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How Effective Are the Lacey Act Amendment of 2008 and Related Trade Measures in Other Nations?
Jeffrey Prestemon,∗a,b

New research has documented the effects of the Lacey Act Amendment of 2008 on US hardwood imports from suspected illegal wood source countries. But questions remain about how the Lacey Act and related trade measures implemented by the European Union and other nations might be affecting not just imports but also global forest product trade flows more broadly. This presentation describes research quantifying how illegal logging affects production, prices, and trade flows, research quantifying the price and quantity effects of the Lacey Act on US imports of tropical lumber and hardwood plywood from suspected source countries, and a recent effort sponsored by the European Commission to assess the effectiveness of the Forest Law Enforcement, Governance and Trade program, including the voluntary partnership agreements and the European Union’s Trade Regulation 995, which took effect in 2013.

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The Softwood Lumber Agreement (SLA) 2006 between the US and Canada is the temporary solution of this dispute, entailing Canada to impose mandatory export charges on lumber shipments to the US By developing a two-country two-stage Stackelberg game model, this study examines the optimal level of the export tax under the framework of the SLA 2006. The theoretical results suggest that the lumber production costs in Canada and the US production capacity along with the linear demand parameters determine the optimal rate of export tax on Canadian lumber exports to the US The empirical estimation reveals that the monthly optimal export demand parameters determine the optimum rate of export tax on Canadian lumber production costs in Canada and the US production capacity along with the linear framework of the SLA 2006. The theoretical results suggest that the lumber Stackelberg game model, this study examines the optimal level of the export tax under the temporary solution of this dispute, entailing Canada to impose mandatory export charges on lumber shipments to the US

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gaining and trade negotiation process between the US and Canada.

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Analysis of the Log Export Market in the Pacific Northwest and the Economic Impacts on Stakeholders
Micah Scudder,∗a,b

Since 2010, there has been enormous growth in Pacific Northwest log exports destined for the Pacific Rim countries. State governments, land managers, forest product manufacturers, and export firms are seeking information on export log origins, the proportion of total annual harvest they represent, and overall international trade flows. During this time period there has also been debate on the pros and cons of log exports due to the economic impacts they have on stakeholder groups: timber owners, domestic processors, communities, and consumers. This debate has occurred during past export growth cycles and has often led to changes in state and federal log export policies. I have analyzed log exports from the Pacific Northwest in regards to volumes, log origins, species mix, export values, destinations, and end uses. My analyses provide a big-picture view of the recent log trade flows in the Pacific Rim region and the contribution that the Pacific Northwest has made towards total demand in the Pacific Rim countries. To assess the effects of the recent log export trends on stakeholders groups I have analyzed wood product market demand of log trade flows, comparative advantages of manufacturers, existing export legislation, and currency exchange rates. This analysis identifies the factors that led to the recent log export surge and its impact on stakeholder groups. By combining this assessment with a big-picture view of log trade flows in the Pacific Rim region, stakeholders will gain an understanding of the global influences that impact the Pacific Northwest forest products industry.

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Efficiency of Ecosystem Services Production in Loblolly Forests with Climate Change
Damian Adams,∗a,b Andres Susaeta,∗b and Doug Carterb

Forests provide a myriad of benefits to society by producing timber, sequestering carbon improving water quality, supporting a variety of plant and animal species, and providing aesthetics and recreation. Continued anthropogenic emissions of greenhouse gases is expected to cause further planetary warming and changes in the precipitation regimes. These changing climate conditions are expected to significantly affect ecosystem services. This is particularly relevant in the case of nonindustrial private forest landowners who own around 49 million ha (68% of private timberlands) in the Southern region of the US and are critical for sustaining the flow of ecosystem services and enhancing the resilience of existing ecosystem in light of changing climatic conditions. Valuation of forest ecosystem services in monetary units becomes critical in the context of climate change. The main goal of this study is to economically assess the provision of timber production, carbon sequestration, and biodiversity from loblolly forest (Pinus taeda L.) plots in the southern US under climate change. We use a non-parametric approach known as data envelopment analysis (DEA) to estimate the technical, allocative, and profit efficiencies of loblolly pine forests’ ecosystem services in the southern US under current and future changes in forest productivity conditions and levels of precipitations and temperatures.

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Jacek Siry and Tom Harris, Jr.

Forest industry ownership described as primary wood products manufacturers used to own about 8% to 10% of US forests, but most of these have now been sold to institutional investors, such as timber investment management organizations (TIMOs), or converted into timber and real estate companies, termed Real Estate Investment Trusts (REITs). The forestland ownership change originated in the late 1970s, reaching its peak from 2000 to 2010. It is estimated that TIMOs and REITs by 2006 acquired 80% of forestry industry land. This ownership shift has affected wood market structure, volume of market wood and how wood is sold. We analyze timberland transactions and values and the new ownership to assess the impact of this change on forest resources, wood markets, and forest industry. We also provide an overview and analyze more recent transactions and values as well as the restructuring of major forestland owners in the United States.

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Generalized Faustmann Formula with Forest Property Taxation
Sun J. Chang

In this presentation, I will present the results of incorporating various types of forest property taxes into the generalized Faustmann formula. The general case of the formula under the unmodified property tax will be discussed first since it encompasses other types of taxes as its special cases. Next, analytical results of the impacts of forest property taxes on management decisions under the generalized Faustmann formula will be discussed. These results then are compared and contrasted with those from the classic Faustmann formula to highlight their differences. Lastly, the current situation of forest property taxes in various states will be discussed to provide the necessary background information about the relevance of these results.

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Economic and Environmental Sustainability of Transatlantic Wood Pellet Trade
Puneet Dwivedi

This study estimates greenhouse gas (GHG) intensity and unit production cost of a unit of electricity generated in the United Kingdom from wood pellets imported from the southern region of the United States for 42 different scenarios and compares them with the GHG intensity and unit production cost of a unit of coal-based electricity. This study also estimates the abatement cost of GHG emissions for a unit of electricity generated from imported wood pellets. The use of imported wood pellets for electricity generation could save at least 64% of GHG emissions relative to coal-based electricity in the United Kingdom. The average unit production cost of electricity generated from imported wood pellets (US $ 225 MWh-1) was higher by 30% than the unit production cost of electricity generated from coal (US $ 171 MWh-1) without any price support in the United Kingdom. However, in the presence of payments from the established price support mechanisms of Renewable Obligation Certificates (ROCs) and Levy Exemption Certificates (LECs), the unit production cost of electricity generated from imported wood pellets (US $ 145 MWh-1) was lower by about 15% than the unit production cost of electricity generated from coal. The negative abatement cost suggests existence of generous price supports to wood-pellet based power plants. The policy makers should consider 1 MWh of electricity generated from imported wood pellets equivalent to 0.64 ROCs or 0.76 ROCs in presence and absence of payments from the price support mechanism of LECs for ensuring a zero average abatement cost, respectively.

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Location & Consumption Patterns of Sawmills: Changes over Time & Effects on Wood Demand Distribution
Consuelo Brandeis and Donald Hodges

Entry and exit of mills are expected occurrences within an industry, as more efficient and often larger mills replace less efficient, smaller mills that can no longer compete. However, exits can also result due to other reasons, including changes in final product demand and competition from foreign producers. Within the southern US timber industry, the sawmill industry has experienced a high rate of mill exits. Between 1997 and 2011, the number of operating sawmills dropped by 46 percent. Consumption of saw logs, however, increased over the same period. Changes in the number and consumption capacity of sawmills pose questions related to resulting shifts in the spatial distribution of mills and the consequences of such changes on the pattern of roundwood demand. To explore these issues we analyzed the spatial distribution of active sawmills in Tennessee from 1997 to 2011. We also investigated the effect of new location patterns on roundwood production across the state. Mill information was obtained from the USDA Forest Service Forest Inventory and Analysis, Timber Products Output program survey of primary wood-using mills. The analysis reveals significant changes in the location of active mills and the areas supplying them. Tennessee’s sawmill industry shifted from a nearly uniform distribution of wood demand originating from smaller mills scattered across the state, to demand from larger wood consumers clustered around two areas of the state.

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Analysis of Import Demand for Coated Graphic Printing Paper in the United States
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The coated graphic printing paper is a noteworthy commodity in the US import market due to its wide usage and large value of import. During the period from 2002 to 2015, the consumer demand for imported coated graphic printing paper has experienced great fluctuations. This study examines this market from various perspectives including consumer behavior, trade depression and diversion effects, and demand elasticities. In addition, the exogenous impacts on this market from economics depression and related trade remedies are also explored in this study. Based on the framework of Almost Ideal Demand System (AIDS) model in static and dynamic form, the results for those analysis are revealed in terms of both long-run and short-run effects. The implications of this study will be serving as empirical evidences for consumer behavior, market competition, and trade remedies effects in the US forest product import market.

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SRWC Productivity and Economic Feasibility on Marginal Lands in North Carolina
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Evolving bioenergy markets necessitate consideration of marginal lands for woody biomass production worldwide particularly the southeastern USA, a prominent wood pellet exporter to Europe. Growing short rotation woody crops (SRWCs) on marginal lands minimizes cropland use concerns for bioenergy production and provides a sustainable wood source for existing and growing global biomass markets. We estimated aboveground biomass productivity of various hardwood SRWC on operationally established sites (0.5 ha to 109 ha) and assessed their economic feasibility on lands used to mitigate environmental liabilities including municipal wastewater, livestock wastewater and sludge, and subsurface contamination by petroleum and pesticides. Mean annual increments (Mg ha$^{-1}$ yr$^{-1}$) of aboveground biomass had no consistent relationship with stand density or age. Non-irrigated Populus, Plantanus occidentalis L. and Pinus taeda L. stands produced 2.4 to 12.4 Mg ha$^{-1}$ yr$^{-1}$. Older, irrigated Taxodium distichum (L.) Rich, Fraxinus pennsylvanica (L.) Marshall, and coppiced P. occidentalis stands had higher productivity (10.6 to 21.3 Mg ha$^{-1}$ yr$^{-1}$) than irrigated Liquidambar styraciflua L. and non-coppiced, irrigated P. occidentalis (8 to 18 Mg ha$^{-1}$ yr$^{-1}$). Natural hardwood productivity at 20 to 60 years was less than hardwood and P. taeda productivity at 5 to 20 years. Unlike weed control, irrigation, rotation length, and coppicing improved managed hardwood productivity. Rotation length affected economic outcomes although the stands were economically unfeasible due to high establishment and maintenance costs and low current stumpage values that are expected to quickly change with development of robust global markets.

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