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TARIFF CONCESSIONS IN THE KENNEDY ROUND
AND THE STRUCTURE OF PROTECTION IN WEST
GERMANY: AN ECONOMETRIC ASSESSMENT

by

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TARIFF CONCESSIONS IN THE KENNEDY ROUND AND THE STRUCTURE OF
PROTECTION IN WEST GERMANY: AN ECONOMETRIC ASSESSMENT*I. Introduction

It is well documented that the structure of tariffs in industrialized countries affords the greatest protection to relatively (unskilled) labor-intensive branches of industry (Constantopoulos, 1974, and references therein). Since we know from the Stolper-Samuelson theorem that this implies an improvement in the relative reward for services of labor, in particular unskilled labor, the political motive for such a tariff policy is obvious.

In recent years industrialized countries have loudly proclaimed their dedication to the principles of free-trade and their intent to counterbalance the disadvantageous trade position of the less developed countries. While progress on the latter objective has been modest (Murry, 1973), great gains have been achieved in lowering tariff barriers. The most significant advances in this regard were effected in the GATT Kennedy Round (1963-67), which produced an average 35 percent reduction in tariff levels of non-agricultural products, by far and away exceeding any reductions negotiated in previous GATT rounds. An interesting question in light of industrialized countries practised, as well as proclaimed dedication to trade liberalization is whether their tariff policy continues to be designed with labor's short-run interests in mind.

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An interesting study addressed precisely to this question has recently been carried out analyzing United States tariff reductions negotiated in the Kennedy Round (Cheh, 1974). The purpose of the present paper is to examine the same question, using a similar method for the case of West Germany. The results of the West German case are particularly interesting in the way that they compare to those found for the United States. For this reason we re-introduce in some detail Cheh's model and findings for the United States. It should also be noted in the introduction that the present study owes its existence to a recent, detailed study of the structure of protection in West Germany from which the bulk of the data analyzed here are drawn (Donges, et al., 1973).

II. The Labor Adjustment Cost Hypothesis

Cheh's study of tariff policy in the United States marks a departure from earlier studies in that the analysis focused on changes in tariffs rather than their levels. As Cheh pointed out, the structure of tariff levels at any one point in time is the product of a whole host of interacting factors, many of which are historical and perhaps no longer relevant in reflecting the prevailing outlook of policy-makers. Since the focus of Cheh's study (as well as the present one) was not confined to the broad issues of whether the tariff structure protects labor or capital, but rather to analyze the current (Kennedy Round) thinking of policy-makers, the preferable dependent variable is inter-industry variation in tariff level reductions.

Aside from its success, a unique aspect of the Kennedy Round was the adoption of a "linear" (uniform percentage) rule of tariff reduction, as opposed to the item-by-item

negotiations of previous rounds. This agreement itself suggests that the participating nations had abandoned the status quo trade policy. However, as is frequently the case with rules, negotiating parties found ample excuse to evade the rule and to make demands for exceptions far in excess of the "bare minimum" stipulated in the agreement. In the case of the United States, over one quarter of the nearly two thousand items considered were exempted from the linear reduction rule. It was these exceptions to the rule which provided the basis for Cheh's examination of the nature of U.S. tariff policy in the Kennedy Round. In the case of West Germany, reductions in the nominal external (non-EEC) tariffs between 1964 and 1972 varied between industries (at the level of aggregation analyzed here) with a standard deviation of 12 percentage points (see Appendix Table II), implying that the EEC, likewise, took advantage of the exception clause of the linear reduction rule.

The central hypothesis of Cheh's study is that "... inter-industry variation in U.S. percentage tariff reductions in the Kennedy Round reflect a governmental policy of minimizing labor adjustment problems consequent on tariff cuts" (Cheh, p. 325). The hypothesis states, in other words, that while subscribing to freer trade, the United States policy was to maintain in so far as it could, the status quo position of relatively labor-intensive industry. In testing this hypothesis, the "dependent" variable preferred by Cheh (for reasons discussed below) was the percentage reduction in nominal tariff rates across industries, adjusted for corresponding changes in non-tariff barriers between 1964-72. The "independent" variables proposed to proxy the short-run labor adjustment cost occasioned by tariff cuts (and hypothesized relationship to the dependent variable) were:

- (1) Total employment in an industry, reflecting an industry's potential political leverage (negative)

- (2) Labor use (labor-output ratio), reflecting the employment sensitivity of an industry to a given decline in sales (negative)
- (3) Percent of workers classified as unskilled, indicating the mobility of workers in an industry (negative)
- (4) The percent of old-workers (over 55 years of age), for the same reason as (3) (negative)
- (5) Average annual growth of industry 1958-63, to reflect an industry's strength prior to negotiations (positive)
- (6) The initial tariff level, accounting for the absolute magnitude of a given cut (negative).

Employing multiple regression analysis Cheh found that " ... as much as 50 percent of inter-industry variation in reductions in nominal tariff and non-tariff rates negotiated by the United States at the Kennedy Round may be accounted for by our variables that proxy labor adjustment costs" (Cheh, p. 335). Before looking more closely into Cheh's findings (presented in Appendix Table I) we shall present the results of a similar experiment on West German data from which some comparative conclusion may be drawn.

III. The Structure of Tariff Reductions in West Germany

It should be stressed from the outset that no pretention is made to "explain" the motives of West German policy-makers or to ascribe the statistical results presented below to their conscious policy objectives. Indeed, it would be foolhardy to even attempt such an undertaking since decisions on external tariffs including those negotiated in the Kennedy Round are determined jointly by the EEC as prescribed under the articles of the Rome Treaty. We feel it is of sufficient

interest to ascertain whether observed changes in tariffs are consistent with hypothesized motives of policy-makers, be the results the product of accident or design.

As was argued above, changes in protection levels should provide a clearer indication of prevailing policy than levels of protection which may reflect a host of historical factors. Furthermore, Cheh has argued that changes in nominal tariff rates are to be preferred to effective tariff rates in addressing the question at hand since it is most likely that it is the former that policy-makers and pressure groups have in mind in defining their objectives. While accepting the reasoning, we shall examine for comparative purposes both nominal and effective rates. Two different measures of change in protection between 1964-1972 available in the Kiel study (Donges, et al.) are used as dependent variables:

- (1) percentage reduction in nominal tariff rates (NT) vis-à-vis non-EEC countries, 1964-72
$$\text{NTR } 64-72 = (\text{NT } 64 - \text{NT } 72) / \text{NT } 64$$
- (2) percentage reduction in effective rates of total protection (EP) vis-à-vis non-EEC countries, 1964-70
$$\text{EPR } 64-70 = (\text{EP } 64 - \text{EP } 70) / \text{EP } 64.$$

The effective total protection variable is a composite variable reflecting changes in effective tariffs and the tariff equivalents of non-tariff trade measures, taxes and subsidies. Comparative analysis of the two dependent variables is of particular interest since it is quite possible that policy-makers substitute alternative forms of protection. Changes in the structure of nominal tariffs might well, therefore, be compensated for by counter-vailing shifts in non-tariff protection measures. Unfortunately dependent variable (2) was not available for 1972.

Results with respect to the two variables will not be comparable, therefore, in so far as the structure of changes in effective total protection between 1970-72 (for which we lack information) differs from that in the previous period, 1964-70.

The set of independent variables used to proxy the short-run labor adjustment cost hypothesis for the West German experiment was similar to that used by Cheh, and was composed of the following (hypothesized relationship to the dependent variable in parenthesis):

- (1) industry employment (L) (negative)
- (2) industry labor-output ratio (LU) (negative)
- (3) index of human capital-intensity (HK) (positive)
- (4) index of regional concentration of the industry (RC) (negative)
- (5) initial level of protection (NT64 or EP64) (negative)
- (6) average annual growth, 1958-64 (G) (positive).

This set of independent variables differs from Cheh's in that the worker-age variable was excluded by reason of data availability, and an additional variable reflecting regional concentration of industry (RC) was included. The relationship between the geographic concentration of an industry and the magnitude of its adjustment problems resulting from a given decline in employment is obvious.¹

Following Cheh, multivariate regression was used to test the hypothesis that inter-industry variation in tariff

¹ For an in-depth analysis of this relationship in the case of West Germany, see Dicke, et al., 1976.

reductions granted by the EEC in the Kennedy Round reflect a policy of minimizing short-run labor adjustment costs. A linear relationship was assumed between the dependent and independent variables of the form:

$$\left. \begin{array}{l} \text{NTR 64-72} \\ \text{EPR 64-70} \end{array} \right\} = a + b (L) + c (LU) + d (HK) + e (RC) \\ + f (\text{NT64 or EP64}) + g (G) + \epsilon$$

the error term (ϵ) being assumed to have the necessary properties. In testing the hypothesis for West Germany, a step-wise regression procedure was used, entering each variable from the set of independent variables in the order of its explanatory power and terminating the procedure when none of the remaining unentered variables add significantly to the explanatory power of the equation.¹ In addition to regression coefficients and t-statistics, beta-weight coefficients are presented for each entered variable, allowing the evaluation of the contribution of each entered independent variable to the total explained variation in the dependent variable.

The results of the West German case study are presented in Table I. Regressions (1) and (2) show the results of the test of the labor adjustment cost hypothesis with respect to changes in nominal tariffs and changes in effective total protection. In terms of explanatory power the independent variables perform about as well on West German data as they do for U.S. (see Appendix Table I). However, with respect to nominal tariff reductions the labor adjustment cost hypothesis is clearly rejected. The central variable of the hypothesis, (L), intended to indicate the potential political

¹ A 90 percent significance interval was arbitrarily taken as the criterion.

Table I

REGRESSION RESULTS^a - PROTECTION REDUCTIONS AND LEVELS
ON LABOR ADJUSTMENT COST VARIABLES

Dependent Variable Name/Mean/ Std. Dev.	I N D E P E N D E N T V A R I A B L E S							R ²
	Constant	L	LU	HK ^b	RC ^c	NT64 EP64	G	F
1. NTR64-72 .335 .124	.145 (1.968)				.051 .566 (3.112)	.015 .404 (2.218)		.300 (5.3)
2. EPR64-70 ^d .261 .159	-.023 (-.267)	-.223 -.371 (-2.098)		.282 .527 (3.092)		.004 .444 (2.756)		.462 (6.57)
3. NT64 12.089 4.324	17.106 (9.045)			-4.447 -.375 (-2.214)	-.998 -.319 (-1.879)			.308 (5.77)
4. NT72 ^e 7.948 3.025	12.019 (9.982)			-3.616 -.435 (-2.810)	-.824 -.377 (-2.435)			.421 (9.47)
5. EP64 ^d 24.374 17.347	72.375 (3.937)			-21.369 -.367 (-1.882)			-1038.4 -.484 (-2.482)	.229 (3.57)
6. EP70 ^f 16.778 9.944	44.70 (4.142)			-16.52 -.495 (-2.468)			-698.9 -.409 (-2.043)	.230 (3.59)

- Notes:
- Regression coefficients, beta-weight coefficients and t-statistics.
 - Computed by comparing an industry's actual wage bill with that which would occur were labor paid the wage of unskilled labor (see Fels, 1971, Donges, et al. p. 100).
 - Coefficient of variation of industry employment shares in German Federal States (Bundesländer).
 - Airplane and Shipbuilding industries were excluded from the sample for effective protection regressions because of their special circumstances (see Donges, et al., p. 34).
 - In this regression G pertains to growth 1964-72.
 - In this regression G pertains to growth 1964-70.

Source: Donges, et al., and Krengel, selected issues.

leverage of an industry, and which proved to be the single most important explanatory variable of U.S. inter-industry variation, does not appear significant at all in the case of West Germany. Moreover, this finding cannot be attributed to collinearity with other "independent" variables, as is evident in the matrix of simple correlation coefficients presented in Table II. The only independent variables that do enter significantly, (RC) and (NT64), exhibit signs just the opposite to that predicted by the hypothesis.¹ The former result is inexplicable.² The latter, however, suggests that the EEC attempted in so far as it could to execute the plan of tariff harmonization, or écrêtement, which it proposed early in the negotiations as an alternative to the American initiated linear reduction rule (see Preeg, 1970).

Regarding changes in effective total protection (regression 2), the hypothesis appears quite relevant. Two key variables, (L) and (HK), proved statistically significant with expected signs. It would appear that the leverage of German pressure groups has had its primary impact on non-tariff forms of protection, a result that is not at all surprising given that tariff changes are negotiated not by the Federal Republic alone, but jointly with EEC partners. Furthermore, one observes that changes in protection levels have intensified the structural bias giving greatest protection to relatively unskilled labor-intensive branches. At the same time, one observes that contrary to

¹ Note: RC, the coefficient of variation of employment shares in Bundesländer, takes a value of zero when the industry share is the same in all Länder.

² RC is not a very reliable variable at this level of industrial or geographic aggregation. Moreover, there is evidence of collinearity with NR64 (see Table II). Thanks to K. Schatz for pointing this out.

Table II

SIMPLE CORRELATION MATRIX OF DEPENDENT AND INDEPENDENT VARIABLES

	NTR64-72	EPR64-70	L	LU	HK	RC	G	NT64	NT72	EP64	EP70
NTR64-72	-	.217	-.022	.265	.198	.396	-.234	.165	-.359	-.067	-.213
EPR64-70		-	-.278	-.398	.286	.264	-.010	-.050	-.392	.467	.124
L			-	-.061	.225	-.149	.007	.015	.057	-.312	-.282
LU				-	-.319	.091	.005	.234	.116	-.340	-.234
HK					-	.272	.384	-.462	-.538	-.176	-.310
RC						-	-.409	-.421	-.496	-.006	-.086
G							-	-.041	.010	-.200	-.232
NT64								-	.838	.036	.159
NT72									-	.023	.265
EP64										-	.903
EP70											-

Source: See Table I.

expectation, the most highly protected industries have encountered the greatest losses in protection. We must therefore grant the labor adjustment cost hypothesis a somewhat qualified acceptance in explaining inter-industry variation in effective total protection reductions.

Before drawing implications from the results, it is of interest to determine whether trade liberalization has altered the structure of protection in West Germany. In order to shed some light on this question, the absolute levels of tariffs and effective total protection before (1964) and after (1972 and 1970) the Kennedy Round have been regressed on the set of independent variables. Results are reported in regressions (3) - (6) of Table I. Regressions (3) and (4) confirm the findings of previous studies (Donges, et al.; Constantopoulos) that the structure of tariff protection in W. Germany favors labor-intensive industry. Comparing the results of (3) and (4) reveals that despite significant reduction in tariff levels, the structure of tariffs has remained unaltered. The results presented in (5) and (6) reveal that total protection is, likewise, heaviest in labor-intensive branches. In addition one observes that industries which grow the slowest and are therefore presumably the weakest receive the most protection. Comparison of regressions (5) and (6) suggests that this pattern has not been disturbed by the average 26 percent decline in protection levels between 1964 and 1970, but if anything has been reinforced in the process of declining protection.

IV. Conclusions

John Cheh has shown that inter-industry variation in U.S. tariff concessions in the Kennedy Round, as well as changes in total effective protection, can be partially attributed to a policy of minimizing labor adjustment costs consequent on tariff cuts. We have found no evidence to support a similar conclusion with regard to nominal tariff concessions granted by the EEC as they pertain to the German Federal Republic. In fact, we have found that nominal tariffs were reduced the greatest in those industries enjoying the highest levels of protection at the time of negotiations. At the same time, however, we find evidence that reductions in effective total protection have been tempered by consideration of short-run labor adjustment problems. This finding supports Gerhard Fels' (1974, p. 3) contention that "During the Sixties, a shift occurred in West Germany's industrial policy from assistance by trade barriers to assistance by domestic subsidies and tax allowances". A similar shift in the form of protection in the United States is not evident from Cheh's analysis, however. Nevertheless, the results with respect to both countries support the conclusion that while subscribing to freer trade, industrialized countries have continued to maintain a policy compatible primarily with the short-run interests of labor.

In terms of international as well as domestic welfare, however, the West German policy would appear more rational than that of the United States. The principle conclusion of recent developments in trade policy theory is that taxes and subsidies are almost always preferable to tariffs as a means of dealing with domestic distortions, be they real or imagined on the part of policy-makers (Bhagwati, 1971, Corden, 1974). Moreover, although it is generally impossible

to judge the welfare implications of second-best adjustments, it has been shown that adjustments that reduce extreme distortions or that reduce all distortions uniformly, under given conditions, lead to an unambiguous improvement in welfare (Lloyd, 1974). In light of these theoretical propositions, the West German (EEC) policy would appear at least in some respects to be moving in the right direction.

Appendix Table I

PRINCIPLE RESULTS OF CHEH'S ANALYSIS OF U.S. TARIFF CONCESSIONS IN THE KENNEDY ROUND

Regression Results^a - Percentage Reduction in Protection on Labor
Adjustment Variables and Rates of Protection

	Dependent variable	Constant	L	LU	UL	OL	GS	NR1	R ² F-statistic	Number of observations
(1)	NRR1	79.84 ^b (18.83) (4.24)	-0.012 ^c (0.0055) (-2.17)	-0.025 (0.12) (-0.21)	-0.20 (0.16) (-1.25)	-0.38 (0.52) (-0.72)	20.89 (47.69) (0.44)	-0.68 ^c (0.31) (-2.17)	0.34 3.48	48 ^d
(2)	NRR2	82.77 ^b (19.09) (4.34)	-0.021 ^b (0.0056) (-3.71)	0.061 (0.12) (0.51)	-0.24 (0.16) (-1.46)	-0.46 (0.54) (-0.86)	36.96 (48.61) (0.76)	NR2 -0.80 ^b (0.29) (-2.75)	0.50 6.83	48 ^d
(3)	ERR1	72.01 (44.57) (1.62)	-0.0041 (0.013) (-0.31)	0.041 (0.28) (0.15)	-0.47 (0.37) (-1.26)	-0.55 (1.23) (-0.45)	129.53 (116.09) (1.12)	ER1 0.27 (0.26) (1.04)	0.14 1.12	50
(4)	ERR2	85.31 (53.84) (1.58)	-0.026 (0.016) (-1.65)	-0.049 (0.34) (-0.15)	-0.35 (0.45) (-0.76)	-0.53 (1.49) (-0.35)	173.92 (142.57) (1.22)	ER2 -0.031 (0.28) (-0.11)	0.17 1.46	50

^aEstimated coefficients, followed by standard errors and *t*-statistics.
^bCoefficient significantly different from zero at 1 percent level.
^cCoefficient significantly different from zero at 5 percent level.
^dIndustries # 24 (Household furniture) and # 44 (Farm machinery and equipment) have been omitted because they were not subject to any import restrictions during the period of investigation.

- Notes: (i) NNR1: Nominal tariff reduction
 NNR2: NNR1 adjusted for non-tariff measures
 ERR1: Effective tariff reduction
 ERR2: ERR1 adjusted for non-tariff measures
- (ii) Independent variables as defined in Section II.

Source: Cheh, p. 334.

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