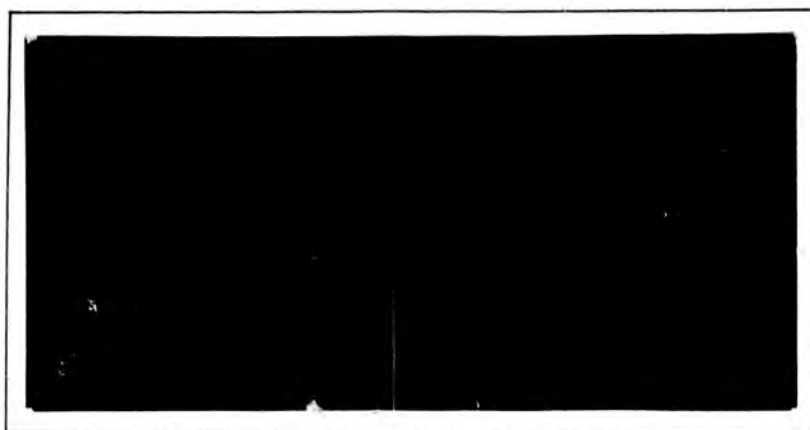


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INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH

UNIVERSITY OF ALASKA ANCHORAGE

**A COMPARATIVE ANALYSIS OF THE
ECONOMIC EFFECTS OF REDUCED
STATE GOVERNMENT
EMPLOYEE COMPENSATION**

prepared by

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prepared for

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EXECUTIVE SUMMARY

A big share of the state budget goes to pay state workers--so how to cut state spending for public employees and by how much has been a hot topic in Alaska over the past year, as smaller oil revenues force continuing budget cuts. The Senate Finance Committee of the Alaska Legislature asked us to look at the different economic effects of two possible ways of reducing future employee costs: cutting wages of all state workers, or saving the same amount of money by laying some workers off.

We found that saving \$100 million by laying workers off would have bigger effects on the economy than would saving the same amount by cutting pay of all state workers. Laying workers off would mean more job loss throughout the economy, more loss of personal income, and more houses standing empty. On the other hand, reducing public employees' pay would also reduce business costs and the cost of consumer goods throughout Alaska more than would laying workers off.

We also looked at historical fluctuations in wage rates for various industries in Alaska and asked some of Alaska's larger employers how they were holding down employee costs in the current recession.

Below we discuss our findings.^a We want to emphasize that pay cuts affect the Alaska economy differently than do layoffs. Rather than advocate one alternative over the other, we analyze and report the likely economic consequences of each alternative. We did not investigate the effect of either alternative on the quantity or quality of public services. And there are other possible ways of cutting public employees' compensation that we did not consider;^b each of those would also have different effects on the delivery of public services, the numbers of jobs in Alaska, and price and income levels.

^aTo gauge the economic effects of pay cuts or layoffs we had to make assumptions about, among other things, the average federal tax rates applicable to state workers and the share of state workers' pay spent locally. The values we use for these assumptions, of course, affect the outcome, but altering those values within reasonable ranges does not alter the general study conclusion.

^bReducing hours or cutting retirement benefits, for example.

Effects of State Wage Cuts or Layoffs

- Cutting \$100 million from the state budget by reducing all state employees' wages by the same percentage (with a portion of that cut in benefit reductions) would cost Alaska \$80 million in disposable personal income--\$60 million of which would be income lost by government workers and \$20 million of which would be income lost by private industry workers as a result of less spending by government workers.^c
- Cutting \$100 million from the state budget through layoffs, proportional at all wage levels, would take about \$95 million in disposable personal income out of the economy--\$70 million of which would come from income lost by laid-off government workers, and \$25 million of which would come from private industry employees who previously served the laid-off government workers.
- Reducing the state budget through pay cuts rather than through layoffs would take less income out of the economy for two main reasons:
 1. The federal government would share more of the burden under pay cuts because the federal income tax system is progressive; that is, the higher your income, the larger the percentage that goes for taxes. Among state employees, the marginal tax rate--the rate they pay on the last dollar they earn--is nearly twice as high as their average tax rate, which is the rate they pay on their total incomes.

Taking a dollar out of the economy by cutting wage rates of state employees, a dollar would reduce disposable personal income by about 74 cents, because the wage cut would reduce state employees' federal tax liability by around 26 cents. But taking a dollar out of the economy by eliminating jobs would cut disposable personal income by 85 cents because the average tax rate on total income of state employees is about 15 percent.

^cTo achieve a \$100 million savings would require about a 13 percent reduction in overall public employee compensation. We include University of Alaska and seasonal workers in all of our calculations.

2. In general, households spend most of their income and save some portion. Pay cuts would likely hit first at income that might not have been spent in the local economy anyway--money that workers would otherwise have saved, or possibly spent on trips outside the state. On the other hand, eliminating the entire incomes of some workers by eliminating their jobs would essentially cost the economy all of the income they would have spent locally.
- Cutting \$100 million in state spending by reducing wages would maintain the current number of public jobs but cost private industry 960 jobs. Using layoffs to save the same amount would eliminate a total of 3,880 jobs--2,640 public jobs and 1,240 private jobs. Private industry would lose trade and service jobs in both instances mainly because government workers would be spending less, but the effects would be greater under layoffs than under wage cuts.
 - Increased vacancies in all kinds of housing would follow either state wage cuts or layoffs, but the effects would be greater under layoffs. Most state workers with reduced wages would still be able to pay for housing, but many who lost their jobs would probably leave the state. Private industry workers affected by state wage cuts or layoffs would also find it more difficult to pay for housing, and some would leave. The drop in demand for housing units could be as high as 750 if state wages were cut and 3,000 if workers were laid off.
 - Cutting government salaries or laying state workers off would both tend to push down private wages, but the effect would be larger under wage cuts. For example, if the average state government wage were reduced 10 percent, the prevailing wage rate in the Alaska economy would eventually fall about 4 percent. That would likely happen because wage levels in most industries are at least partly determined by prevailing wages throughout the economy. If the state laid off 10 percent of its workers, prevailing wages in Alaska would probably drop about 1 percent because there would be less demand for labor--and wage rates are also partly determined by demand.
 - A drop in prevailing wage rates could increase the competitiveness of Alaska businesses and reduce the costs of living in Alaska.

Other Findings

- Annual wage rates in Alaska since 1970 have varied considerably among industries over the course of the business cycle. In comparing wage rates among industries, one has to control for differences due to the influence of the business cycle. For example, one can't justify a 10 percent reduction or increase in state government wage rates based on a comparable change in wages in the construction industry--because employment in the construction industry rises rapidly when the economy is expanding and falls precipitously during recessions, putting strong upward and downward pressure on wages. Employment in the public sector, on the other hand, is relatively stable.
- Measures to cut employee costs in private industry in Alaska have been widespread since the current recession started, according to a quick, informal survey we made of a number of large Alaska employers and some unions. The severity of the measures varies with how hard the individual employers have been hit by the recession. Most employers we talked to have eliminated at least some jobs as they became vacant, many have laid workers off and frozen wages, and virtually all have adopted ways of reducing their costs for employee health insurance and tightened up or reduced costs for other benefits. A few have reduced wages; if they are hiring new employees at all, many are starting new workers at a lower base pay than they would have formerly.

PART 1. THE AGGREGATE ECONOMIC EFFECTS OF REDUCING
STATE GOVERNMENT EMPLOYEE COMPENSATION

A. SUMMARY

Cutting the state budget by reducing the average wage rate of government employees would have a smaller contractionary impact on both aggregate employment and personal income than saving the same amount of money by reducing the number of public employees. For example, if \$100 million were cut from the budget in 1988 by a proportional reduction in all wage rates, the loss of disposable income in the economy would be \$80.4 million, and the loss of jobs would be 962 annually. If the \$100 million cut were accomplished by reducing the labor force proportionally at all levels, the loss of disposable income would be \$95.2 million, and the loss of jobs would be 3,885 annually.

The smaller contractionary effect of the wage rate reduction is primarily the result of two factors. First, federal sharing of the cut through reduced federal income tax payments is unequivocally greater with a wage cut. Higher marginal federal tax rates apply to a wage cut than the effective (average) tax rates that apply to a reduction in the total annual earnings of a few workers. Even though the new federal tax code is less progressive than previously, the marginal tax rate for state workers is about double the effective, or average rate. Thus, the removal of a dollar of income from the economy by reducing the wage rate by one dollar reduces disposable personal income after taxes by only 74 cents because federal tax liability has fallen by 26 cents. If a dollar of income is removed from the economy by eliminating a job, disposable income would fall by 85 cents after taxes because the effective tax rate on state employees is about 15 percent.

Second, there is less tendency for marginal wage income to be spent in the local economy than average wage income. People are more likely to save their marginal income, and thus reducing that income would affect how much they contribute to saving rather than to spending. On the other hand, most income is spent, and the elimination of all wage income for an individual would reduce spending by almost as much. It is also probable but not certain that marginal income is more likely to be spent in ways that do not impact the local economy, such as pleasure and buying trips outside the state.

In either case, 18 percent of the cut is in the form of benefits reduction. Consequently, after the effect of reduced tax liability is taken into account, disposable income of government workers declines \$60.6 million from a salary reduction and \$69.6 million from a reduction of the work force. No government jobs are eliminated by the salary reduction, but 2,644 are eliminated by the work force reduction alternative.

The effect on the private sector--trade and services--results primarily from reduced spending out of the disposable income of government workers but also from the reduction in benefits paid a part of the government employee compensation package. A portion of benefits paid, particularly physicians and dental services, impacts the local economy. The loss of jobs and income in the private sector is less with the salary reduction compared to the work force reduction--\$19.8 million and 962 jobs annually, compared to \$25.4 million and 1,241 jobs annually.¹

The salary reduction plan would increase excess capacity in housing by a smaller proportion than the work force reduction alternative. A salary reduction would not directly eliminate the ability of a household with a state employee to pay for housing, but the loss of all wage income to 2,644 state employees would cause a significant out-migration of households. In either case, there would be excess capacity created in housing and commercial real estate from the reduction of private sector jobs and income. A smaller private effect would result from the wage reduction alternative.

The pattern of excess capacity created is related to the pattern of home ownership. If 2,644 state workers became unemployed, 2,388 households would be impacted. Of these households, 64 percent are homeowners and 36 percent are renters. The loss in demand for housing units of all kinds would be increased in either case by the loss in jobs in the private sector.

The salary reduction alternative would impact the economy with a lag because it takes some time for households to adjust their consumption habits to the continued expectation of reduced income. Some of the reduction in purchasing power will be compensated for by a drawdown of accumulated savings. Consumer durables, non-essentials, and discretionary spending would be reduced first. Over time, households would reduce their nondiscretionary spending and their purchases of nondurables to bring their spending into line with their lower level of income. The work force reduction plan would impact the economy more immediately, due to out-migration of households and their purchasing power. In addition, the depressed condition of the construction industry would continue for a longer time with higher out-migration of households, which would increase and prolong the excess capacity in the housing market. This factor creates an additional negative aggregate economic impact associated with workforce reduction, which has not been quantified in this study.

¹We assume in Part 1 of this analysis that the private sector does not respond by reducing wages; however, the analysis in Part 2 of this report indicates that a portion of the private response, particularly if the government wage rate were to fall, would be in reduced private sector wages rather than in private sector employment reductions.

The magnitude of the effects of these budget-reducing alternatives depends primarily on the values chosen for the marginal and average federal income tax rates applicable to state workers, the marginal and average propensity to consume locally of state workers, and the local income (or value added) component of that local spending. Also, the size of the effects would be greater if concentrated among lower wage categories of employees and smaller if concentrated among higher wage categories. For reasonable ranges for the value for these and other parameters, the general conclusion of the study is not altered. The aggregate economic effect of state wage reductions would be less than that of workforce reductions. Tables 1 and 2 summarize the results of the impact analysis as well as sensitivity analyses.

TABLE 1. IMPACT OF REDUCTION IN STATE WORK FORCE AT ALL PAY SCALES

****CASE A. ****PAGE 1.				*****CASE A.			
REDUCE STATE WORK FORCE AT ALL PAY SCALES				REDUCE STATE WORK FORCE AT ALL PAY SCALES			
READ IMPACT SOURCE ACROSS AND LOCATION DOWN*****	ALASKA INCOME (MILL \$)			DISPOSABLE INCOME (MILL \$)			EMPLOYMENT (ANNUAL AVERAGE)
	PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIV PUBLIC TOTAL
****SUMMARY*****							
PRIVATE SECTOR	\$0.0	(\$74.9)	(\$74.9)	\$0.0	(\$63.7)	(\$63.7)	\$0.0 (\$51.0) (\$51.0) 0 -1241 -1241
PUBLIC SECTOR	\$0.0	(\$250.0)	(\$250.0)	\$0.0	(\$174.2)	(\$174.2)	\$0.0 (\$139.3) (\$139.3) 0 -2644 -2644
TOTAL	\$0.0	(\$324.9)	(\$324.9)	\$0.0	(\$237.9)	(\$237.9)	\$0.0 (\$190.3) (\$190.3) 0 -3885 -3885
TOTAL 87:3-4	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.6)	(\$47.6)	\$0.0 (\$38.1) (\$38.1) 0 -3885 -3885
EFFECT 88:1-2	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.6)	(\$47.6)	\$0.0 (\$38.1) (\$38.1) 0 -3885 -3885
88:3-4	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.6)	(\$47.6)	\$0.0 (\$38.1) (\$38.1) 0 -3885 -3885
89:1-2	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.6)	(\$47.6)	\$0.0 (\$38.1) (\$38.1) 0 -3885 -3885
89:3-4	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.6)	(\$47.6)	\$0.0 (\$38.1) (\$38.1) 0 -3885 -3885
PRIVATE SECTOR 87:3-4	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0 (\$10.2) (\$10.2) 0 -1241 -1241
88:1-2	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0 (\$10.2) (\$10.2) 0 -1241 -1241
IMPACT 88:3-4	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0 (\$10.2) (\$10.2) 0 -1241 -1241
89:1-2	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0 (\$10.2) (\$10.2) 0 -1241 -1241
89:3-4	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0 (\$10.2) (\$10.2) 0 -1241 -1241
PUBLIC SECTOR 87:3-4	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0 (\$27.9) (\$27.9) 0 -2644 -2644
88:1-2	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0 (\$27.9) (\$27.9) 0 -2644 -2644
IMPACT 88:3-4	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0 (\$27.9) (\$27.9) 0 -2644 -2644
89:1-2	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0 (\$27.9) (\$27.9) 0 -2644 -2644
89:3-4	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0 (\$27.9) (\$27.9) 0 -2644 -2644

****ASSUMPTIONS*****DANGER!!!!!!!!*****

A. PRIVATE EFFECTS*****

C. DIRECT INCOME CHANGES*****

			PRIVATE	PUBLIC
* 0.2 OFFSET1	FEDERAL OFFSET: MARGINAL FEDERAL TAX RATE ON ALASKA INCOME			
* 0.08 LEAK1	TAX EXPORTING: PORTION OF INCOME TAX PAID BY NON-RESIDENTS			
* 1.3 MULT1	ECONOMIC MULTIPLIER ON RESIDENT DISPOSABLE PERSONAL INCOME	87:3-4	0	-50
0.85 DPIRATE	RATIO OF DPI/PI FOR SUPPORT SECTOR INCOME	89:1-2	0	-50
0.021 WAGESUP1	AVERAGE SUPPORT SECTOR WAGE (MILLION \$)	88:3-4	0	-50
0.15 COMP2	SUPPORT SECTOR BENEFITS AS % OF WAGE	89:1-2	0	-50
0.8 MPC1	MARGINAL PROPENSITY TO CONSUME OF TAXPAYER OR PF DIV RECIPIENT	89:3-4	0	-50
0.8 MPC3	MARGINAL PROPENSITY TO CONSUME OF SUPPORT SECTOR EMPLOYEE			
		TOTAL	0	-250

B. PUBLIC EFFECTS*****

* 0.15 OFFSET2	FEDERAL OFFSET: AVERAGE FEDERAL TAX RATE FOR STATE EMPLOYEE	1 POR1	PORTION OF \$
* 1.3 MULT2	ECONOMIC MULTIPLIER ON STATE EMPLOYEE DISPOSABLE PERSONAL INCOME		SPENT ON
0.031 WAGEGOV1	AVERAGE STATE/LOCAL WAGE (MILLION \$)		PUBLIC JOBS
0.22 COMP1	STATE GOVERNMENT BENEFITS AS % OF WAGE	0.25 DPI1	PORTION OF
0.8 MPC2	MARGINAL PROPENSITY TO CONSUME OF GOVT EMPLOYEE		NON-JOB
0.4 BEN1	LOCALLY SPENT PORTION OF PUBLIC EMPLOYEE BENEFITS		EXPENDITURES
0.4 INC1	INCOME PORTION OF LOCALLY SPENT BENEFITS		

****CASE A. *****PAGE 2.
REDUCE STATE WORK FORCE AT ALL PAY SCALES

*****CASE A.
REDUCE STATE WORK FORCE AT ALL PAY SCALES

=====												
ALASKA INCOME (MILL \$)			DISPOSABLE INCOME (MILL \$)			DISCRETIONARY SPENDING (MILL \$)			EMPLOYMENT (ANNUAL AVERAGE)			
PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIV	PUBLIC	TOTAL	

87:3-4												
DIRECT EFFECT												
Private Sector	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	0	0	0	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
Total	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
INDIRECT EFFECT												
Private Sector	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0	(\$10.2)	0	-1241	-1241	
TOTAL EFFECT												
Private Sector	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0	(\$10.2)	0	-1241	-1241	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
Total	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.5)	(\$47.5)	\$0.0	(\$38.1)	0	-3885	-3885	

99:1-2												
DIRECT EFFECT												
Private Sector	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	0	0	0	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
Total	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
INDIRECT EFFECT												
Private Sector	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0	(\$10.2)	0	-1241	-1241	
TOTAL EFFECT												
Private Sector	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0	(\$10.2)	0	-1241	-1241	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
Total	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.5)	(\$47.5)	\$0.0	(\$38.1)	0	-3885	-3885	

88:3-4												
DIRECT EFFECT												
Private Sector	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	0	0	0	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
Total	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
INDIRECT EFFECT												
Private Sector	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0	(\$10.2)	0	-1241	-1241	
TOTAL EFFECT												
Private Sector	\$0.0	(\$15.0)	(\$15.0)	\$0.0	(\$12.7)	(\$12.7)	\$0.0	(\$10.2)	0	-1241	-1241	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$34.8)	(\$34.8)	\$0.0	(\$27.9)	0	-2644	-2644	
Total	\$0.0	(\$65.0)	(\$65.0)	\$0.0	(\$47.5)	(\$47.5)	\$0.0	(\$38.1)	0	-3885	-3885	

CASE A. **PAGE 6.
REDUCE STATE WORK FORCE AT ALL PAY SCALES

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SENSITIVITY ANALYSIS

=====

DISPOSABLE PERSONAL INCOME

EMPLOYMENT

		% FEDERAL TAX (C48)				
	+J12	5%	10%	15%	20%	25%
	1.10	(\$226)	(\$214)	(\$203)	(\$192)	(\$180)
MULTI-	1.20	(\$245)	(\$233)	(\$220)	(\$208)	(\$196)
PLIER	1.30	(\$265)	(\$251)	(\$238)	(\$225)	(\$211)
(C49)	1.40	(\$284)	(\$270)	(\$255)	(\$241)	(\$227)

		% FEDERAL TAX (C48)				
	+P12	5%	10%	15%	20%	25%
	1.10	-3246	-3226	-3206	-3186	-3167
	1.20	-3626	-3586	-3546	-3506	-3466
	1.30	-4005	-3945	-3885	-3825	-3765
	1.40	-4384	-4305	-4225	-4145	-4065

		% FEDERAL TAX (C48)				
	-237.87	5%	10%	15%	20%	25%
	0.20	(\$259)	(\$245)	(\$232)	(\$219)	(\$206)
LOCAL	0.30	(\$262)	(\$248)	(\$235)	(\$222)	(\$208)
BENEFIT	0.40	(\$265)	(\$251)	(\$238)	(\$225)	(\$211)
SPENDING	0.50	(\$267)	(\$254)	(\$241)	(\$227)	(\$214)
(C53)	0.60	(\$270)	(\$257)	(\$244)	(\$230)	(\$217)

		% FEDERAL TAX (C48)				
	+P12	5%	10%	15%	20%	25%
	0.20	-3894	-3834	-3774	-3714	-3654
	0.30	-3949	-3889	-3830	-3770	-3710
	0.40	-4005	-3945	-3885	-3825	-3765
	0.50	-4061	-4001	-3941	-3881	-3821
	0.60	-4117	-4057	-3997	-3937	-3877

TABLE 2. IMPACT OF CUT IN PUBLIC SALARIES AND BENEFITS AT ALL PAY SCALES

****CASE B. *****PAGE 1.

CUT PUBLIC SALARIES AND BENEFITS AT ALL PAY SCALES

*****CASE B.

CUT PUBLIC SALARIES AND BENEFITS AT ALL PAY SCALES

READ IMPACT SOURCE ACROSS AND LOCATION DOWN*****		ALASKA INCOME (MILL \$)			DISPOSABLE INCOME (MILL \$)			DISCRETIONARY SPENDING (MILL \$)			EMPLOYMENT (ANNUAL AVERAGE)		
		PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIV	PUBLIC	TOTAL
****SUMMARY*****													
PRIVATE SECTOR		\$0.0	(\$58.1)	(\$58.1)	\$0.0	(\$49.3)	(\$49.3)	\$0.0	(\$39.5)	(\$39.5)	0	-962	-962
PUBLIC SECTOR		\$0.0	(\$250.0)	(\$250.0)	\$0.0	(\$151.6)	(\$151.6)	\$0.0	(\$121.3)	(\$121.3)	0	0	0
TOTAL		\$0.0	(\$308.1)	(\$308.1)	\$0.0	(\$201.0)	(\$201.0)	\$0.0	(\$160.8)	(\$160.8)	0	-962	-962
TOTAL 87:3-4		\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	(\$32.2)	0	-962	-962
EFFECT 88:1-2		\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	(\$32.2)	0	-962	-962
88:3-4		\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	(\$32.2)	0	-962	-962
89:1-2		\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	(\$32.2)	0	-962	-962
89:3-4		\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	(\$32.2)	0	-962	-962
PRIVATE 87:3-4		\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	(\$7.9)	0	-962	-962
SECTOR 88:1-2		\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	(\$7.9)	0	-962	-962
IMPACT 88:3-4		\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	(\$7.9)	0	-962	-962
89:1-2		\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	(\$7.9)	0	-962	-962
89:3-4		\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	(\$7.9)	0	-962	-962
PUBLIC 87:3-4		\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	(\$24.3)	0	0	0
SECTOR 88:1-2		\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	(\$24.3)	0	0	0
IMPACT 88:3-4		\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	(\$24.3)	0	0	0
89:1-2		\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	(\$24.3)	0	0	0
89:3-4		\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	(\$24.3)	0	0	0

****ASSUMPTIONS*****DANGER!!!!!!!!!!!!*****

A. PRIVATE EFFECTS*****

C. DIRECT INCOME CHANGES*****

			PRIVATE	PUBLIC
0.2 OFFSET1	FEDERAL OFFSET: MARGINAL FEDERAL TAX RATE ON ALASKA INCOME			
0.08 LEAK1	TAX EXPORTING: PORTION OF INCOME TAX PAID BY NON-RESIDENTS			
1.3 MULT1	ECONOMIC MULTIPLIER ON RESIDENT DISPOSABLE PERSONAL INCOME	87:3-4	0	-50
0.85 DPIRATE	RATIO OF DPI/PI FOR SUPPORT SECTOR INCOME	88:1-2	0	-50
0.021 WAGESUP1	AVERAGE SUPPORT SECTOR WAGE (MILLION \$)	88:3-4	0	-50
0.15 COMP2	SUPPORT SECTOR BENEFITS AS % OF WAGE	89:1-2	0	-50
0.8 MPC1	MARGINAL PROPENSITY TO CONSUME OF TAXPAYER OR PF DIV RECIPIENT	89:3-4	0	-50
0.8 MPC3	MARGINAL PROPENSITY TO CONSUME OF SUPPORT SECTOR EMPLOYEE			
TOTAL			0	-250

B. PUBLIC EFFECTS*****

0.26 OFFSET2	FEDERAL OFFSET: AVERAGE FEDERAL TAX RATE FOR STATE EMPLOYEE	1 POR1	PORTION OF \$
1.25 MULT2	ECONOMIC MULTIPLIER ON STATE EMPLOYEE DISPOSABLE PERSONAL INCOME		SPENT ON
0.031 WAGESGOV1	AVERAGE STATE/LOCAL WAGE (MILLION \$)		PUBLIC JOBS
0.22 COMP1	STATE GOVERNMENT BENEFITS AS % OF WAGE	0.25 DPI1	NON-JOB
0.8 MPC2	MARGINAL PROPENSITY TO CONSUME OF GOVT EMPLOYEE		EXPENDITURES
0.4 BEN1	LOCALLY SPENT PORTION OF PUBLIC EMPLOYEE BENEFITS		BECOMING DPI
0.4 INC.	INCOME COMPONENT OF LOCAL BENEFIT SPENDING	0 SWCH	=1 IF JOB CUT

CASE B. **PAGE 2.

CUT PUBLIC SALARIES AND BENEFITS AT ALL PAY SCALES

*****CASE B.

CUT PUBLIC SALARIES AND BENEFITS AT ALL PAY SCALES

=====												
ALASKA INCOME (MILL \$)			DISPOSABLE INCOME (MILL \$)			DISCRETIONARY SPENDING (MILL \$)			EMPLOYMENT (ANNUAL AVERAGE)			
PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIVATE	PUBLIC	TOTAL	PRIV	PUBLIC	TOTAL	

87:3-4												
DIRECT EFFECT												
Private Sector	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	0	0	0	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
Total	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
INDIRECT EFFECT												
Private Sector	\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	0	-962	-962	
TOTAL EFFECT												
Private Sector	\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	0	-962	-962	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
Total	\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	0	-962	-962	

88:1-2												
DIRECT EFFECT												
Private Sector	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	0	0	0	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
Total	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
INDIRECT EFFECT												
Private Sector	\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	0	-962	-962	
TOTAL EFFECT												
Private Sector	\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	0	-962	-962	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
Total	\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	0	-962	-962	

88:3-4												
DIRECT EFFECT												
Private Sector	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	0	0	0	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
Total	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
INDIRECT EFFECT												
Private Sector	\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	0	-962	-962	
TOTAL EFFECT												
Private Sector	\$0.0	(\$11.6)	(\$11.6)	\$0.0	(\$9.9)	(\$9.9)	\$0.0	(\$7.9)	0	-962	-962	
Public Sector	\$0.0	(\$50.0)	(\$50.0)	\$0.0	(\$30.3)	(\$30.3)	\$0.0	(\$24.3)	0	0	0	
Total	\$0.0	(\$61.6)	(\$61.6)	\$0.0	(\$40.2)	(\$40.2)	\$0.0	(\$32.2)	0	-962	-962	

****CASE B. ****PAGE 6.

CUT PUBLIC SALARIES AND BENEFITS AT ALL PAY SCALES

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SENSITIVITY ANALYSIS

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DISPOSABLE PERSONAL INCOME

EMPLOYMENT

		% FEDERAL TAX (C48)					
		+J12	5%	10%	15%	20%	25%
MULTI- PLIER (C49)	1.10		(\$226)	(\$214)	(\$203)	(\$192)	(\$180)
	1.20		(\$245)	(\$233)	(\$220)	(\$208)	(\$196)
	1.30		(\$265)	(\$251)	(\$238)	(\$225)	(\$211)
	1.40		(\$284)	(\$270)	(\$255)	(\$241)	(\$227)

		% FEDERAL TAX (C48)					
		+P12	5%	10%	15%	20%	25%
	1.10		-602	-582	-562	-542	-522
	1.20		-982	-942	-902	-862	-822
	1.30		-1361	-1301	-1241	-1181	-1121
	1.40		-1740	-1660	-1581	-1501	-1421

		% FEDERAL TAX (C48)					
		+J12	5%	10%	15%	20%	25%
LOCAL BENEFIT SPENDING (C53)	0.2		(\$249)	(\$236)	(\$223)	(\$211)	(\$198)
	0.3		(\$252)	(\$239)	(\$226)	(\$213)	(\$201)
	0.4		(\$255)	(\$242)	(\$229)	(\$216)	(\$204)
	0.5		(\$258)	(\$245)	(\$232)	(\$219)	(\$206)
	0.6		(\$261)	(\$248)	(\$235)	(\$222)	(\$209)

		% FEDERAL TAX (C48)					
		+P12	5%	10%	15%	20%	25%
	0.2		-1060	-1010	-960	-910	-860
	0.3		-1116	-1066	-1016	-966	-916
	0.4		-1171	-1121	-1071	-1022	-972
	0.5		-1227	-1177	-1127	-1077	-1027
	0.6		-1283	-1233	-1183	-1133	-1083

B. HOW DOES PUBLIC SPENDING ON PERSONNEL IMPACT THE ECONOMY?

When the state government spends money on personnel, the economic impact can be measured by changes in the levels of personal income and disposable personal income in the economy and by the change in the number of jobs. Initially the money spent becomes personal income of existing or new employees. Some of this increase in personal income must be paid to the federal government in income taxes, but the remainder is available to households to spend in the economy.

The spending of this disposable personal income within the economy creates jobs and income in the private economy, primarily in the support sectors of trade and services. The size of the private economic response depends upon how much of each additional dollar of disposable income is spent within the region (the marginal propensity to spend locally), rather than saved or spent outside the region, and also upon the proportion of that locally spent income, which becomes local value added. These two factors are the primary determinants of the size of the economic multiplier that measures the total economic change for the economy which is produced by a \$1 change in state personnel spending.

A portion of personnel expenditures, about 18 percent, is for employee benefits rather than wages and salaries. The largest components of this part of employee compensation are employee retirement contributions made by the employer and health insurance payments. If the health insurance program is actuarially fair, the amount which the insurance companies pay to health care providers in a year will be about the same as the amount set aside as health insurance by the state, net of administrative costs. This component of employee compensation will have an economic impact on the state through the jobs and income it creates in the health industry. Retirement benefits are like saving of individuals in that they do not result in current spending within the economy.

The size of the multiplier changes over time, depending upon the size of the economy, the phase of the business cycle, and other factors. On the one hand, the economic multiplier for Alaska is small because the size of the economy is small and does not warrant much "taking in of each other's wash." In particular, there is practically no manufacturing that occurs in Alaska. Thus, when demand for manufactured goods rises, that demand must be met by imports from outside the state with little impact on the local economy except in the transportation and trade sectors. On the other hand, the economic multiplier for Alaska has tended to be large in recent years because increases in demand have induced large spending increases in investment--housing, business, and government--and in government operating expenditures. In addition, the growing size of the market has resulted in import substitution and specialization of services and retailing which have increased the average as well as the marginal propensity to consume locally.

Simply put, there are now a lot more ways to spend consumer income locally than was the case ten years ago.

When the economy is in a recession, as is now the case, the multiplier will be reduced. This is largely due to the fact that induced investment dries up when the economy is growing slowly or declining in size. Basically no new construction and little business investment occurs in such an environment. In addition, import substitution and specialization do not fall when the market size stagnates or shrinks because of "threshold effects." That is, once having overcome the costs of entering the market, a business will remain even if the market contracts because the cost of remaining is less than of entry and the entry costs become irrelevant once they have been committed.

Consequently, for the purposes of this study, we use a multiplier value of 1.3. The interpretation of this value is that for each \$1 of personal income taken away from a state worker, an additional 30 cents of personal income is eliminated elsewhere in the economy for a total loss of \$1.30.

We assume that when state employee spending in the local economy is reduced and the income of businesses is reduced, businesses respond by reducing employment. For simplicity, we convert all the loss in personal income in the private sector into loss of jobs in the support industries. In reality, some of the loss of income would be in the form of reduced business net income rather than jobs, and some would likely be in the form of lower salaries for employees rather than job losses. This is particularly likely if the state government personnel cost reduction is carried out by a drop in the government wage.

C. DO PUBLIC EMPLOYEES SPEND THEIR INCOME
DIFFERENTLY THAN THE GENERAL POPULATION?

Public employee expenditure patterns may differ from those of private employees for two reasons--differences in per capita income or differences in taste. A different expenditure pattern could impact the economy in two different ways--a different propensity to spend or a different propensity to spend locally.

State employees on average have higher wage and income levels than the total population. The average annual wage in state government was \$32,381 in 1984. This is 13 percent above the average annual wage paid in all industries in Alaska in that year of \$28,586. Since state government employees may have income from other sources and may have different patterns of hours worked and job turnover than other groups in the population, this is an imprecise measure of relative income. Furthermore, this is a measure of wages paid by job, rather than a measure of wages paid per employee.

A more comprehensive measure of income by household is available from the U.S. Census. Data on state worker income revised by the Anchorage CPI to reflect inflation between the time of the Census and the present confirms that their average wage is above that of the average worker in the state but not by a large margin. Table 3 shows that the average wage for a full-time employed state worker in a single-wage-earner family was \$36,435 compared to \$35,022 for the average of all families with one full-time wage earner. The same pattern holds for families with more than one full-time wage earner and for nonfamily households.²

TABLE 3. AVERAGE WAGE^a BY EMPLOYER AND HOUSEHOLD TYPE

	Households with State Worker		All Households with a Wage Earner
	% of State Employees	Average Wage	
FAMILY			
1 Wage Earner	32%	\$36,435	\$35,022
More than 1 Wage Earner	44%	33,237	29,042
1 State Worker	28%	33,110	--
More than 1 State Worker	16%	33,675	--
NONFAMILY			
	23%	29,166	28,836

^aAverage of all household wage earners

SOURCE: U.S. Census Public Use Sample

²Since this data does not take into account possible changes in the relative wage in state government since the 1979 Census, it may not be completely accurate but is indicative of similarity of state worker and other households.

Consumption theory suggests that, at any point in time, we should observe people with higher incomes saving a larger percentage of their income and spending a smaller percentage than people with lower incomes. Economists say that the "average propensity to consume" and the "marginal propensity to consume" of high-income people is lower than that of low-income people. This hypothesis is confirmed by budget studies of consumer expenditures by income level. Table 4 shows the relation between income and expenditures for consumers taken from the 1981 Consumer Expenditure Survey of the federal government. Low-income households have expenditures which exceed current income while high-income households have expenditure levels below current income. High-income households are saving while low-income households are drawing from past savings in order to maintain consumption at levels in excess of current income. The average propensity to consume, the ratio of expenditures to income after taxes, declines as income rises.

TABLE 4. CONSUMER EXPENDITURES BY INCOME CLASS

	Income Range					Average of All Households
	Lowest 20% of Households	20-40	40-60	60-80	Highest 20% of Households	
Income	\$3,473	\$9,791	\$16,809	\$25,128	\$44,616	\$19,989
Taxes	125	590	1,668	3,356	6,768	2,505
Disposable Income	3,248	9,201	15,141	21,772	37,848	17,484
Expenditures	7,852	11,570	15,736	20,714	30,563	17,301
Average Propensity to Consume [Expenditures/ Disposable Income]	2.4	1.26	1.04	.95	.81	.99

SOURCE: U.S. Department of Labor, BLS Consumer Expenditure Survey: Interview Survey, 1980-81, Bulletin 2225, April 1985, Table 1.

While we observe this variation in the proportion of income saved and spent by different income classes at any point in time, economists have noticed a remarkable consistency over time in the proportion of aggregate personal income spent on consumption. This proportion--again the average propensity to consume--has exceeded 90 percent since World War II. As Table 4 shows, the average propensity to consume using the BLS definition was 99 percent for the population in 1981 in spite of substantial variation in the average propensity to consume among income classes. This suggests that consumption is determined not only by the current level of income but also by some expectation about lifetime income (the permanent income hypothesis or the life-cycle hypothesis) or by the relative income position of the household (the relative income hypothesis).

Thus, it may be that the average propensity to consume declines as we compare households in different income groups at a point in time because that income may not correspond to lifetime average income. Alternatively, households with high current income may be in that part of their life cycle consistent with high savings because income at that time is high relative to lifetime average income.

The theory suggests that two households with different current incomes but otherwise similar characteristics, both receiving the same portion of their lifetime permanent income should both spend and save similar portions of current income. Observed differences between average and marginal propensities to consume among households would be largely the result of differences in transitory income and the characteristics of the household. The consequence of this for the present analysis is that changes in income from wage changes which are viewed by the recipient as permanent may not change the average propensity to consume out of current income for that household.

In addition, studies done at the national level suggest that the portion of current income spent is a positive function of the stability of income. Since government employment income is relatively stable, this would suggest a higher marginal propensity to consume out of current income for government employees. For these reasons as well as the fact that the difference in average income of state-worker households and total households with workers is not great, we assume that there is no difference in the average propensity to consume of state workers compared to other workers in the economy.

However, we do assume that the marginal propensity to consume of state workers is below their average propensity to consume, both in the short- and long run. In the short run, changes in income are viewed partially as transitory, and current consumption is unrelated to transitory income. If the change in income is viewed as permanent, consumption would adjust, but with a lag. However, we

assume that leisure is a normal good so that at higher lifetime income levels, some people will choose to consume more leisure; that is, work less by retiring earlier, for example. Consequently, consumption as a percentage of current income would fall for these households since permanent income is not increased if leisure is substituted. To account for this, we assume the marginal propensity to consume is 95 percent of the average.

A second consideration is that state workers may have different tastes in consumption than the population in general. This could impact the economy because of differing local components in different goods. It is difficult to substantiate this hypothesis because we have no detailed Alaska consumption survey which distinguishes the occupation of the household. It has been suggested that state employees prefer to consume housing in excess of the general population.³ This is based upon a comparison of expenditure information in the Alaska Geographical Differential Study (AGDS), the APEA Cost of Living Study (APEA), and the U.S. Bureau of Labor Statistics Consumer Price Index. The APEA Study and the BLS Index have very similar "market basket" weights for important items, specifically housing, food and beverage, and apparel and upkeep for Anchorage.⁴ On the other hand, the statewide "market basket" weights for the AGDS study are very different from the APEA Study. The shelter category has about half the weight (18 percent) in the AGDS study as in the APEA study (36 percent).

Part of this difference in proportion of the household budget spent on shelter is due to the fact that the APEA study does not include some categories of expenditures included in the AGDS study, specifically recreation and entertainment and miscellaneous. Consequently, the weights on all included categories are about 10 percent higher than would be the case if the excluded categories were included. A second difference could be the result of using different survey methods. The AGDS study was done by telephone and thus subject to more error in response than the mail survey done for the APEA study. However, it is not possible to determine the direction of resulting bias, if any.

The majority of the difference can be explained by differences in income between the general population surveyed for the Alaska Geographical Differential Study and the population of APEA members surveyed in the Cost of Living Differential Study. This conclusion is based on the pattern of home ownership identified from the 1980

³Brad Pierce, State Employee Spending Patterns--Research Request 86-048, Alaska State Legislature, House of Representatives, Research Agency, March 25, 1986.

⁴APEA study, p. 55.

Census and the pattern of price of housing purchased from Alaska Housing Finance Corporation records. Table 5 shows the distribution of home ownership among households with a full-time state government employee, compared to the general population of households with workers based on the 1980 Census. For family households with one wage earner who was a state worker, the proportion owning their homes was 70 percent, compared to 68 percent for the population of all families with one wage earner. For all state worker families with more than one wage earner, the proportion was 75 percent homeowner--identical to the population. If one was a state worker, the proportion was 76 percent, but if more than one was a state worker, the proportion was only 72 percent. For nonfamily households with a state worker, the proportion of homeowners was 37 percent while it was 40 percent for nonfamily households without state workers. This suggests that among households in Alaska with workers, home ownership is not related to whether a state worker is in the household.

TABLE 5. HOME OWNERSHIP PATTERN OF ALASKA HOUSEHOLDS

	Households with State Worker	All Households with a Wage Earner
FAMILY	73%	70%
1 Wage Earner	70%	68%
More than 1 Wage Earner	75%	75%
NONFAMILY	37%	40%
TOTAL	64%	63%

SOURCE: 1980 Census Public Use Sample

The amount of housing purchased does not depend upon whether a household contains a state employee, based on information on home purchases from AHFC data. Using a sample of AHFC loan applications covering the last few years, we regressed housing purchase price against household net worth, gross income, and age and occupation of head of household. (Occupation was a dummy variable with a value of 1 for state worker and 0 otherwise.) Sales price was, as expected, a positive function of net worth, income, and age but was independent of whether an applicant was a state employee (Table 6).

Consequently, if the housing consumption patterns of state employees differ from the state average, it is because their incomes, net worth, age, and other factors differ from the average rather than because they have a significantly different preference for housing.

Information for comparing other components of consumption is not available, but since housing is the single most important item in the budget of most families, its similarity to the average in the budget of state workers suggests that other budget items are likewise similar.

TABLE 6. WHAT FACTORS EXPLAIN HOW MUCH HOUSING PEOPLE PURCHASE?

Variable	Mean	Regression Coefficient	t value
Net Worth	\$107,493	.005	3.27
Age	34.3	.425	5.57
Gross Monthly Income	\$3,882	.12	35.18
State Worker Dummy (=1)	-	1,938	.87
Constant		28,894	10.4
Sales Price	\$92,350	-	-

$R^2 = .33$

Standard Error = \$39,439 n = 3,186

SOURCE: AHFC records

Additional possible evidence on the consumption habits of state employees compared to the population in general comes from a comparison of communities of otherwise similar characteristics where state employment is high in some and low in others. For example, we can compare the ratio of retail employment to personal income in the four Southeastern Alaska communities (census areas) of Juneau, Sitka, Ketchikan, and Wrangell-Petersburg. State government directly accounts for a much larger portion of personal income in Juneau than in these other communities (Table 7). Other things being equal, if the consumption pattern of state employees were different from those of other groups, we might expect to see the ratio of retail trade employment to personal income differ significantly in these different communities. Specifically, if state workers spent more of their money outside the community, the ratio would be lower; and if they spent more in the community, the ratio would be higher. The actual ratios are quite similar in 1984, suggesting no significant difference. In earlier years, however, Juneau had a somewhat lower ratio. We can, however, draw no firm conclusions from this analysis because there are many other reasons why the ratios may differ by community. These include differences in per capita income, economies of scale in retailing in larger communities, greater mix of commodities available in larger communities, and differences in the proportion of spending attributable to nonresidents such as tourists, fishermen, and legislators.

TABLE 7. CHARACTERISTICS OF FOUR SOUTHEAST ALASKA COMMUNITIES

	Employment		Personal Income (million \$)	Ratio Retail Jobs/ Personal Income	
	Total	State Gov't.		1980	1984
Juneau	16,262	4,423	523	3.52	3.86
Ketchikan	7,169	587	240	3.82	3.91
Sitka	4,419	254	120	4.28	3.28
Wrangell/ Petersburg	3,348	106	101	3.94	3.57

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis

Higher-income households do allocate their consumption spending differently from lower-income households, and this would account for the fact that state employees are observed to have consumption patterns different from the average for the population. Table 8 shows the distribution of family expenditures by income taken from the 1972-73 Consumer Expenditure Survey. As one would expect, higher-income families tend to allocate a smaller portion of their expenditures to food at home, tobacco, shelter, utilities, laundry, and health care. They allocate a larger percentage of their expenditures to food away from home, alcoholic beverages, home furnishings, clothing, recreation, reading, education, and miscellaneous.

It is not obvious how this income-related shift in the composition of expenditures impacts a regional economy. On the one hand, increased spending on vacations and pleasure trips implies that a larger part of each expenditure dollar is spent outside the community by higher-income families. On the other hand, the increase in the proportion of spending on food away from home (and other services) may lead to an increase in local economic activity because of the labor-intensive nature of restaurants. If as income increases, the shift in consumption pattern results in no net change in local impact from spending except for the additional "leakage" of vacation spending, we can estimate the order of magnitude of this effect. Assume all vacation spending is outside the region. At \$10,000 of family income, \$240 is lost to the region from vacation spending; while at \$25,000, \$1,200 is lost rather than \$600 if the vacation proportion of spending had stayed constant as income rose. The additional \$600 is 4 percent of the increase in income from \$10,000 to \$25,000. On this basis, we assume that the local component of spending of higher-income consumers is 95 percent that of the average consumer.

TABLE 8. ANNUAL EXPENDITURES BY SELECTED INCOME GROUPS:
THE 1972 CONSUMER EXPENDITURE SURVEY

Expenditure Category	Family Income Before Taxes					
	Under \$3,000		\$10,000 - \$12,000		\$25,000 and Over	
	Dollars	Percent of Expenditures	Dollars	Percent of Expenditures	Dollars	Percent of Expenditures
<u>Current Consumption Expenditures</u>	3,211	100.0	8,284	100.0	17,290	100.0
Food	722	22.5	1,656	20.0	2,845	16.5
at home	598	18.6	1,209	14.6	1,793	10.4
away from home	115	3.6	427	5.2	1,016	5.9
meals as pay	9	.3	20	.2	36	.2
Alcoholic Beverages	36	1.1	124	1.5	265	1.5
Tobacco Products	67	2.1	144	1.7	161	.9
Housing	1,258	39.2	2,467	29.8	5,158	29.8
shelter	735	22.9	1,266	15.3	2,603	15.1
fuel and utilities	218	6.8	413	5.0	685	4.0
operations	206	6.4	415	5.0	954	5.5
furnishings and equipment	99	3.1	373	4.5	915	5.3
Clothing	141	4.4	539	6.5	1,427	8.3
Dry Cleaning and Laundry	47	1.5	81	1.0	149	.9
Transportation	438	13.6	1,733	20.9	3,156	18.3
Health Care	234	7.3	536	6.5	966	5.6
Personal Care	63	2.0	169	2.0	341	2.0
Recreation	155	4.8	638	7.7	2,000	11.6
vacation home	1	-	6	.1	47	.3
vacations and pleasure trips	46	1.4	202	2.4	836	4.8
boats, aircraft, etc.	10	.3	68	.8	241	1.4
other recreation	97	3.0	362	4.4	876	5.1
Reading	16	.5	45	.5	112	.7
Education	11	.3	62	.8	500	2.9
Miscellaneous	26	.8	92	1.1	210	1.2
<u>Personal Insurance, Retirement, Pensions, Total</u>	67	-	746	-	2,121	-
<u>Gifts and Contributions</u>	137	-	403	-	1,894	-

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Consumer Expenditure Survey: Integrated Diary and Interview Survey Data, 1972-73, Bulletin 1992, Table 1.

D. WHAT IS THE DIFFERENCE IN EFFECT BETWEEN INCREASING THE WAGE RATE AND INCREASING STATE EMPLOYMENT?

In this section, we trace the differential effects on aggregate demand from increasing wage rates for existing employees compared to increasing employment by the hiring of additional employees. We ignore other effects on the economy such as changes in the average wage or changes in the productivity of government. We assume the increase in the wage is the same percentage at all levels and that the hiring of new employees would also be proportional across existing wage levels.

We begin with an economy in equilibrium. We assume full employment and that the stock of capital, in particular the housing stock, is fully utilized. The increase in spending by government is made possible by an increase in tax revenues which falls completely on nonresidents.

In this case, the differential impact in the long run will be related primarily to differences in the loss of disposable income to the federal government through the personal income tax, different consumption patterns of households with different income levels, and scale effects from aggregate economic growth.

If the wage rate is increased proportionally across the board to all employees, the impact on the local economy will depend upon the change in disposable personal income of government employees and how they spend that additional income. If we assume benefits are proportional to wages, about 82 percent of the increase becomes additional personal income.⁵ The higher wages would be taxed by the federal government at the marginal federal tax rate for each employee. In Table 9, we present information on the household income of state employees from the U.S. Census, which we have combined with marginal and average (effective) federal tax rates for 1988, based upon the Tax Reform Act of 1986, calculated in Tables 10 and 11. By calculating a wage income-weighted average of the marginal tax rate for households (families and nonfamilies) in each income category, we obtain an estimate of the proportion of the wage increase which would be paid to the federal government as additional federal taxes. Because of the high average income of state employees, the marginal tax rate for this income is high--26 percent.

⁵The conclusions are insensitive to relaxing the assumption of benefits being proportional to wage rates.

TABLE 9. SAMPLE OF ALASKA HOUSEHOLDS WITH STATE WORKERS

Family Households With at Least 1 State Worker								
Income (thousands of 1987\$)	1 Employed, 1 State Worker		More than 1 Full-Time Employed				Nonfamily Households With at Least 1 State Worker	
	No. of Families	Average Wage (1987\$)	1 State Worker		2 or More State Workers		No. of Households	Average Wage (1987\$)
			No. of Families	Average Wage (1987\$)	No. of Families	Average Wage (1987\$)		
0 to 10	5	9,017	0	0	0	0	18	6,242
10 to 20	17	15,200	9	11,354	1	8,258	29	14,129
20 to 30	36	19,667	6	12,732	2	12,383	49	25,713
30 to 40	29	27,522	20	21,098	4	17,106	29	34,380
40 to 50	48	36,483	21	21,812	5	20,762	21	41,195
50 to 60	40	44,549	36	29,126	4	25,973	15	54,761
60 to 70	21	43,112	29	28,157	12	32,471	5	53,795
70 to 80	19	49,833	33	39,671	8	33,093	2	67,200
80 to 90	7	63,044	17	47,285	12	41,471	0	0
90 to 100	2	65,198	14	39,236	5	33,983	0	0
100 and over	11	72,338	33	49,457	7	55,641	1	60,008
Number of State Workers	266	36,435	232	33,110	135	33,675	192	29,166

NOTE: Actual 1979 wage converted to 1987 using the Anchorage CPI.

SOURCE: 1980 U.S. Census for Alaska, Public Use Sample

TABLE 10

*****JOINT RETURN**HOMEOWNER**NO IRA**2 CHILDREN**PF DIV ON CHILDRENS' RETURN*****

INCOME	TAXES DUE		===STATE TAX===		*****TAXES PAID/INCOME*****			COMBINED	AFTER TAX			FEDERAL
	TAXPAYER		STATE		BEFORE	AFTER	PLUS	MARGINAL	FEDERAL	PERMANENT	INCOME	OFFSET
	FEDERAL	TOTAL	PAYS	COLLECTS	OFFSET	OFFSET	FEDERAL	TAX	AVERAGE	FUND DIV	LOSS	PERCENT
								RATE	RATE	VALUE	(DIV-TAX)	
0	0	0	0	0	ERR	ERR	ERR	0.00%	ERR	\$1,400	\$1,400	ERR
\$2,500	\$0	\$0	\$0	\$0	0.00%	0.00%	0.00%	0.00%	0.00%	\$1,400	\$1,400	ERR
\$5,000	\$0	\$0	\$0	\$0	0.00%	0.00%	0.00%	0.00%	0.00%	\$1,400	\$1,400	ERR
\$7,500	\$0	\$0	\$0	\$0	0.00%	0.00%	0.00%	0.00%	0.00%	\$1,400	\$1,400	ERR
\$10,000	\$0	\$0	\$0	\$0	0.00%	0.00%	0.00%	0.00%	0.00%	\$1,400	\$1,400	ERR
\$12,500	\$105	\$121	\$16	\$16	0.13%	0.13%	0.97%	18.20%	0.84%	\$1,145	\$1,129	0.00%
\$15,000	\$480	\$576	\$96	\$96	0.64%	0.64%	3.84%	18.20%	3.20%	\$1,145	\$1,049	0.00%
\$17,500	\$855	\$1,031	\$176	\$176	1.01%	1.01%	5.89%	18.20%	4.89%	\$1,145	\$969	0.00%
\$20,000	\$1,230	\$1,486	\$256	\$256	1.28%	1.28%	7.43%	18.20%	6.15%	\$1,145	\$889	0.00%
\$22,500	\$1,605	\$1,941	\$336	\$336	1.49%	1.49%	8.63%	18.20%	7.13%	\$1,145	\$809	0.00%
\$25,000	\$1,980	\$2,396	\$416	\$416	1.66%	1.66%	9.58%	18.20%	7.92%	\$1,145	\$729	0.00%
\$27,500	\$2,355	\$2,851	\$496	\$496	1.80%	1.80%	10.37%	18.20%	8.56%	\$1,145	\$649	0.00%
\$30,000	\$2,730	\$3,306	\$576	\$576	1.92%	1.92%	11.02%	18.20%	9.10%	\$1,145	\$569	0.00%
\$32,500	\$2,858	\$3,415	\$558	\$558	2.02%	1.72%	10.51%	18.20%	8.79%	\$1,145	\$588	15.00%
\$35,000	\$3,195	\$3,821	\$626	\$736	2.10%	1.79%	10.92%	18.20%	9.13%	\$1,145	\$520	15.00%
\$37,500	\$3,533	\$4,226	\$694	\$816	2.18%	1.85%	11.27%	18.20%	9.42%	\$1,145	\$452	15.00%
\$40,000	\$3,870	\$4,632	\$762	\$896	2.24%	1.90%	11.58%	18.20%	9.68%	\$1,145	\$384	15.00%
\$42,500	\$4,208	\$5,048	\$840	\$989	2.33%	1.98%	11.88%	20.60%	9.90%	\$1,112	\$271	15.00%
\$45,000	\$4,545	\$5,506	\$961	\$1,131	2.51%	2.14%	12.24%	20.60%	10.10%	\$1,112	\$150	15.00%
\$47,500	\$5,214	\$6,131	\$917	\$1,274	2.68%	1.93%	12.91%	33.60%	10.98%	\$930	\$13	28.00%
\$50,000	\$5,844	\$6,864	\$1,020	\$1,416	2.83%	2.04%	13.73%	33.60%	11.69%	\$930	(\$90)	28.00%
\$52,500	\$6,474	\$7,596	\$1,122	\$1,559	2.97%	2.14%	14.47%	33.60%	12.33%	\$930	(\$193)	28.00%
\$55,000	\$7,104	\$8,329	\$1,225	\$1,701	3.09%	2.23%	15.14%	33.60%	12.92%	\$930	(\$295)	28.00%
\$57,500	\$7,734	\$9,061	\$1,327	\$1,844	3.21%	2.31%	15.76%	33.60%	13.45%	\$930	(\$398)	28.00%
\$60,000	\$8,364	\$9,794	\$1,430	\$1,986	3.31%	2.38%	16.32%	33.60%	13.94%	\$930	(\$500)	28.00%
\$62,500	\$8,994	\$10,527	\$1,533	\$2,129	3.41%	2.45%	16.84%	33.60%	14.39%	\$930	(\$603)	28.00%
\$65,000	\$9,624	\$11,259	\$1,635	\$2,271	3.49%	2.52%	17.32%	33.60%	14.81%	\$930	(\$706)	28.00%
\$67,500	\$10,254	\$11,992	\$1,738	\$2,414	3.58%	2.57%	17.77%	33.60%	15.19%	\$930	(\$808)	28.00%
\$70,000	\$10,884	\$12,724	\$1,840	\$2,556	3.65%	2.63%	18.18%	33.60%	15.55%	\$930	(\$911)	28.00%
\$72,500	\$11,514	\$13,457	\$1,943	\$2,699	3.72%	2.68%	18.56%	33.60%	15.88%	\$930	(\$1,013)	28.00%
\$75,000	\$12,144	\$14,190	\$2,046	\$2,841	3.79%	2.73%	18.92%	33.60%	16.19%	\$930	(\$1,116)	28.00%
\$77,500	\$12,774	\$14,922	\$2,148	\$2,984	3.85%	2.77%	19.25%	33.60%	16.48%	\$930	(\$1,219)	28.00%
\$80,000	\$13,404	\$15,655	\$2,251	\$3,126	3.91%	2.81%	19.57%	33.60%	16.76%	\$930	(\$1,321)	28.00%
\$82,500	\$14,034	\$16,387	\$2,353	\$3,269	3.96%	2.85%	19.86%	33.60%	17.01%	\$930	(\$1,424)	28.00%
\$85,000	\$14,664	\$17,120	\$2,456	\$3,411	4.01%	2.89%	20.14%	33.60%	17.25%	\$930	(\$1,526)	28.00%
\$87,500	\$15,294	\$17,853	\$2,559	\$3,554	4.06%	2.92%	20.40%	33.60%	17.48%	\$930	(\$1,629)	28.00%
\$90,000	\$15,924	\$18,585	\$2,661	\$3,696	4.11%	2.96%	20.65%	33.60%	17.69%	\$930	(\$1,732)	28.00%
\$92,500	\$16,554	\$19,318	\$2,764	\$3,839	4.15%	2.99%	20.88%	33.60%	17.90%	\$930	(\$1,834)	28.00%
\$95,000	\$17,184	\$20,050	\$2,866	\$3,981	4.19%	3.02%	21.11%	33.60%	18.09%	\$930	(\$1,937)	28.00%
\$97,500	\$18,042	\$20,804	\$2,763	\$4,124	4.23%	2.83%	21.34%	38.60%	18.50%	\$860	(\$1,903)	33.00%
\$100,000	\$18,784	\$21,642	\$2,858	\$4,266	4.27%	2.86%	21.64%	38.60%	18.78%	\$860	(\$1,999)	33.00%

NOTE: THE INCOME LOSS MEASURE IN THE LAST COLUMN IS THE DIFFERENCE IN DISPOSABLE INCOME BETWEEN THE FOLLOWING:
 1. IMPOSE INCOME TAX AND PAY DIVIDEND, AND 2. NEITHER IMPOSE TAX NOR PAY DIVIDEND.

PF DIVIDEND	\$700	LOW TAX RATE TO	\$30,000	\$30,000
STANDARD DEDUCTION	\$3,800	HIGHEST RATE AFTER	\$73,000	
EXEMPTIONS	4	EXEMPTION	\$2,000	\$3,000

FEDERAL TAX REFORM ACT OF 1986, HB-154 AND SB-148

TABLE 11

****SINGLE RETURN (NOT A CHILD CLAIMED ON RETURN OF PARENT)*RENTER*NO IRA**

TAXES DUE		==STATE TAX==		*****STATE*****			COMBINED	AFTER TAX		FEDERAL		FEDERAL
FEDERAL TOTAL		TAXPAYER	STATE	BEFORE	AFTER	PLUS	MARGINAL	FEDERAL	PERMANENT	INCOME	LOSS	OFFSET
		PAYS	COLLECTS	OFFSET	OFFSET	FEDERAL	RATE	AVERAGE	FUND DIV	LOSS	(DIV-TAX)	PERCENT
INCOME												
\$0	\$0	\$0	\$0	\$0	ERR	ERR	ERR	0.00%	ERR	\$700	\$700	ERR
\$2,500	\$0	\$0	\$0	\$0	0.00%	0.00%	0.00%	0.00%	0.00%	\$700	\$700	ERR
\$5,000	\$60	\$124	\$64	\$64	1.28%	1.28%	2.48%	18.20%	1.20%	\$573	\$509	0.00%
\$7,500	\$435	\$579	\$144	\$144	1.92%	1.92%	7.72%	18.20%	5.80%	\$573	\$429	0.00%
\$10,000	\$810	\$1,034	\$224	\$224	2.24%	2.24%	10.34%	18.20%	8.10%	\$573	\$349	0.00%
\$12,500	\$1,185	\$1,489	\$304	\$304	2.43%	2.43%	11.91%	18.20%	9.48%	\$573	\$269	0.00%
\$15,000	\$1,560	\$1,944	\$384	\$384	2.56%	2.56%	12.96%	18.20%	10.40%	\$573	\$189	0.00%
\$17,500	\$1,935	\$2,399	\$464	\$464	2.65%	2.65%	13.71%	18.20%	11.06%	\$573	\$109	0.00%
\$20,000	\$2,310	\$2,854	\$544	\$544	2.72%	2.72%	14.27%	18.20%	11.55%	\$573	\$29	0.00%
\$22,500	\$2,685	\$3,309	\$624	\$624	2.77%	2.77%	14.71%	18.20%	11.93%	\$573	(\$51)	0.00%
\$25,000	\$3,060	\$3,764	\$704	\$704	2.82%	2.82%	15.16%	31.20%	13.54%	\$482	(\$222)	0.00%
\$27,500	\$3,435	\$4,219	\$784	\$784	2.85%	2.85%	15.59%	31.20%	14.85%	\$482	(\$302)	0.00%
\$30,000	\$3,810	\$4,674	\$864	\$864	2.88%	2.88%	16.03%	31.20%	15.95%	\$482	(\$382)	0.00%
\$32,500	\$4,185	\$5,129	\$944	\$944	2.90%	2.90%	16.47%	31.20%	16.88%	\$482	(\$462)	0.00%
\$35,000	\$4,560	\$5,584	\$1,024	\$1,024	3.07%	3.07%	16.91%	33.60%	17.67%	\$465	(\$609)	0.00%
\$37,500	\$4,935	\$6,039	\$1,104	\$1,104	3.24%	3.24%	17.35%	33.60%	18.36%	\$465	(\$752)	0.00%
\$40,000	\$5,310	\$6,494	\$1,184	\$1,184	3.40%	3.40%	17.79%	33.60%	18.96%	\$465	(\$894)	0.00%
\$42,500	\$5,685	\$6,949	\$1,264	\$1,264	3.53%	3.53%	18.23%	33.60%	19.49%	\$465	(\$1,037)	0.00%
\$45,000	\$6,060	\$7,404	\$1,344	\$1,344	3.65%	3.65%	18.67%	33.60%	19.97%	\$465	(\$1,179)	0.00%
\$47,500	\$6,435	\$7,859	\$1,424	\$1,424	3.76%	3.76%	19.11%	33.60%	20.39%	\$465	(\$1,322)	0.00%
\$50,000	\$6,810	\$8,314	\$1,504	\$1,504	3.86%	3.86%	19.55%	38.60%	20.99%	\$430	(\$1,499)	0.00%
\$52,500	\$7,185	\$8,769	\$1,584	\$1,584	3.95%	3.95%	20.00%	38.60%	21.56%	\$430	(\$1,642)	0.00%
\$55,000	\$7,560	\$9,224	\$1,664	\$1,664	4.03%	4.03%	20.44%	38.60%	22.08%	\$430	(\$1,784)	0.00%
\$57,500	\$7,935	\$9,679	\$1,744	\$1,744	4.10%	4.10%	20.88%	38.60%	22.56%	\$430	(\$1,927)	0.00%
\$60,000	\$8,310	\$10,134	\$1,824	\$1,824	4.17%	4.11%	21.32%	38.60%	22.99%	\$430	(\$2,070)	1.31%
\$62,500	\$8,685	\$10,589	\$1,904	\$1,904	4.23%	4.10%	21.76%	38.60%	23.39%	\$430	(\$2,213)	3.02%
\$65,000	\$9,060	\$11,044	\$1,984	\$1,984	4.28%	4.09%	22.20%	38.60%	23.76%	\$430	(\$2,356)	4.55%
\$67,500	\$9,435	\$11,499	\$2,064	\$2,064	4.34%	4.08%	22.64%	38.60%	24.10%	\$430	(\$2,500)	5.94%
\$70,000	\$9,810	\$11,954	\$2,144	\$2,144	4.38%	4.07%	23.08%	38.60%	24.42%	\$430	(\$2,643)	7.19%
\$72,500	\$10,185	\$12,409	\$2,224	\$2,224	4.43%	4.06%	23.52%	38.60%	24.72%	\$430	(\$2,787)	8.34%
\$75,000	\$10,560	\$12,864	\$2,304	\$2,304	4.47%	4.05%	23.96%	38.60%	24.99%	\$430	(\$2,930)	9.39%
\$77,500	\$10,935	\$13,319	\$2,384	\$2,384	4.51%	4.04%	24.40%	38.60%	25.25%	\$430	(\$3,074)	10.35%
\$80,000	\$11,310	\$13,774	\$2,464	\$2,464	4.55%	4.04%	24.84%	38.60%	25.49%	\$430	(\$3,217)	11.24%
\$82,500	\$11,685	\$14,229	\$2,544	\$2,544	4.58%	4.03%	25.28%	38.60%	25.72%	\$430	(\$3,361)	12.06%
\$85,000	\$12,060	\$14,684	\$2,624	\$2,624	4.62%	4.02%	25.72%	38.60%	25.94%	\$430	(\$3,504)	12.82%
\$87,500	\$12,435	\$15,139	\$2,704	\$2,704	4.65%	4.02%	26.16%	38.60%	26.14%	\$430	(\$3,648)	13.52%
\$90,000	\$12,810	\$15,594	\$2,784	\$2,784	4.68%	4.01%	26.60%	38.60%	26.33%	\$430	(\$3,791)	14.18%
\$92,500	\$13,185	\$16,049	\$2,864	\$2,864	4.70%	4.01%	27.04%	38.60%	26.51%	\$430	(\$3,935)	14.80%
\$95,000	\$13,560	\$16,504	\$2,944	\$2,944	4.73%	4.00%	27.48%	38.60%	26.68%	\$430	(\$4,078)	15.38%
\$97,500	\$13,935	\$16,959	\$3,024	\$3,024	4.76%	4.00%	27.92%	38.60%	26.84%	\$430	(\$4,222)	15.92%
\$100,000	\$14,310	\$17,414	\$3,104	\$3,104	4.78%	3.99%	28.36%	38.60%	27.00%	\$430	(\$4,365)	16.43%

NOTE: THE INCOME LOSS MEASURE IN THE LAST COLUMN IS THE DIFFERENCE IN DISPOSABLE INCOME BETWEEN THE FOLLOWING:

1. IMPOSE INCOME TAX AND PAY DIVIDEND, AND 2. NEITHER IMPOSE TAX NOR PAY DIVIDEND.

	FEDERAL	STATE
PF DIVIDEND	\$700	LOW TAX RATE TO \$17,900 \$30,000
STANDARD DEDUCTION	\$2,600	HIGHEST RATE AFTER \$43,200
EXEMPTIONS	1 EXEMPTION	\$2,000 \$3,000

FEDERAL TAX REFORM ACT OF 1986, HB-154 AND SB-148

Based upon the discussion in the previous section, we assume that a smaller percentage of the disposable personal income left after federal taxes is spent locally than the average dollar of state employee spending. This is for two reasons. First, some workers will not view the wage increase as an increase in their permanent income. Second, a larger-than-average portion of this incremental income will be spent on activities with no local economic impact (vacations). We assume each effect to reduce local spending 5 percent, or together to reduce the economic impact of this disposable personal income 10 percent below the average for all disposable personal income in the economy.

The benefit portion of the increase does not become taxable personal income, but a portion is spent locally and impacts the economy. We assume 40 percent is spent locally, primarily medical and dental insurance payments.

Consumption of all categories of items would increase, although not by the same percentage and not with the same response time. For example, people would not immediately sell their homes and move into larger houses, but over time higher incomes would result in increased incentives to "trade up," and in the course of the normal turnover of houses among state employees, the average price of houses purchased would increase.

If, instead of increasing salaries, additional employees were hired, the aggregate disposable income of government workers would increase by a larger amount, and the amount spent on benefits would be identical. This is because the additional income would be taxed by the federal government at the average (effective) tax rate of government employees--estimated to be 15 percent (see Table 9). In addition, because the increase would be associated with in-migration into the region by workers and families to fill the new jobs, some nonlabor income would move into the region. Net worth is positively related to income, and new state employees moving into the state from Outside would bring their net worth with them. For households in the \$2-4 thousand monthly income range, the median household net worth in the United States in 1984 was \$47 thousand.⁶ Although the largest component of this is home equity, it represents both a flow of income (interest-bearing assets and stocks) and a command over resources which can contribute to aggregate demand in excess of current income. We have no data to measure the magnitude of this "grubstake" effect of new migrants on aggregate demand. It is probably small, except in the case of housing where home equity represents a significant increment to aggregate demand beyond current income, especially if it has been converted to liquid form by migrants.

⁶"Household Wealth & Asset Ownership: 1984," Current Population Reports, Household Economic Studies, Series P-70, No. 7, U.S. Department of Commerce, Bureau of Census, p. 2.

The spending impact of this additional disposable income would, in the long run, be the same for these employees as that of the wages paid to existing employees. We would expect them to spend their income in the same proportions as existing employees. There may be a small incremental effect on aggregate demand due to larger total market size. That is, the larger aggregate demand level may be sufficient to support some activities locally that were previously foregone or brought in from outside the region. This could also be true, however, if wage rates increased.

One could argue that a larger population would require certain public goods and services--such as additional teachers and more or wider roads--which the smaller population could do without. On the other hand, higher wages paid to state employees could partially be used to increase the number of teachers in the school system or to widen roads for the existing population. The former activity increases the quantity of public goods produced while the latter increases their quality. In terms of the economic impact as measured by total jobs and income of local government and support industries, there would be no difference between the two cases.

E. WHAT IS THE TIMING OF THE ECONOMIC IMPACT OF HIGHER PERSONAL INCOME?

It takes some time after an increase in income before the consumption pattern of households and the aggregate consumption pattern of the economy adjusts to a new equilibrium where spending and saving is again in balance. Household consumption is based on habit and the existing stock of household goods. Also, particularly, if there is new population associated with new jobs, investment in new additions to the housing stock and other forms of private and public infrastructure may need to occur. The result would be an investment "boom" which may be followed by a recession--as was the case in Alaska in the early 1980s.

When a consumer has an increase in income which he perceives to be permanent, it takes some time for him to adjust his consumption habits to that higher income level. In the short run, a large portion of the increase may go into liquid assets, such as a bank or checking account, or into the reduction of outstanding consumer debt. Table 12 shows one set of estimates of the responsiveness of the consumption of various kinds of goods and services to changes in income in the short and the long run. As one would expect, in the short run consumption of durable goods is quite responsive to income changes as measured by elasticity. Durable goods are a form of saving in that they are "consumed" over a number of years. (One consumes only a tiny bit of a toaster each time it is used.) In addition, their purchase is postponable. Nondurable goods consumption is less responsive to income changes in the short run. These are items for which habits have developed and the consumption of which is not sensitive to fluctuating income. Housing is the least responsive in the short run.

TABLE 12. EXPENDITURE RESPONSES TO INCOME CHANGES

Commodity Group	Short Run		Long Run	
	Derivative	Elasticity	Derivative	Elasticity
Automobiles and Parts	.39	6.3	.11	1.8
Furniture and Household Equipment	.17	2.4	.09	1.3
Other Durable Goods	.03	1.2	.03	1.5
Food and Beverages	.26	.7	.27	.7
Clothing and Shoes	.16	1.2	.06	.4
Gasoline and Oil	.02	.4	.05	1.4
Other Nondurable Goods	.10	.8	.11	.9
Housing	.01	.1	.13	.8
Household Operations	.06	.9	.11	1.6
Transportation	.03	.8	.03	.7
Other Services	.16	.8	.39	1.9

SOURCE: H.S. Houthakker and Taylor, Consumer Demand in the U.S.: Analysis and Projections, Harvard, 1970, p. 207.

Over time, responsiveness is much more homogeneous across consumption categories. Durable goods become less responsive while nondurables and housing become more responsive. Increases in all categories become proportional to the change in income, except for those categories such as vacations noted in Table 8.

Thus, the full effect of the change will only be manifest after a certain period of time--perhaps several years, as consumers gradually adjust their consumption pattern to be consistent with their new income level. In the interim, the impact will be somewhat less due to the accumulation of liquid assets and the reduction of outstanding consumer debt.

On the other hand, there would be no lag in effect if the additional personal income were the result of hiring additional employees. Their consumption would be consistent with their income level and would not require a period during which adjustment to higher income occurred.

The investment "boom" associated with population increase would be an important factor in considering the effect of hiring additional workers at the prevailing wage rate. In the absence of excess unemployment, the additional jobs would be filled by new migrants to the region who would bring their families with them. The presence of these additional households in the community would require immediate investment in housing, businesses, and government facilities. This would place a temporary demand on the construction industry. When the construction of these new facilities was completed, the demand would contract and construction activity would decline.

If the additional purchasing power were distributed in the form of higher wages, there would also be an investment "boom," but its composition would be somewhat different. First, the timing of the boom would be stretched out because of the aforementioned lag in the adjustment of consumption patterns to permanent increases in income. For example, the increase in income would lead people to spend more in the local economy, and this would result in more stores opening and consequently the need to construct additional commercial space to house the stores. This construction response would be slower than in the case of new consumers entering the market. Second, productivity increases in the use of the existing stock of the infrastructure in the community would be more likely here than in the case of a population-driven increase in aggregate demand. In particular, housing and public infrastructure would likely not expand to the same extent. Some people would move into new houses, but many, if not most, would not choose to "upgrade" because of the costs associated with such a move. The existing public infrastructure could continue to provide adequate levels of service at higher income levels. Thus, it is likely the aggregate investment response would be somewhat larger as well as more concentrated at the time of the initiating increase in income if new jobs were created at the prevailing wage. In addition, the "grubstake" effect would work in the same direction.

F. HOW DOES CONSUMPTION VARY OVER THE BUSINESS CYCLE?

The Alaska economy is now in a recession and has rarely been in equilibrium in the past. It has been subject to significant cycles around a growth trend. This factor complicates the analysis of the effect of changes in government employee compensation levels because the relation between household income and consumption is not constant over the course of the business cycle, nor is the composition of consumption constant.

Over time the typical household will adjust its purchases and savings decisions to match the level of income it expects to receive on a permanent basis; but at any point in time, actual income may deviate from that long-run average. The business cycle is one source of such deviation. Consumer spending can be divided into three categories--nondurables, durables, or services. Nondurables are commodities with a short life such as food. Durables have a longer lifetime and only wear out from repeated use; a washing machine is an example. Services consist of the purchase of the services of other people--barbers, lawyers, etc.

Fluctuation in the consumption of durables and the proportion of income saved accounts for most of the fluctuation of consumption as household income fluctuates up and down over the business cycle. Nondurables and services tend to be stable over the cycle. During an economic downturn, some of the money to pay for these purchases may come from withdrawals from savings. Consumer durables are sensitive to the business cycle because they are postponable purchases. Their purchase can be timed for periods when interest rates are low since many are bought on credit, when expectations are high and when discretionary income is high. Consumers may, in fact, spend more than their current income when the business cycle is in an upswing by increasing their level of consumer debt.

This reinforces the idea that consumers adjust their consumption in response to changes in income with a time lag--not only because of habit but also due to uncertainty about the permanence of the change in income. If the income change is viewed as temporary--the result of a business cycle, for example--consumers will maintain spending on current consumption and concentrate temporary adjustments on spending for consumer durables and additions to savings.

The concepts of discretionary purchasing power, discretionary spending, and discretionary income are useful in this context for understanding the flexibility of a consumer in adjusting his spending in response to changes in income. Discretionary purchasing power is defined as disposable personal income plus additions to household consumer credit minus contractual saving, essential expenditures, fixed commitments, and imputed income (a component of the personal income accounts). It is a measure of the amount of money a consumer has available in a month or year for spending after

paying for necessities and prior commitments. It is divided into discretionary saving and discretionary spending.⁷ Although the concept of discretionary purchasing power is difficult to measure accurately, it is clearly a better measure of the relation between changes in consumer ability to spend than is personal income.

It is also clear that discretionary purchasing power is much more variable over the business cycle than is disposable personal income. During expansions, consumer credit expands faster than income as households increase purchases of durable goods by borrowing. The reverse is true during recessions. In this study, we calculate the economic effects of changes in consumption due to government employee compensation in equilibrium. In fact, the economic effects would appear to be proportionately larger if they occurred during a general recessionary period when consumer spending was already depressed.

G. IS THE RESPONSE OF THE ECONOMY DIFFERENT WHEN
EMPLOYEE COMPENSATION IS REDUCED?

A number of factors will make the economic effects of a decline in employee compensation asymmetrical with an increase. These include the fact that households have contractual and other fixed expenditure commitments to which they are obligated in the short run, potential excess capacity in housing and other components of the regional capital stock due to out-migration and the decline of aggregate demand, market-scale effects, and asymmetry in the "grubstake" effect.

A \$100 million cut in the budget implemented through wage cuts which caused a 13 percent drop in the wage rate⁸ would, because of reduced federal tax payments at the marginal rate for state employees of 26 percent, reduce disposable income by 9.6 percent of the annual wage,⁹ but by a larger or smaller proportion of household income, dependent upon the characteristics of the household. For the 56 percent of state employees in one-wage-earner households and the 16 percent in households with more than one wage earner all working for the state (Table 3), the decline in their

⁷The Conference Board, Discretionary Spending, Technical Paper Number 17, 1966, p. 5.

⁸This estimate uses Alaska Department of Labor data on total annual earnings of state government employees in 1984 of \$625 million.

⁹A 10 percent drop in the wage rate would reduce disposable income as a percentage of total wage income by 7.4 percent; and for one-wage-earner households, drop actual disposable personal income by 9 percent.

disposable income would be about 11.3 percent if they had no other significant sources of income.¹⁰ For the 28 percent in households with another wage earner not employed by the state, the decline in disposable income would be perhaps, at most, 6 percent of disposable income if there were no other sources of income to the household. Since a large portion of monthly expenditures are fixed obligations for the typical household, the reduction in purchasing power would initially fall upon discretionary spending and reduction of accumulated savings for the payment of fixed obligations. Over time fixed obligations could be reduced to be consistent with the lower level of disposable income. The effect on the economy of this lag in spending adjustment would be to delay the full impact on income and job reduction in the private sector.

If the work force were reduced because of a reduction of the budget by \$100 million, about 72 percent of the households affected would lose their only source of wage income and thus be forced to find alternative employment, likely outside the region. The impact of their spending on the economy would cease when they left the region. For the other 28 percent of the affected workers, their household wage income would be approximately cut in half, necessitating very severe realignments of spending behavior.

The most obvious commodity and market affected would be housing since the elimination of 2,644 public sector jobs would directly affect the ability of 2,388 households with at least one state employee to pay for shelter. If half of multiworker families and all single-worker households could no longer afford housing, then 2,000 housing units could potentially become vacant. The loss of private jobs could increase the total to 3,000. If the government wage rate were reduced, the loss of private sector jobs could increase vacancies by 750.

The creation of this excess capacity in housing would extend the period of dormancy in which the construction industry now finds itself by an indeterminate length of time. That extension would depend primarily upon the rate of growth of the economy and number of households in the coming years. Simply put, if the growth rate of the economy were 2 percent and the excess capacity in the housing industry were 2 percent, the housing construction industry would be dormant for about a year. The actual time would depend upon the supply imbalance in particular markets, defined both geographically and by housing type.

Market asymmetry refers to the fact that, as the economy grows in terms of income, the scope of locally provided goods and services expands and, consequently, the economic multiplier gets bigger. As this occurs, business investment takes place. When the economy falls into a recession, business disinvestment will not occur at the

¹⁰ $(.85 - .74 * .13) / .85$

same rate because of threshold effects and the sunk costs associated with market entry. Firms that entered the market because it grew beyond a certain threshold size will not move out if the market size falls below that threshold. The threshold for entry is higher than the threshold for exit.

Finally there is no "grubstake" effect operating when economic contraction results in net out-migration. When households move into a region they bring a "grubstake" with them, for example, in the form of the equity they have cashed out of the house they sold before moving. This "grubstake" contributes to regional spending over and above the current income of the new household and contributes to the growth boom. When a household leaves the region, there is no negative "grubstake" effect on aggregate demand in the region.

PART 2. CYCLICAL MOVEMENTS IN ALASKA REAL WAGES

Summary

This working paper discusses the manner in which real wages earned by Alaskans--wage rates adjusted for inflation--have responded to short-term changes in labor market conditions since 1970. The paper summarizes labor markets for Alaska as a whole by examining fluctuations about the trend in a real wage index since 1970. The statistical analysis of wage and employment indexes for the economy as a whole suggests that a 10 percent cyclical increase (decrease) in employment has been associated with an average increase (decrease) in real wage rates of 3.8 percent. A similar analysis of U.S. national employment and average earnings shows that a 10 percent change from the trend in employment nationally would be associated with an average change from the trend in real wage rates of 2 percent.

Next, the paper examines cyclical behavior of real wage rates in individual Alaska industries, estimating labor supply relationships for a large set of representative public and private sector activities. Alaska industries show a wide variation in the degree of cyclical wage flexibility. Wage rates in federal, state, and local government appear the least flexible of all wage rates and, in fact, typically rise when public employment falls.

The paper uses the statistical results to address two policy issues: (1) the effect on economy-wide wage levels of a negotiated decline in state government wage levels and (2) the percent of a typical dollar reduction in compensation that goes into pay cuts vs. layoffs for various private sector industries. The results suggest that a negotiated 10 percent reduction in state wages might cause average wage rates in the economy as a whole to decline by 4 to 5 percent. A 10 percent reduction in personnel expenditures, on the other hand, would be expected to result in a reduction in wage rates of around 3 percent in the typical Alaska industry, with the remaining reduction in labor costs being borne by layoffs.

Introduction

As a general rule, wage rates rise more rapidly than inflation when the economy is expanding and rise more slowly than inflation (or perhaps decline) when the economy is in recession. This is a result one would naturally expect from the interaction of supply and demand in markets for labor services. When employment increases cyclically, the demand for labor is growing more rapidly than supply, and excess demand puts upward pressure on wage rates. When there is a recession, the demand for labor falls, and excess supply puts downward pressure on wage rates.

Casual observation suggests that wages fluctuate by much more in some industries than in others? Government pay scales, for example, do not seem to be affected much by changes in public employment levels, while wages in other industries, for example, construction, seem to experience large fluctuations. A simple explanation for why wages are more variable in some industries than in others is that demand for their products fluctuates to a greater degree. In order to draw useful conclusions from data on short-term wage changes, it is necessary first to control for the degree of demand variation in the industry. For this reason, the term flexible wage is used below to refer to a positive association between the real wage rate for an industry and the level of that industry's employment.

Since one may presume that wage rates may rise more rapidly during periods of expansion than they fall during periods of contraction, the analysis in this paper focuses on deviations from the trend line of real wages in each industry. Over the long term, wage scales in each industry must remain in equilibrium with wage rates in other industries in order for that industry to retain its qualified work force.

The degree of wage flexibility in Alaska industries has important consequences for the performance of the economy. On the one hand, falling private sector wage rates in response to employment losses will cause personal income and employment to decline further through the multiplier process. On the other hand, however, more flexible wage scales in Alaska reduce the cost of doing business during a recession, leading to a more rapid economic recovery.

Another important issue related to wage flexibility is that of fairness. Are public-sector employees treated fairly, relative to workers in private industry, when budget cuts are accompanied by pay cuts? How large a pay cut would one expect in private sector industries if there were a ten percent reduction in personnel expenditures, for example?

The next section of the paper summarizes labor market trends and fluctuations for Alaska as a whole since 1970. Following this overview, the paper compares this observed behavior for Alaska wages since 1980 to changes occurring simultaneously in U.S. average earnings. Next, the discussion turns to explanation of variations in cyclical behavior of real wage rates in individual Alaska industries. The paper develops a model for estimating the parameters of the labor supply relationship for an industry, and presents estimates of the parameters of that relationship for various government and private sector industries. The paper concludes by using these results to address two policy issues: (1) the effect on economy-wide wage levels of a negotiated decline in state government wage levels and (2) the percent of a typical dollar reduction in compensation that goes into pay cuts vs. layoffs for various private sector industries.

Cyclical Movements in Average Alaska Earnings, 1970-1986

Total employment in Alaska has more than doubled since 1970. Growth did not proceed smoothly throughout the past two decades, however. There were two large expansions, from 1973 to 1977 and from 1981 to 1985. Each was followed by a recession, in 1978-1979, and from 1986 to the present.

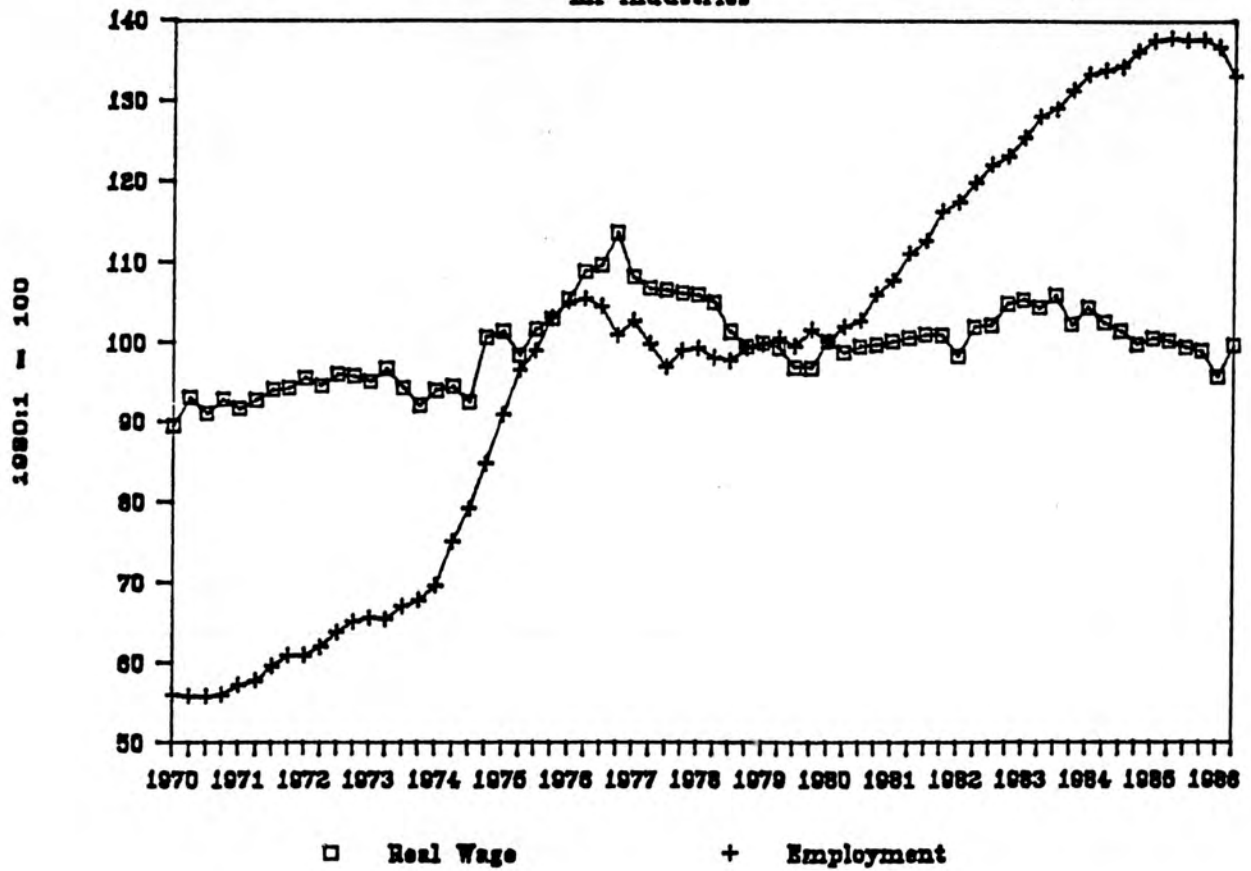
Did real wage rates earned by Alaskans follow the same trend and cyclical pattern as employment? To answer this question, one must first decide how to measure average wage rates. Time series data on average earnings per hour--the most accurate measure of pay scales--are not available. As a consequence, one must rely on average weekly or monthly earnings, which may change when there is a change in average hours worked per week. Another data problem (which would be present even if hourly wage rates were available) occurs with the use of economy-wide average wage rates. Since wages vary greatly among occupations and industries, changes in the relative sizes of industries may obscure changes in pay scales. Growth in the number of jobs in a high-paying industry such as oil and gas may appear to represent growth in pay scales. One can remedy this latter problem to a large extent by constructing an index of compensation that adjusts for interindustry shifts in employment.

Figure 1 shows a graph of an index for Alaska real wages that adjusts for interindustry shifts in employment, along with an index of total wage and salary employment. The wage index measures seasonally adjusted earnings at annual average rates based on the industry employment mix in the first quarter of 1980. The employment series has also been seasonally adjusted. The first quarter of 1980 was chosen as the base year for the index since it represents a relatively "normal" year for the national as well as the Alaska business cycle. Using a boom year such as 1976 or 1983 as the index base period would increase the weight for cyclical industries such as construction, and, as will be shown below, increase the measured flexibility of the wage index.

Two general patterns are apparent in the wage index shown in Figure 1. First, there is little trend apparent in real wage rates. Annual earnings, adjusted for inflation using the Anchorage Consumer Price Index, were actually slightly lower in 1986 than they were in 1980. Second, modest cyclical increases and decreases in real wage rates in the mid-1970s and early 1980s corresponded to large cyclical increases and decreases in employment occurring at roughly the same time. Figure 1 appears to support the hypothesis that changes in the demand for labor associated with economic growth and recession have an impact on real wage rates.

FIGURE 1

Real Wage and Employment Indexes All Industries



It is possible to quantify the relationship between total employment and the real wage index shown in Figure 1 by estimating the parameters of the following equation:

$$\log(\text{Wage}) = a_0 + a_1 \text{Trend} + a_2 \log(\text{Employment}) \quad (1)$$

Defined as in equation (1), the parameter a_2 measures the percentage change in the real wage index expected from a one percent change in total employment, given the trends in each series.

Table 13 shows the results of estimating equation (1) for the two series shown in Figure 1 over the period from 1971 to the second quarter of 1986. The elasticity of the wage rate index with respect to employment, a_2 , is 0.38. This implies that a ten percent increase (decrease) in wages would be associated with an average increase (decrease) in real wage rates of 3.8 percent. The trend coefficient, a_1 , is negative, indicating that employment has been growing more rapidly than wage rates over the period.

One may wish to compare whether wages have been more or less flexible in the 1980s than they were in the 1970s. Table 13 also contains estimates of the parameters of equation (1) for two subperiods, 1971-1979 and 1980-1986. The elasticity of the wage rate index with respect to employment is estimated to be higher in the more recent period than it was in the 1970s. However, the difference is not statistically significant at the five percent level.

TABLE 13. CYCLICAL FLEXIBILITY OF ALASKA
REAL WAGE INDEX

(quarterly data, seasonally adjusted)
(standard errors in parentheses)

Range	Constant	Trend	Employment Elasticity	Std. Error of Regress.	R Squared
1971 1 to 1986 2	8.51 (0.18)	-0.004 (0.001)	0.38 (0.04)	0.028	0.67
1971 1 to 1979 4	8.68 (0.26)	-0.003 (0.001)	0.34 (0.06)	0.033	0.70
1980 1 to 1986 3	7.90 (0.50)	-0.007 (0.002)	0.52 (0.11)	0.017	0.50

Ordinary Least Squares Estimates

Comparing Alaska and U.S. Wage Fluctuations

How does the cyclical behavior of Alaska wages compare to the short-term variability that may be observed in national average wage rates? While the Alaskan and U.S. business cycles have not coincided in recent years, and Alaska employment levels fluctuate by much more than national employment levels, the range and manner of wage variations are quite similar. One could make a detailed statistical investigation of this topic. The goal of the present paper, however, is just to provide a few illustrations.

Figure 2 shows a graph of an index of average U.S. wage rates for the period 1980 to 1986, along with an index of total private nonagricultural employment. The U.S. wage series is derived from real weekly earnings as reported monthly in the Survey of Current Business. Both the wage and employment series have been seasonally adjusted. From 1980 to 1982, the U.S. economy was in recession. Both employment and wage rates fell below their trends in this period, recovering with the economy in 1983 and 1984. The national economy appears to show similar cyclical wage behavior to the Alaska economy.

Table 14 shows the results of estimating equation (1) for the two series shown in Figure 2 over the period from 1971 to the second quarter of 1986. The elasticity of the wage rate index with respect to employment, a_2 , in Table 14 is 0.20. This implies that a ten percent change from the trend in employment nationally would be associated with an average change in real wage rates of 2 percent. This is somewhat lower than the elasticity of Alaska wages with respect to employment (0.38 average over the period 1970-86), suggesting that Alaska real wages are more sensitive to changes in labor market conditions than are national wage rates. This result is expected, given the larger relative share in the Alaska economy of construction and service industries, which, as will be shown below, have relatively flexible wages.

TABLE 14. CYCLICAL FLEXIBILITY OF NATIONAL
REAL WAGE RATES

(quarterly data, seasonally adjusted)
(standard errors in parentheses)

Range	Constant	Trend	Employment Elasticity	Std. Error of Regress.	R Squared
1980 1 to 1986 3	3.20	-0.0003 (0.0002)	0.20 (0.08)	0.0044	0.20

Ordinary Least Squares Estimates

FIGURE 2

U.S. Employment and Earnings Indexes

Seasonally Adjusted Annual Rates

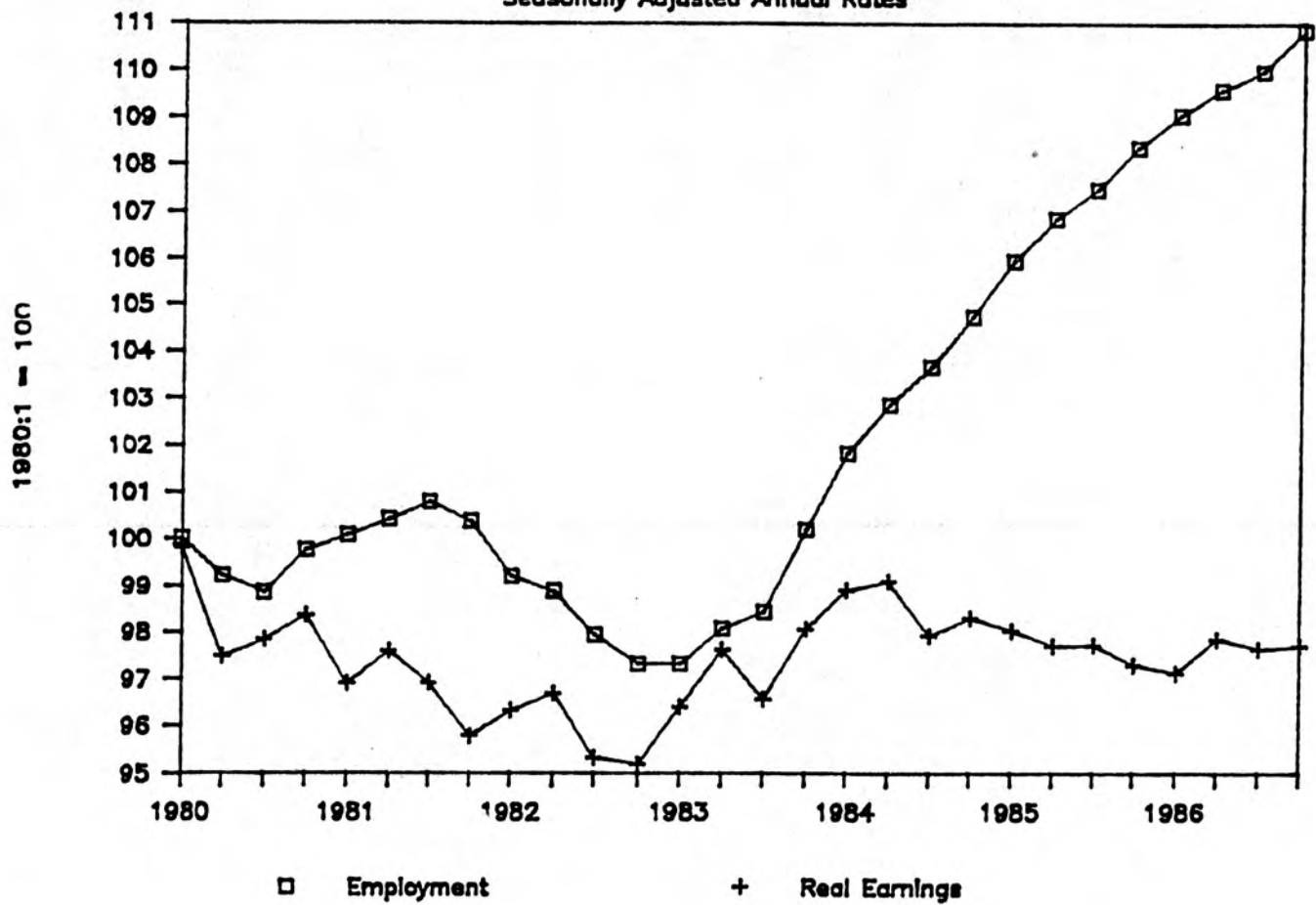


Figure 3 shows the same Alaska real wage index plotted in Figure 1, alongside the index of real weekly U.S. earnings multiplied by 52.18 (the average number of weeks in a year). The figure shows the effects of the differing cycles in the Alaska and national economies, as the recession in the lower 48 coincided with the peak oil-spending boom in Alaska. In 1983, at the trough of the national recession and at the peak of Alaska's economic expansion, the Alaska wage index briefly reached twice the national average earnings level, although it was substantially lower than this both at the beginning and end of the period.

The apparent dips in the Alaska wage index in the first quarter of 1982 and the first quarter of 1986 are most likely the result of unusual seasonal conditions in certain Alaska industries in those years (seasonal adjustment procedures can only correct for normal seasonal variation).

Cyclical Movements in Wage Rates of Alaska Industries

Up to this point, the discussion of cyclical variations in wage rates has been limited to the discussion of economy-wide average earnings indexes. There are major differences in the pattern of cyclical economic change among the various industries, such as between retail trade and the oil industry. One might expect that these industries would exhibit different wage behavior. The remainder of the paper focuses on wage behavior of individual industries in the Alaska economy. Of particular interest is the cyclical behavior of wages in public sector relative to private sector industries.

A systematic way of approaching the cyclical flexibility of real wage rates in Alaska is to estimate equation (1) for various industries. This is a similar approach as used by Hall to analyze cyclical behavior of national wage rates in various industries.¹ Table 15 shows the parameter estimates for equation (1) for 27 representative Alaska industries for the period 1971 to 1986. Table 15 shows the industries grouped into three categories, depending on the estimated elasticity of the real wage rate with respect to employment in that industry. Berman (1987), Appendix A, contains the detailed regression results, including the constant and trend values for each industry, standard errors, and estimation method.

¹Robert B. Hall, "The Rigidity of Wages and the Persistence of Unemployment," Brookings Papers on Economic Activity, 1975: 2, 301-335.

FIGURE 3

Alaska and U.S. Real Annual Earnings

Seasonally Adjusted Annual Rates

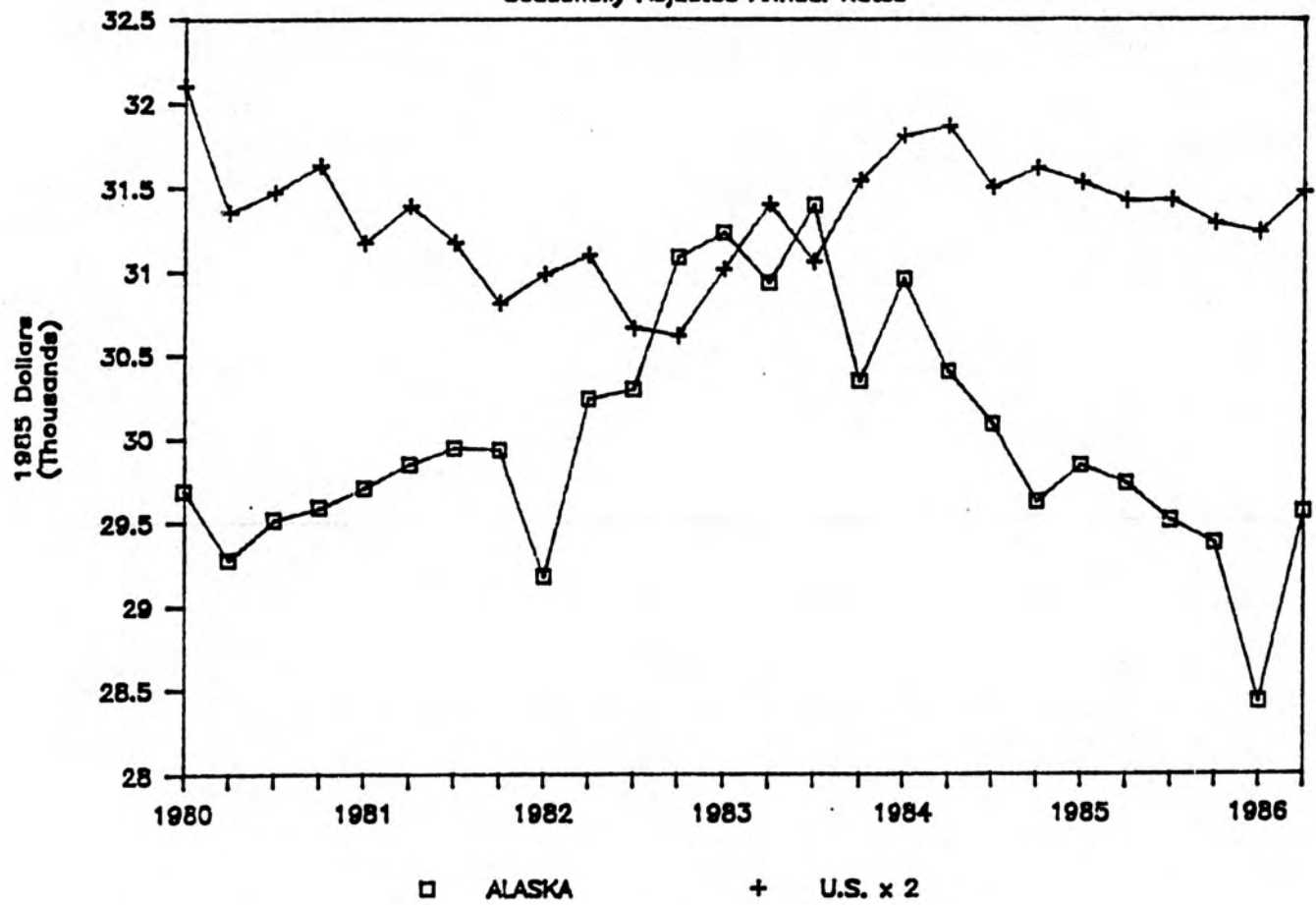


TABLE 15. EFFECT OF EMPLOYMENT ON REAL WAGE LEVELS
IN SELECTED INDUSTRIES, 1971-1986

Industry	SIC #	Employment Elasticities	Sum of Squared Residuals	R Squared
<u>FLEXIBLE-WAGE</u>				
Utilities	49	1.08	0.31	0.35
Local Transportation	41	0.94	3.51	0.09
Communication	48	0.78	0.24	0.51
Trucking/Warehousing	42	0.75	0.74	0.74
Auto Repair/Services	75	0.66	0.26	0.49
Food Stores	54	0.64	0.28	0.46
Building/Garden Supplies	52	0.47	0.36	0.28
Spec. Trade Contractors	17	0.44	0.55	0.58
Health Services	80	0.44	0.20	0.57
Eating/Drinking Places	58	0.40	0.11	0.62
Stone/Clay/Glass Prod.	32	0.29	1.05	0.12
Genl. Building Contrct.	15	0.27	0.97	0.13
Whlsl. Trade--Durable	50	0.26	0.19	0.17
Heavy Const. Contrct.	16	0.21	0.40	0.77
Legal Services	81	0.21	0.30	0.12
Apparel/Accessories	56	0.19	0.15	0.81
<u>INFLEXIBLE</u>				
Oil/Gas Extraction	13	0.16	0.19	0.73
Lumber/Wood Products	24	0.09	0.32	0.03
Hotels/Lodging	70	0.05	0.13	0.20
Food/Kindred Products	20	0.01	0.47	0.23
Air Transportation	45	-0.02	0.11	0.09
Banking	60	-0.10	0.12	0.48
Transport. Equipment	37	-0.13	0.47	0.11
<u>COUNTERCYCLICAL</u>				
Federal Government	91	-0.21	0.09	0.06
Local Government	93	-0.21	0.31	0.37
Printing/Publishing	27	-0.33	0.07	0.35
State Government	92	-0.48	0.09	0.83

Industries with an elasticity of around 0.2 or larger are considered to have flexible, or cyclical wages. Industries with an elasticity of approximately 0.15 to -0.15 are considered to have inflexible wage rates. The third category in Table 13 contains industries with definitely negative elasticities of wage rates with respect to employment.

The majority of private-sector Alaska industries are included in the flexible-wage category. The most elastic industries on the whole are transportation (except air transportation) and utilities. Other flexible-wage industries include construction, trade, and most service industries. Figure 4 shows the indexes of employment and real wage rates for the general construction industry, as an illustration of the pattern of wage and employment fluctuations characteristic of a flexible-wage industry.

Although the results in Table 15 confirm in general for Alaska wage rates what Hall (1975) obtained for national industry wage rates, the transportation and utility industries are an exception. Wage rates in the utility sector in particular were inflexible in Hall's study. One difference results from the similarities between labor markets for utilities and transportation services in a rapidly growing Alaska and labor markets in the construction trades. Another difference is simply the different time period of analysis. Hall would probably obtain more flexible wage rates if he were to reestimate his equations with data from the 1980s (rather than from the 1960s and early 1970s) due to the effects of deregulation in the transportation and communications industries.

Industries with inflexible wage rates, according to Table 13, include resource production industries, air transportation, and banking. There are several reasons why wage rates in a particular industry might not be appear flexible. Examination of the pattern of fluctuations in real earnings in the food processing and lumber industries shows that large short-term fluctuations follow no identifiable pattern, creating too much noise in the data to produce valid statistical estimates. Figure 5 shows the indexes of employment and real wage rates for the food processing industry (mostly seafood processing). Figure 5 illustrates the problem of statistical analysis when there are large random fluctuations in the data.

The elasticities of wage rates to employment in the third category of industries in Table 15 are actually negative. In these industries--publishing and the three levels of government--real wages appear to increase when employment falls, relative to the trend changes in wage rates and employment. Figure 6 shows the indexes of employment and real wage rates for state government, the Alaska industry with the lowest response (-0.48) of wage rates to changes in employment.

FIGURE 4

Real Wage and Employment Indexes

General Construction

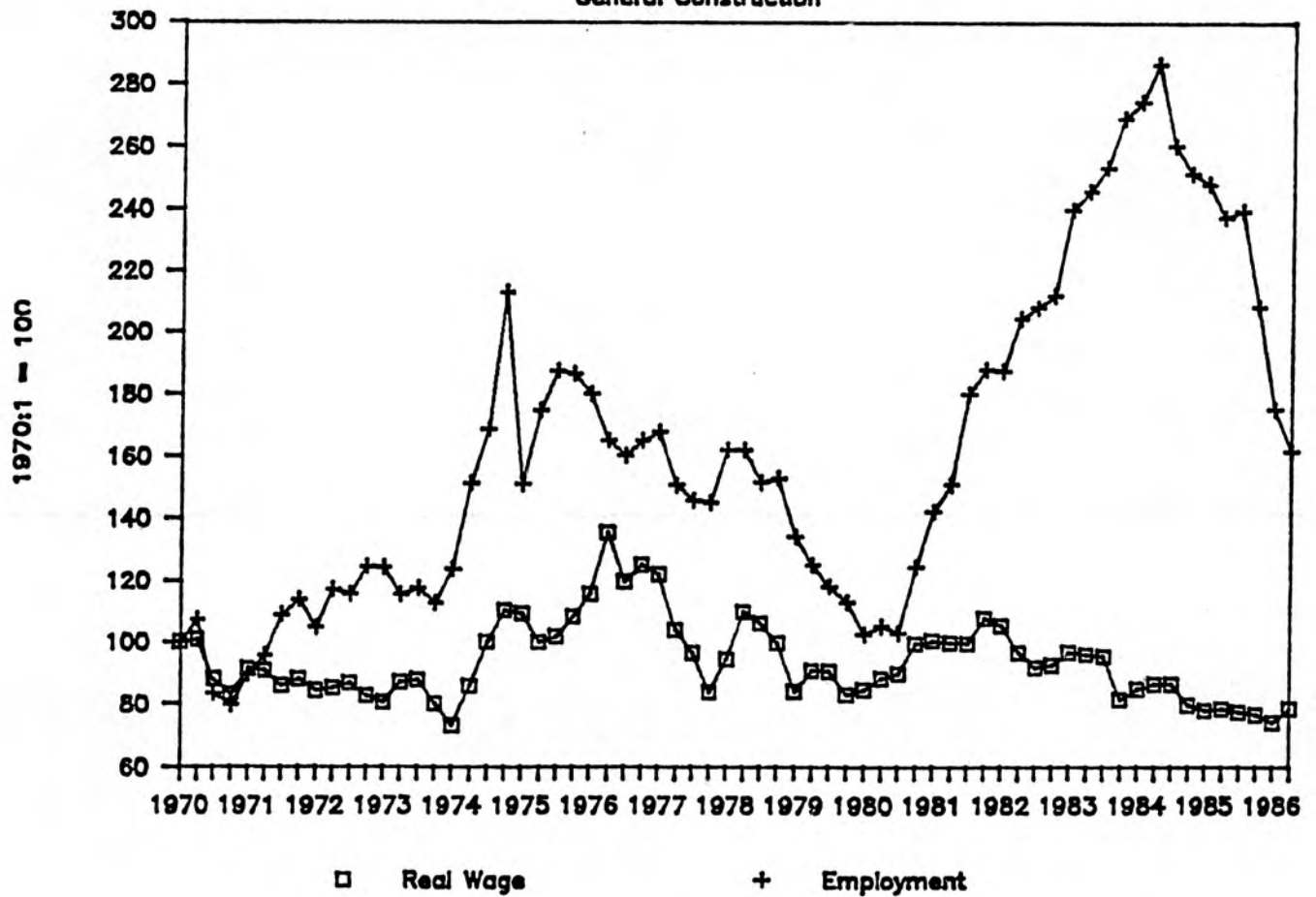


FIGURE 5

Real Wage and Employment Indexes

Food Processing

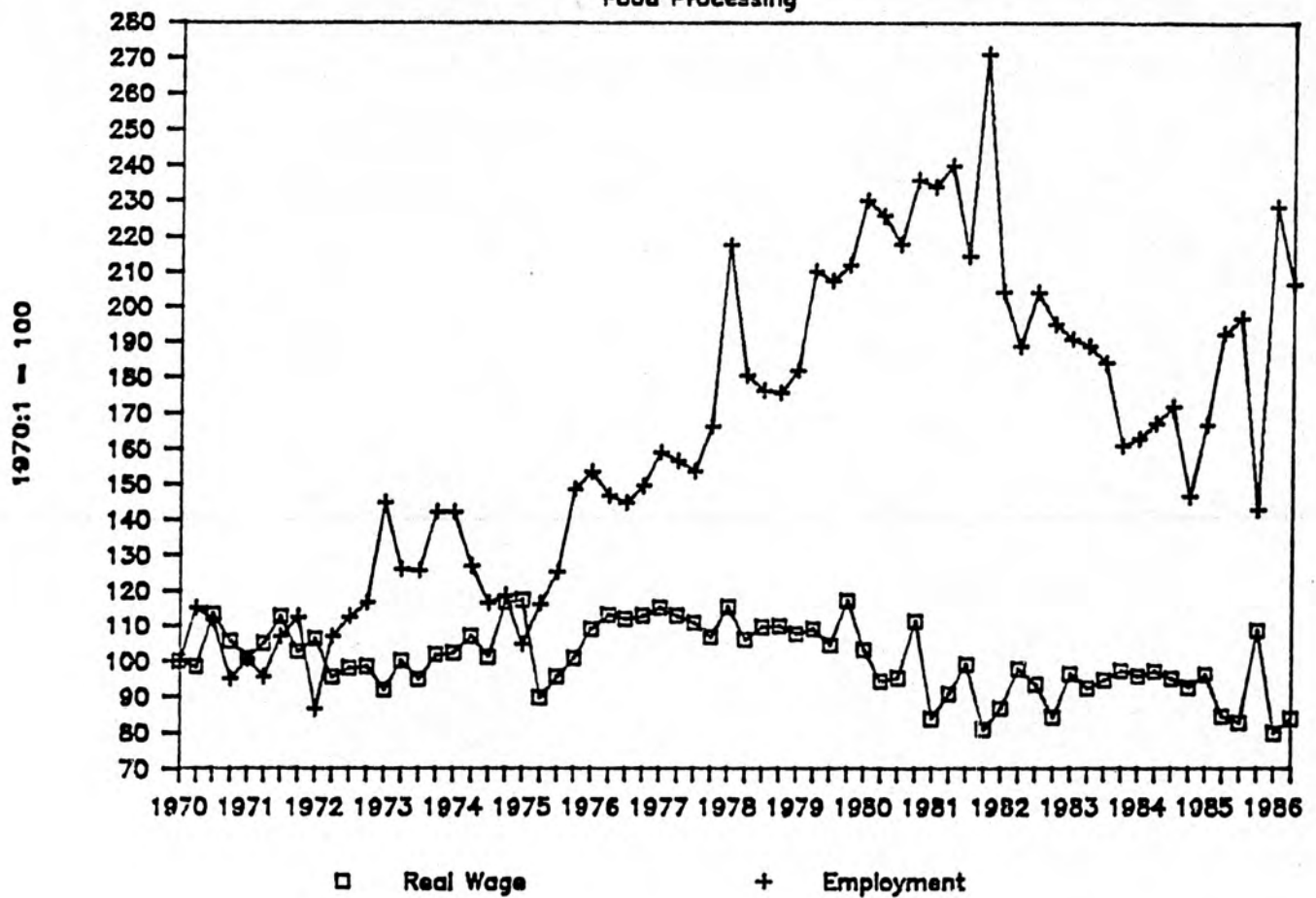
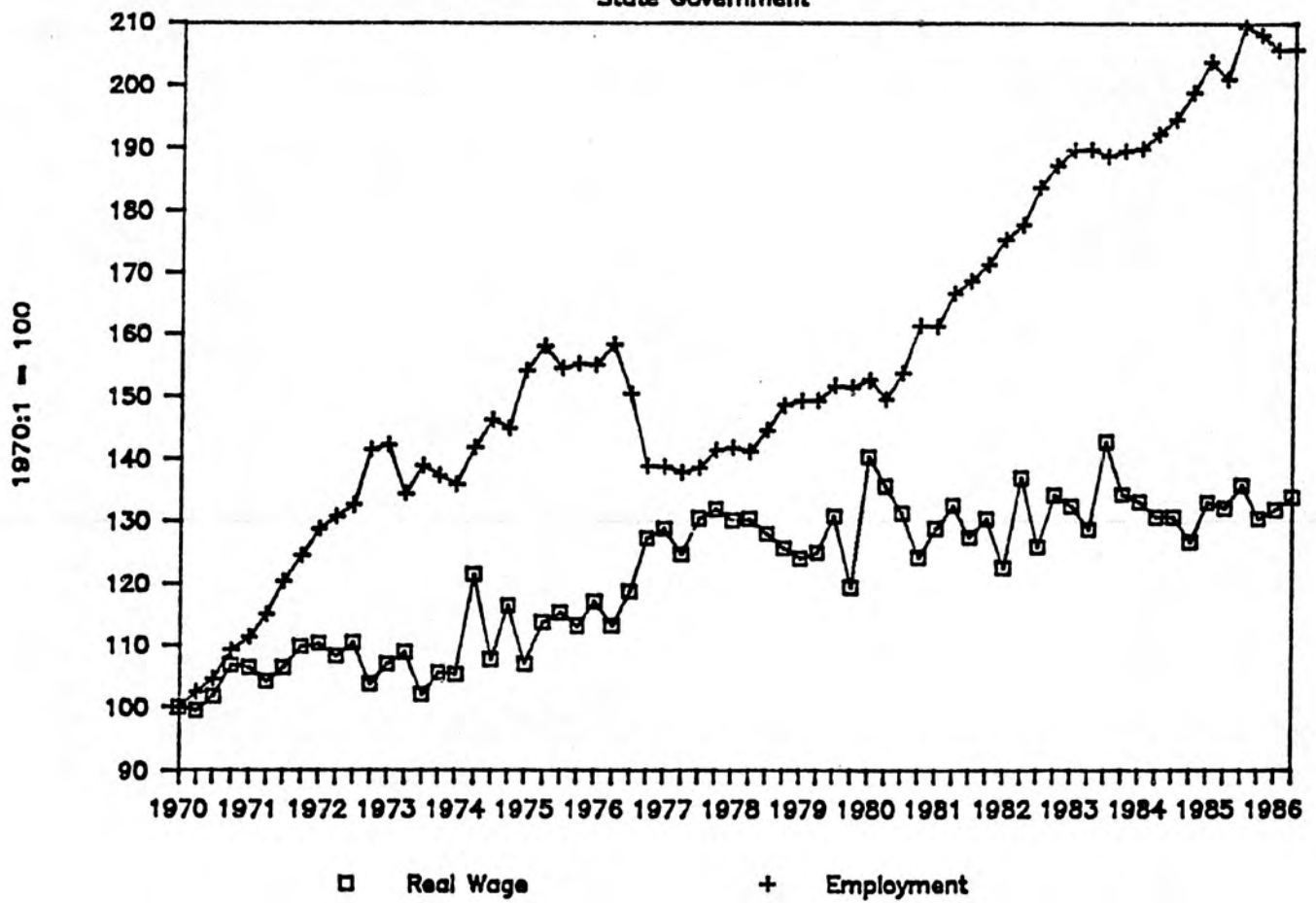


FIGURE 6

Real Wage and Employment Indexes

State Government



The elasticities shown in Table 15 were also computed for each industry with the sample period divided into two subperiods: 1971-1979 and 1980-1986. There was no systematic change apparent for the behavior of real wage rates as a whole from the 1970s to the 1980s. Wage rates became more elastic in some industries, less elastic in some, and remained unchanged in others. Although the elasticities changed for many industries, industries in the flexible-wage and countercyclical categories in Table 15 retained their patterns of wage behavior throughout the 16-year period. The behavior of some inflexible-wage industries changed significantly from the 1970s to the 1980s, however.

Wages in the oil and gas industry were flexible in the 1970s, but became inflexible in the 1980s. The timing of this change coincided with the growth of headquarters employment relative to drilling and operations jobs in that industry. Wage rates in the air transport and banking industries, on the other hand, were inflexible in the 1970s, but became flexible in the 1980s.

The next section discusses an important characteristic of labor markets that can explain why some industries have flexible wages over the business cycle, while others have inflexible, or even countercyclical wage rates.

Explaining Short-term Wage Behavior

Over a period of several years, each industry in the economy has to pay competitive wages in order to attract and maintain a qualified work force. From year to year, however, changes in wage rates may vary from industry to industry due to contract provisions and other labor market conditions that may be specific to each industry and perhaps to each firm. We can describe these short-term influences on wage rates in terms of their effects on labor supply and demand.

We define labor demand for each industry as the number of workers that employers want to hire at the prevailing wage. Wage levels, technology, taxes, and new investments are the most important factors which determine the demand for labor over the longer term. Over the short run, the main factor determining demand for labor is the demand for the products of the industry. The demand for labor typically changes at differing rates and even in different directions for various industries as a result of changes in market conditions specific to each industry.

For statistical purposes, we define labor supply to refer to the number of workers who are willing and able to work in an industry at the prevailing wage. Unemployed workers are not measured as part of the labor supply, but changes in employment levels affect the wages anticipated by all workers (corresponding to a Rational Expectations market-clearing model of labor markets). Two factors are important

in determining the number of workers available to employers. First, employers will attract more and better-qualified job seekers if they pay a higher wage. Second, employers may have to raise wages to keep their qualified employees from quitting if wages are rising elsewhere in the economy. One may measure the changes in the "opportunity cost" of employment in other industries with the economy-wide index of wage rates shown in Figure 1.

Cyclical flexibility of real wage rates for an industry depends upon the degree to which short-term changes in either labor demand or supply affect the market wage. We presume that labor demand is inelastic in the short run, implying that employers mainly observe trends in wage rates and ignore cyclical wage fluctuations when they make hiring decisions. Given the quantity of labor demanded by employers, the supply relationship determines the equilibrium wage as follows:

$$\begin{aligned} \log(\text{Wage}) = & b_0 + b_1\text{Trend} + b_2\log(\text{Employment}) \\ & + b_3\log(\text{Wage Index}) \end{aligned} \quad (2)$$

The elasticity b_2 in Equation (2) measures the percentage change in the industry's real wage rate expected from a one percent change in the industry's employment, given the economy-wide real wage index and trends in each of the series. The elasticity b_3 measures the percentage change in the industry's real wage rate expected from a one percent change in the economy-wide real wage index, given the real wage index and trends in each series. Real wage rates may be flexible in the short run, according to the yardstick employed in Table 15, either because they respond to changes in employment levels in the industry (b_2), or because they respond to changes in wage levels elsewhere in the economy (b_3).

A reduction in wage scales in a particular industry (such as state government) affects wages in other industries because it affects the desirability of alternative job opportunities. For the same reason, the average level of wages affects wage rates in each industry (in varying degrees), creating a circular effect, or multiplier. The degree of sensitivity of a particular industry's wage rate to changes in an average wage index--the parameter b_3 in equation (2)--depends on industry-specific items such as hiring practices, union contracts, the proportion of career employees in the industry.

One would expect the elasticity of the the elasticity of the real wage rate with respect to employment (b_2) to vary across industries. A low labor supply elasticity might mean hiring in a national labor market. In this instance, conditions in other Alaska industries are not particularly relevant to workers' choices of jobs. Examples of jobs expected to have a low labor supply

elasticity include highly skilled professions and most federal government positions. A high elasticity of labor supply for a particular industry suggests that this industry hires many temporary, short-term, or relatively unskilled workers. These industries may be thought of as swing employers. The construction industry is an example of an industry expected to have a highly elastic supply of labor.

Table 16 shows the results of estimating the labor supply equation (2) for the same 27 representative industries over the period from 1971 to the second quarter of 1986. The elasticities of industry wage rates with respect to employment (given the real wage index), b_2 , range from a low of -0.53 for local government to a high of 0.86 for local transportation services. Elasticities of real wage rates with respect to the Alaska wage index, b_3 , range from -0.25 for stone, clay, and glass (the equation for this industry had a poor fit due to irregular seasonal fluctuation), to 2.77 for local transportation.

The industries are shown in Table 16 in the same order as they appear in Table 14; that is, ranked from most flexible to least flexible. Flexible-wage industries show either a relatively high wage rate elasticity or with respect to employment or with respect to the wage index, or both.

A striking fact apparent from the parameter estimates in Table 16 is the number of industries with negative estimates for the supply elasticity, b_2 . A negative supply elasticity means that if wage levels in other industries are unchanged, a reduction in employment is associated with an increase in real compensation rates. In addition to the three levels of government, approximately one-third of the private sector industries in Table 16 show a negative estimate for b_2 . Apparently, employers in these industries hire new workers at lower wage scales than the industry average and are most likely to lay off workers with the least seniority and the lowest pay when they reduce their work force.

This is just an extreme form of the phenomenon economist Arthur Okun observed for national labor markets.² Okun described the development of career labor markets, in which employers hire workers, and employees choose jobs on the basis of expected long-term rather than actual short-term benefits. Employers are reluctant to lay off career employees during cyclical fluctuations in demand which they view as temporary. The high cost of searching for, training, and developing loyalty in new employees that would have to be hired during the next expansion exceeds the cost of paying wages to redundant workers during a cyclical downturn. Career workers also may be reluctant to give up seniority and other benefits in order to take higher-paying jobs when jobs are temporarily plentiful.

²Arthur M. Okun, "Inflation, Its Mechanics and Welfare Costs," Brookings Papers on Economic Activity, 1975: 2, 351-390.

TABLE 16. EFFECT OF EMPLOYMENT AND WAGE INDEX ON REAL
WAGE LEVELS IN SELECTED INDUSTRIES

Industry	SIC #	Elasticities		Sum of Squared Residuals	R Squared
		Employment	Wage Index		
<u>FLEXIBLE-WAGE</u>					
Utilities	49	0.44	0.92	0.12	0.71
Local Transportation	41	0.86	2.77	2.57	0.30
Communication	48	0.38	0.79	0.13	0.67
Trucking/Warehousing	42	0.53	1.67	0.55	1.81*
Auto Repair/Services	75	0.45	0.67	0.16	0.64
Food Stores	54	0.28	0.81	0.12	0.75
Bldg./Garden Supplies	52	0.20	0.81	0.30	0.38
Spec. Trade Contrct.	17	0.13	2.14	0.30	0.78
Health Services	80	-0.38	1.37	0.11	0.76
Eating/Drink. Places	58	0.34	0.15	0.11	0.64
Stone/Clay/Glass Prod.	32	0.32	-0.25	1.06	0.11
Genl. Bldg. Contrct.	15	0.00	2.26	0.47	0.57
Whlsl. Trade--Durable	50	0.21	1.05	0.06	0.72
Heavy Const. Contrct.	16	0.12	1.89	0.21	0.88
Legal Services	81	-0.01	0.60	0.25	0.24
Apparel/Accessories	56	-0.31	0.98	0.10	0.88
<u>INFLEXIBLE</u>					
Oil/Gas Extraction	13	0.08	1.05	0.08	0.89
Lumber/Wood Products	24	0.05	0.85	0.24	0.27
Hotels/Lodging	70	-0.10	0.47	0.10	0.41
Food/Kindred Products	20	-0.02	0.95	0.37	0.49
Air Transportation	45	-0.23	0.54	0.14	0.05
Banking	60	-0.24	0.45	0.10	0.55
Transport. Equipment	37	-0.11	0.24	0.46	0.12
<u>COUNTERCYCLICAL</u>					
Federal Government	91	-0.33	0.24	0.08	0.13
Local Government	93	-0.53	0.90	0.21	0.57
Printing/Publishing	27	0.10	0.66	0.07	0.36
State Government	92	-0.45	0.48	0.06	0.88

* R^2 greater than one is a possible result for two-stage least squares estimation.

Union contracts may not be sufficient by themselves to protect real wages, but a combination of union contracts and career employees is likely to yield countercyclical wage behavior. Such a combination is especially prevalent in state and local government in Alaska.

The coefficients shown in Table 16 were also computed for each industry with the sample period divided into subperiods for the 1970s and the 1980s. While the two sets of coefficient estimates were statistically different for some industries, there was no systematic change among the industries from the 1970s to the 1980s. For most of the industries with changing coefficients, the size of the wage index elasticity changed relative to the employment elasticity, but there was no overall movement towards greater or lesser cyclical flexibility. Complete results for these equations are shown in Berman (1987), Appendix B.

Policy Issues for Public Employee Compensation

Reductions in public spending affect the Alaska economy in different ways depending upon whether the budget reductions take the form of staff reductions or reductions in compensation rates per employee. However, both methods of reducing public spending are likely to reduce prevailing wage rates in the private sector. In the short run, reduced private sector wage rates will result in mean personal income and employment losses. Over the longer term, however, lower wage scales reduce the cost of doing business in Alaska and could lead to economic growth.

One may use the above analysis to address two sets of policy issues regarding the effects on the Alaska economy of reductions in public employee compensation rates. The first concerns the potential effect on economy-wide wage levels of a negotiated decline in government wage rates. The second is the question of fairness: what percent of a reduction in personnel expenditures would typically show up in various private sector industries as a cut in pay and what percent of employees would be laid off?

Effect on Private Wage Rates of Changes in State Wage Levels

In this section, we discuss how the state budget affects wage rates throughout the Alaska economy. First, we describe the relationship between wage and employment changes in particular industries and overall wage levels. Next, we define specific "multipliers" measuring the effect of changes in state employee compensation rates on wage rates in the rest of the economy. Then, we provide estimates of these multipliers using the example of a 10 percent cut in either state government employment or state wage levels.

The economy-wide wage index changes in response to a change in state employment in proportion to the change in state employment times the state share of total employment times the elasticity of supply for an aggregate wage index. In symbols,

$$W = a_2 p(E_s) M \quad (3)$$

where W is the percent change in the wage rate index; E_s is the percent change in state employment; M is the change in total employment divided by the change in government employment (M may be thought of as the employment multiplier for basic industries); p is the ratio of state employment to total employment; and a_2 is the aggregate labor supply elasticity as defined in equation (1).

Projecting the change in the wage index that might occur in response to a change in the state wage level requires an additional step. The wage index equals the weighted average of wages in all industries, where the weights are employment levels in each industry for a base year. For small increments, one can estimate the change in the wage index as the weighted average of the change in state wage and the average change in wage scales in other activities:

$$W = p(W_s) + (1-p)(W_o) \quad (4)$$

A reduction in state wages reduces opportunities potentially available for workers in all other industries. This puts downward pressure on wages in each industry. The extent of downward pressure depends on (1) the magnitude of state government employment relative to employment in other industries and (2) the sensitivity of wage rates in various industries to changes in prevailing market wage levels. The extent of the wage effect also may vary from region to region, depending on the relative size of state employment in the economy of the local area. Due to the absence of data on private industry wage levels by community, we consider only statewide average effects.

For each industry i ,

$$W_i = b_{1i} + b_{2i}E_i + b_{3i}W \quad (\text{industry } i) \quad (5)$$

The expected value of b_{1i} where $i = s$, for state government, is the value of the trend term estimated in equation (2). Consider a drop in b_{1s} for next year reflecting a negotiated reduction in state government wages. If one interprets $i = 0$ to stand for all

other economic activities, substituting equation (5) into equation (4) yields the percentage reduction in economy-wide wage levels in response to a one percent reduction in the state wage. That is,

$$W = \frac{p}{1 - b_{30} - p(b_{3s} - b_{30})} \quad (6)$$

One can use the estimated parameters for equation (2) to obtain values for b_{1i} , b_{2i} , and b_{3i} for each industry i . The value of the parameter b_{30} may be calculated as the weighted average of the estimated coefficients for b_{3i} , where the employment level in the first quarter of 1980 provides the weight for each industry.

Estimates of the parameters b_{1i} , b_{2i} , and b_{3i} of equation (2) are shown in Table 16 for representative industries as discussed above. The coefficients for state government wage rates show an estimated value for b_{3s} of 0.48.

One may also obtain a weighted average value for b_{30} from the estimated coefficients in Table 16. Table 17 shows the computation of b_{30} for the entire period, 1971-1986 (the period used to estimate the parameters for Table 16) as well as for the two subperiods. One can see that private sector real wage rates have become more elastic with respect to the wage index in the 1980s, but there is little change in the computed value of b_{30} , after taking into account the behavior of wage rates in federal and local government. The value of b_{30} in Table 17 is around 0.85.

Equation (6) may slightly overestimate the anticipated effect on average Alaska wage levels if state workers received an exact 10 percent cut their wages for a contractual period. The equation assumes that state wage rates would actually fall by 10 percent at first, then an additional one or two percent in response to falling wages elsewhere in the economy (as shown in equation (5), assuming $b_{3s} = 0.48$). An alternative way of calculating the effect of a state wage reduction is to assume that the total effect on state wages comes to exactly 10 percent. One can estimate the change in the wage index in this case by setting the coefficient b_{3s} in equation (6) equal to zero, reducing the formula to:

$$W = \frac{p}{1 - b_{30}(1-p)} \quad (7)$$

Table 18 shows estimates of the response of private sector and economy-wide wage rates to a 10 percent reduction in state compensation levels using equations (6) and (7). With p (state share of employment) equal to 9 percent, the change in the Wage

TABLE 17. COMPUTATION OF AVERAGE WAGE ELASTICITIES (b_3)

Industry	SIC #	Wage Index Elasticities			Employment (1980,1)
		1971-79	1980-86	1971-86	
<u>FLEXIBLE-WAGE</u>					
Utilities	49	1.00	0.11	0.92	1,352
Local Transportation	41	5.33	-0.17	2.77	934
Communication	48	0.59	0.83	0.79	4,337
Trucking/Warehousing	42	0.58	1.27	1.67	1,929
Auto Repair/Service	75	0.49	1.41	0.67	812
Food Stores	54	1.15	1.12	0.81	3,593
Bldg./Garden Supplies	52	0.44	1.55	0.81	1,048
Spec. Trade Contrct.	17	0.72	1.85	2.14	4,449
Health Services	80	1.46	1.61	1.37	5,632
Eating/Drink. Places	58	0.31	0.42	0.15	7,774
Stone/Clay/Glass Prod.	32	-0.19	4.19	-0.25	217
Genl. Bldg. Contrct.	15	1.01	0.44	2.26	2,364
Whlsl. Trade--Durable	50	0.58	0.79	1.05	3,314
Heavy Const. Contrct.	16	1.58	1.53	1.89	2,970
Legal Services	81	1.60	1.45	0.60	1,271
Apparel/Accessories	56	0.46	1.78	0.98	1,049
<u>INFLEXIBLE</u>					
Oil/Gas Extraction	13	0.97	0.42	1.05	5,575
Lumber/Wood Products	24	0.40	1.33	0.85	2,915
Hotels/Lodging	70	0.81	0.37	0.47	3,220
Food/Kindred Products	20	0.42	-0.46	0.95	7,978
Air Transportation	45	0.20	0.87	0.54	5,311
Banking	60	0.47	0.41	0.45	2,817
Transport. Equipment	37	-1.09	0.43	0.24	92
<u>COUNTERCYCLICAL</u>					
Federal Government	91	0.11	0.84	0.24	16,890
Local Government	93	1.34	1.02	0.90	20,636
Printing/Publishing	27	0.18	0.85	0.66	1,042
State Government	92	0.43	0.96	0.48	15,195
WT. AVG.		0.73	0.85	0.81	4,619
w/o State		0.77	0.84	0.86	4,212
Private		0.77	0.79	0.99	3,000

TABLE 18. EFFECT OF STATE COMPENSATION REDUCTION
ON OTHER ALASKA REAL WAGE RATES

Period	Wage Index Elasticities		State Share of Alaska Employment ^b	Response of Wage Index to 10 percent Change in State Wage Rate
	State Gov't ^a	Other Activities ^a		
1971-1986	0.48	0.86	0.09	0.52 ^c
1971-1979	0.43	0.77	0.09	0.35 ^c
1980-1986	0.96	0.84	0.09	0.61 ^c
1971-1986	0.00	0.86	0.09	0.41 ^d
1971-1979	0.00	0.77	0.09	0.30 ^d
1980-1986	0.00	0.84	0.09	0.38 ^d

^aAs calculated in Table 17.

^bState government employment as a fraction of total Alaska wage and salary employment in first quarter of 1980. Source: ISER MAP database.

^cCalculated from Equation (6).

^dCalculated from Equation (7).

Index that occurs in response to a one percent change in state wages is around 0.4 to 0.5 percent. A negotiated 10 percent reduction in state wage rates, then, would be likely to reduce private sector wage rates by 4 to 5 percent for the typical industry.

The actual reduction would be larger or smaller than this for individual industries. Those with a wage elasticity b_3 that is substantially larger than the average value of 0.85--such as construction--might fall by as much as 10 percent. Wages in industries with little sensitivity to Alaska average wage levels, such as federal government, would experience little change.

State employee layoffs would also put downward pressure on wages in the private sector, but not as much. One may estimate the effect on the real wage index from a change in state government employment in a straightforward way by using equation (1). From Table 13, each one percent reduction in total Alaska employment is associated with a 0.38 percent decline in the wage index. Considering that state government employs around 9 percent of wage earners, and assuming an employment multiplier for state workers of 1.5, a ten percent decline in state government employment would cause total employment to fall by around $0.9\% \times 1.5 = 1.4$ percent.

Average wage rates in the state would decline by around 38 percent of this decline in employment, or around one-half of one percent. Thus a 10 percent decline in state wage rates would have approximately ten times as great an effect on private sector wage rates as would a 10 percent decline in state employment.

Pay Cuts vs. Layoffs in the Private Sector

One can also use the empirical analysis of Alaska real wage rates to examine the equity issue of public employee wage cuts vs. staff cuts when personnel expenditures must be reduced. The empirical observations on the typical behavior of industry labor markets throughout the state economy provide a benchmark for examining proposals for negotiating flexibility into state wage contracts.

Equation (1) provides a simple method for assessing expected wage cuts in response to a cutback in personnel expenditures. This equation, when interpreted for an economy-wide average wage index, represents the reduced-form equation for the set of equations estimated in Table 16 explaining wage rates for each industry. Using again the symbols W and E to refer to the percentage changes in the state real wage index and total state employment, respectively, the relationship is:

$$W = a_1 + a_2E \quad (8)$$

where a_1 and a_2 are the same as in equation (1).

Table 13 shows estimates for a_2 , the average elasticity of Alaska real wage rates with respect to total employment, given the trends in these two variables. The employment elasticity of the real wage index ranged from 0.34 to 0.52, and averaged 0.38 for the period 1971-1986. This elasticity measures the expected percentage change in real wage rates in response to a one percent change in employment.

Since the amount spent on personnel is equal to the wage rate times employment, one may approximate the relationship between the percent changes in wage rates (W), employment (E), and personnel expenditures (R) as:

$$R = W + E \quad (9)$$

Substituting equation (9) into equation (8) and solving for W, the percentage change in the wage index, one obtains:

$$W = [a_2 / (1 + a_2)] R \quad (10)$$

One may use equation (10) to estimate the amount by which a reduction in personnel expenditures in the typical Alaska industry would translate on the average into a cut in wages. With the average value of a_2 from Table 13 being 0.38, a 10 percent reduction in personnel expenditures would be expected to reduce wage rates by around 2.8 percent. The remaining reduction in personnel costs would be borne by layoffs.

PART 3. CHANGES IN COMPENSATION OF SOME ALASKA WORKERS AND NATIONAL TRENDS IN COMPENSATION LEVELS

Private Sector Alaska Trends

Sources and Extent of Information

Aside from the main purpose of this report--outlining the different economic effects of laying off some state workers or cutting pay for all state employees--we wanted to give the legislature a broad sense of the kinds of things other big employers in Alaska have been doing to hold down their personnel costs in the past couple of years.

The discussion below is based on a quick, informal telephone survey of some of Alaska's larger private employers, a few unions, the Municipality of Anchorage, and an organization representing some federal civilian workers. We asked them how the size of their work forces and pay and benefits had changed in the past year or so.

The private employers we talked to had anywhere from 100 to more than 2,500 employees in Alaska. Jobs supplied by these private employers, together with municipal and federal civilian jobs in Anchorage, make up roughly 7 percent of all the wage and salary jobs in Alaska. We do not purport this small survey to be in any sense comprehensive or representative of all Alaska employers. We did not, for instance, talk to owners of small businesses; we did not talk to anyone whose business has gone bankrupt.

With little time and money, we simply tried to talk to some private employers who have survived the local economic slump and also adjusted to changing national or international conditions. The dire condition of the construction industry in Alaska has been well-publicized; we talked mainly to employers who have been less drastically but still substantially affected by the current recession.

We also collected information on recent changes in pay and benefits of municipal and federal workers in Anchorage--to illustrate how other government entities have reacted to local and national economic conditions.

Eliminating Jobs

Most Alaska employers we talked to had fewer workers in the spring of 1987 than they had a year earlier. At best, they had the same number. The drops ranged up as high as 20 percent, but most were less than 10 percent.

The first thing most employers did in the face of the recession was eliminate jobs as they became vacant. A few offered older workers the option of retiring early, but others said they couldn't see any savings in doing that. Then employers turned to layoffs. With a couple of exceptions, the employers we interviewed acknowledged having had to lay some workers off during the past year--but they were reluctant to say just how many jobs they had cut that way. Nobody likes laying people off, and everyone emphasized that they had tried to eliminate jobs mostly as they became vacant. A few employers had special programs to help workers find new jobs. Some were able to shift workers to new jobs when their old jobs were eliminated. Some union contracts also allow workers with more seniority to bump newer workers from jobs during layoffs.

Overall, we found that whether through attrition, early retirement plans, or layoffs, employers eliminated a substantial number of Alaska jobs over the past year or so. A few we interviewed had the same number of workers they had a year ago. But that certainly did not mean they hadn't taken steps to reduce their personnel costs. And all those employers who had eliminated jobs had also taken other measures to hold down pay and benefits of their remaining employees.

Wage Freezes and Cuts

Most--but not all--the employers we talked to had wage freezes in effect. In a number of cases unionized workers had agreed to forgo negotiated pay raises or cost-of-living increases to hold down the number of layoffs. A couple of employers had actually cut wages of some or all of their employees; employees in at least one organization agreed to pay cuts so that there would be no layoffs. Because so few of those we talked to had cut wages, we can't cite any range of those pay cuts. A number of employers we talked to said they would certainly consider pay cuts if the recession worsened.

The Alaska Department of Labor recently announced that wages contractors are required to pay some workers on state-funded construction projects would be reduced by 20 percent. The workers affected were truck drivers and surveyors throughout the state and painters working north of the Alaska Range. Federal and state laws require contractors doing work on public construction projects to pay "prevailing" local wages for those jobs, based on annual surveys. The most recent state survey was done in November 1986; in April 1987 the state Department of Labor announced reductions in the previously announced prevailing wages for those three occupations--apparently based on similar reductions announced by the federal government. Wage rates for other construction-related public jobs were unchanged.

Employers we interviewed who had not frozen or reduced wages were holding down pay costs in various other ways. If they had hired

any workers recently--not a common occurrence--those new workers were brought in at lower pay ranges than would probably have been true a couple of years ago. Pay increases awarded those who had been promoted or were doing outstanding work were reduced and made less frequent.

Another measure that is becoming more common nationally is also happening in Alaska: a couple of employers we talked to have begun substituting periodic lump-sum bonuses for increases in base pay. Such lump-sum payments are cheaper for the employer for a number of reasons. One reason is that many benefits are calculated on the size of the employee's base pay--if the base pay is not increased the costs of the benefits are likewise held down.

Other Measures

The majority of employers we talked to had not reduced the number of hours their employees work; we found one group of service workers who were working on average fewer hours than they had a year or two ago. (Bear in mind that we did not concentrate on talking to construction and other workers who have been hardest hit by reduced working hours.)

Many national or international companies operating in Alaska have historically paid their Alaska workers an allowance, in addition to their salaries, to cover the higher costs of living in Alaska. The federal government also pays salaried federal workers in Alaska a cost-of-living allowance. At least one international company operating in Alaska has reduced its employee costs in recent years by reducing the cost-of-living allowance paid its salaried Alaska workers--on the grounds that the difference between costs in Alaska and the lower 48 is smaller than it used to be. The federal government and some private organizations periodically conduct their own cost-of-living surveys in selected U.S. cities.

It has also been a policy of the federal government in recent years to reduce its employee costs by contracting out some kinds of work that it formerly hired employees to do; that policy has over a period of years reduced the number of federal blue-collar workers in Alaska. We found some evidence that other government entities and private organizations are also contracting out more work than they formerly did, but we don't know enough about that practice to say how widespread it is.

Overall, employers are looking closely at all kinds of employee costs--at extra pay offered those who work special shifts, for instance, or expenses for out-of-town trips--and trying to reduce them.

Benefit Changes

Every employer--private and public--we talked to has taken some steps in recent times to hold down the costs of medical coverage for workers. Many have adopted what are commonly called "cost-containment" plans that, among other things, require workers to get second opinions about the need for some kinds of health care and advance approval for expensive surgeries. Some are asking employees to pay a larger share of insurance premiums or requiring employees to pay larger amounts for health care before insurance coverage begins. Others have reduced the share of medical or dental costs they cover.

Employers we interviewed had generally not reduced paid vacation time or sick leave for their employees. A few had restricted the amount of accrued vacation time employees' could use or had encouraged employees to take some leave without pay.

How other kinds of benefits may have changed is difficult to summarize. We know that a number of union contracts negotiated in recent times have included some concessions, but we don't know the nature or the extent of those changes. A number of Alaska union contracts are now or soon will be re-negotiated; employers are looking for wage or benefit concessions. Most employers offer (and many union contracts include) a variety of benefits specific to a certain organization or kind of job. The general impression that we got from employers we talked to is that there has been a tightening up of such benefits; one company told us, for instance, that it used to offer employees special loan programs that have now been considerably reduced.

National Trends in Pay and Benefits

Scope of Discussion

Below we briefly describe some of the ways employers nationwide have been holding down or reducing their personnel costs in the 1980s. Those cost-cutting moves have grown out of various economic conditions, including the national recession of the early 1980s and the need for many American companies to become more competitive with domestic or foreign companies. Alaska's economy is affected not only by local conditions but also by national conditions and trends.

Much of this discussion is based on articles in the U.S. Bureau of Labor Statistics' Monthly Labor Review (MLR). That publication reports the terms of large labor contracts and other developments affecting American workers. This is not a comprehensive or quantitative description--it is simply a broad, quick review of some of the ways recent economic conditions have affected pay and benefits of some American workers.

Reduced Working Hours Versus LayOffs During Recessions

The MLR reported in 1981 that the first move American companies--particularly manufacturers--made during all the recessions from the 1950s through the 1980s was reducing the number of hours their employees worked. Employers prefer reducing working hours to laying people off to the extent possible because it is cheaper. Laying people off involves some immediate costs, and calling them back some more costs. Also, sometimes trained workers take other jobs after they are laid off--so companies have the additional expense of training new people. They prefer to try to hold onto their employees by having everybody work less.

There are, of course, limits to how much employers can reduce working hours and still persuade people to stay on the job. When the recession gets bad enough, layoffs begin. According to MLR, firms with unionized work forces are more likely to lay workers off sooner than are similar firms with non-union workers. This is true because many union contracts specifically restrict how much management can reduce working hours. Terms of such contracts favor more senior workers--who know they are unlikely to be among those who lose their jobs when there are layoffs.

Pay Raises, Cuts, Freezes, and Cost-of-Living Adjustments

Annual pay raises for union workers in private industry have been falling since the early 1980s--and workers in a number of industries have taken actual pay cuts in recent times.

The U.S. Bureau of Labor Statistics reports that negotiated annual pay raises for private union workers nationwide averaged more than 7 percent in 1982 and steadily dropped to less than 2 percent in 1986. Inflation, which was one of the driving forces behind higher wage increases in the late 1970s and early 1980s, has been less in the past several years.

Many steel workers, airline employees, loggers, auto workers, and others most hurt by competition or by unfavorable economic conditions took pay cuts in recent years. In some cases those cuts were designated as temporary, with full pay to be restored when the industries became more profitable.

Some unions that renegotiated contracts in 1986--longshoremen, for example--agreed to pay freezes during at least some years covered by multi-year contracts. President Reagan also froze wages of federal civilian workers in 1986; for several years before that civilian workers had received pay raises annually.

The share of union workers covered by cost-of-living adjustments has also declined in the past couple of years. In 1985, nearly half of all union members covered by major bargaining agreements received

cost-of-living adjustments, generally based on changes in the federal consumer price index. At the end of 1986, that proportion had declined to about 40 percent because cost-of-living adjustments were dropped from several large contracts when they were renegotiated. And among contracts that still provide for such adjustments, the terms of the adjustments have often been tightened up. Under contracts recently negotiated by aluminum workers, for example, cost-of-living adjustments were reduced and will be paid only after the consumer price index has risen more than 3 percent in a year.

Other Measures

In the past several years American employers have increasingly turned to various other measures to hold down employee costs. Among the most common, according to MLR, are cost-containment plans for health care; lump sum payments in lieu of wage increases; and two-tiered wage systems.

Medical costs climbed to dizzying heights in the past decade or so, and employers' costs for medical insurance coverage for their employees followed. In recent years scores of private and public employers have adopted some form of what are known as "cost-containment" plans for medical costs. Such plans hold down health care costs for employers in various ways--requiring employees to get second opinions or advance authorization for expensive medical procedures, for instance. Some of the plans also pass more of the medical costs on to the employees. How much such plans can save companies was illustrated in 1986, when General Motors announced its plan had saved the company an estimated \$213 million the previous year.

The MLR reports that in 1985 and 1986 nearly 1.4 million American workers covered by new contracts agreed to accept lump-sum payments in lieu of wage increases in at least some portion of the contract period. Employers save money by making such one-time payments instead of increasing wages because--among other things--increases in base pay translate into increases in benefit costs.

Two-tiered wage systems are perhaps the most controversial cost-cutting measure American industry has introduced in recent years. The systems call for different rates of pay for employees of the same company doing the same job: new employees are paid less to begin with and work up to the pay scale of older employees only over a number of years--if ever. This method has been most commonly used by airlines, but also by other employers. The MLR reports that in 1985 and 1986 contracts including such two-tiered systems were negotiated for about 1 million American workers.

Public Employee Pay Trends

Public employees nationwide in 1986 earned about \$9 an hour--or about one-third less than unionized private workers, according to Business Week magazine. But between 1982 and 1986 public employees represented by unions consistently won higher average annual pay raises than did unionized private workers. Those annual increases ranged from a high of almost 9 percent in 1982 to nearly 6 percent in 1986.

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