

**Income Differentials within the West-Coast Longshore Industry:
What are the Causes?**

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Executive Summary

In light of increasing income discrepancies between the various West Coast ports, I present a model of longshore income determination and ultimately expose that factor which most influences annual earnings, and thus is largely responsible for the apparent income differentials. Given the wage and employment structure of the International Longshore and Warehouse Union, representing longshore workers up and down the West Coast, my initial hypothesis was that the union's seniority scales primarily influenced longshore earnings, with the most senior workers enjoying higher incomes. Building on this assumption, I further believed that the greater the number of senior longshoremen within a particular local (or port), the higher the average annual income for that local. A given port's work availability, as measured by the total tonnage passing through the port in a certain period, and previous longshore incomes were also thought to have positive effects on average annual earnings, yet not as significant as seniority factors.

To my surprise, the regression model, including data from six West-Coast ports, revealed that seniority actually has no significant impact on the determination of a local's average annual longshore income. Instead, it appears that the amount of work available—that is, the amount of tonnage to be handled—primarily effects longshore earnings. Income differentials between the West Coast ports can then be attributed to differences in the amount of “work tons” that each port receives.

Background

Since its inception in 1934, the International Warehouse and Longshore Union (ILWU), representing longshoremen along the West Coast, has been known for policies advocating and furthering equality among its members, particularly in terms of wages. This may be evidenced

by the long-established straight time wage rate, which is the derivative of all waterfront workers' wages. Despite such historic efforts toward wage equality, however, in recent years there has been an increasing difference in the average annual income of longshoremen across the various ports up and down the West Coast (see Figure 1 in Appendix). Given that the wage rate described above is determined by a coast-wide contract, and thus applicable to all West Coast ports, what factors are then responsible for the apparent earnings differentials?

In this paper I will address this question by econometrically analyzing possible factors that influence longshore annual incomes in different West Coast ports. In doing so, I am able to determine which factor is most dominant and may feasibly account for earnings differentials across ports despite contract provisions promoting wage equality. Although a variety of factors ultimately affect longshore incomes, I simplify the model and consider only skill and experience rates, as embodied in ILWU seniority scales, and work availability, as denoted by the amount of tonnage (cargo) handled in a port at a given point in time. Furthermore, for the comparative purposes of this study I will examine six ports, each chosen according to relative size given that the longshore income gap is most evident between the smallest and largest ports. The ports, as represented by individual ILWU locals, include those in: L.A./Longbeach and the San Francisco Bay area, the first and second largest ports on the West Coast, respectively; Seattle and Tacoma, two medium-sized ports; and Everett and Anacortes, two relatively small ports.

The Model

In order to assess earning discrepancies between the six ports mentioned above, I collected data on each local's average annual income, seniority scale, and work availability from 1983 to 2001. This information was available through the annual reports of the Pacific Maritime

Association (PMA), the ILWU's main employer group. The regression equation used is thus as follows:

$$\text{AVGINCOME} = \beta_1 \text{LALB} + \beta_2 \text{SF} + \beta_3 \text{SEA} + \beta_4 \text{TAC} + \beta_5 \text{EVT} + \beta_6 \text{ANC} + \beta_7 \text{LOG}(\text{SENIORITY}) + \beta_8 \text{LOG}(\text{TONNAGE}) + \beta_9 \text{AVGINCOME}(-1) + \beta_{10} \text{YEAR} + \beta_{11} \text{AR}(1)$$

The dependent variable, AVGINCOME, denotes a local's average annual income in real terms and represents working wages plus benefits. On the right side of the equation, six dummy variables, representing the six ports, are included in order to allow for different intercepts.

LOG(SENIORITY) takes into account registered Class A and B longshoremen in each local, the two most senior classifications (out of four) of West-Coast longshore workers. Ultimately, working hours, union benefits, and skill and experience wage premiums increase as a longshoreman climbs the seniority scale. I therefore assume that the more senior a longshore worker, the more income he or she will earn. While data on the two lower categories ("casuals") is not available, considering only the most senior longshoremen allows differences in skill and experience to account for differences in average annual income across the six ILWU locals. The main assumption is that the greater number of Class A and B longshoremen within a given local, the higher average earnings will be within that local. (See the Appendix for a more thorough discussion about the West-Coast longshore wage and employment structure.)

The number of longshoremen within a local, however, is also a function of the port's size. To control for this factor, LOG(TONNAGE) is included into the regression equation, representing the total amount of cargo that passes through a port as measured in revenue tonnage. Large ports, such as L.A./Longbeach and San Francisco, that have a greater cargo capacity will have greater work opportunities and thus employ more longshore workers to handle the cargo. Yet work availability is itself a determinant of earnings. LOG(TONNAGE) therefore has a dual role in

the regression equation, both controlling for port size and directly affecting income levels through its impact on work availability.

Once-lagged real average annual income is denoted by $AVGINCOME(-1)$; it seems logical that a longshoreman's earnings for any given year are at least somewhat dependent upon income levels in the previous year. $YEAR$, representing a time trend, enables the model to capture average yearly changes in a port's longshore average income over the 18 year period considered. Finally, $AR(1)$ is included in the regression equation in order to correct for serial correlation.

Regression Results

From the regression output (see Appendix), it is clear that the amount of tonnage a port handles, or work availability, has had the most impact on West-Coast longshoremen's real average annual incomes from 1983 to 2001. The coefficient of $LOG(TONNAGE)$ reveals that a one percent increase in the amount of "work tons" available in a port will translate into a 48.38 (10.3709) unit increase in a local's average earnings. Similarly, the coefficient on $AVGINCOME(-1)$ shows that a one unit increase in once-lagged earnings translates into approximately a 0.47 (0.1085) unit increase in a local's average annual income. Despite being highly statistically significant, however, this coefficient merely states that longshoremen can at most expect the current year's income level to be about half of the previous year's, holding all else constant. Given that longshore real average annual earnings have generally increased over the relevant time period, one can assume that past income levels are not too influential on future levels. Although both $LOG(TONNAGE)$ and $AVGINCOME(-1)$ are highly statistically significant, then, only the former appears to have any great effect on longshore annual earnings.

Furthermore, the coefficients on $YEAR$ and $LOG(SENIORITY)$ appear to be statistically insignificant. Although each passing year seems to yield approximately a 0.86 (0.6489) unit

increase in annual income, this trend cannot be concluded with any statistical certainty. Forming a five percent confidence interval, however, reveals that yearly changes in longshore earnings range from about -.44 units to 2.16 units. Lastly, the coefficient of LOG(SENIORITY) results as the most statistically insignificant. This outcome appears to invalidate my earlier claim that a local with a greater number of Class A and B longshoremen will enjoy a higher average annual income. Instead, it has been shown that the amount of existing longshore work, in terms of the total tonnage available to be handled, ultimately determines the amount that a longshore worker can take home each year.

Conclusion

Given the analysis above, the underlying cause of income differentials between ports appears to stem from corresponding differentials in the work availability in each port, that is, differences in the amount of revenue tonnage that each port handles in a given year. Over the 18 year period considered here, for example, revenue tonnage increased in L.A./Longbeach, the San Francisco Bay area, Seattle, Tacoma, Everett, and Anacortes by 240.87%, 48.77%, 35.53%, 146.66%, -89.00%, and 5374.67%, respectively. According to the regression model, as changes in average annual earnings are most sensitive to changes in actual tonnage handled, one would assume that the Anacortes, L.A./Longbeach, and Tacoma ports would currently provide longshoremen with the highest incomes, while the San Francisco, Seattle, and Everett ports would trail in their average annual earnings. A look at the graph in Figure 1 below roughly depicts these trends. L.A./Longbeach and Tacoma do indeed afford the highest longshore incomes, followed by Seattle and San Francisco, and trailed by Anacortes and Everett. The only exception to the rule, as posed by the regression model, is Anacortes; given an extremely high

percentage increase in tonnage handled, this latter port would have been expected to outperform the other West-Coast ports in terms of longshore incomes. However, one must only note that the Anacortes port has in fact experienced about a 140% increase in average annual earnings over the relevant time period, compared with San Francisco's 61% increase, the second highest among the group. Despite its current relative position, Anacortes has done extremely well over the past two decades in improving the livelihood of its longshore workers.

The relationship between port tonnage and longshore annual income is clearly evident when one considers the port trends describe above. Indeed, the trends expose the critical impact of available "work tons" on longshore real average annual earnings, and ultimately on the distribution of income on the waterfront.

Appendix

West Coast Longshore Real Average Annual Incomes by Port/Local

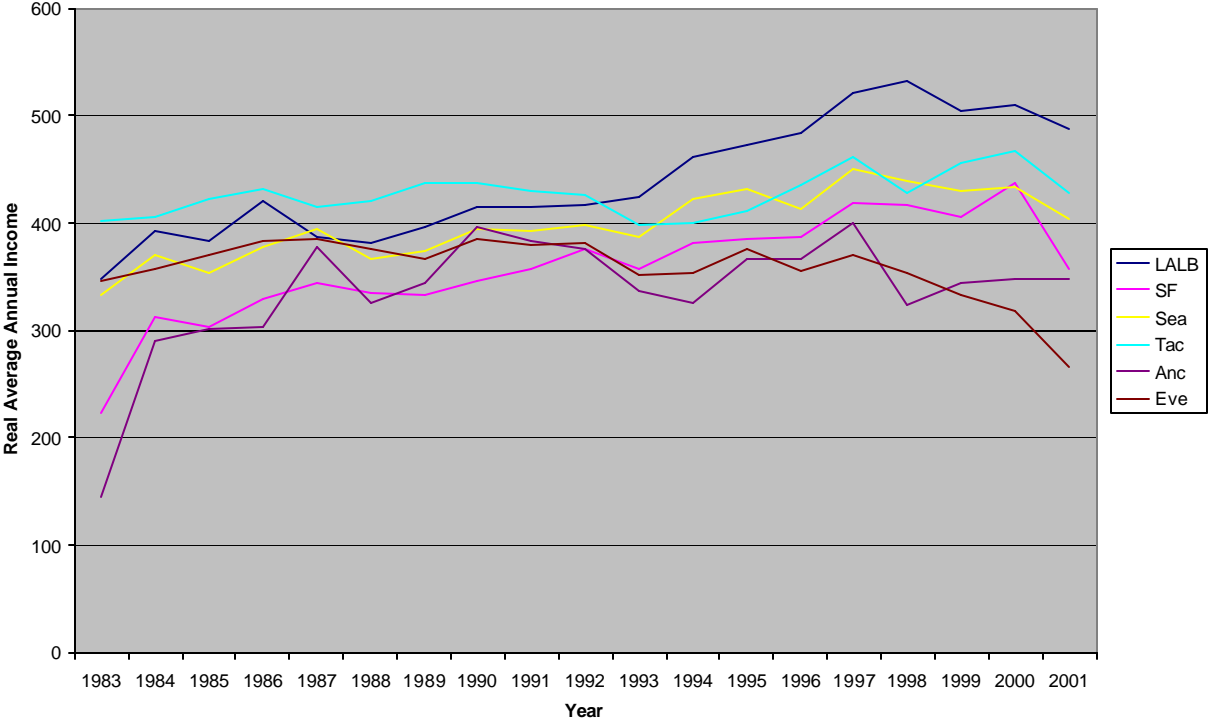


Figure 1

The West-Coast Longshore Wage and Employment Structure

The ILWU’s seniority scale includes four longshore categories. From lowest to highest ranking they are: unidentified casual, identified casual, Limited Class B, and Class A. Although employed in longshore work, the former two categories are not considered ILWU members. To obtain union status and benefits as a Class B longshoreman, a “casual” must accumulate 400 hours of work, which may prove difficult given that senior longshoremen are given priority in employment. The jump from Class B to Class A requires an additional number of hours. According to a Seattle Office PMA staff-member, moving up the ILWU scale from an

unidentified casual to a Class A longshoreman may take anywhere from five to fifteen years, depending on the work availability of each port.

It is therefore apparent that this seniority scale reflects income differentials between all longshore categories due to differences in the working hours and union benefits available from level to level. Yet seniority further exacerbates earning disparities given that skill and experience rates are also major determinants of longshore annual incomes. Skill and experience rates are premiums added to the straight time wage rate based upon special skills and the total number of hours worked, respectively. Given this wage and employment structure, I assume that the more senior a longshore worker, the more skilled and experienced he or she will be, and thus the more income he or she will earn.

Regression Outputs

Dependent Variable: AVGINCOME
 Method: Least Squares
 Date: 12/10/02 Time: 17:35
 Sample(adjusted): 3 119
 Included observations: 102
 Excluded observations: 15 after adjusting endpoints
 Convergence achieved after 10 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LALB	-2322.339	1339.413	-1.733848	0.0863
SF	-2302.462	1336.124	-1.723240	0.0882
SEA	-2280.690	1327.534	-1.717990	0.0892
TAC	-2271.682	1324.526	-1.715091	0.0897
EVT	-2154.619	1311.314	-1.643099	0.1038
ANC	-2133.702	1301.343	-1.639616	0.1045
LOG(SENIORITY)	-4.850897	14.59265	-0.332421	0.7403
LOG(TONNAGE)	48.37647	10.37086	4.664656	0.0000
AVGINCOME(-1)	0.469840	0.108543	4.328620	0.0000
YEAR	0.861764	0.648854	1.328131	0.1875
AR(1)	-0.121460	0.119109	-1.019741	0.3106
R-squared	0.851026	Mean dependent var	393.4187	
Adjusted R-squared	0.834656	S.D. dependent var	49.52724	
S.E. of regression	20.13904	Akaike info criterion	8.944770	
Sum squared resid	36907.86	Schwarz criterion	9.227856	
Log likelihood	-445.1833	Durbin-Watson stat	1.911835	
Inverted AR Roots	-0.12			

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.000973	Probability	0.975184
Obs*R-squared	0.001103	Probability	0.973509

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 12/10/02 Time: 17:37

Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LALB	20.88453	1504.282	0.013883	0.9890
SF	20.91100	1501.700	0.013925	0.9889
SEA	20.68997	1490.807	0.013878	0.9890
TAC	20.59092	1486.685	0.013850	0.9890
EVT	20.32824	1471.039	0.013819	0.9890
ANC	20.13676	1459.330	0.013799	0.9890
LOG(SENIORITY)	-0.124552	15.20701	-0.008190	0.9935
LOG(TONNAGE)	-0.068729	10.65930	-0.006448	0.9949
AVGINCOME(-1)	0.003194	0.149705	0.021338	0.9830
YEAR	-0.010054	0.727814	-0.013814	0.9890
AR(1)	0.005835	0.222065	0.026277	0.9791
RESID(-1)	-0.010135	0.324919	-0.031193	0.9752
R-squared	0.000011	Mean dependent var	-6.66E -12	
Adjusted R-squared	-0.122210	S.D. dependent var	19.11607	
S.E. of regression	20.25050	Akaike info criterion	8.964367	
Sum squared resid	36907.46	Schwarz criterion	9.273188	
Log likelihood	-445.1827	Durbin-Watson stat	1.910471	