

PRODUCTIVITY, PROFITABILITY, WAGES AND UNEMPLOYMENT: THE IMPACT OF MALINVAUD'S THEORY OF RATIONING IN GERMANY

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HARALD HAGEMANN

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Productivity, Profitability, Wages and Unemployment: The Impact of Malinvaud's Theory of Rationing in Germany

*Harald Hagemann**

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1. Introduction

Malinvaud's *The Theory of Unemployment Reconsidered* (1977) was well received in the German economics profession ever since the 1977 conference of the Verein für Socialpolitik in Münster, where Werner Hildenbrand had organized a special session on Malinvaud's book. The main speaker "On the Dynamics of Temporary Equilibria with Quantity Rationing" had been Volker Böhm (1978a), from 1973-77 Assistant Professor at CORE, Université Catholique de Louvain, from 1977-94 Professor at the University of Mannheim and thereafter at Bielefeld until his retirement in 2009¹. Volker Böhm, who had got his PhD from Berkeley with Gerard Debreu as his thesis supervisor in 1972, shortly after Jean-Michel Grandmont (1971) and before Jean-Pascal Benassy (1973), was a pioneer in attempts at making the theory of fixed price equilibria dynamic. An often quoted article is "Temporary Equilibria with Quantity Rationing" (1979) which Böhm wrote together with Pierre Lévine, stimulated by the contributions of Jacques Drèze (1975) and Benassy (1975).

With his *Prices, Wages and Employment* Böhm (1980) wrote one of the first textbooks in the German language area on the microeconomic foundations of macroeconomics. In *Disequilibrium and Macroeconomics* (1989) and several subsequent publications Böhm contributed to a more systematic theory of allocation under non-market clearing prices.²

A highly influential article in Germany was Winfried Vogt's "Walras or Keynes – On the French new staging of the neoclassical synthesis" (1979), which stimulated discussion among

* Institute of Economics (520), University of Hohenheim, 70593 Stuttgart, Germany. hagemann@uni-hohenheim.de

¹ Hildenbrand's PhD student Reinhard John (1978) presented another paper on temporary equilibria with quantity rationing.

² Malinvaud (1980 b, 13 n.7) refers to Böhm (1978b) as an attempt at making the theory of fixed price equilibria dynamic.

the young generation of more theoretically minded economists. Malinvaud's theory of rationing soon became a major issue of theoretical debates in the subsequent years, often considered as "the new macroeconomics" (see, for example, the collection edited by Hagemann, Kurz and Schäfer 1981)

Against an enormous rise in unemployment in the mid - 1970s and on a much higher level in the early 1980s after the two oil price shocks, Malinvaud's distinction between *Keynesian* unemployment (caused by a shortage of effective demand) and *Classical* unemployment (caused by a too high level of real wages relative to labour productivity) became an issue of hot and controversial debates. 'Keynesian' unemployment was widely conceived as synonymous with 'cyclical' unemployment, whereas 'classical' unemployment was considered as synonymous with 'structural' unemployment.

Malinvaud's 1977 book had a greater impact on theoretical and policy debates than the follow-up volume *Profitability and Unemployment* (1980) which is based on the Marshall lectures he gave in Cambridge in 1978. Malinvaud considered that book as "a companion to my *Theory of Unemployment Reconsidered* to clarify the relationship between profitability and unemployment". Not only does unemployment reveal an imbalance in quantities, but high or low profitability reveals an imbalance in prices as well. Malinvaud considered Walrasian equilibria as an appropriate framework for long-run economic analysis, whereas the fixed-price (dis-)equilibria in the center of his 1977 book would be relevant only to short-run macroeconomic analysis. For medium-run analysis a "less restrictive theory is needed, in which prices will be allowed to shift from one temporary equilibrium to the next one" (Malinvaud 1980 b, p.10)

Profitability is considered as a decisive prerequisite for economic growth. Full employment presumes two conditions: a sufficient effective aggregate demand and a sufficient productive capacity. If there is a shortage of capacity due to insufficient investment activity in the past (e.g. as the consequence of low profitability expectations among investors), neither demand management nor a lowering of real wages could increase output and employment in the short run. The result is *capital shortage unemployment*.

This aspect was taken up in an influential article "Labor, Wage and Productivity" by Herbert Giersch (1983). As a founding member of the German Council of Economic Advisors from

1964-70, President of the Kiel Institute of World Economics from 1969-89³ and President of the Mont Pèlerin Society 1986-88 Giersch had the greatest impact on economic policy debates in Germany for almost three decades⁴. Always inclined to regard unemployment as the negative consequence of a too high level of real wages, Giersch (1983) now took up Malinvaud's category of Classical unemployment and extended it in the temporary dimension as "classical unemployment"

- of the first degree in the *short run*
- of the second degree in the *medium run* (alias *capital shortage unemployment*), and
- of the third degree in the *long run* (alias *technological unemployment*).

The debate was re-vitalized in the 1990s when shortly after German unification an enormous increase in unemployment rates in East Germany took place as the worst macroeconomic development.

In the following I will first discuss Malinvaud's temporary equilibrium model with quantity rationing with a focus on the distinction between Keynesian and Classical unemployment and the relevance of this distinction for economic policy in *section 2*. In the subsequent *section 3*, emphasis is on the medium run including an investment function and the relationship between profitability and unemployment as discussed by Malinvaud (1980) in his Marshall lectures. Special attention in *section 4* is given to those elements which took a major role in German economic policy debates before and after German unification. Malinvaud's high appreciation in Germany is also indicated by the prizes and honors he received which are discussed in the concluding *section 5*.

2. Keynesian versus Classical Unemployment

Malinvaud has elaborated his typology of three different fixprice equilibrium regimes within the nominal price space, with the money wage rate w on the vertical and the general price level p on the horizontal axis. In *Figure 1* W indicates the Walrasian equilibrium in which the labour market and the goods market are cleared simultaneously.

- C denotes the area of *Classical unemployment*, with excess supply in the labour market and excess demand in the goods market, i.e. households are rationed on both markets.

³ Giersch also chaired the Summer Symposia at the Kiel Institute where in 1979 Malinvaud gave us his contribution to the 1978 IEA conference "Unemployment in Western Countries" (Malinvaud 1980a) of which the German translation was published only a few months later than the English original.

⁴ On Giersch's role as a public economist see also the contribution by Plehwe and Slobodian (2019).

- **K** denotes the area of *Keynesian unemployment* with excess supply on both markets, i.e. households are rationed on the labour market and firms are rationed as suppliers of goods.
- **I** is the area of *repressed inflation*, with excess demand on both markets.⁵

The curve segment WE, on which the goods market is cleared, separates Keynesian from Classical unemployment. The left curvature indicates that a proportional increase of p and w exerts a negative effect on the demand for goods which results from the lower real value of money balances. This negative real balance effect could only be compensated by the positive purchasing power effect of an over-proportional increase of nominal wages. It demonstrates the dominant role of the real balance or Pigou effect in Malinvaud's model which only includes outside money.⁶

Keynesian (K) vs Classical (C) Unemployment

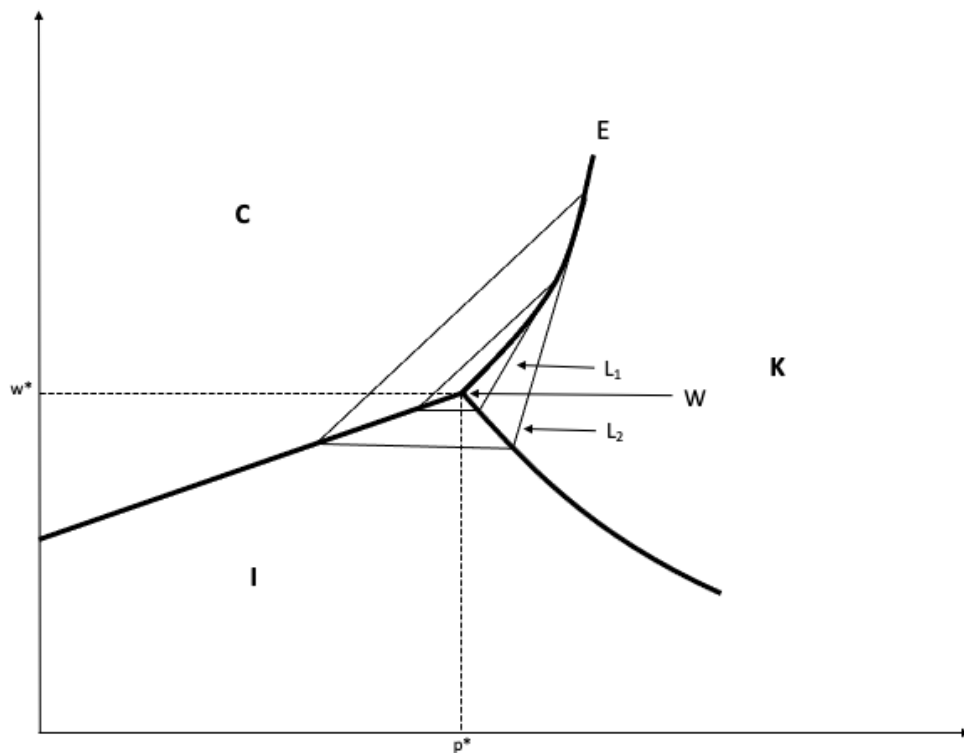


Figure 1: Fixprice equilibrium regimes

⁵ Malinvaud widely abstracts from the fourth case of *Underconsumption*, characterized by excess supply on the goods market and excess demand on the labour market as relatively irrelevant.

⁶ In contrast to the IS-LM model where the focus is on the interdependence between the goods market and the money market, in Malinvaud's basic model the focus is on the interdependencies between the goods and the labour market.

As soon as firms are subjected to rationing on the goods market the marginal productivity principle is replaced by the real purchasing power effect. The real wage is now smaller than the value of the marginal productivity of labour, i.e. the volume of employment is independent of the real wage and determined only by the effective demand for goods⁷. A reduction of the real wage would cause more and not less unemployment. An increase of employment requires a stimulation of effective demand, i.e. an increase of the real wage for a movement to full employment equilibrium. The curve for labour market clearing therefore is falling beyond W .

In the case of Classical unemployment full employment is prevented by a too high real wage. A reduction of w/p (which in the diagram is represented by a straight line through the origin) therefore is a necessary condition for a reduction of unemployment. With autonomous demand given⁸, Keynesian unemployment results from a price level too high in relation to cash balances of households. In this case a price reduction is precondition for a reduction in unemployment. It can be associated with a higher (at $w < w^*$) or lower money wage (with $w > w^*$). Repressed inflation is characterized by a too low level of p and w .

The figure shows that labour market clearing can be associated with various levels of the real wage which is compatible with a Walrasian full employment equilibrium. Simultaneous clearing of the labour and goods market furthermore requires $w = w^*$ and $p = p^*$.

Repressed inflation is also associated with a loss of output and employment if one assumes, as Malinvaud does, that households reduce their effective labour supply if they are rationed as consumers on the goods market. This becomes visible when looking at the iso-employment curves in figure 1⁹. An iso-employment curve denotes a w - p -combination implying the same employment level. In the Classical area they are straight lines through the origin because employment is an inverse function of the real wage when firms are not rationed. In the Keynesian area the slope of the iso-employment curves is increasing since the same employment requires an increase of the real wage to compensate for the negative consequences of the real balance effect. With the instrument of iso-employment curves the comparative-static employment effects of price and / or wage changes are directly visible. Figure 1 shows that the same employment level can occur in all three regimes and can be associated with different

⁷ See also Barro and Grossman's (1971, 86) graphical representation of Patinkin's (1965, chapt. 13) analysis of the labour market with an excess supply of goods.

⁸ There is no explicit investment function in Malinvaud (1977).

⁹ On iso-employment curves see Barro and Grossman (1976, pp. 92 ff.) who, however, develop this instrument not in the nominal but in the real price space (w/p , M/p).

combinations of w and p . Maximum employment L^* is realized in Walrasian equilibrium W . With growing distance from W the employment level declines ($L^* > L_1 > L_2$).

In Malinvaud's rationing approach emphasis is on '*effective*' and not '*notional*' supplies and demands.¹⁰ In contrast to the alternative representation of rationing equilibria in the quantity diagram¹¹, the w - p diagram ignores the process by which the temporary equilibrium with quantity rationing is approached and thereby does not comprehend a central property of rationing models, namely the interdependence of markets via quantity signals. Whereas this is a drawback, the w - p diagram (which assumes the existence of rationing equilibria) elucidates the deviation of the wage-price vector from Walrasian equilibrium which exists as a central point of reference, albeit not as a center of gravitation. This shows some benefits in the analysis of the comparative-static properties of wage and price changes since the direction of the effects of specific economic policies can be seen immediately.

Malinvaud's typology of fixprice equilibrium regimes with the focus on the distinction between Classical and Keynesian unemployment is of great importance for the appropriate economic policies for each one of these two cases. He considered the Keynesian revolution to be a shift of emphasis from 'Classical' to 'Keynesian' unemployment.¹² The two types of unemployment have different causes and therefore require different therapies and economic actors to cure. The diagnosis of Classical unemployment implies that real wages are too high and have to be corrected. This gives the actors in collective bargaining agreements, i.e. trade unions and industrial and trade associations, responsibility for the reduction of unemployment. On the other hand, in the case of Keynesian unemployment with a lack of efficient demand as its fundamental cause, the government is in the pole position for a successful therapy. Fiscal policy particularly

¹⁰ For a detailed discussion of the difference see the 'dual decision hypothesis' elaborated by Clower (1965).

¹¹ See Muellbauer and Portes (1978) for a detailed discussion of the double wedge diagrams. However, the Malinvaud approach would result in this quantity diagram not in a double wedge but only in a straight line because, due to the atemporal treatment of firms, the goods-restricted labour demand function becomes the inverse of the labour-restricted supply function on the goods market, i.e. the wedge of the firms is reduced to one line.

¹² In the second edition Malinvaud ([1977] 1985, 16 n.2) also refers to chapters 3 and 6 of Benassy (1982) for a fuller discussion of rationing schemes.

Malinvaud's typology of fixprice equilibrium regimes is not strictly Keynesian since *The General Theory* is not based on a system of fixed prices and wages. However, Malinvaud's case of Keynesian unemployment corresponds roughly to Keynes's underemployment equilibrium and results in equivalent policy recommendations to reduce "involuntary" unemployment. The latter also holds for Malinvaud's case of Classical unemployment which has some similarities with "involuntary" unemployment in Keynes.

Keynes emphasized the difficulties or failures of economies to coordinate economic activities and thereby as regulating systems. Therefore the research programme of Leijonhufvud and Clower, who pay more attention to the adjustment process towards equilibrium rather than to the question of existence, is more in the spirit of Keynes. Leijonhufvud later distanced himself from fixprice models and regretted his earlier emphasis to attribute to Keynes a reversal of Marshall's ranking of relative price and quantity adjustment speeds which contributed to the rise of rationing models in the 1970s.

has a decisive role to play in times of a great recession or depression as in the current Covid-19 crisis.

A central difference exists between Classical and Keynesian unemployment in the application of specific wage and price variations. Whereas real wages must be reduced (not necessarily absolutely, but relative to productivity) to cure Classical unemployment because the employment effect is determined exclusively by the negative (positive) cost effect of wage increases (decreases), in the case of Keynesian unemployment real wages usually should be increased. The reason is that the positive employment effect of a wage increase is the more likely the stronger the positive (indirect via the spillover effect on the goods market and the feedback effect on the labour market) purchasing power effect is in relation to the negative (direct) cost effect. In long-run equilibrium an inverse relationship exists between the real wage and the rate of profits (without technical progress). In a deep recession the economy is operating substantially below full capacity. Temporarily it is even possible that a rise in the real wage may be associated not only with a rise in investment and output but even with a rise in the rate of profits, as a consequence of an increase in the degree of capacity utilization associated with a decline in fixed costs per unit of output.

In reality economies are often characterized not by pure but by mixed forms which makes it necessary to develop a more complex multisectoral model considering intersectoral dependencies. Thus, for example, an increasing government demand for products of sectors, which are characterized by Keynesian unemployment, cannot be successful if in key sectors supplying important inputs Classical unemployment or repressed inflation prevails at the same time.¹³

3. Profitability and Unemployment

A main weakness of Malinvaud's fixprice model has been that his short-run analysis, in contrast to Keynes, did not include an investment function. Furthermore, autonomous investment is lumped together with government expenditures to a mixed variable G , a procedure which was heavily criticized (not only) by the guardians of the Holy Grail such as Richard Kahn (1977). This deficiency was overcome when Malinvaud gave his Marshall lectures in the lion's den in the subsequent year.

¹³ For a first analysis of intersectoral differences see Malinvaud (1980a, part II).

The extension of the basic model by an endogenous capital accumulation is a key element of medium-run analysis. The connection between profits, investment and employment is placed into the foreground. Malinvaud (1980b) develops a cyclical model which consists of a sequence of short-run fixprice periods in between which not only prices but also production capacities vary. Focus is still on the interdependencies between the goods and the labour market. The system includes three simplifying assumptions: (1) labour supply is *inelastic*; (2) the production function (of the representative firm) is linear-homogeneous, and (3) the complex system of utility functions is omitted. The fact that Malinvaud still abstracts from technical progress and assumes a constant working population implies a zero natural rate of growth, indicating that growth considerations are still not in the center of analysis.

Net output y is given by the minimum of the three variables βL , d and $\bar{y}$ with L as the exogeneous labour force, β as the (constant) productivity of labour, d denoting the aggregate demand for goods, and $\bar{y}$ as the productive capacity of the capital stock which is given in the short run.

Equilibrium requires: $\beta L = d = \bar{y}$

- a) If d is smaller than βL and $\bar{y}$, there is a situation of generalized excess supply, i.e. *Keynesian unemployment*.
- b) If $\bar{y}$ is smaller than d and βL , there is a situation in which excess supply of labour and excess demand for goods prevail, i.e. households are rationed on both the labour and the goods market i.e. *Classical unemployment*.
- c) If full employment output βL is smaller than d and $\bar{y}$, excess demand exists on both, the goods and the labour market, i.e. *inflation*. The term “repressed” is deleted since now price adjustments take place between the different fixprice periods.

Full employment presupposes two conditions: a sufficient effective aggregate demand *and* a sufficient productive capacity. If there is a shortage of capacity neither demand management nor a lowering of real wages could increase output and employment in the short run. The result is *capital shortage unemployment*.

The *investment function* is specified as

$$i_0 = \underbrace{a(\beta - e - w_0)}_{\text{Profitability effect}} + \underbrace{b(\hat{y}_0 - \bar{y}_0)}_{\text{Aggregate demand effect}}$$

with i_0 denoting investment in the current period, w_0 as the initial real wage rate, $\bar{y}_0$ as the existing capacity, $\hat{y}_0$ the desired capacity and a , b and e being non-negative parameters. This investment function, which is linear with fixed coefficients, is admittedly simple, assumed to be the same for the different regimes (thereby neglecting the feedback to expectations formation), and basically designed for connecting short-run fixprice equilibria in the medium run. "The logic behind the investment function is the uncertainty about the future state of supply and demand in a situation in which there is strict complementarity between capital and labour and no financial constraint" (Malinvaud 1980 b, 38). Malinvaud assumes that current investment always raises capacity to the level required by the expansion of demand. This investment function, in which the profit component and the demand component (accelerator) are combined in an additive way, is the central behaviour function. With its two components it is open for a more neoclassical (profitability effect) or Keynesian (aggregate demand effect) argumentation, depending on the relative strengths of the two effects in the respective situation. The derivation of the investment function is based on the one-period maximization of expected net returns from investment. The desired capacity is determined by the expected development of the real wage, the costs of a capacity unit, labour productivity and aggregate demand. In conformity with the spirit of the fixprice model changes in price variables are expected with certainty, but "when deciding on its future productive capacity, the firm is uncertain as to the future state of demand for its product" (Ibid, 30-1).

In addition to capital accumulation wage and price changes are a decisive element of intertemporal connection. Therefore, hypotheses on changes of these variables are important for the analysis of the sequence of short-run equilibria. Malinvaud is content with ad-hoc assumptions making them plausible referring to the results of econometric studies. The relative change of the price level from one period to the next is a linear function of excess demand on the goods and labour market. The price adjustment function differs between the three regimes. The same holds for the development of the real wage which is assumed to be constant in the case of Keynesian unemployment, to decrease in proportion to the unemployment rate u in the case of Classical unemployment, and to increase in proportion to excess demand in the case of Inflation. Expectations are assumed to be exogeneous and constant, a problematic hypothesis for a medium-term model.

Clearer than before Malinvaud (1980 b, 12) emphasizes "that the new theories of short-term fixed price equilibrium ... are intended to apply in the neighbourhood of a Walrasian equilibrium". Malinvaud's restriction to constellations of small deviations from Walrasian

equilibrium (in order to justify fixed prices in the short run) is more necessary in cases of excess demand rather than in cases of excess supply, where prices are more rigid even with larger deviations from Walrasian equilibrium.

Malinvaud's model shows some similarities with the *corridor concept* elaborated by Leijonhufvud (1973). However, in contrast to Malinvaud in the neighbourhood of Walrasian equilibrium no interventions of the government are necessary. Within the corridor, i.e. if only small disturbances occur, the destabilizing tendencies caused by false trading, i.e. buying and selling at non-equilibrium prices, are dominated by automatic stabilizers such as taxes and social security payments and consumption expenditures depending on permanent income. Only outside the corridor, where cumulative deviations prevail, government interventions are necessary. In this case, in which the capability of the capitalist economy for self-regulation collapses, fiscal policy becomes decisive. Although the borderlines of the corridor are difficult to define, the fixprice assumption and the coordination of economic plans only via immediate quantity adjustments are difficult to maintain.

Malinvaud's medium-term model has the result that Keynesian unemployment not only occurs more often than Classical unemployment but also that it is of a more pertinacious nature. Another important consequence is "that classical unemployment is most likely to end up as Keynesian unemployment" (Malinvaud 1980b, 73). However, this adjustment process is time-consuming and may transcend the medium run. Malinvaud's result is that neither demand management nor income policy alone would be sufficient to overcome a Keynesian depression which is characterized by underutilized capacities and a too low real wage. This is the consequence of the model assumptions such as stationary expectations, a fixed-coefficients technique and a constant real wage. With his price adjustment hypothesis this would imply a decreasing money wage in the Keynesian regime, a questionable hypothesis which contradicts the main content of chapter 19 of *The General Theory* in which Keynes (1936) argues against the 'classical doctrine' that a downward flexibility of money wages will systematically lead to full employment.¹⁴ However, in particular with regard to Malinvaud's central theme, the relationship between profitability and unemployment, the inherent tendency towards a Keynesian unemployment equilibrium is by no means conclusive. Thus, an increase of real wages would indirectly stimulate aggregate demand, however at the same time impair profitability directly. In the longer run this would endanger the approximation to full

¹⁴ For a more detailed discussion of the relationship between wages and employment in Keynes see Hagemann (2019).

employment because the necessary maintenance (respectively with different assumptions, the expansion) of production capacities would not take place. Preconditions for future employment must be fulfilled even with a current underutilization of production capacities. The stronger the profitability component in the investment function is in relation to the demand component the higher the probability of capital shortage unemployment due to a lack of profitable investment projects.

Malinvaud also addresses the situation after the oil price shock(s), i.e. a situation in which the preexisting real wage rates became too high due to the sudden deterioration in the terms of trade and aggregate demand became deficient because the negative effect in oil-importing countries has not been adequately compensated by additional demand from oil-exporting countries.¹⁵ According to Malinvaud the effect of the oil price shock “is an initial spell of Keynesian unemployment with negative net investment” (1980b, 86) due to the negative effect on profitability. As the appropriate economic policy the author recommends a combination of expansionary demand management with an incomes policy “that is intended to reduce the real wage rate” (Ibid, 89) to avoid that the economy ends up in a situation of capital shortage unemployment in the medium run.

It should be added that particularly in view of the emphasis on the role of profitability and the weak investment activity a monetary policy lowering interest rates would be more advantageous in the medium and longer run to avoid a bottleneck of production capacities. However, in West Germany exactly the opposite happened which caused a major conflict between Chancellor Helmut Schmidt and the Bundesbank. For the first time since 1965 the balance of payment on current account went into deficit in the years 1979-1981 exclusively due to the enormous increase in oil price. Together with inflation gaining speed this was the rationale for the Bundesbank to follow a contractionary monetary policy which led to a soaring of interest rates. The long-term interest rate, relevant for most investment activities, in 1981 on average reached a level of 10.6 per cent which contributed to a collapse of private investment, a monetary policy heavily opposed by Schmidt who rightly foresaw that the following rapid increase of unemployment figures to more than two millions in 1983 endangered his Chancellorship (which indeed ended in 1982).

In 1974, the year Schmidt had become Chancellor, he made the famous statement in which he emphasized the causal connection profitability-investment-employment: “Today’s profits make

¹⁵ Furthermore, as it happened, greater structural distortions occur since the composition of the additional demand from oil-exporting countries (e.g. for weapons) diverges from the composition of domestic demand.

the investments of tomorrow and thereby create the jobs of the day after tomorrow”¹⁶. Interestingly, this statement was widely cited by French politicians from Giscard d’Estaing in 1976 to Mitterrand from 1983 and the European turn, raising it almost to the height of a “theorem”. As a consequence, the idea won popularity particularly after the second oil price shock when elements of classical unemployment got stronger. More emphasis was now placed on profitability than aggregate demand. Malinvaud took up seriously the idea in the presence of sectorial declining rates of profit and investment after the oil price shocks. But his own (Malinvaud 1986) as well as other econometric studies that followed on the link profitability-investment-employment, such as that by Artus, Laroque and Michel (1984), were disappointing.

However, as intuitive as these reflections are, it cannot be stated that most Western economies, particularly after the second oil price shock, were moving in the neighbourhood of Walrasian equilibrium. Malinvaud is conscious about this limitation but points out that it is “interesting to note that even a model built on very crude hypotheses can produce suggestive results” (Ibid, 89). Similarly to John Hicks, who often ended his model analyses indicating “ways ahead”, Malinvaud discusses in the concluding chapter ways to overcome the restrictive character of his model. This includes a disaggregation opening the possibility of coexistence of sectors with Keynesian and sectors with Classical unemployment, the endogenization of expectations, the integration of international trade and financial markets and the consequence of a replacement of a fixed-coefficient technology by a production function with substitutability between capital and labour. One internal problem of his medium-term model should be pointed out at the end of this section. The length of the period is determined in a twofold way: by fixed prices and by a given production capacity. Both do not automatically correspond.

4. German economic policy discussions inspired by Malinvaud’s theory of unemployment

Malinvaud’s *The Theory of Unemployment Reconsidered* and, to a lesser degree, the subsequent *Profitability and Unemployment* had an enormous impact on debates on the diagnosis and therapy of unemployment in Germany.¹⁷ With some exceptions, such as Kurt and Werner Hildenbrand (1978) and Volker Böhm who were also influenced by the works of Jacques Dréze,

¹⁶ “Die Gewinne von heute sind die Investitionen von morgen und die Investitionen von morgen schaffen die Arbeitsplätze von übermorgen.”

¹⁷ In contrast, his subsequent *Mass Unemployment* (Malinvaud 1984) based on his 1983 Royer Lectures in Berkeley, and *Diagnosing Unemployment* (Malinvaud 1994), based on his 1990 Caffé Lectures in Rome, were much less noticed.

Jean-Pascal Bénassy and Jean-Michel Grandmont, there were not so many contributions advancing the research frontier. But rationing models soon became the subject of many dissertations and entered many macroeconomic textbooks as core chapters.¹⁸ In particular Malinvaud's typology with the central distinction between Classical and Keynesian unemployment became a main ingredient in many controversial debates on the diagnosis and therapy of unemployment. This has to be seen against the background of the timely publication of his works. In the mid-1970s a long phase of full, and even overemployment, came to an end. After the first and particularly after the second oil price shock unemployment in West Germany soared considerably and remained around two millions during the whole 1980s. A second shock on the labour market happened in East Germany after unification in 1990.

A main conclusion is drawn by Malinvaud at the end of his *Mass Unemployment*: "Economics as a science has failed at this moment in history to convey to the general public a useful message on what ought to have been done in order to contain unemployment" (Malinvaud 1984, 113). As he describes in his autobiographical reflections (2004) in his youth he experienced the disaster of mass unemployment in the Great Depression in his home town Limoges. When unemployment came back in most Western countries after the first oil price shock on a larger scale, he felt compelled to put his focus on the explanation of "variations in involuntary unemployment between periods or countries" and considered "that the theory of the fixed-price general equilibrium is particularly enlightening in this respect" (Malinvaud 2004, 285). He became known as a champion of the microeconomic foundations of macroeconomics and rightly regarded macroeconomics as particularly difficult since it is dealing with complex phenomena. His research and teaching activities until his death in 2015 were dominated by developing proper methods and models for the diagnosis and therapy of unemployment. "My hope to improve understanding of macroeconomics provides the unifying concern behind these activities" (Malinvaud [1986] 1989, 297). Stimulated also by Yves Younes and Jacques Dréze Malinvaud engaged into the construction of general equilibrium fixprice models and became a proponent of disequilibrium theories. He recognized as the decisive disequilibrium which has developed in Europe a situation of "medium-term classical unemployment, but short-term Keynesian unemployment" (Ibid, 309), characterized by a growing gap between full employment output and productive capacity because the latter's expansion suffered from too low profitability. This has caused Malinvaud to elaborate his medium-term model in

¹⁸ See, for example, the introductory book into disequilibrium theory by Kurt Rothschild (1981) with separate chapters on Patinkin, Clower, Barro/Grossman and Malinvaud, and the very successful Macroeconomics textbook by Bernhard Felderer and Stefan Homburg (1984).

Profitability and Unemployment in which the definition of “Classical unemployment” has undergone a change compared to his earlier *The Theory of Unemployment Reconsidered*. There the regime of Classical unemployment was characterized by excess demand in the market for goods (buyers’ market) in the short run, which could be cured by a reduction in real wages. According to Malinvaud this type of Classical unemployment with its excess demand for goods, could not be dominant for long. Together with his observation that since 1974 a situation of excess supply of goods had established in the medium to long run, it stimulated him to construct his medium-term model in which the investment function comprises a profitability and a demand component, and Classical unemployment is now conceptualized as capital shortage unemployment.

Giersch on the other hand, has been the champion of identifying a too high wage level as the root cause of unemployment in the short run, in the medium run (alias *capital shortage unemployment*) and in the long run (alias *technological unemployment*). He accused Post-Keynesians in Anglo-Saxon countries to ignore capital shortage unemployment and technological unemployment (Giersch 1983, 10) which in his interpretation were the medium-run respectively the long-run consequences of an excessive wage level. This would cause a declining profitability of investment, which he considered “the driving force in the capitalist process” (Giersch 2000, 86), and thereby due to the negative effect on investment leading to capital shortage unemployment in the medium run. Giersch explicitly blamed Keynesian policies with its exclusive emphasis on the demand side for the big wage push emerging in the late 1960s and for the accelerating inflation rate after the oil price shock. “Keynesian policies thus increased classical unemployment by producing a shortage of capital, with an insufficient number of jobs built into the capital stock” (Ibid, 87). No wonder that his views “that wage moderation was a necessary condition for any strategy intended to substantially reduce Europe’s unemployment before the end of the 1980s” (Ibid, 95-6) caused a permanent conflict with organized labour. It is also at odds with Malinvaud’s (1980b) investment function which contains not only a profitability component but also a demand component. A rationing of firms on the goods market has negative spillover-effects on the demand for labour. Thus, the demand for labour can take the vertical form as indicated in the famous diagram of Patinkin (1965). The root cause of this excess supply on the goods market and the labour market can arise outside both markets. This happened with the crash of Lehman Brothers in September 2008 at the origin of the Great Recession on the financial markets, or as in the case of Covid-19 in early 2020 completely outside the economic sphere. In both cases excessive wage policies could not be blamed for the collapse of employment.

Similar reservations hold for the emergence of technological unemployment in the long run. In Giersch's scenario it is the consequence of dynamic substitution processes according to which excessive wages and depressed profit rates cause entrepreneurs to engage in the development of labour-saving innovations thereby killing jobs in the long run.¹⁹ As Leontief (1982, 190) has already emphasized in the debate on the employment consequences of the introduction of industrial robots into the production process, several important innovations contain such a quantum jump in productivity that their introduction cannot be blocked or slowed down by substantial wage decreases: "A drastic general wage cut might temporarily arrest the adoption of labor-saving technology, even though dirt-cheap labor could not compete in many operations with very powerful or very sophisticated machines."

Malinvaud had already discussed the impact of technical progress in his original prototype model. An increase in productivity due to technical progress would result in a shift to the left. If the price-wage constellation would remain fixed at the original Walrasian equilibrium W_0 ,

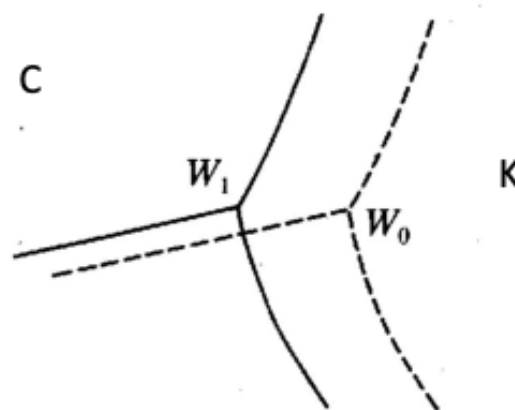


Figure 2: The Impact of Technical Progress

then the economy would move into Keynesian unemployment.²⁰ Therefore real wages have to increase proportional to the rise in labour productivity for the economy to stay in the new Walrasian equilibrium W_1 . Improvement (deterioration) of the *Terms of Trade* would shift the boundaries to the left (right), i.e. in the same (opposite) direction and thereby has a similar effect as an increase in productivity.

¹⁹ „Überhöhte Löhne und gedrückte Zinsen locken aus der Schatzkammer des neuen Wissens nicht die Kapitalsparer an, sondern die Job-Killer. Das Ergebnis ist technologische Arbeitslosigkeit, eine klassische Arbeitslosigkeit dritten Grades“ (Giersch 1983, 10).

²⁰ See Malinvaud ([1977] 1985, 94).

Supposing that full employment exists in the initial situation. Then a productivity-oriented wage policy according to which real wages rise proportional to labour productivity would not change unit labour costs and thereby contribute to the maintenance of full employment and price level stability. As equation (1) indicates, it would also be neutral concerning the share of wages in national income.

$$\frac{W}{Y} = \frac{w \times L}{p \times Y_r} = \frac{w/p}{Y_r/L} \quad (1)$$

The profitability of firms rises (falls) with lower (higher) capital costs and an improvement (deterioration) of the terms of trade. This leads to a modification of a simple productivity-based wage policy. The scope for wage increases is enhanced (diminished) above (below) productivity growth with falling (rising) interest rates and an improvement (deterioration) of the terms of trade. The big cost problem for the firms resulted from the fact, that the two oil price shocks implied a deterioration of the terms of trade for oil-importing countries such as Germany (but also France, Italy or Japan) combined with phases of high interest rates (particularly in 1973/74 and 1980/82) thereby reducing the range for wage increases substantially which was resisted by the trade unions whose bargaining power, however, was shrinking due to the enormous increase in unemployment rates. Furthermore, productivity growth in the early 1980s was much below earlier growth rates. This led to a stagnation of real wages in Germany for about six years. Then in 1986 real wages increased considerably. Although wage growth exceeded productivity growth, the share of wages in national income declined, and correspondingly the share of profits increased, only seemingly in contrast to equation (1) which, however, does not include the other cost factors. The main reason was the improvement in the terms of trade, the greatest annual change which exceeded the negative annual changes after the oil price shocks. The improvement of almost 3 percent in 1986 mainly was the combined effect of a decrease in oil prices from about \$40 to \$13-\$15 per barrel and an enormous revaluation of the Mark to the US-dollar from 3.47 in spring 1985 to 1.58 in fall 1987. In the late 1980s employment in West Germany increased considerably but unemployment came down only slowly below two millions. Nevertheless, when the Berlin Wall collapsed in November 1989 the degree of capacity utilization in West German industry was on a high level.

German unification happened on 3 October 1990. But from an economic point-of-view the decisive date was already three months earlier when on July 1st the DM was introduced in East Germany with the economic, monetary and social union. East Germany suddenly became an

open economy with a convertible currency for which it was in no way prepared. One major difference to the currency reform in West Germany on June 20th, 1948 was that in the West German case it took until 1961 that a full external liberalization was attained, whereas with East Germany joining the economy and currency of the Federal Republic of Germany in the night from June 30th to July 1st, 1990 a complete internal *and* external liberalization happened. Chancellor Kohl granted the East Germans what they were demanding at the last Monday demonstrations in Leipzig and elsewhere. “When the Mark will not come to us, we will come to you” – without being aware of the negative side of the consequences. Industrial production in East Germany collapsed immediately by about 50 percent in the second half of 1990. From summer 1990 to summer 1993 employment in East Germany decreased by more than 40 percent associated with an enormous structural change²¹.

Economists identified four main causes for this collapse in employment which was stronger than in most Western countries during the Great Depression²².

1. *The economic consequences of Mr. Kohl*

The shock of revaluation by about 400 percent on July 1st, 1990 (which even the most competitive economy in the world could not have mastered immediately) caused an almost complete breakdown of the export and import substitution markets of East German industry. In analogy to Keynes’ scathing critique “The economic consequences of Mr. Churchill” (1925) of the decision of the British government with Winston Churchill as the Chancellor of the Exchequer in April 1925 to return to the gold standard at the pre World War I parity of \$4.86 for the pound sterling (at a time when the exchange rate on the financial markets was \$4.40/£), these effects of a strongly overvalued currency were named “The economic consequences of Mr. Kohl”. They could only be compensated a little bit by a boost of purchasing power in the hands of the East Germans due to the favourable conversion of their money wealth at an average rate of 1.8:1.

2. *Keynesian unemployment*

In summer 1990 an enormous pent-up demand of the East Germans for Western products burst. This caused a *Sonderkonjunktur*, i.e. a boom in West Germany (and also a strong increase of

²¹ In agriculture employment decreased by far more than 80%, in manufacturing above average with more than 50 percent, in trade and transportation below average and in the public sector only moderately. Services, the former stepchild of the socialist economy, were the only sector with an increase in employment.

²² In the former GDR the participation rate of women was among the highest in the world and about 25 percent higher than in West Germany. During the 1990s there was a gender bias in unemployment rates which were higher for women than for men.

imports from EU countries) in 1990/1991, at a time when many countries, from the USA to France, were in a recession. The preferences of East German consumers led to a massive diversion of spending away from East German to Western goods. As a consequence there existed excess demand on goods markets in West Germany and excess supply on goods markets in East Germany at the same time.

3. *Capital shortage unemployment*

In 1989/90 labour productivity in East Germany (which was relatively the highest in the Eastern bloc) was only about 1/3 of the West German level despite similar qualification of the working population²³. The main reason for this gap in productivity was the obsolescence of the capital stock in East Germany which at the time of unification was outdated technologically and also ecologically. This marks another major difference to West Germany where despite all destructions due to Allied bombing in World War II (which destroyed a much greater share of houses than of machines) was remarkably modern (plus a different international surrounding with most other countries suffering from the war). The capital stock of West German industry in May 1945 at the end of WWII was about 20% higher than at the beginning in September 1939²⁴. Although Saxony with its machine tool and car industry, etc. historically had been one of the main centers of the German industrialization process between 1871 and 1913/14, it was strongly falling behind in the period between 1945 and 1989²⁵. This contributed to capital stock obsolescence and the resulting unemployment after unification.

Capital shortage unemployment thus may be diagnosed correctly as a main reason for unemployment, but the decisive cause for the genesis of capital shortage unemployment could be explained in

- a *neoclassical* way (as the medium-run consequence of a too-high wage level/ low profitability),
- a *Keynesian* way as the medium-run consequence of a too-low level of effective aggregate demand which is reflected in underutilized production capacity, or

²³ West Germany had relatively more employees with university degrees, but the percentage of workers without any final exam in school or apprenticeship was lower in East Germany.

²⁴ For greater details see Hagemann (1993, 16-22).

²⁵ Ironically, Chemnitz which had one of the highest per capita incomes in Europe in 1913 was named Karl-Marx-Stadt in the former GDR.

- as the *socialist legacy* as in East Germany after 1 July 1990, or in other formerly socialist economies in Central and Eastern Europe.

4. *Classical unemployment*

In the first years after unification wage increases in East Germany were running far ahead of productivity increases. As a consequence of this “high wage – high tech strategy” (Sinn and Sinn 1992) most existing productive capacities became unprofitable before new modern plant and equipment could be built up on a broader scale and the productivity gap closed. Although wages were lower in East than in West Germany they were relatively too high in relation to productivity, i.e. unit wage costs in East Germany exceeded those in West Germany. In contrast to countries such as Hungary, Poland or the Czech Republic which have kept their national currencies until today, East Germany had lost the possibility of depreciating her exchange rate to improve the competitiveness of firms (as it happened to Southern European countries with entry in the Euro area). The wage-setting process in East Germany after July 1st, 1990 differed substantially from the one in West Germany after June 20th, 1948 when a rather restrained wage policy in combination with high productivity increases and a long-term undervaluation of the Mark led to high exports, profits and investments. Investment in modern machinery equipment in East Germany in the 1990s was hampered on the profitability side. Thus prevailing unemployment had stronger *classical* features in the sense of Malinvaud (1980).

5. **Concluding Remarks**

The disequilibrium approach in macroeconomics was mainly a European phenomenon, with French economists such as Benassy, Grandmont or Malinvaud, and Jacques Drèze at the CORE in Louvain Belgium, taking the lead. However, the reception of their work in Germany mainly remained limited to a small group of high-brow mathematical economists with Werner Hildenbrand at the University of Bonn at the center. Hildenbrand who had written his habilitation thesis on ‘The core of an economy’ and got his *venia legendi* from the University of Heidelberg in 1968 was Professor of Economics at Bonn from 1969-2001. Since 1966 he spent longer research periods at the University of California at Berkeley where he closely cooperated with Gerard Debreu and Roy Radner. From 1968-1976 he was also Research Professor at the Center for Operations Research and Econometrics in Louvain, cooperating with Drèze and publishing also an article with Grandmont (1974), and from 1986 to 1993 part-time visiting professor at the European University Institute in Florence where he cooperated with Alan Kirman.

Until the mid-1970s the reception of Malinvaud's work did not stand out. His pathbreaking article on capital accumulation (Malinvaud 1953) was well perceived and became a classic among a small group of specialists in capital theory with an interest in the extension of equilibrium theory emphasizing the intertemporal aspects of production and consumption. The advanced *Lectures on Microeconomic Theory* (1972) were used as a textbook only at a few faculties with a stronger theoretical approach. However, the resonance ground of his work extended enormously with his *Theory of Unemployment Reconsidered* (1977), a kind of watershed signaling his dedication to the importance of macroeconomic disequilibria, particularly involuntary unemployment, in the real world. In the following two decades Malinvaud's distinction between different fixed-price (dis-)equilibria became a main point of reference in theoretical and policy debates in Germany.

The high appreciation for Malinvaud's work is also reflected in several prizes and honours. Among the fourteen honorary doctorates he received from universities outside France, three are from Germany (and with Basel, Geneva and Lausanne also three from Switzerland). Not surprisingly, like the one from Louvain, one is from the University of Bonn where Malinvaud was also a member of the International Advisory Board of the Center for European Integration, together with Jacques Delors, for several years. The Goethe University in Frankfurt am Main awarded an honorary doctoral degree to Malinvaud on November 10, 1988. The last institution was the University of Bielefeld on January 14, 2000. Particularly noteworthy, and quite rare, is that on 28 April 1989 Edmond Malinvaud received the *Großes Bundesverdienstkreuz*, i.e. the Great Cross of Merit of the Federal Republic of Germany.

REFERENCES

- ARTUS, P., LAROQUE, G. and MICHEL, G 1984, "Estimation of a Quarterly Macroeconomic Model with Quantity Rationing", *Econometrica*, 52 (6), 1387-1414.
- BARRO, R.J. and GROSSMAN, H.I. 1971, "A General Disequilibrium Model of Income and Employment". *American Economic Review*, 61 (1), 82-93.
- 1976, *Money, Employment and Inflation*, Cambridge, Cambridge University Press.
- BENASSY, J.-P. 1975, "Neo-Keynesian Disequilibrium Theory in a Monetary Economy", *Review of Economic Studies*, 42 (4), 503-523.
- 1982, *The Economics of Market Disequilibrium*, New York Academic Press.

- BOEHM, V. 1978a, "Zur Dynamik temporärer Gleichgewichte mit Mengenrationierung", in E. HELMSTAEDTER (ed.), *Neuere Entwicklungen in den Wirtschaftswissenschaften*, Berlin, Duncker & Humblot.
- 1978b, "Disequilibrium dynamics in a simple macroeconomic model", *Journal of Economic Theory*, 17, 2, 179-199.
 - 1980, *Preise, Löhne und Beschäftigung*, Tübingen, Mohr Siebeck.
 - 1989, *Disequilibrium and Macroeconomics*, Oxford, Basil Blackwell.
 - and LÉVINE, P. 1979, "Temporary Equilibria with Quantity Rationing", *Review of Economic Studies*, 46 (2), 361-377.
- CLOWER, R.W. 1965. "The Keynesian Counter-Revolution: A Theoretical Appraisal", in F.H. HAHN and F.P.R. BRECHLING (eds.), *The Theory of Interest Rates*, London: Macmillan.
- DRÈZE, J. 1975, "Existence of an Exchange Equilibrium under Price Rigidities", *International Economic Review*, 16 (2), 301-320.
- FELDERER, B. and HOMBURG, S., 1984, *Makroökonomik und neue Makroökonomik*, Heidelberg and New York, Springer, 9th ed. 2005.
- GRANDMONT, J.-M. and HILDENBRAND, W., 1974, "Stochastic Processes of Temporary Equilibria", *Journal of Mathematical Economics*, 1 (3), 247-277.
- GIERSCHE, H. 1983, "Arbeit, Löhne und Produktivität", *Weltwirtschaftliches Archiv*, 119, 1, 1-18.
- 1986, "Economics as a Public Good", *Banca Nazionale del Lavoro Quarterly Review*, 39, 3, 251-273.
 - 2000, "Herbert Giersch (b. 1921)" in R.E. BACKHOUSE and R. MIDDLETON (eds.), *Exemplary Economists*, vol. II: Europe, Asia and Australasia, Cheltenham UK and Northampton MA, USA, Edward Elgar.
- HAGEMANN, H. 1981, "Zu Malinvauds Neufundierung der Unterbeschäftigungstheorie", in H. Hagemann, H.D. Kurz and W. Schäfer.
- 1993, "Makroökonomische Konsequenzen der deutschen Einigung" in H. HAGEMANN (ed.), *Produktivitätswachstum, Verteilungskonflikte und Beschäftigungsniveau*, Marburg, Metropolis.

- 2019, "Wages and employment", in R. W. DIMAND and H. HAGEMANN (eds.), *The Elgar Companion to John Maynard Keynes*, Cheltenham, UK and Northampton, MA, USA, Edward Elgar.
- HAGEMANN, H., KURZ, H.D., and SCHAEFER, W. (eds.). 1981, *Die neue Makroökonomik. Marktungleichgewicht, Rationierung und Beschäftigung*, Frankfurt/New York, Campus.
- HILDENBRAND, K. and W., 1978, "On Keynesian Equilibria with Unemployment and Quantity Rationing", *Journal of Economic Theory*, 18 (2), 255-277.
- JOHN, R. 1978, "Temporäre Gleichgewichte mit Mengenrationierung. Die Bedeutung von Erwartungen", in E. HELMSTAEDTER (ed.), *Neuere Entwicklungen in den Wirtschaftswissenschaften*, Berlin, Duncker & Humblot.
- KAHN, R., 1977. "Malinvaud on Keynes", *Cambridge Journal of Economics*, 1, 375-388.
- KEYNES, J. M., 1925, *The Economic Consequences of Mr. Churchill*, London, Hogarth Press.
- 1936, *The General Theory of Employment, Interest and Money*, London, Macmillan.
- LEIJONHUFVUD, A, 1973, "Effective Demand Failures", *Swedish Journal of Economics*, 73, 27-48.
- LEONTIEF, W. 1982, "The Distribution of Work and Income", *Scientific American*, 247(3), 188-205.
- MALINVAUD, E 1953, "Capital Accumulation and Efficient Allocation of Resources", *Econometrica*, 21 (2), 233-268.
- 1972, *Lectures on Microeconomic Theory*, Amsterdam, North-Holland, last edition 1985.
 - 1977, *The Theory of Unemployment Reconsidered*, Oxford, Basil Blackwell, 2nd ed. 1985.
 - 1980a, "Macroeconomic Rationing of Employment" in E. MALINVAUD and J.P. FITOUSSI (eds.) *Unemployment in Western Countries*, London, Macmillan; German translation "Die makroökonomische Rationierung der Beschäftigung", in Hagemann, Kurz, Schäfer (eds.) 1981.
 - 1980b, *Profitability and Unemployment*, Cambridge, Cambridge University Press.
 - 1984, *Mass Unemployment*, Oxford, Basil Blackwell.

- 1986, “Productive capital, uncertainties and profitability”, Working paper hal-01541929.
- 1987, “The Challenge of Macroeconomic Understanding”, *Banca Nazionale del Lavoro Quarterly Review*, 162, 219-238, reprinted in J. KREGEL (ed.), *Recollection of Eminent Economists*, London 1989, Macmillan.
- 1990, *Diagnosing Unemployment*, Cambridge, Cambridge University Press.
- [2001] 2004, “Some ethical and methodological convictions”, in M. SZENBERG and L. RAMRATTAN (eds.), *Reflections of Eminent Economists*, Cheltenham, UK and Northampton, MA, USA, Edward Elgar.

MUELLBAUER, J. and PORTES, R. 1978, “Macroeconomic Models with Quantity Rationing”, *Economic Journal*, 88, 788-821.

PATINKIN, D. 1965. *Money, Interest and Prices*, 2nd ed., New York, Harper and Row.

PLEHWE, D. and SLOBODIAN, Q., 2019. “Landscapes of Unrest: Herbert Giersch and the Origins of Neoliberal Economic Geography”, *Modern Intellectual History*, 16 (1), 181-215.

ROTHSCHILD, K. W., 1981, *Einführung in die Ungleichgewichtstheorie*, Heidelberg and New York, Springer

SINN, G. and SINN, H.-W., 1992, *Jumpstart. The Economic Unification of Germany*, Cambridge, Mass., USA and London, MIT Press.

VOGT, W., 1979. “Walras oder Keynes - Zur (französischen) Neuinszenierung der neoklassischen Synthese“, in K. LASKI, E. MATZNER and E. NOWOTNY (eds.), *Beiträge zur Diskussion und Kritik der neoklassischen Ökonomie. Festschrift für Kurt W. Rothschild and J. Steindl*, Berlin.

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