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Industry specifics of liquidity dependence in Russia and vulnerability to financial shocks

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Industries that require large working capital as compared to revenue are, in general, more sensitive to changes in debt financing availability. It makes such industries more vulnerable to financial crises when opportunities to attract debt financing usually become much scarcer.

In Russia, the number of such industries is large, and they are more important to the economy than in Europe. Construction, real estate operations, agriculture and certain manufacturing industries, among others, are, perhaps, the most vulnerable to financial turmoil.

For this reason, financial shocks can affect the Russian economy to a greater extent than that of the European countries. Therefore, maintaining financial stability requires particularly close monitoring and analysis of the situation in these industries.

There are reasonable grounds to suggest that the economy's industry structure influences the nature of the relationship between the real and financial sectors. In particular, a large number of economic studies demonstrate that industries dependent on debt financing (liquidity dependent) suffer more during contractionary phases of the credit cycle (Braun and Larrain, 2005; Kroszner et al., 2007; Dell'Ariccia et al., 2008; Abiad et al., 2011).

Indicators of the economy's liquidity dependence can include certain balance sheet indicators of non-financial organisations (see, for example, Raddatz, 2006). First of all, it's the ratio of inventories to revenue. A high value of this indicator is usually attributed to the specifics of the production cycle and is a sign of an increased requirement in investments in inventories that cannot be funded with current revenues. Assuming that short-term financial assets of non-financial organisations can also be considered working capital¹ required for their operations, we can take the ratio of their current assets to revenue as the indicator of their dependency on debt financing. As a matter of fact, the results of empirical analysis confirm that these indicators can be used to identify the differences in the sensitivity of European economies to financial shocks.²

¹ For the discussion on the relationship between sectoral factors and corporate cash holdings, see Subramaniam et al. (2011) and Bigelli and Sánchez-Vidal (2012).

² Ponomarenko A., Rozhkova A., Seleznev S. Macro-financial linkages: the role of liquidity dependence // Bank of Russia Working Paper Series, 2017, No. 24.

Let us compare the indicators of liquidity dependence in Russia and certain European countries.³ We will analyse the variation of liquidity dependence indicators between industries.⁴ In the Russian economy, the interindustry heterogeneity of these parameters is high (see Fig. 1 and 2). The highest current assets to revenue and inventories to revenue values were identified in the agriculture (A), real estate operations (L), services (M, S), construction (F) and certain manufacturing subsectors (pharmaceuticals (C21), computers and electronic devices manufacturing (C26), machinery and equipment manufacturing (C28)). Wholesale and retail trade (G), transportation and storage (H), healthcare (Q), electricity, gas and water supply (D, E) are the least dependent on debt financing.

This heterogeneity is not a purely Russian feature. A similar variation of liquidity dependence between industries is also observed in the European countries. Fig. 1 and 2 show that the average values of balance sheet indicators calculated based on the Russian data are not very much different from those for 10 European countries across nearly all industries. The few exceptions are real estate operations (L), other services (S), construction (F) and agriculture (A) where liquidity dependence values are much higher than the European average. The production of coke and petroleum products (C19) should also be noted. In this industry, the current assets to revenue ratio calculated based on the Russian data is 2.5 times as high as the average for the European countries in the sample, although it still falls within the European range.

³ Average data for 10 European countries (see Fig. 3) for 2000-2014 are used. The European data are taken from the BACH database (see Ponomarenko A., Rozhkova A., Seleznev S. (2017)). For Russia, we used the average values for 2014-2016 taken from the database of companies' annual accounting statements, provided to the Bank of Russia by Rosstat.

⁴ The description of OKVED 2 codes used in Fig. 1 and 2 is provided in Appendix 2.

Fig. 1 Inventories to revenue ratio in Russia and Europe (median and range), %

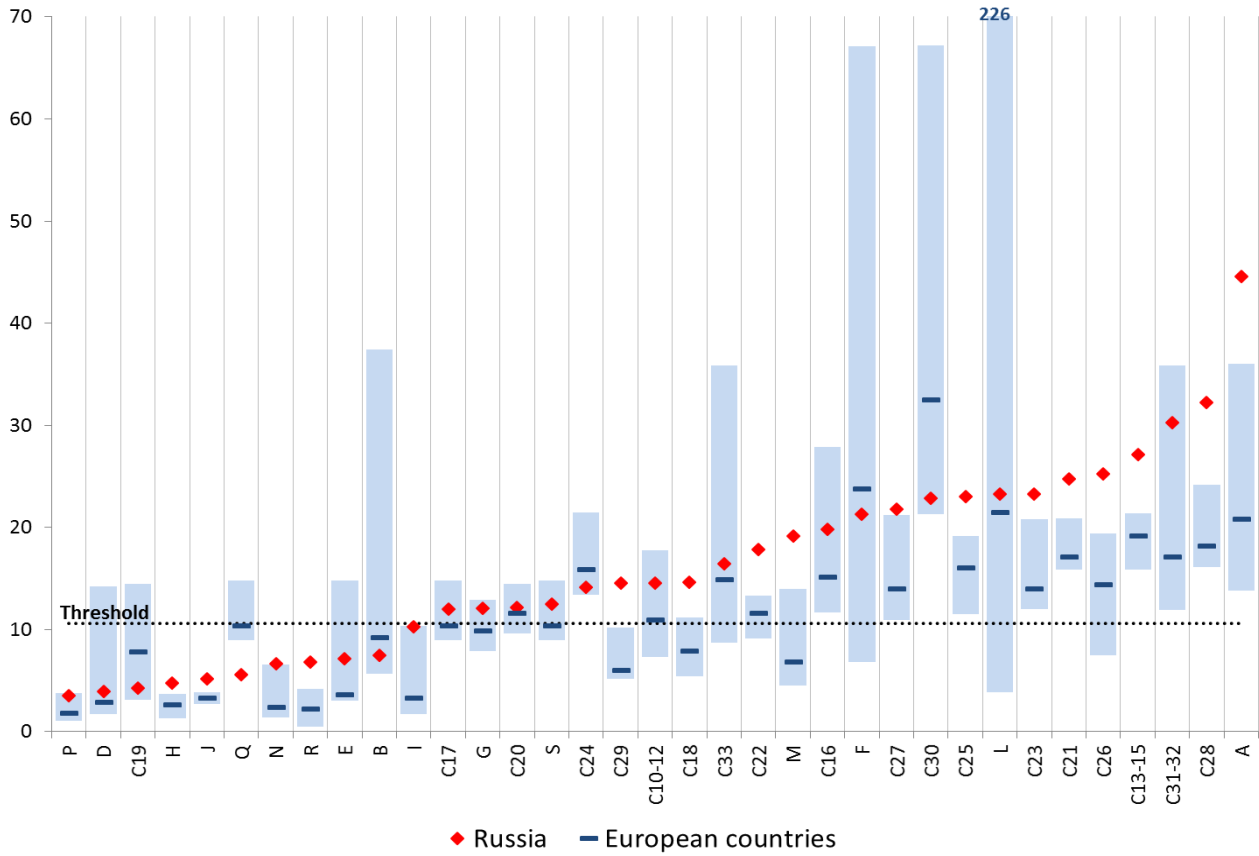
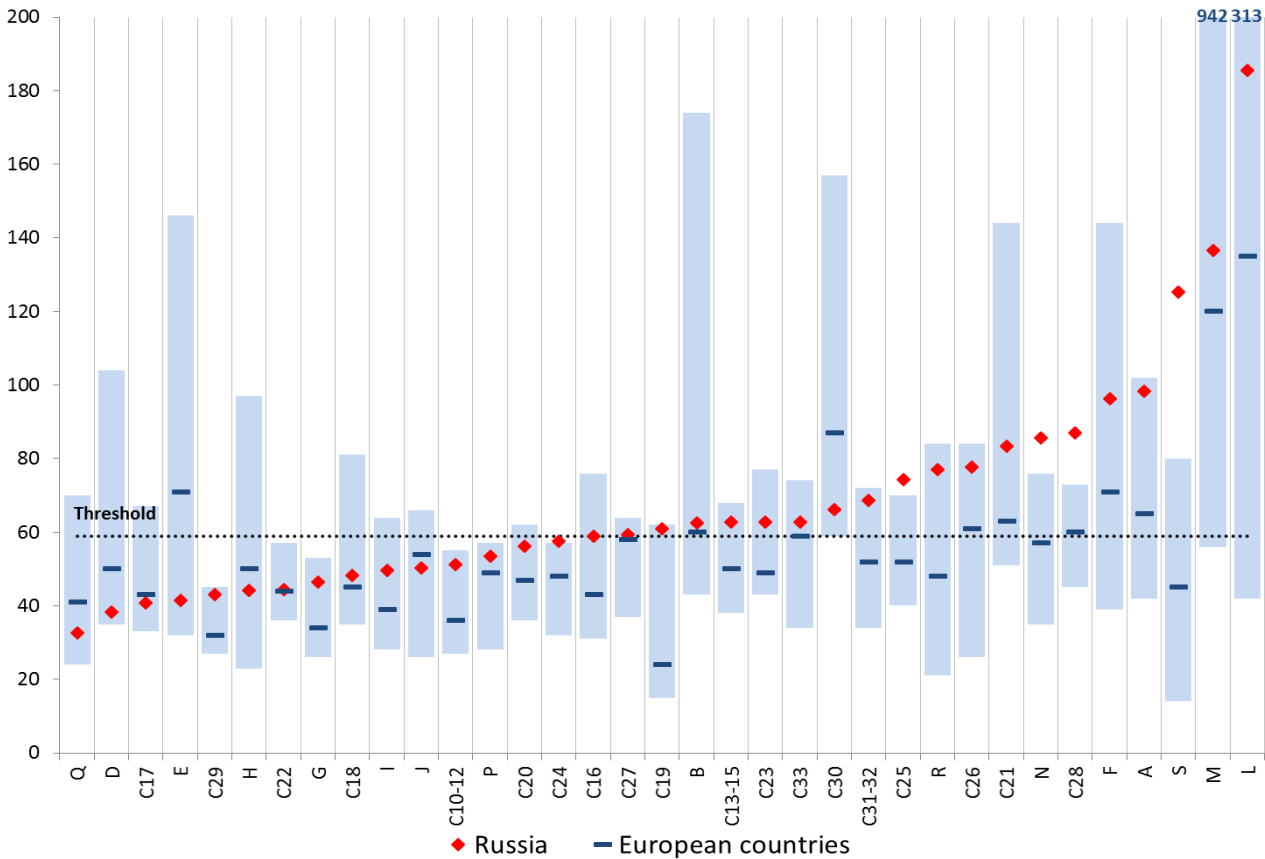


Fig. 2 Current assets to revenue ratio in Russia and Europe (median and range), %



It should be noted that, in the majority of industries, both indicators of liquidity dependence were above the threshold (Fig. 1 and 2).⁵

It is important to note, however, that the fact that liquidity dependent indicators exceed or fail to reach the threshold and European levels merely speaks about individual sectors and should not be interpreted as evidence of potential debt issues (or absence thereof) in those industries. For example, wholesale and retail trade (G) in Russia does not look materially more dependent on debt financing than in Europe. In this sector, only the first parameter slightly exceeded the threshold value. That said, this sector usually faces significant financial issues during the periods of the cyclical decline of demand when revenues drop. Another example is the production of coke and petroleum products (C19). In Russia, most petroleum refineries form a part of vertically integrated oil companies. This integration increases the industry's resilience to financial shocks, all other things being equal.

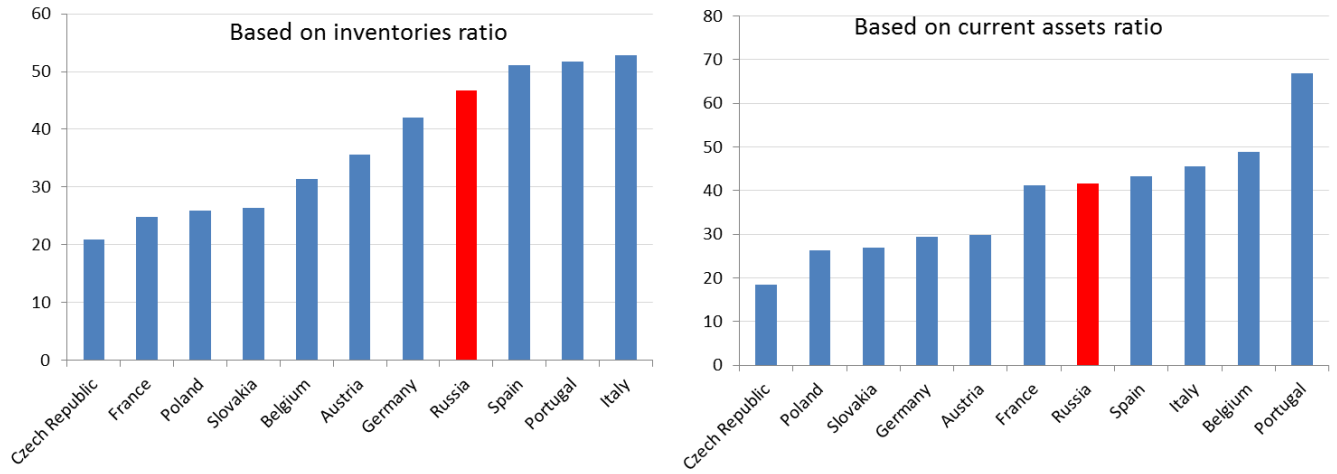
As an aggregated indicator of the economy's liquidity dependence, it is possible to use the ratio of the added value produced in industries with high dependency on debt financing to GDP. The latter included such industries where the corresponding balance sheet indicators exceeded the threshold. The results of comparison of the aggregated indicators⁶ are provided in Fig. 3. We note the high proportion of industries with strong dependency on debt financing in the Russian economy. It is comparable with the values for the European countries that took the hardest hit during the 2008 financial crisis due to heavy debt burden of their economies (Spain, Italy and Portugal).

For the above-mentioned industry specifics, financial shocks can affect the Russian economy to a greater extent than European. Therefore, maintaining financial stability requires particularly close monitoring and analysis of the situation in the industries that are the most dependent on debt financing.

⁵ The threshold levels were identified in Ponomarenko A., Rozhkova A., Seleznyov S. (2017).

⁶ For Russia, the average indicator was calculated for 2016-2017 while for the European countries, the averaging period was 2000-2014.

Fig. 3 Aggregated indicator of liquidity dependence in Russia and Europe, %



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Appendix

OKVED Codes	Type of economic activity
A	Agriculture, forestry and fishing
B	Mining and quarrying
C10–12	Food, beverages and tobacco
C13–15	Textiles, clothes, leather and accompanying goods
C16	Wood and wood products
C17	Paper and paper products
C18	Printing and media copying
C19	Coke and petroleum products
C20	Chemicals and chemical products
C21	Pharmaceuticals and medical products
C22	Rubber and plastic products
C23	Other non-metallic mineral products
C24	Metallurgical production
C25	Finished metalware, except for machinery and equipment
C26	Computers, electronic and optical products
C27	Electrical equipment
C28	Machinery and equipment not included in other groups
C29	Motor vehicles, trailers and semitrailers
C30	Other motor vehicles and transport equipment
C31–32	Other production
C33	Repairs and installation of machinery and equipment
D	Electricity, gas and steam supply; air conditioning
E	Water supply, etc.
F	Construction
G	Wholesale and retail trade

H	Transportation and storage
I	Hotels and public catering
J	Information and telecommunications
L	Real estate transactions
M	Professional, academic and technical activities
N	Administrative and accompanying activities
P	Education
Q	Healthcare and social services
R	Culture, sports, organisation of leisure and recreational activities
S	Other services

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