

## REVIEWS

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### BOOK REVIEW: INNOVATION AND PLANNED ECONOMY? TECHNOLOGICAL CHANGE IN CENTRALLY PLANNED ECONOMIES: THE EXAMPLES OF THE GERMAN DEMOCRATIC REPUBLIC AND THE PEOPLE'S REPUBLIC OF POLAND

**Abstract:** The subject of this review is Falk Flade's monograph devoted to the mechanisms of innovation in the planned economies of German Democratic Republic and the People's Republic of Poland. The author combines the concepts of *National Innovation Systems* and *Sectoral Innovation Systems* with a comparative approach to analyse two key branches of the economy, microelectronics and synthetic fibre chemistry, in terms of innovation creation in a planned economy. Flade argues that planning did not preclude innovation, but significantly distorted it, replacing competitive incentives with requirements to comply with the plan as well as political and propaganda objectives. Based on extensive archival research, Flade identifies structural barriers that stifled innovation, knowledge diffusion and productivity. Discussing the differences between the GDR and the Polish People's Republic, Flade concludes that they did not result from ideological differences, but from economic management practices and the nature of the relationship between science and industry. The monograph makes an important contribution to economic history and innovation policy studies, offering a nuanced, empirically documented interpretation of 'planned progress' in Central and Eastern Europe.

**Keywords:** innovation, planned economy, microelectronics, artificial fibres, People's Republic of Poland (PRL), German Democratic Republic (GDR)

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The idea of progress, innovation and technical modernization was one of the pillars of the ideology and economic practice of socialist states and a tool for legitimizing communist authorities. According to its assumptions, technology, science and innovation were to be a tool for the 'accelerated development of productive forces', and their mass and effective application was to be proof of the superiority of the planned economy and the socialist system over capitalism. However, during more than 40 years of real socialism, despite the ideological emphasis on progress, reality diverged from ideology and socialist economies had difficulty generating and absorbing innovation.

The issue of innovation and technical progress in the real socialist economy has been addressed by economic historians since the 1990s, both in Poland and Germany. Falk Flade's monograph is a continuation of this research and, at the same time, an innovative attempt to understand the logic of innovation in planned economies. The author asks the question: was real technological progress possible in a centrally planned economy, and how did the institutional framework for innovation develop in such systems (Flade, 2024: 15–20)? In an effort to answer this question, Flade analysed the phenomenon of innovation in selected sectors of the economy of the German Democratic Republic (GDR) and the Polish People's Republic (PRL) in terms of their institutional development as well as scientific and economic results, taking into account the structural and bureaucratic constraints resulting from the planned economy (Flade, 2024: 45–58).

The book was prepared as part of the German research project *Mod-Block-DDR* and published in the prestigious series *Schriften zur Wirtschafts- und Sozialgeschichte* (vol. 89). In contrast to traditional approaches (Roesler, 1990; Haase, 1990; Balcerowicz, 1997), which focused on the dysfunctions of socialist planning, Flade concentrates on how real institutions, research centres, universities and enterprises attempted to generate and implement innovations despite the limitations of the socialist system. He argues that 'plan' and 'innovation' do not have to be mutually exclusive categories. At the same time, he points out that in the realities of the socialist economy, pro-development activities encountered barriers resulting from the very nature of the system and their subordination to political and propaganda goals, which meant that success in this area was measured by the degree of

plan implementation and the satisfaction of the communist authorities, rather than by efficiency, quality or profitability.

The book consists of seven parts: a theoretical and methodological introduction (part A), a comparison of the 'national innovation systems' of the GDR and the People's Republic of Poland (part B), and the main part of the work, which consists of two pairs of sectoral studies (parts C-F). The first is devoted to microelectronics, the second to synthetic fiber chemistry. The whole is concluded with a synthetic comparative chapter (Schluss) (part G).

The extensive source base consists of documents from German and Polish archives, including files from ministries, research institutes and production plants, such as Halbleiterwerk Frankfurt/Oder, CEMI, Stilon and Chemitex. Flade also used extensive statistical materials (GUS, RWPG), numerous printed and electronic sources, and patent data. The bibliography includes over three hundred items. German- and English-language studies dominate, but the author is also familiar with some Polish literature, although its use remains rather selective.

In terms of methodology, Flade refers to the concepts of *National Innovation Systems* (Nelson, 1993; Freeman, 1995; Lundvall, 2007) and *Sectoral System of Innovation* (Malerba, 2002), as well as to the comparative method. He adapts the above concepts to the study of the planned economy and, on this basis, concludes that the innovation system in a socialist state can be analysed in terms of a network of institutions – from ministries and central planners, through research institutes, to industrial plants – which produced, processed and implemented technological knowledge within the politically and bureaucratically determined mechanisms of a planned economy (Flade, 2024: 45–58). In combination with a comparative method, Flade uses them to study two areas of the economy in the GDR and the People's Republic of Poland: microelectronics and synthetic fibre chemistry. This allowed him to capture the differences between planning structures, cooperation networks, organizational culture and the dynamics of technological learning in two sectors of the economy in the GDR and the People's Republic of Poland.

As part of a detailed analysis of the innovation system in the field of microelectronics and synthetic fiber chemistry, Flade points to the key importance of these areas for the economic modernization strategy in the GDR and the People's Republic of Poland.

In the GDR, microelectronics was seen as a *strategic sector of the future*, on which the competitiveness of the machine, optical and telecommunications industries depended. The authorities treated it as a symbol of 'socialist modernity' and invested significant funds in the development of, among others, Halbleiterwerk Frankfurt (Oder), VEB Carl Zeiss Jena and Kombinat Mikroelektronik Erfurt (Flade, 2024: 60–145). In the People's Republic of Poland, this sector was linked to the program of *electronisation of the national economy* and attempts to modernize industry through the use of automation and digital computing. Development and production work was concentrated in the CEMI, MERA, TEWA and UNITRA plants, where, in the 1970s and 1980s, in addition to their own research, attempts were made toward modernization by importing Western licenses (Philips, Fairchild) (Flade, 2024: 147–210).

In turn, the chemical industry (especially synthetic fibers) was the pillar of a development strategy based on the 'chemicalisation of the economy' – a concept promoted since the 1960s both in Moscow and in its satellite countries. As a result, in the GDR, the Chemiefaserwerk Guben and Schwarze Pumpe plants, and in the People's Republic of Poland, Stilon Gorzów, Elana Toruń and Anilana Łódź, among others, were an integral part of the plan to create a self-sufficient raw materials industry.

Flade's reconstruction of the history of these industries and individual companies became the basis for formulating general conclusions about the innovation system in socialist economies and identifying differences in this area between the GDR and the People's Republic of Poland. In his opinion, employees of research institutes and company development departments sought to modernize technology and expand the range of products manufactured, but their activities were limited by the structure of central planning and control mechanisms characteristic of a socialist economy. Planning did not preclude innovation, but it significantly distorted it, replacing competitive incentives with requirements to comply with the plan and political and propaganda objectives, and eliminating the space for experimentation and the associated risks. As a result, the system favored the emergence of so-called 'selective innovations' – large, prestigious and costly projects that had symbolic political significance, but often brought limited technological benefits. Small, grassroots improvements, typical of market

economies, remained marginalized, deprived of institutional support and economic motivation. On the other hand, even if the results obtained did not meet all the expectations, their development stimulated modernization and the development of technical and production competences broadened the range of products manufactured by both economies, and influenced the transformation of the economic structure and relations with foreign partners.

Discussing the differences between the GDR and the PRL, Flade concludes that they did not result from ideological differences, but from economic management practices and the nature of the relationship between science and industry. Both countries operated under the same planned economy system, but implemented its principles in different ways. Flade points out that the fundamental differences concerned the degree of centralization, the manner of cooperation between the scientific and research sector and industry, and the extent of contacts with the West. Of particular importance was transfer of technology (especially in microelectronics and synthetic chemistry), which was a key source of innovation in both countries. However, its effectiveness was limited by political, bureaucratic and financial barriers. As a result, both the GDR and the PRL were able to, periodically, modernize selected sectors, but were unable to translate these achievements into lasting internal innovation capacity and market success. The costs were disproportionate to the results achieved, and the gap with capitalist economies (especially since the 1980s) was growing.

Based on an in-depth analysis of two sectors, Flade appreciates the achievements of scientists and engineers, while arguing that the most significant obstacles to the development of the socialist economy were: excessive centralization, a lack of economic incentives for innovation, poor cooperation between science and industry, technological isolation, bureaucratic fragmentation of institutions, and the ideologization of objectives. The author emphasizes that these barriers were not accidental but were an integral part of the planned system. Therefore, despite numerous attempts at reform, they were never permanently overcome (Flade, 2024: 312–318).

In summary, Flade's book is an example of modern economic historiography. A rare interdisciplinary combination of economic, historical and organizational analysis. Methodological innovation, empirical accuracy, wealth of data and attention to context make the book

exemplary in terms of craftsmanship and offer original conclusions. Flade has shown that the concept of *National Innovation Systems* with the *Sectoral Innovation Systems* model can also be applied to the analysis of non-market economies. This is one of the first such consistent applications of contemporary innovation theories to the analysis of socialist countries. Also worthy of recognition is the extensive, two-pronged empirical analysis covering the GDR and the People's Republic of Poland, which brings a new quality to research on the modernization of socialist countries and their lag behind the West. The result is a coherent picture of the meso- and micro-mechanisms of innovation in real socialism. Flade's book is a rare combination of a source-based, comparative and quantitative approach, which makes it a model of modern economic history.

Among the few weaknesses of Flade's book, the first thing to be pointed out is the imbalance between the section devoted to the GDR and the analysis of the Polish People's Republic. The author rarely refers to Polish economic and historical literature (e.g. Kurowski, 1990; Jasiński, 2011; Kaliński, 2012), which limits the comparative and contextual potential of the section devoted to the Polish People's Republic. The book focuses mainly on institutional structures and science and technology policy, thus failing to take sufficient account of the political context, in particular the role of leading Communist Party officials in the PRL and the GDR in setting the direction of investments and the rivalry between party factions associated with particular sectors of the economy. Furthermore, it does not sufficiently highlight the micro-social dimension of innovation, including issues related to the organizational culture of enterprises, human capital and work culture, and the ideological conditions of creative work. These aspects appear only marginally, although they could enrich the analysis with an important social perspective. In some places, the style of narration appears too technical, and the excess of tabular data weakens the clarity of the argument.

Despite the above reservations, Flade's work is a mature and interdisciplinary comparative study that convincingly combines economic precision with a historical perspective. The author departs from the schematic identification of socialism with stagnation and presents a nuanced picture of systems in which, despite political and structural constraints, there were spaces for innovation, local cooperation net-

works and original forms of technological learning that were able to create new solutions and expand technical competences, but were unable to translate them into sustainable economic growth. Thanks to its high level of analysis, wealth of sources and methodological clarity, Flade's book is a point of reference for further research on the economic and technological history of the Eastern Bloc.

**Tadeusz Janicki**, b. in 1964 in Krotoszyn, associate professor, habilitated doctor of humanities, head of the Department of Economic History of the Faculty of History of the Adam Mickiewicz University, Poznań and President of the Polish Association of Economic History. Editor-in-Chief of the academic journal *Studia Historiae Oeconomiae*. Author of many works on the socio-economic history of Poland and Germany in the 19th and 20th centuries, with particular emphasis on the history of the country-side, agriculture and agricultural policy, the Nazi occupation of Polish lands, the political thought of the Polish peasant movement and the regional history of Wielkopolska. Organizer, together with Professor Dariusz Gwiazdowicz from the Poznań University of Life Sciences, of the session at the international congress of historical Sciences entitled: 'Man and nature: Between destruction and creation', which took place as part of the 23rd International Congress of Historical Sciences in Poznań 2022 and Co-organizer (together with P. Franaszek, C. Leszczyńska, and D. Bębnowski) of the session entitled "Equalities and Sustainability Challenges in Transition Economies in Central and Eastern Europe after 1989" at the World Economic History Congress (WEHC) in Lund, Sweden, 2025.

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