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Veiled Waters: Examining the Jones Act's Consumer Welfare Effect

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In the United States, one of the most influential laws affecting the nation's transportation infrastructure is the Merchant Marine Act of 1920, more commonly known as the Jones Act. In essence a protective tariff, it dictates that all waterborne cargo shipped between domestic ports-known as cabotage - be handled exclusively by U.S. built, owned, and crewed vessels. With the sheer scope and volume of trade under this umbrella, the Act wields considerable influence over several aspects of the economy. Its original intentions are clear: to strengthen the domestic shipbuilding industry, protect employment in merchant marine trades, guarantee a requisitionable fleet for purposes of national defense, and provide for enhanced security in seaports.

There is considerable debate, however, as to whether the Act is beneficial or detrimental to the country on the whole. This is largely because, as of yet, there is not a body of literature containing quantifiable insights into each of its costs and benefits. Thus, I do not seek to make a definitive assessment of the Jones Act, but rather to contribute to our understanding of how its trade regulations influence the cost of US coastal shipping and impact consumer economic welfare. This information is a necessary stepping-stone toward an informed, holistic policy evaluation.

In this paper, I estimate how the price level of domestic cabotage services would differ if the Jones Act were not in place. The difficulty in this effort lies in the nature of the Act itself. Since foreign unregulated competition in US cabotage is prohibited, there is no preexisting set of 'free market' prices in this market to serve as a basis of comparison. In addition the price of unregulated, foreign flag transport in the world market is essentially unobservable due to a series of peculiar characteristics unique to the maritime shipping industry, and attempting to estimate it is one of this paper's primary tasks. In doing so, I adopt a shadow pricing method that simulates the removal of Jones Act compliance costs from the cost structures of firms wishing to participate in the domestic trade. My approach adapts data from several key sources. Rate aggregate calculations derived from current Maritime Administration and Bureau of Transportation statistics are used to frame the market conditions for domestic water transport. Historical financial statement data and Robert Morris & Assoc. market research is then applied to formulate a representation of firms' operating profit structures. Finally, Jones Act compliance incidence levels are accounted for. The resulting picture of the domestic and global shipping markets allows me to examine how a change in operating costs influences the price charged for shipping. The difference between the "repeal scenario" price of coastal transport and that observed in the existing market is then used to generate a lower-bound estimate of Jones Act's impact on consumer economic welfare. From there, I adapt measures of market elasticities from the International Trade Commission's Computable General Equilibrium Model in generating several key back-of-the-envelope estimates of what my own result may mean in a broader context.

My principal finding indicates that, without the Jones Act in place, coastal water transport in the United States would be approximately 61% cheaper and that consumers using these services would stand to gain a minimum of \approx \$578 million annually in economic benefit¹.

¹ When I consider the ITC model's implied elasticity of demand for this market, the actual amount of consumer welfare gains to result from a repeal of the Jones Act appears to be closer to

This result represents a new contribution to the understanding of this legislation's consequences. My simulated repeal applies actual Jones Act vs. 'free market' compliance cost differential data - that has only recently become available- in generating a more precise estimate of price level effects than was possible in past inquiries. The presentation of my findings also differs from that seen in the bulk of research concerning the Jones Act. Thus far, most analyses have framed a singular aspect (usually whichever one the respective study focused on) as the principal factor to be considered in forming a determination of the Jones Act's value and relevance in today's society. I frame my results within the context of the Act's considerably large scope, and my discussion acknowledges how they relate to the interests and perspectives that have kept the legislation in place for almost a century. Nonetheless, I believe that the potential gains to consumer welfare described shown by my analysis provide an argument for a movement toward liberalization of the United States' coastal shipping trade.

The paper proceeds as follows. Section 2 details the domestic merchant marine infrastructure and the legal environment it operates in. Section 3 reviews the existing body of research relating to the Jones Act and transportation deregulation. Section 4 describes my methodology and presents the key findings. Section 5 concludes with a discussion of my results and their potential implications for domestic waterborne transportation policy.

I. BACKGROUND

The following subsections describe the context of the Jones Act. The first outlines its legislative history, while the second details the marine shipping industry and the Act's role within it.

A. Legal Foundation and Revisions

The Merchant Marine Act of 1920 was instituted for the purpose of regulating cabotage (water transport of goods between domestic ports) in a way that ensured the future health and viability of the U.S. merchant fleet². By restricting the transport of goods from one domestic port to another, the Congress reasoned, United States shipbuilding and maritime transport industries would be shielded from cheaper foreign competition and able to maintain market presence and employment. This is clearly stated in the Act's Introduction:

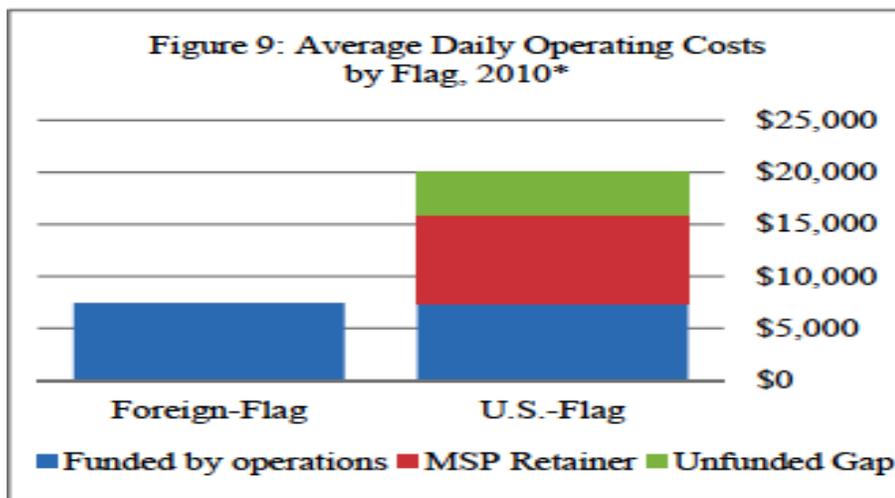
“Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States; and it is hereby declared to be the policy of the United States to do whatever may be necessary to develop and encourage the maintenance of

\$685 million per annum. Similarly, resulting welfare losses to other players in the economy can be seen as relatively negligible.

² Another key component of the Act is its creation of laws governing the rights of American seamen. This paper will address the Act only as it restricts the ability to participate in the cabotage industry to vessels built, flagged, crewed, and built in the United States.

such a merchant marine, and, in so far as may not be inconsistent with the express provisions of this Act, the United States Shipping Board shall, in the disposition of vessels and shipping property as hereinafter provided, in the making of rules and regulations, and in the administration of the shipping laws keep always in view this purpose and object as the primary end to be attained (Merchant Marine Act of 1920)."

Upon its' enactment, however, it became apparent that domestic operators were consequentially disadvantaged by the requirement of paying relatively higher domestic prices to operate their vessels. In an attempt to mitigate this, Congress responded with the Merchant Marine Act of 1936, creating an "operating differential subsidy" as well as a "construction subsidy"³ for qualifying domestic firms. The descendant of this bill is found in the Maritime Security Act of 1996, in the form of the Maritime Security Program (MSP), which "provides a fixed retainer payment to US-Flag vessel owners in exchange for providing the DOD with access to their vessels...during times of war." (PwC & MARAD, 2011) shows that, like its predecessor, the MSP is insufficient to close the gap between US and Foreign-Flag operating costs:



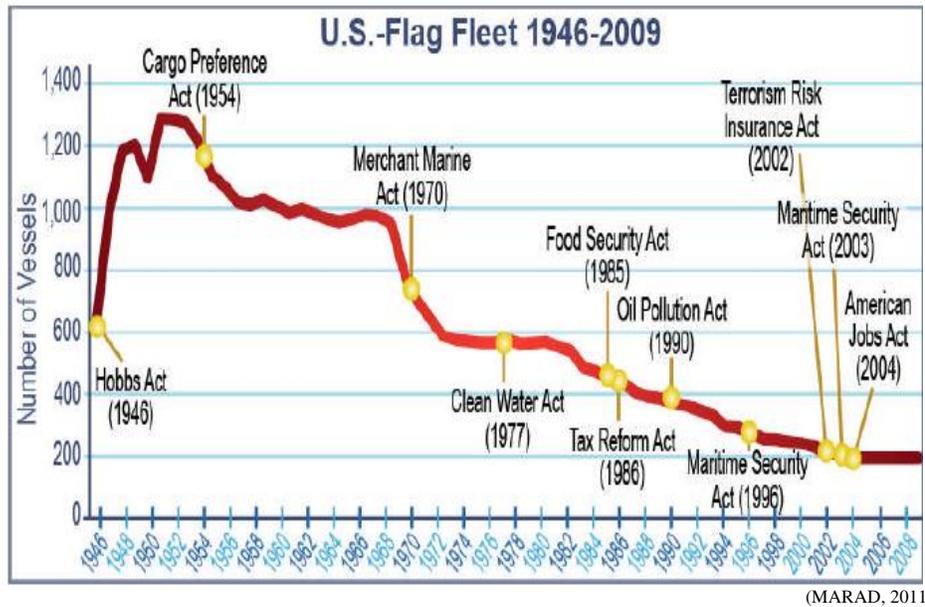
*US-flag costs are weighted by the number of vessels in each operator's U.S.-flag fleet.

(MARAD, 2011)

Unfortunately, before the Jones Act's economic consequences cost could be observed in peacetime, the onset of WWII drove a dramatic increase in government-commissioned and private sector demand for vessels and crews such that the size of the merchant marine reached its all time peak capacity of some 24,000 vessels in 1940, and the percentage of American commerce transported under the domestic flag reached the highest level (~43%) to be seen for the following eighty years. PwC (2011) demonstrates the steady decline in the size of the US Merchant Marine since the end of WWII, a trend that was not acknowledged until long after the damage had been done.

³ Both of which were repealed in the 1990's

Figure 1: U.S.-Flag Oceangoing Fleet 1946-2009
 (Privately-Owned Vessels of 1000 Gross Tons or More)³⁹
 Sources: Lloyd's Register; 'Compilation of Maritime Laws', MARAD, 2008



(MARAD, 2011)

There was, however, a significant cabotage repeal effort in the mid 1990's. Preliminary studies by the ITC coupled with a new Republican majority led to the formation of the Jones Act Reform Coalition "JARC" to "promote shipper interests" (Papazinas & Gardner, 2009). Domestic maritime interests (in particular, the Seafarer's International Union) put pressure on pro-Jones Act members of Congress to retaliate. As a result, the Maritime Cabotage Task Force "MCTF" was formed in order to combat the JARC's legislation aimed at dismantling the cabotage law. The JARC's proposals did not gain sufficient Congressional support, and cabotage law remained untouched. The Open America's Waters Act of 2010, introduced by Sen. John McCain, also sought to repeal the Jones Act. It too received heavy opposition from the MCTF, and was eventually tabled in the Committee on Commerce, Science, and Transportation (Library Of Congress, 2012).

B. Industry Structure

Coastal shipping and inland shipping (barging) are the two sectors that operate under the Jones Act's governance. However, this study concerns only the coastal⁴ trade. Inland shipping in the United States is considered to be commercially robust and competitive, and thus not viewed as a logical candidate for deregulation (Lane, 2011)⁵. Unlike in the inland trade, where prices are determined by the matching of daily demand with supply capacity, cabotage rates are set individually for each specific route and type of commodity a firm can service. As such there is not a going rate for a set amount of freight being transported a set amount of miles. For this

⁴ The term "coastal" also encompasses freight shipped across domestic ports in the Great Lakes.

⁵ Not only because there would be scarcely any economic welfare gains to be had, but also because the use of inland waterways is wisely restricted to domestic firms in the interests of national security.

reason, an analysis of the entire coastal shipping market requires that rates be examined in the aggregate.

Another key component of the maritime shipping trade is the longstanding practice of flagging, which refers to the status a ship holds when registered in a given country. Each nation has its own respective flagging regulations and privileges, which greatly influence where global firms register their fleets. Not surprisingly, the flags that afford ships the greatest liberty and least regulatory oversight -Panama and Liberia- are by far the most popular (Smith, 2004). Nevertheless, some foreign firms do choose to register a portion of their fleet under the US-flag in order to be eligible for lucrative Department of Defense military preference cargo and the MSP retainer payments in exchange for agreeing to requisition part of their fleet to the US in times of war.

There are four core groups that comprise the maritime shipping trade in the United States:

- US Owned, Foreign Flag vessels are subject only to the operating restrictions imposed upon them by their flag of registry, and carry global cargoes.
- US Flag, Foreign Owned (not pictured) vessels are subject to the compliance costs specific to the US-Flag of registry and operate occasionally in international waters, but specialize in carrying large volumes of US military preference cargo.
- US Owned, “Foreign Trade” vessels are subject to the compliance costs specific to the US flag, but forgo the additional build requirement necessary for being Jones Act eligible. They to specialize in military preference cargo.
- US Owned, Jones Act trade eligible vessels are subject to both US-flag specific and Jones Act-specific operating restrictions. They operate solely between domestic ports.

The composition of this market is illustrated below (2011):

U.S.-Owned Fleet by Segment, 2009

	Ocean Lakes	Tugs	Barges		Offshore Ferries	Total		
			Dry	Tank				
U.S.-Owned	638	48	5,735	27,483	4,731	688	604	39,927
U.S.-Flag	190	48	5,735	27,483	4,731	525	604	39,316
Jones Act	98	48	5,735	27,483	4,731	525	604	39,224
Foreign Trade	92	0	0	0	0	0		92
Foreign-Flag	450	0	0		0	163		613

Notes: Year-end fleets. The U.S. privately-owned fleet consists of vessels operated under U.S. and foreign flags. Ocean/Lakes—vessels of 10,000 DWT or greater.

Sources: Ocean and Offshore—Clarkson Research, Vessel Register; Tugs and barges—U.S. Army Corps of Engineers, Vessel Detail files.

(Statistical Snapshot, 2011)

This paper concerns the lattermost fleet on this list, which is comprised of the 98 vessels with Jones Act trading privileges (though as cited by Smith, (2004) and others this number has been steadily declining for several decades).

Other significant trends currently facing the Jones Act industry include increasing prices for cabotage services, as well as decreases in coastwise fleet size and total tonnage transported.

These are illustrated in the consolidated table below, with data taken from the US Maritime Administration:

Industry	2004	2005	2006	2007	2008	2009
Coastwise Trade Volume (Million Metric Tons)	200.1	193.8	183.2	186.7	169.0	152.2
Number of Oceangoing Jones Act Vessels	106	105	102	97	96	98
Coastwise Transport Producer Price Index (PPI)	100.0	110.1	119.7	131.6	137.6	131.6

US Water Transport Statistical Snapshot, 2011

Since the Jones Act requires that all its' participating vessels be registered under the US-flag, they are thus subject to all of the following US-flag specific regulations as well as those spelled out in the Jones Act. These regulations generate compliance incidences that are borne by participating firms as part of their operating cost structure, defined by Stopford (1997) as:

$$[\text{Operating Costs} = \text{Crew} + \text{Stores/Lubes (Fuel)} + \text{Maintenance \& Repair} + \text{Insurance} + \text{Overhead}]$$

Though the amount of individual compliance requirements is extensive and often housed in a complex legal vernacular, they can be shown to fall generally within the above named cost structure items⁶ and generate the following consequences (PWC, 2011):

- Crew: The use of domestic mariners, who require compensation, social benefits (tax levels), and working conditions commensurate with a much higher standard of living than foreign counterparts, is mandated. This results in crewing expenditures being roughly 5.8 times higher on Jones Act vessels.
- Maintenance & Repair: Jones Act vessels are required to be repaired & maintained at US shipyards, whose services are more costly than at foreign yards. This results in M&R costs being roughly 1.3 times higher on Jones Act vessels.
- Insurance: Protection & Indemnity insurance (that covers crew and cargo risk) is much higher for firms that employ US mariners, as their personal injury liability is much higher than in other countries. This results in insurance costs being roughly 2.1 times higher for Jones Act vessels.
- Overhead: Costs related to shore-based employment. Domestic expenditures in this area are higher likely due to the higher levels of regulatory compliance 'labor' handled by shore-based offices. This results in such costs being roughly 1.7 times higher for Jones Act vessels.

⁶ Store/Lube (Fuel) costs are essentially equivalent for Jones Act and foreign markets. It should also be noted that what the Jones Act build requirement effects is a capital expenditure. Instead of being considered an 'operating cost', it is reflected in the price level of domestic transport services as part of the profit margin a firm requires to maintain loan payments.

The higher costs associated with Jones Act transport are purely a product of its regulatory environment and closed-market status. There are no significant differences in the quality of domestic vs. foreign flag service, and they can thus be viewed as perfect substitutes (Lane, 2011).

It is also necessary to separately acknowledge the domestic shipbuilding industry, that - as stipulated in the Jones Act build requirement- provides the most important source of capital inputs to coastwise shipping. Due to a series of factors examined in Gray (2008), this industry has experienced consistent declines in output and employment, as well as soaring prices of its products for the last two decades. Due to the capital-intensive nature of marine shipping, these rising prices have had particularly negative consequences for the domestic fleet operators required by law to face them. Though this may seem to indicate a form of market failure, the argument is often made that the Jones Act build requirement is still on the whole beneficial in the way that it protects a relatively small, but lucrative base of employment in American yards from cheaper foreign competition. It is worth noting, however, that the volume of this 'lucrative base' of domestic shipbuilding is most heavily concentrated within a handful of massive yards dedicated to the construction of military vessels on contract from the government (Bollinger, 2011). Though I do not analyze the shipbuilding market or its labor force directly, its already well-documented characteristics are of great use in supplementing my findings and providing insight into what the economy could look like without the Jones Act.

Worthy of reiteration is the Act's well-documented responsibility for increases in operating costs (Whitehurst, 1998 and PWC, 2011) and overall costs of providing transport within this industry (ITC, OECD). Findings along these lines have led to a sizable amount of political discourse focusing upon how the Jones Act may be influencing price level inflation for industries dealing with specialty goods shipped to and from Hawaii and Alaska, since they are the two areas that rely most heavily upon Jones Act trade for transporting goods produced in the contiguous US (Jackson & McKetta, 1986). Geographic and sub-sector analyses addressing these types of questions have yielded some of the most enlightening results, but an overall quantification and judgment of the Jones Act will not be possible until additional research into each of the Act's different spheres of influence augments the existing body of research.

II. LITERATURE

This current body of research on the Jones Act is relatively limited, and a great deal of room for further inquiry remains. The following section serves to preface my investigation by acknowledging the previous studies that have contributed the most to a better understanding of this legislation and its consequences.

A. Fundamental Studies

Papazivas & Gardner (2009), a legal study, is perhaps the best place to start. Interestingly, this paper did not address questions of the Act's costs and benefits. Rather, it examined whether repealing the Act would facilitate any changes to the coastal shipping market at all; many cabotage supporters have argued that the Jones Act merely restates the laws that already apply to all other forms of intrastate commerce. If so, global transportation rates would not prevail in a liberated market, and there would be no reason to examine any of the Jones Act's economic effects for anything other than an academic exercise.

The paper engaged in a detailed historical analysis of cabotage and interstate commerce laws in the United States from George Washington's second address to Congress in 1790 through present day. After doing so, it concluded that the Jones Act does indeed go above and beyond standard interstate commerce law in its imposition of domestic build, citizen crew and operation regulations. Additionally, the Act fails to apply many existing intrastate laws to the coastal shipping industry. This finding is significant in showing that, though many legal details could vary in a repeal scenario, a world price level for ocean transport could feasibly supplant that of the current Jones Act market.

Although some initial inquiries were made into the viability of the government's direct subsidy programs, Jantscher (1975) conducted the first formal analysis of U.S. maritime economic policy. This paper reached meaningful conclusions regarding direct subsidies. Using a rudimentary cost-benefit analysis, it demonstrated that said subsidies were ineffective at restraining costs faced by domestic operators, as increases in subsidy levels could not keep up with the rapid growth in labor costs. (This analysis was likely influential in the direct subsidy program's eventual repeal in the 1990's). Additionally, Jantscher (1975) provided a thorough industry blueprint that is still the foundation for studying maritime economic policy in the United States. Insights were also gleaned into tax incidences faced by domestic firms, military cargo allocation and its role in maintaining the industry's "skeleton" demand, national security arguments, and private firms' cost structure formulas (later formalized in Stopford, 1988). Indeed, my own analysis draws heavily upon this blueprint.

B. The National Defense Question

After the end of the Cold War, the relevance of maintaining a military requisition-able merchant marine fleet came into question. The main figure in formally analyzing this was Clinton Whitehurst, a transportation economist who delved into the optimization of wartime logistics and supply chain infrastructures. By the time that his work became published, it was generally understood (though not yet examined) that the Jones Act did indeed raise the costs of domestic transport. The question remained: is the Act worth leaving in place for its military benefits, or is it failing in both of its original objectives?

Whitehurst (2001) not only measured the United States' (then) current marine shipping capacity, but also estimated the necessary size of it for the military to adequately face a cohort of worst-case scenarios. Using game theoretic intuition, it also modeled a probability distribution of the government's likelihood of being able to charter sufficient foreign flagged transport in the cases of conflicts fought in various areas of the globe. The conclusions this paper arrived at are surprisingly far-reaching, and have had a marked impact on how the 'defense component' of the Jones Act is currently understood.

The first, and most intuitive of these conclusions is that the United States faces two options in providing an adequate infrastructure: to augment the stock of government-owned general cargo vessels and meet potential excess demand with foreign charters, or to restructure and expand federal government support for the domestic merchant marine such that there would be "little to no reliance on foreign flag ships". Both of these options are very expensive. The paper's remaining conclusions suggested an adoption of the latter, along with an improvement of the competitive environment in which domestic vessels operate, citing several strategies to ensure provisions for wartime contingencies. These strategies were presented in essentially two categories. One included incremental/marginal changes such as: increasing Title XI government

funding for domestic shipbuilding yards⁷, providing continued support for the Cargo Preference Acts⁸, allowing accelerated asset depreciation schedules for US firms and those with EUSC⁹ to defer taxes on profits that are re-invested into their business.

The other category contained more institutional reforms. Here, the conclusion prescribed an aggressive policy of pursuing international legislation to “level the playing field” of worldwide ocean transport. If the International Labor Organization was to institute updated wage and living standards, Whitehurst (2001) argued, operating cost differentials would likely decrease and the US fleet would gain a more robust position in the marketplace. Were this to take place, there would be significantly less dependency on foreign flagged transportation and a decrease in the United States’ vulnerability to world market volatility in wartime.

This paper thus concluded with an appeal for a compromise between opposing private sector interests¹⁰, acknowledging the Jones Act’s economic weaknesses and the need for further analysis and action while still confirming its importance as a defense measure. The conclusion deemed that this compromise is needed for the construction of for a new long-term maritime policy: the subject of Whitehurst’s other major work in this area.

Whitehurst (1998) provided an economic discussion of how to best increase the efficiency of the domestic water transportation industry while minimizing dependence on foreign charters. The main conclusion arrived at is: the forming of government-subsidized multimodal transport companies¹¹ would be better able to take advantage of the massive economies of scale prevalent in larger, foreign flagged operations. In order for this to be successful (competitive), however, the paper cited the need for alterations¹² to the build requirement stipulated in the Jones Act. If permitted to use foreign-manufactured components in the construction of their vessels, both American yards and the firms that purchase their ships would have a healthier cost structure. Additionally, Whitehurst (2011) called for the –now in place- deregulation of international ocean shipping. The argument cited that deregulation would provide a potential multimodal infrastructure with the opportunity to provide lower service rates and encourage the formation of global shipping alliances. If these conditions are met, and a long-term legislative and financial commitment it is made to establish multimodal logistic pipelines, it is concluded that a repeal of the Jones Act would be inevitable and likely be of benefit to American firms and consumers, while strengthening domestic defense capabilities.

C. Quantifying the Jones Act

At the close of the twentieth century, the time had long since come for a serious empirical evaluation of the economic costs and benefits of the Jones Act. This need was acknowledged,

⁷ To increase their capacity as well as bolster overall financial health, with the now widely cited rationale that this would be “crucial if the US faced war with Asia.”

⁸ Which guarantee that at all cargo shipped at the expense of the military is carried by US flagged vessels, and that all other government-impelled cargo is offered first to them as well.

⁹ Effectively United States Controlled Ship

¹⁰ Those advocating a repeal of the Jones Act and those who support it

¹¹ In which ocean shipping is “but a part” of the system

¹² Ad-hoc, before any actual cabotage reform takes place

and the project undertaken privately at first in 1996 by economists¹³ at the International Trade Commission (ITC), and then repeated more extensively in 2002 by the ITC itself in its' official report "Impact of Significant Import Restraints."

In this report, the ITC modified their preexisting Computable General Equilibrium Model (CGE) to include domestic coastal water transport services. The model itself used data on all known monetary transactions within the economy (Social Accounting Matrix) and on the use of specific quantities of factors of production and inputs in the production of each specific good/service (Input-Output Matrix) in order to generate interactive supply and demand curves for each economic agent. Then, the model solved for an equilibrium structure of the entire United States economy.¹⁴ This extremely data-intensive and interactive technique allowed the ITC to capture a wide range of economic impacts resulting from the 'shock' of opening the Jones Act to foreign competition.

Specifically, this study focused on how a repeal of the entire Jones Act or solely the build requirement would affect equilibrium price levels, quantities, and employment in coastal shipping and closely related industries. The model provided the ITC with relatively straightforward comparative-static estimates of this that served to compare these variables of interest in their 1999 (the year of their most recent data) state with an estimate of their long-run values after the designated policy change.

The results generated by running the CGE model proved to be very compelling. In the case of a complete repeal, the ITC estimated a welfare gain of \$656 million to the entire economy, as well as a 20.4% decrease in the composite price of coastal transport services. Not surprisingly, this corresponded to an estimated 84.1% decrease in domestic coastal transport employment and a 70% drop in its output. Perhaps most interestingly, this policy shift yielded only a 3.1% decrease in both domestic shipbuilding and output, and no significant change in the actual price of ships. This is logical given that the majority of the American shipbuilding industry's output is based on government contracts, and suggests that though its protection was one of the Act's original goals, the vitality of this industry is not very closely tied to the Jones Act.

In its entirety, ITC (2002) is the most detailed and insightful inquiry into the Jones Act that has yet been made. However, it lacks enough complete information to paint a precise picture of how the Jones Act affects the economy. At the time of its publication, actual data did not exist on foreign flag vs. domestic compliance cost levels; the Maritime Administration provided their estimates but they had not been compared/audited against actual foreign-flag numbers. This comparison was only recently accomplished in (MARAD & PwC 2011), and is what will help drive my new –albeit much more limited– inquiry into how these compliance costs may translate into consumer welfare effects for the US.

D. Sub-Sector Analyses

In the construction of an economic analysis of the Jones Act, it is also useful to examine the contributions made in a series of papers that seek to quantify the Act's impacts on

¹³ Francois, Arce, Reinert, et al. uses an essentially identical method as the 2002 ITC report, but presents much less detailed findings. I thus focus upon the 2002 report, but include insight gained from the 1996 paper.

¹⁴ With the aid of General Algebraic Modeling Software

geographically specific industries. They have the distinct advantage of precise datasets and very focused scopes of inquiry, which allow for streamlined methodologies that lead to largely credible results.

The first of these was a study of the Jones Act's effects upon the Alaska forest products trade, published in Jackson McKetta (1986). Their analysis was conducted in part to address speculation that the Jones Act is particularly harmful to the non-contiguous states (AK and HI) that rely heavily upon expensive cabotage services to import most of their consumption and capital goods. This paper approached an alternate facet of this speculation by investigating the consequences the Jones Act creates for non-contiguous states' main export industries (in this case, the Alaska forest products trade). In doing so, the authors estimated the effects of repealing the Jones Act build requirement¹⁵ upon this industry using a Partial Equilibrium Model.

This Partial Equilibrium Model (PEM) was in essence an optimization model used to maximize Alaskan firms' unique rents for each commodity shipped from a supplier to each specific demand region (subject to regional derived-demand curves). The economic intuition this sought to test and quantify is: that repealing part of the Jones Act would presumably cause a rightward shift of the supply curves for each good shipped to each region, resulting in changes in quantity, price, and (potentially) trade patterns for each good. Before this could be possible however, there were key information requirements that needed to be satisfied.

Unlike with the Gen. Equilibrium model used by the ITC, Jackson & McKetta (1986) sought to analyze the AK forest products trade in isolation, holding the remainder of the US economy constant. Thus, they needed to form an "industry" Input-Output Matrix containing price and quantity information on all factors of production (& shipping), for AK forest goods, as well as an "industry" Social Accounting Matrix holding data on market transactions in each region of interest. In dealing with a relatively small and cooperative industry this was accomplished without any mentionable difficulty, with the one (unsurprising) exception being the ability to obtain route and seasonally specific rate formulas from domestic marine shipping companies. Instead, they used government-aggregated rates as a substitute for actual market data in the Input-Output matrix.

The task then came of determining the Jones Act vs. non-Jones Act rate differential estimates, which would be the basis of the 'policy shock' to the status quo of the partial equilibrium. Fortunately, the relative magnitudes of transport price for each of the routes in question were calculated¹⁶ in a closely related study by Simat (1982). Jackson & McKetta needed only to apply these relative magnitudes to their aggregate Jones Act price levels for each route in order for the model to estimate a discrete difference in transport rates between the two scenarios.

With all of the information in place, it was now possible for the authors to address their two main questions regarding a Jones Act partial repeal scenario: Would the resulting differences in goods' unit prices (marginal values) be enough to shift the destination/direction of trade? And what kind of welfare effects would result from changes in trade volumes' price and quantity? As it turned out, the results varied slightly for each good/market but were compelling when taken altogether. Estimated welfare gains for the entire market were practically split between producer

¹⁵ Specifically, the entry of US-Flag, vessels not built in the US or owned by US firms

¹⁶ Simat used a cost-determined approach that compared component costs of actual Jones Act transport on these routes with non-Jones Act vessel component costs for the same route. These were then computed to a per-unit freight rate, and their relative magnitudes observed.

and consumer surplus at a respective \$2.38 million and \$2.39 million. Though lower transport costs facilitated lower prices for each sub-sector, goods did not exhibit a sensitivity to change market destinations. The authors qualified these results as indicating that altering the Jones Act could increase competitiveness improve service in the AK forest product trade in the long run.

In a more qualitative approach, Magee (2002) discussed the potential consequences of a cabotage law reform upon the cruise ship/passenger vessel industry in the United States, with the goal of developing a strategy to improve that industry's competitiveness and increase passenger traffic. The paper treated both the Jones Act and the Passenger Services Act of 1886¹⁷ in a repeal simulation, and utilized a host of industry cost structure data in the development of several conclusions, namely that: domestic ports likely stand to observe significant increases in traffic in the case of a Passenger Services Act repeal, and that the waiving of the Jones Act labor and build requirements are key to the viability and growth of the domestic cruise ship industry. The elimination of operating cost differentials (resulting from higher domestic labor and shipbuilding prices) faced by vessels with coastwise passenger transport privileges and the inclusion of foreign firms in the coastwise trade would drive significant increases in port city employment, economic growth and tax revenue. This implication is noteworthy; though domestic open water maritime employment, which the Jones Act was originally designed to support, would likely fall in the case of a cabotage law repeal, overall cruise ship traffic in domestic ports was estimated to dramatically increase, and with it the levels of shore-based maritime employment.

Also worthy of consideration is a study undertaken in Piggott (2002) that analyzed the effect of the Jones Act on soybean production in North Carolina. This paper is unique in its specificity, being the sole example in the literature focusing in upon such a very small market. This setting proved conducive to the creation of a realistic analytical framework, and the paper employed a clever spatial simulation model¹⁸ to estimate various effects of a Jones Act repeal. Piggott (2002)'s conclusions are intriguing; if the Jones Act were to be repealed, an overall welfare loss for North Carolina producers would be observed (roughly equivalent to 1% of the state's total soybean annual soybean output), but an overall gain for the rest of the United States. This is attributed to the eradication of the price premium currently charged by NC producers, which currently serves as a fee to access in-state soybean products not faced with Jones Act transportation costs. This paper's results serve as an important reminder of the incredibly dynamic nature of the transportation industry, whose spatial nature includes many unforeseen (and not yet fully understood) economic interactions. Though impossible to account for all of the Jones Act's spatial interactions within the domestic transportation infrastructure, I will strive to incorporate the concept of such varied contingencies into the discussion of my findings.

E. Related Regulations and Alternative Transport Modes

Though no other component of the domestic supply chain infrastructure is –or was– regulated in exactly the same manner as the Jones Act, both the Trucking and Rail industries have undergone their own phases of mass deregulation whose consequences can facilitate a

¹⁷ Dictating that all passengers transported to and from United States ports must be carried in domestically operated and built vessels.

¹⁸ Piggott's model uses elasticity estimates for soybean transportation supply/demand between North Carolina and Ohio in conjunction with the freight rate % changes estimated in the ITC's report (see p.8)

complementary understanding of how the relaxing of legislative constraints can impact economic conditions.

Addressing the need for a comprehensive survey of global transport deregulation data, Li (2002) compared the effects of rate & entry restrictions and their subsequent removals upon the general economic outcomes across countries. The paper cited that in the US, Germany, and New Zealand similar types of these regulations led to higher rates, monopoly pricing, and less competition over time. Li (2002) also concluded that entry regulation led to the downfall of railroads due to substitution effects, and that though trucking entry regulation served to aide some operators, they were “certainly harmful to shippers and the economy as a whole.” The discussion of liberalization effects is extensive, but crux of Li (2002)’s findings is that positive economic consequences were shown to be dramatic in terms of cost-savings, productivity, rates, service quality, and infrastructure (among others).

OECD (1997) analyzed in detail the effects of Trucking (Motor Carriers Act of 1980) and Rail (Staggers Act of 1980) deregulation upon their respective markets for the period 1980-1997. In the case of Rail, “rate controls were relaxed, railroads were allowed to contract to provide specific services to individual firms and to enter into long-term contracts, and mergers and the abandonment of non-profitable branch lines became easier” (OECD, 1997). As a result rail freight rates declined approximately 1.5% annually in this period, and increased supply chain efficiency drove dramatic decreases in rail employment & miles of track, causing the mode to be “competitive with trucks and barges for the first time in decades. (OECD 1997).” An underlying theme in the successes of this deregulation is the “increased control over capital investment and disinvestment”: a quality noticeably lacking in the coastal cabotage industry due to the Jones Act’s build requirements.

The case of trucking deregulation is even more compelling. The Motor Carrier Act of 1980 (MCA) “reduced barriers to industry entry, loosened restrictions on contract carriers... and permitted common¹⁹ carriers to raise or lower rates by 10% annually without regulatory interference.” Consequentially, the number of trucking firms tripled from its 1975 level, and industry employment increased by over 500,000 in the period 1980-1997 (OECD, 1997). In “The Winston (1990) estimated a \$3 billion yearly increase in consumer surplus as a result of the reform. Ying (1990) showed decrease of 23% in the overall cost structure level of trucking firms over time. Indeed, this was sufficient enough for the Federal Trade Commission to declare in its 1997 submission to the Ibero-American Competition Forum that “The United States now has had sufficient experience with deregulation of the trucking industry to conclude that it has been entirely beneficial for consumers. None of the concerns expressed by skeptics of deregulation have proven valid” (FTC, 1997). With regards to the Jones Act trade, it is also likely that removal of barriers to entry (flag & crew requirements) would be the driving force behind increases in consumer welfare. Given the successes of trucking reform, the question of potential benefits from cabotage deregulation is likely to remain pressing. This paper now proceeds in quantifying these benefits for consumers of coastal shipping services.

¹⁹ The designations ‘Common’ and ‘Contract’ carrier refer to the general distinction between firms that operate on designated routes and are ‘for hire’ to transport any commodity along them, and those that operate on a ‘per job’ basis with no set routes.

III. Theory and Methodology

The goal of this study, generally speaking, is to use newly available foreign and domestic firm cost structure data to facilitate a clearer, updated understanding of what the Jones Act doing in the market for ocean transport. This section starts with a description of the intuition behind how I approach this, and proceeds to give a walk-through of my analysis. My endeavor matters because the Act still holds sway over a large yet deteriorating industry, whose future remains as of yet undetermined. Current information regarding how this maritime policy affects the welfare of the US economy is a necessary tool for ongoing discussions, and is what I now focus on providing.

In proceeding, I argue that the main reason Congress would consider repealing the Jones Act is to enhance economic welfare for domestic firms and consumers; the premise of a requisition-able fleet for national defense purposes remains relevant, and domestic crew and shipbuilding unions have a strong interest in preserving the high-wage jobs supported by the Act. It follows that, if Congress were to take steps to repeal the Jones Act, it would seek a policy implementation designed to maximize the expected economic gains driven by lower price levels of domestic transport. I contend that this objective would be best accomplished by repealing the build and crew requirements, effectively opening the coastal trade to foreign flagged foreign owned fleets. These operate in a competitive, largely unregulated market that is free of the compliance cost constraints that burden vessels operating under the Jones Act and under the US Flag in general. The fostering of a liberated, US coastal transport market characterized by these conditions would plausibly result in a decrease in ton-mile rate levels for the services currently restricted to the Jones Act trade. The question is: how much would prices (and output) change, and what would that mean for economic welfare?

The ideal way to seek out this answer would be through the use of a CGE model like the one used in ITC (2002). Because a CGE accounts for the “nature of all existing economic transactions among economic agents”, it would allow me to estimate the resulting changes in equilibrium price and quantity of coastal transport as well as the distributive effects for every other sector (IBD, 2012). Welfare gains and losses from repealing the Jones Act could then be evaluated for the economy at large, effectively quantifying all of the Act’s current economic consequences.

Unfortunately, constructing such a CGE model for this purpose is not feasible given the amount of available real-world information. Though the formulation of a Social Accounting Matrix would be possible (if very time consuming) using data from the BEA’s National Income Accounts, trouble arises when trying to prepare the Jones Act trade’s entry into an Input-Output Matrix. The kind of comprehensive input cost structure information for domestic firms is not publically available, but is required for an accurate construction of the industry’s Supply Curve. I thus cannot directly analyze how the equilibrium quantity of output (as well as economic welfare in other related sectors) might be affected by a repeal of the Jones Act. However, I do adapt some of the key comparative static results from (ITC, 2002)’s CGE model in order to augment my principal finding.

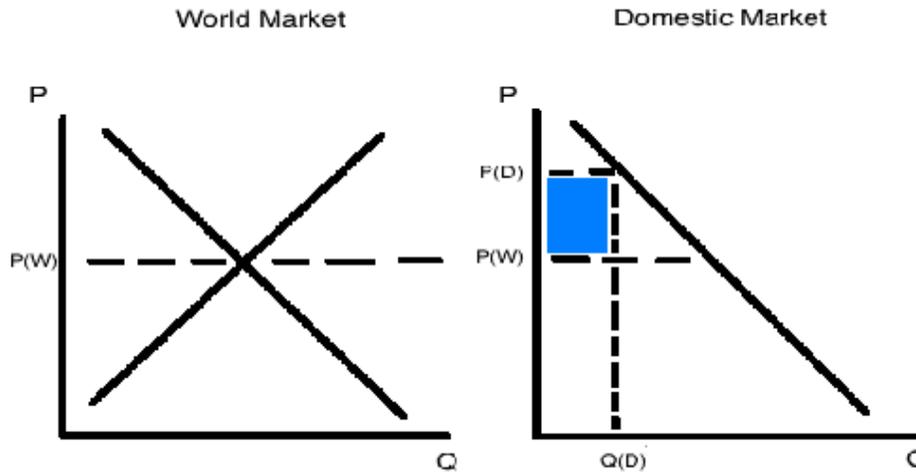
The available data on Jones Act as well as the foreign-flag trade is better suited for analysis with a Partial Equilibrium model. Holding all other sectors of the economy constant, and focusing in upon how a repeal of the Jones Act would affect the price level of cabotage services (quantity of output remaining fixed), I obtain an estimate of the lower-bound level of change to consumer surplus. That is to say: a change in equilibrium price level resulting from a repeal

multiplied by the original equilibrium level of demand [$Q_0 \times \Delta P$] can show the minimum amount that consumers of cabotage services stand to gain in terms of economic welfare (the total difference between what consumers are willing to pay and the total that actually is paid for coastal transport at market price).

In theory, finding this lower-bound estimate would be a simple (even trivial) exercise of looking up the world price level of unregulated ocean transport and comparing it with that observed in the Jones Act trade. In practice, observing such a world price is nearly impossible for several reasons unique to this industry. Firstly, it is best practice to analyze maritime rates as measured per ‘ton-mile’. This unit describes price level (correctly) as a function of both cargoes’ weight and the distance it is transported. Unfortunately rates are not published in ton-mile terms, nor are their formulae published separately for the several thousands of different routes, seasons, and types of cargo. Though agencies such as Lloyd’s List, Eurostat, ISL, and Platt’s maintain extensive datasets on the amount of tonnage moving through different ports and channels (as well as the average price levels per ton), price levels per ton-mile are not retroactively calculable until data on total revenues from shipping operations as well as tonnage and mile quantities can be collected and aggregated. This is accomplished for the Jones Act trade by the US Army Corps of Engineers, which requires all of this information to be annually reported to the agency. Ton-mile rates for the unregulated market are not available, likely because doing the same for the entire global foreign-flag fleet would be a colossal task, and require the collaboration of several nations’ respective agencies. Thus, *the aggregate price level of unregulated ocean shipping (in its most precise terms) is essentially unobservable*. Indeed, even the International Trade Commission could not observe it; ITC (2002) used cost structure comparison estimates to generate a proxy for the difference between domestic and foreign flag price level. The goal of this study is to estimate said change in price level due to the Jones Act using more accurate cost structure data, and to use the result to help us understand how the Act affects consumer welfare.

My approach can address only a comparative static change in the equilibrium price of the coastal transport market (as the rest of the US economy is held constant in its current state), but will still facilitate the application of the newest information in generating a new understanding of my basic question. In order to visualize the intuition behind the policy shock in question, and what I seek to quantify, let us consider the following graphical illustration.

The figures below depict an exogenously determined ‘world’ price of transport, not impacted by prices in the comparatively miniscule domestic trade, being allowed to enter into the domestic market.



Given the assumption that foreign-flag and domestic shipping are perfect substitutes, the world price level would supplant the level currently charged by domestic firms if the Jones Act were to be repealed. The industry’s new equilibrium output would be given by the intersection of the rightward shifting domestic trade Supply Curve and the original Demand Curve at the World price point. The difference in equilibrium quantities between the current market and those in a repeal scenario would illustrate the policy shock’s affect upon consumer and producer surplus (economic welfare). However, since the magnitude of a supply curve shift cannot be feasibly estimated with available data, I focus on quantifying the lower-bound increase in consumer surplus. Graphically, the (minimal) new level of consumer surplus is shown by the area (in blue) under the original demand curve and above the prevailing World price at the original level of output. Mathematically, this is given simply as:

$$(P_{\text{Domestic}} - P_{\text{World}})(Q_{\text{Domestic}})$$

It is now necessary to quantify each of these parameters. Q_{Domestic} is readily observable/computable in terms of ton-mile output, and so is P_{Domestic} . As discussed before, P_{World} is not. Estimating it (and thus establishing a differential that captures the price level impact of repealing the Jones Act) using newly available comparative profit and cost structure data is the main task and contribution of this study.

I proceed with the argument that an examination of the operating profit structures of Jones Act and Foreign Flag firms can achieve the best insight into the formation of their relative price levels when they cannot be directly observed. However, operating costs are considered to be the maritime shipping industry’s greatest trade secret, and there is little available data-and correspondingly little economic literature- on the subject. Fortunately there is, thanks to the efforts of PwC & MARAD (2011), information on the relative magnitudes of operating cost structure components for foreign-flag vs. domestic firms. This insight will be the key to unlocking a P_{World} estimate by comparing financial identities and the market information contained in them.

IV. ANALYSIS

For the sake of clarity, I begin this section by providing a walkthrough of the steps taken that lead to estimates of world price and potential impacts upon consumer surplus. This is followed by a description of each of the individual parameters used (and their values), as well as a presentation of the results yielded by my analysis.

In general terms, I use the definition of two observable quantities (Gross Profit Margin from Operations for each sector) to pinpoint the value of one unknown quantity (the Price Level charged by foreign flag firms). Gross Profit Margin from Operations (GPMO) for each sector are defined by the following identity equations, which allow me to frame the unknown variable of interest - Marginal Revenue (Price) _{Foreign} – as a component existing in an observable market statistic:

$$GPMO_{\text{Jones Act}} = \frac{\text{Marginal Revenue (Price)}_{\text{Jones Act}} - (Y^*)(\text{Operating Cost Per Unit}_{\text{Foreign}})}{\text{Marginal Revenue (Price)}_{\text{Jones Act}}}$$

$$GPMO_{\text{Foreign}} = \frac{\text{Marginal Revenue (Price)}_{\text{Foreign}} - (\text{Operating Cost Per Unit})_{\text{Foreign}}}{\text{Marginal Revenue (Price)}_{\text{Foreign}}}$$

From here, it becomes a matter of quantifying each of the other observable components and then applying algebra to solve for the global price level per ton-mile (Marginal Revenue (Price) _{Foreign}) that allows these identities to hold.

The general intuition behind this process is that: since I can know the operating profit margin of Jones Act firms, the price that these firms charge, and relatively how much more expensive it is to provide a ton-mile of service in this market than in global trade, I can thus infer the actual average operating costs per ton-mile for the global trade. With this at hand, it is only a matter of seeing what average price level foreign firms are charging in order to generate their operating profit margin.

The identity equations are populated with the following data:

$$GPMO_{\text{Jones Act}} = .1680 .$$

This represents the industry average profit margin (for the years 2007-2011) from operations for Jones Act firms, as collected and aggregated for the use of the Investment & Commercial Banking industries by the Risk Management Association:

$$GPMO_{\text{Foreign}} = .1745$$

This value represents my own estimation of the industry standard profit margin from operations for foreign-flag vessels; the calculation was obtained by taking yearly earnings (2007-12) from operations before interest, taxes, depreciation, and amortization “EBITDA” and dividing that term by gross revenue from operations for ten of the world’s largest foreign flag shipping companies. The four dry bulk/container carriers (AP Moller/Maersk, NYK, Evergreen, and CSCL) and six tanker carriers (Frontline, MOL, Euronav, MISC, and HMM) were chosen to

coincide with the composition of the fleet currently serving the demands of the Jones Act trade: ~40% dry bulk/container ships, ~ 60% tanker ships²⁰.

$$Y^* = 2.7$$

This coefficient represents how much greater per unit operating costs are for US-flag vessels²¹ than for Foreign Flag vessels. PwC & MARAD, 2011 generated this by aggregating previously discussed operating cost disclosures.

$$\text{Marginal Revenue (Price)}_{\text{Jones Act}} = \$0.003882 \text{ per ton/mile}$$

This value represents the Jones Act trade's industry average price of transport per ton/mile for the years 2007-2010 (the last available year). I accessed Total Revenue from Operations data from the Risk Management Association for the period, which was then divided into The Army Corps of Engineers "Waterborne Commerce of the United States" total ton/miles of output per year for the industry. The per year ton/mile rates were then averaged into the figure above.

With these values inserted, there is now:

$$.1680 = \frac{\$0.003882 - 2.7(\text{Operating Cost Per Unit})}{\$0.003882}$$

and

$$.1745 = \frac{\text{Marginal Revenue (Price)}_{\text{Foreign}} - (\text{Operating Cost Per Unit})}{\text{Marginal Revenue (Price)}_{\text{Foreign}}}$$

Solving for Operating Cost Per Unit in the first (Jones Act profit structure) equation, I obtain:

\$.001196, an estimate of the Operating Cost per Ton-Mile for Foreign Flag ships. This can now be inserted into the second (Foreign Flag profit structure) equation and used to solve for Marginal Revenue (Price)_{Foreign}, yielding a value of \$.0014488: an estimate of the aggregate price level per ton-mile for unregulated, Foreign-Flag transport.

A comparison with the aggregate price level per ton-mile for Jones Act transport (\$.0014488 vs. \$.003882) suggests that domestic cabotage services would be approximately 61% cheaper if the Jones Act were to be repealed. Applying this to the Partial Equilibrium analysis, a lower-bound estimate for the gains to consumer surplus can be calculated as:

$$(\$0.003882 - \$0.0014488) (237,694,000,000) = \$578,357,040.8 \text{ per year.}$$

It can also be useful to see how this result would differ if some of the model's key assumptions were altered. For instance:

²⁰ See Appendices 1 and 2 for the complete dataset.

²¹ Note: The Jones Act build requirement imposes higher capital costs, not operating costs. As such, this increased expenditure level is captured in domestic firms' price levels as a contribution to overhead/capital payments.

- If the actual value of Y^* -operating cost differential- were to be either 25% larger or smaller than the figure I incorporate, the estimates of price differential and lower bound consumer welfare gain would thus be: (70.0%, \$646 million/yr) and (50.1%, \$461 million/year) respectively.
- If the value of $GPMO_{Foreign}$ were to be either 25% larger or smaller than what my own estimates indicate, the estimates of price differential and lower bound consumer welfare gain would then be: (60.5%, \$559 million/yr) and (64.5%, \$596 million/yr) respectively.

This demonstrates that, even if the two component values that are the most prone to variation²² take on values that vary by 25% in either direction, the estimates price level and welfare due to the Jones Act remain significantly large.

With this in mind, I now consider the question of what a more precise estimate of the actual value of consumer surplus gains might be. My method is confined by its ability to generate only a lower bound value, but it is very reasonable to anticipate that a decrease in the price level of cabotage would indeed result in an increase in the industry's equilibrium quantity of demand and supply. However, by combining my findings with (ITC, 2002)'s comparative static estimates I can more reasonably address the change in quantities that may result from my estimated change in price level. (ITC, 2002)'s assessment implies an elasticity of demand of -.59 for the domestic cabotage market,²³ and when this is applied to my study's lower bound results, the new equilibrium quantity of output resulting from a repeal of the Jones Act can be estimated as being 36% higher (.61*.59= .36) at a value of 323,263,840,000 ton-miles per year. From here, a more precise estimate of changes to consumer welfare can be calculated²⁴ as:

$$[\Delta P(Q_{0 \text{ Jones Act}}) + \frac{1}{2} (Q_{1 \text{ Jones Act}} - Q_{0 \text{ Jones Act}})\Delta P] = \$682,461,308.1 \text{ per year.}$$

V. Discussion

The primary purpose of this result is to help us better understand the Jones Act's costs and benefits. While a full cost-benefit analysis is outside the scope of my analysis, the results it arrives at are beneficial. According to my findings, repealing the Jones Act would result in a minimum gain of approximately \$578 million to domestic consumer surplus/economic welfare. Meaning: even if there were no change in equilibrium coastal shipping demand and supply, consumers would save \approx \$578 million annually purchasing the same services that they already do.²⁵ Additionally, this welfare gain could very reasonably be as high as \$682 million a year when taking into account what is known about this industry's demand elasticity. Though both of

²² The data in (RMA, 2011) shows that $GPMO_{Jones Act}$ varies considerably less from year to year than does $GPMO_{Foreign}$.

²³ They estimate that a 12.0% increase in output results from a 20.4% decrease in price level.

²⁴ This expression simply accounts for the additional gains to consumer surplus resulting from a change in quantity demanded, where the second term represents its triangular area below the demand curve (bounded by the original supply curve and the difference in equilibrium quantities).

²⁵ Though I am unable to provide an estimate of how much Quantity Demanded would change in this scenario, I assume (according to the Law of Demand) that Price Level and Demand for a good are inversely related.

these figures are miniscule when viewed next to the output of the entire US economy (\$15.29 trillion) they are significant in terms of their respective market; even the lower-bound value of estimated yearly savings amounts to over 30% of the current annual output of the Jones Act trade (CIA, 2012 and RMA, 2011).

While this paper is the first to successfully apply accurate cost structure differential data in generating an estimate of the Jones Act's effect on price, there are some notable caveats to its results and my to approach in general. Ideally, a CGE model -containing specific input cost information for each industry-could have been constructed and used to examine meaningful effects beyond those related to consumer welfare. There thus remain some important missing pieces that my results do not directly address, and the conclusions that can be drawn from them are likewise limited in scope.

Firstly, my approach does not incorporate the concept of elasticity. I cannot estimate changes in the equilibrium quantity of demand and output due to a change in price, which is why only a lower-bound consumer welfare effect is addressed and why a past estimate of demand elasticity is parsed in to provide additional perspective. Also, due to my Partial Equilibrium framework that examines only the marine shipping industry, the rest of the economy is held constant. Because of this, I cannot properly investigate important questions such as:

- How might a decrease in the price of coastal transport affect the prices of other goods?
- What kind of substitution effects would occur with competing modes (truck and rail)?
- How would employment in the domestic merchant marine trades change due to an influx of foreign competition?

Additionally, there is the nature of my dataset. For the most part, each component used in my analysis is based upon aggregated information, which does not capture route, commodity, or seasonally specific characteristics for each transportation sub-market. I also assume that industry profit margins and relative costs of inputs do not fluctuate with time. However, since each component of my dataset was averaged over a 5 year time span, my framework should be sufficiently representative of general industry conditions.

The above notwithstanding, my findings are based on newly available information and do provide a meaningful insight into the most fundamental economic consequence of this longstanding legislation. We are now able to see the Jones Act's price level and consumer welfare effect more clearly within the Act's broader context.

Let us re-consider the Jones Act's original goal of fostering a domestic merchant marine. Pro-cabotage groups (such as the Maritime Cabotage Task Force and the International Seafarer's Union it primarily represents) often cite that the law does indeed ensure the existence of a high paying, domestic trade in the way it prohibits foreign flag competition. These groups with such a strong vested interest in preserving the Jones Act have been successful in combating repeal attempts steered by politicians (especially from HI and AK) seeking to increase economic welfare of their constituents; both the first major cabotage liberalization push of the mid 1990's as well as the Open America's Waters Act of 2010 (introduced by Sen. John McCain) were tabled before ever making it to the Congressional floor for debate. Unless a more widespread public awareness/interest for this issue is fostered, it is perhaps unlikely that a proposal to liberalize America's coastal waterways will gain significant ground. Notwithstanding the obstacles posed by the political status quo (and the lack of a complete body of knowledge on the subject of the Jones Act), there remains significant evidence suggesting that America's current

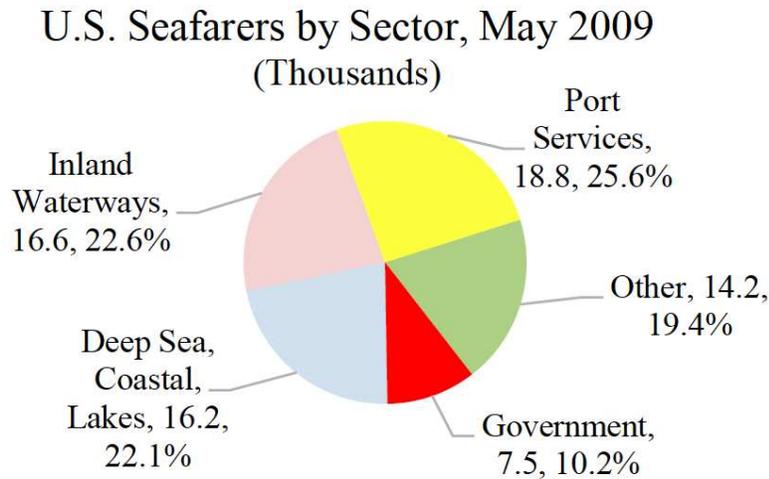
marine transport infrastructure may be sub-optimal. Smith (2004) and others have demonstrated the almost exponential decline in US merchant marine employment since the legislation was implemented, and that instead of fostering a domestic marine shipping infrastructure the Jones Act has actually crippled it, leaving in place only the means to meet the demand of shippers using cabotage services out of necessity.

An additional component of marine infrastructure the Act aims to protect is the domestic shipbuilding industry. However, ITC (2002) showed that even if the Jones Act were to be repealed, and firms were no longer required to operate domestically built vessels, the US shipbuilding industry would not be significantly affected since the vast majority of its output is tied to government contracts.

This is not to say that there would not be any economic “losers” were the Jones Act to be repealed. Of greatest concern is the likelihood that domestic employment in the coastal seafaring trade suffer a dramatic decrease; if (ITC, 2002)’s estimates are of any indication, employment in this sector would decrease by 84.1% and result in the loss of over 13,600 jobs²⁶ (Statistical Snapshot, 2011). However, (taking into account just the lower bound estimate of gains to consumer welfare) citizens would have to value each of these 13,600 jobs as being worth over \$42,500 greater than what they already pay in order for the minimum gain to consumer welfare to be offset²⁷.

The remainder of the (albeit small) amount of complementary research points toward the overall infrastructure being poised to benefit from a repeal as well.

Consider the following:



US Waterborne Transport Statistical Snapshot, 2011

Inland Waterways refers to the “barging” trade: a strong competitor with trucking and rail, and generally considered to be healthy (Lane, 2011). The employment and output in this sector would not likely be significantly affected as a result of coastal cabotage liberalization, as it services routes within the interior of the United States (ITC, 2002).

²⁶ .841* 16,200 (Current Coastal Seafaring Employment in the US) = 13,625

²⁷ \$578,000,000 in additional economic value divided by 13,600 jobs ≈ \$42,500 per job

Magee (2002) hypothesizes that repealing the Jones Act would result in a substantial increase in the size of the Port Services sector. This idea is quite intuitive; if foreign-flag ships were allowed to transport cargo between US ports (e.g., unload in New Orleans and then move on to Boston) their routes could be modified to include multiple stops instead of just one. Considering the massive economies of scale present in international shipping operations (especially when the widening of the Panama Canal to accommodate even larger vessels is complete) there would likely be substitution effects where sea transport supplants truck & rail for some domestic routes. Economic intuition follows that increased port infrastructure and employment could result naturally from the need to accommodate more geographically varied routes. It may thus be feasible that repealing the Jones Act could affect a shift from seafaring coastal jobs to those that are port-based, and that the quantity demanded of coastal transport could significantly increase from the current status quo – and with it consumer welfare. However, this is far from certain. An in-depth analysis of how US Supply Chain infrastructure might respond to a liberation of cabotage would be an extremely useful tool for policymakers seeking to best guide the future of the US merchant marine.

As a final thought, it is worth acknowledging the case of the European Union (EU). Beginning in the 1990's, it began an ongoing process of liberating the market for ocean transport that included the repeal of cabotage laws among member nations. The main rationale for this program continues to be to facilitate “ a more balanced use of transport modes based on their own merits rather than on historically different administrative formalities... (that) will be beneficial for the environment²⁸ and for the economy” (Europa, 2009). Though the geographic, political, and economic environment in the EU differs from that in the United States, the goal of optimizing the efficiency of transport infrastructure is shared. What has been- and continues to be- learned about the Jones Act's long-term consequences might indicate that pursuing such a process may also be logical for the United States.

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²⁸ Coastal marine transport is considered to be much less environmentally damaging than either truck or rail transport. (Lane, 2011).

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VII. Appendix 1: Foreign Flag Profit Structure Data

<i>Firm & Year</i>	<i>Gross Profit From Operations</i>	<i>Total Operating Revenue</i>	<i>Gross Profit Margin from Operations</i>	<i>Average Gross Profit Margin from Operations</i>	<i>Industry Average Profit Margin from Operations</i>
AP Moller/Maersk	(in million DKK)	(in million DKK)		0.240400124	0.174502138
2007	64711	278872	0.232045526		
2008	81250	311821	0.260566158		

	2009	48968	260026	0.18831963	
	2010	89088	315396	0.28246395	
	2011	76955	322520	0.238605358	
NYK Line	(in million Yen)	(in million Yen)			0.092579409
	2007	185428	2164279	0.085676569	
	2008	294479	2584626	0.113934859	
	2009	245038	2429972	0.100839845	
	2010	79925	1697342	0.04708833	
	2011	222544	1929169	0.115357441	
Evergreen Marine	(in million Taiwan Dollars)	(in million Taiwan Dollars)			0.103217335
	2007	4564019	27844435	0.163911352	
	2008	1557350	22437412	0.069408629	
	2009	1987591	15162947	0.131082104	
	2010	1773310	17026011	0.104152993	
	2011	730144	15361235	0.047531595	
CSCCL	(in million RMB)	(in million RMB)			-0.030996517
	2007	4296016	38825620	0.110648999	
	2008	367428	34756152	0.010571596	
	2009	-6231995	19740331	-0.315698607	
	2010	4466298	34808706	0.128309797	
	2011	-2508695	28246498	-0.088814373	
Teekay	(in thousand USD)	(in thousand USD)			0.275416618
	2007	739238	2395507	0.308593546	
	2008	634524	3193655	0.198682701	
	2009	606964	2181605	0.278219018	
	2010	674828	2095753	0.321997869	
	2011	526720	1953782	0.269589954	

Appendix 1: Foreign Flag Profit Structure Data Cont.

Frontline	(in thousand USD)	(in thousand USD)			0.339037908
	2007	738829	1299927	0.568361916	
	2008	1073999	2104018	0.510451431	
	2009	477423	1133286	0.421273183	
	2010	520763	1165215	0.446924387	

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	2011	-204001	810102	-0.251821376	
MOL	(in million Yen)	(in million Yen)			0.153342982
	2007	268397	1568435	0.171124082	
	2008	401588	1945967	0.206369378	
	2009	301316	1865802	0.161494092	
	2010	119486	1347965	0.088641767	
	2011	214701	1543661	0.139085589	
Euronav	(in thousand USD)	(in thousand USD)			0.553431063
	2007	296143	530937	0.557774275	
	2008	612996	856309	0.715858411	
	2009	248323	461285	0.538328799	
	2010	285548	525075	0.543823263	
	2011	162268	394457	0.411370568	
MISC	(in thousand RM)	(in thousand RM)			-0.026090428
	2007	532669	4355482	0.122298519	
	2008	567568	5652986	0.100401452	
	2009	-560382	6093712	-0.091960697	
	2010	-702737	4159477	-0.168948404	
	2011	-331174	3590234	-0.092243013	
HMM	(in million KRW)	(in million KRW)			0.044682886
	2007	424000	5091884	0.083269768	
	2008	717349	8003038	0.089634586	
	2009	-445336	6115482	-0.072821079	
	2010	946255	8124208	0.116473507	
	2011	50889	7420767	0.006857647	

VIII. Appendix 2: Jones Act Market Statistics

	<i>Coastal Ton-Miles</i>
2007	228052000000
2008	207877000000
2009	196290000000
2010	192348000000

Lakes Ton-Miles

2007	51893000000
2008	50263000000
2009	33509000000
2010	45346000000

	Jones Act Ton-Miles	Jones Act Operating Revenue	Yearly Jones Act Ton-Mile Rates
2007	279945000000	618380000	0.002208934
2008	258140000000	826546000	0.003201929
2009	229799000000	904061000	0.003934138
2010	237694000000	1469650000	0.00618295

Industry Average Jones Act Ton-Mile Rate
0.003881988