depends on the individual organization. Routine dispositions of timber are treated as capital gains. REITs commonly hold multiple types of real estate, so other properties may provide income that is taxed differently.

### ***TIMOs***

For the purposes of this comparison, TIMOs and REITs are very similar. TIMOs often invest funds for endowments or trusts which are in turn tax exempt, so they would not face even the listed capital gains rate. That would be true of any investment for them, however, so their expected rate of return would not be different, and would therefore not affect their investment decisions.

### ***S-Corps and Master Limited Partnerships (MLPs)***

S-Corps and MLPs are not subject to the corporate income tax, so they would face only the capital gains tax on dividends. It is not clear what differences there are among C-Corps, S-Corps, and MLPs beyond the declaration of company type for tax purposes.

## **Washington State Tax Issues**

Local and state taxes are another important factor determining a company's competitive position. In Washington, forestlands are taxed as property and at the time harvest income occurs (Table 2.1) in addition to the business and occupation tax. Table 2.2 lists states and their per acre taxes on property and timber harvest income (WFPA 2002). Washington has the highest per acre tax burden of all states; this amounts to over \$19 on a per mbf basis and is several times larger than neighboring Oregon (\$2.54 per acre or \$3.18 per mbf).

**Table 2.2: Timber and Property Taxes Across States**

State	Taxes Per Acre		Total
	Property	Timber	
Alabama	\$1.42	\$0.16	\$1.58
Arkansas	\$1.06	\$0.00	\$1.06
California - Coastal	\$2.27	\$6.61	\$8.88
California - Inland	\$1.07	\$2.53	\$3.60
Florida	\$4.61	\$0.00	\$4.61
Georgia	\$3.64	\$4.02	\$7.66
Idaho	\$4.72	\$0.00	\$4.72
Louisiana	\$3.04	\$2.41	\$5.45
Maine	\$2.12	\$0.00	\$2.12
Michigan	\$1.10	\$0.00	\$1.10
Minnesota	\$0.93	\$0.00	\$0.93
Mississippi	\$3.40	\$0.38	\$3.78
Montana	\$2.38	\$0.00	\$2.38
New Hampshire	\$1.98	\$6.67	\$8.65
North Carolina	\$1.83	\$0.00	\$1.83
Oklahoma	\$1.44	\$0.00	\$1.44
Oregon - West	\$2.54	\$0.00	\$2.54
Oregon - East	\$0.61	\$0.00	\$0.61
South Carolina	\$2.22	\$0.00	\$2.22
Texas	\$8.71	\$0.00	\$8.71
Virginia	\$1.50	\$0.00	\$1.50
Washington - West	\$1.79	\$13.71	\$15.51
Washington - East	\$0.58	\$2.70	\$3.28
West Virginia	\$3.61	\$0.45	\$4.06
Wisconsin	\$0.74	\$2.04	\$2.78

Source: WFPA 2002

Washington Forest Protection Association (2002) also compared taxes on farms and forest resources in western and eastern Washington (Table 2.3). This comparison of within state sectors permits analysts to evaluate two different sectors under similar state tax laws. The result of the analysis suggested that the tax effort on forest resources was greater than on farm resources; nearly \$48 million in 2002 for forest resources statewide versus \$39 million for farm resources.

**Table 2.3: Taxes on farm and forest resources by East and West regions (2002)**

Area	Farm Resources		Forest Resources	
	# of Acres	Tax/Acre	# of Acres	Tax/Acre
Western Washington	630,772	\$ 9.74	4,519,539	\$ 8.87
Eastern Washington	10,977,489	\$ 3.09	1,931,805	\$ 3.75
Statewide	11,608,211	\$ 3.33	6,451,344	\$ 7.42

Source: WFPA 2002

Another study (Wash Ace 2005) published business cost comparisons between Washington, Oregon and Idaho. A closer look at Idaho was instructive since many sawmills are located just across the border in Idaho. Table 2.4 reports both the level and rank of four criteria used to compare the cost of doing business across states. These four indices suggest that Washington state has a higher business cost than neighboring Idaho.

**Table 2.4: Business Cost Comparison**

Criteria	Washington		Idaho	
		Rank		Rank
Unemployment Insurance taxes	\$685	1	\$331	10
Cost of Doing Business (Milken Index)	107.9	8	84.4	46
Business Taxes as a share of Gross State Product	5.1%	4	4.2%	37
Business Taxes as a share of State and local taxes	50.1%	10	38.8%	39

Source: WashAce 2005

### Trends in International Forest Products Markets

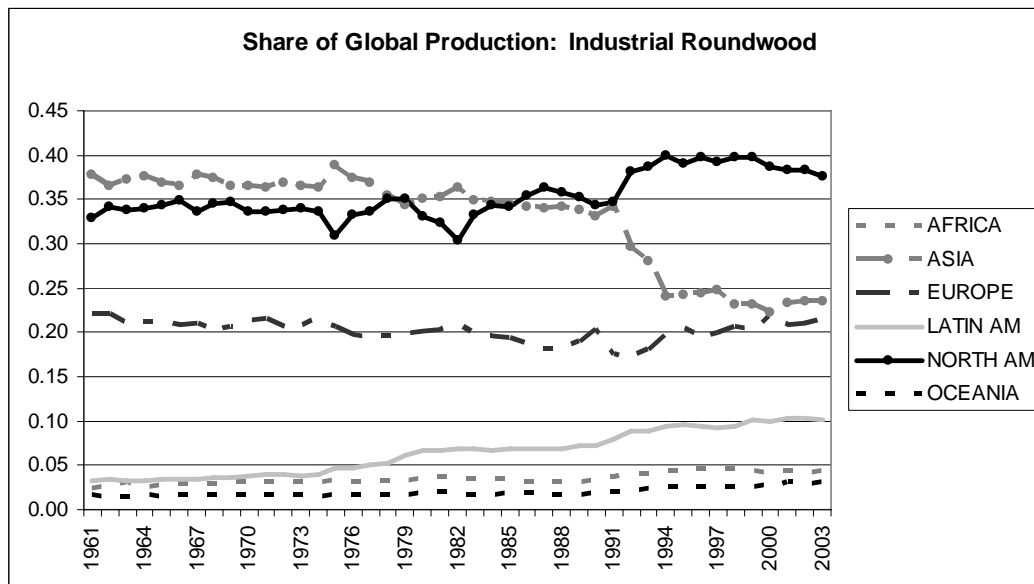
Historically Washington producers serviced Asian markets. The strengthening of the U.S. economy and dollar made exports of wood products to other parts of the globe more expensive during much of the latter part of the 90s and early on in the 2000s. Adjustments to international trade of Washington products began with changes in the availability of fiber in the early 1990s as foreign firms considered alternative sources of more stable suppliers and alternative products. The federal and state log export restrictions also contributed to a short supply situation in Asian markets. Europeans entered the Japanese market in 1993 and immediately began taking US share because of strong dollar and willingness to meet Japanese market requirements for metric sizes and provide forward pricing guarantees.

The Kobe earthquake in 1995 transformed the Japanese market as concerns about earthquake safety of structures resulted in major changes of Japanese building codes. The Japanese residential construction industry made a rapid transition from site built houses to pre-cut house packages that are built from pre-cut components. This change meant that lumber used in pre-cut operations must be kiln-dried. It changed what previously had been a green lumber market, mostly serviced by Canadian mills. The change to kiln-dried undermined the market for green hemlock in post applications and this market changed rapidly to a kiln-dried European whitewood glulam post.

The Asian economic crisis in 1997 caused the decline of virtually all U.S. wood exports to Asian markets. Perhaps most significantly, the Asian economic crisis occurred just after the Japanese housing market dropped off as a result of the consumption tax increase in 1996 that was applied to house purchases. The imposition of the consumption tax caused Japanese housing starts to drop from 1,643,266 in 1996 to 1,387,014 in 1997. The drop in housing starts, and the beginning of an economic recession that would last almost 10 years in Japan, saw the transformation of the Japanese wood industry from a market focused on wood quality at almost any price to a price sensitive market. This new price sensitivity and the continued strength of the U.S. dollar continued to work against U.S. exporters and U.S. wood exports continued to decline through 2002.

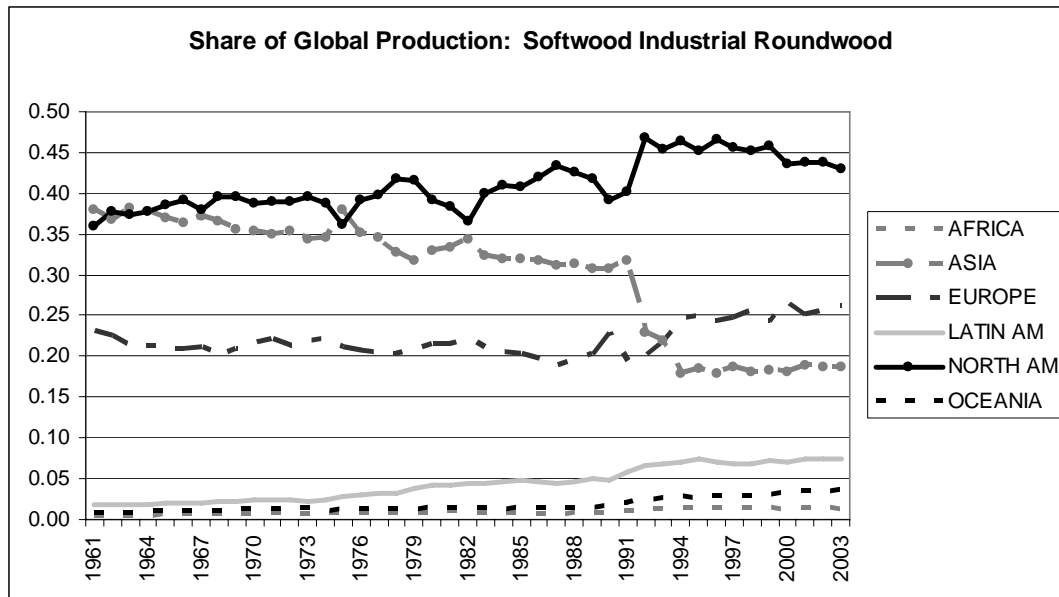
This section describes the global trends in forest products markets. We use these trends to place Washington's competitive position within the world-wide wood market. One of Washington's competitive advantages is its access to international markets. Exchange rates and fiber availability issues have impacted Washington's competitive position and only time will tell if it has lost it completely. With this in mind we provide a summary of global trends in what follows. We utilize graphs extensively and produce summary points. The data is taken from FAOSTAT.

### Production Shares



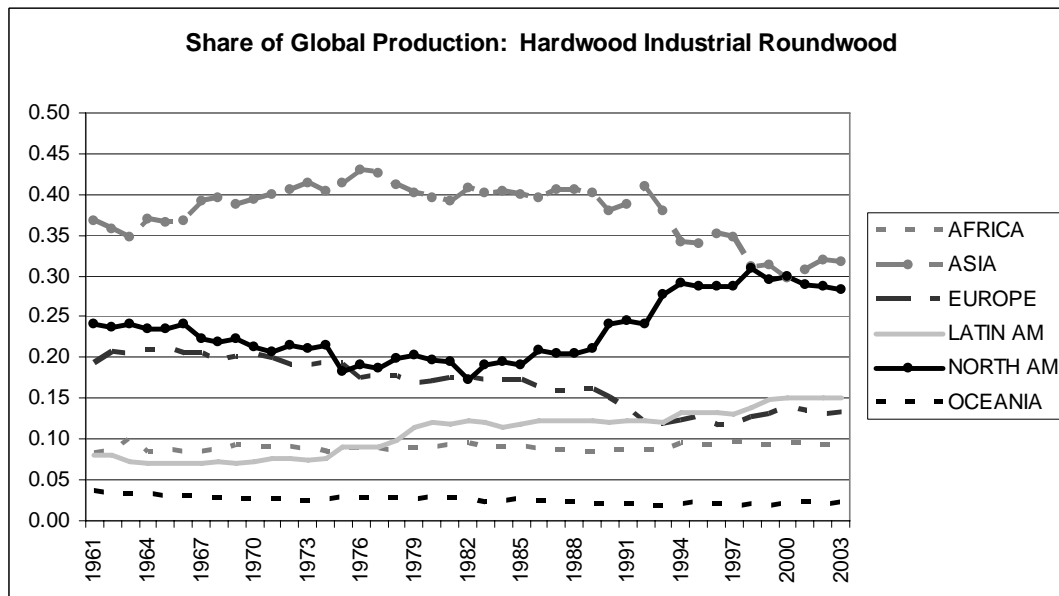
**Figure 2.9: Industrial roundwood production shares.**

Figure 2.9 illustrates the share of global production for six continental regions. Industrial roundwood includes pulplogs, sawlogs and veneer logs, and excludes firewood. A major trend is the step increase in North American share in production while the Asian share, principally due to the collapse of the former Soviet Union, fell sharply. Also note the increasing trend in share in Latin America.



**Figure 2.10: Softwood industrial roundwood production shares.**

Figure 2.10 above breaks out the industrial roundwood production into its softwood component. Since 1992, North America's share has jumped to over 45 percent but has a slight trend downward since. When we consider Figure 2.1 we note that the increase in its global share has come at a time when Washington's harvest level has declined dramatically. The implications have already been noted. The U.S. South for example is expected to capture a larger share of any increase in U.S. demand for softwood lumber.



**Figure 2.11: Hardwood industrial roundwood production shares.**

Figure 2.11 above illustrates the growth in the hardwood industrial roundwood production share for North America. Constraints on tropical timber harvest levels and the collapse of the former Soviet Union in 1990 lead to a reduction in Asian global share. The increase in hardwood production in Washington is perhaps a bright spot for the sector over the past decade. The switch from dark hardwoods, mostly produced by Asian,

African and Latin American producers to light hardwoods, produced mainly by temperate forests has been a plus for Washington alder.

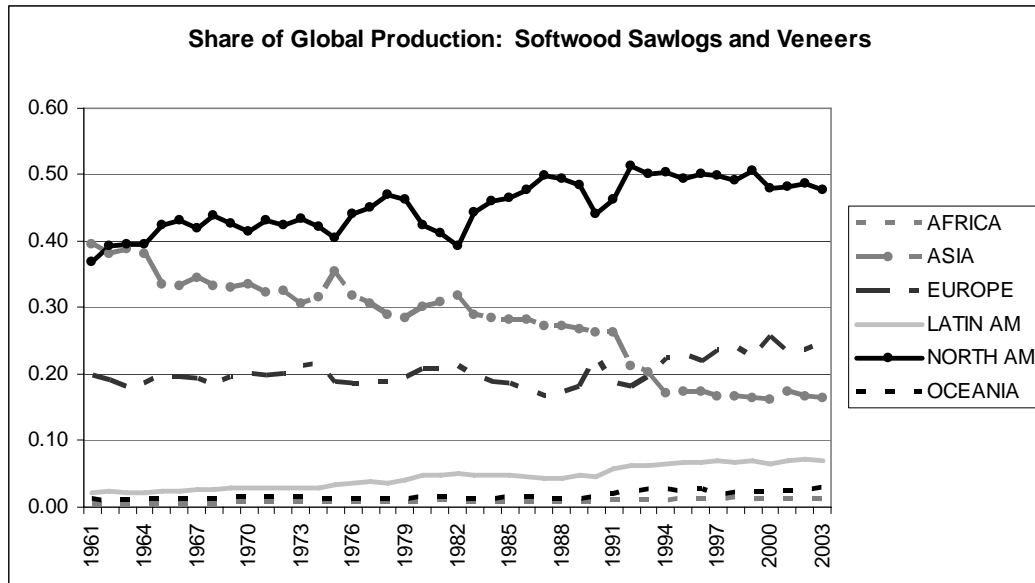


Figure 2.12: Softwood sawlogs and veneers production shares.

Figure 2.12 breaks out the softwood sawlog and veneer log components of industrial roundwood production share. North American timber producers have about half of the world’s softwood log market. Latin America, a relatively small geographical area for softwood log production is approaching 8 percent. Currently, Asia’s world share is considered low as long as Russia’s political economy remains unstable.

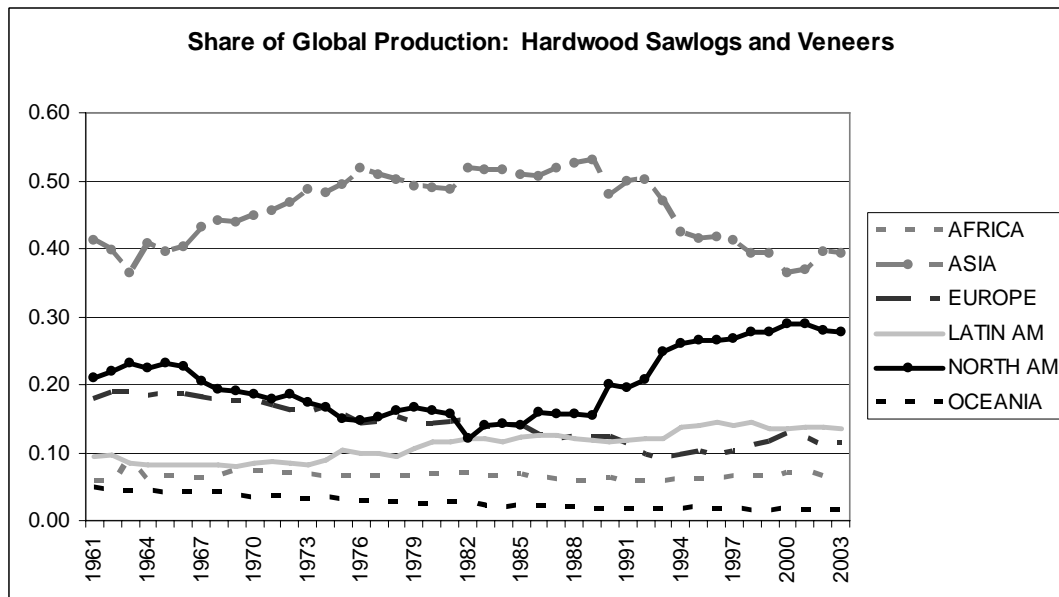


Figure 2.13: Hardwood sawlogs and veneers production shares.

Figure 2.13 illustrates North America’s share of global production of hardwood sawlogs and veneer logs and how it has grown from less than 20 percent during the 1980’s to nearly 30 percent in 2003. Washington’s role in this growth is limited however, particularly since plywood manufacture in the state has declined over

the past 15 years. Washington nevertheless possesses plywood mills that are some of the most productive in the nation. While it is likely not to grow substantially due to fiber availability constraints, these mills are also under pressure from an increase in Asian, particularly Chinese production in plywood.

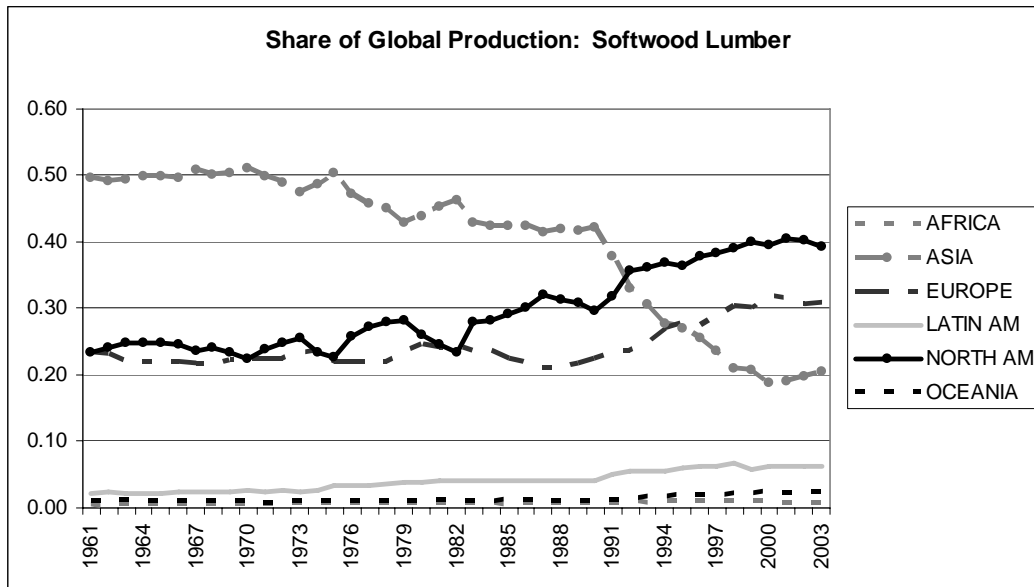


Figure 2.14: Softwood lumber production shares.

Figure 2.14 clearly establishes North America as the predominant producer of softwood lumber. It also illustrates Europe’s expansion as well. Part of the growth in share has occurred at the expense of the collapse in Asian share, and as we present later on, the shift in consumption from Asian to North American consumers.

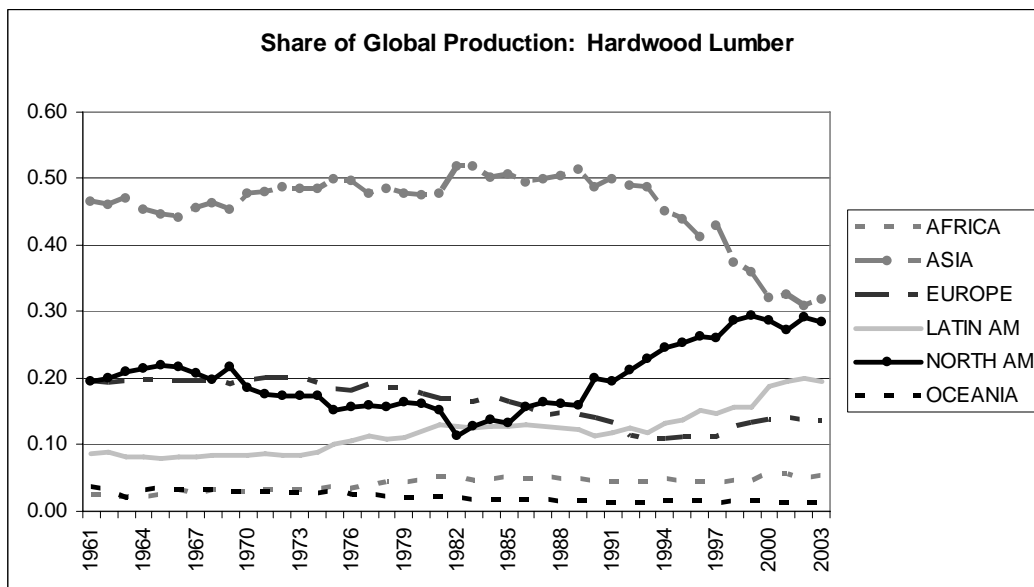


Figure 2.15: Hardwood lumber production shares.

Figure 2.15 suggests that North America’s hardwood lumber production share has gained a nearly equal share to Asian producers of hardwood lumber, and has outpaced Latin American producers over the past two



decades. Our previous notes on Washington alder apply here as well. Hardwood lumber has benefited from a move away from dark hardwoods, which were mostly perceived to be derived from unsustainably sources in the 1990s, to lighter woods. The certification of many dark hardwood forestlands however, is likely to impact the demand for lighter woods over darker woods.

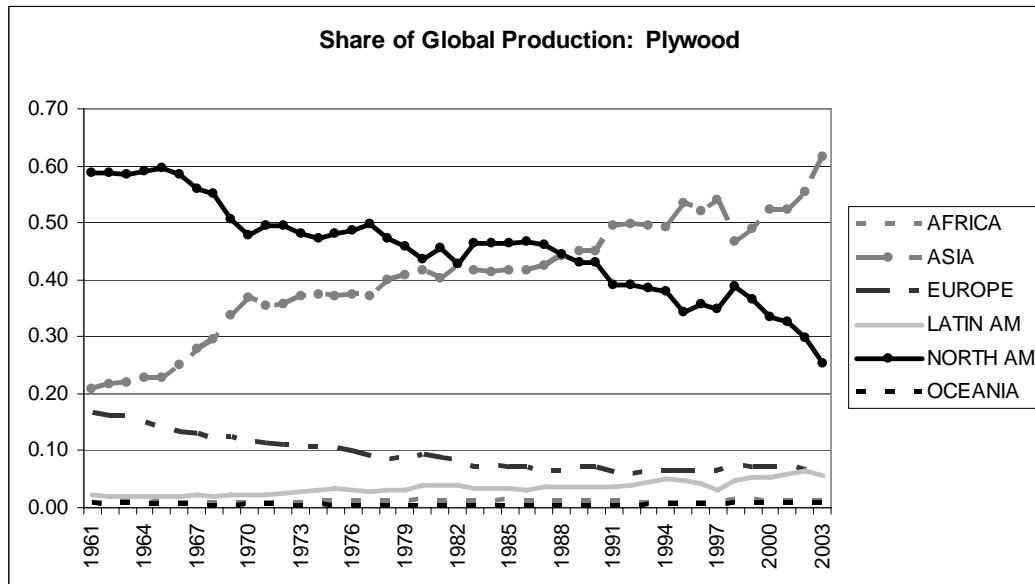


Figure 2.16: Plywood production shares.

Figure 2.16 illustrates the decline in plywood share for North American producers, while Figure 2.17 shows fairly well distributed wood-based panel production shares. The plywood panel is a component of the wood-based panel grouping. Asian producers continue to manufacture plywood to meet their needs. Chinese production of plywood has increased sharply. Plywood manufacturing in Washington has been stagnating with little or no growth, but nevertheless, has maintained a productive mill infrastructure.

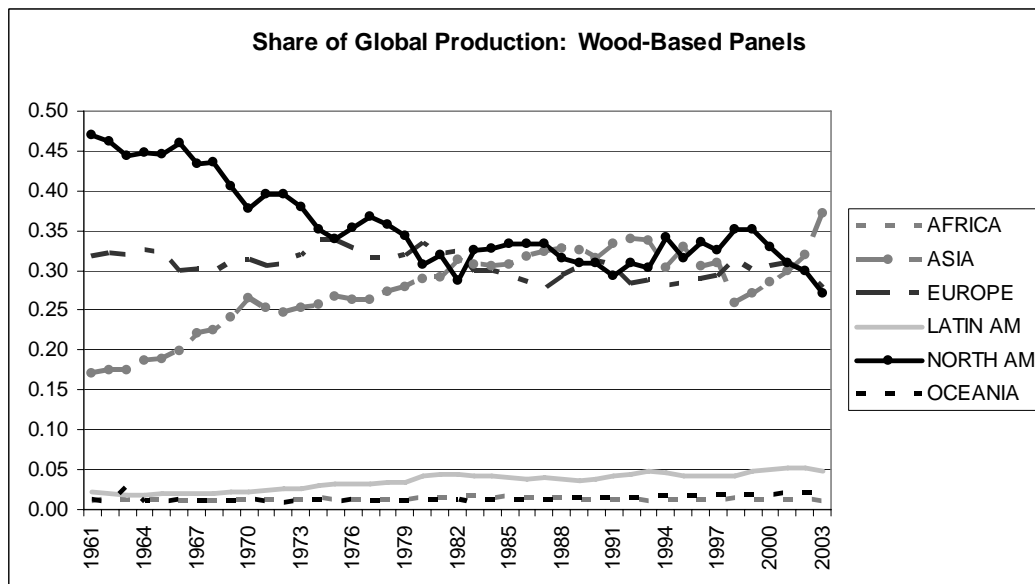
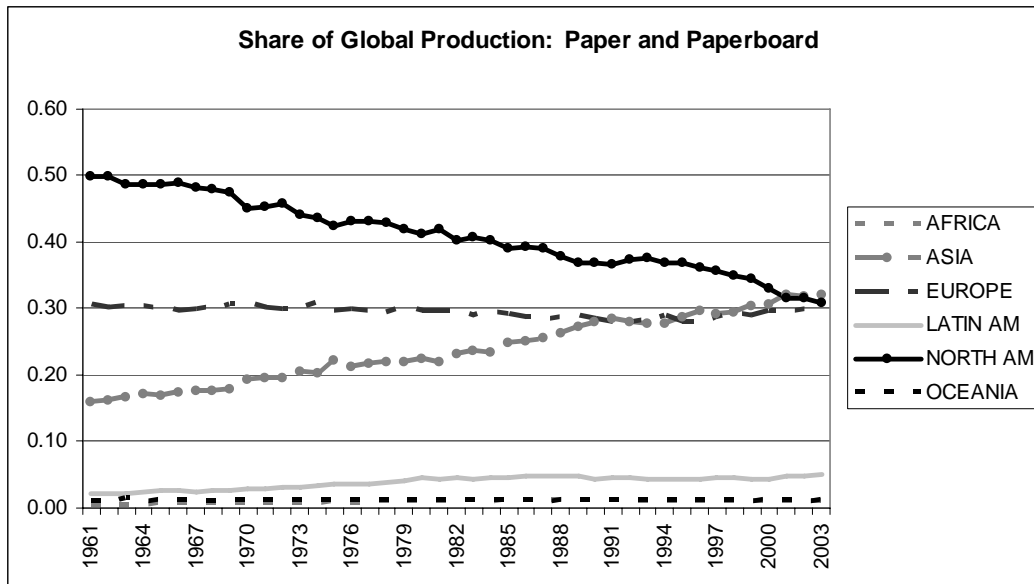
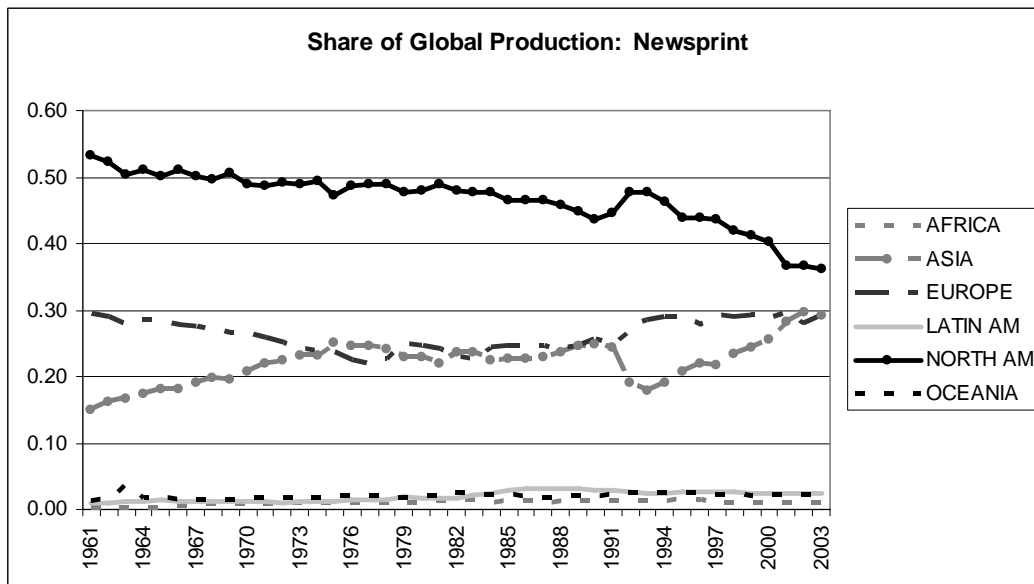


Figure 2.17: Wood-based panel production shares.



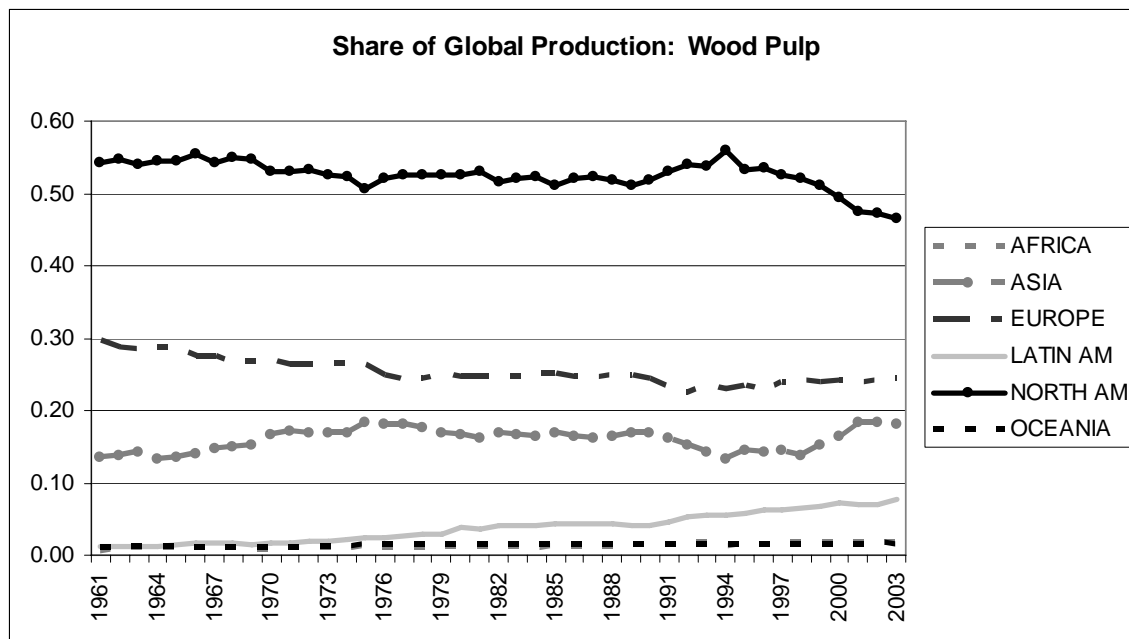
**Figure 2.18: Paper and paperboard production shares.**

Figure 2.18 illustrates the decline in North American paper and paperboard production dominance, while Asian producers have steadily gained production share.



**Figure 2.19: Newsprint production shares.**

Newsprint, a component of the paper and paperboard grouping, has been a major reason why North America's share has declined (Figure 2.19). Newsprint in Washington has been declining as a share of the pulp products produced by mills in Washington. In a section below we describe in greater detail the competitive issues that the pulp and paper sector is facing.



**Figure 2.20: Wood pulp production shares.**

Figure 2.20 illustrates a smaller share in wood pulp production principally since the early 1990's. At the same time Latin America's share of wood pulp production has increased to about 9 percent. There are several reasons for this shift in wood pulp production shares. Of particular note are factors that make location of greenfield facilities more competitive in Latin America and Asia. In the major Latin American producing countries, Brazil and Chile, capital has been readily available for expansion of forest product manufacturing plants. In addition, both Chile and Brazil are low cost producers of pulpwood with fast growing plantations. This is part has attracted investment dollars from North American, Asian and more recently, European firms.

### Production Investment

Development banks also finance forestry investments in these regions. The Forest Products Transportation Project by the World Bank spurred the export of forest products from Uruguay through infrastructure rehabilitation. The World Bank loan, approved in 1997 for US\$73 million, was invested in infrastructure and equipment for roads, railways, and the Montevideo port. Thus, the share of forest products exported from this port increased from 10 percent in 1997 to 40 percent in 2004. The project also supported government efforts to reduce the cost of managing the road network. These road rehabilitation investments resulted in the development of private ports which currently play a major role in the exportation of forest products from Uruguay. Finally, the project facilitated the continuation of operations at the Fray Bentos port.

Income taxes in most competing nations are more favorable for investments in papermaking and timber production than U.S. income taxes. Domestic taxation of domestic production in papermaking and timber lists Russia, Indonesia, Brazil and China as having taxes that are one half those in the U.S. (PWC/AF&PA 2005)

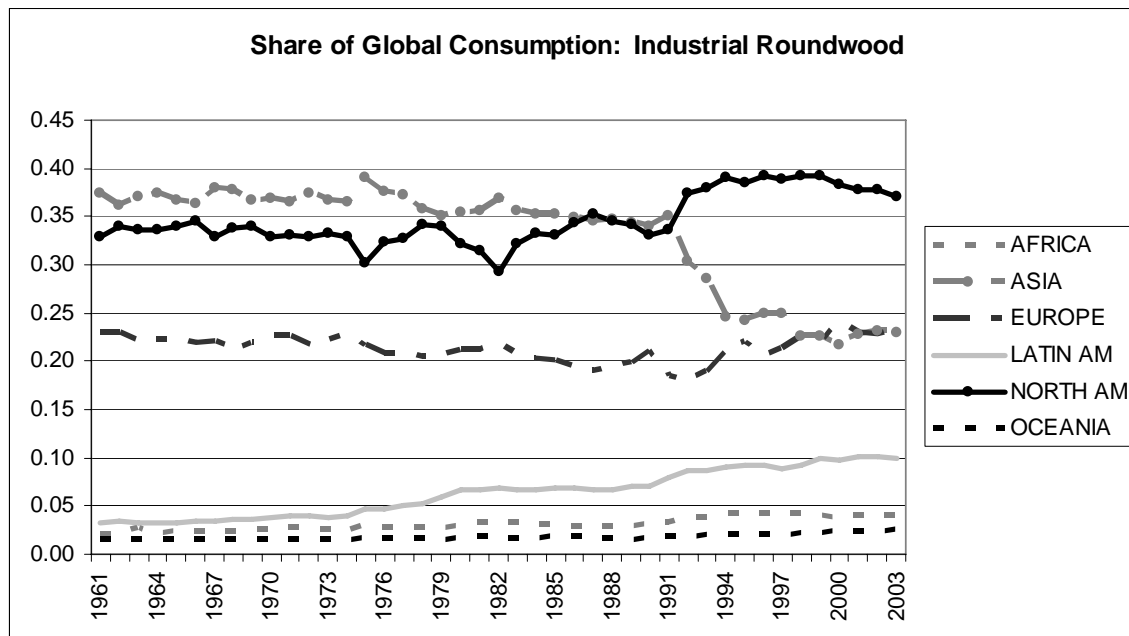
The foreign investment in U.S. operations is also growing. USDOC (1998) reported that the pulp and paper mill ownership in the U.S. is dominated by Canadian and European companies. In their report, Canadian companies owned 100 percent of 15 U.S. pulp and paper mills and had part ownership in 4 others. Likewise, U.S. companies are invariably looking for, and finding, international investment opportunities. However, U.S. investment is primarily concentrated in Canada. U.S. firms account for about 10 percent of Canadian lumber production and about 15 percent of wood panel production. U.S. producers of lumber products are

closely linked with Canadian producers in supplying the North American market, and U.S. ownership or investment in wood product facilities in other countries is growing. The larger U.S. forest product producers have ownership or some form of partnership in manufacturing facilities in South America, Europe, Asia, and Oceania. There are also many U.S.-operated sales and distribution offices worldwide.

Given the maturity of the pulp and paper sector in Washington state, it is most likely that capital needs to be generated from within companies rather than investors outside of the area. The one exception can be investments in biofuel technologies and conversion of pulp and paper facilities into biochemical and bio energy facilities.

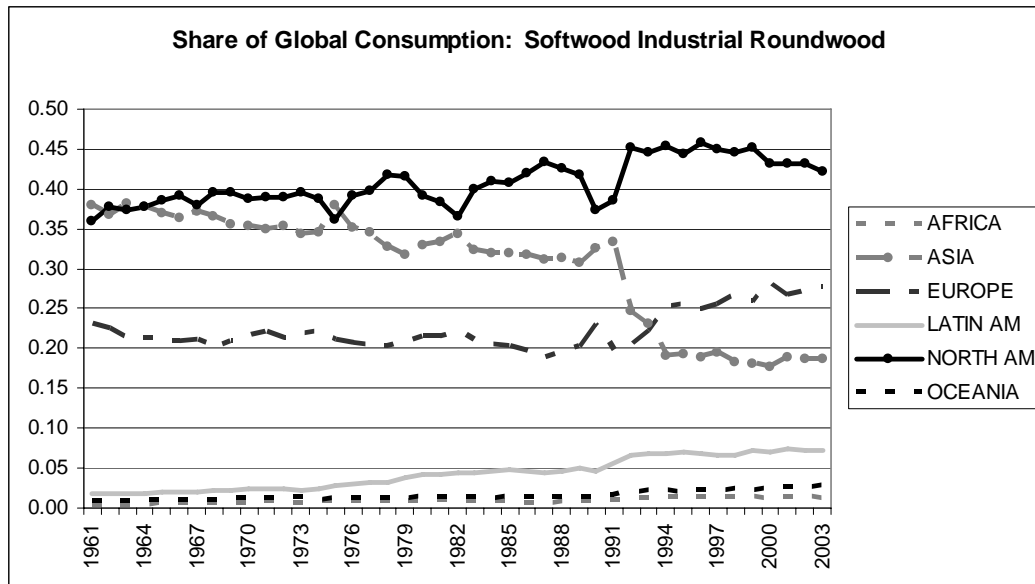
### Consumption Shares

The preceding charts illustrated production shares. In what follows we present consumption shares. These trends are important to understand since Washington is a net exporter of wood products. We present global trends using FAO data. Consumption is defined as apparent consumption; that is, production minus exports plus imports. We describe the share in consumption trends for some of the same product groups as above.



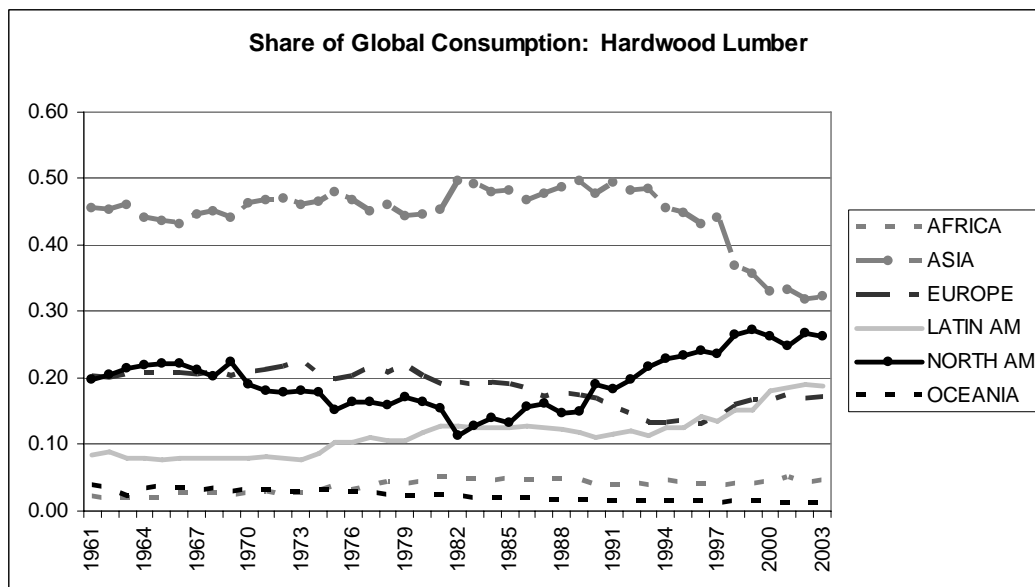
**Figure 2.21: Industrial roundwood consumption shares.**

Figure 2.21 reproduces the industrial roundwood consumption shares. The fact that the North American consumption share is similar to the production share suggests that North American market is nearly self-sufficient in meeting its consumptive needs for industrial roundwood.



**Figure 2.22: Softwood industrial roundwood consumption shares.**

Figure 2.22 breaks out the softwood industrial roundwood component. In general and at a broad scale of analysis, North America is basically self sufficient in softwood industrial roundwood. As described above however, there are many regional differences. Washington produces an excess of its lumber needs and is in competition with Canadian, U.S. southern and offshore mills.



**Figure 2.23: Hardwood lumber consumption shares.**

Figure 2.23 above illustrates the global consumption share of hardwood lumber. Note that when compared to production, the consumption share for North America is lower. In this instance, North America is a net exporter of hardwood lumber. The European consumption share is higher than their production share suggesting that Europe imports hardwood lumber in net terms. This suggests market opportunities for hardwood lumber in Europe from North America. In fact, alder exports to Europe have been successfully introduced.

We note that softwood lumber production and consumption shares are similar indicating as in the industrial roundwood cases a self-sufficiency on meeting demand at the board market level (figure not shown).

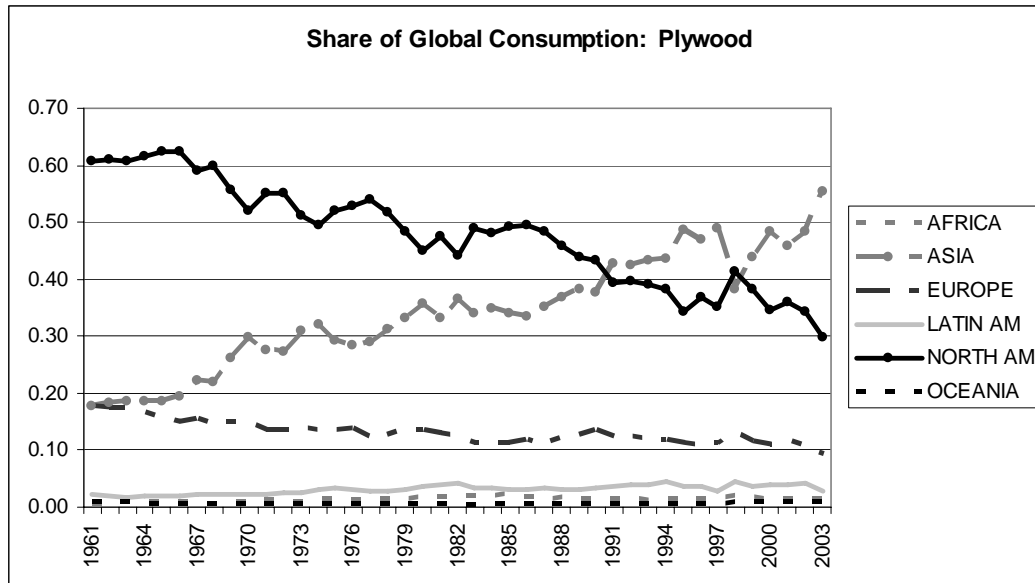


Figure 2.24: Plywood consumption shares.

Figure 2.24 above suggests North America is a net importer of plywood with Asia and Europe producing more than they consume internally. More recently, China has increased its exports of plywood into the U.S. markets putting pressure on existing plywood mills to lower costs.

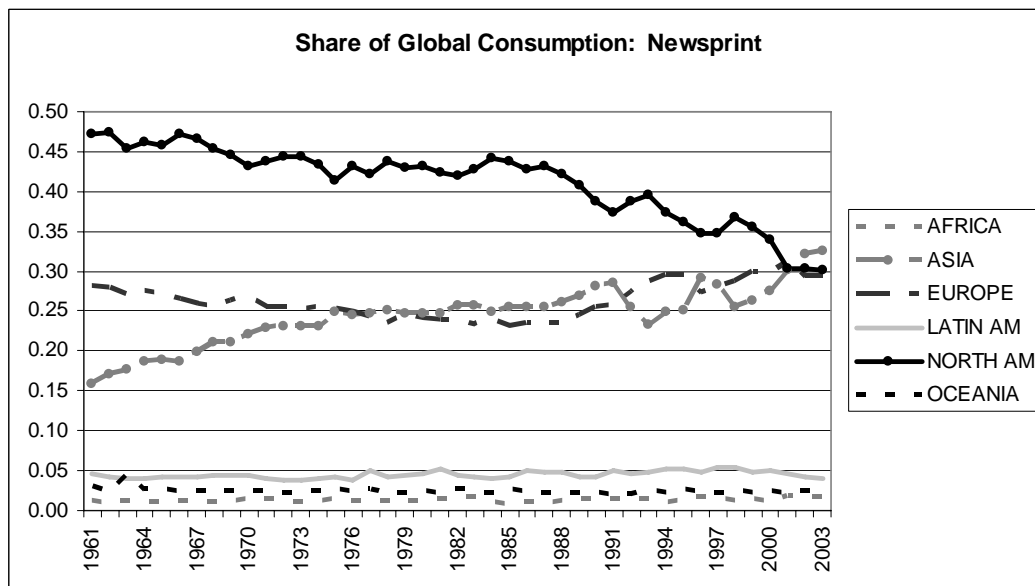
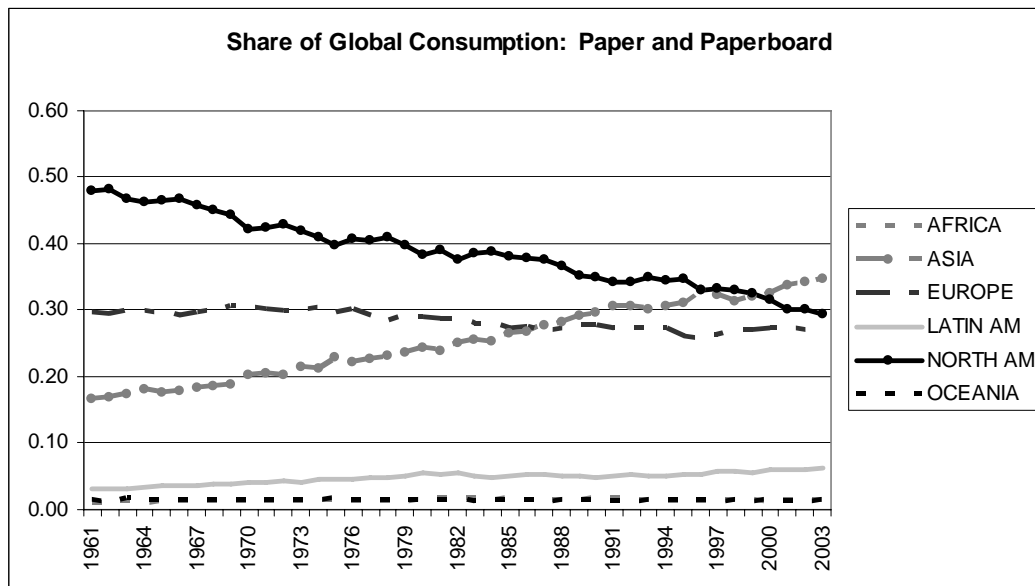


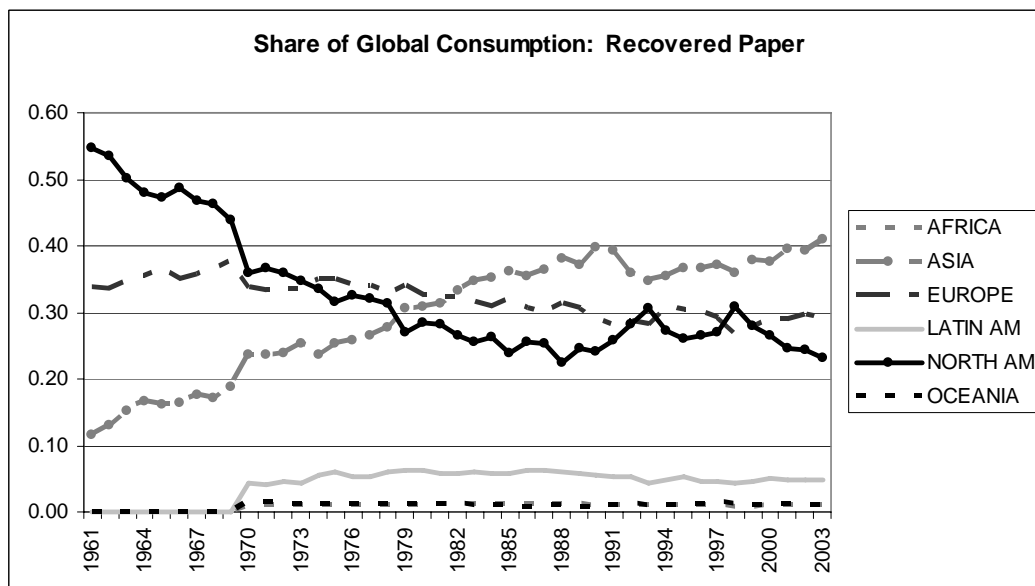
Figure 2.25: Newsprint consumption shares.

Figure 2.25 and figure 2.19 above suggest North America is a net exporter of newsprint whereas Asia is a net importer. It is also apparent by comparing the two figures that Latin America has increased its exports of newsprint. What is more troubling is the sharp decline in newsprint demand in the U.S. A recent analysis of newsprint demand has negatively correlated the growth of the internet with newsprint consumption (Hideaki 2007).



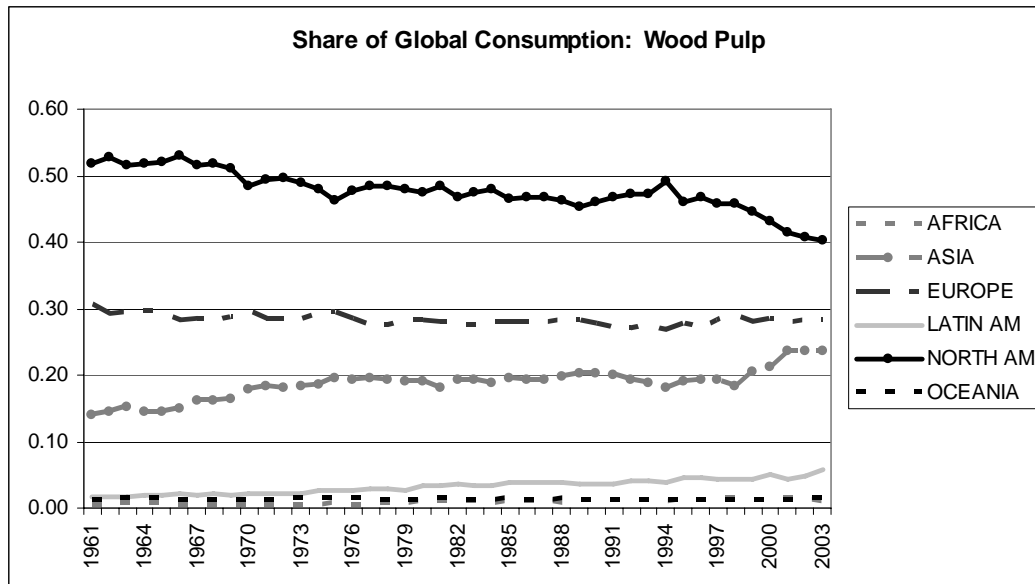
**Figure 2.26: Paper and paperboard consumption shares.**

Figure 2.26 above suggests Europe has expanded its exports to Asia of paper and paperboard products.



**Figure 2.27: Recovered paper consumption shares.**

Forty percent of recovered paper is consumed in Asia and its trend continues to grow despite the step-down associated with the collapse of the former Soviet Union (Figure 2.27). Recovered paper exports from Washington increased during the period. The increase in demand from China raised prices and impacts the cost competitiveness of local mills. In 2004 around 10 percent of the material input to pulp manufacture is waste paper.

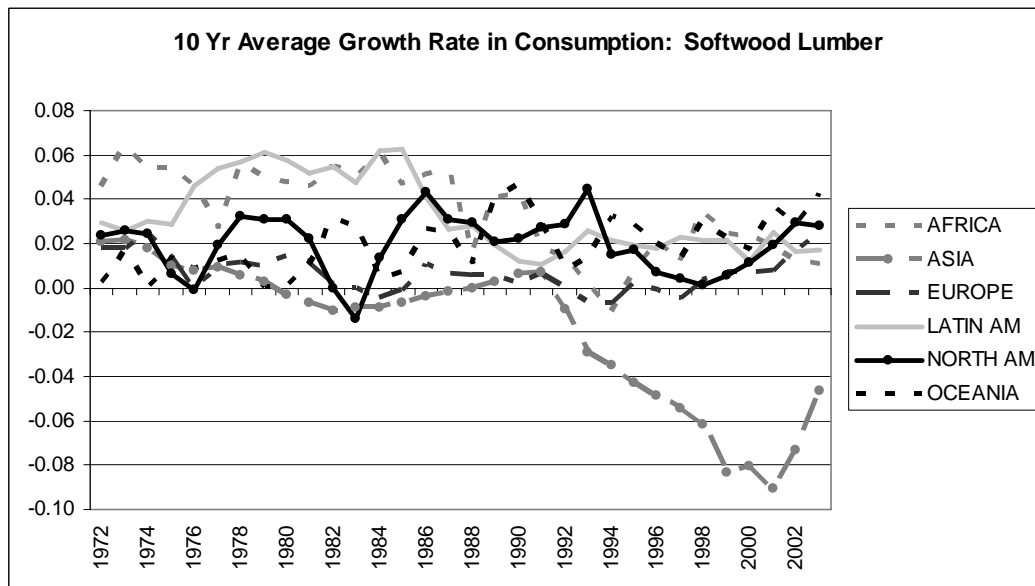


**Figure 2.28: Woodpulp consumption shares.**

Figure 2.28 above suggests, in combination with Figure 2.20 that wood pulp is exported to Asia from North America, Europe and Latin America. Asia remains a net importer of wood pulp and is likely to do so until China’s plans to expand its plantation area and pulping capacity are realized.

**Rates of Change**

It is also instructive to examine rates of changes in production and consumption trends. The rates of change suggest how fast markets are shifting. They reflect longer-term changes when these rates are averaged over a 10-year period.



**Figure 2.29: Softwood lumber consumption shares growth.**

Figure 2.29 produces 10 year average annual growth rates for softwood lumber demand. It clearly establishes the collapse of the Asian market while other markets have been robust. The trend is similar for



the softwood log market (figure not shown) and correlates with the decline in log exports from Washington shown in Figure 2.1. One point that is worth noting is the rebound associated with Asia demand growth in 2001. A return of the Asian wood basket would provide renewed opportunities for Washington producers.

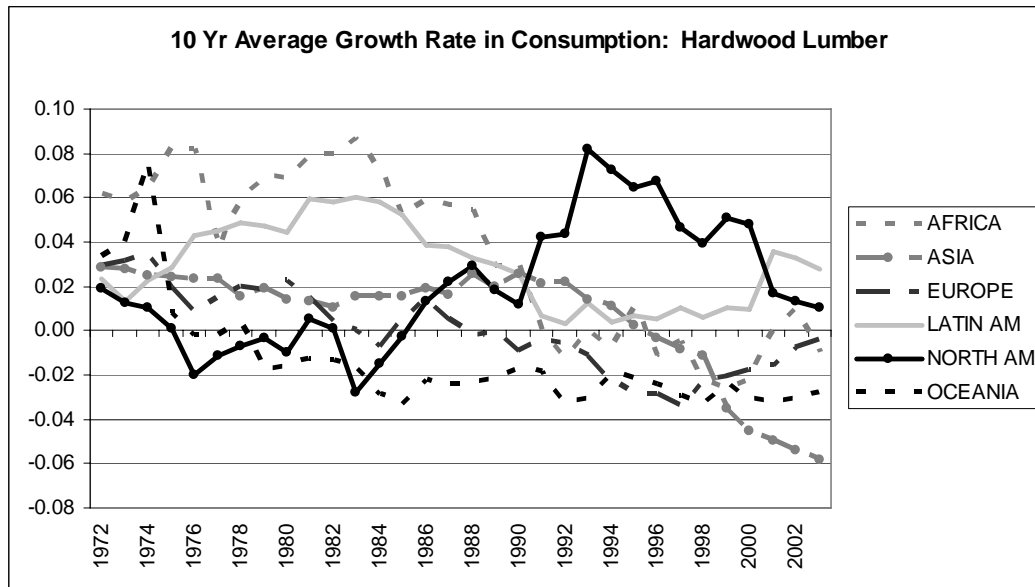


Figure 2.30: Hardwood lumber consumption shares growth.

Figure 2.30 indicates that two markets have maintained positive growth for hardwood lumber demand: North and Latin America. The North American growth rate has declined substantially, since peaking in the early 1990s. Closer examination of the data suggests a potential inverse relationship between North American hardwood demand and tropical hardwood demand, particularly when comparing the decade of the 80s with the 90s.

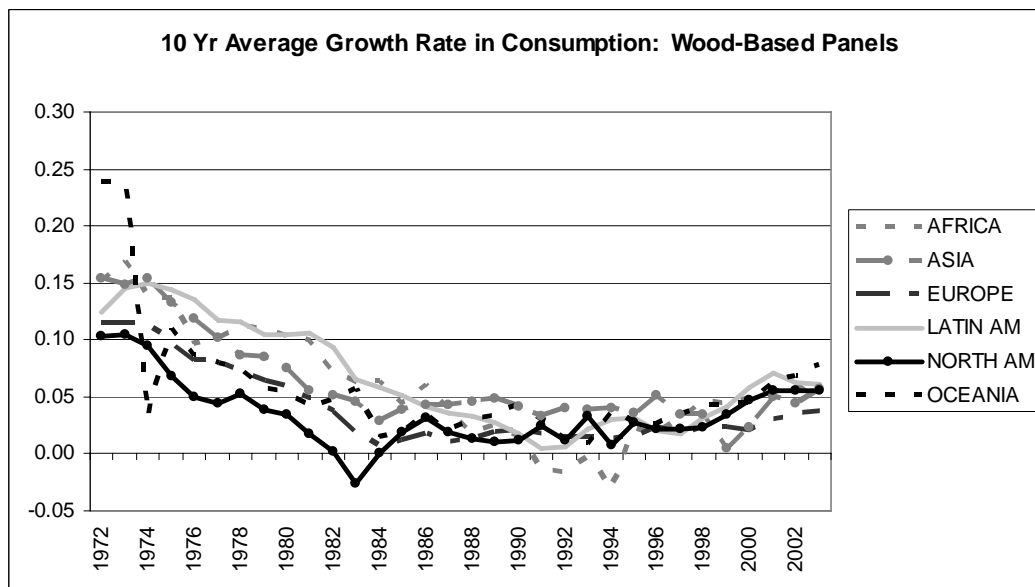
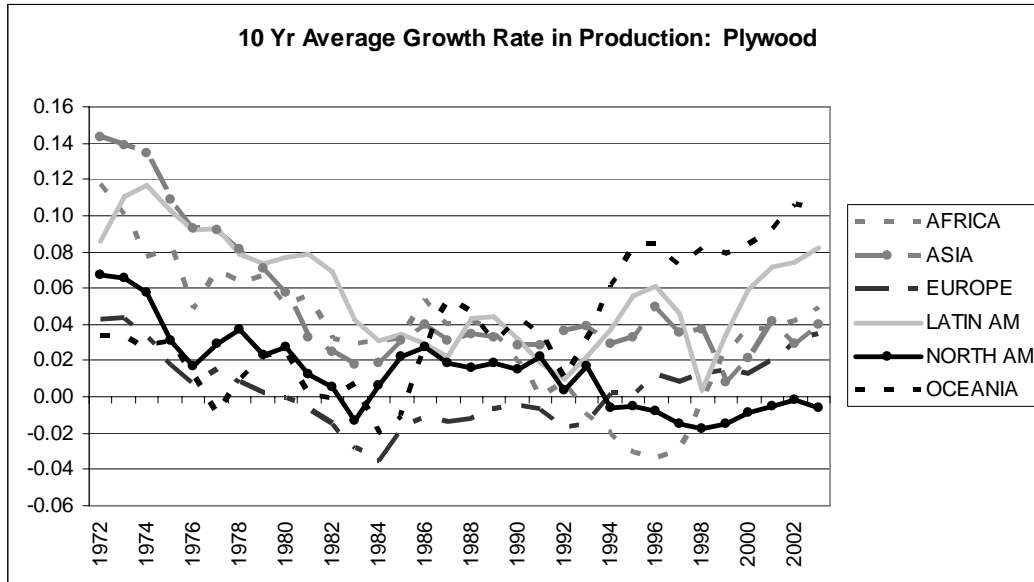


Figure 2.31: Wood-based panels consumption shares growth.

Figure 2.31 suggests pretty robust growth for wood - based panel consumption. The demand has been about 5 percent for all regions. When compared to plywood production rates, these trends suggest a movement

offshore from North America. Figure 2.32 reproduces the production growth rate averages for plywood. While production rates in North America have declined (a negative growth), other regions, particularly Oceania, have achieved relatively high growth rates.



**Figure 2.32: Plywood production shares growth.**

We combine the 10 yr average annual growth rate with the share data for 2004 in the charts that follow for aggregate product categories. Figure 2.32 below reproduce these data and suggest the poor performance of the paper and paperboard demand in North America, Japan and western Europe, while emerging markets such as China Other Asia and eastern Europe have expanded markets. North America’s poor performance is driven in part by negative growth in the newsprint sector.

Figure 2.34 shows data for wood-based panels. Emerging markets in China and Eastern Europe have growth over 10 percent per year on average. Together they account for over 25 percent of the global market. Western Europe and North America continue to be the largest market but with average growth rates below 5 percent. Japan’s economic recession has resulted in negative growth when averaged over the past 10 years.

The softwood lumber markets over the past 10 years have shifted from Asian to largely North American. As previously mentioned this shift has made Washington producers focus their products on U.S. markets (Figure 2.35). Hardwood lumber markets however are largely in recovery, particularly Asian markets (Figure 2.36).

## Paper and Paperboard

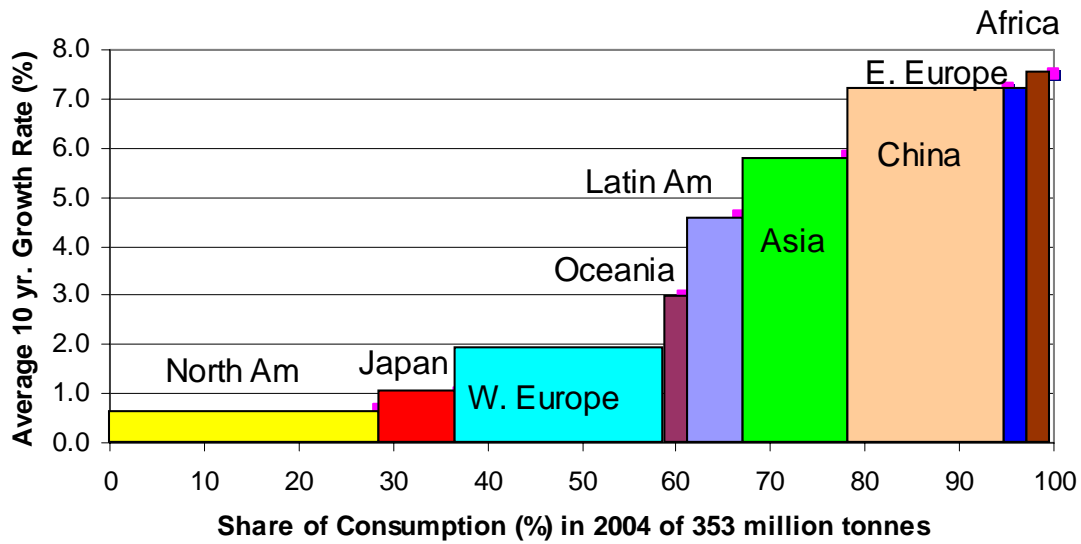


Figure 2.33: Demand Growth by Market Share for the Paper and Paperboard Sector

## Wood-Based Panels

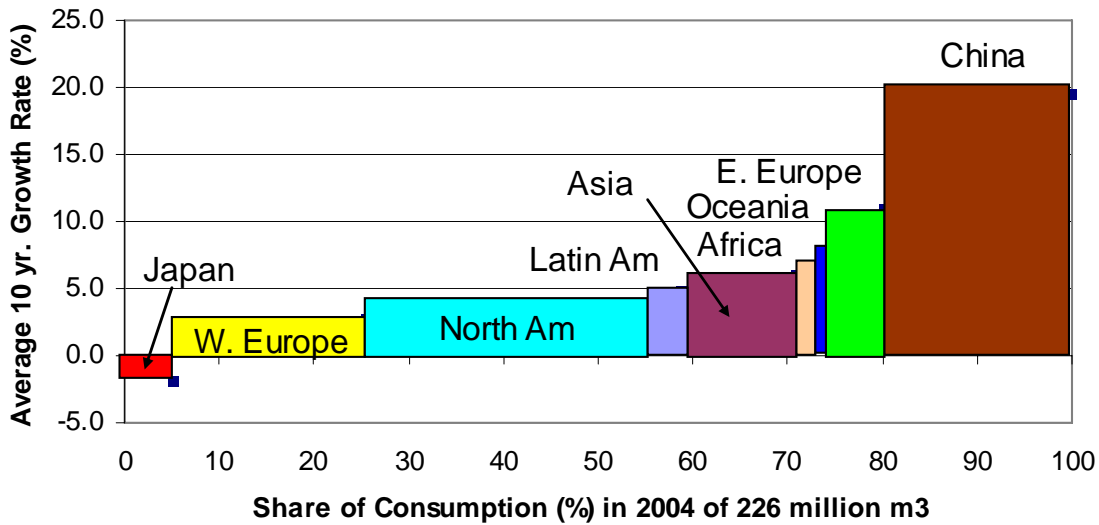


Figure 2.34: Demand Growth by Market Share for the Wood-Based Panels Sector

## Softwood Lumber

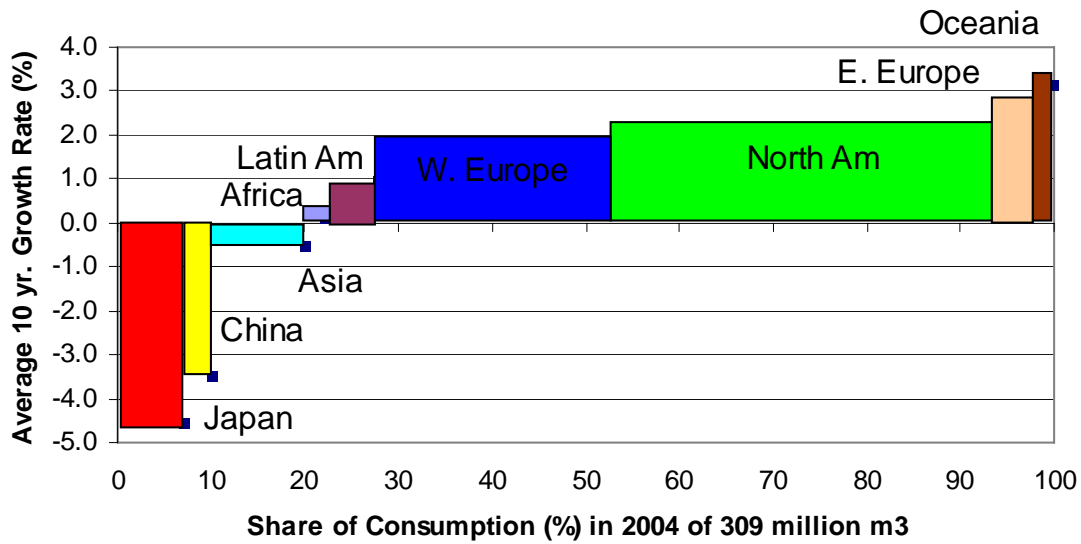


Figure 2.35: Demand Growth by Market Share for the Softwood Lumber Sector

## Hardwood Lumber

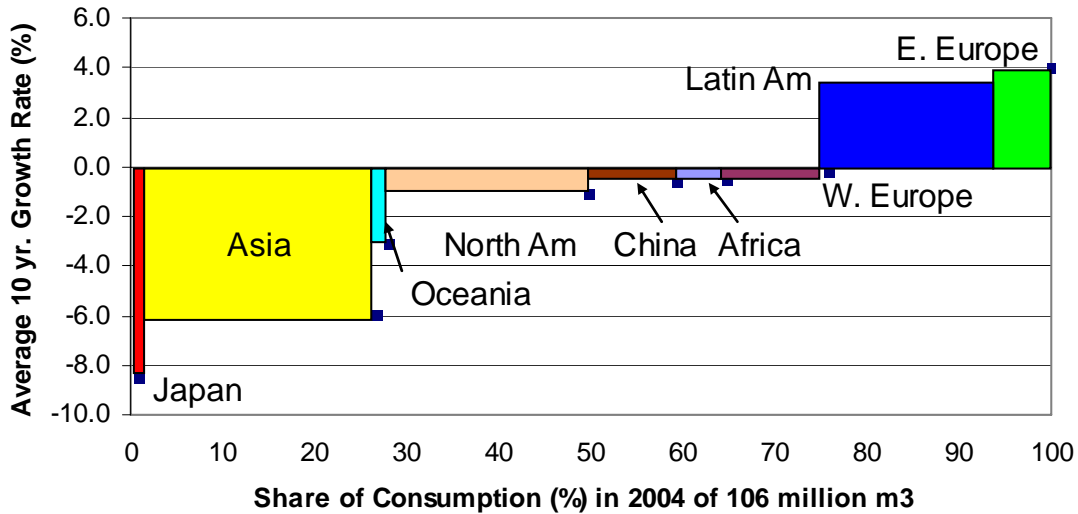


Figure 2.36: Demand Growth by Market Share for the Hardwood Lumber Sector

## Conclusions

Washington's wood products industry has been forced to adjust to a new harvest level, and with it new markets. Demand for raw materials by industry continues to determine the value of timberlands. Today industry has adjusted to new markets producing primarily a commodity product.

As a consequence of the new harvest level and changes in export markets, Washington's forest products industry today is producing primarily softwood lumber for the domestic market. Washington participates within a much broader market in which softwood and hardwood log and lumber production has expanded.

The major competitors of Westside and Eastside Washington mills are mills in Oregon, Idaho, Canada and the U.S. South. A comparison of harvest and delivery costs to mills relative to Washington mills on average reveals that U.S. South mills are at 44% of Washington costs, and the Interior B.C. mills are at 30% of our harvest and delivery costs. While we are high cost producers on average, we can still service markets, but at higher costs and less profits than our competitors.

Two markets of interest to Washington producers are the Interior West and Midwest markets: 44% of Washington's production goes to the Interior West market, and 16% of the production going to the Midwest market. These markets are also serviced by southern U.S. and Interior B.C. mills.

The California market is also important to Washington. In 2005 it consumed an estimated 6 BBF of lumber while Washington produced about 5.7 BBF. Oregon shipped 30% of its product to California compared to Washington, at 19% of our lumber. Imports coming from outside North America also service the California market. Note that Washington sits in the far northwest corner of the U.S., servicing a domestic commodity market. Our international markets that were once important in the past are not presently growing. Of the 5.7 BBF of lumber produced by Washington sawmills, 4.2 BBF are in excess of the 1.5 BBF consumed in Washington.

Washington has the highest per acre tax burden of all states, averaging over \$15 in 2002. If we compare within-state sectors, forest resources paid \$48 million compared to the \$38 million paid by the agricultural sector. The difference is more pronounced since forested resources have a much smaller land base. Parcelization and tax burdens can have large negative effects on forest management.

The substantially greater number of mills in Idaho just across the border raises a question regarding the state's competitiveness. Business cost comparisons reveal that Washington has the highest unemployment insurance taxes, is ranked higher than Idaho in the cost-of-doing-business index, and has a higher share of business taxes than Idaho when measured as a share of gross state product and state and local taxes.

Notwithstanding, there are several Westside mills that are highly competitive. Eastside mills however have high log costs due to fiber scarcity and compete directly with the Canadian mills. Regulations impact the availability of wood, and wood has the highest cost share in producing products. Finally, taxes impact investments at both the forest land and mill levels.

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