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Investments in the Transaction Sector and Financial Assets: Impact on Economic Growth

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ABSTRACT

Investments are distributed unevenly in the economy. This distribution between economic sectors and activities (financial and non-financial) determines not only the dynamics of sectors, but also their contribution to economic growth. **The aim** of the article is to assess the impact of investments in the transaction and non-transaction sectors and the sectors themselves based on their gross value added on economic growth, as well as the impact of investments in financial assets on gross domestic product. The financial sector is an integral part of the transaction sector. Therefore, it is important to consider the impact of investments on economic growth, especially to compare it within countries. The **research methodology** employed the method of structural analysis, econometric modeling, and comparative analysis. The study **resulted** in structural models built to assess the GDP growth rate from investments in the transaction and non-transaction sectors, as well as changes in GDP from investments in financial and non-financial assets. The econometric models helped establish that the transaction sector and the investments in it make the largest contribution to the growth rate in the Russian economy, while financial investments largely weaken the economic dynamics, since the gap between financial and non-financial investments is rapidly increasing. In the other countries, the imbalance between financial and non-financial investments is less pronounced, which reduces the inhibitory effect of financial investments. The analysis of the countries provides the characteristics of their economic dynamics regarding the impact of investments in the transaction sector and financial assets. **The general conclusion** is that the economic growth policy in the Russian economy should consider the impact of investments in financial assets and attempt to narrow the gap with investments in non-financial assets. This will not only increase the sustainability of economic dynamics, but also the contribution of investments to economic growth.

Keywords: transaction and non-transaction sectors; financial assets; investments; economic growth; investment function; contribution of investments in growth rate; contribution of sectors to growth rate; institutional bias of the financial market

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INTRODUCTION

A classic paper on defining the transaction sector in the economy is the article by J. Wallis and D. North written in 1986 [1], where the authors establish a methodological basis for measuring and including the transaction sector in the system of national accounts. On the one hand, they specify the concept of the transaction sector in economic theory, reducing it to a set of types of transaction activities, in contrast to transformation activities (purely production activities), characterized by the costs of exchange organized by sales agents, intermediaries, as well as information search and provision services. On the other hand, the theoretical definition of the sector makes it possible to identify the method of its empirical definition, in particular, by the wages of employees in transaction occupations and providing transaction services — finance, real estate, banking and insurance, legal practice, government trade and services.

However, highlighting purely transaction activities, the paper indicates that there is a certain share of services in non-transaction activities, i.e. transaction activities due to the functioning of intermediaries [1].

Over time, this approach has evolved from different perspectives, for example, in assessing the reduction of emissions that affect climate change. Excluding transaction costs underestimated the total costs [2]. The transaction sector was reducing transaction costs on average, thereby contributing to economic growth. It was showing this effect of home and host country banks on international investment and economic growth [3]. Certainly, transaction costs affect economic growth both in the transaction and non-transaction sectors, where they are included in the total costs. At the same time, institutional innovations, in particular, trade innovations related to transaction management methods, can significantly reduce transaction costs [4].

The approach by J. Wallis and D. North [1], somehow referred to by works [2–4], comes down to considering the total transaction costs for all types of transaction activities, also included in the non-transaction sector. The task of summarizing all types of transaction costs has a right to exist, but in this case, the transaction sector is considered as a certain aggregate sector, which in reality does not exist as an economic unit, since part of transaction costs is disengaged from non-transaction activities (sectors).

In my opinion, this is a model approach, useful in accounting for all transaction activities at the macroeconomic level, which affect economic growth [5–8], considering that such an aggregate sector (in terms of costs covering activities distributed in the economy) is not a sector in the subject-economic sense. The reason is that the activities are actually mixed up even within the two named sectors (transaction and non-transaction). There may be another approach to highlighting the transaction sector in the economy. It includes all definitions of activities with predominantly transaction costs, since their activity is associated with implementing transactions and provision of services. In this case, the indicated activities are distinguished by the Russian Classification of Economic Activities (OKVED). The other activities, not related to the transaction tones, make up the non-transaction sector. This may also include infrastructure elements — energy supply, water supply, waste management, etc. However, it does not include, for example, financial and banking activities, which make up a significant segment of the transaction sector [9].

However, the transaction sector also needs investments in fixed assets, whose state determines the effectiveness of transactions (the value of transaction costs). In particular, the quality of computers and software, and sufficiency in appropriate equipment, will determine the effectiveness of information operations, search, as well as the costs of transactions and financial and banking transactions. This is important for both the transaction and non-transaction sectors.

Investments in the transaction and non-transaction sectors are likely to have different effects on the economic dynamics. The contribution to the economic growth of these two sectors will also differ in each country. Neoclassical models of economic growth [5, 6] hardly consider this circumstance following from the structure and condition of the sectors and determined both by the efficiency of transactions

and motives, the scale of tasks and the structure of investments in each sector [7, 8]. Typically, investments in fixed assets of the transaction sector are not as significant in size as in the non-transaction sector. However, with highly dynamic development of the transaction sector itself, they may be so, that their contribution will be substantial and even comparable (sometimes even higher) to the contribution of investments in the non-transaction sector to the country's economic growth.

In turn, the financial and banking segment of the transaction sector provides the so-called financial investments, or investments in financial assets. They are not considered regarding investments in the transaction sector, since accounting considers investments in fixed assets. However, their impact on economic growth, along with investments in non-financial assets, may be very tangible.

The aim of this study is to assess the impact of the transaction sector and investments in it on the economy (growth rate) emphasizing the impact of investments in financial assets on gross domestic product. This is an independent task in contrast to the studies establishing the impact of the economic structure on financial institutions and capital markets [10], or vice versa, the impact of the securities market, foreign investment and the banking system on the growth [11–13] — various impacts on various industries or even the absence of this impact. As a rule, such studies are based on various criteria and analyze a one-way impact, not cross-impact. This makes it difficult to adequately assess the impact, which is variable and depends on many factors. Apparently, the problem of impact should be reduced to measuring the contribution to the growth rate. For the transaction and non-transaction sectors, as well as investments in them, this can be done with the structure formula [8, 9], transforming it for various sectors and investments. As for financial investments not considered in GDP, it is possible to introduce a parameter for assessing their impact, measuring the superiority of financial investments over the difference in savings and investments in non-financial assets. Besides, it is possible to apply econometric models of the relationship between GDP and financial and non-financial investments, based on which to evaluate GDP growth rate depending on the investment rate of each of these types (financial and non-financial assets).

In this study, we will proceed from the fact that the gross domestic product (measured by gross value added) is the sum of the gross value added of two basic sectors — transaction and non-transaction, allocated by type of activity.

The transaction sector includes the following activities (by OKVED, by gross value added):

- wholesale and retail trade;
- repair of motor vehicles and motorcycles;
- transportation and storage;
- activities of hotels and catering facilities;
- information and communication activities;
- financial and insurance activities;
- real estate operations;
- professional, scientific and technical activities;
- administrative activities and related additional services;
- public administration and military security;
- social security;
- education;
- health activities and social services;
- culture, sports, leisure and entertainment activities;
- other types of services[1].

Thus, *the non-transaction sector* includes the following activities (by OKVED, by gross value added):

- agriculture, forestry, hunting, fishing and fish farming;
- mining;
- manufacturing industries;
- provision of electric energy, gas and steam;
- air conditioning;
- water supply;
- water disposal, waste collection and disposal, pollution elimination activities;
- construction.

Investments in the transaction and non-transaction sectors are the sum of investment by type of activity that compile each of these

[1] Gross value added of the sectors is shown in prices of 2005 for all countries considered in the article. Source: Rosstat. URL: https://www.gks.ru/accounts (accessed on 20. 04.2020).

economic sectors (by type of activity). According to Rosstat[2], investments in financial assets are investments of organizations in state and municipal securities, securities of other organizations, including debt securities with the specified date and redemption amount (bonds, bills); contributions to the authorized (joint) capital of other organizations (including subsidiaries and dependent business entities); loans granted to other organizations, deposits in credit organizations, receivables acquired through assignment, contributions of a partner organization under a simple partnership agreement, etc.[3]

We will now formulate the methodological basis for the necessary model quantitative estimates and will further move to an empirical analysis based on the introduced models.

INVESTMENTS IN THE TRANSACTION AND NON-TRANSACTION SECTORS OF THE ECONOMY. RESEARCH METHODOLOGY

Investments are distributed by sector of economy and type of activity, and this affects the overall economic dynamics. This distribution depends both on the expected return of these types of activities in these sectors, on their current state, and on the investors' decisions arising from the goals and objectives they face.

Fig. 1 shows a simplified communication scheme between economic sectors and transaction segments such as banks and the financial market, through which investments are made in financial and non-financial assets.

The country's national income in *Fig. 1* is divided into consumption, part of which is spent on the purchase of products created by the manufacturing, raw materials (non-transaction) and transaction sectors, and savings, whose significant share is accumulated by the banking system. It allocates loans for activities of three sectors, and allocates a certain part of the available financial resources to purchase securities in the stock market, thereby investing them through the purchase of corporate stocks. Consequently, besides their own funds generated from profit, corporations in these sectors receive investments in the form of loans and through the purchase of securities issued by them. We will consider two sectors — the transaction (*Yf*) and non-transaction (including, for example, the manufacturing and raw materials sectors — *Yn*), which give the total product of the economy $Y = Yf + Yn$. The volume of investments in the sector will determine the future possibilities for increasing the income generated by the sector, i.e. $Yf = f(If)$, where *If* is an investments in the transaction sector, $Yn = q(In)$. Then the total product is $Y = f(If) + q(In)$.

According to the structure formula [9, p. 88], the economic growth rate $g = f\,gf + n\,gn$ is the total growth rate of each sector ($gf = (1/Yf)\,d\,Yf/dt$; $gn = (1/Yn)\,d\,Yn/dt$) by its share in the total value product (income), where *f, n* are the shares of the income generated by the sector in the total income *Y* of the country's economy.

Investments in the transaction and non-transaction sectors add up to gross investment, i.e. $I = If + In$. Then, we apply this value in the expression for the gross product in terms of consumption $Y = C + I + G + Nx = C + If + In + G + Nx$ (*C* is the gross consumption; *G* is the government spending; *Nx* is the net export). We differentiate it by time and transform it, and then obtain a structure formula to assess the contribution of investments in each of the two sectors to the economic growth rate: $g = gC*c + gIf*df + gIn*dn + gG*a + gNX*b$ [9, p. 88], where df is the share of investments in the transaction sector in gross product; dn is the share of investments in the non-transaction sector in gross product; *gIf, gIn* is the growth rate of financial and non-financial investments. Producing the investment rate to their share by this formula

[2] Source: Rosstat. URL: https://www.gks.ru/folder/14476 (accessed on 20.04.2020).

[3] Investments in financial assets (financial investments) include equity instruments and units of investment funds, debt securities, options, forward contracts, other financial assets and liabilities. The World Bank. URL: https://data.worldbank.org/indicator/NE.GDI.TOTL.KD; International Monetary Fund. URL: https://data.imf.org/regular.aspx?key=61545853; Non-financial investments (investments in non-financial assets) — gross capital formation — consists of the costs to replenish fixed assets of the economy plus net changes in inventory balance. The World Bank. URL: https://data.worldbank.org/indicator/NE.GDI.TOTL.ZS; This view practically coincides with the Rosstat's definition. URL: https://www.gks.ru/folder/14476. https://www.gks.ru/accounts (accessed on 20.04.2020).

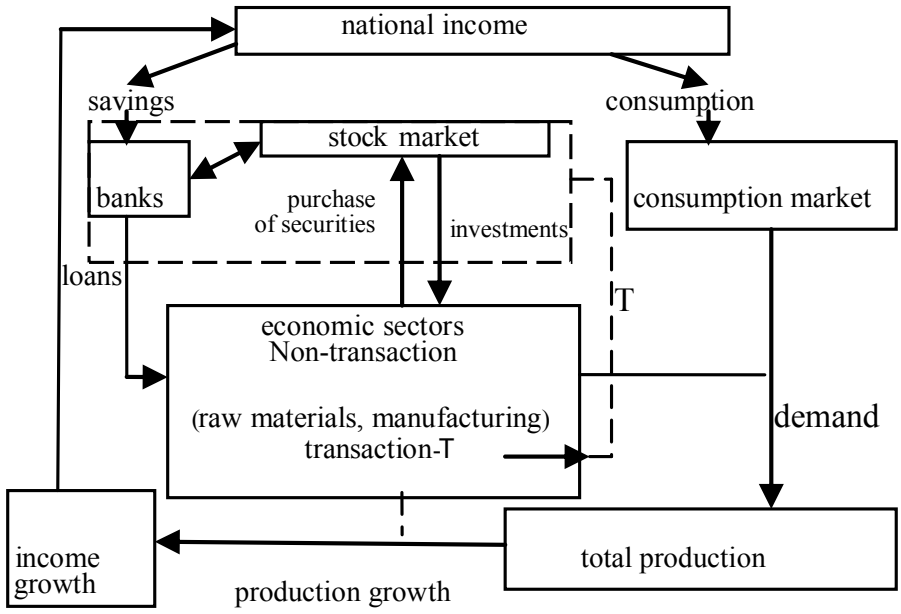


Fig. 1. **Sectoral relations structure: transaction (T) and other elements of macroeconomics**

Source: compiled by the author.

is the contribution of these investments to the product growth rate.

Financial investments may exceed GDP. Together with the investments in the non-transaction sector, they will not amount to gross investments. Therefore, the impact of investments in financial (F) and non-financial assets (N) can be examined with simple econometric models. Two types of such models are possible:

1) $Y = c + a\,F + b\,N$, then the structure formula will be as follows:

$g = a\,if\,g_F + b\,in\,g_N$, where a, b — are the model coefficients; if, in — are the share of financial and non-financial investments in the product Y; $g_F = (1/F)\,d\,F/dt$; $g_N = (1/N)\,d\,N/dt$ — is the investment growth rate in financial and non-financial assets, respectively[4];

2) $Y = AF^{\alpha}N^{\beta}$, then the growth rate will be $g = \alpha g_F + \beta g_N$, where α, β — are the exponents in the investment function of the product Y, or the substitution rate by financial investments for non-financial investments.

3) when assessing the impact of financial investments on economic development, an important parameter is the indicator $\gamma 0 = F/(S - N)$, where S is the total savings. Thus, this parameter shows the excess of financial investments over the difference between savings and investments in non-financial assets. If this difference grows, then the self-sufficient impact of the financial sector on the economy increases. If the parameter is negative, this indicates that the country is attracting capital for its development (investments in non-financial assets).

Ceteris paribus, the lower the interest rate on the loan is, the higher the investment is, and the higher the dividends per share are — the more attractive the stock for purchase is, i.e. investments in the corporate sector are increasing. Within the simplest model, this means that $I_o = n - mi + c\,d$, where I_o is the investment; $n > 0$, $m > 0$, $c > 0$ are the coefficients; i is the interest rate; d is the value of the dividend per security.

Thus, a positive growth rate of the interest rate (increase in interest) will inhibit the economic growth, and a positive growth rate of dividends in the real sector of the economy will contribute to the growth, the contribution to the overall rate will be positive (ceteris paribus). This is true under the assumption that the investment is related to the value of the interest rate and dividends. In the absence of such a connection and/or the presence of a different

[4] In this study, we use this type of model, whose statistics confirm the required accuracy.

assessment of the contribution to the overall growth rate will change.

Based on the formulated methodological base, we will build further research in three main areas, considering the Russian economy as an object:

- we will estimate the contribution of the transaction and non-transaction sectors to the economic growth rate, identifying the specifics of such dynamics;
- we will measure the impact of investments in the transaction sector on the pace of the economic dynamics compared with investments in the non-transaction sector;
- we will determine the gap of the financial sector by the amount of investments in financial assets from the real sector of the (non-financial) economy and estimate the contribution of financial and non-financial investments to the rate of economic growth using simple econometric models. As an example, we will conduct a comparative analysis with the United States and Germany (the data for China by financial investments are not available in the general source).

Thus, the proposed algorithm will become the basis for the necessary relevant conclusions on assessing the impact of investments in the transaction sector and in financial assets on economic growth.

CONTRIBUTION OF THE TRANSACTION AND NON-TRANSACTION SECTORS TO THE ECONOMIC GROWTH AND INVESTMENT STRUCTURE

We will now evaluate the contribution of the sectors of the Russian economy (by the product created and investments in the sector) to the economic growth rate according to the approach outlined in the previous section[5].

Fig. 2. shows the contribution of the transaction and non-transaction sectors of Russia to the economic growth rate for 2000–2018.

Fig. 2, a shows that within the framework of a two-sector view of the economy, the share of the non-transaction sector decreased, and that of the transaction sector increased in the period of 2000–2018. At the same time, the contribution of the transaction sector to the economic growth rate was the largest relative to the non-transaction sector, with the exception of 2004–2005, 2015, and 2017–2018. In 2009, 2015 and 2017–2018 the contribution of the transaction sector to the growth rate was negative (*Fig. 2, b*). A common feature of the sectoral dynamics was that over the period under review, the contribution of the two sectors, in general, decreased, since the growth rate also decreased. Thus, an increase in the share in the GDP of the transaction sector was accompanied by a decrease in the contribution to the overall growth rate; a decrease in the share of the non-transaction sector occurred with a decrease in its contribution.

Thus, we can conclude that the transaction sector makes a decisive contribution to the growth rate of the Russian economy over the considered period. However, after the 2015–2016 recession, the contribution ratio of the sectors changes, so that the transaction sector even inhibits the economic growth. Since the impact of the transaction sector on the economy is large, it is likely that the recession that occurs during the virus attack in 2020, will retain the negative contribution from this sector and will bring the greatest and fastest losses to it compared to the non-transaction sector.

Fig. 3–5 show the dynamics of the economic structure of the USA, China and Germany with an assessment of the contribution of the transaction and non-transaction sectors to the economic growth rate of these countries.

In the USA, where the share of the transaction sector is very high, it increases slightly with a decrease in the share of the non-transaction sector (*Fig. 3, a*). Moreover, the largest contribution to the economic growth rate comes from the transaction sector (*Fig. 3b*) over the entire interval, and this contribution increases (with a slight increase in the share of the transaction sector).

Among the examined countries, China shows the largest increase in the share of the transaction sector in the structure of GDP (*Fig. 4, a*). Moreover, the contribution of the transaction sector to the growth rate until 2005 is less, then comparable with the non-transaction sector until 2012. After 2012, the Chinese economy makes a greater contribution to the growth rate precisely due to the

[5] All calculations used the prices of 2005 for all countries. The gross value added (GVA) of the transaction and non-transaction sectors was determined as the total GVA of the activities included in each sector. These activities are defined in the introduction.

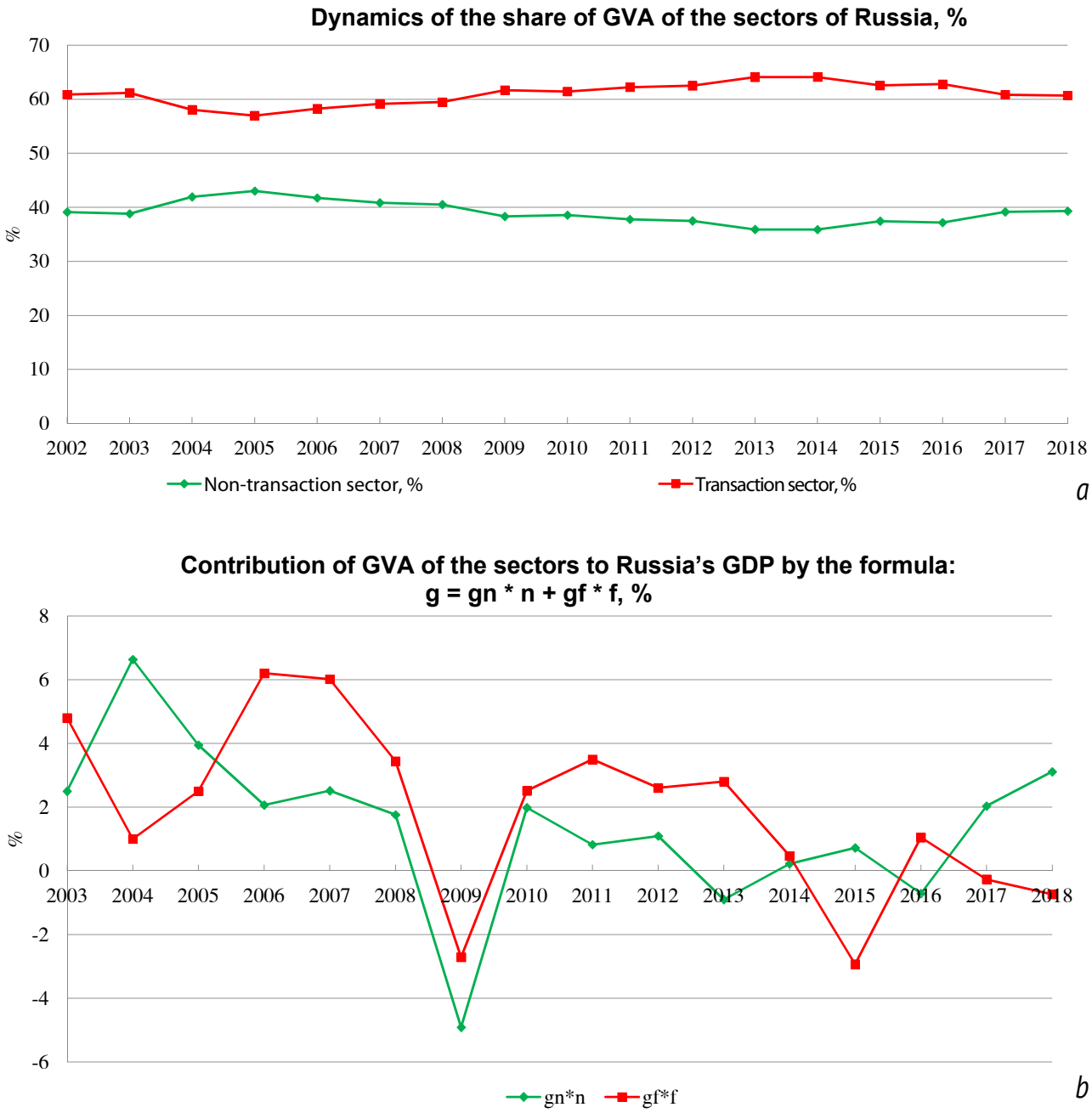


Fig 2. **Sectoral structure of the Russian economy — *a*, contribution of the transaction and non-transaction sectors to growth rate — *b*, 2000–2018**

Source: compiled by the author according to Rosstat. URL: https://www.gks.ru/accounts; https://www.gks.ru/free_doc/new_site/business/invest/tab_inv-OKVED.htm (accessed on 20.04.2020).

transaction sector; the contribution of the non-transaction sector significantly decreased (*Fig. 4, b*).

Unlike the other countries examined, the German economy shows a more or less stable two-sector structure (*Fig. 5, a*), with the non-transaction sector dominating in terms of its share of GDP. It also makes a greater contribution to the growth rate than the transaction sector. Therefore, the German economy can be considered the least transaction relative to the other countries. Moreover, the contribution of the sectors to the growth rate more or less corresponds to the existing structure, i.e. there is no dynamics of the contribution to the rate itself [increase or decrease with a change in the proportion between the sectors, which does not change significantly

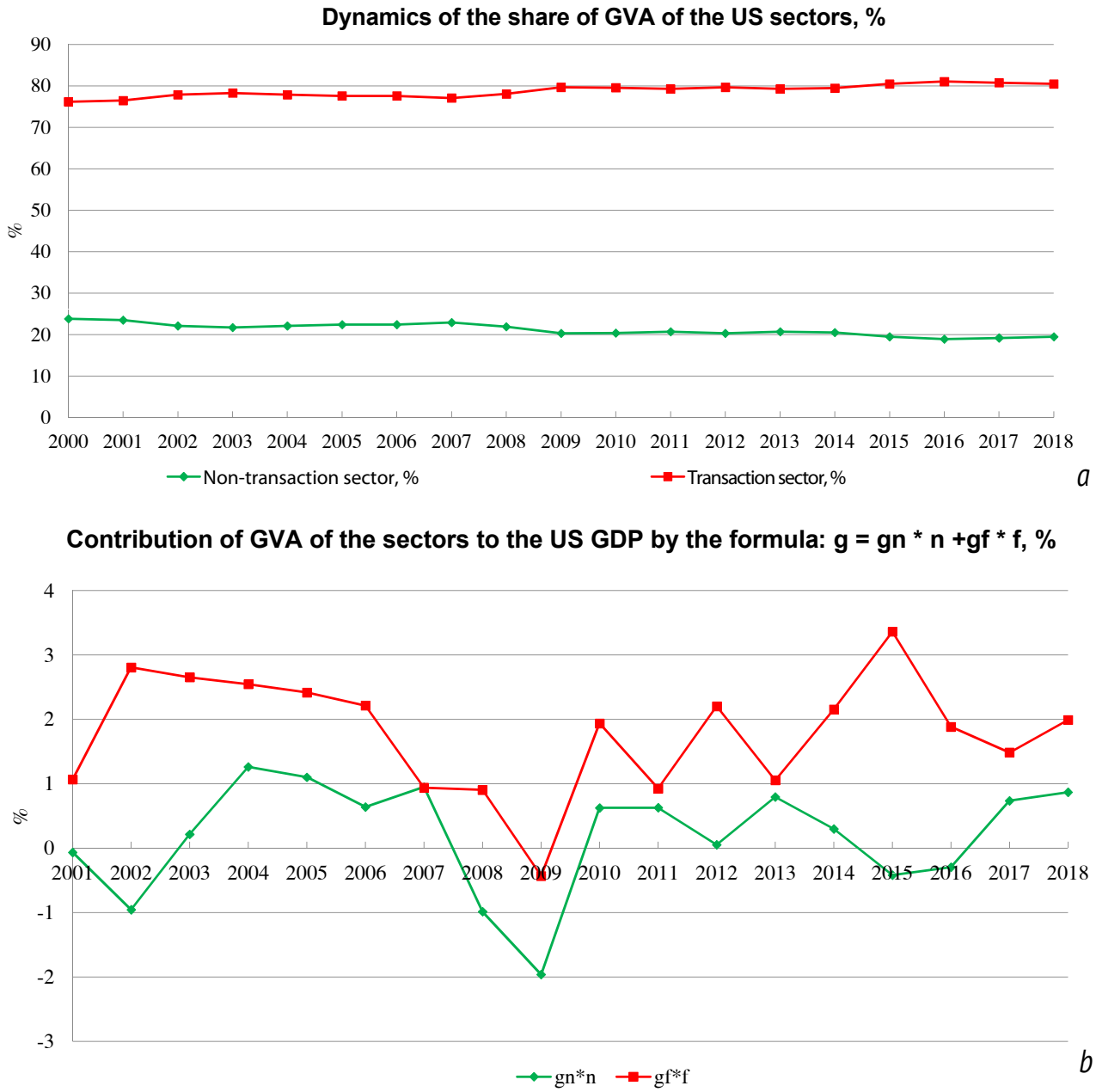


Fig 3. **Sectoral structure of the US economy — *a*; contribution of the transaction and non-transaction sectors to growth rate — *b*, 2000–2018**

Source: compiled by the author according to the World Bank. URL: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=US; US Bureau of Economic Analysis. URL: https://apps.bea.gov/iTable/iTable.cfm?reqid=56&step=2&isuri=1#reqid=56&step=2&isuri=1; https://apps.bea.gov/histdata/fileStructDisplay.cfm? HMI=8&DY=2012&DQ=Annual&DV=Comprehensive&dNRD=January-23-2014 (accessed on 20.04.2020).

(*Fig. 5, a*), in contrast to the other countries]. Only Germany, unlike the other countries, shows a change in the structure of the sectors in 2009 in favor of the transaction sector, and after the crisis, the proportion returns to the previous ratio.

As we see, the sectoral dynamics and the economic structure differ in the countries under review, as well as the impact of the sectors on the economic growth in each country. In this regard, it is appropriate to assume that investment[6] in the transaction sector affects not only its dy-

[6] Investments are shown in 2005 prices, considering the index — the GDP deflator.

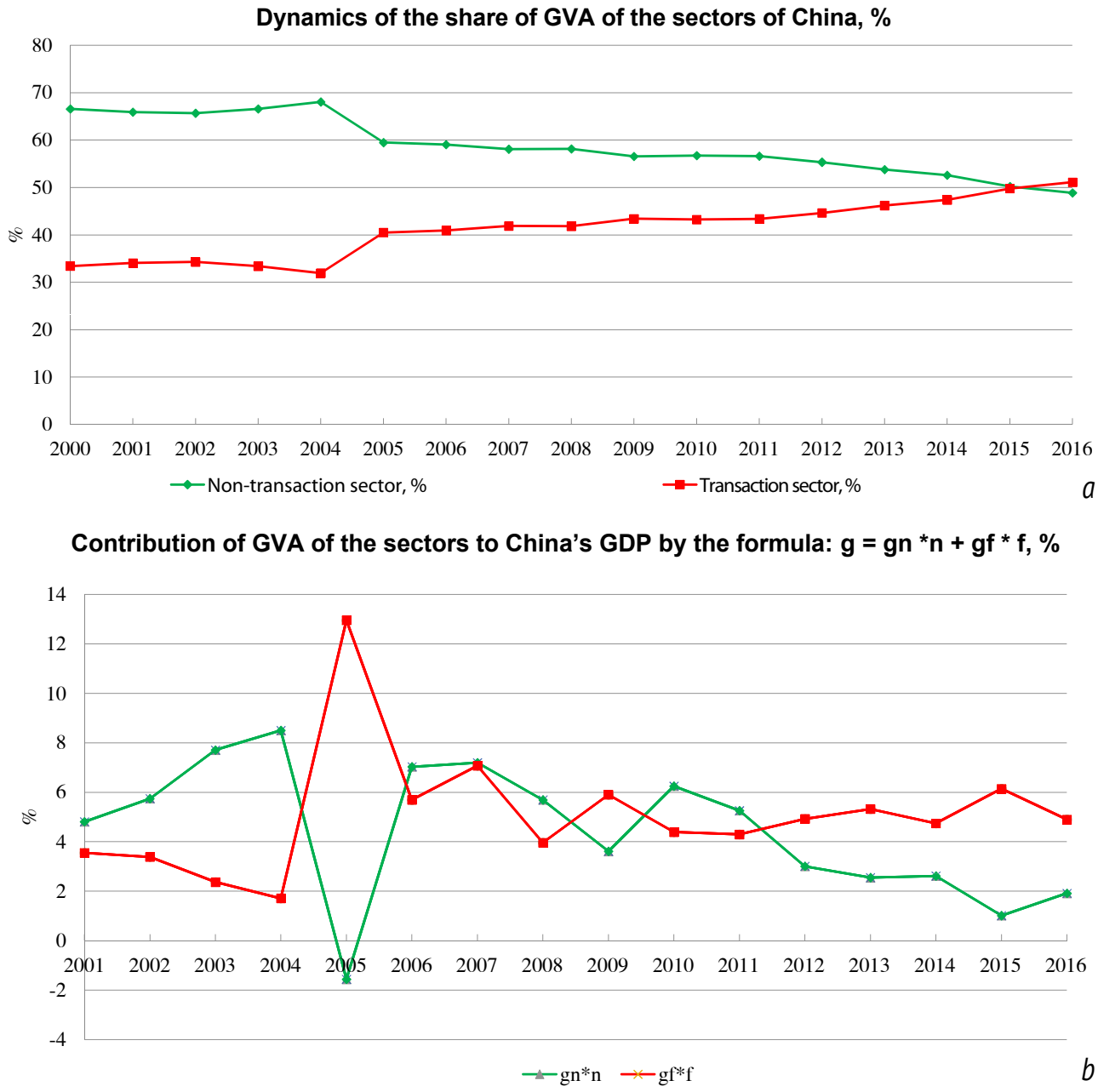


Fig 4. **Sectoral structure of the Chinese economy — *a*; contribution of the transaction and non-transaction sectors to growth rate — *b*, 2000–2016**

Source: compiled by the author according to the World Bank. URL: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CN; National Bureau of Statistics of China. URL: http://www.stats.gov.cn/english/Statisticaldata/AnnualData (accessed on 20.04.2020).

namics, but also its contribution to the economic growth rate. It should be noted that the impact of investments in the sectors on the economic dynamics may differ from the impact of the sectors themselves (in terms of their overall dynamics). This circumstance is of fundamental importance from the position of the formation of a policy of economic growth. Therefore, we will assess the contribution of the investment structure (distributed between the two sectors) to the economic growth for Russia, the USA, China and Germany, focusing on the Russian economy (*Fig. 6, 7*).

As we see from *Fig. 6, a*, investments in the transaction sector make the largest contribution to the growth rate of the Russian economy, with the exception of 2017–2018. In the United States,

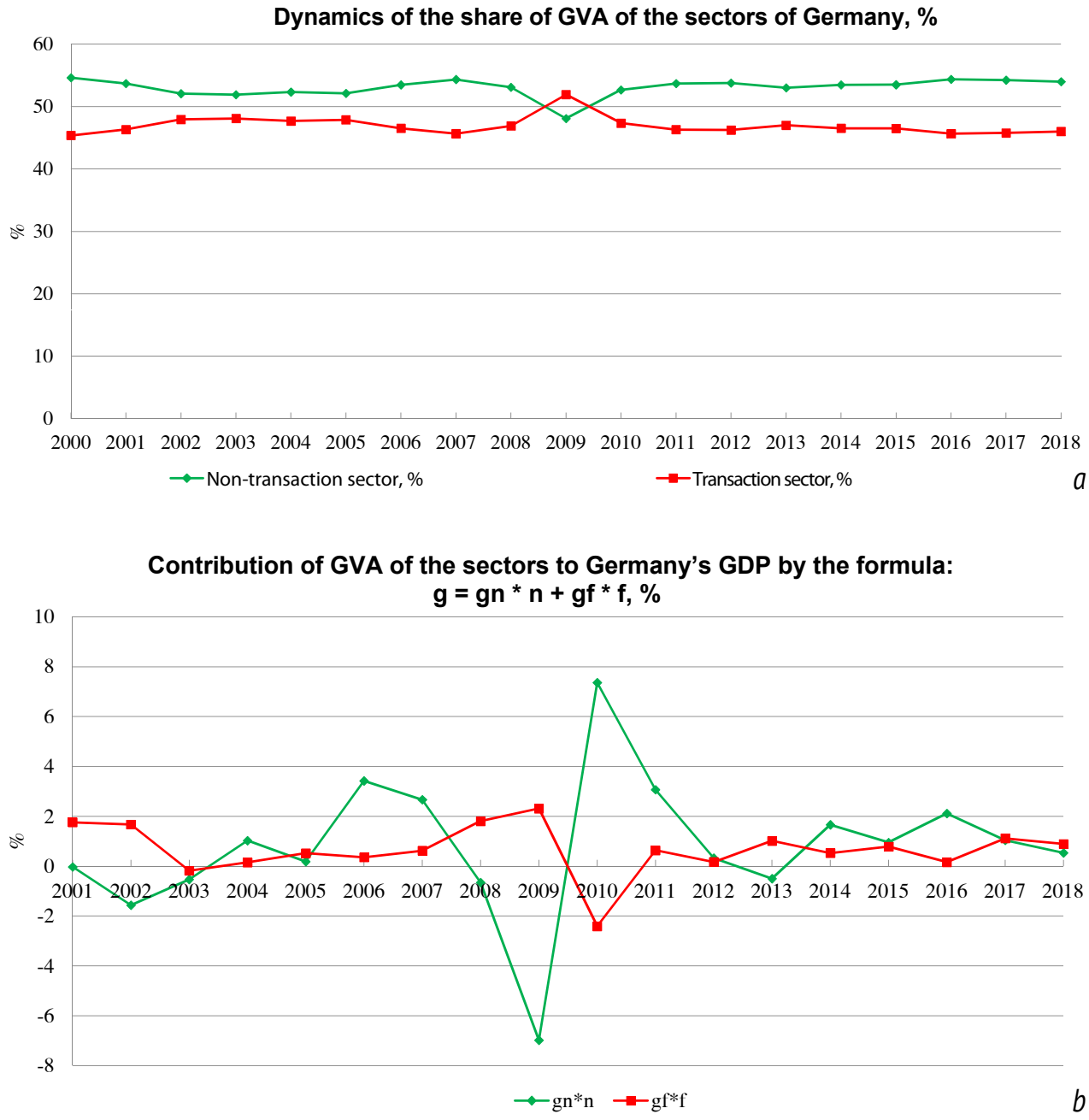


Fig 5. **Sectoral structure of the German economy — *a*; contribution of the transaction and non-transaction sectors to growth rate — *b*, 2000–2018**

Source: c compiled by the author according to the World Bank. URL: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=DE; Eurostat. URL: https://appsso.eurostat.ec.europa.eu/nui/setupDownloads.do (accessed on 20.04.2020).

the situation is approximately the same, with the exception of the years of the crisis of 2007–2009, as well as 2018. In Germany, the contribution to the growth rate of investments in the transaction sector is also decisive (*Fig. 7, a*). It significantly increases in 2015 to 2018 (despite the implementation of Industry 4.0 doctrine, which has been widely used from Germany since 2011).

Until 2008, China had a greater contribution to the growth rate of investments in the non-transaction sector; until 2014, investments in the transaction sector dominated. From 2015 to 2017, the contribution of investments in the non-transaction sector to the rate of China's economic dynamics was significantly higher (*Fig. 7, b*).

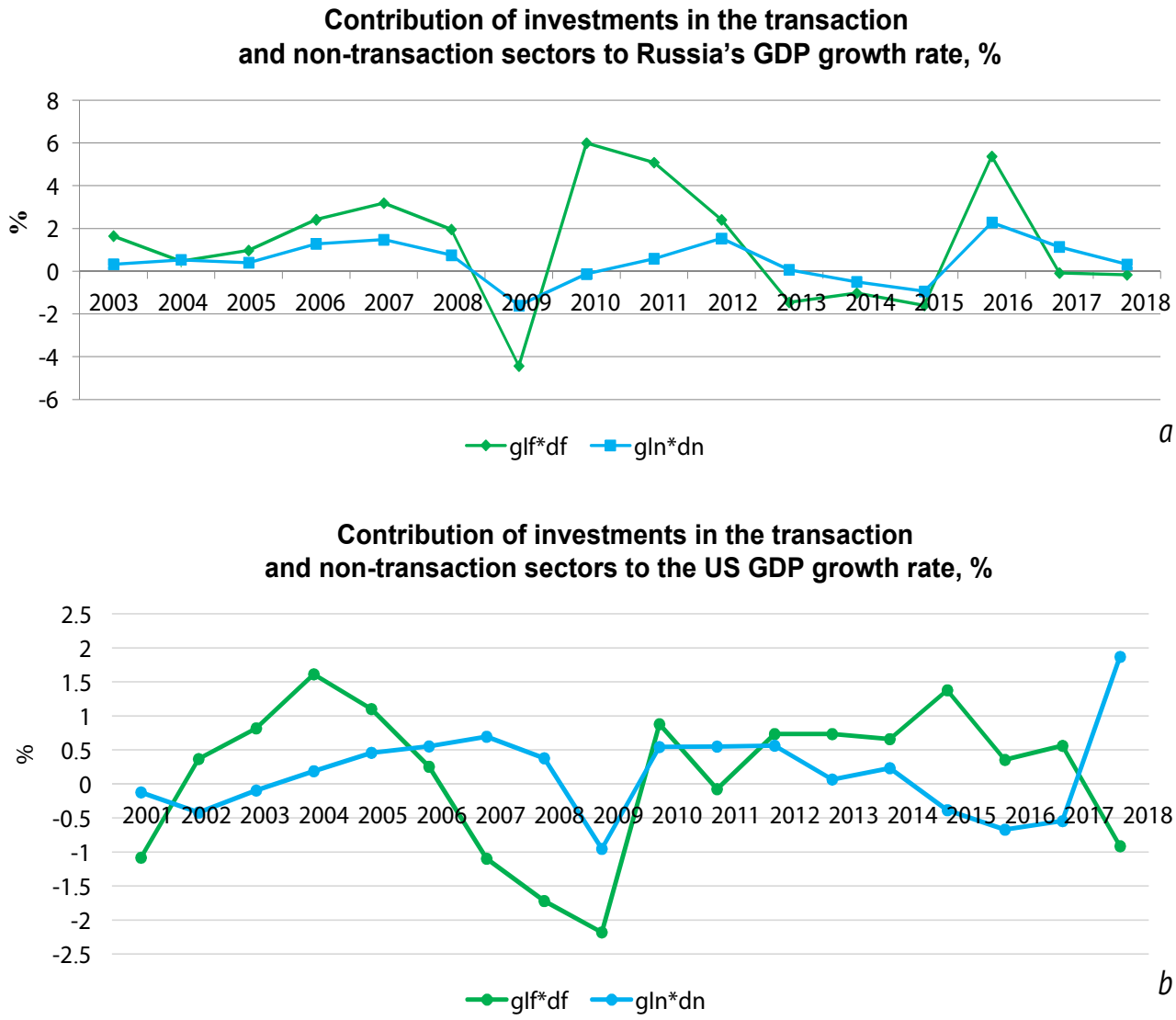


Fig. 6. **The contribution of investments in sectors to the GDP growth rate in Russia — *a*, 2003–2018 rr.; USA — *b*, 2001–2018**

Source: compiled by the author according to Rosstat. URL: https://www.gks.ru/accounts; https://www.gks.ru/free_doc/new_site/business/invest/tab_inv-OKVED.htm; according to the World Bank. URL: https://data.worldbank.org/indicator/NE.CON.PRVT.ZS; https://data.worldbank.org/indicator/NE.CON.GOVT.ZS?locations=US; U.S. Bureau of Economic Analysis. URL: https://apps.bea.gov/iTable/iTable.cfm? ReqID=10&step=2 (accessed on 20.04.2020).

It is important to note what the superiority of investments in the transaction sector was over investments in the non-transaction sector in these countries, and how it changed. The sources shown above indicate that this ratio varied[7] for Russia — in the range from 1.3 to 2.4; USA — from 2 to 3.5; Germany — from 1.9 to 2.7; China — from 1.15 to 1.4.

Thus, investments in the transaction sector were superior to investments in the non-transaction sector, with fewer times in China, most of all in the United States. In terms of share and contribution to the growth rate in the American economy, the transaction sector shows the highest impact. Investment superiority also emphasizes this fact.

[7] We only indicated the range of the change (the smallest and largest values of the change). Within the range, the change for countries was different, except Germany, where the ratio was steadily increasing.

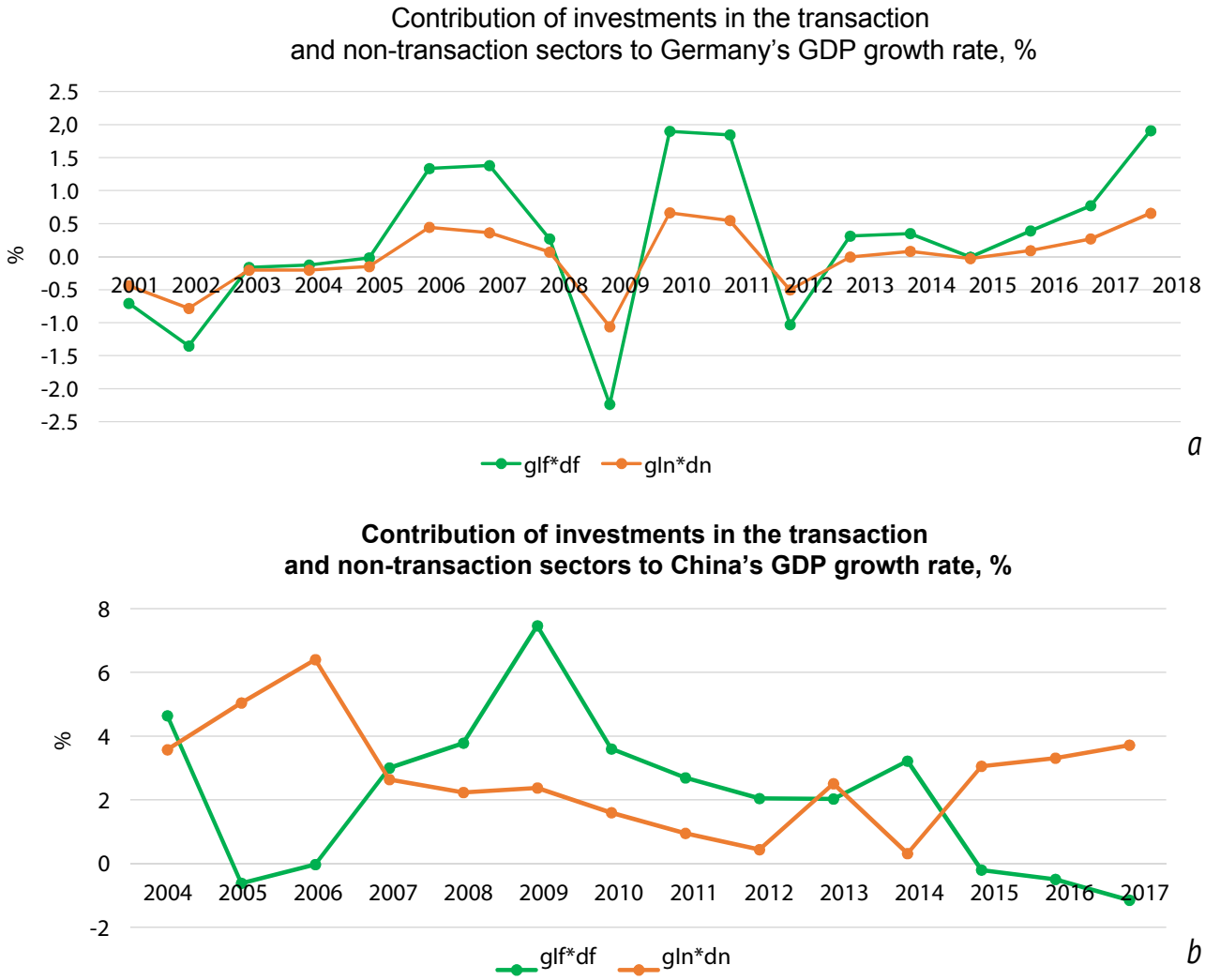


Fig. 7. **The contribution of investments in sectors to the GDP growth rate in Germany — *a*, 2001–2018; China — *b*, 2004–2017**

Source: compiled by the author according to the World Bank. URL: https://data.worldbank.org/indicator/NE.GDI.TOTL.ZS?locations=DE; https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG; https://data.worldbank.org/indicator/NY.GDP.MKTP.KD; https://data.worldbank.org/indicator/NE.GDI.TOTL.ZS?locations=CN;Eurostat. URL: https://ec.europa.eu/eurostat/data/database; National Bureau of Statistics of China. URL: http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm (accessed on 20.04.2020). 2018 data for China are not available.

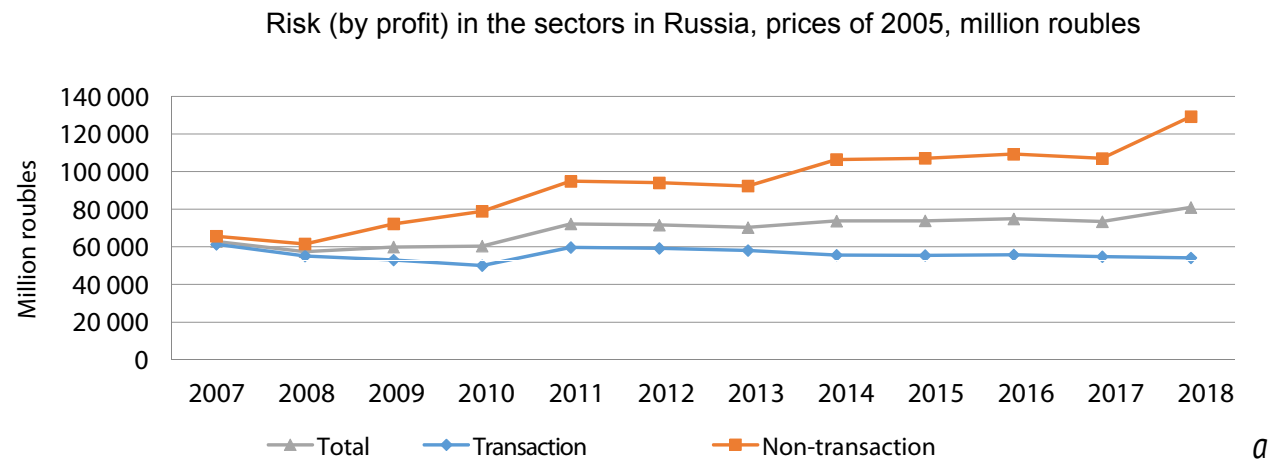
In Russia, the ratio of investments in the two sectors is also quite high, so the transaction sector occupies the first position in terms of contribution to the growth rate. Thus, investments in the transaction sector contribute to its growth rate.

In China, the increase in the contribution of the non-transaction sector to the economic growth rate in 2015–2017 can be associated with an increase in the contribution of investments to the non-transaction sector relative to the transaction sector (*Fig. 4, 7, b*).

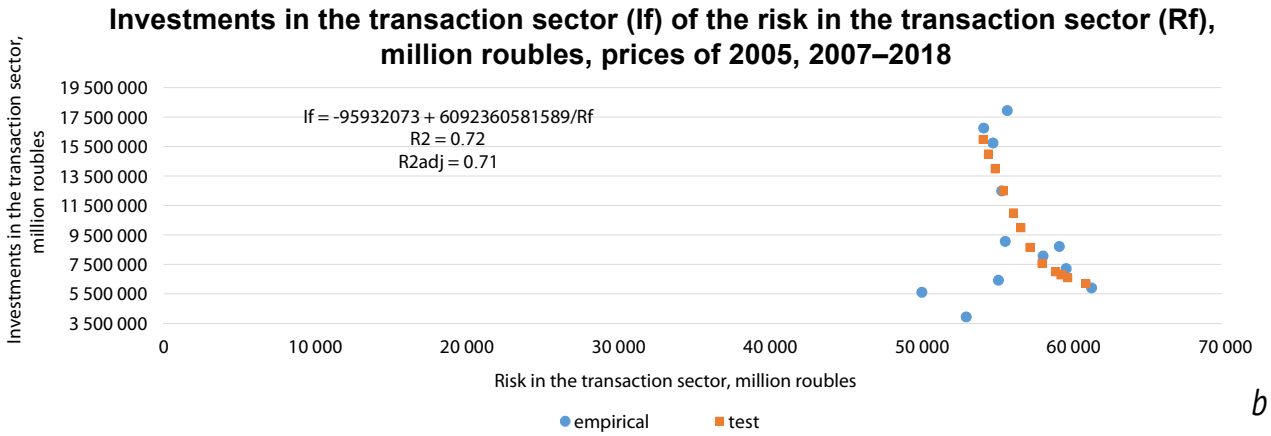
In the Russian economy (*Fig. 8*)[8], the risk[9] in the non-transaction sector, in contrast to the transaction sector, increased significantly, which

[8] The difference in the time interval is due to the lack of data for calculating the necessary parameters from these sources.

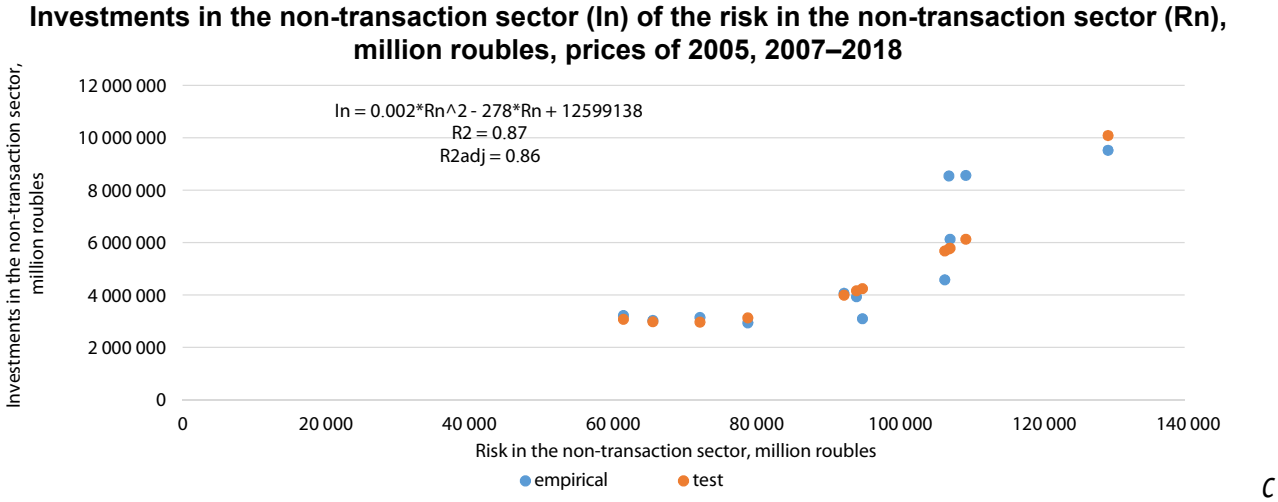
[9] The risk was calculated as the standard deviation of profit margin. The profit was quoted in the prices of 2005 using the consumer price index for goods and services. The profit of each sector is equal to the sum of profit by the types of activity that make up each economic sector. The risk in each sector and the total risk were calculated as the arithmetic mean of the risks by the types of activities that make up the sector and the entire economy.



a



b



c

Fig. 8. **Risk in the Russian economy — *a*; investment in the transaction sector from risk — *b*; in the non-transactional sector from risk — *c*, 2007–2018**

Source: составлено автором по данным ЕМИСС / compiled by the author according to EMISS. URL: https://www.fedstat.ru/indicator/31074; https://www.fedstat.ru/indicator/57733; https://www.fedstat.ru/indicator/31541 (accessed on 20.04.2020).

Note: * model statistics: F-test = 7.2; D-W test = 1.4 ∈ [1.33; 2.67]; White test: χ^2 test = 7.5; χ^2 crit. = 19.7. ** model statistics: F-test = 51.9; D-W test = 1.4 ∈ [1.33; 2.67]; White test: χ^2 test = 5.8; χ^2 crit. = 19.7.

supported investments in the transaction sector and provided their higher contribution to the economic growth rate (*Fig. 6, a*). Risk reduction led to an increase in investments in the transaction sector and increased financial investments. An increase in investments in the non-transaction sector was accompanied by an increase in risk (*Fig. 8*).

The risk in the Russian economy increased with the growth of the key interest rate and decreased with its decrease. Therefore, changes in interest rates affected the investment process and the distribution of investments between the transaction and non-transaction sectors. Also, as the interest rate decreased, financial investments (investments in financial assets) increased by a larger amount than investments in non-financial assets. As the interest decreased, the growth rate of investments in the transaction sector (as well as in the non-transaction one) increased in the studied time interval. The GDP growth rate was determined by the risk elasticity of investments[10]. The higher it was, the higher the growth rate was. As the risk elasticity increase increased, the rate decreased (*Fig. 9*).

Thus, a positive effect on the growth rate of risk elasticity of investments in the Russian economy was observed up to a certain sensitivity. If investments became more sensitive to risk (they changed more than 18 roubles when the risk changed by one rouble), this helped lower the growth rate (*Fig. 9*).

As we see, an increase in risk in the non-transaction sector is accompanied by a slight increase in investments; a decrease in risk in the transaction sector is accompanied by an increase in investments. This effect supported the largest contribution of investments in the transaction sector to Russia's economic growth rate. At the same time, part of the transaction sector (financial and banking transactions) made investments in financial assets that could somehow affect the economic growth along with investments in non-financial assets. We will consider this final structural aspect of the study in the next section, while comparing the Russian economy with the American and the German ones[11]. The proportions and their current dynamics, including the established regime of the contribution of economic elements (investments or individual sectors) to the growth rate, cannot be ignored when developing a macroeconomic growth policy. This is especially important from the perspective of modernization or industrialization of the economy. The impact of the transaction sector that has grown in many countries and its substantial part — the financial and banking sector — cannot but be ignored both in terms of diverted by these sectors resources that could be used for development tasks and in terms of their impact on the economic dynamics. Thus, not only the development of structural policies, but also of classical measures in the framework of macroeconomic growth policies [14–16] require considering this impact. Moreover, through the functioning of the financial system, the debt economy mode is developed [17], which is an urgent problem not only within the framework of "financial economics".

INVESTMENTS IN FINANCIAL AND NON-FINANCIAL ASSETS: COMPARATIVE ANALYSIS

The final stage of the study will be devoted to considering the impact of investments in financial and non-financial assets on the change in gross domestic product in Russia, the USA, and Germany. The comparative aspect will clarify the degree of impact of financial and non-financial investments on product changes within each economy.

Fig. 10 shows the relative difference between the countries regarding investments in financial and non-financial assets, respectively, to the country's GDP [19].

First, it should be noted that in Russia the difference between the two types of investments (to GDP) is very significant (*Fig. 10, a*).

Second, this difference increases due to the outstripping growth of financial investments, so that their ratio to GDP is steadily increasing and exceeds the value of GDP itself (more than one

[10] The risk elasticity of investments is the sensitivity of changes in investments to changes in risk, i.e. shows how the investments will change if the risk changes by one percent (measured in percentage).

[11] The data on investments in China's financial assets are not available, therefore are not considered here.

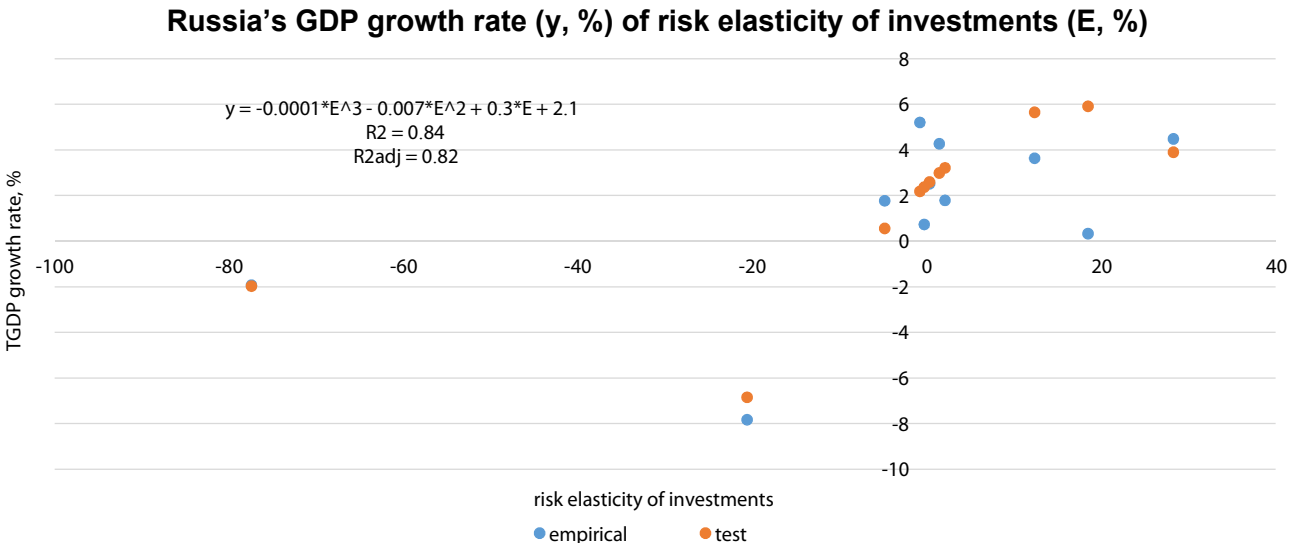


Fig. 9. **Russia's GDP growth rate and risk elasticity of investments, 2008–2018**

Source: compiled by the author according to Rosstat. URL: https://www.gks.ru/free_doc/new_site/business/invest/tab_inv-OKVED.htm; https://www.gks.ru/accounts; ЕМИСС / EMISS. URL: https://www.fedstat.ru/indicator/57733; https://www.fedstat.ru/indicator/31541 (accessed on 20.04.2020).

Note: * model statistics: F-test = 54; D-W test = 2.1 ∈ [1.32; 2.68]; White test: χ^2 calculation. = 6.3; χ^2 crit. = 18.3.

since 2011, then since 2014). Since 2014, there has been a sharp increase in financial investments and a decrease in non-financial investments, and neither Germany nor the United States show such an upward trend in this time interval.

Third, in the United States, financial investments to GDP are about twice inferior to investments in non-financial assets (*Fig. 10, b*). Moreover, the ratio to GDP is significantly less than one (unlike the Russian economy).

Fourth, in Germany, investments in financial and non-financial assets in relation to GDP exceed the corresponding types of investments in the USA and investments in non-financial assets in Russia. At the same time, investments in financial assets are higher than investments in non-financial assets. Moreover, a sharp separation of financial investments from investments in non-financial assets happened in 2009 and survived to date (*Fig. 10, c*).

Fifth, *Fig. 11* gives a very indicative picture of the institutional bias (γ0) of the financial market from the "real economy" for each country. It is growing strongly for Russia (*Fig. 11a*), and is more or less stable for Germany [19]. A positive value of γ0 indicates the situation for these countries when investments in non-financial assets do not exceed total savings, and financial investments exceed the difference in savings and investments in non-financial assets by the number of times shown in the *Fig*. For Germany, this superiority is almost not increasing. For Russia, it is growing quite quickly. Of course, this parameter can increase with the growth of investments in non-financial assets without a significant increase in savings and with the growth of financial investments. For the Russian economy, this is due to the growth of investments in financial assets. For the German economy, the indicator is stable due to the fact that the difference between the two types of investments relative to GDP has practically remained unchanged since 2010 (*Fig. 10, c*). For the United States, the parameter of the institutional bias of the financial market is negative, since investments in non-financial assets exceed savings; the country attracts a significant amount of capital for investments. It is due to this, and not the strong growth of investments in financial assets, that the parameter γ0 increases in the negative range of values by 2014 and then returns to the past values.

Thus, in the countries under review, the ratio of financial investments to non-financial investments clearly affected the economic dynamics in different ways. Obviously, investments in

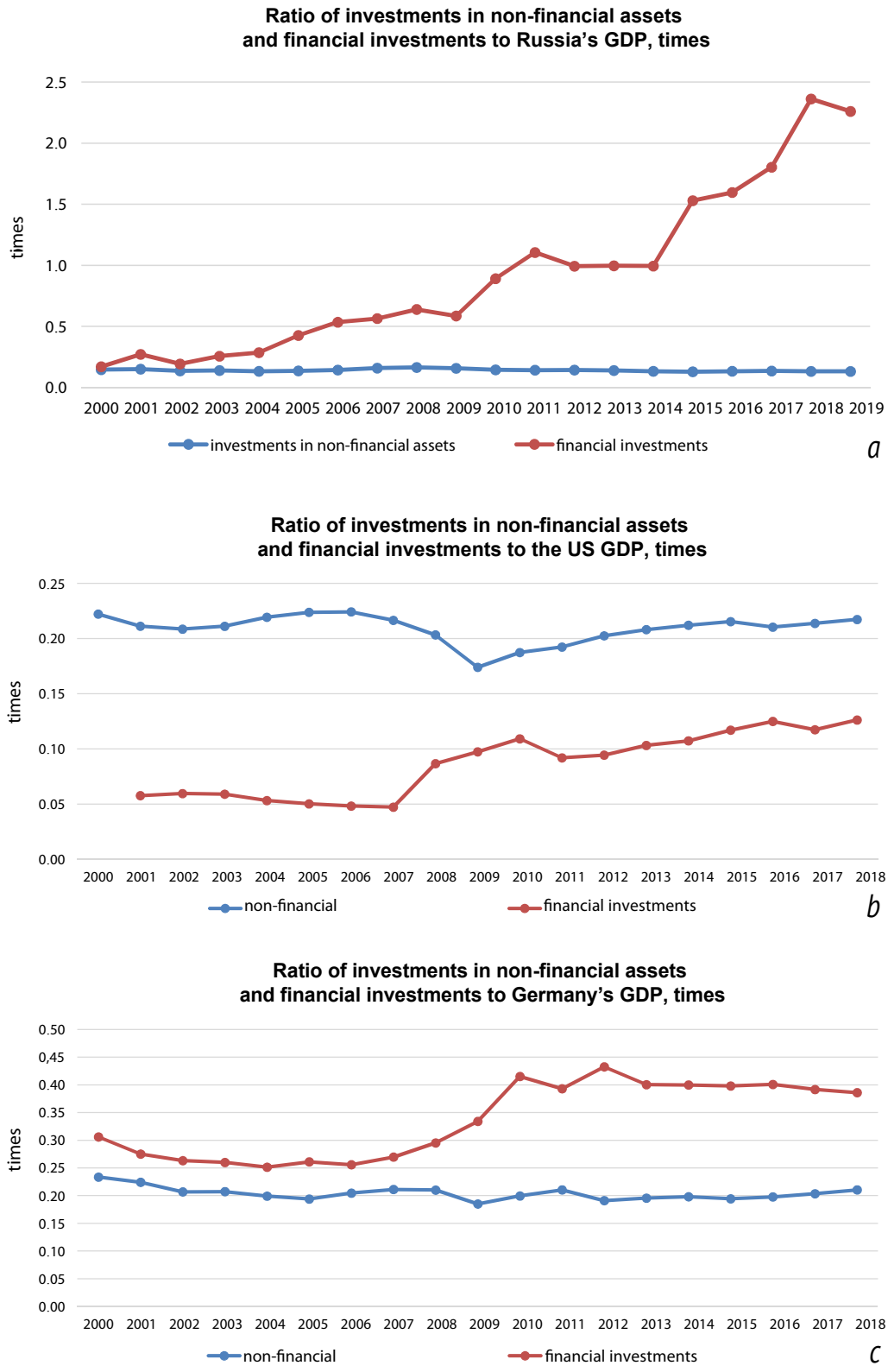


Fig. 10. **Investments in financial and non-financial assets in Russia — *a*; USA — *b*; Germany — *c***

Source: compiled by the author according to Rosstat. URL: https://www.gks.ru/investment_nonfinancial; https://www.gks.ru/folder/14476; https://www.gks.ru/storage/mediabank/tab1(2).htm; World Bank. URL: https://data.worldbank.org/indicator/NE.GDI.TOTL.KD; https://data.worldbank.org/indicator/NY.GDP.MKTP.KD; International Monetary Fund. URL: https://data.imf.org/regular.aspx?key=61545853 (accessed on 20.04.2020).

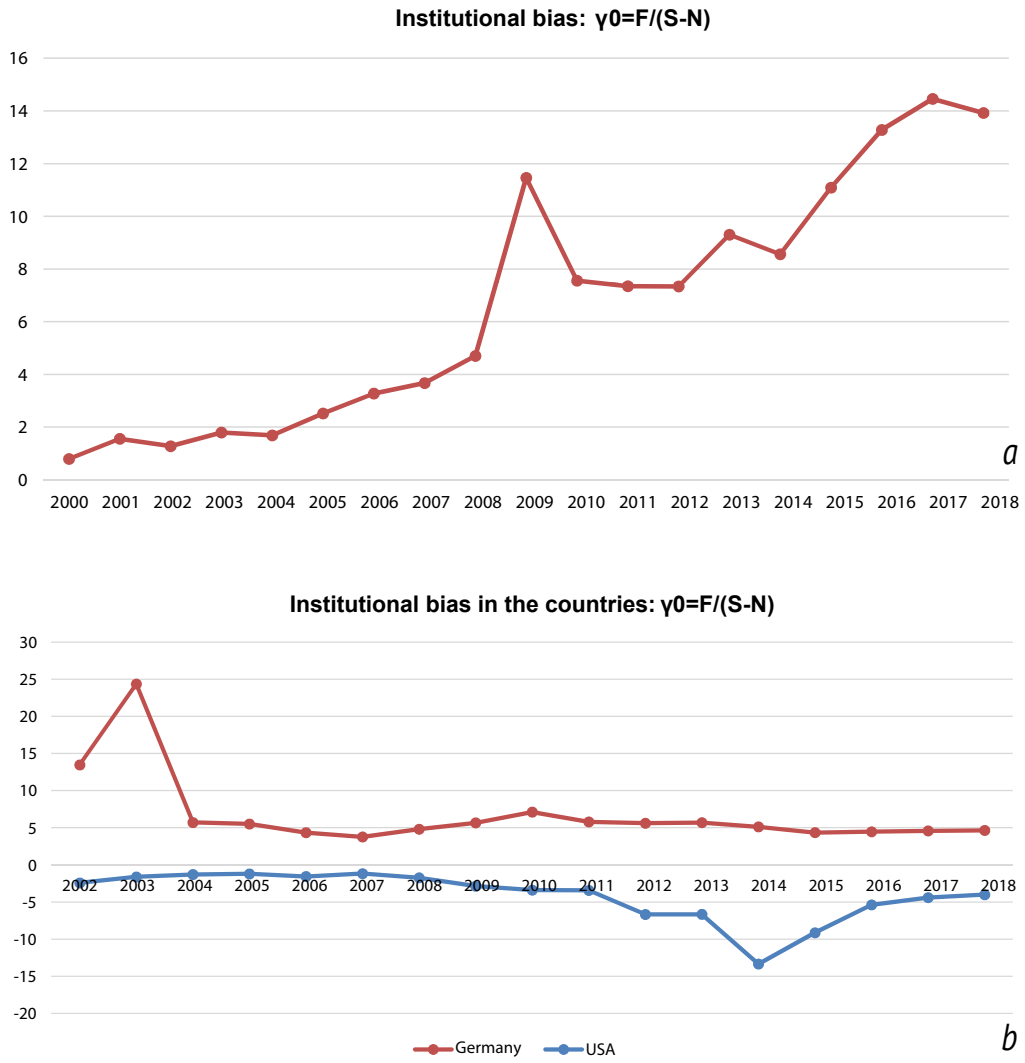
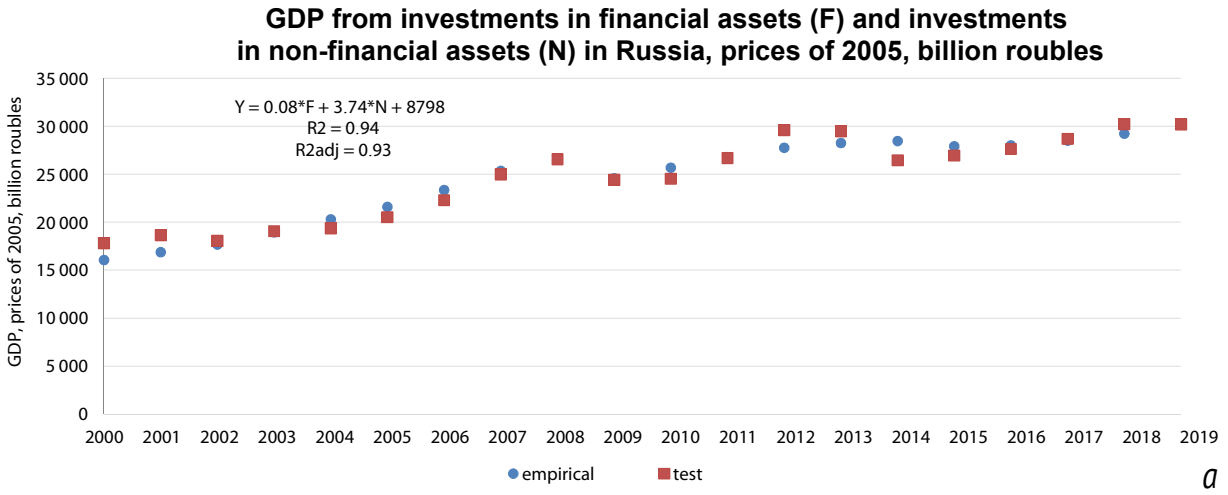


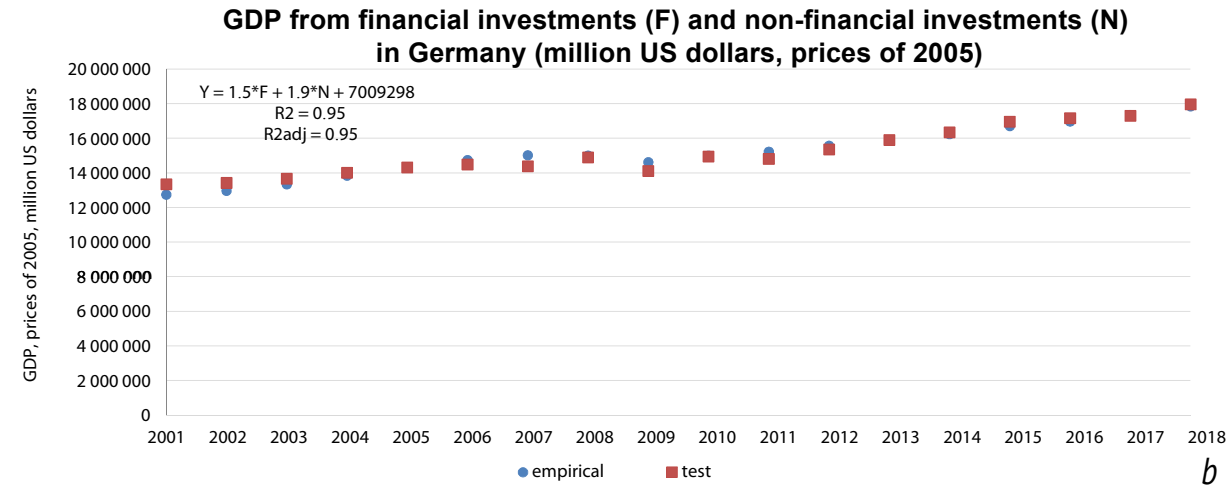
Fig. 11. **The value of the institutional bias of the financial market γ0 in Russia — *a*; USA, Germany — *b***

Source: compiled by the author according to Rosstat. URL: https://www.gks.ru/investment_nonfinancial; https://www.gks.ru/folder/14476; https://www.gks.ru/storage/mediabank/tab1(2).htm; World Bank. URL: https://data.worldbank.org/indicator/NE.GDI.TOTL.KD; https://data.worldbank.org/indicator/NY.GNS.ICTR.ZS; https://data.worldbank.org/indicator/NY.GDP.MKTP.KD; International Monetary Fund. URL: http://data.imf.org/regular.aspx?key=61545865 (accessed on 20.04.2020).

financial and non-financial assets are related in a certain way. This relationship depends not only on financial, but also on sectoral economic structure, on the ratio of risks and profitability in various types of activities.

Fig. 12 shows the models linking the GDP of each country with investments in financial and non-financial assets. Comparing the obtained ratios, we conclude that for the American economy the impact of investments in financial and non-financial assets on the change in GDP is the most even. With the same change in investments in financial and non-financial assets, the impact on the change in GDP will be quite close. The German economy shows a less even impact on the considered time interval. The largest gap in the impact on the change in GDP of financial and non-financial investments is shown by Russia, for which the indicator of the financial market bias is growing significantly (not due to an increase in investments in non-financial assets, but solely due to the growth of financial investments). At the same time, with the





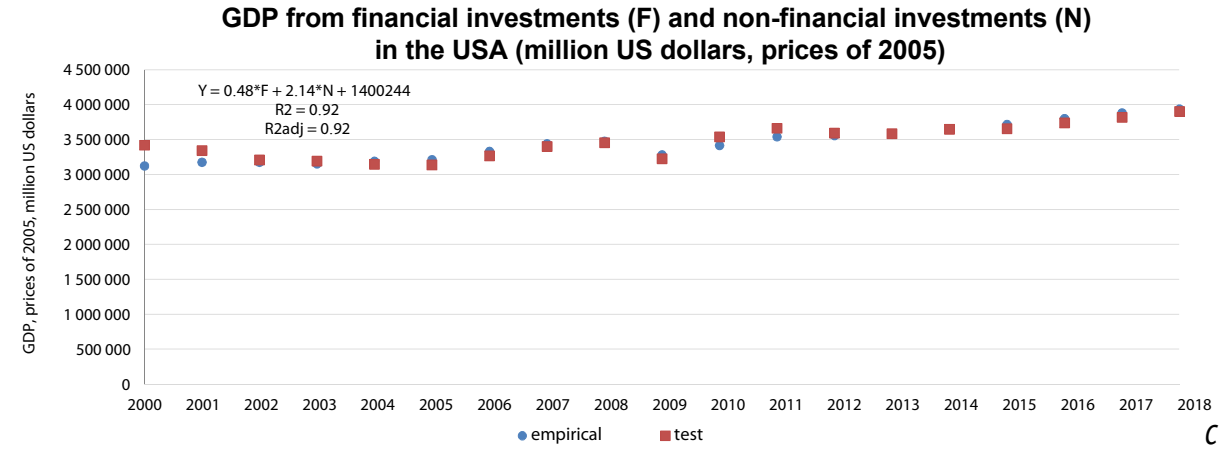


Fig. 12. **Model of GDP dynamics of the value of investments in financial (*F*) and non-financial assets (*N*) of Russia — *a**; USA — *b***; Germany — *c******

Source: compiled by the author [19] according to Rosstat. URL: https://www.gks.ru/investment_nonfinancial; https://www.gks.ru/folder/14476; https://www.gks.ru/storage/mediabank/tab1(2).htm; World Bank. URL: https://data.worldbank.org/indicator/NE.GDI.TOTL.KD; https://data.worldbank.org/indicator/NY.GDP.MKTP.KD; International Monetary Fund. URL: https://data.imf.org/regular.aspx?key=61545853 (accessed on 20.04.2020).

Note: * model statistics: F-test = 125.3; D-W test = 1.4 ∈ [1.4; 2.6]; White test: χ^2 test = 1.5; χ^2 crit = 30.1.

** Model statistics: F-test = 147; D-W test = 1.8 ∈ [1.53; 2.47]; White test: χ^2 test = 3.9; χ^2 crit = 27.6.

*** Model statistics: F-test = 88.3; D-W test = 1.9 ∈ [1.53; 2.47]; White test: χ^2 test = 4.6; χ^2 crit = 28.9.

Table

Final comparative structural analysis of the impact of investments in the transaction sector and financial assets by the countries under consideration

Country	The largest contribution of the sector to the growth rate	The largest contribution of investment in the sector to the growth rate	The impact of financial investments — on γ0 and on the growth
Russia	Transaction	Transaction	Financial investments dominate, γ0 > 0 and grows due to financial investments. The financial investments slow down the dynamics of GDP. The importance of non-financial investments for the growth rate is great
USA	Transaction one with a significant margin	Transaction	Non-financial investments dominate, γ0 < 0 (due to non-financial investments), γ0 grows due to the growth of financial investments. The impact on the GDP dynamics is comparable with non-financial investments
Germany	Non-transaction	Transaction	Financial investments dominate, γ0 > 0 and is stable due to non-financial investments. The impact on the GDP dynamics is significantly less than non-financial investments
China	Non-transaction Transaction	Non-transaction Transaction	

Source: compiled by the author according to the study results (*fig. 2–12*).

same change in financial and non-financial investments, the impact on the change in GDP is many times greater for non-financial investments. Consequently, such a significant excess of financial investments over investments in non-financial assets essentially means that there is a certain effect of the GDP growth slowdown, structural imbalance in favor of the financial sector as part of the transaction sector. The transaction sector itself makes an essential contribution to the growth rate of the considered economies, in particular the Russian economy. However, the outstripping growth of financial investments rather slowed down the rate of the Russian economy.

The multiplicative econometric model ($Y = 418F^{0.11}N^{0.37}$)[12], selected to estimate the change in Russia's GDP from investments in financial and non-financial assets, also confirms the above conclusion regarding the Russian economy, slowed down by growing financial investments.

Now we will summarize the analysis results in the final *Table*. The *Table* shows the features of qualitative structural manifestations in the economic dynamics and, respectively, the impact of the transaction sector and financial investments on it.

[12] Statistics of the model: R2 = 0.97; R2adj = 0.97; F-test = 269.7; D-W test = 1.5 ∈ [1.4; 2.6]; White test: χ2 test = 1.1; χ2 crit = 30.1.

In the Russian economy, both the transaction sector and investments in it have a greater impact on the growth rate than the non-transaction sector. In the US, the transaction sector is even more significant. The Chinese economy is characterized by a commensurate impact on the dynamics of the two sectors and investments in them. In Germany, the non-transaction sector makes a greater contribution to the growth rate, but investments contribute more to the growth rate in the transaction sector (see *Table*). In the Russian economy, there is an excessive bias towards financial investments, which holds back the economic dynamics, in contrast to the American and German economies, where there is no similar bias and financial investments have less impact on the rate relative to non-financial investments.

This leads to the conclusion that economic policy should consider not only the change in the sectoral contribution to the growth rate of investments in the transaction and non-transaction sectors, affecting the distribution of resources between them, but also affect the change in the sensitivity of GDP to investments of various kinds. Thus, it is necessary to avoid bias towards financial investments [15, 17]. Of course, it is not the growth rate per se that matters, but the quality of the economy (including structural relationships, also, those considered in the study), which is formed during its functioning and the ongoing macroeconomic growth policy.

CONCLUSIONS

To sum up, we will denote the most relevant conclusions.

First, the economic dynamics of the Russian economy was largely determined by the transaction sector — by the product created and by investments in it. Financial investments significantly exceed non-financial ones, which slows down the economic dynamics.

Second, the great superiority of financial investments over Russia's GDP creates a high potential for instability in economic development. Equivalent ratios of investments in financial assets to GDP for the United States and Germany are much smaller than in Russia, and the amount of non-financial investments is much higher in both relative and, especially, absolute terms. Thus, the Russian economy is faced with the main structural task of creating a new growth model — the balanced development of the financial market (financial investments) and non-financial markets (investments in non-financial assets). In fact, it is about lowering the parameter of institutional bias of the financial market $\gamma 0$, among other macroeconomic policies that affect the growth rate.

Further research is conditioned by the need to consider the possible relationship between investments in financial and non-financial assets when the parameter of the institutional bias of the financial sector changes, as well as to clarify the impact of the dynamics of this parameter on the economic growth rate. Moreover, it will be useful to receive models linking various indices characterizing the state of the stock market (for example, the S&P index and others) with the dynamics of financial investments, with the definition of assessing the impact on the change rate of GDP and inflation. These tasks might be solved in the future research.

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