

## The Impact of the COVID-19 Pandemic on the Dynamics of Development of Construction Companies and the Primary Housing Market: Assessment of the Damage Caused, Current State, Forecasts

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### Abstract

The Covid-19 virus has significantly affected the development of the world economy; moreover, this influence has turned out to be quite ambiguous. In this paper, the emphasis was placed on considering the development trends of construction companies and the primary housing market. Thus, the main objectives of the work are to assess the impact of the COVID-19 crisis on this sector of the economy and to assess possible trends in its development in the future. The main method in writing the work was the method of analysis conditioned upon the large number of processed statistical data on the development of the construction sector and the housing market in the countries of the world. During the analysis, the author came to the conclusion that the development trends of construction companies in the countries of the world as a whole have a similar trend: all of them have suffered significantly from the pandemic and its limitations. However, there are some negative trends depending on the regions and countries; it was shown that the state of construction companies largely depended on how the state reacted to the newly appeared problems, how active and fast it was. Prices on the housing market showed a significant increase, which is also primarily explained by the policy of states to support businesses (mainly small) and local residents in connection with the pandemic, which means an increase in their ability to pay.

### Keywords

world economy; housing market in individual countries; forecasting; crisis; economic activity

### 1. Introduction

The development of the world economy throughout history has been accompanied by fluctuations, that is, economic cycles. Economic cyclicity is a model of economic development in which this development is characterised by periodic fluctuations in economic activity, including a scheme of revolutionary and

evolutionary stages of economic development with their characteristic regular recessions and rises in production (Mironova & Aleshina, 2016). The economic cycle can be conditionally divided into several stages, as a result of which there is a gradual increase in production, an "overheating" of the economy (which is accompanied by illogical and unreasonable economic indicators)

and, eventually, a recession and crisis, followed by recovery (Andreev, 2012). There are a lot of reasons that cause crises, downturns, and recessions. Among the economic ones, there are periodic depletion of autonomous investments, weakening of the multiplier effect, fluctuations in the money supply, renewal of fixed capital and other reasons (Koptelov, 2012; Rexha et al., 2024). However, other reasons, such as military conflicts, can often serve as the causes of downturns. One of these reasons in 2020 was the crisis caused by the COVID-19 virus. The situation was also complicated by the fact that in modern history there have been no such shocks, because of this, which states were not sure exactly how to prevent it and how best to act. This has led to a lot of difficulties in regulating the economy.

The crisis has affected individual sectors of the economy in different ways and has even been able to lead some of them to growth. These, for example, include online training or conducting online events. However, most of the industries still experienced significant problems when trying to overcome the crisis. Therefore, it remains relevant to assess the impact of the COVID-19 pandemic on individual sectors of the economy. In this paper, an analysis of the impact of the crisis on the construction sector is formed, considering the trends of individual countries, which is especially relevant to the specific features of the response of companies in this industry to the threat of a pandemic. Quite a large number of scientists from all over the world have been studying this issue.

For example, Semenenko in his work described the trends in the global construction market since the pandemic as a whole, without focusing on individual countries (Semenenko, 2020). In the paper, the author showed that, conditioned upon the specific features of the sector and the impossibility of its transfer to remote methods of work, the industry turned out to be one of the most vulnerable in the crisis. Biswas described in more detail the problems associated with transport problems, supply chain breaks and job cuts and showed possible methods of solving these problems (Biswas, 2021; Brovko et al., 2024). An important role in writing the article was played by works that specialised in the analysis of the housing market in individual countries. These include the work by Jagun et al. with an analysis of

the housing market in Malaysia (Jagun et al., 2022); the work by Yang et al. with an analysis of the development of the construction sector in China (Yang et al., 2021); the work by Nový and Nováková with an overview of the impact in the Czech Republic and European countries (Nový & Nováková, 2022), and the work by Gornig et al. with an analysis of similar trends in Germany (Gornig et al., 2021).

Thus, the purpose of the work is to assess current trends in this sector of the economy during the crisis and the damage done, and predict the future development of the sector. And although, as shown in the work, the construction sector in all countries suffered greatly from the consequences of the COVID-19 crisis, in general, it was able to adapt and continue its functioning in new conditions. The object of the study is the development trends of construction companies and the primary living market as a whole. The novelty of the article consists in assessing the impact of the COVID-19 crisis on certain specific sectors of the economy, including making forecasts for the subsequent development of this industry in the future.

## 2. Materials and Methods

In the first section, the author used a significant amount of statistical data. The main databases for the work were Statista (Harmonized index of consumer prices (HICP) inflation rate of the European Union in May 2022, by country, 2023) (data on the level of inflation in Europe, the share of the construction sector in US gross domestic product (GDP)); World Bank Group Open Data (GDP (current US\$), 2022) (GDP of countries in 2019 – 2020); United Nations Economic Commission for Europe Statistical Website (Share of construction in GDP, 2022) (data on the share of the construction sector in the GDP of some countries in dynamics). An important role in the work is also played by the works of other scientists describing current trends in the primary housing markets and among construction companies in the world and individual countries (Semenenko, 2020; Biswas, 2021; Jagun et al., 2022).

In the second section, the percentage of growth/decline in the share of the construction sector in the GDP of some Western countries (France, Germany, USA, Italy, Austria, Spain) was calculated. To do this, data on the

level of the construction market to GDP in 2019 and 2020, GDP in these years was used. To find this share, the GDP deflator was first multiplied by the market share of construction companies in 2020; after that, there was a difference between this value and the value not reduced by the deflator value. The found percentage of the difference from the value in 2020 is the growth rate in the construction sector in 2020 (in this case, you also need to multiply this value by -1). At the same time, the following formula for calculation is still obtained (1):

$$(1) \quad T = \frac{D_{2020} - (D_{2020} * \left(\frac{GDP_{2020}}{GDP_{2019}}\right))}{D_{2020}} * 100\%,$$

where: T – growth/decline rate;  $D_{2020}$  – share of the sector in 2020;  $GDP_{2020}$ ,  $GDP_{2019}$  – the country's GDP in 2020 and 2019, respectively.

The work can be divided into several stages. At the first stage, the analysis of general trends in the development of construction companies during the COVID-19 pandemic is carried out. Particular attention is paid to how companies in this sector have adapted to the new working conditions, what methods have been used for this and how this may affect the subsequent features of their work. The second stage examines the main trends in the development of the housing market and construction companies in the countries of the world that most strongly influence the development of the global economy. This part of the work shows the rate of change in prices for non-commercial real estate in these countries, examines the policy of states in relation to companies in the construction sector and how they were able to survive this crisis. At the end of the work, brief results are compiled for the entire article.

The main method in writing the work was the method of analysis, since conclusions about the state of the housing market and construction companies as a whole were formed based on analysed statistical information and data in the works of foreign and domestic scientists. It follows from this that statistical methods played an important role, especially the graphical method, with the help of which the information obtained during the work about the object of research was justified. In addition, modeling and forecasting methods were used

to determine current and possible future trends in the construction sector.

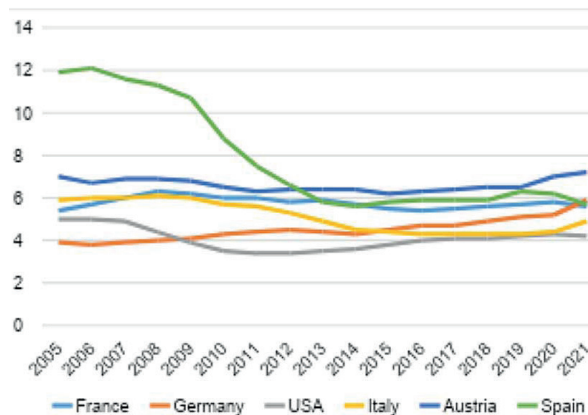
### 3. Results and Discussion

#### 3.1. General changes in the development trends of construction companies and the primary housing market during the COVID-19 pandemic

The development of the country's economy largely depends on the state of its construction sector, which trends prevail in the primary and secondary housing markets; this is not surprising, since a large number of jobs are created in this sector, and stability in the housing markets allows employees to feel more confident when making decisions about buying or selling assets or making other economic decisions (Hamid, 2015). The economic crisis has significantly affected the activities of developers. The main consequences of this phenomenon are associated with an increase in the credit burden, a decrease in the pace of commissioning of new housing, a reduction in the volume of square footage; another negative trend in the development of the real estate market is an impressive reduction in employment, which also affected the overall unemployment rate in the country, reflecting the social aspect of the industry (Korostelkina & Voronkova, 2021; Saifnazarov, 2024). In general, the real estate market can be divided into the non-commercial and commercial real estate market. This paper mainly analyses the trends that prevail in the non-commercial real estate market, that is, the primary housing market, which, nevertheless, in many countries is a fundamental part of the real estate market as a whole (Tsytrenov et al., 2021). In addition, it plays an important strategic role for the country, as it provides its residents with living opportunities. This suggests that the trends that occur in the residential real estate market (as well as real estate in general) significantly affect the purchasing power of the population, and hence the development of the economy as a whole.

Conditioned upon its specific feature, the construction industry was one of the first to feel the impact of the COVID-19 crisis (Pamidimukkala & Kermanshachi, 2021). According to GlobalData, global construction was expected to decline by 3.1% in 2020, with a decrease of 7.3% in Western Europe, 1.7% in North America, and 0.9% in Northeast Asia. The introduced new rules

related to quarantine restrictions have really worsened the functioning of construction companies. In addition, not only the physical, but also the psychological condition of the employees of these companies has worsened (psychological problems are always inherent in employees, but the virus and the pandemic have aggravated them). Figure 1 shows the share of the construction sector in relation to GDP in some countries over the past 15 years.



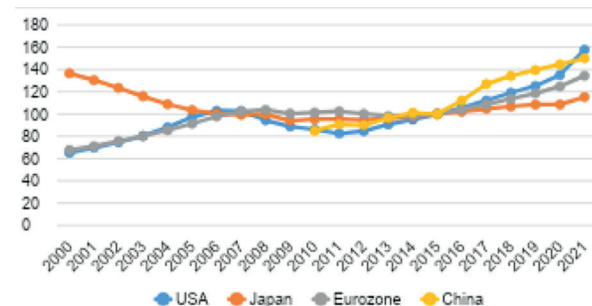
**Figure 1 .** The Share of the Construction Sector in the GDP of Some Countries, %.

Sources: compiled by the authors based on Share of construction in GDP (2022) and Statista (2022)

Figure 1 shows that, depending on the country, the trends that were inherent in this indicator may differ. Thus, in some countries, the share of the construction sector in GDP increased, and in some – decreased. The situation with trends in the last two years (2020 and 2021) is also ambiguous: for example, in several countries, the share of the sector in relation to GDP has been growing, and in some data the indicator has been declining. An important role in these trends is obviously played by the change in the level of GDP in these countries: thus, from 2019 to 2020, the GDP of France decreased by 3.66%, Germany – by 1.02%, the USA – by 2.24%, Italy – by 5.97%, Austria – by 0.39%, Spain – by 7.91% (GDP (current US\$), 2022). Thus, it can be calculated that the real construction market in Spain decreased by 9.37%, Germany – increased by 0.91%, France – decreased by 1.97%, the United

States – decreased by 2.23%, Austria – increased by 7.27%, Italy – decreased by 3.78%. Nevertheless, in general, the COVID-19 crisis has negatively affected the construction sector in developed countries.

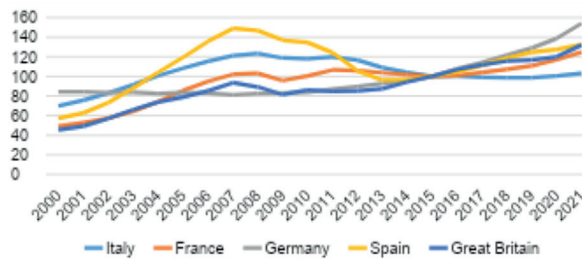
Special attention is required to consider trends in the residential real estate market as one of the most important components of the real estate market. Let's consider the dynamics of price changes in this market in some countries. The dynamics in the Euro Area, the USA, Japan and China are shown on Figure 2.



**Figure 2 .** Housing Price Index in Some Countries from 2000 to 2021 (Value of 100 – Prices on the Market in 2015).

Sources: compiled by the authors based on Housing prices (2022).

Figure 2 shows that, after the peak of housing prices in 2007-2008 and their recovery by 2015-2016, prices continued to rise in all the countries considered. The most interesting are 2020 and 2021, in which price growth, oddly enough, continued anyway and even accelerated (a slight drop occurred only in Japan, and the growth rate slowed down in China). The same dynamics can be observed if the situation is considered in terms of quarters. Separately, let's consider the price changes in the markets of European countries in Figure 3.



**Figure 3 .** Housing Price Index in Europe from 2000 to 2021 (Value of 100 – Market Prices in 2015).

Sources: compiled by the authors based on Housing prices (2022).

As can be seen from Figure 3, the trend described in Figure 2 is also generally repeated by European countries. This suggests that, in most countries of the world, housing prices have really increased, despite the seemingly unfavourable situation for such a business. Based on the information analysed during the work, it can be assumed that the growth of this market, like many other markets at this time, is associated with massive injections of funds by states into the economy to support citizens and small businesses. In general, the higher the level of development of a country, the more affordable housing is for its residents, however, such injections into the economy apparently made it even more possible for the population of such countries to buy housing, which caused prices to rise (Ianchuk, 2021; Kerimkhulle et al., 2023). Probably, the real growth of the housing market is speculative, and the long-term real yield on it may even be negative. It all depends on what trends will prevail in the market in the future, what will be the political situation in the world and what indicators will global inflation reach.

Let's now consider what changes have taken place in the construction sector in individual countries. In China, where the COVID-19 virus was the first to spread, restrictive measures were introduced since the beginning of the pandemic, in some cities the real estate market was stopped in principle explained by the inability of companies to continue working in such conditions (note that the authorities did not impose bans or restrictions on the work of such enterprises). Nevertheless, with the

help of government intervention (fixing prices for new buildings, postponing tax payments, the reduction by the Central Bank of China of its main interest rate on loans and the simultaneous subsequent stimulation by developers of buyers conditioned upon the introduction of discounts in the primary market) led to a slight initial drop in prices in the housing market. However, the number of transactions decreased significantly (they were actually no longer carried out). As part of its new five-year plan, China has unveiled a plan to put this sector of the country's economy on a more environmentally friendly and safe path of development. It is planned to carry out a significant modernisation of the industry, make more extensive use of information technology and steadily move towards increasing the safety of buildings; in addition, it is planned to massively use construction robots in some areas by 2025, including in the production of parts (China publishes five-year plan for construction industry, 2022). In general, it is assumed that the industry will continue to play an important role in the subsequent development of China, despite the significant crisis in this industry in the country in recent years.

In Hong Kong, the development trends were slightly different from the Chinese ones, despite the fact that the city is actually and legally part of China, its special administrative region. Conditioned upon the fact that significant restrictions and strict quarantine measures were not introduced in Hong Kong at the initial stage of the pandemic, changes in the real estate market here occurred quite smoothly. Nevertheless, the number of real estate transactions here has also decreased, although it began its recovery after the first serious months of the pandemic. Discounts on the purchase of primary housing and the introduction of low mortgage rates at a level below 1% have become stimulating methods to maintain the local housing market. In India, where there were about 200 construction firms (and about 1200 small contractors) before the COVID-19 crisis, losses for construction firms in the early days of the pandemic were estimated at about 7.5 million USD per day (Biswas, 2021). In addition, this led to significant unemployment and a decrease in investment, which significantly damaged the development of the industry in the country, and caused serious social crises among

the population in places.

In Malaysia, where the construction sector accounted for about 4% of GDP, the pandemic significantly affected the development of the industry (Yang et al., 2022). Quarantine measures have led to significant damage to the national economy: a drop in GDP, a decrease in productivity in the construction of real estate and an increase in construction costs (Abdullayev et al., 2024). The welfare of workers and other versts of the population has greatly decreased. In addition, a significant part of the projects had to be frozen in principle, which led to operational problems of construction companies, including complicated business processes, and the procedure for obtaining housing by the population of the country. When it became allowed to carry out construction work in the state, developers faced new problems, namely the introduction of mandatory social distancing, a shortage of workers and the complication of supply chains. Small developers (companies with small investments and savings) were particularly badly affected, since it was especially difficult for them to function in such a mode for a long time.

In the USA, the crisis initially affected the development of the primary housing market only slightly: the slowdown in its growth rate began only at the end of March 2020. This is explained by the fact that the pandemic came to this country much later than to other countries. Nevertheless, the pandemic has also negatively affected the development of the real estate market in these countries: the number of real estate transactions has significantly decreased in the country, and in some parts of it, real estate transactions have stopped completely. About 40% of construction companies were forced to stop their activities during the pandemic, while only 20% of these companies did so at the direction of the authorities (Semenenko, 2020; Piddubna et al., 2024). The reason for such events in the market was that US citizens began to postpone the purchase of houses conditioned upon uncertainty in the country. The most affected regions were New York, Illinois and California, however, by mid-April, real estate developers were able to continue their activities.

In Italy, in turn, the suspension of the activities of companies in the construction sector by the state did not take place at all, so construction on the territory

of the country continued regardless of the increase in morbidity. Nevertheless, approximately 44% of all construction companies stated that the COVID-19 pandemic significantly affected their market position (Biswas, 2021). And although the construction of commercial real estate has not decreased its turnover, there has been a slowdown in the housing market, which caused a decrease in the growth rate of the construction industry in the country as a whole. In Italy, no separate programme has been formed to support the construction industry, but construction companies have been able to take advantage of various anti-crisis measures, for example, deferred tax payments. A similar situation happened in Spain, where the construction sector is the second most important after the agricultural sector in terms of providing jobs. Nevertheless, the crisis still led to a significant increase in unemployment in the industry and a decrease in the number of active construction sites by more than 50%. The country spent about 200 billion during the COVID-19 crisis. euros to support businesses and the population; part of the money from this amount was also intended to support the construction business.

The negative impact in Germany also turned out to be extremely high. Conditioned upon restrictions on border crossing, about one in three enterprises felt a shortage of workers, who were attracted primarily from Poland. In addition, the closure of borders had a negative impact on the transportation of materials for the construction sector. The country is part of its 750 billion anti-crisis programme. The euro was used to support its construction companies, and also provided compensation costs for workers on forced leave or isolation in the amount of up to 60% of the amount of payments. In the so-called "new Europe countries", in particular in the Czech Republic, the problems in the construction sector related to the COVID-19 crisis were similar to those observed in the countries of "old Europe" (Italy, Germany). They are associated with a shortage of workers and significant restrictions due to the pandemic. Companies were forced to suspend many contracts or put these projects into operation much later. However, scientists assume that in the coming years, companies in the construction sector will have a sufficient number of projects, both from private investors and from the



state, which will allow builders to grow at a pace, as in the period before the pandemic (Gornig et al., 2021; Kerimkhulle et al., 2023a).

### **3.2. The current state of construction companies and their development prospects**

The COVID-19 crisis has significantly worsened development opportunities for construction companies. Contractors have been trying to complete existing projects while at the same time keeping staff on the job, complying with government regulations, travel restrictions, and dealing with disrupted supply chains. Nevertheless, construction companies were able to adapt to new working conditions and changing project deadlines, which helped them survive the period of the most severe restrictions. For example, contractors have found an opportunity to develop projects remotely. New methods of work have also been developed to minimise the impact of the crisis. One of the companies adapted the work schedule to night shifts to compensate for the smaller number of shifts allowed during the day; other companies used QR codes to track workers on site, which allows them to know exactly who was where (to determine where the virus spread) (Five ways COVID-19 has impacted construction companies, 2020). Digitalisation played an important role in this, which in turn led to an increase in the role of cyber security, since companies have increased the need to protect their devices (ensuring the absence of malware on computers), data, connection mechanisms, identification and authorisation tools in different services from a large number of new sources. All this has changed the security architecture of contractors, the consequences of which may be felt in the coming years.

Companies have become much more focused on reviewing and developing projects. Most of them changed their principles of working with clients and tried to create more structured contracts with them. They have become more transparent about the jobs they are applying for and the terms of the proposed jobs. Risk management became more important: companies began to switch to early payment of supplies to reduce the level of uncertainty in future prices (since physically small companies cannot provide early delivery, their situation was more difficult than that of large companies). Work

has been carried out on supply chain management systems to minimise possible interruptions or delays in the future: to do this, companies have reduced the number of companies with which they operate, while increasing the number of chains to reduce losses in the event of a break in one of them. The diversification of business by regions greatly affected the work of companies, because in some places losses on projects were significantly lower than in others. Diversification is likely to become even more widespread in the future, especially in the context of slowing growth in the retail and residential sectors in the near future (explained by the transition of an increasing number of businesses to online mode, commercial real estate will experience significant problems). During the crisis, it became important to maintain a high level of liquidity, because, as a rule, contractors with a strong balance sheet were easier to cope with the turbulence inherent in the market, which increased the role of managing the company's cash balance.

Thus, the pandemic has significantly changed the principles of functioning of enterprises in the construction sector, forcing them to become more crisis-resistant in all areas of their activities: from financial to digital. By solving their urgent problems, they have become stronger and more protected from external factors. The price for holding such events will be a subsequent reduction in expected profits, but an increase in their resistance to various kinds of shocks. Given the current situation in the world, can be concluded that companies in the construction sector will continue to adhere to the concept of risk reduction in the coming years. However, there are hopes that companies will be able to return to the past principles of work, making the industry more attractive to more qualified specialists, especially given the new qualitative changes in some features of the functioning of companies in the industry (in particular, changes in the working methods of employees). Considering the development of the construction sector and the housing market during the COVID-19 crisis in the countries, it was noticed that they are repeated depending on some characteristics of the state structure. Thus, in most Asian countries, where a large share of the influence of the state sector on economic processes and, in particular, on the housing

market prevails, the decline was less noticeable than in more liberal countries (Schmidt, 2019). In particular, significant government intervention in Asian countries has made it possible to slow down the fall in prices and contracts for the purchase and sale of housing, at least in the early stages of the pandemic. This is clearly evident in the example of China, which plans to increase the influence of the industry in the country, despite the unfavourable conditions for this.

In Western countries, the influence of the state is relatively lower than in Asian countries, which has caused differences in the development trends of construction companies. Conditioned upon the lack of significant support for companies in the very first days of the pandemic, many companies were forced to suspend or cancel their projects, and some (with low reserves) went bankrupt. This has led to more significant industry declines in these countries. However, this does not necessarily mean that the policies of countries with stronger state influence turned out to be better than those of more liberal countries. The reason for this is that during crises, the bankruptcy of companies is a normal process that leads to a long-term recovery of the industry. If the state supports companies in the sector (including problematic companies), this can lead to long-term problems of the industry (Shyle et al., 2021; Novykova et al., 2023). A similar situation already exists in some other industries. This can be seen especially vividly in the US financial industry, where some banks are "too big to fail". This negatively affects the long-term development of the sector, as it greatly reduces the factor of competition in the market.

Considering the future development of the construction industry, it can be concluded that it will largely depend on subsequent trends in the world, on the duration and strength of the consequences of the pandemic and current crises. Note that some of their influence was even positive. It turned out that the standard methods of project construction should be supplemented with completely new measures introduced by the company's management in case of a crisis situation. It can be said that the pandemic revealed the weaknesses of companies and allowed managers to overcome them. This will probably lead to more stable development in the future. In general, it can be expected that already in

2022 the construction industry in most countries will be able to feel much better and will continue to develop at a normal pace for it.

#### 4. Conclusions

The paper showed that, depending on the country and region, the COVID-19 crisis affected the development of the construction industry in different ways. Thus, Asian countries experienced the first days of the crisis more calmly than the countries of Western Europe and North America. The most obvious reason for this is the influence of the state in the country, including its reaction to the events at the beginning of the pandemic: in Asian countries it was more rapid and harsh compared to Western countries, in which the state, in its regulation, paid less attention to the construction sector. Nevertheless, it is still possible to determine the general trends that are observed in the world. Construction companies, and business in general, were able to adapt to such realities of work, increasing their resistance to such crises. The future development of the industry depends on how world history will behave in the future, which is a topic for new researches. Conditioned upon the recent turmoil in the world and the looming new crisis, it is likely that construction companies will continue to prepare for the worst times, which will probably reduce their revenue, but will increase sustainability. Probably, construction companies and businesses in general will have to endure the post-crisis echo for a long time and live in the realities of strong uncertainty and impermanence.

Regarding the residential real estate market, it is worth saying that prices on it have recently increased significantly in most countries of the world. This is probably explained by the policy of the states, which was focused on increasing monetary demand to warm up investments and the economic life of the population in the conditions of the pandemic as a whole; however, over time this effect will fall and the price of housing may either stop growing at such a pace, or even decrease by some amount. The subsequent trends in the development of the primary housing market also largely depend on events in the world and on the state of construction companies (how they will survive the subsequent challenges).



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