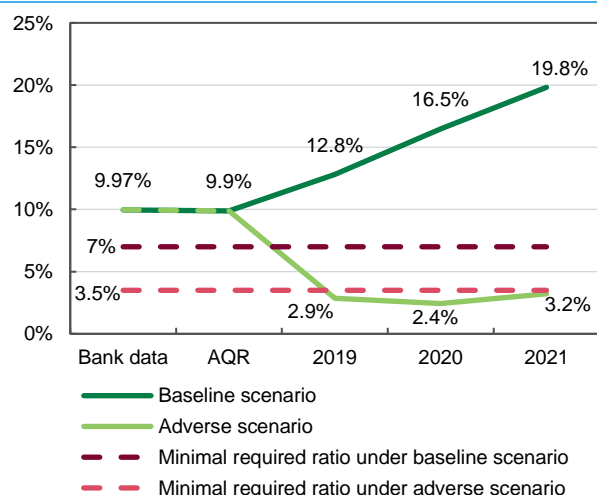


In 2019, the NBU held a scheduled round of stress test of Ukraine's largest banks. Its general principles and findings are outlined in [Section 3.2 Capital risks and stress testing](#) of the December 2019 Financial Stability Report. This report presents individual stress test results for banks. This year, stress test results determined the banks' required (target) level of capital adequacy. Most financial institutions already have either taken steps to mitigate risks or brought their capital adequacy ratios close to the necessary level. The banks have time until October 2020 to meet in full the required ratios the stress tests identified. The NBU will continue to review asset quality and stress test the largest banks in order to identify risks to the banks' capital.

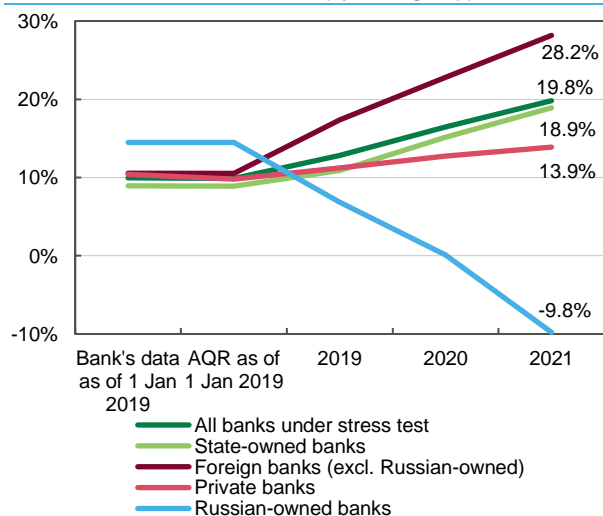
Figure 1. Weighted average estimates of the core capital adequacy ratio based on stress test results*



* Weighted by risk-weighted assets for each year.

Source: NBU.

Figure 2. Weighted average estimates of the core capital adequacy ratio under the baseline scenario (by bank group)*



Source: NBU.

In 2019, 29 banks were stress tested that together account for over 90% of the banking sector's assets. Stress test results under baseline and adverse scenarios should not be regarded as projections of financial indicators. The scenarios were constructed so as to determine how major risks would affect a bank's performance, given its current standing.

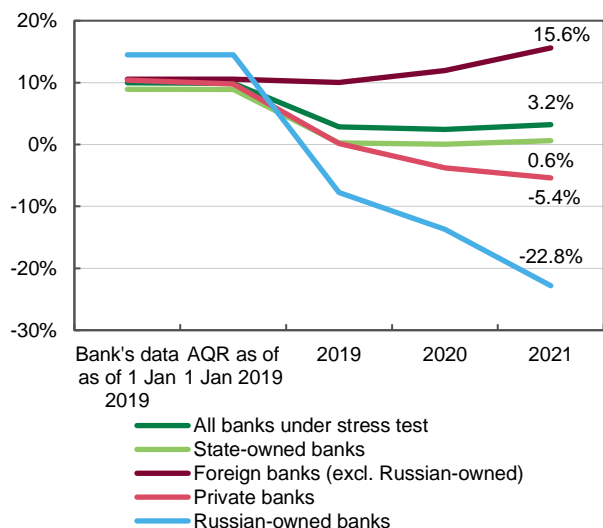
Stress test findings should be interpreted with caution, applying in all cases the key assumptions underlying the stress test model. The first assumption was that the balance sheets of banks were static, and as such were only affected by changes in asset quality and exchange rates. In practice, some banks are growing rather quickly, therefore their balance sheets are already significantly different from those on the stress-test date. The second assumption was that current profit was capitalized throughout the entire forecast period. In practice, banks often decide to distribute their profits to shareholders.

On average, under the baseline scenario, the core capital adequacy of all stress-tested banks increases during the forecast period by about 10 pp, to 19.8%. Most of the stress-tested banks were found able to generate sufficient profits in the forecast period, and to ensure capital growth. However, 11 financial institutions would need capital to meet the minimum capital adequacy requirement under the baseline scenario.

Under the adverse scenario, 18 banks would see their capital fall below the hurdle rate, which stands at 3.5% in terms of the core capital adequacy ratio, and at 5% in terms of the regulatory capital ratio. The total cumulative impact of a hypothetical crisis would reduce the core capital adequacy ratio over a three-year projection period by almost 7.5 pp, to 2.4%.

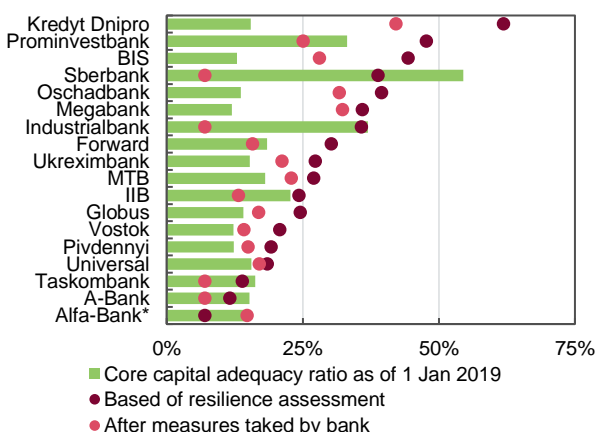
Russian banks performed the worst under both the baseline and adverse scenarios. The reasons were the gradual winding down of operations, the absence of quality assets, and sufficient income from core business activities. The performance of state-owned Oschadbank and Ukreximbank

Figure 3. Weighted average estimates of the core capital adequacy ratio under the adverse scenario (by bank group)



Source: NBU.

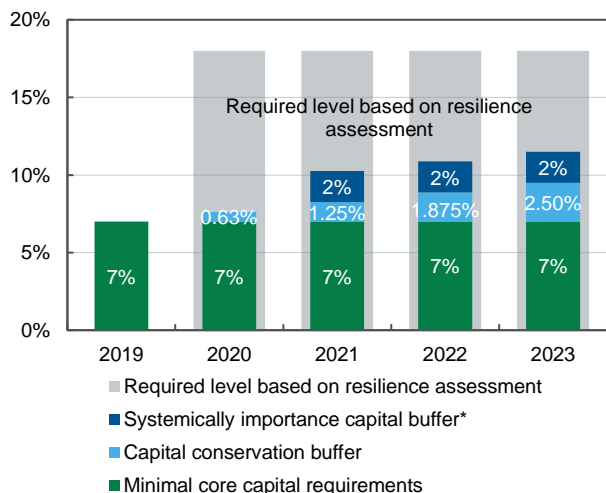
Figure 4. Required core capital adequacy ratios of the banks with capital need based on resilience assessment results



* In view of the reorganization of Alfa-Bank through the merger with Ukrspotsbank, the required capital adequacy ratios have been revised. Specifically, as a successor, the required levels of Alfa Bank's regulatory and core capital adequacy ratios stood at 18.0%. Considering the measures taken by the banks, the revised required ratio is 14.8%.

Source: NBU.

Figure 5. Change in the banks' required core capital adequacy ratios



* Systemically importance capital buffer changes from 1% to 2%.

Source: NBU.

in stress tests this year has worsened, primarily due to the depreciation of collateral against old NPLs. In addition, these banks sustained the negative impact of low current net interest margins and high cost-to-income ratios (CIRs). Ukrspotsbank needed a significant capital increase. Over the course of the year, the bank was merged with Alfa Bank. As a successor, the latter inherited Ukrspotsbank's revised capital requirement. The stress test results of retail banks came out significantly worse than last year. This outcome stems from a conservative assumption that under a shock banks would lose a fifth of their unsecured retail loan portfolio to defaults. For the second year running, financial institutions with concentrated corporate loan portfolios have run up significant capital needs.

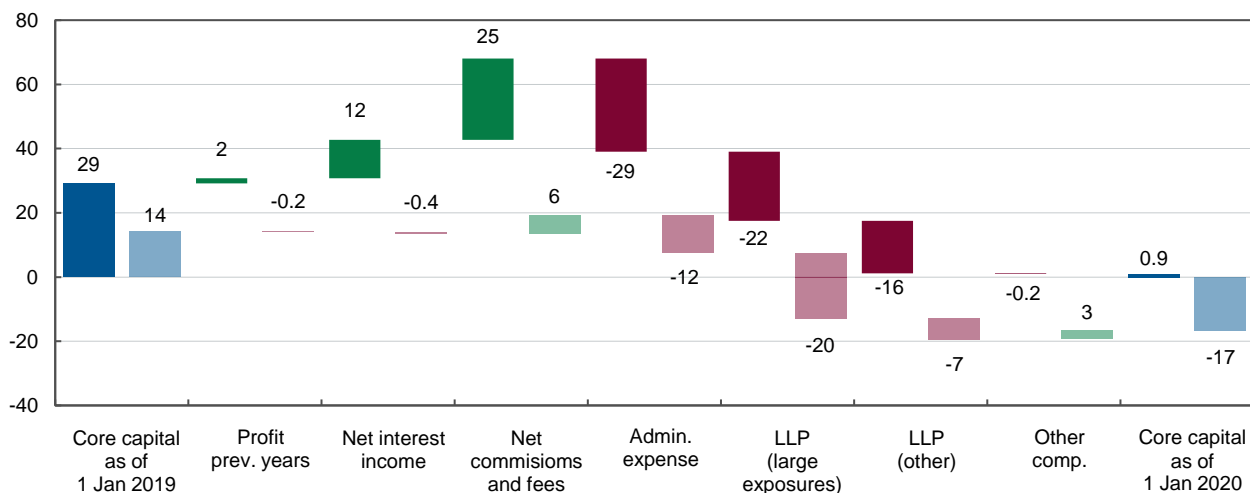
For nine banks, this was the second time they have successfully passed the stress test. Most of these banks are foreign-owned. This group also includes PrivatBank and Ukrgasbank. Of the banks that required capital last year, FUIB and Alfa Bank were found in 2019 to have no additional need of capital.

Based on this year's stress test results, the required ratios of core and regulatory capital adequacy have been set for banks. It was defined if in at least one of the projection period's years the estimated capital adequacy ratios fell below the hurdle rates of 7% and 10% for the baseline scenario and 3.5% and 5% for the adverse scenario.

The banks must meet the capital adequacy ratios by restructuring their balance sheets or raising capital from shareholders. If after taking a number of measures a financial institution reduces its vulnerability to risks – that is to say, if its risk profile improves – the required (target) capital adequacy ratio may be revised. At the same time, the banks can gradually take their current capital adequacy ratios to required levels by ramping up earnings and capital. The banks have time until October 2020 to meet the required ratios. By keeping capital reserves in excess of the minimum risk coverage requirements, the banks will also be able to ward off changes in capital requirements in the upcoming years.

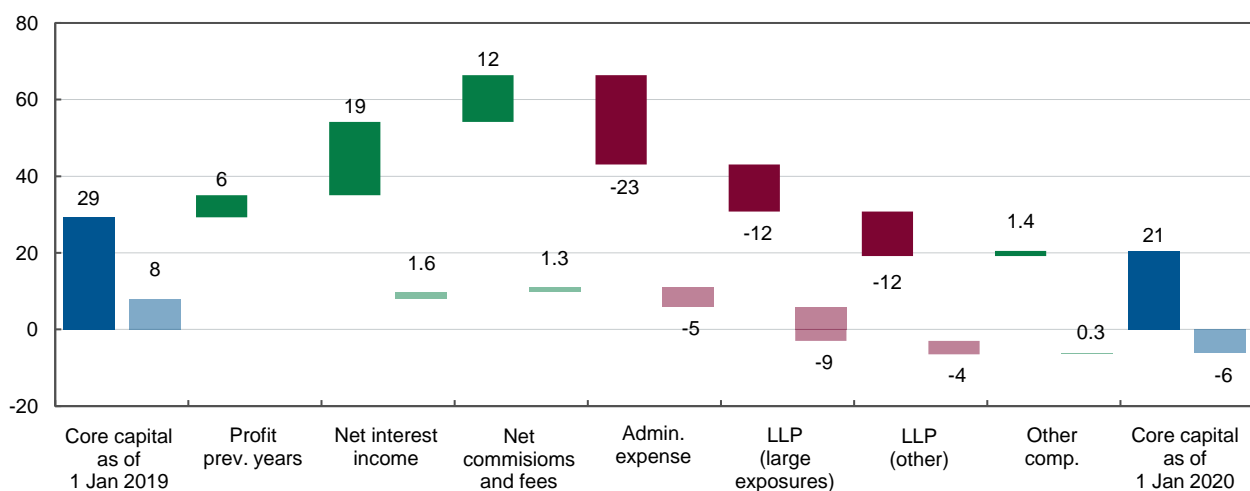
An equivalent of the capital needs as of 1 January 2019 has been calculated as a memo item. This amount does not ensure that the capital adequacy requirement will continue to be met over time. Nor does it lay the groundwork for capitalization or restructuring programs. The total capital needs of all banks stand at UAH 73.8 billion, including UAH 35.3 billion under the baseline scenario. The two state-owned banks account for UAH 45.8 billion. The NBU has verified more than one-third of this sum in measures taken up until now. However, all banks have developed capital increase plans or restructuring programs to meet all stress-test requirements by the due date.

Figure 6. Drivers of change in the core capital of the state-owned banks under the adverse scenario, UAH billion



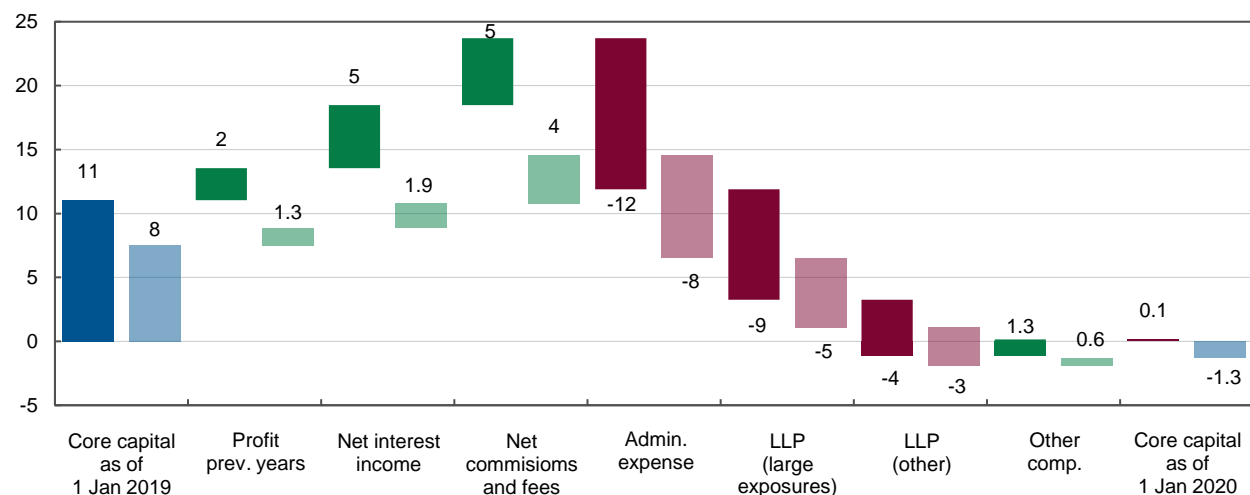
The indicators of the banks found by stress tests to have capital needs are shown as transparent.

Figure 7. Drivers of the change in the core capital of the foreign-owned banks under the adverse scenario, UAH billion



The indicators of the banks found by stress tests to have capital needs are shown as transparent.

Figure 8. Drivers of the change in the core capital of the private banks under the adverse scenario, UAH billion



The indicators of the banks found by stress tests to have capital needs are shown as transparent.

Stress test results by banks

Table 1. Core capital of Ukraine's banks under the stress test, UAH million

Bank	Bank data as of 1 Jan 2019	AQR as of 1 Jan 2019	Baseline scenario			Adverse scenario		
			2019	2020	2021	2019	2020	2021
A-Bank	280	280	782	1 091	1 337	159	60	140
Alfa-Bank	3 362	3 362	5 460	8 245	11 013	1 553	2 443	4 759
Bank for Investments and Savings	370	309	-295	-361	-453	-710	-916	-1 025
Vostok	530	530	571	565	585	-38	-352	-484
Globus	179	165	151	170	195	-64	-221	-300
Idea Bank	303	303	1 172	1 881	2 527	637	950	1 438
Industrialbank	890	866	810	676	446	603	350	71
Kredyt Dnipro	825	374	-610	-1 181	-1 946	-1 507	-2 522	-3 587
Credit Agricole Bank	2 612	2 612	4 217	5 368	6 471	3 402	3 991	4 930
Kredobank	1 241	1 241	2 176	2 658	3 082	1 367	1 449	1 697
Megabank	581	548	-395	-631	-840	-1 304	-1 841	-2 247
IIB	282	202	118	213	300	-195	-263	-205
MTB	511	511	470	429	386	133	-61	-193
OTP Bank	3 023	3 023	7 080	9 319	11 470	5 342	6 566	8 394
Oschadbank	7 927	7 865	1 085	-2 014	-7 414	-10 094	-17 118	-25 063
Pivdennyi	1 770	1 770	2 307	2 411	2 378	706	-175	-758
Privatbank	8 655	8 655	24 779	41 266	58 451	11 046	19 672	33 488
Procredit	2 315	2 315	3 419	4 089	4 721	2 671	2 918	3 320
Prominvestbank	1 268	1 268	-855	-2 210	-3 581	-3 156	-4 334	-5 677
FUIB	3 539	3 539	5 377	6 951	8 420	1 444	1 297	1 985
Raiffeisen Bank Aval	5 262	5 262	10 246	13 872	17 154	8 108	10 076	12 549
Sberbank	4 319	4 319	3 505	2 250	322	-230	-1 715	-3 691
Taskombank	1 254	1 254	2 123	2 402	2 629	1 000	530	452
Ukrgasbank	6 229	6 229	9 170	11 310	13 119	6 521	6 658	7 841
Ukreximbank	7 267	7 244	1 808	414	-2 912	-6 527	-9 047	-14 001
Ukrsibbank	3 584	3 584	5 048	6 720	8 268	3 664	4 356	5 332
Ukrsotsbank	2 189	2 189	1 079	469	-297	-2 899	-3 574	-4 319
Universal	724	704	963	1 240	1 546	-78	-187	22
Forward	238	238	310	361	388	78	-83	-169

Source: NBU.

Table 2. Regulatory capital of Ukraine's banks under the stress test, UAH million

Bank	Bank data as of 1 Jan 2019	AQR as of 1 Jan 2019	Baseline scenario			Adverse scenario		
			2019	2020	2021	2019	2020	2021
A-Bank	560	560	783	1 092	1 339	161	61	142
Alfa-Bank	5 864	5 864	6 956	9 483	11 950	3 106	4 064	6 026
Bank for Investments and Savings	370	309	-295	-361	-453	-710	-916	-1 025
Vostok	804	802	690	689	710	-38	-352	-484
Globus	286	272	261	282	308	-64	-221	-300
Idea Bank	606	606	1 288	2 000	2 647	771	1 097	1 589
Industrialbank	890	866	810	676	446	603	350	71
Kredyt Dnipro	914	463	-610	-1 181	-1 947	-1 507	-2 523	-3 587
Credit Agricole Bank	4 885	4 879	5 367	6 557	7 672	4 787	5 547	6 553
Kredobank	1 795	1 795	2 283	2 765	3 189	1 474	1 556	1 803
Megabank	768	681	-395	-631	-840	-1 304	-1 841	-2 247
IIB	398	301	178	226	294	-201	-269	-211
MTB	588	588	552	500	444	228	-61	-193
OTP Bank	4 859	4 859	7 080	9 319	11 470	5 342	6 566	8 394
Oschadbank	11 600	11 538	2 112	-2 071	-7 471	-10 151	-17 175	-25 120
Pivdennyi	2 348	2 348	2 492	2 600	2 455	916	-217	-800
Privatbank	17 163	17 163	35 940	52 427	69 612	21 946	30 833	44 649
Procredit	3 172	3 166	3 762	4 443	5 079	3 084	3 382	3 804
Prominvestbank	2 029	2 029	-857	-2 211	-3 583	-3 157	-4 335	-5 678
FUIB	5 305	5 299	5 704	7 278	8 746	1 771	1 623	2 312
Raiffeisen Bank Aval	10 396	10 397	10 603	14 229	17 512	8 465	10 434	12 907
Sberbank	4 428	4 428	3 614	2 359	430	-230	-1 715	-3 691
Taskombank	2 237	2 232	2 494	2 784	3 014	1 433	1 008	904
Ukrgasbank	6 639	6 639	8 988	11 128	12 938	6 339	6 477	7 660
Ukreximbank	11 147	11 037	3 610	824	-2 917	-6 532	-9 052	-14 006
Ukrsibbank	6 153	6 153	5 189	6 546	8 093	3 869	4 182	5 157
Ukrsotsbank	2 215	2 215	1 704	930	-305	-2 907	-3 582	-4 328
Universal	724	704	963	1 240	1 546	-78	-187	22
Forward	238	238	310	361	388	78	-83	-169

Source: NBU.

Table 3. Core capital adequacy ratio of Ukraine's banks under the stress test, %

Bank	Bank data as of 1 Jan 2019	AQR as of 1 Jan 2019	Baseline scenario			Adverse scenario		
			2019	2020	2021	2019	2020	2021
A-Bank	7.14	7.14	19.76	27.53	33.79	4.39	1.71	4.02
Alfa-Bank	8.00	8.00	13.08	19.52	26.20	3.51	5.34	10.27
Bank for Investments and Savings	11.34	9.65	-10.85	-13.48	-17.67	-26.38	-34.62	-40.26
Vostok	7.65	7.65	8.21	8.13	8.46	-0.52	-4.58	-6.25
Globus	8.09	7.51	6.94	7.85	9.10	-2.94	-10.19	-13.90
Idea Bank	8.62	8.62	33.47	53.66	72.10	20.24	31.76	48.01
Industrialbank	35.25	34.63	30.96	25.73	17.68	21.41	11.99	2.48
Kredyt Dnipro	11.20	5.56	-9.79	-19.68	-35.34	-23.80	-41.02	-62.89
Credit Agricole Bank	10.67	10.68	16.97	21.47	25.96	13.12	15.08	18.56
Kredobank	11.55	11.55	20.09	24.48	28.61	12.58	13.23	15.55
Megabank	6.68	6.36	-4.87	-7.76	-10.37	-15.62	-21.47	-26.24
IIB	12.14	9.05	5.79	10.63	15.64	-8.89	-11.97	-9.40
MTB	16.94	16.94	15.31	13.90	12.53	4.27	-1.92	-6.03
OTP Bank	11.96	11.96	27.29	35.59	44.13	19.87	23.94	30.49
Oschadbank	8.68	8.61	1.23	-2.34	-9.31	-10.77	-17.89	-27.56
Pivdennyi	9.13	9.13	11.68	12.19	12.26	3.35	-0.81	-3.55
Privatbank	7.78	7.78	21.76	35.93	51.39	9.38	16.24	27.39
Procredit	13.25	13.25	19.32	22.95	26.63	14.40	15.39	17.55
Prominvestbank	7.97	7.97	-5.39	-14.19	-24.50	-17.45	-22.98	-30.90
FUIB	10.75	10.75	16.84	21.93	27.01	4.47	4.02	6.18
Raiffeisen Bank Aval	8.89	8.89	17.11	23.14	28.97	12.97	15.88	19.88
Sberbank	19.05	19.05	15.32	10.47	1.72	-0.90	-6.79	-16.26
Taskombank	8.74	8.74	14.48	16.26	17.95	6.43	3.31	2.81
Ukrgasbank	13.20	13.20	18.87	23.04	26.91	12.51	12.38	14.52
Ukreximbank	8.31	8.33	2.08	0.48	-3.56	-6.62	-8.69	-13.89
Ukrsibbank	11.45	11.46	15.81	20.94	25.92	10.96	12.77	15.59
Ukrsotsbank	16.44	16.44	7.93	3.53	-2.37	-24.48	-30.37	-38.80
Universal	12.29	12.00	16.10	20.61	25.81	-1.37	-3.34	0.40
Forward	15.79	15.79	20.55	23.89	25.69	5.51	-5.99	-12.27

Source: NBU.

Table 4. Regulatory capital adequacy ratio of Ukraine's banks under the stress test, %

Bank	Bank data as of 1 Jan 2019	AQR as of 1 Jan 2019	Baseline scenario			Adverse scenario		
			2019	2020	2021	2019	2020	2019
A-Bank	14.27	14.27	19.81	27.57	33.83	4.44	1.76	4.07
Alfa-Bank	13.95	13.95	16.67	22.45	28.43	7.02	8.89	13.01
Bank for Investments and Savings	11.34	9.65	-10.85	-13.48	-17.67	-26.38	-34.62	-40.26
Vostok	11.59	11.57	9.94	9.91	10.26	-0.52	-4.58	-6.25
Globus	12.90	12.35	12.01	13.02	14.33	-2.94	-10.19	-13.90
Idea Bank	17.24	17.24	36.79	57.05	75.52	24.50	36.66	53.08
Industrialbank	35.25	34.63	30.96	25.73	17.68	21.41	11.99	2.48
Kredyt Dnipro	12.41	6.89	-9.79	-19.68	-35.35	-23.81	-41.03	-62.90
Credit Agricole Bank	19.97	19.94	21.59	26.22	30.78	18.46	20.96	24.67
Kredobank	16.72	16.72	21.07	25.46	29.60	13.56	14.20	16.53
Megabank	8.83	7.91	-4.87	-7.76	-10.37	-15.62	-21.47	-26.24
IIB	17.16	13.51	8.70	11.29	15.34	-9.15	-12.24	-9.67
MTB	19.50	19.50	17.97	16.19	14.42	7.33	-1.92	-6.03
OTP Bank	19.22	19.22	27.29	35.59	44.13	19.87	23.94	30.49
Oschadbank	12.70	12.64	2.39	-2.41	-9.39	-10.83	-17.95	-27.62
Pivdennyi	12.11	12.11	12.61	13.14	12.66	4.35	-1.01	-3.75
Privatbank	15.42	15.42	31.57	45.65	61.20	18.64	25.46	36.52
Procredit	18.15	18.12	21.26	24.94	28.65	16.63	17.84	20.11
Prominvestbank	12.76	12.76	-5.40	-14.19	-24.51	-17.45	-22.99	-30.91
FUIB	16.11	16.09	17.86	22.96	28.06	5.49	5.03	7.19
Raiffeisen Bank Aval	17.57	17.57	17.71	23.74	29.58	13.54	16.45	20.44
Sberbank	19.53	19.53	15.79	10.98	2.30	-0.90	-6.79	-16.26
Taskombank	15.58	15.56	17.01	18.85	20.58	9.21	6.29	5.62
Ukrgasbank	14.07	14.07	18.49	22.67	26.54	12.16	12.04	14.19
Ukreximbank	12.75	12.69	4.15	0.95	-3.57	-6.63	-8.70	-13.89
Ukrsibbank	19.66	19.68	16.25	20.39	25.37	11.58	12.26	15.08
Ukrsotsbank	16.64	16.64	12.53	7.00	-2.44	-24.55	-30.45	-38.88
Universal	12.29	12.00	16.10	20.61	25.81	-1.37	-3.34	0.40
Forward	15.79	15.79	20.55	23.89	25.69	5.51	-5.99	-12.27

Source: NBU.

Table 5. Required capital adequacy levels, %

Bank	Resilience assessment results		Date	After measures taken by bank	
	Regulatory capital adequacy ratio	Core capital adequacy ratio		Regulatory capital adequacy ratio	Core capital adequacy ratio
A-Bank	12.9	11.6	1 Sep. 2019	11.2	7.0
Alfa-Bank*	10.0	7.0	1 Sep. 2019	10.0	7.0
Bank for Investments and Savings	46.9	44.4	1 Oct. 2019	31.2	28.1
Vostok	20.9	20.8	1 Sep. 2019	14.2	14.2
Globus	24.6	24.6	1 Oct. 2019	16.9	16.9
Idea Bank	10.0	7.0	1 Sep. 2019	10.0	7.0
Industrialbank	37.5	35.8	1 Oct. 2019	10.0	7.0
Kredyt Dnipro	63.4	61.9	1 Sep. 2019	43.4	42.1
Credit Agricole Bank	10.0	7.0	1 Sep. 2019	10.0	7.0
Kredobank	10.0	7.0	1 Sep. 2019	10.0	7.0
Megabank	38.2	35.9	1 Sep. 2019	34.6	32.3
IIB	25.0	24.3	1 Sep. 2019	13.7	13.2
MTB	27.1	27.1	1 Sep. 2019	22.9	22.9
OTP Bank	10.0	7.0	1 Sep. 2019	10.0	7.0
Oschadbank	40.1	39.5	1 Sep. 2019	32.2	31.7
Pivdennyi	20.4	19.2	1 Sep. 2019	16.1	14.9
Privatbank	10.0	7.0	1 Sep. 2019	10.0	7.0
Procredit	10.0	7.0	1 Sep. 2019	10.0	7.0
Prominvestbank	47.7	47.7	1 Sep. 2019	25.1	25.1
FUIB	10.0	7.0	1 Sep. 2019	10.0	7.0
Raiffeisen Bank Aval	10.0	7.0	1 Sep. 2019	10.0	7.0
Sberbank	40.8	38.8	1 Sep. 2019	10.0	7.0
Taskombank	13.9	13.9	1 Sep. 2019	10.0	7.0
Ukrgasbank	10.0	7.0	1 Sep. 2019	10.0	7.0
Ukreximbank	28.6	27.3	1 Sep. 2019	22.0	21.2
Ukrsibbank	10.0	7.0	1 Sep. 2019	10.0	7.0
Ukrsotsbank*	53.0	51.8	1 Sep. 2019	Merged with Alfa-Bank	
Universal	20.0	18.5	1 Sep. 2019	19.2	17.0
Forward	31.6	30.3	1 Sep. 2019	17.4	15.8

* In view of the reorganization of Alfa-Bank through the merger with Ukrsotsbank, the required capital adequacy ratios have been revised. Specifically, as a successor, the required levels of Alfa Bank's regulatory and core capital adequacy ratios stood at 18.0%. Considering the measures taken by the banks, the revised required ratio is 14.8%.

Source: NBU.

Table 6. Capital need* in equivalent as of 1 January 2019, UAH million

Bank	Resilience assessment results		After measures taken by bank		
	Baseline scenario	Adverse scenario	Date	Baseline scenario	Adverse scenario
A-Bank	0	113	1 Sep. 2019	0	48
Alfa-Bank**	0	0	1 Sep. 2019	0	0
Bank for Investments and Savings	714	1 154	1 Oct. 2019	307	640
Vostok	6	755	1 Sep. 2019	0	300
Globus	1	375	1 Oct. 2019	0	207
Idea Bank	0	0	1 Sep. 2019	0	0
Industrialbank	0	73	1 Oct. 2019	0	0
Kredyt Dnipro	2 429	3 792	1 Sep. 2019	1 282	2 456
Credit Agricole Bank	0	0	1 Sep. 2019	0	0
Kredobank	0	0	1 Sep. 2019	0	0
Megabank	1 603	2 629	1 Sep. 2019	1 476	2 314
IIB	27	355	1 Sep. 2019	0	102
MTB	0	305	1 Sep. 2019	0	180
OTP Bank	0	0	1 Sep. 2019	0	0
Oschadbank	13 493	28 245	1 Sep. 2019	6 190	21 139
Pivdennyi	0	1 736	1 Sep. 2019	0	908
Privatbank	0	0	1 Sep. 2019	0	0
Procredit	0	0	1 Sep. 2019	0	0
Prominvestbank	4 605	6 320	1 Sep. 2019	2 725	3 961
FUIB	0	0	1 Sep. 2019	0	0
Raiffeisen Bank Aval	0	0	1 Sep. 2019	0	0
Sberbank	1 440	4 759	1 Sep. 2019	0	0
Taskombank	0	111	1 Sep. 2019	0	0
Ukrgasbank	0	0	1 Sep. 2019	0	0
Ukreximbank	9 776	17 530	1 Sep. 2019	3 671	12 188
Ukrsibbank	0	0	1 Sep. 2019	0	0
Ukrsotsbank**	1 171	4 861	1 Sep. 2019	Merged with Alfa-Bank	
Universal	0	467	1 Sep. 2019	0	423
Forward	0	239	1 Sep. 2019	0	24
Total	35 266	73 819		15 650	44 889

* Capital need is given as a memo item; requirement for capitalization or restructuring plan was based on required (target) capital adequacy ratio, not on capital need in equivalent as of 1 Jan 2019.

** In view of the reorganization of Alfa-Bank through the merger with Ukrsotsbank, the required capital adequacy ratios and capital need have been revised.

Source: NBU.