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Working Paper

On the political economy of protection in Germany

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On the Political Economy of

Protection in Germany

by

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I. Introduction[*]

1. At a time when protectionist tendencies are on the upswing world wide once again, it is important to gain evidence on the cause of such movements. Proper diagnosis of the determinants of protection may provide a more promising avenue to avoiding discriminatory economic policies than reiteration of the welfare losses of protection has been able to do. For this purpose Germany constitutes a potentially fruitful case study. First, historically, economic and political regimes have varied widely. Second, institutional conditions at the present are unique enough to warrant and require a closer look at the mechanisms which provide protection. Third, Germany constitutes a large and still relative-ly liberal market for the products of the less developed and newly industrialized countries. Hence, trade policy developments in Germany are likely to lead to serious repercussions in those countries.

2. The general framework chosen for analysis of German protective mechanisms posits the existence of a political market for protection, and follows from the work of Downs (1957), Buchanan and Tullock (1962), and Ohlson (1965), as well as the application of this principle to inter-national trade and protection issues by a number of authors[1]. Very brief-ly, the demand for protection on the part of producing units is derived from firms' opportunity costs in eliciting protection; and the supply of protection is derived from governments' opportunity cost in granting protection. In applying this guiding hypothesis to Germany, explanatory

variables are sought which messure or proxy those opportunity costs, both on average over time, and across industries at a point in time. The specific hypotheses tested must in part be derived from institutional features peculiar to Germany. In the next section of this paper, this framework is applied historically to the period 1880 - 1978, and in the section thereafter, it is applied to explain the structure of protection in manufacturing industries in 1974. Developments since then are briefly discussed.

II. Overall Protection and Economic Growth in Germany: 1880 - 1978

A. Hypothesis

3. The central hypothesis is that overall economic conditions determine changes in protection over time. Assuming economic rents lead factors of production to demand protection and makes politicians grant protection, it seems reasonable to argue that protectionist demand depends on the returns of protection for producing units and on the costs of lobbying; the supply of protection would depend on the returns to protection for politicians and on the costs politicians may face when granting protection. The development of national product can be assumed to incorporate both demand and supply factors of protection: the higher overall economic growth the more possibilities for the factors of production to increase their welfare through the market, that is without lobbying. With slow economic growth, and unemployment prevailing, opportunity costs of lobbying are relatively low. Another point which may have been relevant in the German case during the last decade is that in times of slow growth job tenure legislation becomes more and more effective; at the same time entrepreneurs are increasingly aware of the help governments are willing to give in times of recession. Once such a vicious circle is started, inefficiency leads to protection, which again increases inefficiency.

B. Empirical Background

4. In the time series analysis income has been taken as an indicator of
growth prospects. An effort was made to extend the time series back as
far as possible in order to make use of the widely varying political and
economic conditions extant in Germany in the past. Data could be gathered
back to 1880 (excluding both war and post war periods). The endogenous
variable protection is proxied by the average tariff rate[1]. Tariff rates were
calculated by expressing tariff revenues as per cent of dutiable imports
as well as of total imports. This procedure has its shortcomings, the first
of which is well known: the higher import duties, the lower imports; this
problem is relevant when dealing with highly aggregated figures. The
second shortcoming is that there are other protectionist devices, such
as undervaluation, which may work similarly and constitute substitutes
for tariff protection. Furthermore, not all tariff revenues are collected
through ad valorem duties. Specific duties played an important role be-
tween 1880 and 1913 for instance; inflation would then shift "tariffs" down-
wards as time passes. Import prices, however, did not increase between
1880 and 1913; in fact they delined over the whole period by some 2 %
(Hoffmann, 1965)[2].

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[1] It is extremely difficult to accurately assess non-tariff-protection of
Germany, say in 1970, even if one formally enjoys all the help of govern-
ment officials. For example, we once tried over a two year period, to
assess non-tariff-protection on behalf of the German government. Our
main problem turned out to be asking the right questions of the right persons.
There were only few government officials who knew - within their field
of work - how much protection for which goods against which countries
existed. They seemed to get much satisfaction from their monopolistic
knowledge and sometimes were reluctant to give up that position. As
far as asking the right questions is concerned, who would consider
asking - after being informed that a quantitative restriction on "handker-
chiefs, embroidered" is applied against imports from "country list B" -
whether this holds true for only some countries within "country list B",
in fact only for, say, South Korea. Such information is not in the public
domain, and hence not systematically published.

[2] The net national product deflator increased in the same time from
27.2 to 31.9 (1962=100).

5. The development of German average tariff rates on dutiable imports between 1880 and 1978 is shown in Figure 1, together with net national product and the investment share. Starting in 1880, at a rate of 11.6 per cent, tariff rates went up until 1896 (19.8 p.c.). In these years of the Empire , tariffs were a main source of income for the central government. After that, tariffs by and large maintained the 1896 level unit 1913. Beginning at a relatively low rate (9 p.c.) in 1925 (the first year for which data is available after World War I) tariff rates shot up to 64 p.c. in 1938. The most significant increase during this period occurred in the course of the world economic crisis after 1929, but before 1933; i.e. still under the Weimar Republic. After World War II tariffs declined from 1953 (16 p.c.) until 1967 (7.9 p.c.), went up again until 1970 and after another fall to 7.2 p.c. in 1976 continued to rise[1]. The last two upswings of tariffs - between 1967 and 1969 and after 1976 - can be explained as follows: in mid 1968 intra EC-tariffs were abolished; since these tariffs were considerably lower than tariffs on imports from non-EC countries, the rise in the tariff rate reflects a change in the geographical pattern of dutiable imports. The rise of tariffs after 1976 is of a much different kind; it shows the upsurge of "new protectionism" which characterised the EC's trade policy of the last few years. The EC's new protectionism mainly consisted of the introduction of anti-dumping duties; these anti-dumping duties were applied on a large scale to imports of iron and steel products, chemicals, data processing equipment, shoes and wooden products[2].

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[1] Mineral oils have been excluded from the calculations after 1950. They have been undergoing considerable changes in taxation clearly not for reasons of protecting domestic production. The duties were mostly specific. Including mineral oils would lead to a drop in the tariff rate from 12.8 per cent to 9.0 per cent in 1963/64 for example, whereas the figures excluding oil exhibit a slight drop only (from 10.0 p.c. to 9.0 p.c.).

[2] These, and other swings in the data reflecting known changes in protection policy are not visible if total imports are used instead of dutiable imports. See also "Internationaler Vergleich ..." (1979).

Tariff Rates, Net National Product and Investment Ratio

Tariff Rates[b]

NNP[a]

Investment Ratio[b]
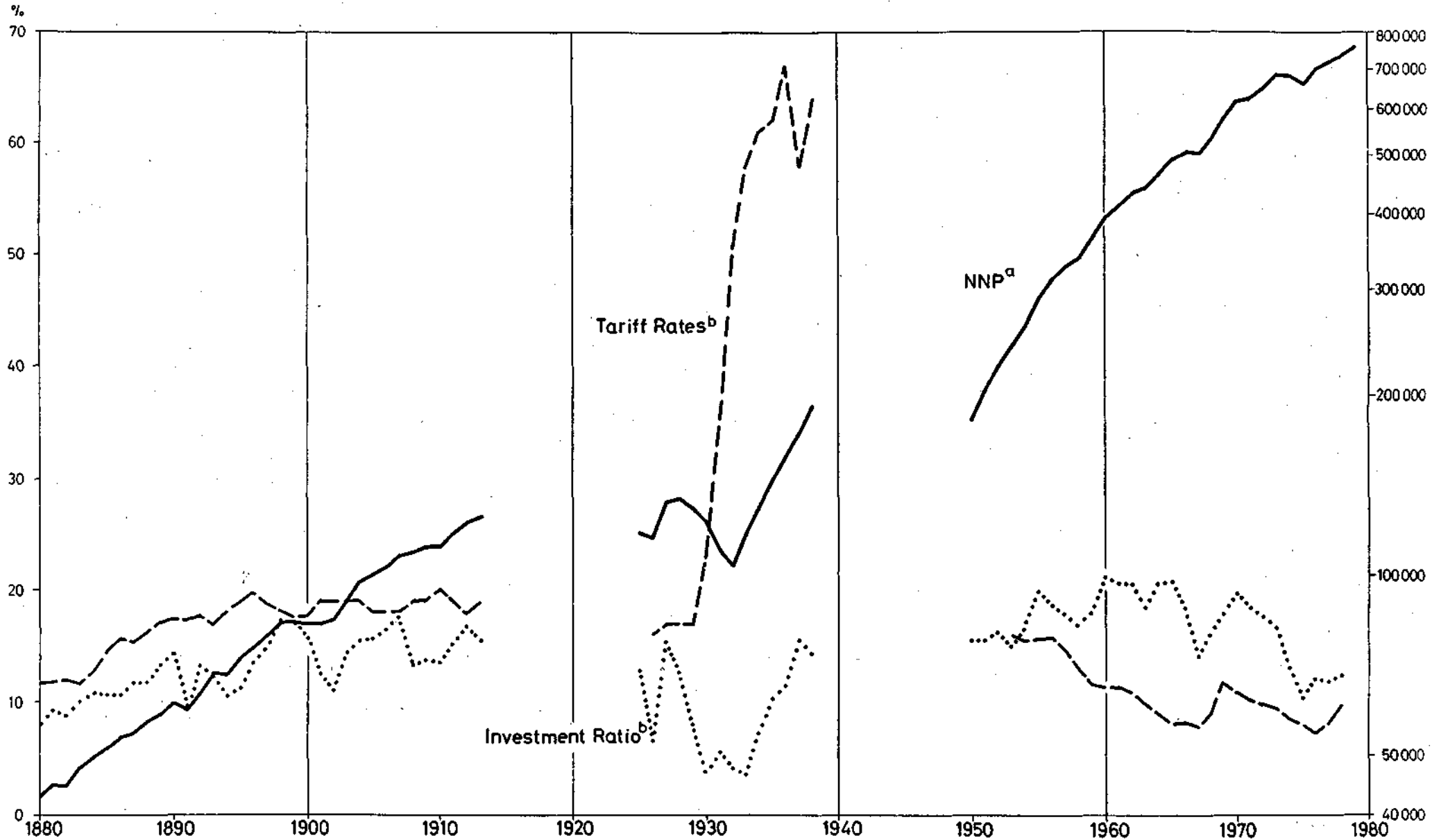
Taken together, the development of the average tariff rate from 1880
to 1978 is not at all implausible: the international delinking of Germany
after World War I for example, and especially the worldwide disintegra-
tion of markets in the course of the economic crisis of 1929, both come
out remarkably well in the "tariff rate". The same applies grosso modo
to developments after World War II, being a time of international integra-
tion of the German economy.

6. Table 1 gives an impression of the structure of tariff protection over
the last hundred years[1]. It is apparent that duties on final goods have
been relatively invariant compared to those on raw materials, the latter
increasing significantly before both world wars. One may argue that
shortly before World War I and between both wars the effective rates of
tariff protection discriminated against final goods, simultaneously en-
couraging domestic production of raw material (substitutes) and dis-
couraging production of final goods as well as - in the interwar period -
production of food and beverages. The steadily declining "tariff rate"
of total imports as opposed to that of dutiable imports after 1953 in-
dicates that more and more products imported from abroad could be
imported duty free, suggesting that overall tariff protection was de-
clining significantly.The bulk of duty free imports, however, was due
to the regional liberalization within the EC. Marginal protection against
suppliers from third countries, as tariffs on dutiable imports indicate,
did not change that much. Indeed, the diverging trends of dutiable and

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[1] Tariff rates on food and beverages, as shown in Table 1, are con-
siderably underestimated regarding the past twenty years. Variable
levies on food imports generally raised import prices until no sub-
stitutes for domestic food production from foreign suppliers were
available within the EC ("Common Agricultural Policy"). Similar
things cannot be observed for the other periods considered; between
1880 and 1913 duties on imported food substitutes were the major
source of tariff revenues.

Table 1 - Rates of Nominal Protection in Germany, 1890 - 1978

Year	Tariff Revenues as % of		Tariff Revenues as % of Dutiable Imports		
	Dutiable Imports	Total Imports	Food and Beverages	Raw Materials	Final Goods
1890	17.4	9.4	21.2	9.9	11.4
1905	18.0	9.0	24.0	7.0	16.0
1913	19.0	6.7	23.0	16.0	15.0
1926	16.0	8.2	17.0	18.0	12.0
1930	23.0	10.4	28.0	27.0	11.0
1938	64.0	30.0	56.0	105.0	22.0
1953	16.0[a]	7.9	17.2	2.5[a]	15.2
1967	7.9[a]	3.8	12.2	4.5[a]	7.9
1976	7.2[a]	1.7	11.4	6.2[a]	7.5
1978	9.9[a]	1.5	11.3	7.1[a]	9.4

[a]Excluding petroleum.

Source: Kaiserliches Statistisches Amt, Statistisches Jahrbuch für das Deutsche Reich, current issues. - Statistisches Reichsamt, Statistisches Jahrbuch für das Deutsche Reich, current issues. - Statistisches Bundesamt, Statistisches Jahrbuch für die Bundesrepublik Deutschland, current issues, and Fachserie G, Außenhandel, Reihe 2, Spezialhandel nach Waren und Ländern, Ergänzungsheft, current issues.

total imports' tariff rates may indicate that suppliers from third countries have been increasingly discriminated against since the 1960s.

C. Tariff Protection and National Income - Regression Results[1]

7. Regressing average tariff protection on total imports between 1880 and 1978 with a simple time trend demonstrates a slightly negative trend over the whole period:

$$\ln \text{Prot} = 2.58 - 0.02\, t \qquad R^2_{adj} = 0.26 \qquad F = 28.3$$
$$(-5.32)$$

This impression is modified when taking into account net national product:

$$\ln \text{Prot} = -64.98 + 0.05\, t - 2.13 \ln \text{NNP}$$
$$(6.21) \qquad (7.71)$$

$$R^2_{adj} = 0.55 \qquad F = 48.9$$

The regression shows that protection declined due to the improvement in real income. Had it not been for this improvement, protection would possibly have increased rather than decreased over the period 1880 to 1978.

8. This is a rather crude way of testing the relationship between income and protection. First, there are 22 years of war and post war years which are left out of the calculation. The political regimes before World

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[1] Throughout the time series analysis there was considerable evidence for serial correlation. Residuals analysis showed, however, that it was mainly smooth, short run cyclical fluctuations which were left unexplained; perhaps an additional variable - like the rate of unemployment - could have delt with this problem of autocorrelation. Reliable employment statistics for the periods under consideration were not available. Thus it should be noted that the t-statistics may not be as good in many cases as has been calculated.

War I, after World War II and in between them cannot easily be thrown together. Indeed, the period between 1880 and 1978 in Germany comprises rather different sets of political circumstances. One may distinguish, in a very general way of course, three periods. The first, between 1880 and 1913, may be called the golden age of growth: internal stability, increasing success on international markets and relatively steady and stable growth seem to have gone hand in hand. The second period, between 1925 and 1938, was a phase of turmoil: high unemployment and high inflation, the breakdown of international economic relations in 1929 and a strongarm economic policy after 1933 favoring cartelization and at the same time pursuing autarchy. Finally, the third phase after 1950 of rapid growth, international reintegration and high social stability until the end of the 1960s. The 1970s again brought relatively low growth, high inflation, unemployment, stronger disintegration tendencies and an increasing importance of governmental rules, regulations and income redistribution. Second, there may be considerable lags between recognition of the need for trade barriers and their application. Some evidence for a lagged relationship between protection and domestic activities is discernible from Figure 1, where after a rapid decline in investment, tariff rates go up (for instance in the years round 1892, 1902, 1930 and 1967); therefore lagged regressions should be applied. Third, it may be argued that it is rather tariff revenues on dutiable imports which represent changing degrees of protection over time.

9. Table 2 gives the relationship between national income and tariff protection for the three periods under consideration, using tariff revenues on dutiable imports as a proxy for protection and applying an Almon distributed lag[1].

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[1] Lags of three to five years and polynominals of degree two and three were tested. The regressions presented in Table 2 are those with the best fit. The time trends matter. Not only is $\bar{R}^2$ consistently lower without the trend but the residuals in all periods exhibit jagged departures from the regression line toward the end of each period.

Table 2 - Tariff Protection and National Income[a], 1880 - 1978

Equation No.	Period	Equation	$\bar{R}^2$	F	D.F.	D.W.
(1)	1880-1913	$\ln Prot = -19.8 + 0.012\ t + 0.011 \ln NNP_t$ $\quad\quad\quad\quad (6.36)\quad\quad (1.814)$ $\quad\quad + 0.057 \ln NNP_{t-1}$ $\quad\quad\quad (1.814)$	0.66	33.5	31	0.38[b]
(2)	1925-1938	$\ln Prot = -347.2 + 0.19\ t - 0.74 \ln NNP_t$ $\quad\quad\quad\quad (20.97)\quad (-3.04)$ $\quad\quad - 0.70 \ln NNP_{t-1}$ $\quad\quad\quad (-7.24)$ $\quad\quad - 0.66 \ln NNP_{t-2}$ $\quad\quad\quad (-2.26)$	0.98	185.5	10	1.93
(3)	1950-1978	$\ln Prot = -50.6 + 0.03\ t + 3.08 \ln NNP_t$ $\quad\quad\quad\quad (2.05)\quad\quad (5.48)$ $\quad\quad - 0.02 \ln NNP_{t-1}$ $\quad\quad\quad (0.03)$ $\quad\quad - 1.15 \ln NNP_{t-2}$ $\quad\quad\quad (-3.67)$ $\quad\quad - 1.22 \ln NNP_{t-3}$ $\quad\quad\quad (-2.60)$ $\quad\quad - 1.26 \ln NNP_{t-4}$ $\quad\quad\quad (-2.13)$	0.82	26.3	23	1.28[b]

[a] t-statistics in parantheses. - NNP adjusted for changes in territory. - [b] See footnote on p. 9.

Source: Calculated from Statistisches Reichsamt (Bundesamt), Statistisches Jahrbuch für das Deutsche Reich (für die Bundesrepublik Deutschland), current issues, and from Glismann, Rodemer, Wolter (1978).

10. Trade policy obviously played very different roles in the three periods under observation. Between 1880 and 1913 protection is positively correlated with net national product (Equation 1). This holds true for the current as well as for a one year lag relationship. Tariffs in this period played an important role in financing government expenditures; tariff reforms were only to a relatively small extent thought of as providing protection to domestic producers[1]. The period 1880 - 1913 began with the central government, the 'Empire', trying to gain financial independence from the states through a tariff reform, when Bismarck tried in vain to increase tariff revenues for the 'Empire.' Only in 1906 did the Imperial Government succeed in getting additional autonomous financing. Thus, increasing national income went hand in hand with increasing endeavours of the Empire. to raise its revenues (Kolms, 1963). This may explain the positive relationship between the income variable and the protection variable.

11. In the first years between 1925 and 1938 slow, if not negative growth, was a major cause for applying trade barriers and propping up employment. The years following 1933 witnessed a consistent policy of autarchy. It may be said that in the period 1925 - 1938 we have an unbiased "pure" relationship between income and protection due to the fact that non-tariff protection played a relatively unimportant role as compared to, say, the 1970s; besides tariffs being the major protectionistic device, no constraints seem to have existed for an undisguised policy of protection (Stolper, 1966). No politician had to argue much in those times when increasing protection directly and openly through tariffs. Constraints due to international commitments or public opinion may be regarded as having been non-existant. This is reflected in the relatively short mean lag of one year as well as the quite good Durbin-Watson statistic (Equation 2). It should also be noted that the observations for 1933 - 1938 are not outliers. Apparently, the policy of autarchy pursued then was a continuation of the trend since 1925 at the latest. Indeed, the period 1925 - 1938 exhibits the highest trend coefficient of all three periods.

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[1] The discussion in 1879 about whether to raise tariffs or not is presented by J. Conrad (1880).

12. The years 1950 to 1978 comprise the GATT-rounds of trade
liberalization as well as the creation of the EC as shaping tariff rates.
Equation 3 shows a positive relationship between current income and
tariff protection and a significant negative relationship for the two, three
and four year lag. The current relationship possibly exhibits the con-
tinuous trend of domestic demand towards relatively highly taxed imports;
this can be observed regarding the product mix of imports - that is the
increased importance of final goods imports as well as changes in the
regional provenance - e.g. the increased importance of less developed
countries as suppliers of consumption goods. The negative lagged relationship
may demonstrate the lagged working of politics when reducing or in-
creasing protection. The lag structure seems to correspond well to the
existing four year election cycle.

13. All in all, the empirical evidence supports the hypothesis that a
political economy of protection has been operative during the more
democratic phases of Germany's past. During the authoritarian Empire
(1880 - 1913) economic growth does not appear to have led to tariff re-
duction. The majority of the observations in the second period fall into
the democratic but unstable Weimar phase, and a short mean lag emerges
for the influence of growth and protection, corresponding well to the hectic
pattern of general elections. Nevertheless, this period is striking for the
importance of the trend, which may be capturing the influence of the des-
integration of the world economy, a process which outlasted Weimar's
demise. Finally, during the third period (1950 - 1978) the political economy
approach comes into its own in a period of stable democracy characterized
by the free operation of interest groups and predictable election cycles.
The empirical results corresponding show a longer lag between changes
in income and changes in protection and a less important though positive
trend component, suggesting unmistakable deliberalization tendencies in
the absence of further economic growth.

III. The Structure of Protection in West German Manufacturing

A. Hypotheses

14. With the founding of the European Economic Community key trade policy instruments have been relinquished by Bonn in favour of Brussels. In fact, however, commercial policy is still determined in both cities, and indeed, in the German provincial capitals as well. Domestically, subsidies of various types, with various aims, have complemented the tariff and quota as major instruments to protect domestic producers from foreign competition. As is the case with tariffs and quotas, the subsidies discriminate among industries; hence, the interindustry structure of production, and with it, the inter regional distribution of trade flows between West Germany and the rest of the world, are affected. For a plethora of ostensible motives - promoting technological change, promoting regional development, creating jobs - and with a wide variety of instruments - access to state guaranteed loans, investment rebates, current subsidies, and tax breaks, federal, state, and local governments, together and individually, protect industries from their competitors in domestic factor markets and hence, against their foreign competitors on the output market.

15. Whatever the motives and means of the agencies granting subsidies, the aggregate effective rate of domestic subsidization along with tariff protection granted at the EEC level, is shown for manufacturing industries in Table 3, which summarizes a unique data set on subsidies compiled by Jüttemeier et al. (1977) for the year 1974[1]. Included are all forms of subsidization, such as the grant element in low interest loans, tax breaks for various purposes, as well as direct financial transfers on the part of federal, state, and local governments.

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[1] Revised data published in Jüttemeier, Lammers (1979). The definition of subsidies herein is far more encompassing than the data available for Riedel's study (1977).

Table 3 - Effective Rates of Assistance to West German Manufacturing[a]
Industries, ca.1974 (per cent of value added)

Industry	ERA[b]	TARPRO[c]	DOMSUB[d]	NONREG[e,f]
Stone and clay products	4.8	3.7	1.1	0.3
Basic iron and steel	17.6	17.0	0.6	0.2
Foundries	12.8	12.1	0.7	0.1
Rolling mills	8.3	7.7	0.6	0.1
Non-ferous metals	24.7	22.3	2.4	0.3
Chemicals	15.7	14.4	1.3	0.8
Saw mills	15.9	13.7	2.2	1.1
Pulp, paper,paperboard	30.5	29.6	0.9	0.2
Rubber and asbestos	9.3	8.7	0.6	0.1
Structural engineering	2.8	1.4	1.4	0.4
Machinery	3.8	2.5	1.3	0.8
Road motor vehicles	6.6	5.8	0.8	0.2
Aircraft	22.6	-0.9	23.5	23.4
Electrical equipment	7.2	4.5	2.7	0.8
Precision mechanics,optics,watches	6.6	4.9	1.7	0.8
Fabricated metal products	6.9	5.6	1.3	0.2
Precision ceramics, pottery	11.0	9.9	1.1	0.2
Glass	12.0	11.1	0.9	0.3
Wood working	10.7	9.9	0.8	0.0
Musical instruments, toys, etc.	7.6	6.9	0.7	0.0
Paper products	20.7	19.9	0.8	0.2
Printing and publishing	9.7	5.3	4.4	3.8
Plastic products	11.1	9.8	1.3	0.2
Leather, leather goods, shoes	9.9	9.4	0.5	0.3
Textiles	22.1	20.8	1.3	0.6
Clothing	22.5	20.7	1.8	0.6

[a]Excludes petroleum refining (reportedly unreliable effective tariff protection estimate) and shipbuilding (reportedly unreliable domestic subsidization estimate). In addition, computing equipment, for which absolute subsidies are available, is allocated to machinery and electrical equipment because of constraint in value added data. - [b]ERA = effective rate of assistance. - [c]TARPRO = effective rate of tariff protection. - [d]DOMSUB = effective rate of subsidization due to all domestic sources. - [e]NONREG = DOMSUB minus effective subsidization attributable to regional aid programs. - [f]Heavy rounding. In subsequent calculations upt to 5 significant digits were used.

Source: Calculated from Donges, Fels, Neu (1973) and Jüttemeier, Lammers (1979).

16. The guiding hypothesis used to explain the structure of protection in fact granted asserts that an underlying economic logic based on the opportunity costs of the business sector in demanding protection and of the political sector in supplying protection is at work in determining differential rates of effective subsidization in Germany.

In the business or interest group sector on the demand side, one would expect that lobbying activities aimed at eliciting protection would be the greater

- the smaller the number of firms in an industry;

- the smaller the number of employees in an industry;

- the greater the regional concentration of an industry.

In all three cases the same rationale applies: communication costs are relatively small for a small number of agents, especially when they are physically close together and problems of excludibility are substantially avoided. In addition, if an industry is in decline, the opportunity costs of protection seeking are reduced for both capital and labor (though conglomerates may find it relatively cheap to respecialize).

17. As for the government, or supply side of protection, declines in an industry's employment are likely to raise protection. Employees in shrinking industries where jobs are endangered are likely to elict public sympathy, and hence, public support and votes for protection, either on altruistic grounds, or as a form of insurance. The altruistic argument would also tend to apply to workers in industries where value added per employee, or human capital, and hence, wages per employee are low.

18. In the case of industry employment, the effect on government is opposite to the effect on interest groups. Because of the greater number of votes at stake, large industries are more likely to be helped, leaving the net effect ambiguous. In the case of regional concentration, a sub-

national region would indeed aid an industry concentrated in its policy, though the response of the national government is by no means clear à priori. Specific institutional conditions have to be taken into account before a hypothesis can be formulated.

19. As for the influence of industry employment, it is important to note that German labor unions are highly encompassing organizations organized along branch lines[1]. Though union membership varies across industries, in effect unions bargain and lobby for all employees of the industry they have organized. This means that communication costs even in large industries are not high. Hence, the propensity to demand protection would not be reduced by increasing size. As a result, employment size is not ambiguous in its influence on protection - it is clearly positive. If, in addition one takes note that German industrial unions are associated in the "Deutscher Gewerkschaftsbund" (DGB) which in turn lives in symbiosis with the Social Democratic Party (SPD), and that individual industrial unions' policies are formulated in consensus with these two organizations, it is clear that the gains any one industrial union may achieve from government intervention will impose costs on other members of the encompassing organizations. Hence, any single industrial union would be loathe to press special interests very hard[2]. This in turn would mean that to the extent that protection is positively associated with industry employment a pure supply response on the part of government is being reflected.

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[1] The encompassingness of interest groups is a point emphasized by Mancur Ohlson (1978) for determining the kinds of policies they will pursue.

[2] It must be admitted, however, that there are signs of a breakdown of such consensus. For example, the labor unions have walked out of joint labor-management-government "Concerted Action", where incomes-policies were negotiated. These agreements, however, were not binding.

20. As for the influence of regional concentration on the inter-industrial structure of domestic assistance, a number of salient features of the German subsidization system need to be taken into account. For the industries examined here, almost half (48. 6 p. c.) the aid received is channeled through various regional development programs. The single most important of these, in turn is the joint federal/state regional development program, half financed by the federal government, and half financed by the states as a group[1]. Aid is distributed to individual regions (rather than to specific industries) based on criteria determined by the federal and state governments jointly through a Planning Commission, which has an idiosyncratic voting procedure: each state has one vote, but the federal government has votes equal to the sum of the number of states. Furthermore, a three-fourths majority is required to carry a proposal (Deutscher Bundestag, 1976). But this institutional set-up implies that individual state interests can easily be stymied: while an industry concentrated in one state may lobby at the state level, and that state may very well desire granting that industry regional aid, that state would have to overcome the opposition of all the other states, as well as the federal government. While state votes could surely be traded, a majority could never be achieved that way. Given perfect trading among states on each issue, the federal votes still constitute a blocking coalition.

21. The issues decided in the Planning Commission within the framework of this program are the specification of towns and cities, along with some of their environs as potential "pôles de croissance", eligible for receiving subsidies, rediced interest loans, and loan guarantees on industrial investment undertaken there. While one may say that to be

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[1] Development aid for the area bordering East Germany is channeled through this program as well. The zonal border area and the other regions eligible for joint program aid constitute two thirds of West Germany's surface and about one third of its population. See Map 1 in "Deutscher Bundestag" (1976).

eligible for agreement on including a specific "pôle", it must have a low per capita income but an industrial base of some kind[1], the states' strategy has been to disaggregate as much as possible and thereby have as many municipalities included in the program as possible. But this provides an additional rationale for regionally concentrated industries to be discriminated against in the context of this program[2]. Hence, for the particular institutional conditions extant in Germany, the regional concentration hypothesis must be differentiated in order to sharpen it: regional aid would tend to discriminate against regionally concentrated industries; all other aid need not.

22. Aid granted industries outside the scope of the joint federal/state program is project or industry specific. Thus, a multitude of individual measures makes up the remaining 51.4 per cent of subsidies to the manufacturing industries considered here. They consist of project specific R&D programs, and industry specific job preservation or restructuring programs and have in common the nature of their distribution: a general legal framework first has to be passed by the Bundestag. Thus, the constraints on log-rolling observable in the Planning Commission on regional development aid are removed. Then, administration of these programs is handed over to the ministerial bureaucracy, with funding passed more or less automatically in the annual budget, once the initial law has been made. Hence,

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[1] A brief description of the formal criteria used is given in Adlung, Götzinger, Lammers, et al. (1979), pp. 171-179.

[2] The second major regional aid program aims at maintaining the economic viability of West Berlin. The subsidy base is similar to that of the joint federal/state development program, namely investment. But this program does not really promote regionally concentrated industry, as West Berlin's economic structure still corresponds quite well to that of the dozen or so major German cities. Indeed, Berlin never had the relative attractiveness for German industry that, say, Paris has to French industry, or London to British industry.

the distribution of funding is subject to the interaction among bureaucratic interests, government and representatives' interests, and the lobbying efforts of the potential recipients. As a consequence one would expect the specific hypotheses advanced by the political economy of protection approach would apply more unambiguously for these non-regional aids.

23. Perhaps the most important single hypothesis for the explanation of the structure of protection specifies the degree of import penetration as a key determinant of commercial policy (Anderson, 1979). Now, while import penetration is only one of the sources for demand for protection, it is important to identify this source separately because the response of government in granting protection may differ from other sources of disturbances. Some of the costs of government intervention aimed specifically against imports will fall upon foreigners who have no votes, or little influence, in shaping domestic policy.

24. In a highly open economy like West Germany, however, exports would have to be treated symmetrically with imports. Any given manufacturing industry, subindustry, or product group, or even firm, will be likely to export and import at the same time[1] (Kravis, Lipsey 1971; Grubel, Lloyd 1975). To the extent that exports and imports are substitutes in production, an entrepreneur may, in the face of stiffening competition from abroad, find it cheaper to switch production from product variants under more pressure to those under less pressure than to invest in lobbying activities. Hence, the structure of competitiveness, or the nature of comparative advantage, rather than import penetration would appear to constitute an important determinant of the structure of protection.

25. While the case can be made that the structure of competitiveness determines the structure of protection, surely the structure of protection also codetermines the structure of competitiveness.   Problems of

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[1] Firms may export their products at the same time that they act as importers (wholesalers) of products with which to complement their assortment.

simultaneity creep into the testing of the hypothesis that the structure of protection is determined by the structure of competitiveness. However, an expedient consistent with institutional conditions in Germany suggests itself. While the structure of protection at a given point in time influences the structure of competitiveness at the same point in time, the reverse causal process takes time to work itself through the political process. Hence, one would expect protection to be influenced by an earlier state of comparative advantage. Indeed, all of the exogenous forces bearing on the structure of protection require time to work their way through the political process.

26. The final major hypothesis to explain protection in Germany also depends on an institutional idiosyncracy, namely the country's membership in the EEC. Subsidies granted by German governments add their allocational impact to that of protection granted in Brussels. Protection at the EEC level would tend to reduce the quantity of protection demanded at various domestic levels, i.e. it is hypothesized that protection from the two sources are substitutes, though how well they substitute for one another is an empirical question.

B. Empirical Tests

27. The empirical counterparts to these constructs are relatively straightforward:

- Value added per employee (1972); number of firms (1970), number of employees (1970); and change in the number of employees (1964-1970) are directly available.

- Human capital intensity (1970) was measured according to a concept introduced by Kenen (1965) and amended by Fels (1972) as the difference between average hourly earnings (by industry) and the hourly earnings of an unskilled worker in each industry. This sum constitutes the renumeration to labor over and above the disutility incurred by the unskilled in each industry.

- Competitiveness is measured as a variant of "revealed comparative advantage" (Balassa, 1967) for the year 1970 as

$$RCA_{ij} = (x_{ij}/m_{ij}) \ / \ (\textstyle\sum_i x_{ij}/ \sum_i m_{ij})$$

where x and m are exports and imports respectively and i and j are industry and country indices. This measure possesses the desirable property that equiproportionate decreases in exports and increases in imports have identical effects of opposite sign on the demand and supply of protection.

- Regional concentration is measured as the coefficient of variation of each industry's share in total industrial employment across 11 states.

- Effective tariff protection by industry was available for 1972.

28. Regressions run to explain the structure of domestic subsidization to manufacturing are shown in Table 4. Equation 1 assumes that the source of the disturbance, i.e. competitiveness, is not important. It, and Equation 2, which omits the insignificant variables from Equation 1 and disaggregates value added into human and physical capital do poorly in explaining the structure of domestic subsidization as measured by the F-test. Replacing value added, or its determinants with the structure of competitiveness (Equation 3), which is largely determined by the structure of human capital intensity, considerably improves the results. These results are maintained when competitiveness vis-à-vis non EEC countries (Equation 5) or competitiveness vis-à-vis LDC's (Equation 6) replaces overall competitiveness.

29. The individual coefficients show that domestic subsidization is the greater

- the lower competitiveness,

- the lower the number of firms,

- the lower the regional concentration, and

- the lower is EEC tariff protection.

Table 4 - Determinants of Effective Domestic Subsidization to Manufacturing Industries in West Germany, 1974

Regression Equations	$\bar{R}^2$	F
(1) ln DOMSUB = 8.19 - 1.67 ln VAPE + 0.15 ln NOE - 0.02 ln DNOE - 0.25 ln NOF - 0.72 ln REG - 1.19 ln TARPRO (1.28)(-1.42) (0.78) (-0.10) (2.54)* (-2.22)* (-2.82)*,a	0.26	2.46
(2) ln DOMSUB = 5.42 + 0.01 ln HUM - 0.24 ln KAP - 0.24 ln NOF - 0.61 ln REG - 0.93 ln TARPRO (1.63) (0.01) (-0.59) (-2.23)* (-1.92)* (-1.49)	0.24	2.54
(3) ln DOMSUB = 5.97 - 0.41 ln RCATOT - 0.17 ln NOF - 0.62 ln REG - 1.50 ln TARPRO (4.43)(-2.38)* (-2.23)* (-2.25)* (-3.81)*,a	0.41	5.37*
(4) ln DOMSUB = 5.39 - 0.67 ln RCAEEC - 0.22 ln NOF - 0.67 ln REG - 1.22 ln TARPRO (3.45)(-0.70) (-2.59)* (-2.10)* (-2.75)*,a	0.27	3.31*
(5) ln DOMSUB = 5.18 - 0.31 ln RCANEC - 0.14 ln NOF - 0.45 ln REG - 1.37 ln TARPRO (4.15)(-2.64)* (-1.69)** (-1.63)** (-3.80)*,a	0.44	5.88*
(6) ln DOMSUB = 7.01 - 0.15 RCALDC - 0.26 ln NOF - 0.68 ln REG - 1.59 ln TARPRO (4.73)(-2.60)* (-3.40)* (-2,50)* (-4.00)*,a	0.43	5.80*

t-statistics in parentheses; *significant at 5 p.c.; ** = significant at 10 p.c.; [a] = not significantly different from minus unity at 5 p.c.
DOMSUB = total effective subsidization from domestic sources; TARPRO = effective rate of tariff protection; NOE = number of employees 1970; DNOE = change in the number of employees, 1964-1970; NOF = number of firms 1970; REG = regional concentration 1970 (variation coefficient of industry i's employment share across 11 "Bundesländer"); HUM = human capital intensity 1970 (average wage per employee minus unskilled worker's wage); KAP = physical capital intensity 1970 (gross fixed capital in 1970 prices); RCA... = "revealed comparative advantage" (exports/imports), with TOT = vis-à-vis total world, NEC = vis-à-vis EEC non-members, LDC = vis-à-vis less developed countries.

Source: Calculated from Donges, Fels, Neu (1973); Jüttemeier, Lammers (1979); Statistisches Bundesamt, Wiesbaden /Statistisches Jahrbuch für die Bundesrepublik Deutschland, var. iss.; Fachserie 7, Reihe 7, 1970/.

The direction of influence of regional concentration accords with the particular institutional framework used to distribute funds in Germany. However, a key variable, the number of employees in an industry does not emerge significant from the test, implying a limited political economy of protection in Germany.

3C. These results agree in one aspect with work done by Jüttemeier et al. (1977, p. 200), who calculated Spearman coefficients between domestic assistance, tariff protection and total protection and a number of industry characteristics on a slightly different sample. The highest coefficient they obtained was for a correlation between the structure of total protection and the structure of competitiveness (- 0.67). However, they found a significant positive association between human capital intensity and domestic assistance. The lack of this relationship here may perhaps be explained by inclusion of tariff protection as an explanatory variable in the present study.

31. In any case, this picture changes, when the non-regional component of domestic subsidization, i.e. R&D aid and special industry programs, is subject to test (Table 5) alone[1]. Following the same testing strategy outlined above for domestic subsidization, the number of employees in each industry does emerge significantly with the expected sign (Equation 2 and 4), lending additional support to the existence of a political economy of protection in Germany. Regional concentration was never significant in regressions (not shown) explaining non-regional aids, as could be expected by the ambiguity introduced by the existence of more than one level of government.

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[1] Here regional assistance is added to tariff protection to form the explanatory variable "RESTAID".

Table 5 - Determinants of Effective Domestic Non-regional Assistance to Manufacturing Industries in West Germany, 1974 (n = 26)

Regression Equations	$\bar{R}^2$	F
(1) ln NONREG = 0.00 + 0.17 ln HUM - 0.22 ln KAP - 0.32 ln NOF + 0.45 ln NOE - 1.24 ln RESTAID (0.00) (0.12) (-0.28) (-1.19) (1.07) (-0.95)	0.04	1.26
(2) ln NONREG =-0.34 - 0.83 ln RCATOT + 0.75 ln NOE - 0.32 ln NOF - 2.33 ln RESTAID (-0.08)(-2.26)* (2.19)* (-1.96)* (-2.92)*	0.27	3.30*
(3) ln NONREG = 0.50 - 0.06 ln RCAEC + 0.47 ln NOE - 0.33 ln NOF - 1.52 ln RESTAID ((0.11)(-0.17) (1.25) (-1.81)* (-1.74)*	0.09	1.67
(4) ln NONREG =-1.10 - 0.57 ln RCANEC + 0.69 ln NOE - 0.27 ln NOF - 2.08 ln RESTAID (-0.28)(-2.40)* (2.13)* (-1.71)* (-2.83)*	0.29	3.52*
(5) ln NONREG = 1.47 - 0.16 ln RCALDC + 0.58 ln NOE - 0.40 ln NOF - 2.02 ln RESTAID (0.34)(-1.29) (1.65)** (-2.19)* (-2.33)*	0.16	2.18

t-statistics in parentheses; * = significant at 5 p.c.; ** significant at 10 p.c. -
ln NONREG = effective rate of domestic assistance not attributable to regional aid programs; ln RESTAID =
effective rate of assistance attributable to regional aid programs plus effective tariff protection;
NOE = number of employees, 1970; DNOE = change in the number of employees, 1964-1970; NOF = number of
firms, 1970; REG = regional concentration 1970 (variation coefficient of industry i's employment share
across 11 "Bundesländer"); HUM = human capital intensity, 1970 (average wage per employee minus unskilled
worker's wage); KAP = physical capital intensity, 1970 (gross fixed capital in 1970 prices); RCA... = "re-
vealed comparative advantage" (exports/imports), with TOT = vis-à-vis total world, NEC = vis-à-vis EEC
non-members, LDC = vis-à-vis less developed countries.

Source: Calculated from Donges, Fels, Neu (1973); Jüttemeier, Lammers (1979); Statistisches Bundesamt,
Wiesbaden /Statistisches Jahrbuch für die Bundesrepublik Deutschland, var.iss.; Fachserie 7,
Reihe 7, 1970/.

C. Recent Developments in Policy Making and Competition from LDC's

32. Hence, it is not surprising that regional economic and political forces have been trying to circumvent those institutions and attempting to get aid for industries concentrated in their regions through the annual budgetary (parliamentary) process. This is reflected in programs to help shipbuilding, concentrated in the coastal states, which more than doubled between 1974 and 1979 (Jüttemeier, Lammers, p.46). In addition, the maritime states[1] are demanding federal matching funds for a coastal program[2], and a "Ruhr-Program" initiated on the insistence of North-Rhine Westphalia has passed the Bundestag. But one may fear that "coastal program" and "Ruhr-program" really mean "shipbuilding program" and "steel industry program".

33. It was argued that the source of pressure matters in determining the supply of protection (para 23), i.e. that the political process would more readily grant subsidies to industries suffering from low international competitiveness given all else. Does the geographical source of that foreign competition matter? A comparison of Equation 5 and 6, Table 4 with Equations 4 and 5, Table 5 testing total domestic subsidization and non-regional domestic subsidization, sheds some light on this issue. Whereas the structure of competitiveness against all non-EEC member countries co-determines the structure of total as well as of non-regional subsidization, the same is not true of competitiveness vis-à-vis the LDC's alone. That variable has explanatory power only when regional subsidies are included. Apparently, regional aid is channeled to regions whose production structure is similar to that of LDC's, and hence, suffering most from new competitors abroad. The same cannot be said for non-regional sub-

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[1] Schleswig-Holstein, Hamburg, Lower Saxony, Bremen.

[2] A program opposed by mountainous, landlocked Bavaria, even though two of the coastal states are governed by the CDU, sister party of the Bavarian CSU.

sidization; here overall competitiveness of the industry is crucial. Demands for new regional aid grograms outside of regular channels in Germany therefore have major implications for LDC exporters. While heretofore German producers threatened by LDC competition could count on aid only if they were not concentrated regionally, if demands for new protection are met they will receive aid even if they are concentrated regionally. This, in turn, implies that the aid will be more concentrated on individual branches than heretofore. And, the fact that the number of employees has a positive influence on this type of aid means that the large old established industries suffering from LDC competition can be expected to get above average support from domestic sources in the future.

D. EEC Foreign Trade Protection

34. It should be borne in mind that these conclusions hold for domestic assistance, which is granted besinde EEC tariff protection. While an analysis of EEC tariff setting along the lines pursued for Germany surpass the bounds of this paper, a number of useful things can be said about the determinants of EEC tariff policy because some of the variables used to explain the German case are unambiguously related to the same determinants in other EEC countries.

- This would be true of human and physical capital intensity across industries in the absence of factor reversals.

- This may be true of the cross industry structure of the number of firms, because technological considerations play a key role in determining industrial concentration.

- This may also be true of the cross industry structure of the change in the number of employees, but of course not in the absolute number of employees.

35. On this rationals, a regression to explain the inter-industry structure
of EEC effective tariffs was run, an approach equivalent to the one Riedel
(1977) chose for the explanation of changes in tariff structure:

$$\ln TAR = \begin{array}{l} 4.21 \\ (4.71) \end{array} + \begin{array}{l} 0.01 \\ (0.10) \end{array} \ln DNOE - \begin{array}{l} 0.06 \ln NOF \\ (-1.73) \end{array} - \begin{array}{l} 0.74 \ln HUM \\ (-4.22) \end{array}$$

$$+ \begin{array}{l} 0.43 \ln KAP \\ (3.97) \end{array} \qquad \bar{R}^2 = 0.53 \qquad F = 8.00$$

where t-statistics are in parentheses and notation is as in Table 4. The
equation as a whole significantly explains the EEC tariff structure, and
lends support to the hypothesis that a political market was operative during
the harmonization process upon founding of the EEC. At the community
level, it appears that the interests of unskilled labor, of physical capital,
and of concentrated industries prevail. Of particular interest to LDC ex-
porters is the size of influence of human capital intensity: labor intensive
industries are heavily discriminated against, a phenomenon not observable
in this form for German domestic protection, especially not for non-regional
aid. These results for the structure of EEC tariff protection are largely
consistent with Riedel's (1977) results, who found that reductions in effec-
tive total protection were the lower, the greater employment in the industry,
the lower the human capital intensity, and the lower the industry's previous
growth rate.

36. Summarizing the salient results of this section, the empirical evidence
lends support to the hypothesis that the political process in Germany can
be characterized as responding to demands for protection on the part of
interest groups on the basis of vote maximizing; that interest groups'
demand for protection is heavily influenced by excludibility considerations;
that the source of the disturbance (domestic vs. foreign) matters in granting
assistance, and that domestic protection and tariff protection are substitutes.
However, the regional component of subsidization, heavily weighted by the
joint federal/state program for improving the regional economic structure,
obeys its own laws. At least within this and related regional program the
expected log-rolling process has been stymied.

IV. Conclusions

37. Overall, the opportunity cost of protection hypothesis can explain the evolution over time of protection in Germany during the democratic phases, as well as the interindustry structure of protection currently. When the growth climate is poor, producers tend to ask for, and obtain, increased assistance. At a point in time, when average opportunity costs of protection are fixed, lobbying and vote maximizing behavior determine protection. While peculiar institutional conditions for distributing aid need to be taken into account, especially the joint federal/state regional development program, in formulating sharp hypotheses on the influence of industry employment and regional concentration, there is some indication that such institutions are being eroded, and that simple (popular) vote maximizing will become even more important in the future.

38. The implications of this analysis are somewhat pessimistic for future trends in German trade policy in general and for LDC exporters to German markets in particular. Apparently, tariff reduction is only possible in an environment favorable to economic growth. Yet the interest groups which demand higher assistance by their very success limit the growth rate. A solution to this dilemma is surely not easy. For the newcomers to world markets in manufactures, the present results suggest that assistance to industry in Germany shall be still more concentrated on sectors especially prone to competition from LDC's like the old, large, regionally concentrated industries.

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