

Giersch, Herbert

Working Paper — Digitized Version

Aspects of growth, structural change, and employment: A Schumpeterian perspective

Kiel Working Paper, No. 89

Provided in Cooperation with:

Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Giersch, Herbert (1979) : Aspects of growth, structural change, and employment: A Schumpeterian perspective, Kiel Working Paper, No. 89, Kiel Institute of World Economics (IfW), Kiel

This Version is available at:

<https://hdl.handle.net/10419/47127>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Kieler Arbeitspapiere

Kiel Working Papers

Arbeitspapier Nr. 89

Aspects of Growth, Structural Change, and
Employment - A Schumpeterian Perspective

von

Herbert Giersch

Institut für Weltwirtschaft an der Universität Kiel

Institut für Weltwirtschaft

Präsidium

2300 Kiel, Düsternbrooker Weg 120

Arbeitspapier Nr. 89

Aspects of Growth, Structural Change, and
Employment - A Schumpeterian Perspective

von

Herbert Giersch

Juni 1979

Mit den Kieler Arbeitspapieren werden Manuskripte, die aus der Arbeit des Instituts für Weltwirtschaft hervorgegangen sind, von den Verfassern möglichen Interessenten in einer vorläufigen Fassung zugänglich gemacht. Für Inhalt und Verteilung ist der Autor verantwortlich. Es wird gebeten, sich mit Anregung und Kritik direkt an ihn zu wenden und etwaige Zitate aus seiner Arbeit vorher mit ihm abzustimmen.

ISSN 0342 - 0787

Ag 51-88 79 Weltwirtschaft
Kiel

Aspects of Growth, Structural Change, and Employment
- A Schumpeterian Perspective -

by

Herbert Giersch

I. The Conceptual Framework

1. This paper aims to throw some light on problems of growth and employment that appear to have been somewhat neglected in the recent development of mainstream economics. As the subtitle suggests we shall make use of a framework of thought that might be called "Schumpeterian", in honor of Joseph Schumpeter, who taught in Vienna and Bonn as well as at Yale and Harvard, and who deserves - as some people here in Kiel think - more credit than he usually receives in the shadow of Keynes.

This system of thought emphasizes

- a medium run time horizon, as distinct from the Keynesian short run and the classical, neoclassical, or Marxian long run;
- the cyclical nature of capitalist development, rather than the notions of short run or long run equilibrium, as a basic postulate;

I am grateful for helpful criticisms and suggestions to Gerhard Fels, Harmen Lehment, Klaus-Werner Schatz, Carsten Thoroe and Frank Weiss.
Shortcomings are mine.

- the catallactic features of activity in the private sector and hence the information and coordination problems arising in decentralized systems - in contrast to a view which Hicks calls "plutologist" or "social accounting Keynesianism" (Hicks 1976);
 - active or dynamic competition of all sorts (Schumpeter's creative destruction) among entrepreneurs, whom Schumpeter (1912) defined as everyone who "carries out new combinations";
 - autonomy, spontaneity, curiosity, experimenting, and risk taking as essentials of human action under competitive conditions in business as well as in research - in contrast to the notion of perfect competition and its implicit "situational determinism" (Latsis 1976);
 - supply activities rather than demand mechanics, such as demand induced (accelerator) investments or multiplier processes.
2. This approach certainly is supply oriented, in contrast to the demand bias of short run macro-economics. Effective demand is taken to be a consequence (multiplier effect) of private supply activities, i.e. of autonomous investments. A shortfall of demand can be explained in this framework as a consequence of unfavorable conditions for autonomous investments, including
- a shortage of technological breakthroughs,
 - a shortage of factors complementary to investments,
 - institutional constraints,

- a shortage of entrepreneurs, and
- a distortion of relative prices depressing profits and profit expectations.

3. The last point allows one to take account of short run impediments to growth and lapses from full employment conditioned by

- (a) excessive real rates of interest (shortage of money relative to goods at given prices) implying that hoarding is too attractive relative to investment in physical assets (Keynesian underemployment of all factors of production);
- (b) excessive real wages that create classical unemployment of labor even if the real rate of interest is not excessive;
- (c) a breakdown of consumers' and investors' confidence (a confidence or liquidity trap) and hence of the conditions for the functioning of the price mechanism as a device for coordinating decentralized decisions (Leijonhufvud 1968).

4. These distortions may arise

- from deceleration of the money supply unanticipated on capital markets (a),
- from minimum wage legislation or from changes in the degree of monopoly on the supply side of the labor market, or from decelerations of the money supply unanticipated on labor markets (b), or

- from secondary deflation (c), or
- from a cumulation of structural changes, due e.g. to supply shocks or sharp variations in real exchange rates and other relative prices, which lead to a temporary breakdown of confidence, i.e. of the methods of projection used in households and firms.

Conversely, cyclical upswings and growth spurts are characterized by changes in relative prices favorable to profits and profit expectations, due, e.g., to

- unanticipated accelerations of monetary growth resulting in a decline of real rates of interest (interest lag),
- price inflation not anticipated in previous wage contracts (wage lag), or
- uncertainty reducing additional information supplied as a public good, such as preannounced credible targets, development programs, and other substitutes for futures markets.^{1,2}

¹ Confidence in accustomed methods of projection can, of course, also be strengthened by quantity signals arising from exogenous increases in foreign or government demand.

² As an example, one may think of suggestions submitted by the German Expert Council during the 1967 recession and subsequently discussed by government authorities and business and labor organizations in the forum established explicitly for the purpose of coordinating expectations and actions ("Konzertierte Aktion") whenever market coordination is thought to need public leadership. The Expert Council had suggested such coordination efforts already in 1965 for attaining the target of price level stabilization without stagnation ("Stabilisierung ohne Stagnation", SVR 1965/66). The idea had been rejected by Chancellor Erhard because of its gradualist elements, although it had been explained to him that gradualism was indispensable because of the existence of old contracts anticipating higher rates of inflation. When the 1966/67 recession occurred - a "wanted" recession as the Minister of Economic Affairs admitted - the Expert Council (SVR 1967/68) thought that the market required support and that a concerted anticipation of high employment equilibrium would greatly contribute to attaining it. Although the official coordination effort failed, the economy expanded fast, however strongly pulled by foreign demand on the basis of an undervalued exchange rate (Giersch 1976). The theoretical basis for public action to coordinate expectations seems to be implicit in Hayek (1948, p. 42 ff.):

(footnote contd. next page)

5. While the Schumpeterian framework helps to focus on time, i.e. on the forces determining the speed and the cyclical pattern of spontaneous development, it leaves a gap with respect to space, i.e. the questions of where development takes place and why development differs from country to country and - within countries - from region to region. This gap, it is suggested, can most easily be closed by combining the Schumpeterian framework with a spatial model derived from Thünen (1826) who, incidentally, anticipated the marginalist revolution. Let me first describe the essentials of a Thünen-Schumpeter model before using it as a tool for understanding some features of postwar economic growth and their relevance for present world economic problems.
6. Imagine a homogeneous Thünen plane, with transportation costs proportional to distance and weight, and a central point determined by either
- the supplier of a public good such as security or contract enforcement, or
 - one or two suppliers of private goods who can take advantage of scale economies or who produce - and benefit from - external economies of conglomeration.

(footnote contd. from page 4)

"... the concept of equilibrium (merely) means that the foresight of the different members of the society ... must be correct in the sense that every person's plan is based on the expectation of just those actions of other people which those other people intend to perform and that all these plans are based on the same set of external facts, so that under certain conditions nobody will have any reason to change his plans ... But if the different plans were from the beginning incompatible, it is inevitable ... that somebody's plans will be upset ... and that ... the whole complex of actions ... will not show those characteristics which apply if all the actions ... can be understood as part of a single individual plan" Moreover, "the problem ... is how the spontaneous interaction of a number of people, each possessing only bits of knowledge, brings about a state of affairs ... which could be brought about by deliberate direction only by somebody who possessed the combined knowledge of all those individuals."

Locational equilibrium (in a stationary setting) requires an allocation of mobile labor and capital in such a way that all transportation costs are shifted onto the owners of land and other immobile resources. Hence the rent of land will monotonically decline from the center to the periphery, while the reward of mobile factors is the same all over the plane. Relatively transport-intensive products will be attracted by the center inasmuch as it pays to incur higher land costs and to substitute labor and capital for land. The system can be conceived as a cone, if the density of population, the GDP per unit of land, or, with some immobility, even per capita income are measured in the third dimension.

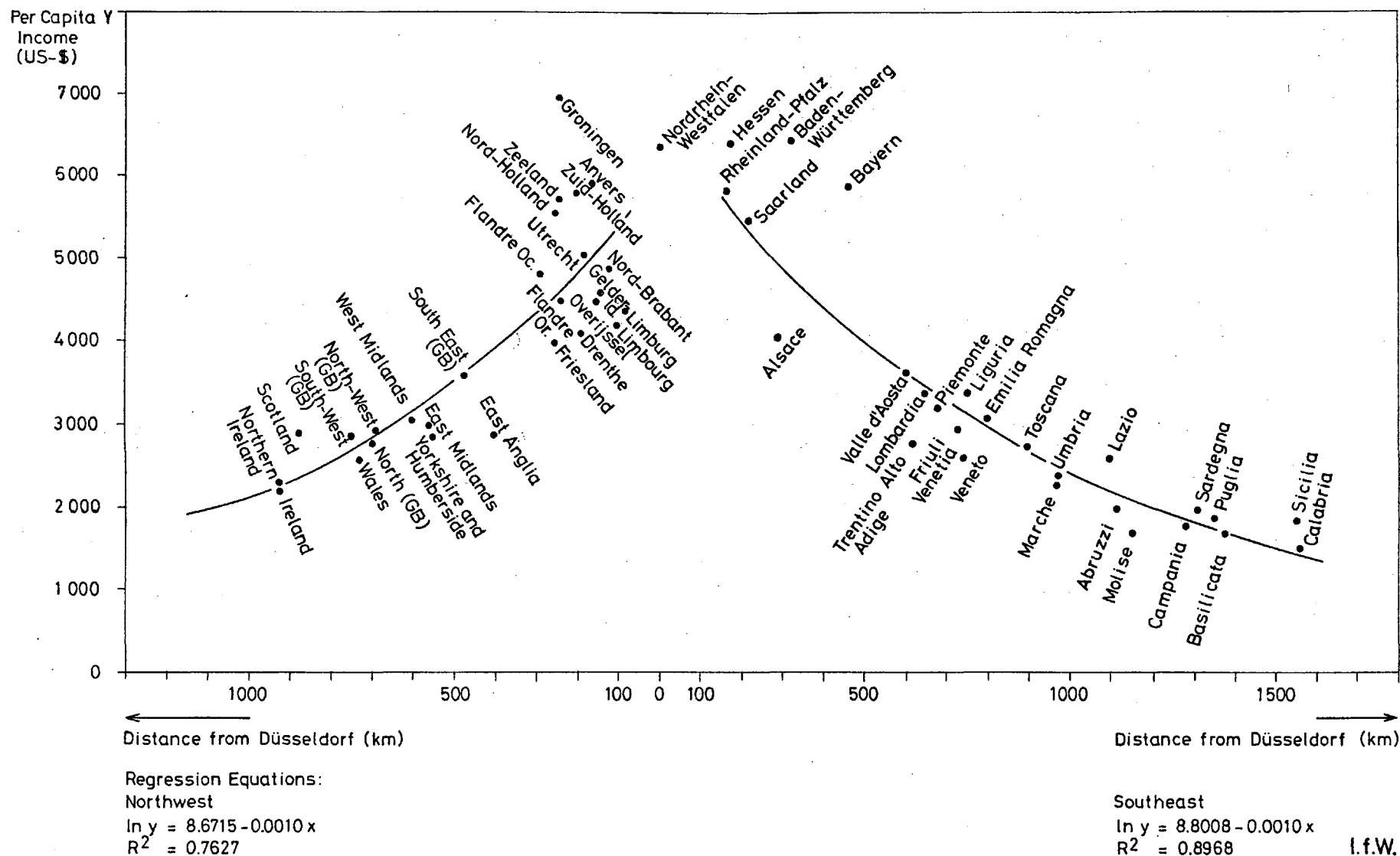
7. With a homogeneous plane and given knowledge, we have only one set of private goods. Trade theorists call them Heckscher-Ohlin goods, but the honor should really go to Thünen. If we introduce differences in climate and natural resource endowment, we also have trade in Ricardo goods. They are named after Ricardo for his pedagogic decision to have England export humidity intensive cloth against sun intensive wine from Portugal. But had he anticipated Alfred Weber's theory of industrial location, he would have referred to raw material deposits as a source of rent and to coal from Newcastle as a resource based good. If a resource rent enables a government to efficiently supply peace and contract enforcement, or private firms to get a head start in industrialization, it may be decisive for center formation. For explaining long run growth we need a third type of good which has the property

of being new in the sense that its production function is still a secret, or the preference for it has not yet been revealed. Such goods will be called Schumpeter goods (instead of product cycle goods). Being the result of innovation, they will be produced where human capital is abundant and where the social atmosphere and the institutional arrangements are attractive to Schumpeter firms and persons who are prepared to devote resources to R&D and to risky ventures in expectation of transitory monopoly gains. A Schumpeter sector added to a Thünen cone transforms the cone into a volcano. Center - periphery trade now also includes the lava of knowledge (transfer of technology) incorporated in Schumpeter goods. When it flows down from the top, it raises total factor productivity wherever it is applied, but once it is applied in competitive places it destroys the original gains from innovation in the center (assuming that the center is in fact the generator of new knowledge or that the center moves to places where the Schumpeter sector has developed or found a convenient location). Thus in order to maintain these gains, the center must continuously generate new knowledge and Schumpeter goods. With transportation costs and some immobility of labor, these gains are partly shifted to local labor that is, or can make itself, complementary to Schumpeter entrepreneurs and firms. Under these conditions even wages for manual workers will decline from the center to the periphery.

8. The world economy - as any national or subnational regional economy with a center - could once be thought of as one great Thünen-Schumpeter system, in the 18th and 19th centuries with London as the center of the Pax Britannica, and in this century with New York as the center of the Pax Americana. Now it seems that the Western world has at least three centers: apart from the U.S., there is a distinct Asian and a distinct European center. The cone shape of income dispersion in Europe is most pronounced, if the subnational regions located in the Northwest and the Southeast directions from the estuary of the Rhine are presumed to have a per capita income dependent upon the distance from Düsseldorf. This hypothesis is shown in Figure 1. The picture is less clear in the Northeast-Southwest direction, unless we take the capitals of the Scandinavian countries and Paris as a part of the cone's top and ignore the areas in between.
9. How could two new Thünen-Schumpeter systems develop in Europe and Asia in the postwar period? Will Europe be able to maintain the income position she has reached in the countries close to the top? Will it be possible for these countries to stay ahead of the U.S. in terms of gross hourly earnings? Is such overtaking a temporary process bound to fail in the medium run? What are the problems of trilateral policy coordination in the triple top system of the West? These are the questions that arise from the Thünen-Schumpeter framework sketched above.

Figure 1

Center Periphery Income Differences in the European Community -
Cross Section from Düsseldorf to Northwest and Southeast
(GDP per Capita, 1974)



II. The Catching-Up Process

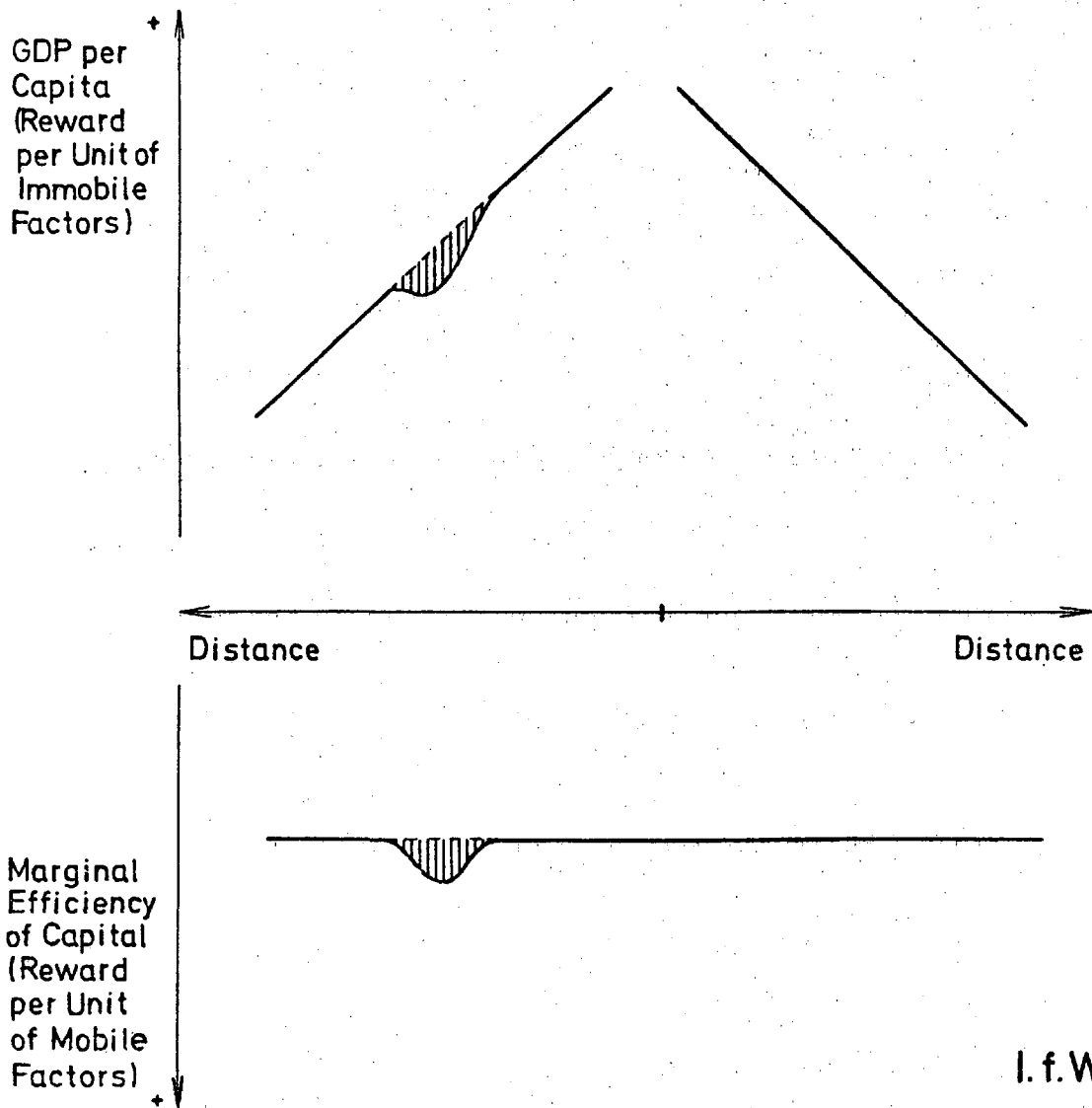
10. A cone of its own may well develop in any place outside the center if conditions emerge or are created which raise the marginal efficiency of capital above the plane which forms the bottom of the system or which lower marginal unit capital costs thus producing the hollow in Figure 2. Such a change can come about

- through war time destruction of parts of the old capital stock that makes room for new and superior vintages (Schumpeter's creative destruction decomposed into (1) a sudden exogenous destruction first and (2) a faster than normal creation afterwards) that can be combined with a more intact stock of human capital;
- through a forced influx of manual labor, human capital, and entrepreneurship (refugees);
- through public infrastructure investments, government efforts to raise the domestic supply of human capital, low wages with impediments to emigration, and institutional measures to make the area more attractive for autonomous investment and entrepreneurs.

11. This catalogue contains the main features of a starting base for postwar recovery as they existed in West Germany. Assuming fixed coefficients in industry, the unemployment prevailing at the time could be called capital shortage unemployment (Giersch 1978). As to wages they were

Figure 2

Model of a Thünen-Schumpeter Income Cone
- Center Periphery Section -



- presumably equal to the low marginal product of labor in overcrowded agriculture,
- probably below the marginal product of labor employed in industry, implying "exploitation",
- below those in neighboring countries and held in check by impediments to emigration.

With an exchange rate set to avoid balance of payments deficits and to allow import liberalization, unit labor costs in the international sector (the tradable goods sector) were so low in international comparison that capital was bound to flow in, and to be accumulated out of domestic profits. Low wages and high profits, combined with an unexploited potential of human capital and skill thus appears to have been essential for producing a laissez-faire catching-up process - sometimes called a virtuous circle. This mechanism was facilitated by information about an appropriate structure of production (reconstruction) and development path (imitation).

12. Neighboring countries benefit from such a virtuous circle as far as

- their firms produce complementary goods (demand effect);
- their consumers are supplied with more attractive goods, which in addition may contribute to improving work incentives (incentive effect);
- their firms are strong enough to transform the challenge of competition into a stimulus to better achievement.

The last two points are basic to a supply oriented "locomotive theory", in contrast to the popular "locomotive theory" based on demand multiplier effects.

13. If virtuous circle growth is to become more than a short lived acceleration to regain a previous position on the world income scale (the Thünen cone), it must obviously either benefit from strong domestic positive feedback mechanisms or from a foreign "locomotive".

(a) The foreign locomotive for postwar Europe certainly was the U.S. as a source of demand and as a pacemaker for domestic supplier activities. Foreign demand is of little help unless domestic suppliers are keen on exploiting it. They can do so by making their product mix complementary to present foreign demand (static linking) and by concentrating their competitive activities on those segments of demand that promise a high income elasticity (dynamic linking). Foreign demand for exports of domestic firms will, of course, rise when foreign firms give up in the competitive race. To be forced to give up on certain established products is beneficial for growth in the pacemaker country, if this contributes to shifting resources to the development of Schumpeter goods: more volcano activity under the pressure of competition from a lower part of the Thünen-Schumpeter system.

(b) Among the competitors who give up may be exporters from neighboring countries who fail to develop the supply activities required for effective linking to a pacemaker. Instead of being or becoming Schumpeter entrepreneurs, they are passive and decide to wait for the foreign trade multiplier to work. Perhaps they fail for

the simple reason of relying too much on demand delivered by the government. In such a case the Schumpeter country crowded with active suppliers will surpass its more complacent neighbors: a new cone begins to emerge on the gradient after the hollow has been filled up.

(c) Positive feedback mechanisms in the catching-up economy can arise

- from the psychological mechanism underlying the dictum that nothing succeeds like success;
- from learning by doing, e.g., in the export business, a practice which can be systematically developed when the way upwards to the top level in the management hierarchy usually passes over the hurdle of an export department;
- from the creation of a growth minded tradition of thought and behavior which supports an initial decision in favor of open markets (the historic Erhard decision) and of institutions conducive to active suppliers' competition, which deemphasizes the equality demand in the "big tradeoff" between equity and growth (rather than efficiency).¹

¹ Put somewhat differently: rapid growth will be extrapolated thus stretching the time implicit in Rawlsian type (Rawls 1971) considerations. Indeed, to be worse off than others is less depressing if and when absolute improvement is fast and can be expected to remain so.

14. Will a catching-up country run an export surplus? Demand biased social accounting interpretations suggest that it obviously will, because this is the way the foreign trade multiplier functions. In German social accounting language the export surplus is called "Außenbeitrag", meaning "the foreign contribution". Supply oriented economists (and laymen) wonder what the foreign countries "contribute" to. The social accounting answer is, of course, "to total demand". But this interpretation meets with doubts in a medium run perspective when supply activities and supply bottlenecks have to be taken into account. Can a country really catch up while it loses resources that would have had a potential social productivity of domestic investment much above the interest earned abroad? The answer becomes obvious when we consider that a catching-up country is likely to be strong in unfolding suppliers' activities both at home and in export markets. Exports are being fought for and markets are conquered by investing in sales organizations abroad, while imports just come in, sometimes at an accelerated speed when domestic supply bottlenecks arise (Giersch 1953). An export surplus and domestic growth thus have a common source: vigorous suppliers' activities. We may call this the case of a "Sturm und Drang" economy.
15. Other cases of ^a persistent export surplus¹ that can be related to suppliers' activities include

¹ For short run phenomena affecting the trade balance, see Dornbush, Krugman (1976).

- the mature economy which has ceased to offer enough attractive opportunities to entrepreneurs and investors, and is thus becoming a supplier of capital to poorer countries further down on the Thünen gradient,
- the aging economy which no longer offers the social atmosphere congenial to active persons and lets them emigrate - together with their capital assets - to "virgin" lands, and
- the decaying economy where capital and labor feel expelled from the area or region, which then suffers from what regional economists sometimes call passive rehabilitation.

In none of these cases would it be justified to accuse the country of pursuing a beggar-thy-neighbor policy.¹

¹ Although it does not quite fit into the growth context, the reader may wish to keep in mind the classical case of a (current account) surplus country importing, and a deficit country supplying, gold and financial assets, including international money. It may be more than a mere coincidence that a catching-up country feels proud about earning its foreign exchange reserves, rather than borrowing them, and that, after having been successful in manufacturing, it also wishes to achieve international status in banking. In a defeated country with an impaired tradition and identity, foreign exchange reserves may be a suitable substitute for such symbols or public goods as the national anthem or the flag. One may call this mercantilism.

16. It is tempting at this stage to integrate the export surplus cases with deficit cases into a "life cycle hypothesis" of trade balances.

- A poor but young economy may be able to raise, or to attract from abroad, entrepreneurs who become dynamic importers of capital goods. If they fail to bring with them or to attract foreign capital in the first instance, their impact as autonomous importers of capital goods is to raise the price of foreign exchange, thus making domestic resources more attractive to foreign investors and suppliers of capital (wealth effect). In other words: autonomous importer -investors can raise the marginal efficiency of capital as seen from outside in a similar way as the process of exogenous capital destruction described in para. 11 above.

The cases to come next would be

- the surplus economy in its "Sturm und Drang" phase;
- the capital exporting mature economy;
- the aging surplus economy losing human capital as well;
- the rentier economy, which runs a current account deficit in order to consume the capital previously invested abroad; and
- eventually the decaying economy.

17. This life cycle hypothesis gives rise to some conjectures about trade policies. I consider it most likely
- for the catching-up (or "Sturm und Drang") economy to pursue a free trade policy under the influence of aggressive exporters who must be presumed to be in favor of open markets everywhere, and
 - for the rentier economy to be protectionist and to be favorable to applying (perversely) the infant industry argument to senile industries and activities¹,
 - for the poor and young economy to turn towards free trade and convertibility once it discovers that youthfulness can be transformed into strength and - in a virtuous circle - into attractiveness with regard to foreign capital.
18. While the rentier economy is likely to be very concerned about (static) optimum tariffs and the best (static) commodity terms of trade, the youthful catching-up economy has a longer time horizon. People are prepared to sacrifice - or plow back - part of their potential gains from trade for the sake of improving the external income terms of trade and, in the end, their external double factorial terms of trade. For this, they will hear, from foreign competitors, complaints about "dumping", "disorderly marketing" and "market disruption".

¹ A decaying economy, if there should be one, would turn towards autarchy, including export restrictions.

The target of raising the double factorial terms of trade (i.e. of catching-up through trade) can be achieved

- by giving priority to export products which promise to benefit from a high income elasticity of world demand (dynamic linking),
- by exploiting economies of learning through specialization in international trade,
- by absorbing whatever technology can be imported and applied to raise efficiency (process innovations) and to capture transitory monopoly gains (product innovation).

More briefly, while the rentier economy adopts a zero sum mentality, the youthful catching-up economy exploits its conversion potential and the profits held out for future oriented activities.

19. It appears that the advanced parts of Europe, after having caught up with the US in many respects, find themselves in a critical stage of transition characterized by declining supply elasticities. This highly tentative judgement is based on very limited and casual observations, mostly, if not exclusively, relating to Germany. Several points come to mind immediately:
- an increasing concern about the costs of economic growth, fueled by the 1972 Club of Rome reports combined with a reluctance to consider that the costs could well be internalized and the fashion among intellectuals of preaching a new austerity;

- the widespread nuclear power anxiety;
- a microprocessor allergy (technological unemployment);
- a noticeable resistance to structural change, and a related concern about rents and windfall profits;
- a shift, in collective bargaining, from payment increases to safeguard provisions, income maintenance clauses, longer vacations, and shorter work weeks, which is more pronounced than in the past;
- a decline in the share of fixed investments (in West German GNP from 26 per cent in the mid-sixties to less than 21 per cent after 1974 (current prices));
- a marked increase of net direct investment abroad.

While the first points seem to apply to most advanced countries or regions all over the world, supporting the hypothesis that the mid-seventies may mark the end of a 30-years period of accelerated growth in the West¹, the points further down the list appear to be characteristic for countries having succeeded in catching up. Without having a pacemaker to follow, these countries find themselves in great uncertainty on the way from (a rather) imitative to (a more) innovative growth pattern.

III. Problems of Transatlantic Equilibrium

20. The transition was inaugurated in 1969 with the D-mark re-

¹ In 1939 Schumpeter (p.1050) foresaw a new Kondratieff upswing, which, if its beginning is dated in the mid forties, seems to have lasted for about three decades.

valuation. The series of appreciations of German currency vis-à-vis the US dollar proved to be more than a monetary phenomenon; it was real, i.e. in excess of differences in price level changes. As the upward revaluation of the DM measured on a cost basis was even greater (SVR 1978/79, p. 141), catapulting hourly wage costs above the U.S. average¹, profitability deteriorated. Similar developments occurred in the Benelux countries, and even stronger ones in Switzerland. Part of this is presumably due to short term phenomena, including

- the substitution of D-marks and Swiss francs for "over-supplied" US dollars as international money, and
- a cyclical lead of the U.S. economy in the post-1975 upswing.

21. But what is relevant here is not the possible monetary and cyclical phenomena but the structural element: the real appreciation of the D-Mark was a necessary condition for accommodating structural change on both sides of the Atlantic².

¹ Hourly Wage Costs in 1978 and 1968:

	1978		1968			1978		1968	
	US-\$	US = 100				US-\$	US = 100		
(1) Belgium	10.59	129.0	45.1		(6) Canada	7.53	91.7	77.4	
(2) Sweden	10.29	125.3	64.1		(7) France	6.47	78.8	42.4	
(3) W.Germany	9.79	119.2	45.4		(8) Italy	5.65	68.8	34.0	
(4) Netherlands	9.57	116.6	45.7		(9) Japan	5.45	66.4	19.3	
(5) U.S.	8.21	100.0	100.0		(10) U.K.	4.07	49.6	32.1	

Source: U.S. Department of Labor, Bureau of Labor Statistics. - Kiel Institute of World Economics.

² The relationship between real and monetary influences of exchange rate changes has been shown by Dornbusch (1973), among others, with Bruno (1976) extending the analysis to problems of growth. An early exposition is Salter (1959), but see also SVR (1964/65, para's 35-36).

For one thing, postwar recovery in Japan and Germany started on an exchange rate track appropriate for overcoming an alleged chronic dollar shortage (para.11). It thus became profitable to build up capacities in the tradables sector for earning dollars. Not surprisingly, the US economy supplying the dollars, tended to become import biased with a relatively weak international sector. After the structural development had gone on for two decades only a sharp real appreciation of the D-mark (and the yen) could be expected to break the underlying structural trend by allowing the price of traded goods to fall relative to domestic goods and push resources out of that sector.

For another thing, and surely not unrelated, underlying sectoral productivity developments in the U.S. and Germany differ (Heitger, Weiss 1979). In Germany, the productivity advance in tradables relative to non-tradables has been faster than in the U.S. Hence, equilibrium prices of tradables in Germany should fall relative to prices of domestic goods. As long as the D-mark remained undervalued in real terms, this gave broad scope for quantity expansion. Only a real appreciation of the D-mark in terms of wages or domestic goods prices could break the quantity expansion and bring about upward pressure on prices (in US dollars) of German tradables. When the real appreciation took place, West Germany came under more severe pressure to give up the more imitative and labor intensive, and hence less competitive, activities in the international sector. They can no longer support economic

growth. The future of the tradables sector lies in human capital intensive activities, and the non-tradables sector can best contribute to such activities by providing human capital and by supplying new knowledge as a condition for innovation.

22. Transatlantic equilibrium thus seems (or seemed?) to require that West Germany expand her domestic sector in order to reduce her export bias while the U.S. would have to build up her import substitution and her export industries (strategy A). But should the diagnosis for the world economy be that the Third World and the newly industrialized countries (NIC's) suffer from a capital shortage but are able to develop their absorptive capacities, all of the rich countries ought to run a surplus on current account to be underpinned by capital exports. In this case, West Germany (and Japan) might just have the right balance between the domestic and international sectors, and it would only be the U.S. that would have to undergo a substantial structural change in the next couple of years (strategy B). To clarify this point might be worth closer study and another summit meeting, with capital exports to Third World countries included on the agenda. The point is to regard export surpluses as the form of resource transfer which is needed to stimulate supply activities in Third World countries. It would also be appropriate to discuss institutional arrangements for overcoming the political risks impeding the flow of private capital.

23. The present (1978/79) situation in West Germany and in countries of a similar position is characterized by a lack of investors' confidence notably in the international sector of the economy (covering in West Germany 47 per cent of employment (1975), more than in any other OECD country).
- Between 1970 and 1971 and again after 1973 the international sector of the West German economy has grown less than would have been normal (Heitger, Weiss 1979), Chart I). Thus structural adjustment has already been going on.
 - The structural element becomes visible in a comparison of the percentage of after-tax profits over total sales in the U.S. and Germany since the mid-sixties. While the U.S. percentage in 1973 - 1976 (5.1) was again almost as high as it had been in 1965 - 1968 (5.3), after a drop in 1969 - 1972 (4.3), the percentage for Germany shows an uninterrupted decline over the three periods by one third (1.9 for 1973 - 1976 as compared to 2.9 for 1965 - 1968). It has also been calculated (Strigel 1978, p.23) that in the U.S. the before tax percentage in 1976 was again as high as at the beginning of the sixties (11), in contrast to Germany where it had declined (from 7 to 5).
 - In 1978 profit rates in German manufacturing which practically covers the international sector, further declined below the 1977 level, but they appear to have risen in the domestic sector, notably in new construction (SVR 1978/79, p.49).

- While in the U.S. gross fixed investment in manufacturing at constant prices showed an average growth rate of 5.2 per cent over the period 1961 to 1977, the corresponding rate for Germany was only 2.2 per cent, exclusively due to the worse performance since 1971 (Strigel 1978, p.24).
- A "Survey of Economic Trends" of the International Chamber of Commerce conducted in spring, 1978 revealed that less than 30 per cent of German businessmen, but nearly 70 per cent of their U.S. counterparts, held the business climate to be good or satisfactory, and almost 30 per cent considered it definitely unsatisfactory, as opposed to less than 10 per cent in the U.S. (Strigel 1978, Graph I). This, of course, also reflects the U.S. lead in the post 1975 upswing.
- It is perhaps no accident that firms with headquarters in West Germany have an increasing propensity to invest abroad and to concentrate on the U.S., thus reversing the transatlantic flow of investment that prevailed in the sixties. (See SVR 1978/79, Graph 29).
- Apart from differences in hourly wages and unit labor costs which are, of course, conditioned by the dollar/DM exchange rate, German businessmen mention additional reasons why it is preferable to invest in the U.S.: a public attitude more positive to business, better tax treatment of business profits, no co-determination, no institutional impediments to releasing workers.

24. But is it not legitimate to argue that in the absence of those factors (and many others that could be mentioned) which promote German investments in the U.S., the exchange rate would adjust to make German unit labor costs in the international sector even higher? In a similar vein it has been suggested that wage restraint in Germany would not raise the marginal efficiency of investment but merely lead to a further decline of the dollar/DM exchange rate.

It can be shown, however, that wage restraint in relation to the productivity increase, or any other development favorable to investment in Germany, will not be fully wiped out by exchange rate adjustments even as far as the international sector is concerned (Lehment 1979); it can be expected to be a stronger factor for growth in the domestic sector, and it is the domestic sector that must grow faster, if Germany is to further correct the export bias in her production structure under strategy A. To put it differently: if the internal terms of trade of the domestic sector were not allowed to improve (relative to the international sector), strategy A could only work via a slowdown in growth of the whole German economy, i.e. via a flow of German investment to the U.S. at the expense not only of the international but also of the domestic sector in Germany. Under strategy B, the U.S. would concentrate on strengthening the import substitution and the export sector thus supporting the dollar to an extent which would help the German international sector to grow in proportion with the domestic sector.

IV. Policies Towards Growth and Employment

25. The key to stimulating growth in West Germany and her European partner countries is investment. One form is public investment, an avenue pursued by the Berlin Institute (Deutsches Institut für Wirtschaftsforschung, DIW), based on the econometric model for Germany produced by Krelle in Bonn (Bonn Model). The outcome is a proposal (DIW Wochenbericht 13/79) implying that a sizeable increase in government investment (about DM 100 billion over the period 1980 - 1985), accompanied by some more government-promoted private investment (about DM 30 billion) would raise average annual rates of increase of

- real GNP	from 2.5	to	3.4 per cent
- labor productivity	from 4.3	to	4.4 per cent
- nominal wages	from 7.5	to	8.0 per cent
- prices (GNP deflator)	from 3.5	to	3.7 per cent
- tax revenues	from 6.5	to	8.0 per cent
- public expenditure	from 6.0	to	7.0 per cent
- imports	from 6.0	to	7.0 per cent.

As exports are assumed to remain unaffected, the export surplus is expected to decline. The simulations also produce a decline in the government deficit.

26. The crucial questions raised by the Berlin program and the Bonn model concern the supply side, notably the supply elasticities of domestic resources, particularly labor and the capital stock. The information about the German economy

and its internal mechanism contained in the Bonn Model obviously relates to the sixties,

- when the currency was notoriously undervalued;
- when the economy was allowed to grow under conditions of an almost unlimited supply of labor (guest workers);
- when unit labor costs were so low relative to unit labor costs in most other countries that firms could fill existing jobs and create new ones without concern about competitiveness;
- when low unit labor costs attracted direct investment and superior technology from abroad;
- when the excess demand for labor induced firms to pursue search activities and active labor market policies, thus reducing search unemployment and frictional unemployment among the domestic labor force to an insignificant percentage;
- when serious indications for the existence or emergence of a grey untaxed economy did not yet exist; and
- when the pressure of competition from low wage countries did not yet manifest itself in a need for structural adjustment.

27. Since the second half of the seventies at the latest, West Germany (and some of her neighbors) no longer enjoys the advantages of a catching-up economy. In these circumstances there is reason to fear that a program of inflating demand without a concern for the capacity and productivity effects

of investment will have much lower output effects and much higher price effects than the model predicts. Even without such a program, inflation is already accelerating at the present stage (May 1979) after the labor market shows signs of tension and after the decline of the dollar has been reversed. A program of demand expansion is not needed as a public good supporting the market mechanism, because the problem is uncertainty about medium run competitiveness in a situation of structural change. The weak spots in the economy are industries and firms, including some large corporations, which are suffering from the storm of innovative competition originating in technologically more advanced parts of the world, including Japan, and from import competition in standardized goods originating in low wage countries. In these circumstances, economic policy has two polar options to stimulate growth and promote employment:

- lowering unit labor costs relative to other countries by restraining real wage increases and reducing the double factorial terms of trade (Option I), and
- accelerating growth of total factor productivity by rejuvenating the economy and augmenting the supply of highly productive jobs (Option II).

These two options will be described and assessed before something is said about the middle ground between them.

28. Option I is similar to the way chosen by the U.S. after 1971 and by England in the thirties as a remedy against "The economic consequences of Mr. Churchill". In both countries

the situation was characterized by an overvaluation of the currency and hence of domestic unit labor costs, with low profit margins and profit expectations as a consequence. The U.S. situation in the late sixties can be compared to that of Germany and related countries in Europe in the seventies; slow growth of the international sector in both cases was accompanied by an outflow of investment.

29. The basic question of Option I is whether an explicit policy of real wage restraint alone, i.e., without elements of Option II, would be desirable or even feasible in West Germany. If the policy is limited to manipulating the price level, the answer is most likely "no" for the following reasons:

- While in the U.S. accelerating inflation between 1972 and 1974 lowered the rise in real wages (hourly earnings related to the CPI) from 2.8 per cent in 1971 to an annual average close to zero (and below zero if 1975 is included), inflation in Germany would have much less chance, if any, of depressing real wage increases below the rise in distributable productivity (output per manhour corrected for changes in the terms of trade) for more than a year, given the inflation sensitivity of the population and the annual nation-wide wage rounds. Prospects for a long wage lag in Germany have deteriorated in comparison to the 1960s when the great post-1967 expansion, supported by longer wage contracts, ended in a series of wild cat strikes in the fall of 1969.

- While the dollar devaluation can be considered to have had a positive employment effect in the U.S. (0.2 percentage points less unemployment in 1974 according to DRI simulations - Eckstein 1978, p.141), a DM devaluation in the case of Germany must be expected to have had - or to have - a greater effect on inflation and an even lesser effect on employment, given the larger relative size of the international sector in a smaller economy.
- Lowering real wages via disguised inflation (from moral suasion to price controls) does not promise success, given that large parts of the population still vividly remember the pre 1948 repressed inflation. They would quickly lose confidence in price indices upon discovering the quality deterioration of goods supplied under disguised inflation.

30. For the recent past, West Germany has found it more appropriate to tend towards policies along the lines of Option II, although the subject has been under constant debate since the 1975 recession. The ideal framework for Option II can be described as follows:

- a) There is an implicit consensus about a solution to the policy assignment problem which attributes
 - responsibility for maintaining price level stability without deflation (preventing Keynesian unemployment) to monetary policy;
 - responsibility for removing a Keynesian underemployment to a concerted action between monetary policy, fiscal policy and wage policy;

- responsibility for preventing and removing classical unemployment to (fairly centralized) organized labor supported by expert information about an appropriate incomes policy;
 - responsibility for lowering search and frictional unemployment to active labor market policies;
 - responsibility for adequate growth of potential output and total factor productivity to the business community and to those branches of government which determine the institutional framework (Ordnungspolitik) and which influence the structure of incentives (Rentabilitäts- und Strukturpolitik);
- b) There is a high degree of predictability (preannouncement) of government and central bank policy;
- c) There are additional efforts to reduce the uncertainty element by supplying information on trends of structural change from independent research institutions competing with each other.

Practice is, of course, much less than ideal. This holds for the implicit "consensus," for the correct diagnosis of specific government and market failures, and for the reliability of government announcements, as well as for the quality of structural research and its information content.

31. The basic issue in Germany (and elsewhere) since 1974 is the nature of the unemployment problem. Adherents of Option II

policies consider

- the uninterrupted decline of employment in German manufacturing since 1970 (by almost 12 per cent until 1977) as a clear indication of longer term structural changes that had been predicted (Fels, Schatz, Wolter 1971);
- the rise in the underlying unemployment rate since 1974 partly as a form of classical unemployment, conditioned by a rise of real hourly wage costs in excess of the distributable increase of labor productivity during the phase of decelerating inflation;
- the hard core unemployment prevailing at the present stage of the upswing (1979) as a reflection of a job gap¹ which is due to
 - wage induced job obsolescence (capital destruction),
 - strong import competition from LDCs²,
 - an insufficient volume of job creation because of poor investment performance and induced labor saving innovations, notably in the international sector,
 - an increase of the intended participation rate of women.

¹ "Even a boom, however strong it might be, could not quickly bring the economy back to full employment in a form similar to that which prevailed before 1974. Because, during the process of structural change, much of the capital stock has been revalued, potential GDP in terms of physical capacity is less than potential GDP in terms of labor at the prevailing real wage level. In this sense, the West German economy is confronted with a job gap, the counterpart of which is insufficient real capital formation". (Fels, Weiss 1978, p.33).

² In 1974/75 the LDCs increased their share of the German market for the first time during a recession (Fels, Weiss 1978, p.42). Mounting competitive pressures of suppliers from LDCs and the newly industrialized countries affect major parts of whole industries like steel, textiles, shipbuilding, and metal manufacturing and hence the economic future of previously prosperous regions in which these industries are concentrated.

32. The job gap scenario for future periods naturally depends upon the expected rate of growth in domestic investment outside the government sector and the expected capital intensity of the jobs incorporated in the new capital stock. For 1985, job gap estimates currently range between 2.25 and 4.5 per cent of the labor force. In the absence of additional capital formation for closing the gap, the economy, according to the underlying scenario hypothesis,

- would fail to provide enough viable jobs for "reasonable" full employment at a level of real wages compatible with "reasonable" expectations, and
- might suffer from a vicious circle of stagflation implying
 - disappointed wage and employment expectations,
 - wage push inflation,
 - wild cat strikes or organized actions against imports from low wage countries, against labor saving innovations, and against a labor market without equitable forms of job rationing, and
 - general hostility towards the market system.

On the other hand, a new investment surge could stabilize or improve the German economy's competitive position, close to the top of the European income cone which forms one of the growth locomotives of the triple top world economic system. The country would then also feel vigorous enough to champion freeing imports from LDCs.

33. In contrast to the Berlin proposal described in para.25, a job creation program in line with Option II is aimed at
- the supply of jobs for new products rather than the demand for traditional products,
 - employment in the private and potentially international sector rather than in or by the government,
 - the strengthening of the engine of growth in the private enterprise system rather than in the public administration.
34. The German government, including State governments, have taken (or are considering) a number of steps in this direction, including
- tax measures to widen the scope for accelerated depreciation (a device amounting to an interest free investment loan plus government participation in the risk of failure),
 - a shift from direct to indirect taxation,
 - more government support to R & D in manufacturing,
 - government loans to support the creation of new firms (under consideration by the Federal government),
 - government supported consulting for small business,
 - investment loans, subsidies, and public infrastructure investment in the framework of regional policy.

However, as any major step in this direction tends to meet with strong political resistance on income distribution grounds, there will be no spectacular developments in the

near future.

35. A disguised form of support for real growth in West Germany may arise from the European Monetary System (EMS), if the following conditions happen to be met:

- German labor unions are called upon to accept a major responsibility for price level stability - as they did in the sixties - and will unintentionally contribute to an undervaluation of the DM relative to other EMS currencies;
- exchange rate adjustments within the EMS are delayed so that unit labor costs in Germany are artificially reduced for most of the time, making locations in Germany again more attractive (as in the sixties) to German and foreign investors;
- an EMS controlled DM becomes less attractive relative to the dollar so that German unit labor costs are not artificially high in relation to unit labor costs in the U.S.

Thus Europe may use German unions as a disciplinary force in its Monetary System and reward them with a supply of complementary investments and more viable jobs for full employment at higher real wages in the medium run. The counterpart would, of course, be less investment and more unemployment in the more peripheral regions of Europe's Thünen-Schumpeter cone and - once the mechanism has been understood - complaints about German beggar-thy-neighbor policies.

B I B L I O G R A P H Y

- B r u n o, M., The Two-Sector Open Economy and the Real Exchange Rate. American Economic Review, Vol.66 (1976), pp.566-577.
- D e u t s c h e s I n s t i t u t f ü r W i r t s c h a f t s-
f o r s c h u n g, Finanzierungsgutachten und Vertei-
lungswirkungen einer nachfrageorientierten Strategie
zur Wiedergewinnung der Vollbeschäftigung. Wochen-
bericht 13/79, Berlin 1979, pp.139-147.
- D o r n b u s c h, R., Devaluation, Money and Nontraded
Goods. American Economic Review, Vol.63 (1973), pp.
871-880.
- , P. K r u g m a n, Flexible Exchange Rates in the Short
Run. Brookings Papers on Economic Activity, (1976)
No.3, pp.537-584.
- E c k s t e i n, O., The Great Recession. With a Postscript
on Stagflation. Amsterdam 1978.
- F e l s, G., F. W e i s s, Structural Change and Employ-
ment. The Lesson of West Germany. In: H.Giersch (ed.),
Capital Shortage and Unemployment in the World Economy.
Tübingen 1978, pp.31-53.
- , K.-W. S c h a t z, F. W o l t e r, Der Zusammenhang
zwischen Produktionsstruktur und Entwicklungsniveau.
Versuch einer Strukturprognose für die westdeutsche
Wirtschaft. Weltwirtschaftliches Archiv, Vol.106 (1971),
pp.240-278.
- G i e r s c h, H., Akzelerationsprinzip und Importneigung.
Weltwirtschaftliches Archiv, Vol.70 (1953), pp.241-282.
- , (ed.), Capital Shortage and Unemployment in the World
Economy. Tübingen 1978.
- , Episoden und Lehren der Globalsteuerung. In: Wirt-
schaftspolitik - Wissenschaft und politische Aufgabe.
Festschrift zum 65.Geburtstag von Karl Schiller. Bern,
Stuttgart 1976, pp.277-296.
- v o n H a y e k, F.A., Individualism and Economic Order.
Chicago 1948.
- H e i t g e r, B., F. W e i s s, Structural Change in a
Two-Sector Open Economy: The View from West-Germany.
In: H.Giersch (ed.), International Economic Development
and Resource Transfer. Tübingen 1979, forthcoming.

- H i c k s, J.R., "Revolution" in Economics. In: S.J. Latsis (ed.), Method and Appraisal in Economics. Cambridge 1976, pp.207-218.
- L a t s i s, S.J., A Research Programme in Economics. In: S.J.Latsis (ed.), Method and Appraisal in Economics. Cambridge 1976, pp.1-39.
- L e h m e n t, H., Lohnpolitik und Beschäftigung bei festen und flexiblen Wechselkursen. Weltwirtschaftliches Archiv, Juni 1979, forthcoming.
- L e i j o u h u f v u d, A., On Keynesian Economics and the Economics of Keynes. New York, London, Toronto 1968.
- S a c h v e r s t ä n d i g e n r a t z u r B e g u t -
a c h t u n g d e r g e s a m t w i r t s c h a f t -
l i c h e n E n t w i c k l u n g (SvR), Jahresgut-
achten 1964/65; 1965/66; 1967/68; 1978/79.
- S a l t e r, W.E.G., Internal and External Balance: The Role of Price and Expenditure Effects. Economic Record, Vol.35 (1959), pp.226-238.
- S c h u m p e t e r, J.A., Business Cycles. A Theoretical, Historical, and Statistical Analysis of the Capitalist Process. New York, London 1939.
- , Theorie der wirtschaftlichen Entwicklung. Leipzig 1912.
- S t r i g e l, W.H., Fehlendes Vertrauen als Wachstums-
bremse. Ergebnisse und Folgerungen aus qualitativen
Unternehmerbefragungen. Ifo-Studien, Vol.24 (1978)
No. 1/2, pp.21-41.
- v o n T h ü n e n, J.H., Der isolierte Staat in Beziehung
auf Landwirtschaft und Nationalökonomie. Hamburg 1826.

ARBEITSPAPIERVERZEICHNIS

75. H. Reisen, Ein komplettes Nachfragesystem des Nahrungsmittelverbrauchs für Indien, Kenia, Malaysia und Mexiko. Kiel, August 1978.
76. B. Risch, Der Zusammenhang zwischen Arbeitslosenrate, Lohnquote und Inflation. Kiel, Oktober 1978.
77. P. Juhl, Struktur und Umfang der deutschen Exportförderungs politik. Eine Bestandsaufnahme. Kiel, Oktober 1978.
78. H. Lehment, Erklärungsansätze für das Schwanken von Wechselkursen. Kiel, Oktober 1978.
79. J. B. Donges, K.-W. Schatz, Growth and Trade Aspects of the Proposed Enlargement of the European Community. Kiel, Oktober 1978.
80. R. J. Langhammer, Der Süd-Süd-Handel - Substitut oder Komplement zum Nord-Süd-Warenaustausch. Kiel, Dezember 1978.
81. J. B. Donges, P. Juhl, Deutsche Privatinvestitionen im Ausland: Export von Arbeitsplätzen? Kiel, Dezember 1978.
82. R. Fürstenberg, Some Effects of Exchange Rate Changes. Kiel, Januar 1979.
83. Axel Neu, Arbeitsentgelte, Surrogatleistung und Verwendungsaufgaben bei einer Reform des Jugendstrafvollzugs. Kiel, Januar 1979.
84. V. J. Geraci, W. Prewo, A Supply and Demand Model of B-lateral Trade in a Multicountry Framework, Kiel, Januar 1979.
85. B. E. Fischer, Faktorsubstitution in Mexikos Landwirtschaft. Empirische Evidenz und agrarpolitische Implikationen. Kiel, Februar 1979.
86. B. Leibert, Vorschlag für ein Prognose- und Simulationsmodell der Umwandlungsbereiche der Energiewirtschaft der Bundesrepublik Deutschland. Kiel, März 1979.
87. B. Risch, Zur Rolle und Ausgestaltung einer effizienten Einkommenspolitik, Kiel, April 1979.
88. B. Fischer, Agrarwirtschaftliche Entwicklung und Agrarpolitik - Mexiko 1960 - 1975. Kiel, April 1979.
89. H. Giersch, Aspects of Growth, Structural Change, and Employment - A Schumpeterian Perspective. Kiel, Juni 1979.