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ANALYSIS OF TRENDS AND DETERMINANTS OF THE «BIG 4» COMPANIES IN THE GLOBAL AUDIT MARKET

The object of research is the «Big 4» – a group of the largest international auditing companies, which includes: Deloitte (Great Britain), PricewaterhouseCoopers (USA), Ernst&Young (Great Britain) and KPMG (Netherlands). The target market of the «Big 4» companies is mainly large companies operating in various sectors of the world economy and regions of the world. Over the years, the «Big 4» companies have been leading the global audit services market and growing their revenues. Companies offer audit, tax and consulting services to their clients. This study is aimed at determining and evaluating the influence of the state of the world economy on the performance of companies and identifying the key endogenous determinants of the sustainability of their development. A comparative analysis of the dynamics of growth rates of global gross domestic product and aggregate global income of the «Big 4» companies during 2009–2022 showed their similarity, but not identity. The annual growth rates of the «Big 4» aggregate income mostly exceeded similar indicators of the global gross domestic product. The conducted correlation-regression analysis of the dependence of the aggregate revenues of the «Big 4» companies on the economic situation in the world confirmed the significant influence of the state of the world economy on the performance of the «Big 4» and made it possible to determine the level of this influence. A number of endogenous determinants contributing to the sustainable development of a group of companies in an unstable economic environment have been identified: the target segment (the largest international and national companies), broad industry diversification and geographical coverage of client companies, timely updating of the range of services in accordance with demand, effective international marketing strategies, use innovative technologies, highly professional management and company personnel.

Keywords: «Big 4» companies, global audit market, global gross domestic product, total global revenue of companies.

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1. Introduction

Audit services in the global market are in growing demand, which, according to several research companies, will grow at an average annual rate of more than 4 % in the next 5 years and is expected to reach 300 billion USD in 2028 [1, 2]. The key players in this market are the four largest in terms of revenue and number of company personnel: Deloitte (Great Britain), PwC (PricewaterhouseCoopers, USA), EY (Ernst&Young, Great Britain) and KPMG (Netherlands), known as the «Big 4»). They serve 88 % of large companies from various sectors of the economy with an annual global turnover of more than 700 million USD. The remaining 12 % of companies from this category of companies are served by other 36 audit companies [3]. For many years, the «Big 4» («Big Four») companies, regardless of the state of the world economy and the economic situation in different countries, occupy leading positions in the

global market, increase revenues and successfully compete with other business representatives in the audit market.

In the scientific literature, there are currently few studies devoted to the functioning of the global audit services market and the activities of key players on it. In sources [4–7], research of a descriptive nature, such as a comparative analysis of the «Big Four» companies, prevails. The history of the creation and development of the «Big Four» companies on the global market is discussed in [8]. The results of the study of trends in the development of the global audit services market and some aspects of the activities of key players in this market are presented in works [9, 10]. Separate issues of marketing strategies of the «Big Four» companies are discussed in [11]. The development of auditing, issues of the quality of auditing services, transition to international auditing and accounting standards in Ukraine are studied in [12, 13]. In addition, information on the development of the global audit services

market is presented on the online resources of the «Big Four» accounting firms, the Financial Reporting Council, the German company Statista.com, research online companies (Research and Markets, Verified Market Research) etc. The study of the available scientific works showed that the study of the activities of the «Big Four» companies in the global services market is mostly descriptive and fragmentary in nature, there is a lack of detailed quantitative analysis of the activities of this group in the context of changes taking place in the global economy and their impact on the results of the companies' operation. In this regard, the purpose of the study is to determine and assess the impact of changes in the world economy on the performance of the «Big Four» group of companies and to identify the key endogenous determinants of their stable growth. This will allow the «Big Four» group of companies to predict development several years in advance, depending on changes in the factors of the business environment, to make timely management decisions regarding the adjustment of international production and marketing strategies, and other audit companies operating in the global market to use the proposed methodical approach in corporate management.

2. Materials and Methods

In the research process, general scientific and special methods of scientific research were used, in particular:

- analysis and synthesis (for researching trends in the development of «Big Four» companies and the global economy);

- comparison (to compare the growth rates of «Big Four» companies and the growth rates of the global economy);
- correlation-regression analysis (to assess the dependence of the aggregate revenues of the «Big Four» companies on the value of the global domestic product);
- tabular and graphic methods for systematization and visual presentation of research results, etc.

Processing of statistical data, calculations and construction of a regression model were carried out using the Excel program.

3. Results and Discussion

The companies Deloitte, PwC (PricewaterhouseCoopers), EY (Ernst&Young) and KPMG lead the Top 10 largest auditing companies operating on the global market (Table 1).

The first four companies presented in the Table 1, by combined revenue almost 5 times the combined revenue of the next six companies from the top ten and are the leading players who dictate the rules in the global market of audit, tax and consulting services.

The «Big Four» companies have been around for over a century and are known for providing high-quality professional services and deep expertise. Each of these companies works in several areas, including tax, mergers and acquisitions (M&A), corporate restructuring, intellectual property protection, risk management, cyber security, and more. And also helps client companies to manage risks, reduce and optimize costs, increase operational efficiency, maximize profits, i. e. maintain high competitiveness in the market.

The «Big Four» provide services to businesses and organizations in a variety of economic sectors, including technology companies, retail businesses, government and financial institutions, non-profit organizations, and more.

A significant share of their clients are large companies, in particular from the Fortune 500 list (the 500 largest companies by total revenue in the USA), the 100 largest companies by market capitalization, whose shares are listed on the London Stock Exchange and are included in the FTSE 100 and FTSE 250 indexes, 500 shareholders of US companies with the largest capitalization included in the S&P 500 stock index. The services of the «Big Four» are also used by small and medium-sized businesses. In 2019, the top ten FTSE 350 client companies that paid the most for «Big Four» audit services consisted of banks (HSBC, Barclays, The Royal Bank of Scotland, Lloyds Banking Group), an insurance company (Aviva), media group (WPP), companies in the oil and gas sector (Royal Dutch Shell, BP), companies in the pharmaceutical and biotechnology sector (GlaxoSmithKline), a supplier of raw materials and rare earth materials (Glencore) [15].

Table 1

Top 10 largest auditing companies in the world by revenue as of 2022 [14]

Company	Country	Revenue (Billion USD)	Number of employees
Deloitte	Great Britain	59.3	411,951
PwC	USA	50.3	328,000
EY	Great Britain	45.4	365,399
KPMG	Netherlands	34.64	265,000
BDO	Canada, Germany, Netherlands, United Kingdom, United States. The main office is in Belgium	12.8	111,300
RSM	International network of companies Head office – Great Britain	8	57,000
Grant Thornton	International network of companies Head office – Great Britain	5.72	56,000
Nexia International	International network of companies Head office – Great Britain	4.5	35,600
Crowe Horwath	International network of companies Head office – USA	4.3	42,000
Baker Tilly	International network of companies Head office – Great Britain	4.3	39,000

The «Big Four» in today's composition was formed in the early 2000s as a result of mergers and acquisitions, and is a network of independent companies that cover more than 150 countries with their activities and agreed to the same standards of activity and the brand name «Big 4» («Big Four»).

The company Deloitte (headquarters in Great Britain) is recognized as the largest of the «Big Four» companies in the world by many criteria and expert assessments. It was founded in 1845. Today's Deloitte Touche Tohmatsu Limited (DTTL) uses the name «Deloitte» as its public trademark. The company provides audit services to about a quarter of the 100 companies included in the British FTSE 100 index. In 1995, Deloitte opened a consulting division, and consulting became the most profitable part of its business. Currently, Deloitte has added digital consulting to its range of services and is successfully positioning itself as an expert in digital transformations and products [4–6].

The main competitor of Deloitte in the global market is the company PricewaterhouseCoopers (PwC), whose headquarters are in the USA and which was created as a result

of the merger of Price Waterhouse and Coopers&Lybrand in 1998. PwC provides services in 26 different sectors of the economy and offers specialized assistance in areas such as audit, taxation, personnel management, transformational processes, improvement of operational efficiency and anti-crisis management. According to the CFA Institute study, PwC provides audit services to the largest part of the S&P 100 companies with a combined market share of 32 %, but among the S&P 500 companies it ranks second after Ernst&Young [4–6]. PwC claimed the largest share of the UK FTSE 100 market, but its share has now fallen to 26 %, as is the case with other major audit firms, as the UK has strengthened antitrust laws for audit firms [6].

The third largest «Big Four» company by revenue is Ernst&Young (EY), headquartered in Great Britain. The company provides a full range of services in the field of audit, taxation, risk management, technology, cyber security, human capital management, etc. EY’s US division is the most successful of their network. It serves more S&P 500 firms than any other «Big Four» firm, and its UK office serves as many clients as PwC, but fewer than Deloitte. EY is constantly expanding its scope to include other professional services such as strategic consulting, legal services, etc. In addition, the company provides services related to the digital transformation of business, the use of technologies and innovations to ensure the efficient operation of enterprises. EY is the undisputed leader in the tax field, the field of transfer pricing, and the financial services sector [5, 6].

KPMG, headquartered in the Netherlands, is the smallest of the «Big Four» in terms of revenue. The name of the company is formed from the first letters of the founders P. Klynveld (Klynveld), W. Barclay Peat (Peat), James Marwick (Marwick) and R. Goerdeler (Goerdeler). The modern network of companies under the KPMG brand was formed in 1987, when the companies Peat Marwick International and Klynveld Main Goerdeler merged. The company currently serves the needs of businesses, governments, capital markets, and more. KPMG’s audit clients are 19 % of companies on the S&P 500 list and 27 % of companies on the FTSE 100 list. Unlike other «Big Four» companies, KPMG also serves medium and small businesses, offering audit, tax and consulting services. The company’s strongest business practices are consulting and tax [5, 6].

Despite the fact that from the very beginning the companies were created to provide audit services, in order to reduce the risk of loss of income depending on demand, changes in the economic situation in the world and in specific countries, each of the companies diversified its activities by expanding the range of services, mainly by adding consulting services, which became the largest source of income for all companies except EY (Table 2).

Diversification of the service portfolio and effective marketing strategies allowed the companies of the «Big Four» to steadily increase aggregate revenues for a long time (Fig. 1), despite the fact that the rates of revenue growth differed among companies depending on demand and the economic situation in the world (Fig. 2).

Table 2

Revenue of the «Big Four» accounting/audit firms worldwide in 2022, by function (in billion USD)

Service sector	Deloitte	PwC	EY	KPMG
Audit (*)/Assurance (**)/AERS (***)	18.4 (***)	18.1 (**)	14.38 (**)	11.85 (*)
Advisory (*)/Consulting (**)	25.8 (**)	20.71 (*)	13.87 (*)	15.44 (*)
Tax	9.9	11.58	11.29	7.35
Other	5.3	–	5.88	–
Total	59.4	50.4	45.42	34.64

Note: formed on the basis of [16]

The lowest annual rates of revenue growth in the period from 2010 to 2022 were recorded for all «Big Four» companies in 2010 (after the 2009 crisis), 2015 (during the global economic crisis) and in 2020 (during the crisis caused by the global COVID-19 pandemic). But they remained positive for almost all companies during the period under study, apart from slight declines in revenues at EY – by 0.65 % in 2010, and KPMG – by 1.5 % in 2015 and 1.8 % in 2020.

During the crisis years, the economic situation in the world significantly worsened in 2015, when the global gross domestic product decreased by more than 5 % compared to 2014, and in 2020, during the reign of the global pandemic of COVID-19, when its size fell by almost by 3 % compared to the year before COVID 2019 (Fig. 3). In the same years, the annual rates of growth of the aggregate income of the «Big Four» also decreased, but remained positive.

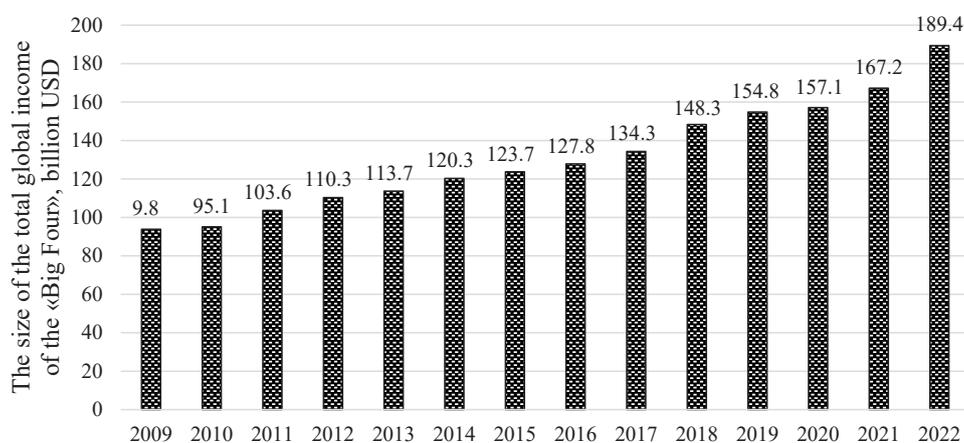


Fig. 1. Aggregate global revenue of the «Big Four» companies during the period 2009–2022, billion USD [17]

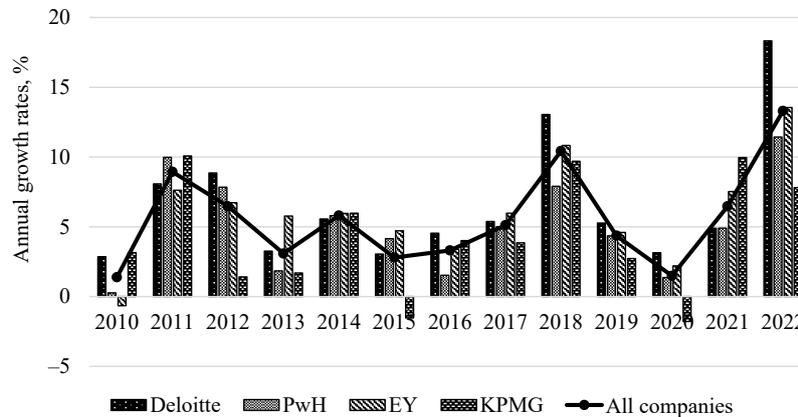


Fig. 2. Annual growth rates of global revenues of the «Big Four» companies in the period from 2010 to 2022, % (developed on the basis of [17])

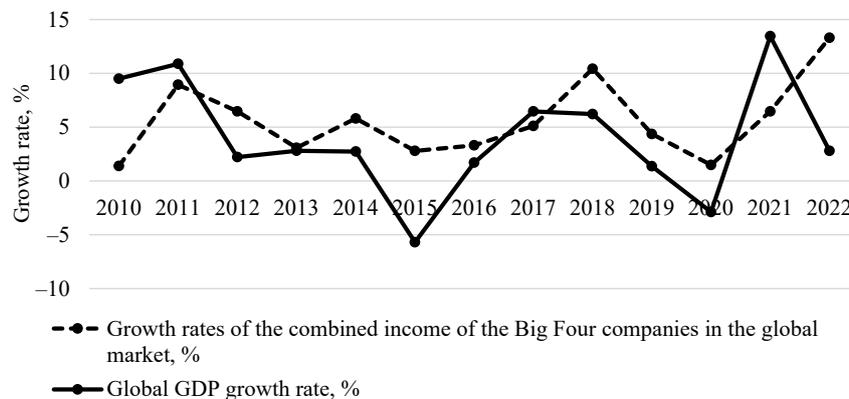


Fig. 3. Dynamics of the annual growth rates of the aggregate income of the «Big Four» companies and the global gross product, 2010–2023, % (constructed by the authors on the basis of indicators calculated according to data [17, 18])

The dynamics of the annual growth rate of the aggregate income of the «Big Four» companies is synchronized with the dynamics of the annual growth rate of the global gross product, but they are not identical. The amplitude of fluctuations in the rate of growth of the aggregate income of the «Big Four» is much smaller than the similar indicators of the global gross domestic product. Even during the crisis years, the combined revenues of the group of companies continued to grow, but at a lower rate than during the crisis years. According to the authors, this situation is due to a number of endogenous factors:

- selected target segments (large client companies and large orders from them), which allows to realize the effect of scale and gain competitive advantages on the global market on this basis;
- the degree of diversification of the economic sectors in which clients work and the regional coverage of the global market;
- timely updating of the range of services in accordance with demand;
- effective international marketing strategies;
- using innovative technologies;
- experienced management and highly qualified personnel of companies, etc.

The conducted correlation-regression analysis of the dependence of the aggregate income of the «Big Four» on the economic situation in the world in the period from 2009

to 2022 showed that the value of the global gross domestic product, which reflects the state of the world economy, has a significant direct impact on the results of operations of the «Big Four» (correlation coefficient $r=0.954$). Changes in the combined income of the «Big Four» companies are 91 % due to changes in the value of the global gross domestic product, that is, the state of the world economy. According to the regression model (Fig. 4), the growth of the global gross domestic product by 1 billion USD leads to an increase in the total income of the «Big Four» companies by an average of 2.6 million USD. A similar opposite trend will be observed if the economic situation in the world worsens.

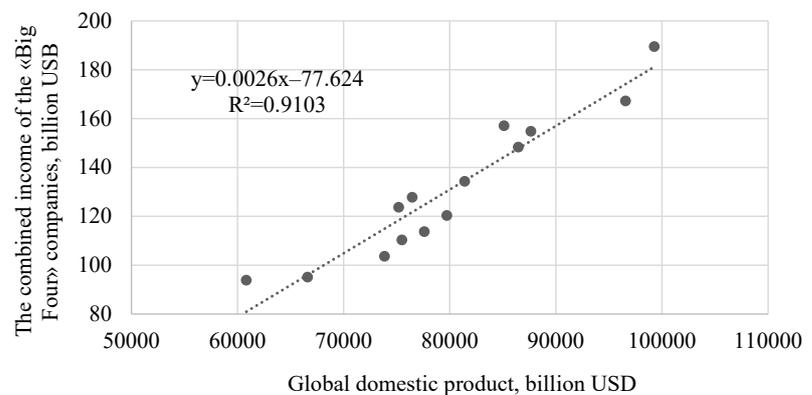


Fig. 4. Dependence of the aggregate costs of the «Big Four» companies on the value of the global domestic product (regression model) for the period 2009–2022 (constructed by the authors on the basis of statistical data [17, 18])

The war that began on February 24, 2022, when the Russian Federation attacked Ukraine, caused the annual growth rate of global gross domestic product to fall to 2.8 % in 2022, while it was more than 13.5 % in 2021, but it did not affect the growth of the aggregate revenues of the «Big Four» companies. They increased by more than 13 % compared to 2021. However, already at the beginning of 2023, the official website of the «Big 4» group stated that due to the deterioration of the economic situation in the world, caused by the slowdown in investment processes, mergers and acquisitions, etc., the companies of the «Big Four» made a decision to reduce some divisions of companies, mainly consulting [18], which once again proves the great dependence of the results of the companies' activities on the general economic situation in the world and individual countries.

According to experts, the war directly affected more than 600,000 enterprises worldwide due to the suspension and transfer of production to other countries, disruption of global supply chains, etc. A slowdown in the development of the global economy is predicted [19]. Under such conditions, it is advisable to continue researching the results of the «Big Four» companies in the context of their adaptation to war conditions and the post-war recovery of the Ukrainian and global economy [20].

The practical significance of the conducted research lies in the identification and evaluation of determinants that determine the performance of large international companies on the global market of audit services. Taking them into account will make it possible to predict their further development, identify possible risks in a timely manner and adequately and effectively respond to them by making appropriate decisions regarding the adjustment of companies' development strategies (target segments, diversification of the range of services, pricing, communications, etc.). In addition, for other companies operating in the global services market, the use of the proposed analysis methodology will contribute to the effective improvement of corporate governance.

The study was limited to a quantitative analysis of the aggregate results of the «Big Four» companies during the period 2010–2022, taking into account changes in the economic situation in the world, without a corresponding analysis of the corporate strategies of the companies that determined the obtained results. In addition, due to the war, all «Big Four» companies left the Russian and Belarusian markets in 2022, but within the scope of this study, the lack and fragmentation of relevant information did not allow to assess the scale of losses and their impact on the future performance of the «Big Four» as a whole and each company separately. Under such conditions, taking into account the specified limitations, the results of quantitative research can be used to forecast the total revenues of the «Big Four» group depending on the economic situation in the world for the next 2–3 years, and the methodical approach can be used by other large companies to analyze and forecast their activities on the world market. In this regard, it is advisable to continue research in two directions:

- 1) carry out a quantitative analysis of the impact of the economic consequences of the war on the results of the international activities of the «Big Four» group of companies;
- 2) analyze changes in corporate strategies of companies on a global scale and, in particular, in Ukraine, taking into account the factor of the Russian-Ukrainian war and their impact on the economic results of the «Big Four» companies.

4. Conclusions

The study showed that the results of the «Big Four» companies significantly depend on the state of the economic situation in the world. This is confirmed by a comparison of the annual growth rates of the aggregate global revenues of the «Big Four» and global GDP, and a correlation-regression analysis of the dependence of the aggregate global revenues of companies on the size of global GDP. At the same time, it was found that the decrease in the size of the global GDP during the crisis period did not cause the same drop in the total global income of companies. Annual income growth rates decreased, but remained positive and higher than global GDP growth rates. Such high viability and effectiveness of the companies' activities is due to a number of determinants, in particular:

- selected target segment (largest international and national companies);
- broad industry diversification and regional coverage of client companies;
- timely updating of the range of services in accordance with demand;
- effective international marketing strategies;
- using innovative technologies;
- highly professional management and company personnel.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

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Data availability

The manuscript has no associated data.

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