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Abstract of doctoral thesis
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**THE ROLE OF THE STEEL INDUSTRY IN THE DEVELOPMENT OF THE
GERMAN ECONOMY UNDER CONDITIONS OF GLOBALISATION**

Reason for choice of topic

Germany is an economic powerhouse, a developed industrial state. The sources of this power lie in its advanced technology, its ability to mobilise capital and its highly competent management. Germany's industrial output rose from EUR 1306.68 billion in 1990 to EUR 6334,68 billion in 2021. The country has experienced prosperity throughout this period.

Germany's prosperity has deep roots in a past that is characterised by momentum and continuity. The development of the steel industry in the development of the German economy is taking place against the background of two processes: globalisation and integration. Each of these processes has its own specific characteristics. The steel industry plays a central role in the development of German industry, influences other industries and thus contributes to the development of the country's economy. The development of the steel industry in Germany, which is a component of the manufacturing industry, influences - through a network of international economic relations - the economic development in other countries. This happens to varying degrees at different times. These interrelations take place at the level of globalisation and integration.

The issue of economic development is set in the perspective of economics. The theoretical terms of this scientific discipline are used to explain the involvement of scholars in understanding the meanders of economic processes and their conditions when Germany's production potential arose, and in subsequent periods of development. The auxiliary discipline of economics, which is international economic relations, demonstrates the essence and meaning of the formation of

economic relations between states against the background of, and because of, steel production. The relations themselves between corporations in the steel industry and the German state are multidimensional. On the one hand, they exert influence on state institutions in order to obtain statutory solutions favourable to themselves; on the other hand, corporations are opposed to state regulation, even if this does not deplete their profits but threatens the competence of their management boards.

Structure of work

The work is divided into three chapters, an introduction and a conclusion. The work also contains a bibliography, a list of tables, figures, photographs and appendices.

This dissertation brings together the main issues related to the most important concepts of contemporary world economies, namely economic growth and globalisation. Germany, as one of the major economies of the globalised world, alongside the United States and China, is also the undisputed leader in the European Union. The steel industry has undoubtedly played and will continue to play a fundamental role in the development of the German economy.

The first chapter deals with a discussion of concepts, definitions, models as well as categories related to economic development, the second characterises the origins of the European Union. It describes the economy of Germany, detailing the history and the role of the steel industry in the significance of the country's development. The third chapter is based on an analysis of the activities of the three largest steel producers in Germany, Salzgitter SA, ThyssenKrupp and ArcelorMittal.

The first chapter covers, among other things, issues related to economic concepts such as: economic and economic development, economic growth models, economic activity, types and objectives of enterprises, globalisation, competitiveness, input-output analysis.

Economic development is inevitably linked to the objectives set by businesses, or states. Views on the objectives of businesses have evolved and still vary today. The objective of enterprises is considered to be profit maximisation. This view is now widely held. In the course of economic development and research conducted on the economy, other formulations have also emerged, which are classified and discussed in this chapter, based, among others, on the theorems of Adolf Wagner and Walter Rostow. The following part of the chapter discusses the mechanisms of influence on the creation of a new political, social and economic order in the era of globalisation. Evaluating, especially from today's perspective, one cannot ignore the fact that globalisation is seriously distorted by inequalities in the distribution of wealth and

prosperity. Globalisation is also a positive process that is increasingly creating socio-economic unity despite everything. Globalisation arises from the basic mechanisms of the market economy and especially competition. The trend in a globalised world is for numerous mergers and acquisitions, which weakens the competitiveness of companies. The size of corporations, concerns and their power is constantly increasing. Micheal Porter's views on the competitiveness of nations and investment in technology as the dominant form of competition are discussed in detail. The concepts of economic development by such authors as Michał Kalecki, Stefan Kurowski, Immanuel Wallerstein, Amartya Sen and Rudolf Richter are described in detail.

The second chapter focuses on the foundations and people who made the European Union possible, of which Germany is an inseparable member and founder. The European Union is an economic and political union of 27 democratic European states. The idea of uniting Europe has its history and its "founding fathers", such as Jean Monet, Altiero Spinelli and Richard Coudenhove-Kalergi. From the Westphalian area we should also mention Ludwig Erhard and Konrad Adenauer. This part of the second chapter also presents the concepts that underpinned the creation of the European Union, whose main objective is the need to ensure security and peace. The following part of the chapter discusses the steel industry in Germany, its emergence in the nineteenth century with the start of industrialisation processes, which was an important element and factor of development. The steel industry is a major supplier of materials and semi-finished products to the engineering, automobile, shipbuilding and electrical industries, as well as to industrial construction, housing and infrastructure. The steel industry employs 96,464 people (2018 data) and creates 3.7 million jobs in a non-direct way, i.e. through the supply of steel products and semi-finished products. The production of steel products and the demand for them in the national economy are an important barometer of a country's economic development and a measure of its industrial potential. At present, the steel industry in Germany is a highly efficient industrial sector with modern technology and relatively low employment. The basic raw materials necessary for the production of steel products are iron ore, coke and scrap metal in large quantities. Traditionally, ironworks have been located near coal mines or close to where iron ore is extracted. An additional cost factor in the steel making process is electricity. Hence the second chapter discusses in detail the energy security and raw material policy of Germany and the European Union. In particular, attention is paid to so-called renewable energy: wind energy, solar energy and biomass. The chapter also examines the structure of exports and imports of the steel industry by sales and purchase volume according to criteria.

The third chapter discusses the organisational structure and economic activities of the second largest steel producer in Germany, the Salzgitter AG concern, in the balance year 2019. The basic macroeconomic indicators of the individual Group companies forming the Salzgitter AG concern are analysed. In particular, attention was paid to expenditure on research and development, on investments in combination with the problem of so-called green steel. In the further part of the chapter comparisons were made between the Salzgitter AG concern and its direct competitors, i.e. ThyssenKrupp AG and the world leader in the number of steel products manufactured in the world, ArcelorMittal. The chapter identifies the strengthening of the German steel oligopoly in the global market in 2005-2020. The case study describes prohibited cartel activities of the largest steel producers in Europe, in particular the Salzgitter AG concern. A subjective analysis is made of a questionnaire on the perception of the role of the steel industry in the convictions and opinions of German academics from the Hamburg School of Business Administration in Hamburg.

The graphics produced in the work are included in two groups. One of them consists of tables, and the other of drawings and diagrams. The group of drawings includes all graphics except tables, diagrams, schematics, sketches of problem maps.

The bibliography includes book and journal entries and online sources used in the dissertation.

Appendices have been included in circumstances where inclusion in the main text of the thesis could decompose its structure.

The main objective of the dissertation is to identify the determinants, dimensions and impact of the steel industry on industries of decisive importance for the economic development of Germany in the globalised market. The realisation of this objective is linked to the achievement of the following cognitive (theoretical) and specific objectives:

Cognitive (theoretical) objectives of the work:

1. presentation of assumptions and concepts influencing the formation of conditions for socio-economic development in Germany,
2. explaining the processes of globalisation and integration as an institutional framework for the development of the German economy as a whole and the steel industry as a part of it.

Sub-objectives:

1. identification of the determinants of the German steel oligopoly in the global steel market,

2. analysis of the world steel market,
3. the importance of high-tech steel products for Germany's economic development,
4. the impact of technological change on production processes in the international Salzgitter AG group,
5. An analysis of the consequences of the EU's tightening of CO₂ for the German steel industry,
6. the formulation of linkages between German steel producers and the public perception of the role and importance of the steel industry in the development of the modern German economy.

The theoretical-empirical interpretation of the dissertation topic is directed towards the verification of the following hypotheses:

H1 - The German steel industry has a significant impact on the various sectors of the German economy through the introduction of new grades of rolled (fabricated) steel.

H2 - The German economy has a positive impact on other economies participating in the globalised market through cooperative activities.

The aforementioned cognitive objectives and hypotheses allow us to present the main hypothesis of the paper:

Main hypothesis:

The performance of the German steel industry under conditions of increasing globalisation influences other sectors of the German economy and determines the increasing successful impact on the interacting economies of the German economy.

The subject of the research are German steel multinationals in the field of metallurgical production influencing the development and evolution of steel grades tailored to the needs of the innovative and export-oriented German economy. In Germany, the steel industry is characterised by a high degree of innovation and innovation means progress in the production technologies of the steel mills and in the steel grades themselves. The individual steel grades which, thanks to their properties, are more durable and more resistant to wear during service, lighter than standard grades and, above all, adapted in terms of product range to every sector of the economy, from the armaments industry to the latest communication technology industry.

The period discussed in this dissertation covers 1990 - 2020, when necessary the research period is longer and also includes third decade of the 21st century.

The Method

The dissertation employs a historical narrative method and a systematic method. Each of them is based on a different research approach. In the first case, the main role is played by periodization, which allows us to learn about the history of a certain problem. In the second case, it is about substantive ways of solving a problem and then categorisation plays an important role. Both approaches are used in this work.

This dissertation has a theoretical and empirical character. In order to achieve the assumed aims, verify the hypotheses, as well as the specificity of the problem, such procedures as literature study, the method of historical description, the method of analysis and synthesis, the method of induction and deduction, and comparative analysis were applied.

The mentioned methods and procedures are not disconnected from each other. The model of rational science is the patron of the presented dissertation. This means that this methodological procedure minimises the possibility of error and maximises the probability of approaching the truth.