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E pur si muove: Peter Flaschel's contributions to macroeconomic theory and disequilibrium economic modeling

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INTRODUCTION

Peter Flaschel, born 1943 in Zwickau, Germany, Professor of Economics at Bielefeld University and one of the most prominent scholars of the so-called 'Bielefeld School' of disequilibrium macroeconomic modeling, passed away in October 2021. With him, the economics profession, and especially the non-mainstream economics community, lost an outstanding and extremely prolific scholar, who dedicated his life to the development of a theoretical modeling approach that coherently illustrated and explained the intrinsically unstable dynamics of capitalist market economies.

Peter's original academic training was not economics, however. He studied mathematics at Bonn University, where he also continued his doctorate studies, earning the prestigious Felix-Hausdorff Memorial Prize for the best PhD dissertation in mathematics with his thesis (in German) on *Geometry of the Space of Closed Curves: Closed Geodesics* along the way in 1969. Peter thus had a promising career in the field of pure mathematics ahead of him, which he then turned down in favor of the field of economics, as he himself pointed out in an interview on his lifetime work published in this journal (Hein/Niechoj 2013). In that interview, Peter explained how reading Marx's *Das Kapital* during a vacation he spent with his companion, who later would become his wife and lifetime partner, Sigrid Luchtenberg, motivated his academic career-changing decision. Marx's analysis of capitalist economies and their inherent unstable and non-mean-reverting tendencies, and the vision of modeling those complex relationships in mathematical terms – where he felt at home due to his sound academic training – became a lifetime goal and his very *raison d'être*.

THE EARLY YEARS

Peter thus moved to the Free University of Berlin in 1975, where he began his work on macroeconomic modeling and on topics closely related to Marx's economic theory.

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His Habilitation thesis was about Marx, Sraffa and Leontief, and was published (in German) in a revised form as *Marx, Sraffa and Leontief: Critique and Approaches to their Synthesis* (Flaschel 1983b). In 1980 he became a professor of economics at the Free University of Berlin and continued his theoretical work on the theory of value in classical and Marxian economics. This work ultimately led to his 1983 article 'Actual labor values in a general model of production,' published in *Econometrica* (Flaschel 1983a), as well as to his *Journal of Economic Theory* paper 'The so-called "transformation problem" revisited: a comment' (Flaschel 1984a).

While elaborating on the theory of value in classical and Marxian economics, a closely related issue soon arose, namely the study of market dynamics in classical political economy. It was the period when in conventional economics the theory of the excess demand function was discussed in Walrasian systems, in the work of Arrow and Hahn, Debreu, Hildenbrand, and the French School, using differential geometry and catastrophe theory. Peter, together with Willi Semmler, who became one of his lifelong co-authors, proposed a theory of market dynamics starting from classical political economics on the two-sided nature of capitalist markets, namely the theory of cross-dual dynamics, as presented in 'Classical and neoclassical competitive adjustment processes' (Flaschel/Semmler 1987). This approach questioned the stability of market dynamics when prices and outputs dynamically interact in a multi-market system. On the other hand, the Keynesian theory of the market was also developed at that time, which would be known as dual dynamics. A contribution to this relatively new field was published with the article 'On the integration of dual and cross-dual micro-dynamical processes in Leontief Systems' (Flaschel/Semmler 1988).

During his time at the Free University of Berlin, Peter became interested in the work by Richard Goodwin, and therefore in the mathematical modeling of the dynamic interaction between income distribution and macroeconomic activity in capitalist economies (Flaschel 1984b; Flaschel/Krüger 1984; 1988; 1989). The modeling approach and empirical application of a dynamic theory of income distribution were coupled with Keynes's principle of aggregate demand. This work began shortly after his moving to Bielefeld University, which would become his home for the rest of his academic life. With contributions such as 'Macroeconomic dynamics and effective demand: some corrections' (Flaschel 1985) and 'Macrodynamics, income distribution, effective demand and cyclical growth' (Flaschel 1993), among others, he laid the foundations of what would be an outstanding list of over a hundred peer-reviewed articles and about twenty books and numerous other contributions, most of them intrinsically related to the modeling of the interaction between income distribution, growth, and macroeconomic dynamics.

Peter's perspective on the development of capitalist economies was inherently dynamic, not in the mainstream sense of the word, where economic decisions are the results of a perfectly forward-looking and optimizing behavior as in the now-predominant dynamic stochastic general equilibrium (DSGE) modeling framework (see, for example, Christiano/Eichenbaum/Evans 2005), but in an implicitly behavioral, boundedly rational manner. As discussed in his co-authored MIT Press book *Dynamic Macroeconomics: Instability, Fluctuations and Growth in Monetary Economics* (Flaschel et al. 1997), there are many theoretical, mathematical and empirical reasons to reject the notion of perfect foresight and the validity of the saddle-path stability concept (Sargent/Wallace 1973) at the macroeconomic level. As is well known, in deterministic models with forward-looking variables such as Sargent's and Wallace's modification of the classic Cagan (1956) monetary model, the relevant steady state is saddle-path stable. This means that there is a unique trajectory – the saddle-path – along which the system can converge to the steady state, while all other trajectories imply overall unstable dynamics. As suggested by Sargent/Wallace (1973), stability can be imposed in an overall unstable environment through the assumption that forward-looking agents fully

understand the dynamics and properties of the dynamic system of interest and are able to adjust the values of the forward-looking variables so that the system 'jumps' exactly to the unique converging saddle-path. Current conventional DSGE rational expectations models theoretically still seem to stick to this stability concept – except in the work of some economists, who worked with the concept of 'indeterminacy.' Yet the early pioneering work in economics that worked with markets and macro disequilibrium dynamics, as Tobin remarks, has almost been abandoned.

In contrast, Peter unwaveringly defended the notion that adjustments at the aggregate level, and especially in the real sector, happened in a gradual manner – and often in a non-mean-reverting manner – in response to disequilibria in the goods and labor markets, and not in a discrete manner, through 'jumps' to some equilibria as the result of the forward-looking behavior of rational agents. Consequently, aggregate fluctuations could, but did not necessarily have to, converge to a long-run equilibrium. Instead, persistent fluctuations, limit cycles, and complex dynamics could occur, particularly if meaningful non-linearities, such as downward nominal wage floors in the labor market and positive feedback mechanisms in the real markets for goods and in the financial markets, were incorporated.

In the 1997 MIT Press book, Peter and his lifelong co-authors and friends Reiner Franke and Willi Semmler presented a *tour de force* through dynamic macroeconomic modeling, showing how standard non-linear differential equation analysis could be applied as a powerful tool to model and analyse complex and often non-linear macroeconomic relationships. In his appraisal of this book, James Tobin, Nobel Laureate, wrote that:

Macrodynamics is a venerable and important tradition, which fifty or sixty years ago engaged the best minds of the economics profession: among them Frisch, Tinbergen, Harrod, Hicks, Samuelson, Goodwin. Recently it has been in danger of being swallowed up by rational expectations, moving equilibrium, and dynamic optimization. We can be grateful to the authors of this book for keeping alive the older tradition, while modernizing it in the light of recent developments in techniques of dynamic modeling.

The importance of these 'older traditions' became especially apparent during the upswing of the 'New Classical Macroeconomics' and the 'real business cycle' theory resulting from it (see, for example, Kydland/Prescott 1982). As is well known, according to this approach economic fluctuations are caused primarily by exogenous technology shocks, that is, stochastic fluctuations of the productivity drivers in the production function. Together with the assumption of fully flexible wages, prices, and interest rates (and thus perfect market clearing in the entire economy) as well as optimizing behavior of all economic agents, this school of thought delivered far-reaching policy implications. Since the employment in the labor market was always defined as driven by some 'natural rate' in this New Classical Macroeconomics approach, all fluctuations in employment appeared as voluntary adjustments of individual labor supply and thus as optimal answers of the private sector to exogenous shocks. According to this school, markets exhibit some 'mean reversion' process after a shock and as a consequence, a stabilizing counter-cyclical economic policy was not only considered as superfluous, but even as counter-productive.

While the great majority of the profession has become inclined to work within this new modeling paradigm since the 1990s, Peter and his co-authors continued to see the origin of economic fluctuations in delayed adjustments of wages and prices and thus in temporary disequilibria, sharing many views with the heterodox economists' community. For Peter and his group, as well as for most heterodox economists, involuntary unemployment is still considered a highly relevant problem, and fiscal and monetary policies still have an important role to play in mitigating business cycles and their consequences.

THE KEYNES–METZLER–GOODWIN FRAMEWORK

Besides Reiner Franke and Willi Semmler, Carl Chiarella became another of his most important collaborators, with whom he worked on the development of a disequilibrium macroeconomic framework of Keynesian type (Chiarella/Flaschel 1996; 1998; 2000a), that ultimately led to one of his most important contributions, the Cambridge University Press book *The Dynamics of Keynesian Monetary Growth: Macro Foundations* (Chiarella/Flaschel 2000b). There, starting from Tobin's (1965) monetary extension of the neo-classical Solow (1956) growth model, Peter and Carl Chiarella systematically extended and analysed different variants of this framework, incorporating, among other perspectives, Kaleckian–Kaldorian features in the aggregate consumption, Metzlerian inventory dynamics, and sluggish wage and price adjustments to disequilibria in the goods and labor markets. Through these extensions, the important macroeconomic effects of developments in the functional income distribution were investigated analytically through the so-called 'cascade of matrices approach' (see, for example, Chiarella/Flaschel/Franke/Semmler 2006), as well as through numerical simulations. This work on the development of the Keynes–Metzler–Goodwin model was extended together with Reiner Franke in their 2005 Cambridge University Press book *Foundations of a Disequilibrium Theory of the Business Cycle* (Chiarella/Flaschel/Franke 2005), where they provided a thorough theoretical and empirical analysis of this theoretical framework, also placing particular stress on the evaluation of monetary policy rules in that framework.

While Peter's work was primarily theoretical, he also worked with various co-authors on the empirical exploration and estimation of disequilibrium macrodynamic models (Flaschel/Chen 2005; 2006; Flaschel/Kauermann/Teuber 2005; 2012c; Flaschel/Franke/Proaño 2006; Proaño/Flaschel/Ernst/Semmler 2006; Flaschel/Proaño 2007; Diallo/Flaschel/Proaño 2011). These works highlighted the empirical relevance of the disequilibrium approach, acknowledging important econometric issues and preparing the pathway for many recent contributions along the same lines (see, for example, Blecker/Cauvel/Kim 2022). Furthermore, his visionary work on disequilibria, market dynamics, and business cycles found its productive extensions in recent work of regime dependence of shocks and fiscal and monetary policy impacts; see, for example, Charpe/Flaschel/Proaño (2012; 2018), Mittnik/Semmler (2012), and Proaño (2011; 2012).

While Peter's work, and what became to be known as the 'Bielefeld School' in some circles, could be interpreted as a 'highly sophisticated Post-Keynesian approach' (Barkley Rosser Jr 2005), Peter did not exclusively consider himself a heterodox economist, even though he hugely contributed to what is called complexity economics today. Besides his textbook (in German) on Keynesian Macroeconomics (Flaschel/Groh/Krolzig/Proaño 2012b) – which became the standard reading in Bielefeld and in Berlin for many years – his book trilogy *Reconstructing Keynesian Macroeconomics* (Chiarella/Flaschel/Semmler 2012; 2013; 2014), his last two published books *Value, Competition and Exploitation: Marx's Legacy Revisited* (Cogliano/Flaschel/Franke/Fröhlich/Veneziani 2018) and *Unbalanced Growth from a Balanced Perspective* (Chiarella/Flaschel/Franke/Araujo/Charpe/Proaño/Szczutkowski 2021) should be mentioned, as in these books he also put a special emphasis on working with younger co-authors, maybe to 'pass on his legacy.'

Beyond his extensive work on macroeconomic theory, Peter also contributed enormously to important policy issues such as the evolution of the capitalist society and the political system in his work (see, for example, Flaschel/Greiner/Luchtenberg 2012a), the discussion of Flexicurity (leaving Schumpeterian innovation activities on the enterprise

level but providing outside welfare-state buffers for the affected), the rise and rollback of the welfare state, the European labor movement, democratic voting systems, and environmental and climate issues.

LATER WORK

In his later work the question of social reform and what a suitably regulated capitalist society should look like, became more and more important and culminated in his 'MKS model' which combined elements of Marx (M), Keynes (K), and Schumpeter (S), and can be viewed as the foundation of Peter's concept of a 'social capitalism.' The basis consists of a connection between Goodwin's model of the income distribution, capital accumulation, and employment (the Marxian component) with the Keynesian concept of aggregate demand and Schumpeter's considerations about economic efficiency and social security. One of the resulting recommendations was a second employment sector, organized by the government, for people having no or only a minor chance on the regular labor market. This sector was intended to comprise various kinds of useful working opportunities not being provided by the private sector.

In addition to this, Peter's interest also contained the political system of a society and here especially the question about the future and the sustainability of democracy. Together with his wife, Sigrid, he developed an alternative to the prevailing voting system in Germany, characterized, among other issues, by a stronger participation of the citizens in the direct election of delegates sent to parliament. Furthermore, he was very concerned about the problem of how a political system should be designed in order to provide enough incentives for the government to pursue a long-run-oriented and sustainable policy.

Even though his last years were affected by fragile health that complicated, but did not completely hinder, his unwavering research energy, Peter Flaschel remained an active researcher who not only followed current economic and policy developments closely but who continued to work with many co-authors. In context, his most recent work, on inclusive growth and social protection (Krämer/Proaño/Setterfield/Flaschel/Luchtenberg 2022) and on the COVID-19 pandemic (Flaschel/Galanis/Tavani/Veneziani 2022), which he continued to develop in 2020 and in which he applied the fundamental structure of the Goodwin model – with the two dynamic variables 'infection rate' and 'lockdown rate' – should be mentioned.

The award of the Friede-Gard Prize for his lifetime work on macroeconomic modeling was a fully deserved recognition of his prolific academic career. Unfortunately, Peter passed away a few days before the award event, so it became a post-mortem recognition. Yet Peter Flaschel and the 'Bielefeld School' will leave a long echo effect on critical economic, social, and political studies.

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