

INCOME DISTRIBUTION IN KUWAIT

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Since the 1950's immigrant labor has had a direct effect on the supply of labor in Kuwait and it has also played an important role in the development of the state and the building of its infrastructure.

About seventy percent of the labor force is foreign, on every level, the country depends heavily on non-Kuwaiti labor. For example, in 1970 only one doctor in 15, one nurse in 32, one engineer in 15, one accountant in 37, one teacher in 5 was a Kuwaiti citizen, 72 percent of the journalists, 79 percent of the managers, 65 percent of the post office workers, 96 percent of the cooks and waiters, 99 percent of the barbers and head-dressers, 93 percent of the cobblers, 95 percent of the bricklayers, carpenters and construction workers, and 90 percent of the stenographers and typists were expatriates.

Such a steady flow of immigrant labor has had a serious impact on the population structure: Kuwaitis are increasingly becoming a shrinking minority in their own country. Thus while the indigenous population comprised 47 percent of the total population in 1970 they made up only 41 percent in 1980⁽¹⁾. In addition to affecting the internal homogeneity of Kuwaiti society, the presence of a «foreign majority» is bound to have some bearing on the degree of egalitarianism in the distribution of income. This paper is in two parts: The first investigates the distribution of income that has developed in Kuwait 25 years after the first oil shipment was made (1946). The second uses regression analysis to identify the major income determinants among families in Kuwait.

The data base we have is the 1972- 73 demographic and budget survey kindly provided to the author in its computerized raw and micro form by the Planning Board of Kuwait. The survey was well planned and carefully executed, and the data collected are extremely detailed. A stratified sampling procedure was used to draw a sample of 1,188 households, representing 1.12 percent of the total households living in the country during the survey period.

HOUSEHOLD DISTRIBUTION OF INCOME

To give a statistical description of income distribution in the country, we scrutinize the Planning Board's 1972- 73 microdata and present the deciles' share by components in Table (1). The richest decile gets 35.5 percent of the total family income, consumes 26 percent of the total consumption, earns 22.3 percent of the total wage and salary payments, receives 79 percent and 96 percent of the total business and property incomes respectively and about 53 percent of the total income from stock investments.

The poorest decile, on the other hand, receives just below two percent of the total income, consumes 2.8 percent of society's total consumption, earns 2.3 percent of the total wage and salary bill, receives two-tenths and nine-tenths of one percent and nine-tenths of one percent of society's business and property income and nothing of society's income from bonds and securities.

Using the World Bank's classification, Kuwait may be classified as a country with moderate inequality at a high per capita income. Moderate inequality, according to the World Bank's definition obtains when the poorest 40 percent of the population receives between 12 and 17 percent of society's income. In Kuwait, the poorest 40 percent receive 15 percent, the middle 40 percent receive 34.4 percent and the top 20 percent receive 50.6 percent of society's total income. Table (2) shows these income shares for Kuwait and selected countries.

In order to identify the size distribution of income, we need a criterion or summary statistic. The problem of what summary statistic to use in describing an income distribution and what measures of inequality are appropriate is an old one. The most commonly used measures are the coefficient of variation, the variance of the logarithm of income, and the Gini coefficient. The coefficient of variation is defined as the standard deviation divided by the mean income and is unit free.

Table (1)
Income Distribution in Kuwait 1972- 73
by Components
Share in (%)

Family decile	Total Income	Total Consumption	Wages and Salaries	Business Income	Property Income	Stock Investment Income (Bonds and Securities)
Poorest	1.9	2.8	2.3	.02	.09	0
2nd	3.2	4.0	3.7	.40	.7	0
3rd	4.4	5.1	4.9	.80	0	4.7
4th	5.5	7.0	67.0	.5	.1	2.0
5th	6.6	8.2	8.3	1.2	.3	0
6th	7.7	9.3	9.2	1.4	.9	1.1
7th	9.0	9.9	11.2	1.1	3.0	35.2
8th	11.2	12.7	12.3	7.6	5.3	0
9th	15.1	15.2	19.0	8.1	4.0	4.5
Richest	35.5	26.0	22.3	79.0	86.0	52.5

Source: Computed from Microdata of the Budget Survey 1972- 73.

Table 2
Income Shares of the Lowest 40%
Middle 40% and Top 20% of the Population
in Kuwait and Selected Countries

	Year	Lowest 40%	Middle 40%	Top 20%
A. High Inequality: (share of lowest 40% is less than 12%)				
Iraq	1956	6.8	25.2	68.0
Tunisia	1970	11.4	33.6	55.0
Turkey	1968	9.3	29.9	60.8
Brazil	1970	10.0	28.4	61.6
Columbia	1970	9.0	30.0	61.0
Mexico	1969	10.5	25.5	64.0
South Africa	1965	6.2	35.8	58.0
Venezuela	1970	7.9	27.1	65.0

Table (2) (Cont'd)

	Year	Lowest 40%	Middle 40%	Top 20%
B. Moderate Inequality: (share of lowest 40% between 12% and 17%)				
India	1964	16.0	32.0	52.0
Iran	1968	12.5	33.0	54.5
Lebanon	1960	13.0	26.0	61.0
Chile	1968	13.0	30.2	56.8
Norway	1968	16.6	42.9	40.5
Sweden	1963	14.0	42.0	44.0
Kuwait	1972- 73	15.0	34.4	50.6
C. Low Inequality: (share of lowest 40%, 17% and above).				
Pakistan	1964	17.5	37.5	45.0
Korea	1970	18.0	37.0	45.0
Taiwan	1964	20.4	39.5	40.1
Yugoslavia	1968	18.5	40.0	41.5
U.K.	1968	18.8	42.2	39.0
U.S.A.	1970	19.7	41.5	38.8

Source: Chenery, H., Ahluwalia, M., Bell, C., Duloy, J. and Jolly R. Oxford, 1974.

The variance of the logarithms of income is formally defined as:

$$\text{Var} (\log Y) = (1/n) \sum (\text{Log } Y_i - \text{Log } \mu)^2$$

Where Y_i is the *income level of the ^{ith} individual or family* and μ is society's mean income level. The Gini coefficient is the most commonly used summary measure of the Lorenz curve. It is defined as the ratio of area between the Lorenz curve and the diagonal to the total area under the diagonal. It equals zero when income is perfectly equally distributed and equals one when perfect inequality exists. Operationally the Gini coefficients are computed in Table (3) below according to the following formula⁽³⁾:

$$G = 1 + (1/n) - (2/n^2\mu) \{ Y_1 + 2y_2 + \dots + ny_n \}$$

$$\text{for } y_1 \geq \dots \geq y_n,$$

Using our micro-data, we computed the variance of the logarithm of family income for twelve nationality groupings that live in the country.

Table (3)
The Gini Coefficient and Variance of the Logarithm
Kuwait 1972- 73

	Gini Coefficient	Variance of The Logarithm
A. (a) Total Personal Income	.475	.62
(b) Kuwaitis	.483	.76
(c) Non- Kuwaitis	.469	.46
B. (a) Total Family Income	.471	.60
(b) Kuwaiti Families	.483	.70
(c) Non- Kuwaiti Families	.469	.45

Such a procedure might be helpful in understanding the breakdown of total family income-inequality among different groups. The following table gives estimates of this measure of dispersion.

Table (4)
Inequality by Nationality Grouping
(Variance of the Logarithm of Income)

	σ^2 Log Y		σ^2 Log Y
Other Arabs	.61	Syrians	.70
Other Nationalities	.46	Lebanese	.67
Pakistanis	.37	Egyptians	.61
Indians	.50	Iranians	.78
Iraqis	.69	Saudis and other Gulf Nationals	.69
Kuwaitis	.88		
Palestinians	.61		

Source: 1972- 73 Budget Survey, Micro-data.

The above estimates indicate that the distribution of income is more equitable among non-Kuwaiti than among Kuwaiti households. The next section identifies the major household income determinants and sheds some light on the resultant distributional scheme.

Household Income Determinants

We ran various regressions in an attempt to find the best statistical explanation of the variation in income among families. We select

regressions 2 and 3 as our «best fits» and the discussion of the findings will mainly focus on them. However, we present a third regression result which uses dummy variables for assests. (4)

Using the method of least squares, we estimate the parameters of the following regression equation:

$$\log \hat{Y}_i = \alpha_0 + \sum_{i=1}^n \alpha_i X_{ij} + \varepsilon$$

Where j stands for family i for a variable, $\log Y_i$ is the logarithm of the family income, X_i ($i = 1, \dots, n$) are n independent variables, continuous or dummy, α_i and ε_i are parameters to be estimated, and ε_j random error terms with expected value of zero and constant unknown variance.

Table (5) sets forth a list of all the independent variables, which we ran in one or more of the regressions.

1. At the outset, let's notice that the explanatory power of the regressions is higher when a dummy variable for nationality is included in the set of independent variables (R^2 increases from .46 to .54 in regression 1. and from .55 to .64 in regression 2.).

2. All the regressions that we ran have one common property among them: the coefficients of education, age, experience, (5) incomeproducing members in the family, family size, business assets and landownership are larger for Kuwaitis than for non-Kuwaitis. All of these variables are also significant as indicated by their t-values.

3. The same observation holds with respect to the coefficient of four occupations (general and administrative employees, executives and clerical, sales employees, service employees): their coefficients are larger for Kuwaitis than for non-Kuwaitis. However, the non-Kuwaiti coefficients are larger than the Kuwaiti coefficients for workers engaged in agriculture and fishing and for skilled and unskilled workers. While the coefficients are larger, their t-values show that they are insignificant.

4. Kuwaiti families whose main bread earner is self-employed or is a merchant (the two occasionally overlap: self-employed people whose business is trading in commodities) earn more income, *ceteris paribus*, than the rest of the households- both Kuwaitis and non-Kuwaitis.

5. Four interaction terms between human and nonhuman wealth variables (education times age, ages times land assets, age times ownership of bonds and securities as well as education times business assets) turn out to have larger coefficients for Kuwaitis than for non-Kuwaitis. However, many of these coefficients are insignificant.

Table (5)
Definition of Variables

ORIGINAL	DERIVED (REGRESSORS)
A. Human Capital Variables	
1. Education ^(*) 2. Education Squared 3. Age ^(*) 4. Age Squared 5. No. of Income- Producing Members 6. Family Size 7. Experience 8. Experience Squared	X_1 = years of schooling X_2 = years of schooling, squared X_3 = actual years of age X_4 = actual years of age, squared X_5 = no. of family members who are actively employed X_6 = actual no. of family members X_7 = actual years of experience X_8 = actual years of experience, squared
B. Nonhuman Capital Variables	
9. Business Assets 10. Land Ownership 11. Securities and Bonds 8. Business Assets 9. Land Ownership 10. Bonds and Securities	X_9 = actual value of assets X_{10} = actual value of land (housing) assets X_{11} = actual value of assets X'_9 = business assets = 1 if owns, 0 if otherwise X'_{10} = land ownership = 1 if owns, 0 if otherwise X'_{11} = bonds and securities = 1 if owns, 0 if otherwise
Employment[*]	
12. General and Business Administrators 13. Executive and Clerical Emoyees 14. Sales Emoyees 15. Service Emoyees 16. Agricultural and Fishing Workers 17. Skilled Laborers 18. Unskilled Laborers 19. Self-Employed 20. Nationality	X_{12} = 1 if (G and BA), 0 if otherwise X_{13} = 1 if (E and CE), 0 if otherwise X_{14} = 1 if (S.E.), 0 if otherwise X_{15} = 1 if (Service Emoyees), 0 if otherwise X_{16} = 1 if (A and F.W.), 0 if otherwise X_{17} = 1 if (S.L.), 0 if otherwise X_{18} = 1 if (U.L.), 0 if otherwise X_{19} = 1 if (Self-Employed), 0 if otherwise X_{20} = 1 if Kuwaiti, 0 if otherwise

(*) Refers to the household's head.

The impact of the association between years of education and business assets on the level of non-Kuwaitis families' income is negative. This is probably due to the fact that the highly-educated non-Kuwaitis are typically engaged in scientific, professional and administrative types of

jobs in the government sector. They live on handsome amounts of compensations, and their geographic mobility - due to their higher level of education — is probably high. So they do not invest in business assets in the country. Instead, they may choose to save and invest in their own home countries, (not necessarily in business ventures) to which they return after the expiration of their contracts with the government (e.g., Egyptian, Syrian, Jordanian teachers, doctors, engineers and administrators). It could very well be true too that higher education increases the person's awareness of the real rate of return (6) on investments in and outside his country of residence. If this is true, and if the property, business and corporate investment laws in Kuwait do discriminate against non-Kuwaiti investors outside the country than within the domestic investment outlets, it is a foregone conclusion that educated non-Kuwaitis would channel their savings outside the country.

The rate of return outside the country might be higher too because of the exchange rate policies of the countries from which labor emigrated to Kuwait. As an example, the Egyptian authorities try to encourage remittances from Egyptians working abroad by allowing them to convert the Kuwaiti dinar into the Egyptian currency at the parallel rate, « which provides a good incentive to such people to convert their savings into Egyptian pounds» . (7) Less educated non-Kuwaitis who presumably earn less income try to supplement their low incomes by opening up small shops and businesses (e.g. foodstands on the street curbs, vegetable and fruit stands, barbe^r shops, etc.)

6. Business assets when associated with age have an insignificantly positive effect on income of Kuwaitis and non-Kuwaitis: For Kuwaitis, it is plausible that as the business-owning group ages, the accumulated returns on its initial and subsequent investments increase.

For non-Kuwaitis, it is possible that older people have stayed in the country a longer period of time. ⁽⁸⁾ Their length of stay might facilitate and increase their acquisition of business assets by decreasing the information costs about profitable investment outlets as well as establishing good and amicable relationships with Kuwaiti and non-Kuwaiti partners. Alternatively, older non-Kuwaitis who have stayed long enough in the country eventually make it in the business world through trial and error.

7. The interaction term between education and land ownership has a negative impact on income in the case of Kuwaiti families and a positive impact in the case of non-Kuwaitis. However, the coefficients are again insignificant.

The parameter of the interaction term $E \times S$ — education times securities and bonds- assets is higher for non-Kuwaitis than for Kuwaitis. But, both are positive indicating that perhaps as peoples' scholastic investment in themselves increases, their bonds and securities investments increase too. On the other had, the parameter of the interaction term $A \times S$ — age times assets which take the form of bonds and securities — while positive for Kuwaitis is insignificantly negative for non-Kuwaitis, it is not apparent to us why $A \times S$ should have a negative coefficient.

A final result that emerged from our regression estimates is the confirmation of the pattern of inequality that we depicted in the first part of the paper. The variance of the logarithm of family income is .76 for Kuwaitis, .62 for the total population and .466 for non-Kuwaitis.

Our model above is thus capable of explaining about two-thirds of the income inequality among families. About one-third of inequality is not explained by our model. Perhaps a more complete model, based on a larger number of explanatory variables could explain a larger portion of inequality in Kuwait. Until now, various data deficiencies preclude the construction and estimation of such a model. However, the identification of two-thirds of the interfamily causes of inequality, we feel, would increase the decision-makers' chances of hitting the social target (i.e., inequality reduction) by simply better focusing at its various identified components.

Table (6)
Regression Results (1)
Using Dummy Variables for Nonhuman Wealth
Total Kuwaiti and Non-Kuwaiti Families

	Total with Nationality	Total Without Nationality	Kuwaitis	Non- Kuwaitis
Education	.0941 (.01167)	.0806 (.01260)	.134 (.0237)	.0901 (.0135)
Education Squared	-.00158 (.00072)	-.00160 (.000783)	-.00436 (.00182)	-.00105 (.000813)
Age	.06672 (.00868)	-.0493 (.00931)	.0790 (.0125)	.0616 (.0147)
Age Squared	-.0006476 (.0000965)	.00044 (.000103)	.000742 (.000133)	-.000623 (.000173)
No. of income-pro- ducing members in the family	.28331 (.0204)	.275 (.0221)	.2964 (.03094)	.258 (.0288)

Table (6), (Cont.)

	Total with Nationality	Total Without Nationality	Kuwaitis	Non- Kuwaitis
Family Size	.02488	.0425	.0278	.0101
Business ownership	(.00576)	(.0061)	.00841	(.00876)
	.1686	.0739	.161	.0184
Land ownership	(.0363)	(.0387)	(.0697)	(.0419)
	.4479	.666	.419	.00193
Bonds and securities	(.0664)	(.07006)	(.0811)	(.207)
	.2921	.329	.186	.446
General and business administrators	(.139)	(.1507)	(.203)	(.206)
	.0431	.0547	.0345	.0697
Executive and clerical employees	(.114)	(.1230)	(.267)	(.141)
	.0811	.576	.0200	-.0638
Sales Employees	(.0559)	(.606)	(.123)	(.0655)
	.1781	-.191	.308	.0390
Service employees	(.0703)	(.0726)	(.146)	(.0782)
	-.208	-.107	-.166	-.00164
Agricultural and fishing	(.0599)	(.0645)	(.121)	(.0817)
	-.143	-.144	-.292	.372
Workers	(.1511)	(.1637)	(.293)	(.204)
Skilled Laborers	-.0396	-.0779	-.602	
	(.043)	(.0778)	(.168)	.0871
Unskilled laborers	-.258	-.2871	-.1711	(.0887)
Nationality	(.0547)	(.0593)	(.118)	.0505
	.553	—	—	(.052)
Constant	(.03905)			
R ²	4.86789	5.41037	.94274	5.0041
N	.54	.46	.54	.49
Variance of (Log Y)	1163	1163	481	682
	.62	.62	.76	.466

Standard errors in parentheses.

Table (7)
Regression Results (2)
Total Families: No Interaction Terms

	Total Without Nationality	Total With Nationality
Education	.061689 (.0115)	.1374 (.0145)
Education squared	-.000528014 (.000716)	-.00632 (.001135)

Table (7) (Cont'd)

	Total Without Nationality	Total With Nationality
Age	.036143 (.00839)	.3123 (.0703)
Age squared	-.00027362 (.0000924)	.00129 (.000866)
No. of income-pro- ducing members in the family	.2589 (.0202)	.26879 (.0184)
Family size	.044556 (.00555)	.02659 (.00516)
Business assets	.00000466 (.000000406)	.00000424 (.000000369)
Land ownership	.000000254 (.000000575)	.00000197 (.00000052)
Securities and bonds	.0000224 (.0000118)	.0000153 (.0000107)
General and business administrators	.01728 (.112)	.0488 (.102)
Executive and clerical employees	.03062 (.0556)	-.006085 .0505
Sales employees	.003396 (.0721)	.00174 (.0654)
Service employees	-.0478 (.0591)	-.1439 (.0539)
Agricultural and fishing	-.08456 (.149)	-.07221 (.1355)
Skilled laborers	-.05749 (.0710)	-.01959 (.0644)
Unskilled laborers	-.2321 (.0545)	-.205 (.0493)
Nationality	—	.5045
Experience	.1801	(.0341) .2303
Experience squared	(.0672) .000921	(.0450) -.000811
Constant	(.000882)	(.000864)
R ²	5.67858	.7333364
Variance of (Log Y)	.55	.64
N	.62 1163	.62 1163

TABLE (8)
Regression (3): Total (with
nationality variable), Kuwaitis and Non- Kuwaitis

	Total Families	Kuwaitis	Non-Kuwaitis
Education (E)	.0771 (.0119)*	.081 (.042)*	.053 (.0196)
Education squared	- .071 (.000698)	- .0040 (.00189)	- .00064 (.00078)
Age (A)	.0569 (.00774)	.062 (.0146)	.049 (.0145)
Age squared	-.00059 (.000088)	-.00054 (.000146)	-.00055 (.00017)
No. of income- producing members	.266 (.0184)	.289 (.031)	.273 (.0282)
Family size	.0283 (.0052)	.035 (.0085)	.017 (.0084)
Business assets (B)	.0000067 (.00000063)	.0000024 (.0000026)	.0000067 (.0000053)
Land ownership (L)	.000042 (.000077)	.0000097 (.0000041)	.0000008 (.087)
Bonds and Securities (S)	.000078 (.00012)	.000048 (.000115)	.00156 (.68)
General and business administrators	.044 (.101)	.1697 (.27)	.054 (.14)
Executive and clerical employees	.0054 (.051)	.158 (.13)	.029 (.063)
Sales employees	.025 (.066)	.197 (.159)	.052 (.079)
Service employees	-.133 (.055)	-.032 (.126)	-.054 (.0797)
Agriculture and fishing	-.611 (.136)	-.011 (.302)	-.41 (.196)
Skilled workers	-.026 (.065)	.0533 (.17)	.152 (.086)
Unskilled workers	-.201 (.0495)	-.03 (.122)	-.0918 (.0495)
Nationality (N)	.121 (.014)	----- -----	----- -----
Self- employed	.234 (.070)	.720 (.134)	.68 (.078)

Table (8) (Cont'd)

	Total Families	Kuwaitis	Non-Kuwaitis
N × E	.0044 (.059)	—	—
N × A	.0101 (.0077)	—	—
N × B	.0000035 (.00299)	—	—
N × L	.00004 (.00000072)	—	—
N × S	.000024 (.00012)	—	—
E × A	—	.0014 (.00083)	.00076 (.00038)
E × B	—	.00000009 (.000000136)	-.000000004 (.00000015)
E × L	—	-.00000012 (.00000024)	.00194 (.00198)
E × S	—	.0000005 (.0000035)	.00095 (.0041)
A × B	—	.000000049 (.000000054)	.0000002 (.00000013)
A × L	—	.000000024 (.00000010)	-.0024 (.00265)
A × S	—	.0000013 (.0000027)	-.0038 (.0166)
Constant	5.419429	5.2044	5.35
R ²	.65	.54	.54
∝ ² (Log Y)	.62	.76	.466
N	1163	481	682

* Standard errors in parentheses.

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- (1) Ministry of Planning, **Population Census**, Kuwait, 1980.
- (2) Watts, H. and J. Peck «On the Comparison of Income Redistribution Plans» in The **Personal Distribution of Income and Wealth**, Smith J. (ed.) for the Nations Bureau of Economic Research, N.Y. 1975.
- (3) Sen, A. **On Economic Inequality**, Oxford London 1973.
- (4) Our individual observations on sources of family income do not give us the values of the assets owned by households. Rather, they give us the returns on various asset:

owned by households. For this reason, we employed in regression 1 dummy variables for assets. However, we tried to estimate households' assets by multiplying the yearly returns on various assets owned by each household times the prevailing domestic interest rate (5%) in 1972. As a result, our estimated coefficients for assets (in regressions 2 and 3) are probably less efficient than those obtained in regression 1. But, by comparing the estimated coefficients when continuous regressions for assets are used with those obtained from regression 1, we may say that the degree of inefficiency (if any) does not significantly affect the conclusions in the text.

- (5) Notice that we employed in regression 2 both age of the householdhead and his experience. Experience is estimated using the method discussed in A. Blinder below. While experience turned out to be significant, the explanatory power of the model did not decrease when we dropped it. In regression 3 we initially had included it among the independent variables, but the sign of its parameter came out insignificantly negative. The explanatory power of the model hardly changed at all when we dropped it out in regression 3. For a justification of our procedure see Blinder, A., «On Dogmatism in Human Capital», **Journal of Human Resources**, v. XI, no.1, Winter 1976, especially p.19.
- (6) For similar reasoning, see Carvajal, M. and Geithman, D., «An Economic Analysis of Migration in Costa Rica»- in **Economic Development and Cultural Change**, October 1974.
- (7) Wilson, R., **Trade and Investment in the Middle East**, Holmes and Meier. N.Y. 1977.
- (8) On this possibility, se for example, Szurovy, G. and Al-Issa, S., "Expatriate Labor in the Arabian Gulf: Problems, Prospects and Potential Instability" in **Journai of the Social Sciences, Kuwait Univ.**, v. VI, no.3, October 1978.