# Gottfried Bombach: A Pioneer of Macroeconomics in Post-War Germany and Switzerland

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#### Abstract

Gottfried Bombach (1919-2010) was a macroeconomist at the forefront of a new generation of academics who reconnected Germany to the international research frontier of economics after World War II. A graduate of the University of Kiel, where his advisor was Erich Schneider, he wrote widely on the core subjects of macroeconomics, mostly from the vantage point of Keynesian theory. His analyses of the interplay between economic growth, income distribution, inflation and employment, both during the period of rapid post-war growth and after the productivity slowdown of the 1970s, were particularly influential. Also, Bombach was an advisor to government, first in Germany, later in Switzerland. This paper reviews some of his major contributions.

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# Gottfried Bombach: A Pioneer of Macroeconomics in Post-War Germany and Switzerland<sup>1</sup>

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# I Introduction

At the end of World War II, Germany was devastated, physically and intellectually. Much of the elite in the arts and sciences was either dead or exiled. A global center of gravity in many sciences until 1933, Germany had become hopelessly isolated internationally and detached from the advances of the research frontier during the twelve years of the Nazi regime. It was up to a young new generation of academics to repair the damage and to start the long road of catching up with the global state of the art. Gottfried Bombach was a leading representative of that new generation of economists who reconnected German economics with the world in the 1950s and 1960s. In fact, he was among those who introduced Germany to macroeconomics, a subdiscipline of economics which had not even properly existed in 1933.

Gottfried Bombach was born in Kamenz in 1919, the city in Saxony which prides itself for being the place of birth of one of Germany's most influential 18<sup>th</sup> century writers, Gotthold Ephraim Lessing. In 2016, Kamenz commemorated Bombach by naming one of its streets the "Prof.-Gottfried-Bombach-Strasse". Having been conscripted to serve in the German military in the early days of the war, Bombach took up economics at the University of Kiel in the very first semester after the end of the war. He was a student and later assistant of Erich Schneider who ignited his enthusiasm for macroeconomics. In 1949, Bombach got the chance to visit Cambridge where he met Joan Robinson, Richard Stone and other eminent economists.

After completing his PhD thesis on the topic of economic growth, he joined the OEEC - later renamed OECD - where he took part in the development of international standards for national income accounting and international real income comparisons.<sup>3</sup> This foundational work was not only essential for the emerging field of empirical macroeconomics, it also shaped his own subsequent research, leaving him keenly aware of the limitations of all official statistics.

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<sup>&</sup>lt;sup>3</sup> For some recollections of this early statistical work, see (Bombach 2001).

Bombach's academic career was launched by an offer to join the University of Saarbrücken in 1956 from where he moved on to the University of Basel, Switzerland, only one year later. He quickly became one of the most influential voices in macroeconomics throughout the German speaking world, teaching and publishing on economic growth, income distribution and the short-run macroeconomics of output, employment and inflation. Eleven of his students went on to become professors of economics themselves.



Gottfried Bombach, 1919-2010<sup>4</sup>

As an advocate of quantitative, model-based economics, Bombach in a way became a counterpart to his senior Basel colleague Edgar Salin (1892-1974) whose style of economic reasoning was firmly rooted in history and the humanities. Well-versed mathematically as he was, Bombach never had much tolerance for mathematics as an end in itself in economics - *"l'art pour l'art"*, as he liked to put it -, but insisted that economics be strictly applicable to the pressing topics of society and in line with intuitively sound analysis. Not accidentally, he named his Basel research institute the "Institute for Applied Economic Research". Bombach rejected attractive outside offers, such as one to become director of the renowned ifo Institute in Munich, to remain faithful to Basel for the rest of his life. He appreciated the academic atmosphere of a department which united economics with the humanities, enjoying the

<sup>&</sup>lt;sup>4</sup> Photo University of Basel

company of the likes of Karl Jaspers, Walter Muschg, Edgar Bonjour, Werner Kaegi and, of course, Edgar Salin.

Jointly with Bernhard Gahlen of the University of Augsburg and with Alfred Ott of the University of Tübingen, Bombach founded the "Economic Seminar of Ottobeuren" in the 1960s, an annual conference which was to become an important event in the calendar of many influential German, Austrian and Swiss economists. Among his publications, a survey of growth theory (Bombach 1965) and a series of six volumes on Keynesianism, from its origins in the 1930s to the current political and academic debates of the 1990s (Bombach et al., 1976-1997), became standard references. Among his many distinctions, six honorary doctorates, invitations to give the De Vries Lecture in 1985 (Bombach 1986a) and the Thünen Lecture at the Annual Meeting of the German Economic Association in 1990 (Bombach 1991a) stand out. As an economic advisor, he was much in demand, both in his native Germany for the economics ministry of Ludwig Erhard, and in Switzerland in several advisory roles for the Swiss government.

Gottfried Bombach died in Basel at the age of 91 in 2010.

#### II Economic growth: Bombach's life-long preoccupation

Bombach devoted his first research to the theory of economic growth in his PhD thesis, completed in 1952, a 55-page abridged version of which appeared in *Weltwirtschaftliches Archiv* one year later (Bombach 1953). This work mostly dealt with post-Keynesian growth theory which had independently been developed by Domar (1946) and Harrod (1939). Remarkably, Harrod's 1948 book, which summarized and extended the argument of his 1939 article, was available in a German translation as early as 1949. As Bombach (1991, p. XIII) told it in retrospect, the publication of this book caused a sensation in Kiel. Whereas Keynes was well known in Germany, his 1936 *General Theory* being available in a German translation in the same year, Harrod's 1939 article in the *Economic Journal*, which had spelled out the main messages of his growth model, appears to have gone largely unnoticed in the isolated Germany of the Nazi era.

At the time, Bombach praised Harrod's work for reframing economic thinking in terms of equilibrium growth, thereby overcoming the limitations of the stationary world of neoclassical theory as well as the curious inconsistency in the Keynesian model which had positive net investment - implying growing production capacity - side by side with a static concept of equilibrium output. Bombach was particularly interested in the assumed technology underlying the Harrod-Domar model. He rejected the widely held view that Harrod's rather pessimistic assessment of the stability of a market economy depended on the assumption of fixed factor proportions in production. A rigidly limitational Leontief-type of

production function in capital and labor would have rationalized the conclusion that one of the factors was bound to be chronically underemployed, but it was neither a necessary premise nor was it consistent with observable facts.

As Bombach pointed out, Harrod's assumption of a constant capital coefficient was in line with the findings of Kuznets et al. (1946) who had published the relevant time series for the United States dating back to 1869. Against this empirical backdrop, building a model on the premise of a constant capital-output ratio was *prima facie* not unreasonable. Bombach (1953, p. 41), too, regarded the capital-output ratio as a "useful tool for the analysis of the trend."<sup>5</sup> However, he was quick to point out that the empirical stability of that ratio did not justify the conclusion that growth theory could safely proceed on the assumption of a fixed proportion of capital and labor in production, let alone that Harrod had made such an assumption. After all, Kuznets et al. (1946) had firmly established that output per worker exhibited a robust upward trend throughout their sample period. Output per worker can be expressed as the ratio of the capital-labor ratio and the capital-output ratio:

(1) 
$$\frac{Y}{L} \equiv \frac{K/L}{\beta}$$
 Y: output; L: labor; K: capital;  $\beta \equiv K/Y$ 

If *Y/L* followed a secular upward trend and the capital-output ratio  $\beta$  was roughly constant, Bombach argued, it was inevitable to conclude that *K/L* followed a secular upward trend, too, thereby contradicting any notion of fixed factor proportions. Ongoing capital-labor substitution, he stated, "is always an essential feature of long-term growth" (Bombach 1953, p. 51). He thus rejected any representation of technology with fixed capital and labor coefficients as a foundation for the theory of economic growth. Instead, he advocated the use of a Cobb-Douglas production function with a time component to allow for technical progress over time, as previously proposed by Tinbergen (1942):

(2) 
$$Y = e^t \cdot L^m \cdot K^n \qquad (m+n=1)$$

Harrod suspected that market economies had no built-in mechanism to align their "warranted" equilibrium growth rate, as defined by the ratio of their savings rate and their marginal capital coefficient, with their natural growth rate, as determined by population growth and technical progress. With a production function as in equation (2), this failure could no longer be attributed to technological limitations to factor substitution. Rather, Bombach interpreted Harrod as rejecting the notion that the capital-labor ratio responded to the price signals of the market with sufficient strength for the economy to remain in a steady-state growth equilibrium. In fact, this interpretation was later supported by Harrod (1973) himself in a restatement of his theory. Bombach's reading of Harrod in his 1952 PhD thesis thus

<sup>&</sup>lt;sup>5</sup> All quotes are translated by the author. When a source is reprinted in Borner/Riese (1991), pages refer to the reprint.

set him apart from Robert Solow who, a few years later, was to present his path-breaking neoclassical model as a critique of the Harrod model whose knife-edge property he ascribed to "the crucial assumption that production takes place under conditions of *fixed proportions*" (Solow 1956, italics in the original). Apart from being at odds with Harrod's thinking on factor substitution, Solow's critique also confused the dynamic knife-edge instability of Harrod's model with the longer-term issue of how equilibrium ("warranted") growth could be aligned with the natural growth rate – a point which Solow acknowledged years later in his Nobel Lecture (Solow 1988).

At the time, Bombach (1953) concluded that future research should combine the tool of a substitutional production function with the equilibrium conditions of Harrod and Domar. This is precisely what Solow (1956) did soon after when, in a stroke of genius, he connected the dots and started the neoclassical revolution in growth theory. Looking back to his own agenda many years later, it was not without regret that Bombach (1991b, p. XV) noted how close he had actually been to the core of neoclassical growth theory. Specifically, he regretted that the decade his generation had lost due to the war had prevented it from acquiring the necessary technical expertise in handling differential equations to capture the dynamics of economic growth.

About a decade after Solow's initial paper, Bombach (1965) took stock of growth theory in a handbook article which became his most widely read paper and a standard reference for students and researchers in the field of growth theory throughout the German-speaking area - in its ambition and reach akin to what Hahn and Matthews (1964) had accomplished for the English-speaking world. Unlike later synopses and textbooks of growth theory, Bombach did not treat the neoclassical theory as a superior approach that had relegated the post-Keynesian theory to the dustbin of doctrinal history. Quite to the contrary, he portrayed the two strands of thought as competing on an equal footing, spelling out their common roots, their areas of disagreement, and their limitations.

He forcefully made the point that growth theory, while describing the laws of motion of a capitalist economy, did not yet offer a genuine explanation of economic growth as long as both technical progress and population growth remained unexplained and labor was treated as homogeneous. He suspected that an important transmission channel of technical progress was the upgrading of labor through education and learning by doing. These gaps in the existing growth models directed his attention towards the economics of innovation, human capital, education and population. The 1960s were a time when Germany invested heavily in the expansion of higher education to meet the rising demand for highly skilled labor. Bombach shared the concern that the education systems of both Germany and Switzer-land were badly inadequate in the face of the rapid economic growth of the post-war years. Together with a team of younger researchers at his *Institute for Applied Economic Research* he developed a forecasting model to estimate the demand for skilled labor. He received funding from the OECD and from

pertinent authorities in Germany which were all keenly interested in this work. Some of the resulting research is collected in Borner/Riese (1991, Part II).

Bombach remained devoted to the study of economic growth throughout his long academic career. Expanding on his early work for the OEEC, he repeatedly returned to the issues surrounding the measurement of productivity (Bombach 1959a, 1991a). Having thought hard about the logic of factor substitution and technological progress, he was quick to pinpoint the gaps and errors in the influential analysis of the 'Limits to Growth' put forward by the Club of Rome in the early 1970s (Bombach 1976a). The invitations to deliver the De Vries Lecture in 1985 and the Thünen Lecture in 1990 provided him with two opportunities to sum up his thoughts on the many facets of post-war growth and on the successes and failures of growth theory in explaining this experience.

Much of his discussion in those lectures centered on the sources of the exceptionally rapid growth enjoyed by industrial countries in the post-war years and on the reasons why this 'Golden Age' - the "trente glorieuses" as the French dubbed it - came to an end in the 1970s. On this question, Bombach refused to join the mainstream of growth economists who, in their attempt to explain the productivity slowdown through the lens of the neoclassical model, directed their entire attention to the supply side:

", I do not share the neoclassical view that there is some sort of natural rate of growth independent of the development of demand." (Bombach 1986a, p. 70).

While acknowledging the end of technological catch-up and other supply-side factors, Bombach was enough of a Keynesian to attach a significant weight to the monetary and demand-side turbulences of the 1970s as a major cause of the disappointing growth experience of the 1970s and 1980s. He was careful to emphasize, however, that he was not a simple-minded "unreconstructed Keynesian" who believed that "a return to the old growth patterns" could be brought about simply by boosting demand (Bombach 1986a, p. 71). Rather, he argued that the reliable stabilization of economic activity through appropriate demand management was essential for giving entrepreneurs the confidence and the optimism to keep growth going by expanding and improving the productive capacity of the economy.

In the same vein, he remained open-minded about the potential for the management of the money supply to affect long-term growth. Explicitly referring to the classic study by Friedman/Schwartz (1963), he was convinced that the severe crises of the 19<sup>th</sup> century, not to mention the Great Depression of the 1930s, had left their traces in the long-run trend path of economic growth. This point of view was not too different from Milton Friedman's (1968) famous statement on the role of monetary policy. Whereas Friedman was adamant that the monetary authority could not use its control over the money supply to target a desired rate of real growth, he conceded that if "money gets out of order, it throws a monkey

wrench" into that marvelous machinery which has propelled "the astounding growth in output and level of living we have experienced in the past two centuries" (Friedman 1968, p. 12).

### III Economic Growth, Inflation and Income Distribution

Germany's *Wirtschaftswunder* of the 1950s was accompanied by a steady upward creep of the price level which, at below 2%, was moderate by later standards, but high enough for the Federal Financial Court to demand a report from the Bundesbank on the extent of inflation and its future prospect (Bundebank 1965). Gottfried Bombach (1959b) raised the question of whether inflation was the price Germany had to pay for the rapid increase in its real GDP. His working hypothesis was that voluntary saving fell short of the high rate of investment required to maintain the ongoing growth of the economy. This argument rested on a firm link between growth and investment as expressed by the Harrod-Domar growth equation

(3) 
$$g_Y = \frac{I/Y}{\beta}$$
  $g_Y$ : output growth; I/Y: net investment rate

Bombach never left any doubt about the importance of investment for growth even when Solow's model suggested that changes in the investment rate could not alter the steady-state growth rate due to the diminishing returns to capital and the implied endogenous adjustment of the capital coefficient  $\beta$ . He did not question the logic of the neoclassical result, but dismissed it as irrelevant for any plausible time horizon of economic policy which he argued fell way short of the length of adjustment to a neoclassical steady state.

Bombach's interpretation of inflation in terms of an ex-ante saving-investment gap was plainly in the tradition of Wicksell and the pre-*General-Theory* Keynes. Starting from this premise, he considered various mechanisms by which the ex-ante discrepancy between saving and investment could be resolved. First among them was what he thought was the reality of post-war Germany: ongoing price inflation which redistributed income away from workers towards profits, thereby pushing the *ex-post* saving rate up to the level of the investment rate, while exacerbating the concentration of wealth. The similarity of this mechanism to the one described by Kaldor's (1955) model of income distribution did not escape him.

Alternatively, contractionary fiscal and monetary policy could reduce the investment rate to the point of equality with the saving rate. For Bombach, the implied reduction of the real growth rate was not acceptable, however. He explicitly pointed to the need of competing with the high growth rates recorded in the countries to the East of the Iron Curtain (Bombach 1959b, p. 254). If a high investment rate and high real growth are to be reconciled with price stability, Bombach concluded, wage policy had to come into play. Renouncing their distributional aspirations, unions could secure price stability by subordinating wage policy to this sole objective. Limiting nominal wage growth to the rate of growth of labor productivity, unit labor costs would be kept stable. In effect, workers would voluntarily have to accept the profit share that would otherwise be enforced by inflation. The economy would in effect operate on what Hicks (1974) would later call a *labour standard*. At that point, Bombach had arrived at a trilemma of sorts: The three objectives of high growth, price stability and a fair income distribution, however defined, apparently could not be attained simultaneously – "one of the big problems of our time" (Bombach 1959b).

An additional policy instrument was required if a way out of this trilemma was to be found. Indeed, a solution was suggested by Nicholas Kaldor's 1955 model. Kaldor explained why wage policy was ineffective as a tool to change the income distribution when wages were spent on consumption, inducing an offsetting increase in goods prices as workers fed their higher nominal incomes back into the circular flow of income and expenditure. Instead, he demonstrated how the spending patterns of workers and capital owners were the key to understanding the determination of the functional income distribution. In a refinement of Keynes's (1930) theorem of the widow's cruse, and assuming a fully employed economy, Kaldor's model allowed to derive the profit share in national income as a function of the investment rate and the saving rates out of profits and wages, respectively:

(4) 
$$\frac{P}{Y} = \frac{\frac{I}{Y} - s_W}{s_P - s_W}$$
 with  $s_W < \frac{I}{Y} < s_P < 1$ 

P/Y: Profit share;  $s_W$ : saving rate out of wages;  $s_P$ : saving rate out of profits.

The Kaldor formula illuminated how the low saving rate of workers, in conjunction with a high investment rate, led to a high profit rate and hence to a high concentration of wealth in post-war Germany. Bombach, along with a number of like-minded economists, concluded that the way to raise the wage share without reducing investment was an increase in the saving rate of workers  $s_W$ . Since workers did not appear to be willing to change their consumption and saving behavior on their own, the policy tool favored by Bombach was a so-called *investment wage*, i.e. a wage which was in part retained in a saving vehicle instead of being fully paid out to workers in cash. The scheme would have had to be made mandatory for all workers so as to rule out freeriding (Bombach 1989).

The investment wage looked particularly attractive to its advocates since it promised to kill several birds with one stone:

- It would lead to a more equitable distribution of income by raising the wage share.

- It would place a larger share of newly created wealth into the hands of workers and thereby spread wealth more broadly over time.
- It would allow to keep investment and growth high without stoking inflation.
- It would defuse the conflict between capital and labor by giving workers a stake in capital.

The idea never made much headway in practice. Looking back, Bombach remembers having fought for the scheme "with missionary zeal" and always regarded the failure of policymakers to implement anything faintly resembling an investment wage as a huge missed opportunity (Bombach 1981, 1989). Apart from the virtue of reconciling high real growth with stable prices, the early phase of rebuilding the capital stock after the devastations of the war would have been the best moment to promote broad ownership of the nation's capital stock. Bombach was particularly disappointed by the rejection of the investment wage on the part of trade unions which hated the idea of turning the working class into partial capitalists and denigrated the idea as "bourgeois social romanticism", prioritizing instead the expansion of the welfare state.

Critics of the investment wage argued that it was not feasible for workers to cut their consumption out of the low incomes they earned and that forcing them to save more was a non-starter, therefore. From the vantage point of the Kaldor model, this objection was simply mistaken. It overlooked the fact that the increased saving rate would apply to a higher wage share so that the consumption standard of the working class would actually rise. This result relied on indirect systemic repercussions in the circular flow of income and expenditure to offset the direct effect of a higher saving rate on consumption. Counterintuitive at first sight, this was yet again a paradox of thrift of sorts. Formally, from equation (4), the wage share is

(5) 
$$1 - \frac{P}{Y} = \frac{S_P - \frac{I}{Y}}{S_P - S_W}$$

which implies for the consumption of workers as a share of total income

(6) 
$$(1-s_W) \cdot (1-\frac{P}{Y}) = \frac{(1-s_W) \cdot (s_P - \frac{I}{Y})}{s_P - s_W}$$

With the restrictions on the parameters given in eq. (4), and for given investment *I* and full employment income *Y*, it is apparent from eq. (6) that the absolute consumption level of workers is increasing in  $s_W$ . At the time, Bombach extensively discussed the premises on which this result was based and defended them, simplistic as they were, as not too unrealistic for the years of the *Wirtschaftswunder* when investment was high, the saving rate of workers was near zero and the economy was on the edge of inflation. He later conceded that he had never managed to get the point across convincingly to audiences in numerous lectures and debates – and he regretted not to have worked with numerical

examples to build intuition as he did in his undergraduate classes. Characteristically, he made the point with a numerical example in his reappraisal of the Kaldor model on the occasion of the 25<sup>th</sup> anniversary of its publication (Bombach 1981, p. 412). Once the high growth rates and the full employment of the postwar years were past, he did not pursue the investment wage idea any further as he judged the window of opportunity had closed for good.

Distributional issues remained central to Bombach's research, but the focus shifted away from the distribution of functional shares towards "new dimensions" of the income distribution (Bombach 1972). Instead of the aggregate level of wages, the more granular issue of the role of the wage structure gained importance as unemployment crept up across Europe and Herbert Giersch (1985) coined the term "eurosclerosis" to summarize the many rigidities that prevented European economies and labor markets to adjust to structural change. Bombach emphasized 'real wage resistance' as a key impediment to adjustment. He criticized the push to squeeze wage differentials in defiance of market forces that pulled in the opposite direction. He also shared the prevailing conventional wisdom that the United States, with its high degree of wage flexibility, managed to keep unemployment reasonably low in the face of rapidly changing labor market conditions and a falling demand for unskilled labor. Thus, accepting stagnant or falling real wages for unskilled workers, America favored "low pay to no pay" whereas Europe, averse to widening wage differentials, endured a relentless rise of unemployment, apparently favoring "no pay to low pay". However, Bombach (1986b) refused to subscribe to the notion, popular among advocates of free-market economics, that "every job is better than no job". He was well aware of the risk that low-wage workers could be caught in a poverty trap by unmitigated market forces if the education system did not adequately equip them with the necessary skills.

Yet another dimension of distribution was the intergenerational redistribution of income through the transfer budgets of governments. As welfare systems expanded rapidly while economic growth slowed at the same time, the sustainability of social security systems, in particular the financial burden placed on the generation of the young, began to become major concerns. Also, Bombach accurately predicted that developments in the personal distribution of income would receive much more attention in the future than the stale old dichotomy of labor versus capital income, adding that slowing growth would significantly exacerbate distributional conflicts.

## IV Inflation, Unemployment and Stabilization Policy

Once neoclassical growth theory had been extended into several directions – two-sector models, ever more complex production functions - and once the golden rule of accumulation had been independently discovered by a number of researchers, Bombach's PhD student Carl Christian von Weizsäcker (1962) among them, the focus of the international macroeconomic research community gradually turned away from growth in the course of the 1960s. The inexorable rise of inflation in the United States lent momentum to the rise of the Chicago School of monetary economics as the leading theory of inflation and as a serious challenger to the ruling Keynesian mainstream in macroeconomics. Friedman's restated quantity theory of money became widely accepted and his k-percent rule for the money supply was put into practice by a number of central banks after the collapse of the fixed-exchange-rate system of Bretton-Woods had freed them to pursue monetary targeting.

Despite the voluminous empirical evidence adduced in support of the monetarist approach, Gottfried Bombach remained unconvinced. In his view, the exclusive focus on the money supply as a driver of inflation failed to get to the root of the problem. He felt the proposition that inflation resulted from an excess of money supply growth over potential output growth was close to a truism with no deeper explanatory power. To understand inflation, he argued, one has to go beyond narrow economic mechanisms and instead focus on unresolved conflicts in society at large. As Rector of the University of Basel, he devoted his keynote lecture on the occasion of the 1973 "Dies Academicus", the annual official ceremony of the university, to the problem of inflation. He set the tone of his lecture by citing his longtime faculty colleague, the philosopher Karl Jaspers:

> "Inflation is a consequence of social and economic conflicts not being actually fought. One avoids them by choosing the path of least resistance. False compromises look beneficial and ensure calm for the moment, but make inflation rise subsequently." (Karl Jaspers, cited by Bombach 1973, p. 363).

The notion of inflation as a vent for unresolved distributional conflicts in society had already had a long tradition in post-Keynesian economics, of course. There was no consensus, however, on whether inflation was part of the problem or part of the solution. Bronfenbrenner/Holzman (1963, p. 626), in laying out a model of what they termed "income inflation", suggested that inflation could act as a "social mollifier" by reconciling inconsistent real income claims in nominal terms, thereby preventing "open social strife". Perhaps sensing that such a "mollifying" property of inflation depended on the money illusion of the competing claimants, Bombach took the opposite stance, siding with Streissler (1973, p. 39) who regarded inflation as a self-perpetuating symptom of social tensions or, as he put it, a "silent civil war".

Unlike many post-Keynesians of his time, Bombach did not believe in the effectiveness of price and wage controls or an 'incomes policy' which he thought were mere tinkering with the symptoms instead of a true cure for inflation. Having framed price stability as a "precious public good", he was well aware of the need for collective action, deeming properly restrictive demand policy a necessary though not sufficient tool in the absence of "a sense of collective social responsibility" for the common good

(Bombach 1973). In contrast, he thought that relying solely on the monetarist recipe of tight money carried the risk of unknown, but potentially serious side effects. This warning, given to a Swiss audience at a time when Switzerland had just abandoned its exchange-rate peg and adopted a strict monetarist money supply rule, turned out to be prophetic.

As it happened, the ongoing Swiss inflation collided with the near-halt of money supply growth, resulting in a shock appreciation of the Swiss Franc on the foreign exchanges and a plunge of Swiss GDP that was unparalleled by any other industrial country at the time. In these turbulent times, the Swiss government and the Swiss National Bank jointly established a council of experts, resembling the German Council of Economic Advisers, appointing Gottfried Bombach as one of its three members. It was a short-lived experiment, ending after only three years and three substantive reports by the council (Expertengruppe Wirtschaftslage 1977-1980). Still, the council took the opportunity to highlight a number of crucial factors that had made the crisis worse. The procyclical bias of the highly decentralized Swiss fiscal system was one of them. Another was the habit of tying wages to inflation which exacerbated both inflation and recession when Switzerland was hit by external supply shocks. Indexation, not just of wages, but also of government bonds, the tax code and other long-term nominal contracts, had been favored by many monetarist economists since the 1960s as a device for minimizing the real distortions of inflation and for keeping the costs of disinflation low (Friedman 1974). However, what could have worked reasonably well in the presence of an inflation that was entirely caused by excessive monetary expansion, turned out to act as an outright fire accelerator when inflation was mainly ignited by the supply-side shock of a skyrocketing oil price. Italy's famous scala mobile stood out as a particularly drastic illustration of the perils of indexation.

Switzerland managed to get through the deep recession of the mid-1970s with a minimal increase of unemployment, which was only possible because unemployment was effectively exported abroad by sending scores of foreign seasonal workers back home. But both in the rest of Europe and in the United States, unemployment became the most pressing public policy problem for the first time since the Great Depression. This revived the interest in Keynes and Keynesian theory which had been somewhat put on the defensive by the rise of global inflation and the concomitant monetarist counter-revolution. It was the perfect time for Bombach to start his next major academic endeavor: the edition of a series of six volumes dedicated to Keynesianism and its current status in economic theory and policy (Bombach et al. 1976-1997). Originally designed to comprise but four volumes, this research also set itself the task of exploring the origins of Keynesian thinking in Germany at the time of the Weimar Republic.

A number of smart economists in Germany had developed ideas along similar lines as Keynes in the years 1930-1932 although none of them came close to an intellectual framework as stringent, coherent and influential as the one laid out by Keynes in the *General Theory* a few years later. But some clear

analytical thinking did exist that would have shown Germany a way out of the Great Depression well before the Nazi regime seized power in 1933. Unfortunately, these ideas came to nothing. In part, this was due to political constraints. The burden of war reparations and Germany's commitment to the rules of the Gold Standard severely restricted its scope for expansionary macroeconomic policies. But also, the desirability of monetary and fiscal stimulus in a depression, which subsequently was to become the key policy message of Keynesian economics, was vigorously rejected by the pre-Keynesian mainstream in monetary economics, in particular by the Austrian school as represented by Ludwig von Mises and Friedrich August von Hayek.

Bombach had little patience with the moral overtone of the Austrian school and its assertion that excessive monetary expansion during the prior boom phase created distortions in the structure of production which needed to be purged from the system by enduring an extended period of depressed economic activity:

> "There was a curious notion of atonement here as if one had to pay for the sins of the past. The great Friedrich von Hayek has expressed the traditional opinion most succinctly: monetary overexpansion was to blame for the crisis; trying to fight the crisis with pointed monetary expansion would thus amount to curing the evil with its own cause! A striking case of how a brilliant, seemingly logical phrasing by a great man can have a lasting tragic influence on policy." (Bombach, 1976b, p. 4).

Turning to the lessons from the turbulent 1970s, Bombach was careful to define a middle ground between two bitterly opposed camps in macroeconomics: on one side the new neoclassical school which thought that the simultaneous increase in inflation and unemployment had discredited Keynesian macroeconomics once and for all (Lucas/Sargent 1978) and on the other side the unreconstructed "fundamental Keynesians of present-day Cambridge" (Bombach et al. 1976-1997, Vol. III, p. X). What he thought was discredited by events was that overconfident "hydraulic" Keynesianism of the 1950s and 1960s which had been led to believe that macroeconomic demand management had made the business cycle obsolete and that fine-tuning the economy was about as achievable by economists as engineers were capable of fine-tuning a machine. But that was not the end of Keynesian economics: "Upon reading the *General Theory*, not even a hint of the idea of fine-tuning the business cycle can be found" (Bombach 1983, p. 422). At the very least, he argued, governments should let automatic stabilizers run their course without interfering in a pro-cyclical manner.

In his analysis of why the age of full employment had come to an end in Germany, Bombach emphasized the role of the mechanism of wage determination. He pointed out the obvious conflict between the particular German concept of "Tarifautonomie", i.e. the autonomous wage determination through negotiations between employers and unions, and the full-employment promise of a naïve Keynesian policy framework. There was simply no point for unions to exercise wage restraint if they could rely on the government to take care of the fallout of excessive wage claims. Under these circumstances, a fullemployment promise was untenable as it would entail potentially limitless inflation. Perhaps unintentionally, Bombach was led by his analysis to a conclusion akin to Milton Friedman's proposition that monetary policy, or the government for that matter, could not peg the unemployment rate while the determination of wages was left to the private sector.

Bombach attributed the coexistence of full employment with moderate inflation in the period of the *Wirtschaftswunder* to a cautious wage policy which, incidentally, did not depend on an effective control of the money supply. Wage restraint was sustained, he argued, exactly as long as workers were not fully confident that the extraordinary productivity advances of those years would continue. As one of Bombach's favorite lines went, "for a long time, trade unions did not believe in economic growth, and when they had finally learned to count on it, it was over". This was the core of his theory of stagflation.

The final volume of Bombach's Keynesianism project, published in 1997, returned to issues of longterm development, exploring the influence of Keynesian thinking on the theory of economic growth. By the choice of this topic, Gottfried Bombach reiterated his long-held belief that the fluctuations of economic activity, which were typically considered to be the subject of short-run Keynesian macroeconomics, and the long-term growth of the economy, typically addressed within the framework of neoclassical theory, could in fact not be properly separated – even if the practice of academic research and graduate teaching for the most part suggested otherwise. His extensive literature review went as far as to cover endogenous growth theory which was brand-new at the time. He clearly sympathized with the objective of closing the large gap left by the unexplained Solow residual. But he expressed some doubts about the empirical basis of this new approach although he refrained from giving a definitive judgment. Having begun his long and distinguished academic career by dissecting post-Keynesian growth theory almost half a century earlier, it was *déjà vu* for him to see some variants of the new growth theory bring Harrod-Domar-style linear models back into fashion.

### V Conclusion

What are Gottfried Bombach's major achievements that will be remembered? To be sure, there is no Bombach model or Bombach alpha that made it into present-day textbooks. His more lasting, if less visible long-term importance derives from his role in reconnecting Germany with modern economics after the war. He influenced the development of macroeconomics in the German-speaking countries through his widely-read writings on economic growth, income distribution, inflation and business cycles, by his role in the German Economic Association (*Verein für Socialpolitik*), particularly in its standing committee for theoretical economics, as a consultant on economic policy, and as an advisor to

14

numerous junior researchers who would later move on to become university professors themselves. His lectures at the University of Basel captivated scores of students over more than three decades, illuminating current economic theory, relating it to current events and embedding it in the longer history of economic thought.

There was no such thing as a "Bombach School" in Basel. His guidance to researchers at his Institute for Applied Economic Research was stimulating, but he granted his students a long leash to explore their own fields of interest and to find their own ways. They were all strongly influenced by his rejection of any type of dogmatism and by his flair for applying stringent reasoning to the most pressing economic concerns of society. As a devoted macroeconomist, he never lost sight of the big picture and stood above the petty political conflicts of the special interests. With his open mind, he was widely accepted and admired by practitioners across the political spectrum, invited as a speaker by trade unions, employers and industrialists alike.

Together with influential scholars such as Walter Jöhr, Friedrich Lutz, Jürg Niehans and Karl Brunner, he shaped the public discourse on economic policy in Switzerland for more than three decades, at times ensuring that the Keynesian perspective was not lost. In this capacity, he regularly made his voice heard in the media or as an advisor to the Swiss government.

On the occasion of Gottfied Bombach's 70<sup>th</sup> birthday in 1989, a symposium was held in his honor at the University of Basel. Robert Solow accepted an invitation to give the keynote address at this occasion and took the opportunity to discuss Bombach's wide-ranging essays on economic growth that had just been published as the 1986 De Vries Lectures (Solow 1989). Sure enough, Solow politely pointed out some areas of disagreement, such as the role of aggregate demand for long-run growth, but mainly emphasized their shared vision of the big questions of economics and of what it meant to serve society as an economist. In his own masterful way, he combined his assessment of the current state of economics with his appreciation for Gottfried Bombach:

"I am led to a general hypothesis about our profession. I have the feeling that economics produces fewer and fewer Bombachs as time goes on. That is not to say that economics produces fewer and fewer able and well-trained economists. The number of those appears to be increasing, and their skills improving. The endangered species is the economist who combines two other qualities with technical skill. The first is the informed judgment about economic events that comes with long informal observation of the world of affairs combined with reflection on how it must look to intelligent participants and to intelligent observers. The second quality is the understanding that almost everything that happens in the sphere of economics has moral overtones, and tells us something, not only about the elasticity of this with respect to that, but about the character of our society itself. Bombach has been such an economist." (Solow 1989, p. 1).

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