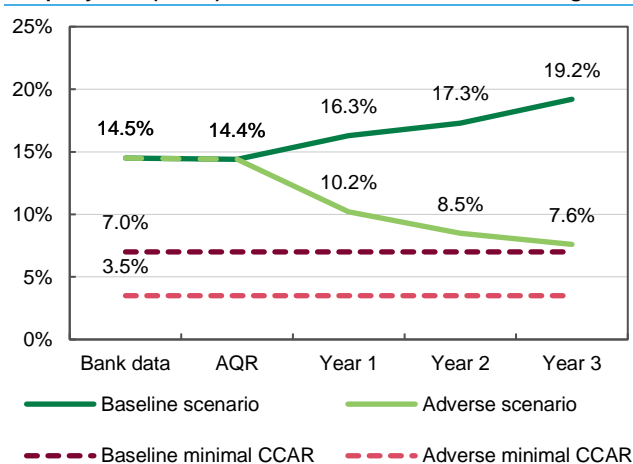


In 2021, after a year-long break, the NBU conducted stress tests of Ukraine's largest banks. [Section 3.2 Capital risks and stress testing](#) of the December 2021 Financial Stability Report outlined their general principles and findings. This report presents stress-test results for some banks and the required (target) capital adequacy ratios identified by the NBU on the basis of the stress tests. Banks for which the NBU set higher target capital adequacy ratio had to draw up capitalization /restructuring plans. The financial institutions must implement the measures outlined in their plans by June 30 2022.

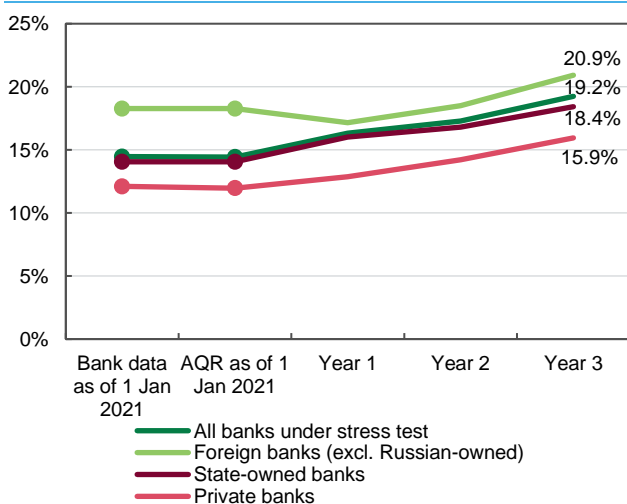
Figure 1. Weighted average estimates of the banks' core capital adequacy ratio (CCAR) based on the results of stress testing*



* Weighted by risk-weighted assets for each year. Asset quality review (AQR).

Source: NBU.

Figure 2. Weighted average estimates of the core capital adequacy ratio under the baseline scenario (by groups of banks)



Source: NBU.

In 2021, the NBU stress-tested 30 banks that together account for over 93% of the banking sector's assets. The findings of the stress tests under the baseline and adverse scenarios should not be regarded as forecasts of financial indicators. The scenarios were designed to determine how major risks would affect a bank's performance, given its current standing.

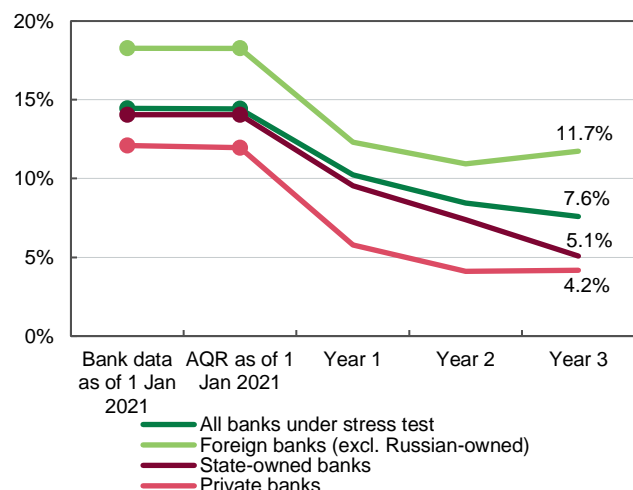
Stress test findings should be interpreted only in the context of the key assumptions of the model. The first assumption was the static balance sheets of banks, i.e. affected only by changes in asset quality and exchange rates. In practice, the banks' assets grow and their balance sheet structure evolves after the stress test date. The second assumption is that banks retain current profit throughout the entire forecast period. In fact, banks often decide to distribute their profits to shareholders. At the same time, planned regulatory changes are taken into account in the model design.

Under the baseline scenario, the core capital adequacy ratio of stress-tested banks increased during the forecast period by an average of 4.8 pp (to 19.2%). Most of the stress-tested financial institutions were profitable and their capital ratios were growing. However, the NBU set required capital adequacy ratio above minimum threshold for nine banks.

The deduction of the noncore assets value had the most significant negative effect for the banks' capital under the baseline scenario. The total amount of such assets was UAH 11.7 billion, of which 79% belongs to the state-owned banks, Credit Dnepr and Megabank. For the latter two financial institutions, the value of assets on the date of the stress test exceeded the amount of their core capital. During 2021, the banks were gradually selling off noncore assets, but this process should be accelerated.

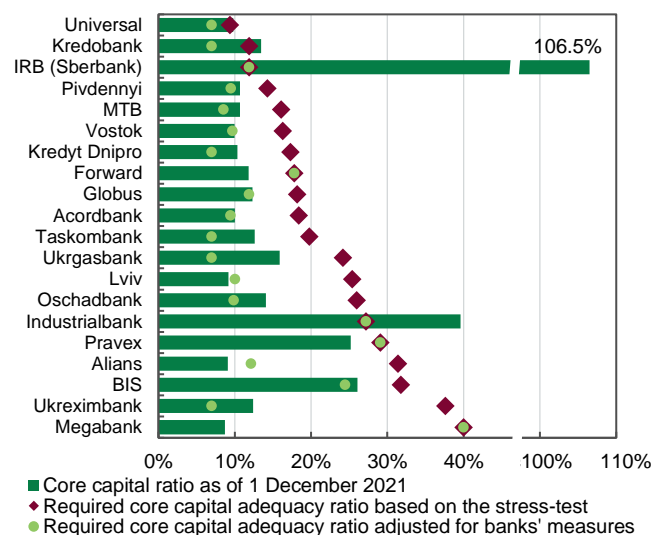
Under the adverse scenario, required capital adequacy ratios were raised above the minimum for 20 banks. The cumulative effect of a hypothetical crisis on the banks' core capital reached 6.8 pp of the capital adequacy ratio. This indicator dropped to 7.6% over the three-year forecast period.

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



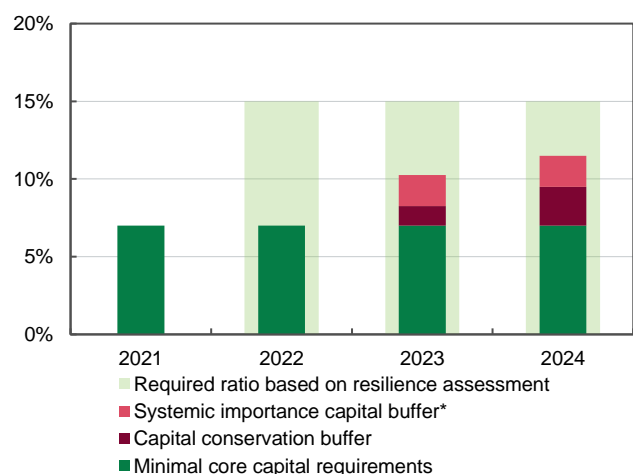
Source: NBU.

Figure 4. Required core capital adequacy ratios of the banks that, according to the AQR, need more capital



Source: NBU.

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



* The systemic importance capital buffer is between 1% and 2%.

Source: NBU.

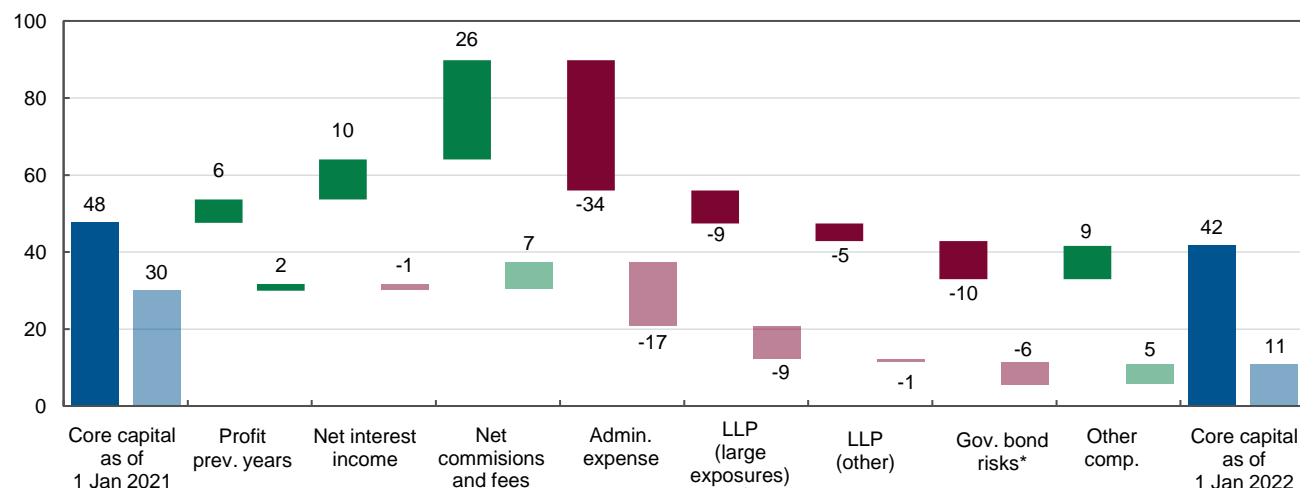
The state-owned banks saw the most notable drop in their core capital adequacy ratios under the adverse scenario. The interest rate risk is their major concern. The stress test assumed a narrowing spread between loan and deposit rates, as usually occurs in times of crisis. However, in 2021, the state-owned banks considerably reduced the cost of funding and increased their net interest margins. This decreased the required capital adequacy level, which was reflected in their restructuring plans. For the first time, the stress tests assumed that risks of investments in government securities would materialize. The price of hryvnia domestic government debt securities decreased in response to their rising yield, while the credit risk for foreign-currency domestic government debt securities grew. This also had major implications for the findings of the resilience assessment of state-owned banks. However, banks did not have to factor in these risks when developing their restructuring plans.

The weighted average core capital adequacy ratio of banks with private Ukrainian capital was the lowest under the adverse scenario. The abovementioned amortization of noncore assets has become an important factor behind a decrease in the capital of some of the banks in this group. Additionally, low operating performance and a high concentration of government securities made them susceptible to interest rate risk. Nevertheless, the impact of credit risk on Ukrainian banks greatly declined compared to the previous stress test. The FX risk had the most significant adverse impact on the capital of foreign banks.

Under the adverse scenario, the equivalent of the capital needs calculated as of 1 January 2021 was UAH 41.7 billion, half the amount under the 2019 stress test. State-owned banks account for 79% of this amount.

Going forward, banks must implement restructuring/capitalization plans in order to achieve the required capital adequacy ratios: for banks requiring capital under the baseline scenario by the end 2021, and for those in need of capital under the adverse scenario by 30 June 2022. To that end, banks need to restructure their balance sheets and improve their operational efficiency. These measures reduce the banks' vulnerability, i.e. improve their risk profile. The NBU adjusted (reduced) banks' required (target) capital adequacy for measures implemented and planned by banks. At the same time, the banks need to gradually bring their current capital adequacy ratios to the required levels by ramping up earnings and capital.

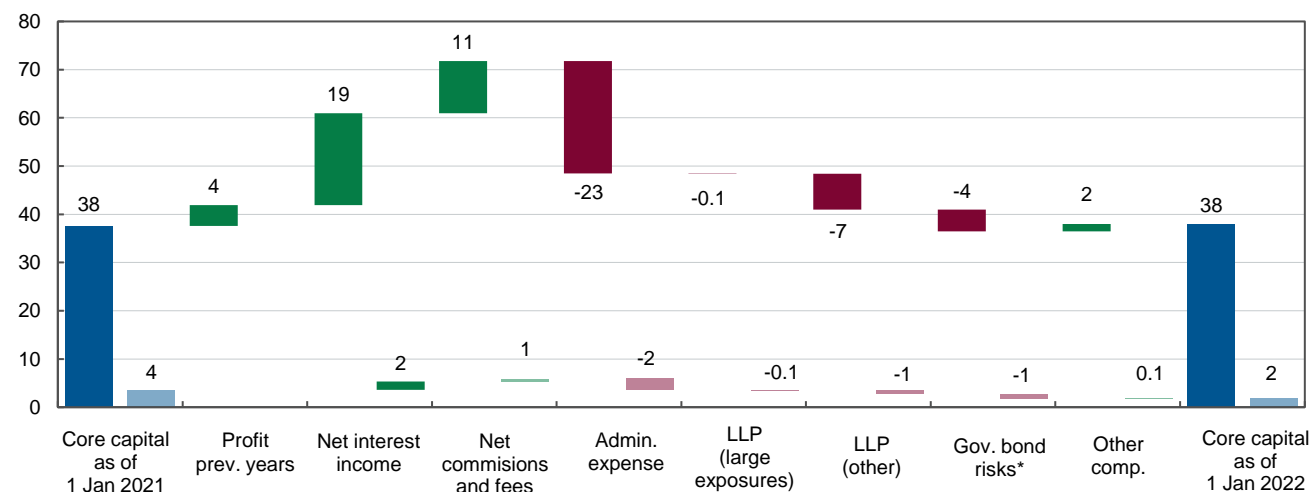
Figure 6. Drivers of change in the core capital of the state-owned banks under the adverse scenario, UAH billions



* Revaluation of government debt securities in hryvnia and credit risk of FX government debt securities. The indicators of the banks found by stress tests to have capital needs are shown as transparent.

Source: NBU.

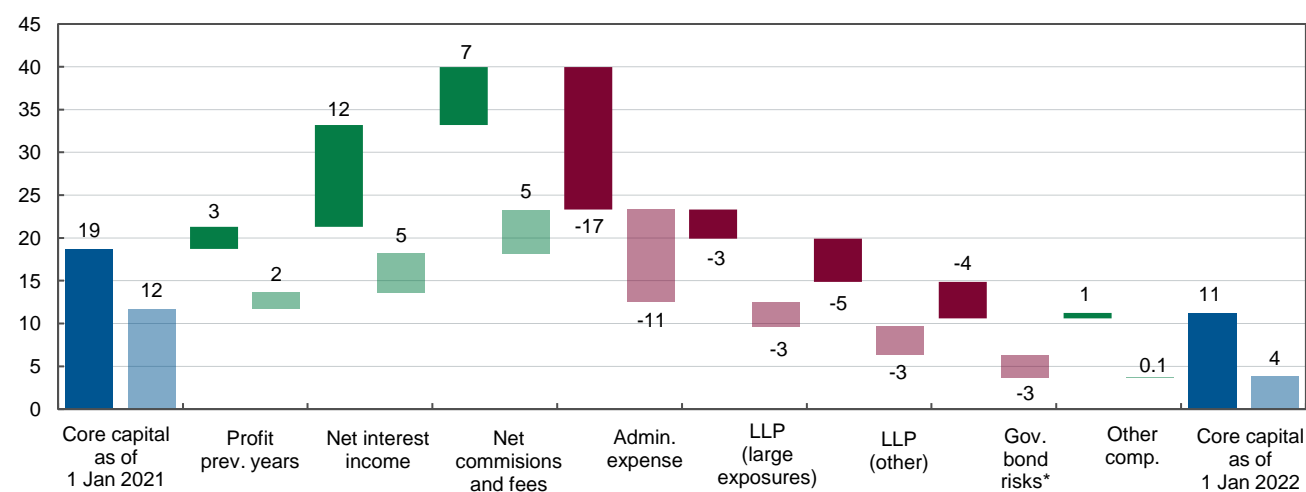
Figure 7. Drivers of the change in the core capital of the foreign-owned banks under the adverse scenario, UAH billions



* Revaluation of government debt securities in hryvnia and credit risk of FX government debt securities. The indicators of the banks found by stress tests to have capital needs are shown as transparent.

Source: NBU.

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



* Revaluation of government debt securities in hryvnia and credit risk of FX government debt securities. The indicators of the banks found by stress tests to have capital needs are shown as transparent.

Source: NBU.

Stress test results by banks

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

Bank	Bank data as of 1 Jan 2021	AQR as of 1 Jan 2021	Baseline scenario			Adverse scenario		
			2021	2022	2023	2021	2022	2023
PrivatBank	17 643	17 643	34 680	50 533	63 528	30 731	40 609	48 818
Oschadbank	12 535	12 535	14 967	14 103	11 348	8 092	1 459	-7 081
Ukreximbank	8 969	8 969	8 004	6 339	3 709	966	-3 882	-12 176
UkrGasbank	8 456	8 456	9 298	10 130	10 061	1 786	-1 029	-3 406
Alfa-Bank	7 055	7 055	9 421	12 180	14 622	4 970	5 301	6 148
Raiffeisen Bank	6 904	6 904	11 385	14 735	17 295	8 212	8 526	10 169
International Reserve Bank	8 122	8 122	9 575	9 008	9 222	8 759	8 956	7 946
Ukrsibbank	6 245	6 245	8 016	8 830	9 353	6 803	6 251	6 044
OTP Bank	7 067	7 067	9 371	11 266	12 887	7 385	7 704	8 550
Credit Agricole Bank	3 111	3 111	5 903	7 054	7 880	4 708	4 438	4 722
Procredit	3 241	3 241	3 720	4 404	4 864	2 996	2 534	2 733
Kredobank	2 045	2 045	2 509	2 939	3 223	970	865	1 056
Idea Bank	472	472	1 150	1 668	2 148	995	1 303	1 782
Pravex	1 296	1 297	1 140	976	755	831	553	325
Forward	248	229	222	221	194	127	-1	-58
FUIB	6 224	6 224	9 561	12 685	15 184	6 098	6 873	8 736
Pivdennyi	2 263	2 263	3 061	3 513	3 651	1 642	986	616
Taskombank	1 798	1 798	2 305	2 521	2 399	945	398	-21
Universal	1 944	1 944	3 726	4 900	5 928	1 549	1 589	2 213
Kredyt Dnipro	911	780	779	908	1 081	132	22	-57
Vostok	841	841	1 061	1 227	1 264	395	43	-184
Megabank	641	498	-803	-1 348	-1 896	-1 121	-2 005	-2 741
A-Bank	790	790	1 620	2 171	2 652	1 328	1 518	2 016
MTB	628	628	693	748	689	301	149	-22
Industrialbank	1 014	1 011	950	851	711	771	608	442
Bank for Investments and Savings	509	509	330	196	26	16	-280	-522
Alians	484	484	116	282	397	-786	-858	-956
Lviv	272	272	290	317	297	-262	-392	-463
Globus	403	403	517	635	708	109	17	-21
Acordbank	272	272	299	367	398	111	14	-48

Source: NBU.

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

Bank	Bank data as of 1 Jan 2021	AQR as of 1 Jan 2021	Baseline scenario			Adverse scenario		
			2021	2022	2023	2021	2022	2023
PrivatBank	35 256	35 256	46 245	62 098	75 092	42 295	52 174	60 383
Oschadbank	17 168	17 168	16 322	15 140	12 203	9 539	2 543	-7 133
Ukreximbank	13 506	13 506	11 518	9 617	6 917	1 910	-3 904	-12 198
Ukrgasbank	8 695	8 695	9 357	10 189	10 120	1 845	-1 036	-3 413
Alfa-Bank	8 391	8 390	10 486	12 977	15 126	6 231	6 284	6 831
Raiffeisen Bank	10 652	10 644	11 685	15 035	17 595	8 512	8 826	10 468
International Reserve Bank	9 104	9 104	9 643	9 075	9 290	8 827	9 023	8 013
Ukrsibbank	6 851	6 869	8 021	8 835	9 358	6 808	6 256	6 049
OTP Bank	8 621	8 616	9 232	11 127	12 748	7 246	7 565	8 411
Credit Agricole Bank	6 220	6 220	6 454	7 450	8 108	5 353	4 918	5 022
Procredit	3 728	3 717	3 720	4 404	4 864	2 996	2 534	2 733
Kredobank	2 151	2 151	2 615	3 045	3 329	1 076	971	1 162
Idea Bank	891	891	1 194	1 696	2 175	1 042	1 331	1 810
Pravex	1 354	1 356	1 199	1 034	813	890	612	383
Forward	248	229	222	221	194	127	-1	-58
FUIB	8 347	8 215	9 866	12 990	15 490	6 403	7 179	9 041
Pivdennyi	2 857	2 857	3 117	3 562	3 693	1 702	1 038	661
Taskombank	2 619	2 619	2 317	2 534	2 412	958	410	-21
Universal	2 633	2 633	3 726	4 900	5 928	1 549	1 589	2 213
Kredyt Dnipro	991	860	860	988	1 161	212	44	-58
Vostok	1 086	1 063	1 164	1 321	1 334	516	87	-184
Megabank	950	807	-803	-1 348	-1 896	-1 121	-2 005	-2 741
A-Bank	1 061	1 061	1 622	2 173	2 654	1 330	1 520	2 017
MTB	716	717	748	791	719	362	197	-22
Industrialbank	1 014	1 011	950	851	711	771	608	442
Bank for Investments and Savings	558	536	330	196	26	16	-280	-522
Alians	575	542	172	338	454	-786	-858	-956
Lviv	473	472	426	427	379	-262	-392	-463
Globus	480	481	565	684	757	165	35	-21
Acordbank	298	297	299	367	398	111	14	-48

Source: NBU.

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

Bank	Bank data as of 1 Jan 2021	AQR as of 1 Jan 2021	Baseline scenario			Adverse scenario		
			2021	2022	2023	2021	2022	2023
PrivatBank	14.26	14.26	19.16	22.57	28.41	16.67	18.03	21.35
Oschadbank	13.42	13.42	13.93	11.81	9.60	7.24	1.17	-5.55
Ukreximbank	14.11	14.11	11.89	8.74	5.13	1.32	-4.82	-14.41
Ukrgasbank	14.56	14.56	14.88	15.07	15.00	2.68	-1.43	-4.59
Alfa-Bank	11.30	11.30	12.53	14.67	17.65	6.56	6.41	7.29
Raiffeisen Bank	10.98	10.98	15.09	17.16	20.17	10.49	9.73	11.42
International Reserve Bank	62.59	62.59	63.68	53.28	55.06	54.16	48.47	41.42
Ukrsibbank	21.46	21.45	22.26	21.44	22.73	18.42	14.97	14.29
OTP Bank	20.79	20.79	22.90	24.90	28.52	17.96	17.17	18.76
Credit Agricole Bank	8.94	8.94	15.33	16.92	18.92	11.75	10.34	10.82
Procredit	15.05	15.06	16.54	18.50	20.48	12.59	10.28	10.84
Kredobank	14.60	14.60	15.28	16.12	17.70	5.86	4.79	5.77
Idea Bank	11.16	11.16	15.88	19.47	25.16	14.15	16.12	22.20
Pravex	34.17	34.17	25.78	19.99	15.50	18.16	10.92	6.24
Forward	12.21	11.40	7.43	6.59	5.82	4.31	-0.03	-1.80
FUIB	13.33	13.37	16.19	19.40	23.26	10.10	10.51	13.13
Pivdennyi	11.31	11.31	14.09	14.74	15.48	7.01	3.88	2.37
Taskombank	12.58	12.58	14.10	13.94	13.44	5.69	2.18	-0.11
Universal	10.54	10.54	13.28	15.66	18.96	5.62	5.35	7.40
Kredyt Dnipro	14.63	12.82	11.69	11.74	14.02	1.91	0.28	-0.71
Vostok	9.52	9.55	10.84	11.27	11.63	3.81	0.38	-1.57
Megabank	7.11	5.61	-9.53	-14.81	-20.86	-12.86	-21.39	-28.40
A-Bank	9.82	9.82	12.97	15.52	19.01	10.90	11.46	15.17
MTB	11.82	11.81	11.85	11.62	10.84	4.92	2.22	-0.32
Industrialbank	42.20	42.13	33.59	25.64	21.45	26.08	17.45	12.40
Bank for Investments and Savings	13.53	13.61	8.02	4.35	0.57	0.38	-6.25	-11.56
Alians	9.32	9.38	2.32	5.22	7.37	-15.73	-15.82	-17.44
Lviv	8.08	8.09	8.07	8.38	7.91	-8.00	-11.50	-13.47
Globus	12.97	13.03	14.40	15.90	17.78	3.09	0.45	-0.55
Acordbank	11.72	11.72	10.93	11.80	12.80	3.98	0.44	-1.51

Source: NBU.

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

Bank	Bank data as of 1 Jan 2021	AQR as of 1 Jan 2021	Baseline scenario			Adverse scenario		
			2021	2022	2023	2021	2022	2023
PrivatBank	28.50	28.50	25.55	27.73	33.58	22.95	23.17	26.41
Oschadbank	18.38	18.38	15.19	12.67	10.33	8.54	2.04	-5.59
Ukreximbank	21.24	21.24	17.12	13.25	9.57	2.61	-4.85	-14.44
Ukrgasbank	14.98	14.98	14.98	15.16	15.09	2.77	-1.44	-4.60
Alfa-Bank	13.44	13.44	13.94	15.64	18.26	8.23	7.60	8.10
Raiffeisen Bank	16.94	16.93	15.49	17.51	20.52	10.87	10.07	11.75
International Reserve Bank	70.16	70.16	64.13	53.68	55.46	54.58	48.84	41.78
Ukrsibbank	23.54	23.59	22.27	21.46	22.74	18.43	14.98	14.30
OTP Bank	25.36	25.35	22.56	24.59	28.22	17.62	16.86	18.45
Credit Agricole Bank	17.88	17.88	16.76	17.87	19.47	13.36	11.46	11.51
Procredit	17.32	17.27	16.54	18.50	20.48	12.59	10.28	10.84
Kredobank	15.35	15.35	15.93	16.70	18.29	6.49	5.37	6.35
Idea Bank	21.06	21.06	16.49	19.79	25.48	14.81	16.46	22.54
Pravex	35.72	35.72	27.10	21.19	16.70	19.44	12.07	7.36
Forward	12.21	11.40	7.43	6.59	5.82	4.31	-0.03	-1.80
FUIB	17.88	17.65	16.71	19.87	23.72	10.61	10.97	13.59
Pivdennyi	14.27	14.27	14.35	14.95	15.66	7.27	4.08	2.54
Taskombank	18.32	18.32	14.17	14.01	13.51	5.76	2.25	-0.11
Universal	14.28	14.28	13.28	15.66	18.96	5.62	5.35	7.40
Kredyt Dnipro	15.92	14.14	12.89	12.77	15.06	3.07	0.56	-0.71
Vostok	12.30	12.07	11.90	12.12	12.27	4.97	0.76	-1.57
Megabank	10.53	9.09	-9.53	-14.81	-20.86	-12.86	-21.39	-28.40
A-Bank	13.18	13.18	12.98	15.53	19.02	10.91	11.47	15.18
MTB	13.47	13.49	12.78	12.28	11.32	5.91	2.93	-0.32
Industrialbank	42.20	42.13	33.59	25.64	21.45	26.08	17.45	12.40
Bank for Investments and Savings	14.84	14.34	8.02	4.35	0.57	0.38	-6.25	-11.56
Alians	11.07	10.50	3.45	6.27	8.42	-15.73	-15.82	-17.44
Lviv	14.04	14.02	11.86	11.28	10.08	-8.00	-11.5	-13.47
Globus	15.50	15.53	15.74	17.13	19.01	4.69	0.90	-0.55
Acordbank	12.82	12.80	10.93	11.80	12.80	3.98	0.44	-1.51

Source: NBU.

Table 5. Required capital adequacy ratios, %

Bank	Required (target) capital adequacy ratio under the baseline scenario		Required (target) capital adequacy ratio under the adverse scenario			
	based on resilience assessment, %		based on resilience assessment, %		based on resilience assessment, %*	
	RCAR**	CCAR**	RCAR	CCAR	RCAR	CCAR
PrivatBank	10.0	7.0	10.0	7.0	10.0	7.0
Oschadbank	10.0	9.8	27.5	26.0	13.7	9.9
Ukreximbank	19.1	16.1	39.1	37.6	10.0	7.0
Ukrgasbank	10.0	7.0	25.7	24.2	10.0	7.0
Alfa-Bank	10.0	7.0	10.0	7.0	10.0	7.0
Raiffeisen Bank	10.0	7.0	10.0	7.0	10.0	7.0
International Reserve Bank	10.0	7.2	11.9	11.9	11.9	11.9
Ukrsibbank	10.0	7.0	10.0	7.0	10.0	7.0
OTP Bank	10.0	7.0	10.0	7.0	10.0	7.0
Credit Agricole Bank	10.0	7.0	10.0	7.0	10.0	7.0
Procredit	10.0	7.0	10.0	7.0	10.0	7.0
Kredobank	10.0	7.0	11.9	11.9	10.0	7.0
Idea Bank	10.0	7.0	10.0	7.0	10.0	7.0
Pravex	21.3	21.3	29.1	29.1	29.1	29.1
Forward	11.7	8.7	19.3	17.8	19.3	17.8
FUIB	10.0	7.0	10.0	7.0	10.0	7.0
Pivdennyi	10.0	7.0	15.8	14.3	11.0	9.5
Taskombank	10.0	7.0	21.3	19.8	10.0	7.0
Universal	10.0	7.0	10.0	9.4	10.0	7.0
Kredyt Dnipro	10.0	7.0	18.8	17.3	10.0	7.0
Vostok	10.0	7.0	17.9	16.3	11.2	9.7
Megabank	37.0	34.0	41.5	40.0	41.5	40.0
A-Bank	10.0	7.0	10.0	7.0	10.0	7.0
MTB	10.0	7.0	17.6	16.1	10.03	8.53
Industrialbank	19.5	19.5	27.2	27.2	27.2	27.2
Bank for Investments and Savings	23.7	20.7	33.3	31.8	26.0	24.5
Alians	17.2	14.2	32.9	31.4	13.67	12.17
Lviv	10.0	7.0	26.9	25.4	11.55	10.05
Globus	10.0	7.0	19.7	18.2	13.42	11.92
Acordbank	10.0	7.0	19.9	18.4	10.95	9.45

* According to NBU-validated capitalization/restructuring plans until 30 June 2022. The plans do not factor in market risk and credit risk of government securities. ** Regulatory capital adequacy ratio (RCAR), core capital adequacy ratio (CCAR).

Source: NBU.