



NARODOWY
BANK POLSKI

Report on Cash Circulation in Poland in 2021



Report on Cash Circulation in Poland in 2021

Warsaw, 2022

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Published by:
Narodowy Bank Polski
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www.nbp.pl

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Table of Contents

1. Summary	5
2. Banknotes and coins in circulation	11
2.1. Value and number of banknotes and coins in circulation	12
2.2. Frequency rate of return of banknotes and coins	15
3. Cash and cashless means of payment	19
3.1. Trends observed in Poland	20
3.2. Trends in selected countries	24
4. Cash circulation market characteristics	29
4.1. The cash circulation cycle and its participants	30
4.2. Amendments to the legislation governing cash circulation	32
4.2.1. Improvement of cash processes	32
4.2.2. Introduction of the statutory obligation of universal cash acceptance	32
4.2.3. Introduction of new legislative solutions in the scope of handling banknotes and coins of suspicious authenticity	33
4.3. Reporting in the scope of cash circulation	34
4.3.1. Legal conditions	34
4.3.2. Statistical data	35
4.4. Cash Circulation Council	38
4.4.1. National Strategy for Cash Circulation Security	40
5. Cooperation with banks in the scope of Polish currency supply	43
5.1. Withdrawing Polish currency	44
5.1.1. Banknotes	45
5.1.2. Coins	46
5.2. Lodging Polish currency in NBP by banks	48
5.2.1. Banknotes	48
5.2.2. Coins	51
Box. Trends in supplying Polish currency to banks in 2017–2021	53
6. Increased demand for cash due to the outbreak of Russian military aggression against Ukraine	57
6.1. Increase in cash demand	58
6.2. Return of cash to NBP	61
6.3. Comparison of periods of increased cash demand	62
7. Glossary of terms	65

Chapter 1

Summary

Summary

Narodowy Bank Polski (hereinafter NBP) is the central bank of the State and, as an institution, plays a major role in the monetary system. The scope of NBP's operations is regulated by the Constitution of the Republic of Poland, the Act on Narodowy Bank Polski and the Banking Law. The key tasks of NBP include its exclusive right to issue banknotes and coins and to acting as the bank of banks. Within these activities, the central bank ensures the adequate quality of banknotes and coins in circulation and liquidity of cash settlements, putting banknotes and coins in the full denomination structure in circulation.

Pursuant to Article 32 of the Act on Narodowy Bank Polski, banknotes and coins issued by NBP have the status of legal tender on the territory of the Republic of Poland. NBP's activity in the scope of cash cycle comprises the following: orders for the production of banknotes and coins placed at manufacturers, the verification of the authenticity and fitness of banknotes and coins and storage and distribution of banknotes and coins. The area which NBP influences directly by means of regulations concerning the withdrawal and lodging of the Polish currency comprises mainly banks.¹ However, it should be indicated that besides the central bank and banks, domestic cash circulation participants also include manufacturers of banknotes and coins, CIT companies processing cash on behalf of banks, ATM deployers, retailers and consumers.

The interaction of professional cash circulation market participants translates into ensuring access to cash to the public. The widespread acceptance of cash and its availability became particularly important during the COVID-19 pandemic in 2020, while the role of cash continued to be the subject of considerations at an international level in 2021. The trend of increasing popularity of cashless payments observed in 2020 continued in 2021. At the same time, however, a significant growth in the demand for cash, which was largely used by consumers not only to settle transactions, but also as a precautionary store of value, was indicated in many countries. The phenomenon involving an increase in the value of circulation with a simultaneous decline in the popularity of cash as a means of payment, which became apparent during the pandemic in most countries of the euro area, the United Kingdom, Australia, the USA or Canada, is referred to as the banknote (cash) paradox. The growth in demand for cash in this case does not translate into the increased use of cash in transactions, since consumers, often for precautionary reasons, accumulate cash for hoarding purposes. Under such circumstances, the demand for banknotes relates particularly to high denominations.² Comparing the value of euro banknotes withdrawn from the European Central Bank in spring 2020 with the average values of the previous five years, a 4% increase was recorded, reaching 8% in December 2020. As the European Central Bank found, prior to the pandemic, approx. 20% of euro banknotes in circulation were actively used as legal tender in the euro area. On the other hand, an increase in cash payments at the beginning of June 2021 was observed in France. According to the surveys, the number of transactions completed using cash was 37% higher than in the first three weeks of May 2021. This could mean that after a period of uncertainty resulting from the 2020 pandemic, the French have started to spend cash accumulated earlier for precautionary purposes. On the other hand, the annual survey on payment habits in the

¹ For the needs of this Report, the term 'banks' also comprises entities other than banks with statutory authority to withdraw and lodge Polish currency from/in NBP.

² *Payments Report 2021*, Riksbank, 2021.

USA revealed the continued impact of the pandemic on consumer behaviour, with the share of cash payments at 20% in October 2021, which means an increase of 1 percentage point compared to the previous year. Norway can be indicated as an example of a cashless society, where in spring 2022 the number of cash payments accounted for only 4% of transactions, down from the 7–8% level recorded in autumn 2019. At the same time, in spring 2022, cash transactions accounted for 2% in terms of value. It is also worth highlighting that although Norwegian society prefers cashless payments, Norges Bank regularly monitors the infrastructure that provides consumers with access to cash. The data collected shows that in 2021, the number of cash withdrawal transactions from ATMs in Norway fell (y/y) by 19% and their value decreased by 16%. At the same time, the number of cash back transactions fell by 11% while their value increased by 19%. Digitisation in the field of payment instruments is therefore inevitable and targeted at facilitating and speeding up transactions. At the same time, however, the importance of transaction security and ensuring that all consumers have access to their preferred payment methods has been increasing significantly.

Taking into account the above, it should be indicated that the role of NBP as a market regulator and as an institution that undertakes initiatives of a strategic nature requiring the involvement of individual participants of the cash circulation market has become particularly important. The development of proposals for actions to strengthen the security of cash circulation in Poland, to prevent the elimination of cash from economic transactions and to defend the freedom of choice of payment instruments, has become one of the priorities. Accordingly, to strengthen the activities of NBP as an integrator of the cash circulation market, the Management Board of Narodowy Bank Polski decided to develop the National Strategy for Cash Circulation Security. The strategy was prepared in cooperation with market participants in the framework of the Cash Circulation Council. The proposals for action identified in the National Strategy for Cash Circulation Security are grouped into four pillars, including the universal acceptance and availability of cash, uninterrupted supply of the market with Polish currency, physical security of banknotes and coins and resilience of IT systems to cyber threats. The assumptions of the National Strategy for Cash Circulation Security are based on a cross-sectional, systemic review of the cash circulation market comprising both legal and organisational conditions as well as measures undertaken over the recent years by Narodowy Bank Polski regarding the operation of this market.

At the same time, in 2021, NBP was involved in legislative work concerning drafting of the Act amending the Act of 19 August 2011 on Payment Services. The aim of this work was to impose the obligation to accept cash payments by entities conducting business in the territory of the Republic of Poland. The new regulations entered into force on 5 November 2021 and eliminate the possibility for merchants to limit their offer to conclude a sales or service agreement to consumers who will only make payments in a cashless form. The lack of possibility to refuse acceptance of a payment with NBP-issued banknotes and coins by a merchant was not unconditional, since appropriate exemptions were foreseen, i.e. for example, the running of business by the merchant on the Internet.

In parallel, legislative work was carried out on the amendment of the Act on Narodowy Bank Polski. Consequently, Article 35(3) of the Act on NBP was amended in the Act of 17 December 2021 amending the Act on Narodowy Bank Polski and the Act on the Executive Penal Code. It forms the basis for the Minister of Justice to issue the regulation on the terms and conditions and procedures for the seizure of banknotes and coins of suspicious authenticity and handling of counterfeit banknotes and coins. Consequently, the regulation of the Governor of Narodowy

Bank Polski of 31 August 1989 on the seizure of counterfeit banknotes and coins was repealed. The Regulation of the Minister of Justice of 7 April 2022 on banknotes and coins of suspicious authenticity and counterfeit banknotes and coins determines, among others, the obligation of the detaining entity to seize a banknote or a coin of suspicious authenticity and indicates the actions when a banknote or a coin of suspicious authenticity is seized by a device accepting or issuing banknotes and coins with the function of verifying the authenticity of banknotes and coins, ensuring the identification of the depositors.

In 2021, subsequent provisions of Regulation No. 19/2016 of the Governor of Narodowy Bank Polski of 17 August 2016 on the method and procedure to be used in counting, sorting, packaging and labelling packages of banknotes and coins, and in conducting activities related to the supply of banknotes and coins to the banks entered into force (Official Journal of NBP of 2020, item 28). They refer, among others, to the implementation of GS1-128 barcodes on manufacturer-formed coin packaging as of 1 January 2021. The introduction of GS1-128 barcodes in banks and for other cash circulation market participants is carried out gradually, including in the form of tests and subsequent stages of the pilot works. As part of the introduction of further changes, on 1 July 2021, provisions came into force regarding the obligation to monitor and record the operations of total checking, counting, sorting and authenticity checking of banknotes or coins withdrawn from NBP. These provisions were introduced into the regulation in advance, in December 2019; however, given their scope, adequate time was offered to prepare for their application.

This “Report on Cash Circulation in Poland in 2021”, hereinafter referred to as the Report, describes the aforementioned phenomena, simultaneously presenting the statistical data and information on the domestic cash cycle. The report outlines the trends observed in the cash circulation market, affecting its participants, i.e. banks, manufacturers of banknotes and coins, CIT companies processing cash for banks, ATM operators, retail chains and consumers. In 2021, the level of cash demand was stable; however, given the timing of preparation of the Report, the factors affecting the domestic cash circulation in addition to the COVID-19 pandemic included the Russian military aggression on Ukrainian territory lasting since February 2022. It should be noted that only in the first days of the war, from 24 February to 7 March 2022, NBP satisfied an unprecedented demand for cash, fulfilling orders for banknotes and coins with the total value of PLN 42 billion, i.e. close to the withdrawal rate in the whole of 2021 Q1. On 28 February 2022, a record high value of withdrawals amounting to PLN 12.5 billion was recorded, 17 times the daily average of 2021 withdrawals. This amount is also twice as high as the highest daily value of cash withdrawn from NBP during the initial period of the COVID-19 pandemic (13 March 2020), amounting to PLN 6 billion. It should also be noted that from March to June 2022, periods of several days when the value of lodgements in NBP exceeded the value of withdrawals from NBP were recorded. Faced with above-average demand for cash, NBP once again satisfied the demand and ensured the smooth and uninterrupted supply of Polish currency to banks, while strengthening the cooperation with market participants.

In 2021, the trend of increasing value of cash in circulation observed for years continued. The value of cash circulation amounted to PLN 355.2 billion and increased by 10.5%, i.e. PLN 33.7 billion, compared to the previous year. At the same time, a decline in the value of withdrawals of Polish currency from NBP to PLN 185.9 billion, i.e. by 16.6%, with an increase in the value of lodgements to PLN 152.1 billion, i.e. by 8.8%, was recorded. This phenomenon may reflect the return of cash hoarded by market participants for precautionary reasons to the central bank. It is worth indicating that in 2021, withdrawals of banknotes with the face

value of 100 zł accounted for 44.7 % of the value of Polish currency withdrawals while 40.6% of withdrawals were performed in the 200 zł denomination, indicating a significant market interest in higher banknote denominations. In addition, it should be noted that in 2021, the number of banknotes and coins – both collected from NBP and lodged in NBP – was the lowest since 2011.

Recent years have seen a systematic decline in the frequency of banknotes and coins returned to NBP from the market, which is reflected in the decline in the recirculation rate in cycles. In 2021, a banknote was recirculated to the sorting room of the NBP regional branch, on average, after 2 years from the moment of its withdrawal by the bank (for comparison: in 2018, a banknote was recirculated to NBP, on average, after the lapse of approximately a year). In the case of coins, the recirculation rate in 2021 reached almost 72 years. This means that banks lodge increasingly lower number of coins of the lowest face value (1–5 gr) in NBP and that this phenomenon has started to affect 10 gr and 20 gr coins.

The developments in the value of cash in circulation resulting from fundamental factors (e.g. exchange rate, GDP, inflation, interest rates) or seasonal factors (i.e. public holidays, holidays, the beginning of the school year, etc.) identified so far, were also present in 2021. The macroeconomic indicators show that:

- in 2021, the value of circulation in relation to GDP amounted to 13.5% and stood at a level similar to 2020 (13.7%), when its largest increase in the last decade was recorded,
- in 2021, the value of M1 amounted to PLN 1.7 trillion and, compared to 2020, increased by PLN 193.2 billion, i.e. by 12.6%,
- the share of cash³ in M1 in 2021 amounted to 19.7% and was similar to the share in 2020 (20.0%).

The subject matter of this Report covers cash transactions related to banknotes and coins of the Polish currency which mainly play a transaction (circulation) function and serve as a precautionary store of value. The data regarding the cash circulation value presented in the Report do not include so-called collector coins and banknotes which play a payment function and have the status of legal tender, but are not treated as a universal means of exchange in transactions.

The key statistical data regarding the cash circulation market in 2020 and 2021 are presented in Table 1, while the key terms included in this Report are explained in the Glossary.

³ Excluding cash at cash desks of Monetary Financial Institutions.

Table 1. Key data for 2020 and 2021

	2020	2021	Change (2021/2020)
Value of circulation (as at 31.12.2021)	PLN 321.5 bn	PLN 355.2 bn	increase of PLN 33.7 bn (+10.5%)
Number of banknotes in circulation (as at 31.12.2020)	2.8 bn pcs	3.0 bn pcs	increase of 0.2 bn pcs (+5.9%)
Number of coins in circulation (as at 31.12.2021)	20.2 bn pcs	21.1 bn pcs	increase of 0.9 bn pcs (+4.0%)
Value of Polish currency withdrawals from NBP	PLN 222.8 bn	PLN 185.9 bn	decrease by PLN 36.9 bn (-16.6%)
Number of banknotes withdrawn from NBP	2.1 bn pcs	1.7 bn pcs	decrease by 0.4 bn pcs (-16.9%)
Number of coins withdrawn from NBP	1.26 bn pcs	1.28 bn pcs	increase of 0.02 bn pcs (+1.9%)
Value of Polish currency lodgements in NBP	PLN 139.8 bn	PLN 152.1 bn	increase of PLN 12.3 bn (+8.8%)
Number of banknotes lodged in NBP	1.5 bn pcs	1.6 bn pcs	increase of 0.04 bn pcs (+2.8%)
Number of coins lodged in NBP	0.4 bn pcs	0.3 bn pcs	decrease by 0.1 bn pcs (-30.6%)
Banknotes – frequency rate of return (as at 31.12.2021)	in cycles: 0.58 in days: 629	in cycles: 0.54 in days: 681	decrease in cycles: 0.04 increase in days: 52
Coins – frequency rate of return (as at 31.12.2021)	in cycles: 0.021 in days: 17,386	in cycles: 0.014 in days: 26,107	decrease in cycles: 0.007 increase in days: 8,721
GDP ¹	PLN 2,339.0 bn	PLN 2,622.2 bn	increase of PLN 283.2 bn (+12.1%) ²
Value of circulation / GDP	13,7%	13,5%	decrease by 0.2 percentage points
Value of M1 aggregate	PLN 1,531.6 bn	PLN 1,724.9 bn	increase of PLN 193.3 bn (+12.6%)
Value of circulation / M1 aggregate ³	20,0%	19,7%	decrease by 0.3 percentage points

¹ Nominal gross domestic product (current prices) according to GUS data for 2020 and 2021 (Statistical Bulletin No. 05/2022, publication date 24 June 2022).

² GDP growth in nominal terms; according to GUS data of 24 June 2022, in 2021, GDP increased by 5.9% in real terms, against a decline of 2.2% in 2020.

³ The value of circulation less cash at cash desks of Monetary Financial Institutions (MFIs) was applied in the calculations.

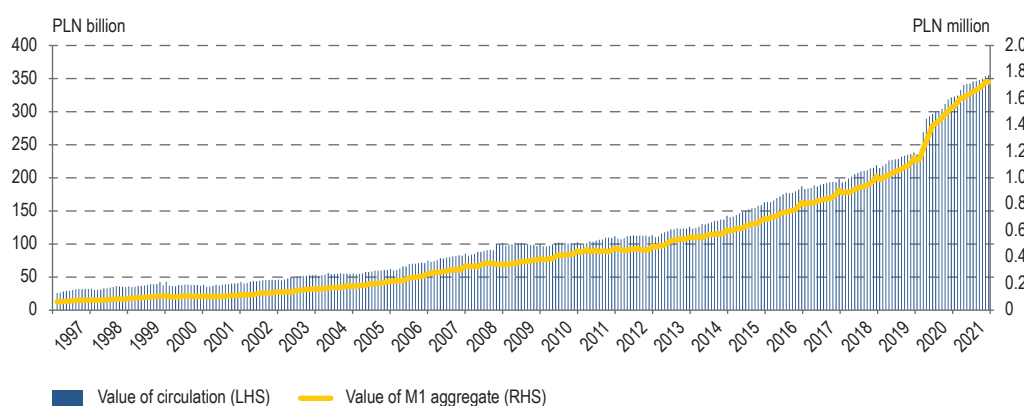
Chapter 2

Banknotes and coins in circulation

Banknotes and coins in circulation

The value of cash in circulation as at 31 December 2021 amounted to PLN 355.2 billion. An increase in the value of cash in circulation of 10.5%, i.e. PLN 33.7 billion, was recorded as compared to 31 December 2020. Figure 1 illustrates the growth in value of cash in circulation.

Figure 1. Value of cash in circulation and value of the M1 aggregate in monthly terms in 1997–2021



Source: study of the NBP Cash and Issue Department.

In Poland, in the years 1997–2021,⁴ the share of cash in the M1 aggregate decreased from approx. 36% to approx. 20%. It should be pointed out that trends change in emergency situations. This was the case in 2008 – at the beginning of the year, the share of cash in the M1 aggregate amounted to 23%, rising to 26% in December in connection with the financial crisis. On the other hand, in March 2020, when the COVID-19 pandemic began, the share of cash in the M1 aggregate increased from 19.4% (December 2019) to 21%.

2.1. Value and number of banknotes and coins in circulation⁵

Throughout 2021, the value of banknotes in circulation increased by over PLN 33.4 billion, i.e. by 10.6%. Compared to the state as at the end of 2020, an increase in the value of banknotes in circulation was noted in the case of banknotes with the following denominations: 500 zł, 200 zł, 100 zł, 20 zł and 10 zł (by 38.6%, 20.7%, 1.4%, 9.3%, 3.6% respectively), whereas a 4.6% decline was noted in the case of the banknote with the face value of 50 zł (Table 2).

In the structure of banknotes by value, the share of 500 zł and 200 zł denominations increased by 1.5 percentage points and 3.3 percentage points, respectively. The share of banknotes with 100 zł and 50 zł denominations decreased by 4.4 percentage points and 0.4 percentage points, respectively. In the case of banknotes with 20 zł and 10 zł denominations, the change was insignificant. The banknote with the denomination of 100 zł continued to dominate the value structure of circulation.

⁴ From January 1997 to December 2020.

⁵ The value and number of banknotes and coins in circulation were presented as at the end of quarters of 2021.

Table 2. Value of banknotes in circulation by denomination in 2021 (in PLN)

Status as at the end of the quarter	500 zł	200 zł	100 zł	50 zł	20 zł	10 zł	Total
1	2	3	4	5	6	7	8
2020 Q4	19 253 421 000	114 919 731 600	166 593 990 000	10 847 698 550	2 523 530 960	1 906 072 610	316 044 444 720
2021 Q1	21 452 626 000	122 270 734 000	168 465 025 300	10 644 428 700	2 521 217 420	1 923 126 810	327 277 158 230
2021 Q2	23 054 520 000	128 235 378 400	170 403 394 800	10 648 670 300	2 612 430 900	1 940 273 090	336 894 667 490
2021 Q3	24 778 609 500	133 042 243 000	169 241 407 800	10 570 989 600	2 640 300 700	1 949 529 250	342 223 079 850
2021 Q4	26 690 637 000	138 746 402 400	168 946 795 000	10 346 443 550	2 758 242 640	1 974 324 080	349 462 844 670

Source: study of the NBP Cash and Issue Department.

Throughout 2021, the number of banknotes in circulation increased by 166.1 million pieces, i.e. by 5.9%. In the structure of banknotes by volume, an increase in share was recorded in the case of the highest value denominations, i.e. 500 zł (by 0.4 percentage points) and 200 zł (by 2.9 percentage points) and the 20 zł denomination (by 0.1 percentage points). This growth was accompanied by a decline in the share of the following denominations: 100 zł (by 2.5 percentage points), 50 zł (by 0.8 percentage points) and 10 zł (by 0.2 percentage points). The changes in the share described above demonstrate an increase in demand for higher denomination banknotes (Table 3).

Table 3. Volume of banknotes in circulation by denomination in 2021

Status as at the end of quarter	500 zł	200 zł	100 zł	50 zł	20 zł	10 zł	Total
1	2	3	4	5	6	7	8
2020 Q4	38 506 842	574 598 658	1 665 939 900	216 953 971	126 176 548	190 607 261	2 812 783 180
2021 Q1	42 905 252	611 353 670	1 684 650 253	212 888 574	126 060 871	192 312 681	2 870 171 301
2021 Q2	46 109 040	641 176 892	1 704 033 948	212 973 406	130 621 545	194 027 309	2 928 942 140
2021 Q3	49 557 219	665 211 215	1 692 414 078	211 419 792	132 015 035	194 952 925	2 945 570 264
2021 Q4	53 381 274	693 732 012	1 689 467 950	206 928 871	137 912 132	197 432 408	2 978 854 647

Source: study of the NBP Cash and Issue Department.

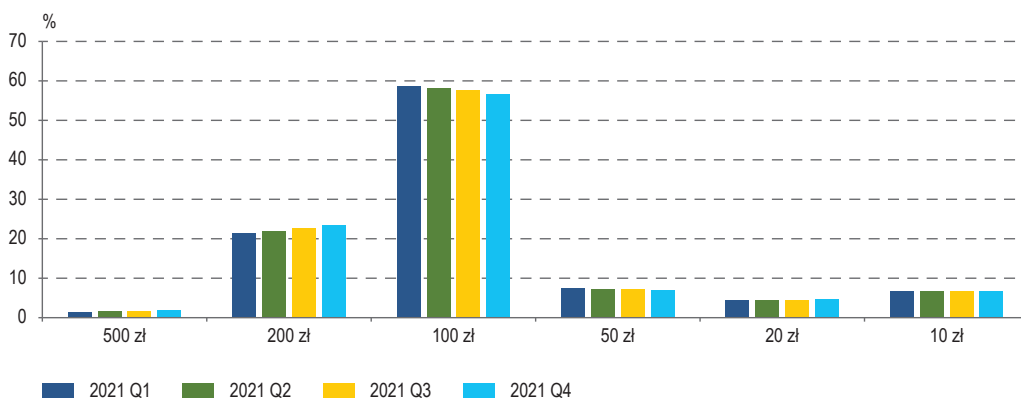
At the end of 2021, banknotes with the face value of 100 zł had the highest share in circulation (56.7%). The second denomination in this respect was the 200 zł denomination (23.3%), while 50 zł banknotes accounted for 6.9% of the circulation. The increasing share of 500 zł banknotes is also noteworthy, from 1.4% in 2020 to 1.8% at the end of 2021 (Figure 2).

Throughout 2021, the value of coins in circulation increased by PLN 329.5 million, i.e. by 6.0%. In the denomination structure, in terms of value, the highest growth was recorded in the case of 5 zł, 2 zł (excluding 2 NG⁶) and 50 gr coins, respectively, by 8.2%, 6.5% and 5.9%. The share of 5 zł and 2 zł coins in the structure of coins in circulation by value increased by 0.7 percentage

⁶ Commemorative 2 zł coins made of Nordic Gold alloy, being legal tender.

points and 0.1 percentage points, respectively. On the other hand, in the case of the share of 50 gr, 5 gr and 1 gr, the change was insignificant; the share of 2 zł NG coins decreased by 0.5 percentage points while the share of 1 zł, 20 gr, 10 gr and 2 gr coins decreased for each of these denominations by 0.1 percentage points (Table 4).

Figure 2. Volume structure of banknotes in circulation by denomination in 2021



Source: study of the NBP Cash and Issue Department.

Table 4. Value of coins in circulation by denomination in 2021 (in PLN)

Status as at the end of the quarter	5 zł	2 zł	2 zł NG	1 zł	50 gr	20 gr	10 gr	5 gr	2 gr	1 gr	Total
1	2	3	4	5	6	7	8	9	10	11	12
2020 Q4	2 027 902 425	1 061 454 368	478 002 114	686 043 005	367 065 851	300 278 791	259 500 384	127 390 014	68 181 297	75 887 172	5 451 705 421
2021 Q1	2 055 337 890	1 069 011 864	477 976 974	686 621 550	369 820 246	302 390 596	261 325 542	128 027 169	68 421 329	76 398 647	5 495 331 807
2021 Q2	2 110 079 405	1 091 027 876	477 977 420	697 802 484	375 170 780	305 608 401	264 038 242	129 007 654	68 773 492	77 080 493	5 596 566 247
2021 Q3	2 151 575 425	1 115 991 968	477 961 304	713 487 439	382 369 236	310 231 073	267 809 179	130 246 899	69 208 077	77 876 007	5 696 756 607
2021 Q4	2 193 747 495	1 130 563 272	477 959 278	723 141 290	388 726 705	314 814 204	271 735 796	131 865 851	69 814 827	78 872 535	5 781 241 253

Source: study of the NBP Cash and Issue Department.

Table 5. Volume of coins in circulation by denomination in 2021

Status as at the end of the quarter	5 zł	2 zł	2 zł NG	1 zł	50 gr	20 gr	10 gr	5 gr	2 gr	1 gr	Total
1	2	3	4	5	6	7	8	9	10	11	12
2020 Q4	405 580 485	530 727 184	239 001 057	686 043 005	734 131 701	1 501 393 957	2 595 003 843	2 547 800 286	3 409 064 849	7 588 717 180	20 237 463 547
2021 Q1	411 067 578	534 505 932	238 988 487	686 621 550	739 640 491	1 511 952 980	2 613 255 415	2 560 543 384	3 421 066 425	7 639 864 741	20 357 506 983
2021 Q2	422 015 881	545 513 938	238 988 710	697 802 484	750 341 560	1 528 042 005	2 640 382 417	2 580 153 074	3 438 674 582	7 708 049 319	20 549 963 970
2021 Q3	430 315 085	557 995 984	238 980 652	713 487 439	764 738 471	1 551 155 367	2 678 091 787	2 604 937 976	3 460 403 867	7 787 600 748	20 787 707 376
2021 Q4	438 749 499	565 281 636	238 979 639	723 141 290	777 453 409	1 574 071 021	2 717 357 962	2 637 317 023	3 490 741 348	7 887 253 511	21 050 346 338

Source: study of the NBP Cash and Issue Department.

At the end of 2021, the number of coins in circulation increased by 812.9 million pieces, i.e. by 4.0%. Growth was recorded for all coins (5 zł – 8.2%, 2 zł – 6.5%, 1 zł – 5.4%, 50 gr – 5.9%, 20 gr – 4.8%, 10 gr – 4.7%, 5 gr – 3.5%, 2 gr – 2.4% and 1 gr – 3.9%). In the case of 2 zł NG denomination coins, no changes were observed (Table 5).

No significant changes were noted in the share of the individual denominations in the structure of coins in circulation by volume. The so-called coins of low denominations, i.e. from 1 gr to 5 gr, had the highest share in the circulation – their total share reached 66.6% collectively. In practice, however, these coins show the lowest frequency rate of return in cycles.

2.2. Frequency rate of return of banknotes and coins

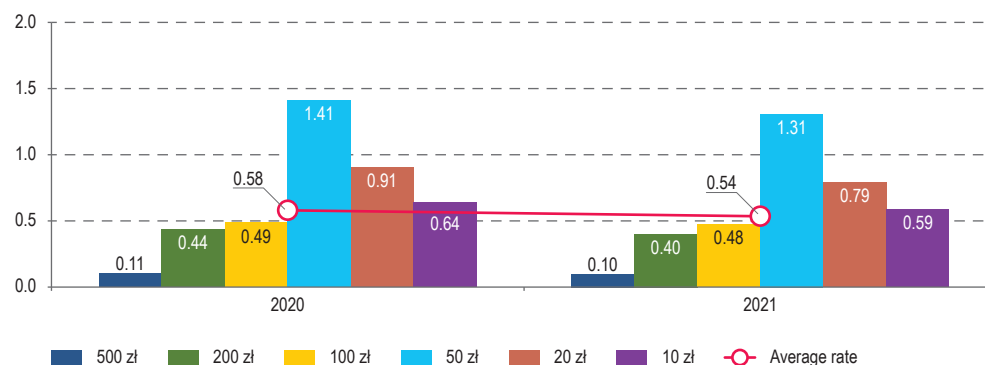
The frequency rate of return of banknotes and coins from the market to NBP is expressed by means of recirculation rates in days and in cycles.

The frequency rate of return in cycles is the quotient of the volume of banknotes or coins lodged in NBP by banks in the adopted period and the average volume of banknotes or coins in circulation in the same period. On the other hand, the frequency rate of return in days is the quotient of the average volume of banknotes and coins in circulation in the adopted period and the volume of banknotes and coins lodged in NBP by banks in the same period, multiplied by the number of days (365).

In 2021, a significant decrease in the frequency rate of return in cycles was observed. The rate of the decline was moderate. On average, as at the end of 2021, a banknote was recirculated to the sorting room of the NBP regional branch after 681 days calculated from the moment of its withdrawal from NBP by a bank (in 2020, the frequency rate of return of banknotes amounted to 629 days). In the case of coins, the estimated time of return to NBP as at the end of 2021 amounted to 26,107 days, i.e. approx. 72 years and it extended by 8,721 days, i.e. almost 24 years compared to 2020.

The developments in banknote (Figure 3) and coin (Figure 4) recirculation rates by denomination are illustrated below.

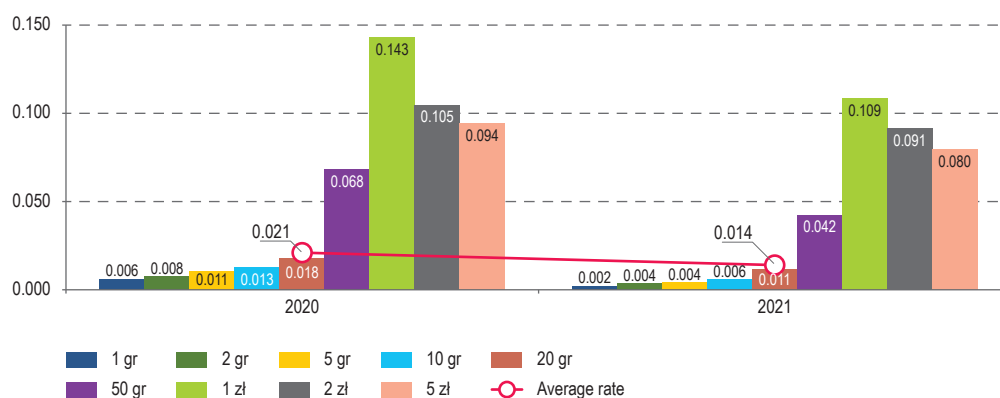
The frequency rate of return in cycles for all banknote denominations as at the end of 2021 amounted to 0.54 (i.e. on average, banknotes returned to NBP every 681 days), which means a decrease of 0.04 compared to 2020 (in 2020, this rate amounted to 0.58). As at the end of 2021, the frequency rate of return for individual banknote denominations varied. The banknotes most frequently returned to NBP were the 50 zł and 20 zł denomination banknotes (279 days and 460 days, respectively), while the 500 zł denomination banknote was recorded least frequently – every 10 years. In 2021, the frequency rate of return in cycles decreased compared to 2020 in the case of all banknote denominations. The decrease in the frequency rate of return amounted to, respectively: 500 zł – 0.01 percentage points, 200 zł – 0.04 percentage points, 100 zł – 0.01 percentage points, 50 zł – 0.10 percentage points, 20 zł – 0.12 percentage points, 10 zł – 0.05 percentage points (Figure 3).

Figure 3. Frequency rate of return of banknotes in cycles

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

The coin frequency rate of return in cycles has demonstrated a downward trend for many years. At the end of 2016, it amounted to 0.036 (i.e. on average coins returned to NBP almost every 28 years), while at the end of 2021, the frequency rate of return for all coin denominations amounted to 0.014, i.e. on average, coins returned to NBP almost every 72 years (Figure 4). Similar to banknotes, the frequency rate of return for individual coin denominations varied. As at the end of 2021, coins with the denomination of 1 zł most frequently returned to NBP (the rate reached almost 0.1, which means that a coin was recirculated to NBP more or less every 9 years) as well as 5 zł and 2 zł coins (a rate of approx. 0.1, i.e. the frequency of their return to NBP amounted to 11–12 years), whereas 1 gr, 2 gr and 5 gr denominations, in practice returned to NBP to a minor extent (according to calculations, approx. once in 442, 274, 234 years, respectively). It should be noted that in the case of coins with the face value of 10 gr and 20 gr, the value of the turnover ratio is more similar to the ratio of coins from the group of low denominations, i.e. 5 gr than to the turnover ratio of coins with a higher denomination, i.e. 50 gr.

Figure 4. Frequency rate of return of coins in cycles

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

Banknotes and coins processed by the commercial sector are also subject to analysis conducted based on quarterly reports submitted by banks to NBP. Details concerning this issue are presented in more detail in subsection “4.3. Reporting in the scope of cash circulation”. The data were used to calculate the frequency rate of return of banknotes in the market⁷ in 2021, reflecting the frequency of their return to the sorting rooms of banks and CIT companies.

Table 6. Frequency rate of return of banknotes in cycles and in days in 2021

Denomination	NBP		Market	
	rate of return (cycles)	rate of return (days)	rate of return (cycles)	rate of return (days)
1	2	3	4	5
500 zł	0.10	3 684	0.87	419
200 zł	0.40	909	1.91	191
100 zł	0.48	765	2.93	125
50 zł	1.31	279	5.79	63
20 zł	0.79	460	2.75	133
10 zł	0.59	620	2.60	141
Total	0.54	681	2.85	128

Source: study of NBP Cash and Issue Department.

The frequency rate of return of banknotes in cycles in the case of NBP is almost 5 times lower than in the case of the commercial sector. The denomination most frequently processed on the market was the 50 zł banknote, which appeared in commercial sorting rooms more than 6 times during the year. The 50 zł banknotes also returned most frequently (every 279 days) to the sorting facilities of the NBP regional branches; however, it happened over four times less frequently than in the case of the commercial sector. Another denomination most frequently returned to the sorting facilities of banks and CIT companies was the 100 zloty banknote (Table 6).

⁷ The calculation was performed as in the case of the frequency of banknotes returning to NBP, replacing the volume of banknotes lodged in NBP by the volume of banknotes processed by banks and CIT companies in that period.

Chapter 3

Cash and cashless means of payment

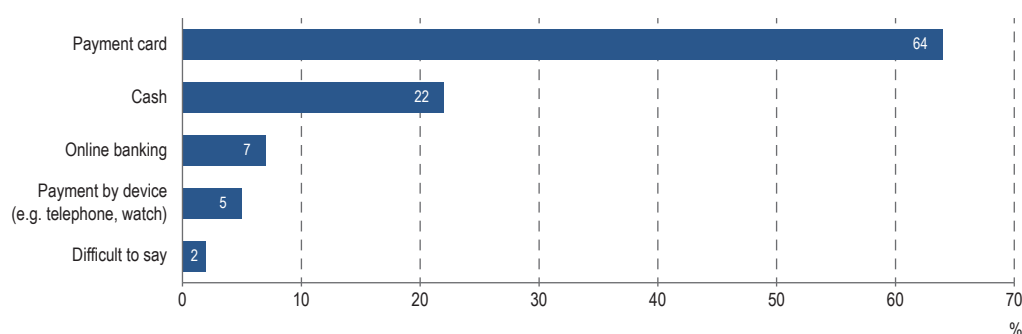
Cash and cashless means of payment

3.1. Trends observed in Poland

During the COVID-19 pandemic (i.e. in 2020–2021), payment habits changed significantly due to the difficulties caused by the restrictions introduced. Due to precautionary motives during the pandemic, the role of cash as a store of value was strengthened, with a simultaneous partial decrease in transaction demand for cash.

Following the rise in popularity of cashless payment methods, particularly during the high incidence of COVID-19 in 2020, and the above-average demand for cash, 2021 saw a tempering of the precautionary sentiment. Cash was the second most common means of payment chosen by many consumers (22% of respondents) following payment cards – 64% of consumers (Figure 5). In Poland, 46% of retail transactions were executed using cash.⁸ In order to ensure that consumers have a choice of payment methods, in line with the objectives adopted under the National Strategy for Cash Circulation Security, NBP aims to ensure the adequate access of society to cash and its wide acceptance.

Figure 5. Payment instruments preferred by consumers in 2021



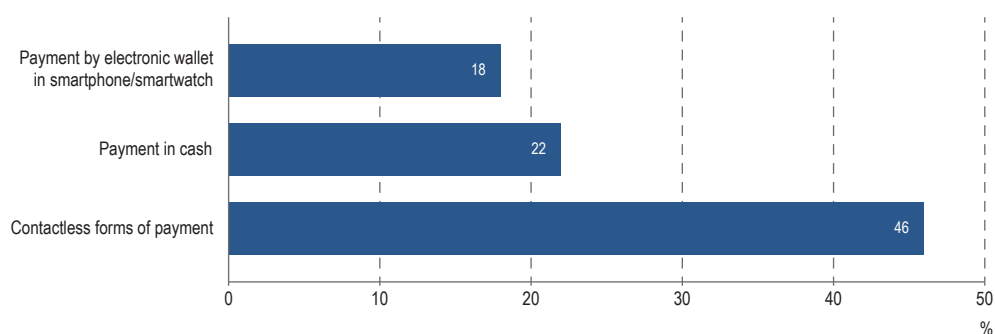
Source: survey on *Cashless payments as perceived by Poles, 2021* conducted as part of the education and information campaign “It is worth paying cashless”, October 2021.

The survey of payment methods conducted by Elavon, among others, those which increased in popularity as a result of the COVID-19 pandemic, shows that nearly a half (46%) of respondents started to use or intensified their use of contactless forms of payment at that time (Figure 6).

According to the survey, 22% of respondents said they used cash more often or started using cash, while 18% used an electronic wallet for payments.

⁸ Adam Tochmański, *Płatności detaliczne w Polsce – trendy i wyzwania [Retail payments in Poland – trends and challenges]*, Warsaw, 20 October 2021.

Figure 6. Increase in popularity of certain forms of payment in connection with the COVID-19 pandemic



Source: *Badanie metod płatności: co sądzą klienci* [Survey on payment methods: What do customers think], Elavon, June 2021, www.elavon.pl/artykuly/badanie-metod-platnosci.html#cookieAccept.

Payment by payment card – the most popular cashless payment method – was selected by as many as 64% of respondents in 2021. The pandemic period has undoubtedly contributed to the rise in popularity of online shopping using a payment card. In the second half of 2021, the value of conducted transactions reached PLN 13.7 billion, which means an increase of 16.9% compared to the figures for the first half of the year.⁹ Comparing the value of transactions conducted in the six-month period under analysis with the corresponding period one and two years ago, an increase of 25% and 81%, respectively, was recorded.

An upward trend has been observed in the above scope for five years. The growing number of online shops offering the possibility to pay by payment card as well as holding a bank account and consequently a payment card, is not insignificant for the popularisation of payment card transactions on the Internet. In the second half of 2021, the number of online shops increased by 5,600 outlets, i.e. by 10.7%.¹⁰ 89% of respondents declared they held at least one bank account while 97% of them declared they had a payment card that they actively used. In 97% of cases, the payment card was used to settle payments for purchases and services.¹¹

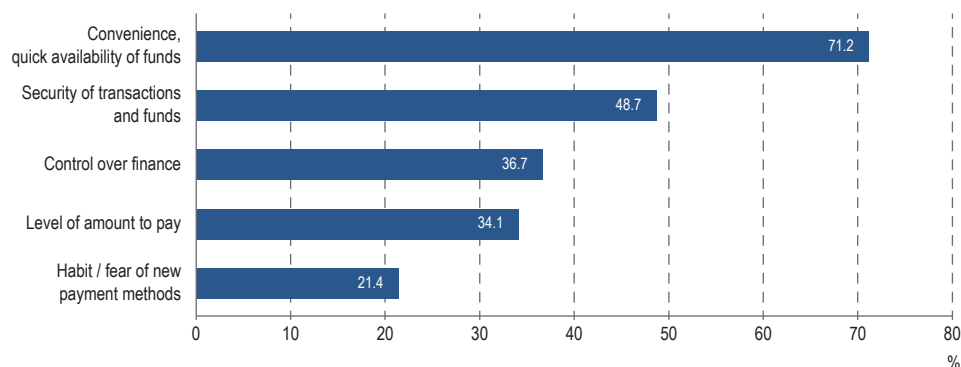
In addition to contingency considerations, permanent factors determining the choice of payment method are observed, as illustrated in Figure 7.

When choosing a payment method, Poles were most often driven by convenience and quick access to funds (71.2%) and the security of transactions and their financial resources (48.7%). Having control over their finance is crucial for 36.7% of respondents. For more than a third of respondents (34.1%), the amount owed for goods or services is also of importance. On the other hand, more than 20% of respondents feel concerned about the new technologies associated with modern payment methods and admitted that getting used to their current payment method is an important factor in their choice of a payment method.

⁹ *Assessment of the Polish payment system performance in the second half of 2021*, op. cit.

¹⁰ *Ibidem*.

¹¹ Dominika Maison, *Postawy Polaków wobec obrotu bezgotówkowego – raport z badania 2021 i analiza porównawcza z danymi z 2009, 2013 i 2016 roku* [Attitudes of Poles towards cashless transactions – 2021 survey report and comparative analysis with data for 2009, 2013 and 2016], October 2021.

Figure 7. Factors determining the selection of payment method

Source: *Metody płatności preferowane przez Polki i Polaków* [Payment methods preferred by Poles], Tavex SW Research.

At the same time, the conducted surveys¹² concerning the payment methods preferred by Poles shows that the number of consumers declaring a feeling of insecurity accompanying the use of cashless payments is growing. The data collected shows that at the end of 2021 Q1, more than half of respondents (52%) expressed concern that they could become a victim to fraudulent practices when paying by a payment card, compared to 46% of respondents at the end of 2020.

Making cash payments regardless of the amount paid was considered safe by 31.5% of respondents, while almost 46% had a feeling of security in the case of low-value cash payments that prevail in daily shopping.¹³

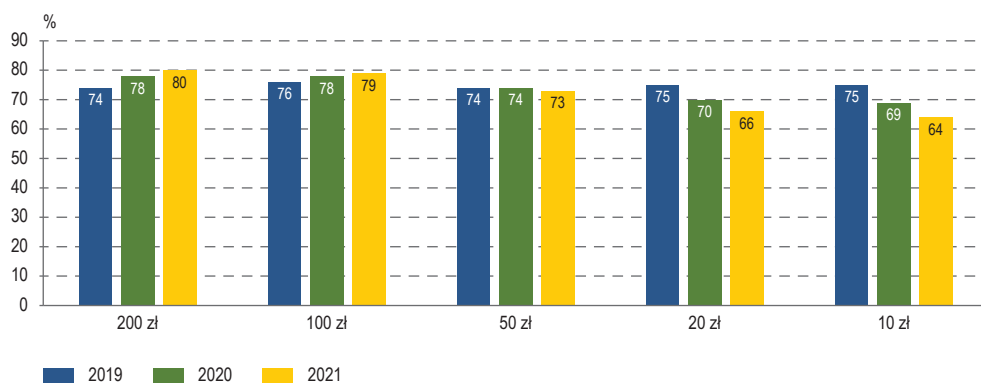
It can be observed that the higher the denomination of a banknote, the higher the confidence Poles place in it. Since 2019 onwards, an upward trend of a few per cent has been observed for 100 zł and 200 zł banknotes in this respect. Confidence in the 50 zł denomination remains almost unchanged, while although the 20 zł and 10 zł banknotes enjoy high public confidence, nevertheless it has fallen by 9 and 11 percentage points, respectively, over three years. It can be assumed that the lower confidence in low denominations is due to the fact that these banknotes remain in circulation longer, which affects their wear and tear (see subsection “2.2. Frequency rate of return of banknotes and coins”). The above data is illustrated in Figure 8.

When shopping online, 41% of respondents chose to pay cash on delivery of their purchased goods (cash on delivery) and the same number opted for cash on delivery in person at the courier. Exactly the same percentage of respondents preferred to pay by a payment card when placing an order, while the percentage of persons choosing a traditional bank transfer was only 1 percentage point higher. The highest number, as many as 70% of respondents, chose an immediate transfer via one of the payment services.¹⁴

¹² *Gotówka sojusznikiem Polaków. Czemu tak chętnie po nią sięgamy?* [Cash as an ally of Poles. Why are we so keen to reach for it?], TavexNews, <https://tavex.pl/gotowka-sojuszniakiem-polakow/>.

¹³ *Raport badawczy „Metody płatności preferowane przez Polki i Polaków”* [Payment methods preferred by Poles, Research report], SW Research, January 2021.

¹⁴ *Badanie E-commerce w Polsce 2021* [Survey on e-commerce in Poland 2021], Gemius, May/June 2021.

Figure 8. Perception of safety when using 200, 100, 50, 20, 10 zł banknotes in 2019–2021

Source: *Public opinion survey on the quality of banknotes in general circulation in Poland. Quantitative research report*, Openfield, September 2021.

Surveys¹⁵ conducted by the Warsaw Institute of Banking in 2021 Q3 show that despite the development of electronic forms of payment, pandemic conditions have caused the number of Poles using cash to increase by 2 percentage points in 2021 (to 22%) compared to 2019 and 2020 (20%).

As many as 68.6% of respondents answered affirmatively to the question “Is cash needed by the economy?”¹⁶ Respondents indicated that factors affecting positive attitudes towards cash forms of payment include:

- better control of expenditure (23.8% of respondents),
- a sense of independence (16.8% of respondents),
- personal data protection (15.5% of respondents).

Poles’ attachment to cash is illustrated by the data on carrying cash on a daily basis. Banknotes and coins are carried by as many as 90.7% of respondents, of which 62.8% carry an amount up to PLN 100, 18.4% carry more cash, 9.5% carry in their wallet an amount that can be spent within a day (less than PLN 100) and 9.3% of respondents indicated that they were not in the habit of carrying cash.¹⁷

The results of the analysis of changes in consumer payment behaviour during the COVID-19 pandemic indicate their permanent nature, especially in the case of online shopping. Continuing online shopping as often as during the pandemic was declared by 57% of respondents. More than 40% of respondents declared a partial return to shopping in stationary shops, although not to the same extent as before the pandemic.¹⁸

¹⁵ Survey carried out by the Warsaw Institute of Banking as part of the *It is worth paying cashless* campaign, October 2021.

¹⁶ *Research report Metody płatności preferowane przez Polki i Polaków [Payment methods preferred by Poles]*, op. cit.

¹⁷ *Ibidem*.

¹⁸ *Badanie E-commerce w Polsce 2021 [Survey on e-commerce in Poland, 2021]*, Gemius, op. cit.

22% of respondents declared making cash payments or increasing their frequency in connection with the pandemic.¹⁹ Only 10% stated that they used cash more often in payments, and twice as many respondents intend to use cash less often once the pandemic is over.²⁰

Respondents who started using contactless payments during the pandemic or used them more frequently, while declaring that they will use them in the future, accounted for 90% of respondents. As many as 96% of the respondents in this group come from age groups above 44 (age ranges 45–54 and 55–60).²¹

As many as 22% of respondents expect to use payment cards more frequently after the pandemic, while only 5% indicate that they will do so less frequently than before the pandemic.

Starting to use e-wallets or using them more frequently in connection with the pandemic was reported by 18% of respondents. In this group of respondents, 80% intend to continue using this payment method. This average increases to 90% among persons aged 16 to 24.²²

3.2. Trends in selected countries

Both in Poland and worldwide, the year 2021 was marked by the pandemic and the sanitary restrictions maintained in this period, the restrictions regarding social mobility, the implementation of new technologies and digitisation on a global scale. This has affected further changes in payment habits of consumers. The increase in popularity of cashless payments observed in 2020 continued to a large extent in 2021. At the same time, many countries indicated a major increase in demand for cash which, however, was not used by consumers to settle transactions, but to store banknotes and coins for precautionary purposes. Information in this regard is provided, among others, by surveys on consumer payment habits which are carried out with defined frequency, among others, by research institutes and central banks.

The aforementioned phenomena have been observed, among others, in the Eurosystem countries, where the volume of cash lodged in national central banks and returning from the market to commercial banks at the beginning of 2021 fell by approx. 20–25% compared to the previous year. In parallel, despite the significant decline in the popularity of cash payments, an above-average increase in the demand for euro banknotes was recorded. In this case, comparing the value of euro banknotes withdrawn from the European Central Bank in spring 2020 with the average values of the previous five years, a 4% increase was observed. In December 2020, the increase was as high as 8%. As the European Central Bank found, prior to the pandemic, approx. 20% of euro banknotes in circulation were used as legal tender in the euro area. On the other hand, the vast majority of cash, approx. 1 trillion euro, was held as a precautionary measure and occasionally used for transactions or the cash was

¹⁹ *Badanie metod płatności: co sądzą klienci* [Survey on payment methods: What do customers think], June 2021, Elavon, www.elavon.pl/artykuly/badanie-metod-platnosci.html.

²⁰ Brief report of the survey “How has COVID-19 changed the shopping and payment habits of Europeans?”, E-service, commissioned by EVO Group companies.

²¹ *Badanie metod płatności: co sądzą klienci* [Survey on payment methods: What do customers think], Elavon, op. cit.

²² Ibidem.

transferred outside the euro area.²³ The results of illustrative surveys concerning the use of cash and cashless payment instruments in 2020–2021 and at the beginning of 2022 are presented below.

The group of cash-addicted countries includes Spain, where 82% of society is against restrictions in cash payments and more than 70% consider this means of payment as essential.²⁴ In 2020, half of Spaniards indicated payment cards as their preferred form of payment, while nearly 36% of respondents recognised cash as the most commonly used payment instrument. In this case, a change in the preference of Spaniards was observed compared to 2014, when cash was the most frequently chosen form of payment for almost 80% of respondents. Moreover, the surveys show that cash is accepted by more than 99% of Spanish retailers, while payment cards can be used to settle payments in 93% of these outlets. At the same time, further development in the use of new technologies by consumers is anticipated, as indicated by 40% of respondents. This means that the interest in new solutions in this area has almost doubled compared to the previous year. As the central bank of Spain indicates, approx. 3% of the population is exposed to the risk of the lack of access to cash. In order to counteract the risk of financial exclusion of citizens, in February 2022 the Spanish government adopted a law indicating the central bank of Spain and credit institutions as responsible for implementing measures to safeguard consumers in this regard.²⁵

France saw an increase in cash payments at the beginning of June 2021. According to the surveys, the number of transactions completed using cash was 37% higher than in the first three weeks of May 2021. This could mean that after a period of uncertainty resulting from the pandemic in 2020, the French started to spend cash accumulated earlier for precautionary purposes.²⁶ The attachment of the French to cash is confirmed by data collected at the request of Monnaie de Paris in the first half of 2021. More than 90% of respondents indicated that they regularly paid in cash, while 70% did so every day. It should be pointed out that in over 70% of the payments made, consumers use cash because they do not want to use cashless payment instruments. The source of this choice may be the highest confidence in cash compared to other payment methods. More than 60% of French consumers feel safe using cash, while confidence in card payments is reported by a smaller number of respondents – 47%.²⁷

The annual survey on payment habits in the USA revealed the continued impact of the pandemic on consumer behaviour as well as consumers' attitude towards the use and accumulation of cash. In October 2021, the share of cash payments stood at 20%, having increased by 1 percentage point against the previous year. Compared to the 2019 figures, however, the share is 6 percentage points lower. Furthermore, it is worth noting that, for the first time since 2016, a y/y increase was recorded in the average monthly volume of cash transactions performed by a consumer: from six to seven. A further increase in the value of cash held by consumers, for example, at home was also noted – in 2021 the amount was USD 347, whereas in the previous years it reached, respectively: USD 299 (2020) and USD 241 (2019).

²³ Fabio Panetta, *Cash still king in times of COVID-19*, speech at Deutsche Bundesbank's 5th "International Cash Conference – cash in times of turmoil", 15 June 2021.

²⁴ *Survey on the need for cash to remain in circulation*, GAD3, 29 September 2021, <https://www.gad3.com/en/study-for-denaria-survey-on-the-need-for-cash-to-remain-in-circulation/>.

²⁵ Helena Tejero (Banco de España), *Cash infrastructure and cash access vulnerability in Spain*, presentation at the "Intergraf Currency + Identity" conference, Lyon, 6–8 April 2022.

²⁶ *France return to cash*, "Cash Matters", 20 August 2021.

²⁷ *The French are fond of cash*, "Cash Essentials", 23 May 2022.

On the other hand, the value of cash held in the wallet for day-to-day expenses fell, from USD 76 in 2020 to USD 67 in 2021.²⁸ This may illustrate a continuing trend of cash hoarding in times of uncertainty “for a rainy day”. At the same time, nearly a third of consumers plan to reduce their use of cash in the near future, while 8% declare that they intend to pay in cash more frequently.²⁹

In the United Kingdom in 2020, the number of payment transactions fell by 11% to 35.6 billion in y/y terms. More than a half (52%) were transactions performed using payment cards. Although cash remained the second most popular payment instrument, its share in the number of transactions fell to 17%. By comparison, back in 2015 it was 45%. Since 2017, the popularity of cash as a payment instrument has been decreasing. Recently, the pandemic has had a strong impact on this phenomenon. It has prompted consumers to turn to cashless instruments, among others, due to sanitary restrictions, fear of using banknotes and coins and the preference for electronic payments in some retail outlets. Consequently, in 2020, 13.7 million consumers used cash only once a month or not at all. Only a year earlier, this figure was almost twice as low.³⁰

In Germany, the share of cash transactions before the pandemic fell by approx. 1 percentage point over a year; however, since 2020, with the spread of the coronavirus, the demand for cash started to increase.³¹ In 2020, 60% of POS payments were made using cash, nevertheless its popularity has declined compared to 2017, when banknotes and coins were used in 74% of transactions. However, it is estimated that 5% of the banknotes withdrawn from Deutsche Bundesbank actively performed a transactional function, while 40% were used for hoarding purposes or transferred outside Germany.³²

On the other hand, Swedish and Norwegian society is perceived as consumers with a cashless preference. In Norway in spring 2022, the share of cash payments by volume reached only 4% and decreased from the level of 7–8% recorded in autumn 2019. In terms of value, cash transactions account for only 2%. It can also be noted that mobile payments have grown significantly in popularity in P2P (person to person) transactions, reaching a share of 77% in spring 2022, which means an increase of 21 percentage points compared to figures recorded five years ago. It is also worth indicating that although society prefers cashless payments, Norges Bank regularly monitors the infrastructure providing consumers with access to cash. The data collected shows that in 2021, the volume of cash withdrawal transactions from ATMs fell by 19% y/y and their value decreased by 16%. At the same time, the number of cash back transactions fell by 11%, while their value increased by 19%. It is worth adding that in the period under review, the number of ATMs decreased from 1,400 to 1,200, which has also contributed to a decline in statistics related to ATM usage with an increase in the value of cash back transactions.

²⁸ Emily Cubides, Shaun O’Brien, *2022 Findings from the Diary of Consumer Payment Choice*, The Federal Reserve, 5 May 2022.

²⁹ Francis Bignell, *American payment habits revealed in Onbe’s*, “2022 Future of Payments Survey”, 31 January 2022.

³⁰ *UK Payment Markets Summary 2021*, UK Finance, June 2021.

³¹ Johannes Beermann (Deutsche Bundesbank), *Cash of the future*, “The Banknote and Currency Conference 2022”, Washington, 24 February 2022.

³² Jens Weidman (Deutsche Bundesbank), *The future of cash*, opening speech at the cash symposium, Berlin, 10 November 2021.

In Sweden, 9% of transactions in 2020 were completed using cash, while the number of cash withdrawals from ATMs fell by 20% compared to the previous year. However, Riksbank stresses that it is essential to provide consumers with the basic infrastructure enabling payments to be performed in the way that suits their needs. In autumn 2020, 12 new locations were established to provide consumers with access to cash in areas where the lack of ATMs had been identified. Moreover, since January 2021, some of the largest banks have been legally committed to provide consumers with the infrastructure to withdraw and deposit cash.³³ Riksbank draws attention to the function of cash as an alternative to cashless means of payment, particularly in the event of unforeseen failures, e.g. Internet outage.³⁴

At the same time, as Riksbank highlights, both in Sweden and in Norway, the value of cash circulation has been declining, likewise the use of cash in payments. This trend also continued during the pandemic, which distinguishes these countries from other countries.³⁵ The phenomenon involving an increase in the value of circulation with a simultaneous decline in the popularity of cash as a means of payment, which became apparent during the pandemic in most countries of the euro area, the United Kingdom, Australia, the USA or Canada, is referred to as the banknote (cash) paradox. The growth in the demand for cash in this case does not translate into an increased use of cash in transactions, since consumers, often for precautionary reasons, accumulate cash as a store of value. Under such circumstances, the demand for banknotes relates particularly to high denominations.³⁶

The impact of the pandemic on consumers' payment habits has been recorded worldwide, with the decline in cash payments reaching 16% globally in 2020.³⁷ In addition, the restrictions introduced at the time and consumers' initial fear of using cash translated into the strengthening of the trend of increasing popularity of cashless means of payment observed for several years. However, it is difficult to predict whether the payment habits developed during the pandemic period will persist. Although 65% of respondents declared that they would continue to use contactless payment cards, at the same time 16% of respondents intended to return to pre-pandemic habits, which suggests a shift by some consumers towards cash.³⁸ Digitisation in the scope of payment instruments is inevitable and targeted at facilitating and speeding up transactions. However, the security of transactions is becoming extremely important as well as ensuring that consumers have a universal access to their preferred payment methods.³⁹

In the context of the foregoing considerations, information communicated by the European Central Bank about the historically low level of counterfeit banknotes disclosed in cash circulation in 2021 should also be mentioned. 347 thousand counterfeit euro banknotes were detected, meaning that the PPM (pieces per million) ratio, i.e. the number of counterfeits per million banknotes in cash circulation, was 12. By comparison, the year before, the European Central Bank reported 17 PPM, in 2019 – 23 PPM, and in 2015 the PPM ratio was as high as 48 counterfeits per million banknotes in circulation. It is worth indicating that in the case of Polish cash circulation, the PPM ratio for banknotes in 2021 was 2.03 (1.67 in 2020) (Figure 9). Although, in nominal terms, the number of counterfeit banknotes is increasing,

³³ *Report on Cash Circulation in Poland in 2020*, Narodowy Bank Polski, p. 27.

³⁴ *Poorer Access to Cash at Bank Offices*, Riksbank, 3 November 2021.

³⁵ *Cash Used Less and Less Frequently in Sweden and Abroad*, Riksbank, 3 November 2021.

³⁶ *Payments Report 2021*, Riksbank, 2021.

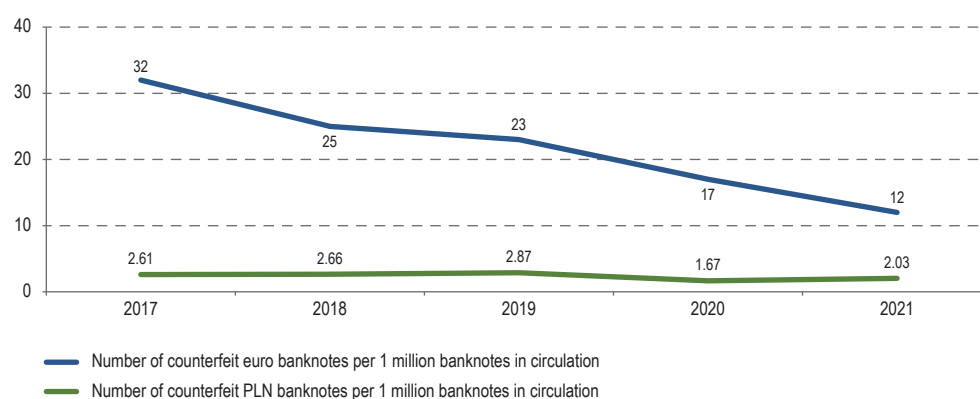
³⁷ *The 2021 McKinsey Global Payments Report*, McKinsey & Company, October 2021.

³⁸ *The Visa Back to Business Study. 2021 Outlook. Global Small Business and Consumer Insight*, Visa, 2021.

³⁹ *Cashless society: the future of digital payments*, "Financier Worldwide Magazine", May 2021.

the scale of counterfeiting remains low. The slight increase in 2021 may result from the fact that fewer cash transactions were carried out in the previous year due to the restrictions related to the coronavirus pandemic, which may have influenced the lower scale of counterfeit banknote disclosures. Moreover, the ratio remains very low, especially if the increase in cash circulation since 2019 is taken into account. The persistently low level of counterfeiting over the recent years is the result of the good quality of the security features of banknotes and coins and the high level of public awareness of the security features, resulting, among others, from the educational and training activities of Narodowy Bank Polski.

Figure 9. Value of PPM in the years 2017–2021 for euro banknotes and Polish general circulation banknotes



Source: Study of the NBP Cash and Issue Department and the European Central Bank statistics *Euro banknote counterfeiting at historically low level in 2021* (ecb.europa.eu).

Chapter 4

Cash circulation market characteristics

Cash circulation market characteristics

4.1. The cash circulation cycle and its participants

The participants of cash circulation in Poland include the central bank, banks, producers of banknotes and coins, CIT companies processing cash on behalf of banks, operators of ATM networks, retail chains and consumers.

The role of NBP in cash transactions in Poland is defined in the Constitution of the Republic of Poland, the Act on Narodowy Bank Polski and the Banking Law. Pursuant to Article 227 of the Constitution, NBP is the central bank of the state and it has the exclusive right to issue banknotes and coins. On the basis of the Banking Act and the Act on Narodowy Bank Polski, the Governor of NBP issues legal acts regulating cash circulation, addressed to banks. At the same time, NBP is an active participant of the cash circulation cycle by supplying the entire market with banknotes and coins. This process takes place on the basis of agreements concluded with banks determining the conditions of withdrawal and lodging of the Polish currency.⁴⁰ Moreover, NBP stimulates the activities of other participants of the cycle and integrates the participants of the overall cash circulation market.

The activity of NBP in the scope of cash circulation covers, in particular:

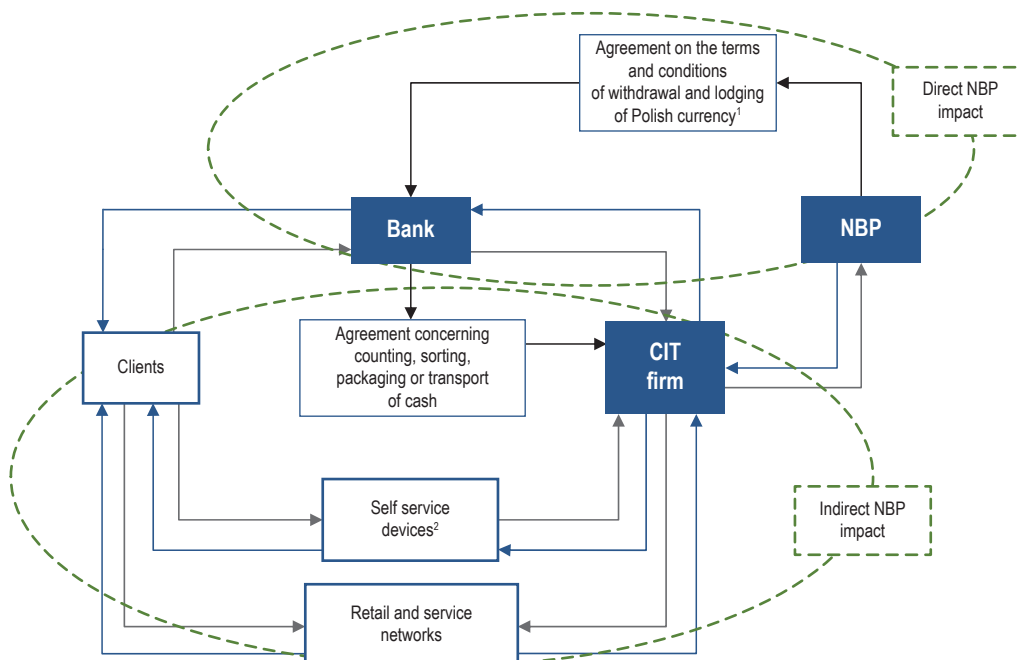
- putting banknotes or coins into circulation, which is performed on the basis of the regulations of the Governor of Narodowy Bank Polski announced in Monitor Polski which set the date of putting into circulation, the volume of issue as well as the design and the face value of banknotes or coins and in the case of coins, also the alloy, the purity and the weight;
- withdrawal of banknotes or coins from circulation; this is performed on the basis of the regulations of the Governor of Narodowy Bank Polski announced in Monitor Polski, which specify the coin or the banknote, the date of its withdrawal from circulation and the banks which carry out the exchange;
- orders for the production of banknotes and coins with manufacturers;
- verification of the authenticity and fitness for circulation of coins and banknotes;
- replacement of coins and banknotes which, due to wear and tear or damage, cease to operate as legal tender in the territory of the Republic of Poland;
- storage of banknotes and coins;
- distribution of banknotes and coins;
- destroying banknotes and coins unfit for circulation.

NBP, banks and CIT companies are responsible for verification of the authenticity and quality of recirculated banknotes and coins. NBP and banks are responsible for the storage and distribution of Polish currency, while CIT companies deal with cash distribution and its storage on behalf of banks.

⁴⁰ The supply of banks with the Polish currency by NBP stems from Article 68(2) of the Act of 29 August 1997 – Banking Law and it implements Article 37 of the Act of 29 August 1997 on Narodowy Bank Polski, pursuant to which NBP organises the management of coins and banknotes of the Republic of Poland. Pursuant to § 4 of Regulation No. 19/2016 of the Governor of Narodowy Bank Polski of 17 August 2016 on the method and procedure to be used in counting, sorting, packaging and labelling packages of banknotes and coins, and in conducting activities related to the supply of banknotes and coins to the banks (Official Journal of NBP of 2020 item 28), NBP concludes with banks and implements agreements defining the terms and conditions of withdrawal and lodging the Polish currency.

The cash cycle is illustrated in Diagram 1. Banknotes and coins withdrawn from one of 16 NBP regional branches by banks or CIT companies operating on behalf of banks are transferred to cash centres of banks or CIT companies dealing with cash processing on behalf of banks and subsequently to customers via bank branches, ATM networks and retail chains. Cash covers the opposite route, returning to the central bank. Banknotes and coins from consumers reach the cash centres of banks or CIT companies dealing with cash processing on behalf of banks via large retailers and self-service machines. There, they are divided into banknotes and coins fit for circulation and unfit for circulation. Some banknotes and coins fit for circulation are recirculated in accordance with the needs reported by banks and their customers, while the surplus banknotes and coins are lodged in NBP.

Diagram 1. Cash cycle in Poland



¹ Basic and deposit system.

² Devices for withdrawal and depositing of cash.

Source: study of NBP Cash and Issue Department.

16 regional branches supplying Polish currency to banks operate within the organisational structure of NBP, supplying banks with Polish currency under agreements. Four of them act as supply centres for other branches of the central bank. As at 31 December 2021, 18 agreements were concluded, regulating the cooperation of the NBP regional branches with 314 organisational units of banks operating under the basic system⁴¹ and 35 organisational units operating under the depository system.⁴²

⁴¹ Withdrawal and lodging of the Polish currency by banks under the concluded agreement on the terms and conditions of withdrawal and lodging of the Polish currency.

⁴² Polish currency lodged as the NBP deposit is the property of NBP and is stored in vault rooms of the bank's organisational unit, subject to the condition that the NBP deposit is adequately secured and separated from banknotes and coins owned by this bank. Some banks use the deposit system. Limits of amounts related to the storage of NBP deposits are agreed with banks on a case by case basis in the agreements.

4.2. Amendments to the legislation governing cash circulation

Amendments to legal acts regulating cash circulation have been introduced in three areas, namely, in the scope of:

- improvement of cash processes,
- ensuring universal acceptance of cash in payments,
- ensuring adequate quality of banknotes and coins in cash circulation.

4.2.1. Improvement of cash processes

In 2021, the successive provisions of Regulation No. 19/2016 of the Governor of Narodowy Bank Polski of 17 August 2016 on the method and procedure to be used in counting, sorting, packaging and labelling packages of banknotes and coins, and in conducting activities related to the supply of banknotes and coins to the banks entered into force (Official Journal of NBP of 2020, item 28).

Since 1 January 2021, regulations in the scope of implementation of GS1-128 barcodes on manufacturer-formed coin packaging have been applicable. The aim is to standardise and improve the coin transfer processes through:

- automatic entry of information on the supplied packages of banknotes and coins into the IT system and updating the data in the IT system,
- limiting manual activities and elimination of most of the paper documentation currently transferred between NBP and the manufacturer.

Works on the introduction of GS1-128 barcodes by banks and other cash circulation market participants are carried out successively, among others, within subsequent pilot stages.

As part of the introduction of further changes, as of 1 July 2021, provisions came into force regarding the obligation to monitor and record the operations of total checking, counting, sorting and authenticity checking of banknotes or coins withdrawn from NBP. These provisions were introduced into the regulation well in advance, i.e. in December 2019; however, given their scope, adequate time was proposed to prepare for their application. In justified situations, the possibility of counting banknotes or coins received from NBP by two bank employees or two employees of a trader acting on behalf of the bank, e.g. in the event of a breakdown, was allowed.

In response to a proposal by the Cash Circulation Group acting at the Polish Bank Association, the entry into force of the provision limiting the manual counting and sorting of banknotes by banks has been postponed from January 2021 to January 2022. Consequently, the share of manually counted and sorted banknotes must not exceed 10% in a given quarter.

4.2.2. Introduction of the statutory obligation of universal cash acceptance

One of four pillars identified in the National Strategy for Cash Circulation Security adopted by the NBP Management Board on 22 November 2021, is Pillar I referring to the availability and acceptance of cash (see subsection “4.4.1. National Strategy for Cash Circulation Security”).

In this area, legislative work was carried out in 2021 on the draft Act amending the Act of 19 August 2011 on Payment Services, with regard to the introduction of the obligation to accept cash payments by entities conducting business in the territory of the Republic of Poland. The primary objective was to regulate the legal status of acceptance of banknotes and coins issued by Narodowy Bank Polski. Article 59ea(1) added to the Act eliminates the possibility for merchants to limit their offer to conclude a sales or service agreement to consumers who will only make payments in a cashless form. The inability of a merchant to refuse cash acceptance is not unconditional, since appropriate exemptions are foreseen. It does not apply in the case of transactions carried out on the Internet, at a place where no staff is present, during a mass event, as well as for a one-off transaction whose value is equal to or greater than the average wage in the corporate sector.

The draft was formally a legislative initiative of the President of the Republic of Poland. The proposal concerning the amendment to the Act on Payment Services and regulating the acceptance of banknotes and coins issued by NBP was submitted to the President of the Republic of Poland by the Governor of Narodowy Bank Polski. The new regulations entered into force on 5 November 2021.

4.2.3. Introduction of new legislative solutions in the scope of handling banknotes and coins of suspicious authenticity

Another pillar of the National Strategy for Cash Circulation Security refers to the smooth supply of cash. It sets out the objective of ensuring the adequate quality of banknotes and coins in cash circulation and recommends the preparation of proposals of legislative solutions in the scope of handling banknotes and coins suspicious in terms of authenticity (see subsection “4.4.1. National Strategy for Cash Circulation Security”).

In 2021, legislative work was carried out on the amendment of the Act on Narodowy Bank Polski. Article 35(3) of the Act on NBP was amended by the Act of 17 December 2021 amending the Act on Narodowy Bank Polski and the Act on the Executive Penal Code. It provided the basis for the Minister of Justice to issue the regulation on the terms and conditions and procedures for the seizure of banknotes and coins of suspicious authenticity and handling of counterfeit banknotes and coins. Consequently, the regulation of the Governor of Narodowy Bank Polski of 31 August 1989 on the seizure of counterfeit banknotes and coins was repealed.

The Regulation of the Minister of Justice of 7 April 2022 on banknotes and coins of suspicious authenticity defines, among others:

- a model report for the seizure of a banknote or coin of suspicious authenticity;
- the obligation to seize a banknote or coin of suspicious authenticity by the seizing entity;
- the measures in the event of seizure of a banknote or coin of suspicious authenticity by a cash-accepting or cash-issuing device with a function of verification of the authenticity of banknotes and coins, ensuring the identification of the depositors;

- the procedure to be followed by a seizing entity when a banknote or coin of suspicious authenticity is discovered in the absence of any possibility to establish by whom it was presented;
- the obligation of the detaining entity to immediately hand over one copy of the seizure report of a banknote or coin of suspicious authenticity along with the seized banknote or coin to the police department with jurisdiction over the place of seizure;
- the number of copies of the seizure report of a banknote or coin of suspicious authenticity depending on the manner of seizure;
- handing over the seized banknote or coin by the police to NBP, together with the decision on admitting expert evidence and a copy of the seizure report of a banknote or coin of suspicious authenticity for the purpose of conducting the expert examination and issuing the opinion on the authenticity of the seized banknote or coin;
- sending the opinion by NBP on the authenticity of the seized banknote or coin to the police (opinion of the specialised institution);
- storage by NBP of the counterfeit banknote or coin until receiving a copy of the final ruling on the banknote or coin;
- destroying the counterfeit banknote or coin by the commission appointed by the director of the competent NBP organisational unit;
- return by NBP of the authentic banknote or coin including the opinion to a police organisational unit or to another authorised body which has handed it over for expert examination.

4.3. Reporting in the scope of cash circulation

Since 1 July 2018, banks which signed an agreement with NBP, specifying the terms and conditions for withdrawal and lodging of the Polish currency, pursuant to Regulation No. 19/2016, have been obliged to provide NBP with quarterly reports containing information on the number of customer-operated devices (e.g. cash deposit machines, recyclers) and devices operated by the bank's staff or by the staff of a trader to whom the bank has entrusted the processing of banknotes (e.g. sorters), as well as the counting and sorting of banknotes and coins, and their subsequent recirculation.

4.3.1. Legal conditions

As part of the guidelines defining the rules for accurate filing of reports, the "Guidelines concerning quarterly reporting related to the number of devices, counting and sorting of banknotes and coins and their recirculation" are available on the NBP website.

In accordance with the aforementioned instructions, banks:

- since 1 July 2018, have been obliged to include in their reports information on banknotes and coins:
 - put into circulation,
 - processed: by devices, in a bank's sorting rooms, in sorting rooms of the undertakings commissioned by the bank for processing of banknotes or coins,
 - held on the last day of a given quarter: in the bank's cash desks, in the vaults of a bank and undertakings (including those received from another bank or from NBP) commissioned by the bank for processing of banknotes or coins as well as in the bank's devices and equipment of independent operators;
- since 1 January 2020, in addition to the above information, banks have been obliged to include in the reports data on banknotes and coins processed at the bank's cash desks and subsequently put into circulation;⁴³
- since 1 January 2022, they have also been additionally obliged to report the share of manually processed banknotes in the total number of banknotes processed by the bank in a given quarter.

The reports are submitted to NBP on a quarterly basis, by electronic means, via the Reporting Information System (SIS) Internet portal. The first report was submitted by the banks for 2018 Q3.

NBP uses the quarterly reporting, among others, to monitor market trends in the area of putting banknotes and coins into circulation by banks without the participation of NBP and to analyse cash flows in banks. The interpretation of data received within the reporting framework allows, among others, to assess the scale of recirculation of banknotes and coins, i.e. putting them back into circulation by banks without the participation of NBP. At the same time, the scale of processing of banknotes and coins by market participants and the use of specialised equipment for this purpose is subject to analysis.

4.3.2. Statistical data

An analysis of the data reported by banks in 2021⁴⁴ shows a stabilisation of the cash stream of banknotes and coins processed and recirculated. The annual data received from the banks on this subject is similar to the data obtained in 2020.

In 2021, the banks counted, sorted and checked for authenticity 8.3 billion banknotes, i.e. 0.2% less than in 2020. In 2021, as in the previous year, the banks processed on average 2.1 billion banknotes per quarter (Table 7).

At the same time, a stabilisation in the number of banknotes recirculated by banks was recorded. In 2021, this figure amounted to almost 5.9 billion pieces and fell by 0.9% compared to the previous year. It should be underlined that, similar to 2020, banks recirculated,

⁴³ The exceptions include the operations of the records of denomination of suspicious banknotes in terms of authenticity, exchanges and replacements carried out at partner establishments; data on operations carried out at banks' partner establishments are reported in value terms, according to a separate procedure.

⁴⁴ The Bank may at any time adjust its report for the selected quarter.

on average, 1.5 billion banknotes per quarter. The share of banknotes recirculated in the number of banknotes processed by banks in 2021 amounted to 71.4% (Table 8). In annual terms, a slight decline in this share of approx. 0.5 percentage points was noted.

Table 7. Volume of banknotes processed in 2020 and 2021 in quarterly terms

Denomination	2020				2021			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	2	3	4	5	6	7	8	9
500 zł	6 110 968	8 612 707	8 934 304	12 639 760	8 280 642	9 739 922	10 927 686	11 811 061
200 zł	172 293 334	212 793 277	260 302 779	270 485 773	255 655 044	297 115 940	330 705 558	348 633 983
100 zł	1 327 778 859	1 118 300 722	1 331 573 852	1 218 803 815	1 073 542 682	1 245 521 491	1 317 314 790	1 322 725 703
50 zł	353 684 183	337 455 208	358 589 044	335 843 270	279 241 740	316 719 133	316 054 595	312 892 718
20 zł	121 208 198	92 877 282	104 973 917	84 366 094	73 079 009	80 798 524	116 730 031	87 007 759
10 zł	152 783 356	143 879 675	164 834 929	136 647 423	116 658 731	128 824 426	132 680 137	125 183 757
Total	2 133 858 898	1 913 918 871	2 229 208 825	2 058 786 135	1 806 457 848	2 078 719 436	2 224 412 797	2 208 254 981
	8 335 772 729				8 317 845 062			

Source: study of the NBP Cash and Issue Department.

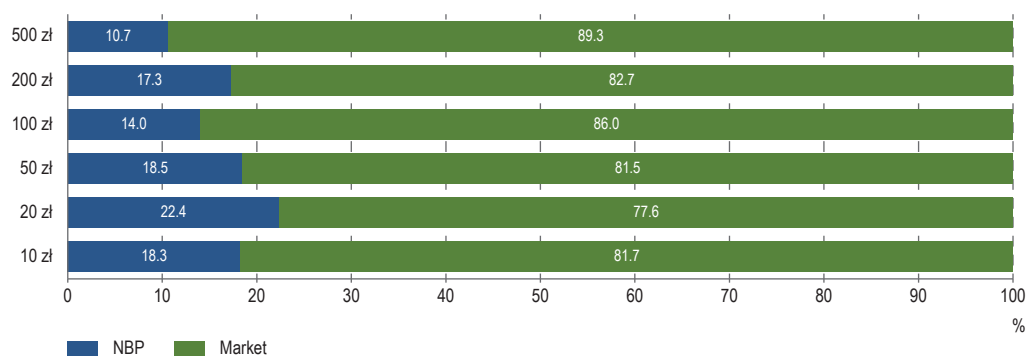
Table 8. Volume and share of banknotes recirculated in 2020 and 2021 in quarterly terms

Denomination	2020		2021	
	Number of recirculated banknotes	Ratio of the number of recirculated banknotes to the number of processed banknotes	Number of recirculated banknotes	Ratio of the number of recirculated banknotes to the number of processed banknotes
1	2	3	4	5
500 zł	26 359 897	72.62%	33 098 672	81.21%
200 zł	625 715 089	68.32%	808 731 131	65.64%
100 zł	3 952 155 967	79.10%	3 853 717 951	77.71%
50 zł	879 027 338	63.44%	801 221 857	65.41%
20 zł	240 612 310	59.64%	218 564 365	61.12%
10 zł	270 742 224	45.26%	225 433 945	44.79%
Total	5 994 612 825	71.91%	5 940 767 921	71.42%

Source: study of the NBP Cash and Issue Department.

In 2021, among all denominations, 100 zł banknotes accounted for the highest volume of processed and recirculated banknotes (respectively: 59.6% and 64.9%). The subsequent most frequently processed and recirculated denominations included the following banknotes: 200 zł (14.8% and 13.6%, respectively) and 50 zł (14.7% and 13.5%, respectively). In the case of 100 zł banknotes, similar results were obtained in 2020, i.e. 59.9% of processed banknotes and 65.9% of banknotes recirculated. This means that 100 zł, 200 zł and 50 zł banknotes circulate, to a major extent, among market participants and are used for trading purposes. At the same time, the 100 zł and 200 zł denominations also fulfil a function as a store of value.

Aggregate figures indicate that the processing of banknotes is largely carried out by the commercial sector. In 2021, its share of banknote processing reached 84.2%, similar to 2020, when it amounted to 84.5%. The level of this share depends on the denomination (Figure 10).

Figure 10. Processing of banknotes in 2021 by denomination structure broken down into NBP and other market participants

Source: study of the NBP Cash and Issue Department.

Table 9. Volume of coins processed in 2020 and 2021 in quarterly terms

Denomination	2020				2021			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	2	3	4	5	6	7	8	9
5 zł	68 802 823	46 341 934	62 879 329	54 087 752	51 110 866	52 453 719	63 052 500	60 412 749
2 zł	115 583 511	73 699 258	102 523 859	93 075 271	88 036 847	90 813 219	104 275 787	101 871 496
1 zł	161 155 202	94 895 471	116 552 042	107 872 285	106 533 576	114 449 745	123 393 813	118 695 451
50 gr	77 155 451	52 344 079	65 332 349	59 549 296	55 299 658	57 600 122	61 735 235	61 509 408
20 gr	59 361 110	39 055 097	47 238 428	42 095 095	39 981 366	41 302 656	44 963 877	43 425 191
10 gr	86 398 384	59 581 011	69 927 429	62 893 210	59 780 636	62 279 357	66 299 327	65 169 163
5 gr	61 002 170	40 864 857	45 623 984	41 719 102	40 621 282	45 003 577	47 045 733	43 508 021
2 gr	72 551 193	49 046 893	53 672 295	49 591 174	46 865 549	54 921 998	57 629 769	53 978 729
1 gr	149 257 919	88 899 039	93 332 943	95 498 730	95 909 876	115 683 688	119 013 925	112 350 064
Total	851 267 763	544 727 639	657 082 658	606 381 915	584 139 656	634 508 081	687 409 966	660 920 272
	2 659 459 975				2 566 977 975			

Source: study of the NBP Cash and Issue Department.

A stabilisation can also be observed in the case of the volume of coins processed. In 2021, the banks counted, sorted and checked for authenticity 2.6 billion coins, similar to 2020 when they processed 2.7 billion coins (Table 9).

Stabilisation can also be noted in the case of recirculated coins. In 2021, as in the previous year, this figure amounted to 1.4 billion coins. The reports submitted show that at the end of 2021, 53.4% of processed coins were recirculated by banks, whereas a year earlier this figure reached 53.1% (Table 10).

Out of all the coin denominations in 2021, the volume of 1 zł coins processed was the highest, at 18%. The second most frequently processed denomination was 1 gr (17.3%). Similar to 2020, 1 zł and 1 gr coins had the highest share. In this period, 1 zł coins accounted for 18.1% and 1 gr coins for 16.1% of the total coins processed.

Table 10. Volume and share of coins recirculated in 2020 and 2021 in quarterly terms

Denomination	2020		2021	
	Number of recirculated coins	Ratio of the number of recirculated coins to the number of processed coins	Number of recirculated coins	Ratio of the number of recirculated coins to the number of processed coins
1	2	3	4	5
5 zł	123 241 240	53.10%	124 177 229	54.70%
2 zł	206 041 120	53.53%	208 238 038	54.09%
1 zł	275 756 713	57.39%	263 531 090	56.91%
50 gr	131 229 207	51.59%	129 953 439	55.03%
20 gr	97 498 194	51.93%	91 186 312	53.74%
10 gr	170 842 448	61.28%	154 705 741	61.02%
5 gr	95 725 895	50.60%	90 101 929	51.14%
2 gr	95 752 345	42.58%	91 642 384	42.94%
1 gr	216 551 634	50.72%	217 489 056	49.10%
Total	1 412 638 796	53.12%	1 371 025 218	53.41%

Source: study of the NBP Cash and Issue Department.

In the case of coins recirculated in 2021, like in the case of coins processed, the 1 zł coins had the highest share, which accounted for 19.2%. The second most frequently recirculated denomination was the 1 gr coin (15.9%). For comparison, in 2020, 1 zł coins (19.5%) and 1 gr coins (15.3%) had the highest share among the coins recirculated.

4.4. Cash Circulation Council

The Cash Circulation Council is a consultative and advisory body to the Management Board of Narodowy Bank Polski, functioning pursuant to Resolution No. 4/2019 of the Management Board of Narodowy Bank Polski of 21 February 2019 on the appointment of the Cash Circulation Council and determination of the procedure of its operation (amended in 2021 by Resolution No. 5/2021).

The Council was established to take measures with the aim to improve and standardise the functioning of the cash circulation market and to increase its efficiency and safety by involving also other cash circulation market participants (in addition to banks). Motivating entities operating in the cash circulation market to cooperate in this respect is of key importance for maintaining the security and quality of cash circulation.

Representatives of NBP and stakeholders of the cash circulation market, including banks, Poczta Polska S.A., organisations associating the banking sector and the retail sector, the Polish Organisation of Cash Handling Companies and CIT companies, have participated in the work of the Council since its establishment.

At the same time, recognising the need to establish a new outlook for cash, at the beginning of 2021, it was decided to assign the Council to develop the draft National Strategy for Cash Circulation Security (NSBOG). The main public institutions competent for the areas covered

by the National Strategy for Cash Circulation Security and representatives of independent ATM network operators were invited to join the work.

Following the entry into force of Resolution No. 5/2021 of the Management Board of Narodowy Bank Polski of 15 February 2021 amending the Resolution on the appointment of the Cash Circulation Council and defining the procedure of its operation, the Council was expanded by representatives of the following institutions: the Ministry of Finance, the Ministry of the Interior and Administration, the Ministry of Justice, the Police Headquarters, the Office of the Polish Financial Supervision Authority, the National Association of Cooperative Banks and representatives of the market of independent ATM network operators as well as additional NBP representatives. It is worth pointing out that the Cash Circulation Council is the only forum of this kind bringing together representatives of different areas of the cash circulation market, while its composition takes into account institutions regulating its operation.

The tasks of the Council comprise:

- analysis of cash circulation in Poland and analysis of legal regulations in this area,
- analysis of the effects of implementing the National Strategy for Cash Circulation Security,
- providing opinions on draft plans prepared by the DES which define the strategic directions for the development of cash circulation,
- recommending proposals of measures aimed in particular at:
 - mitigating systemic risks for cash circulation,
 - improving and enhancing the security of cash circulation,
- providing opinions on projects prepared by the Cash and Issue Department concerning the organisation of cash processes, ensuring universal access to cash in the full denomination structure and of adequate quality,
- preparing proposals of measures to integrate the functioning of the cash circulation market,
- resolving issues indicated by the NBP Management Board.

The amendment to the resolution performed in February 2021, in addition to assigning tasks related to the development of the draft National Strategy for Cash Circulation Security to the Council, obliged the Council to analyse the effects of implementation of the National Strategy for Cash Circulation Security adopted by the NBP Management Board.

In March 2021, as part of the launch of the works related to the preparation of the National Strategy for Cash Circulation Security, the Council established the following task forces, responsible for the preparation of the draft National Strategy for Cash Circulation Security:

- acceptance and availability of cash,
- cash logistics,
- cyber security,
- physical security of cash,
- communication.

The task forces brought together representatives of the institutions represented in the Council.

At the meeting on 29 October 2021, the draft National Strategy for Cash Circulation Security was adopted by the Council Resolution No. 3/2021. The Council also decided to present the draft National Strategy for Cash Circulation Security to the Management Board of Narodowy Bank Polski. Subsequently, on 22 November 2021, the Management Board of Narodowy Bank Polski adopted the National Strategy for Cash Circulation Security. An abridged version of the document and a full version are published on the NBP website.

4.4.1. National Strategy for Cash Circulation Security

In accordance with the tasks adopted by the Council and assigned to each task force, draft activities to be included in the National Strategy for Cash Circulation Security and its chapters were prepared by the task forces. The assumptions of the National Strategy for Cash Circulation Security are based on a review of the cash circulation market comprising both legal and organisational conditions as well as measures undertaken over recent years by NBP regarding the operation of this market. The definition of key action areas involving market participants is included in the four pillars of the National Strategy for Cash Circulation Security:

- Pillar I – cash availability and acceptance,
- Pillar II – smooth cash supply,
- Pillar III – cyber-security of the IT systems used in cash supply processes,
- Pillar IV – physical security of cash.

Part I of the document presents the characteristics of the cash circulation market, taking into account services offered on the market of cashless payments. Subsequent chapters refer to legal conditions of the cash circulation market as well as activities undertaken by NBP over recent years aimed at strengthening market effectiveness and security. This part also contains a description of example solutions in the scope of cash circulation that have been implemented by other countries.

Part II of the National Strategy for Cash Circulation Security presents the solutions proposed by the individual task forces within their assigned areas. The actions to be undertaken are presented against the background of the analysis of, among others, legal, social, economic, infrastructural and other issues, depending on the specific nature of the given solution.

Pillar I of the NSBOG referring to cash availability and acceptance, proposes measures aimed at ensuring universal acceptance of cash in payments, ensuring adequate availability of cash and defining criteria for availability and monitoring of this area. Legislative measures have already been implemented in the form of an amendment to the Act on Payment Services, the aim of which is to oblige traders accepting cashless payment instruments to also accept banknotes and coins (see subsection “4.2.2. Introduction of a statutory obligation for universal cash acceptance”). The cash availability criterion was also adopted, which means ensuring that 90% of the population in Poland has access to a bank branch with a cash desk service or an ATM within a distance no more than 10 km. Pillar I of the National Strategy for Cash Circulation

Security comprises measures aimed at conducting an analysis by payment service providers of the legitimacy and feasibility of applying solutions increasing access to cash in Poland, consisting among others in introducing the possibility of cash servicing of bank customers in outlets established by an external partner (the so-called MultiCash Branch) or automation of customer service in bank outlets through the use of adequate devices (i.e. Assisted Self Service). Actions aimed at self-regulation are envisaged as regards the introduction of ATM fees or the preparation of a regulation requiring payment service providers operating payment accounts to ensure adequate access to the main sources of cash supply.

Pillar II of the National Strategy for Cash Circulation Security, focusing on the smooth supply of the Polish currency to the market, has been targeted at ensuring an adequate denomination structure of banknotes and coins in circulation, supporting stable functioning of the national supply system and striving to maintain the appropriate quality of banknotes and coins in circulation. The measures related to ensuring the adequate denomination structure of banknotes and coins include:

- adopting solutions increasing the flexibility of customer-operated equipment for handling banknotes in circulation,
- the subjective extension of quarterly reporting in the scope of cash circulation to banks that do not have a supply agreement with NBP and to non-banking entities.

The solutions designed stipulate cyclical questionnaire surveys conducted among the public on the perception of cash circulation and the regular acquisition of information from market participants in the scope of adapting customer-operated machines to banknotes in circulation. The proposals of measures also take into account the development of the deposit system towards allowing banks to store Polish currency in the vaults of CIT companies and to supplement the deposit with cash originating from the market. This will allow to increase the efficiency of cash management processes and reduce the costs incurred by market participants, associated among others, with cash transport.

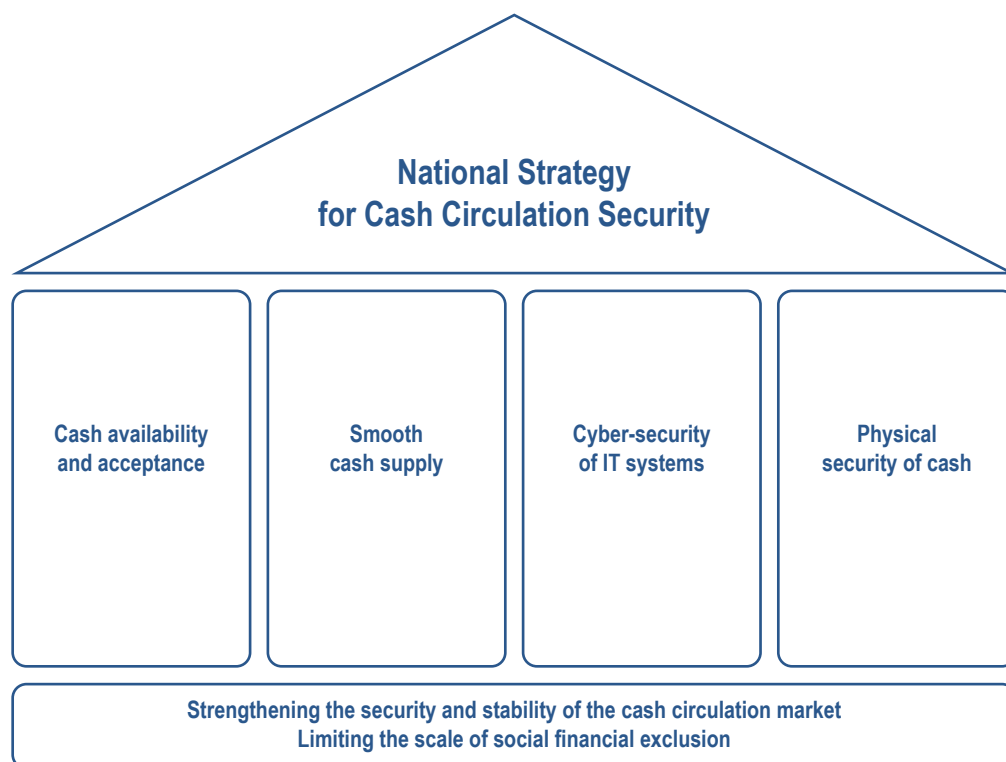
The aim of Pillar III related to the cyber security of IT systems used in cash supply processes is to identify these systems and cover them by special protection as well as to improve the exchange of information between cash circulation market participants in the scope of cyber security. The solutions designed include the development of a common set of practices in the area of ICT security, as well as undertaking a dialogue with cash circulation market participants regarding information exchange in the area of cyber security.

Pillar IV of the National Strategy for Cash Circulation Security is dedicated to the physical security of cash. The following objectives of the proposed actions have been adopted:

- promoting and implementing new technical and organisational solutions to enhance the physical security of cash,
- harmonising and adapting the legal norms and other regulations to the changing environment,
- creation of a coherent supervision system in the area of physical security of entities responsible for cash processing.

At the same time, it was found reasonable to formulate a recommendation concerning the preparation of good practices associated with the cash handling process and a proposal addressed to insurers with a view to supporting modern solutions increasing the physical security of cash.

Diagram 2. Pillars of the National Strategy for Cash Circulation Security



Source: study of the NBP Cash and Issue Department.

Chapter 5

Cooperation with banks in the scope of Polish currency supply

Cooperation with banks in the scope of Polish currency supply

5.1. Withdrawing Polish currency

Under the agreements, banks may withdraw Polish currency from NBP. They are supplied with cash via:

- the basic system,
- the deposit system.

The value of banknotes and coins withdrawn by banks in 2021 was 16.6% lower than in 2020, while the number of banknotes and coins withdrawn by banks in 2021 was 9.8% lower than the previous year (Table 11).

Table 11. Total value (PLN million) and (million pieces) of banknotes and coins withdrawn from NBP

Value or volume	2020	2021	Change (col. 3 – col. 2)	Change in % (col. 3 / col. 2 – 100%)
1	2	3	4	5
Value	222 818.3	185 884.0	-36 934.3	-16.6%
Volume	3 339.1	3 011.0	-328.1	-9.8%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

Table 12. Total number of banks that have jointly withdrawn at least 80% of the value or volume of banknotes or coins from NBP

Value or volume	Banknotes, coins	2020		2021	
		Total share	Number of banks	Total share	Number of banks
1	2	3	4	5	6
Value	banknotes and coins	87.4%	6	81.1%	5
	banknotes	87.6%	6	81.3%	5
	coins	82.1%	5	85.3%	5
Volume	banknotes and coins	81.9%	7	85.2%	7
	banknotes	86.4%	6	88.5%	6
	coins	81.7%	5	82.0%	5

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

Among all banks supplied with cash by NBP, a group of so-called key banks can be distinguished, consisting of 5–7 banks generating over 80% of banknote and coin withdrawals in terms of their value and volume (Table 12).

5.1.1. Banknotes

The value of banknotes withdrawn by banks in 2021, compared to 2020, was 16.6% lower, while the number of banknotes withdrawn by banks in 2021 was 16.9% lower than in 2020 (Table 13).

Table 13. Value (PLN million) and volume (million pieces) of banknotes withdrawn from NBP

Value or volume	2020	2021	Change (col. 3 – col. 2)	Change in % (col. 3 / col. 2 – 100%)
1	2	3	4	5
Value	222 017.5	185 083.8	-36 933.7	-16.6%
Volume	2 080.4	1 727.8	-352.6	-16.9%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

The highest share in banknote withdrawals in 2021, both in terms of value and volume, was recorded in the case of the 100 zł denomination. In 2020, it was also the banknote most frequently withdrawn from NBP. In 2021, in numerical terms, banknotes with the denomination of 500 zł were withdrawn least frequently (Table 14).

In 2021, compared to 2020, both the value and the volume of withdrawals increased for 20 zł denomination (in the case of value of withdrawals by: PLN 4.4 million, and by 0.2 million pieces for the number of withdrawals). On the other hand, in 2021, the value and the volume of withdrawals for banknotes of 500 zł, 200 zł, 100 zł, 50 zł and 10 zł denomination decreased compared to 2020 (in the case of the value of withdrawals, respectively, by PLN 701.5 million, PLN 9,742.8 million, PLN 23,251.0 million, PLN 3,177.0 million, PLN 65.9 million, and in the case of the volume of withdrawals, respectively by 1.4 million pieces, 48.7 million pieces, 232.5 million pieces, 63.5 million pieces, 6.6 million pieces).

Table 14. Value (PLN million), volume (million pieces) and structure of banknotes withdrawn by banks from NBP

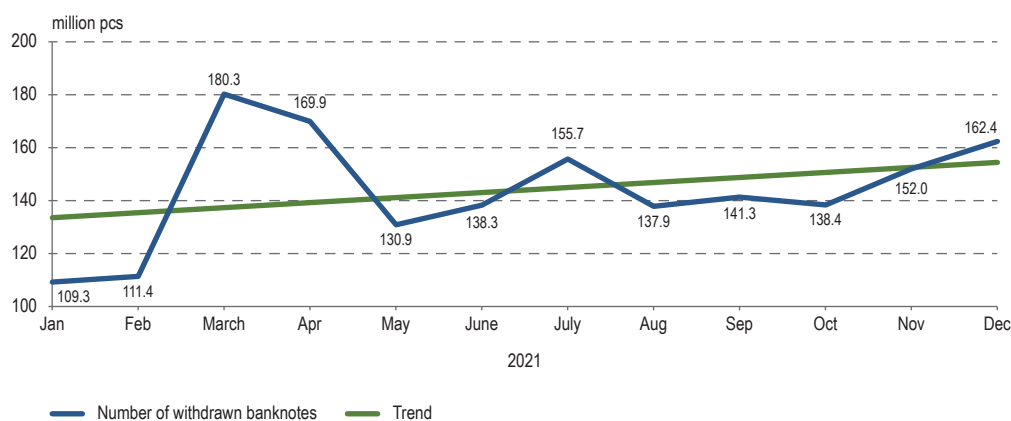
Denomination	Value		Volume		Structure by value		Structure by volume	
	2020	2021	2020	2021	2020	2021	2020	2021
1	2	3	4	5	6	7	8	9
500 zł	10 314.5	9 613.0	20.6	19.2	4.6%	5.2%	1.0%	1.0%
200 zł	85 259.8	75 517.0	426.3	377.6	38.4%	40.8%	20.5%	21.9%
100 zł	106 387.0	83 136.0	1 063.9	831.4	47.9%	45.0%	51.1%	48.1%
50 zł	16 531.8	13 354.8	330.6	267.1	7.4%	7.2%	15.9%	15.5%
20 zł	2 270.5	2 274.9	113.5	113.7	1.0%	1.2%	5.5%	6.6%
10 zł	1 254.0	1 188.1	125.4	118.8	0.6%	0.6%	6.0%	6.9%
Total	222 017.5	185 083.8	2 080.4	1 727.8	100.0%	100.0%	100.0%	100.0%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

In 2021, banks withdrew the lowest volume of banknotes in January (109.3 million pieces) and in February (111.4 million pieces) and the highest volume in March: 180.3 million pieces, in April: 169.9 million pieces, in July: 155.7 million pieces and in December: 162.4 million pieces (Figure 11). A factor influencing this situation is, among others, the seasonality of banknote withdrawals.

Figure 11. Volume of banknotes withdrawn from NBP by banks



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

5.1.2. Coins

The value of coins withdrawn by banks in 2021 was similar to 2020 and amounted to PLN 800.3 million (0.1% lower), whereas the volume of coins withdrawn was 1.9% higher (Table 15).

Table 15. Value (PLN million) and volume (million pieces) of coins withdrawn from NBP

Value or volume	2020	2021	Change (col. 3 – col. 2)	Change in % (col. 3 / col. 2 – 100 %)
1	2	3	4	5
Value	800.8	800.3	-0.5	-0.1%
Volume	1 258.7	1 283.2	24.5	1.9%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

While analysing the denomination structure of coin withdrawals in 2021, it should be indicated that the highest share withdrawals, in terms of number, was recorded in the case of the 1 gr denomination. In 2020, coins of this denomination were also most frequently withdrawn from NBP. In terms of volume, both in 2021 and in 2020, coins with the denomination of 5 zł were withdrawn least frequently (Table 16).

In 2021, compared to 2020, the value of withdrawals decreased for all coins by PLN 0.5 million, while the number of withdrawals of all coins increased by 24.5 million pieces. This is due, among others, to the fact that in 2021 banks withdrew more coins with denominations of 5 zł, 2 zł, 20 gr, 5 gr, 2 gr and 1 gr (respectively, by: 2.4 million pieces, 0.2 million pieces, 10.6 million pieces, 1.9 million pieces, 6.1 million pieces, 26.1 million pieces). On the other hand, in 2021, banks withdrew 23 million fewer coins with the denomination of 1 zł, 50 gr and 10 gr than in 2020.

In the consecutive months of 2021, the volume of coins withdrawn from NBP by banks showed an upward trend. Banks withdrew the lowest number of coins in January – 80.8 million pieces and in February – 66.5 million pieces, and the highest number in November – 120.7 million pieces and in December – 135.9 million pieces (Figure 12).

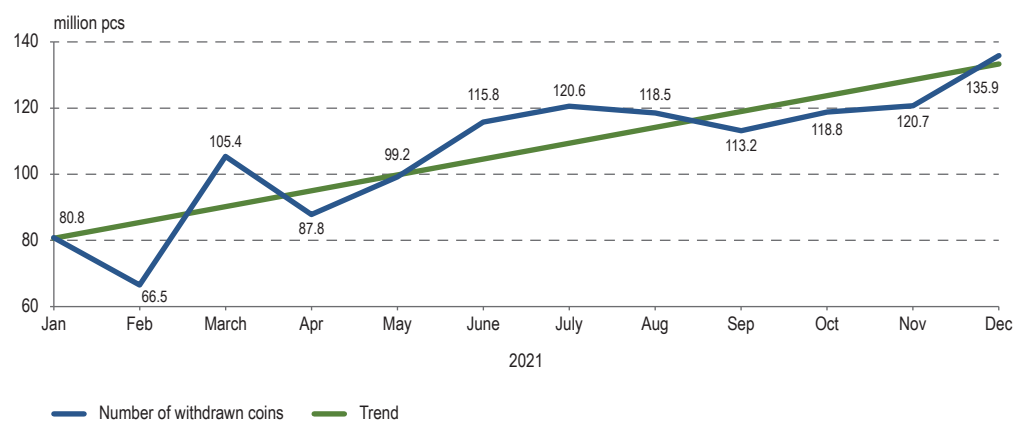
Table 16. Value (PLN million), volume (million pieces) and structure of coins withdrawn from NBP

Denomination	Value		Volume		Structure by value		Structure by volume	
	2020	2021	2020	2021	2020	2021	2020	2021
1	2	3	4	5	6	7	8	9
5 zł	341.9	353.9	68.4	70.8	42.7%	44.2%	5.4%	5.5%
2 zł	232.1	232.4	116.0	116.2	29.0%	29.0%	9.2%	9.1%
1 zł	134.0	123.1	134.0	123.1	16.7%	15.4%	10.6%	9.6%
50 gr	45.7	41.4	91.3	82.8	5.7%	5.2%	7.3%	6.4%
20 gr	18.8	20.9	93.9	104.5	2.3%	2.6%	7.5%	8.1%
10 gr	16.3	16.0	163.4	159.9	2.0%	2.0%	13.0%	12.5%
5 gr	6.3	6.4	125.5	127.4	0.8%	0.8%	10.0%	9.9%
2 gr	2.4	2.5	118.2	124.3	0.3%	0.3%	9.4%	9.7%
1 gr	3.5	3.7	348.1	374.2	0.4%	0.5%	27.7%	29.2%
Total	800.8	800.3	1 258.7	1 283.2	100.0%	100.0%	100.0%	100.0%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

Figure 12. Volume of coins withdrawn from NBP by banks



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

5.2. Lodging Polish currency in NBP by banks

In 2021, the value of banknotes and coins lodged by banks in NBP was 8.8% higher compared to 2020. On the other hand, the volume of banknotes and coins lodged by banks in NBP was 4.3% lower than in the previous year (Table 17).

Table 17. Value (PLN million) and volume (million pieces) of banknotes and coins lodged in NBP

Value or volume	2020	2021	Change (col. 3 – col. 2)	Change in % (col. 3 / col. 2 – 100%)
1	2	3	4	5
Value	139 844.1	152 118.1	12 274.0	8.8%
Volume	1 936.3	1 852.2	-84.1	-4.3%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

Table 18. Number of banks whose total share in the value or volume of banknotes or coins lodged in NBP reached at least 80%

Value or volume	Banknotes, coins	2020		2021	
		Total share	Number of banks	Total share	Number of banks
1	2	3	4	5	6
Value	banknotes and coins	83.5%	5	82.9%	5
	banknotes	83.7%	6	83.0%	5
	coins	83.3%	7	83.5%	7
Volume	banknotes and coins	82.9%	6	83.1%	6
	banknotes	82.0%	5	82.2%	5
	coins	83.3%	7	81.6%	7

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

In 2021, a group of 5–7 banks lodged over 80% of banknotes and coins in NBP – both in terms of volume and value. The composition of this group did not change during the year (Table 18).

5.2.1. Banknotes

In 2021, banks lodged in NBP banknotes with a total value of PLN 151,707.7 million.

In terms of value and number, in 2021 banks lodged more banknotes than in the previous year, by PLN 12,333.9 million, i.e. 8.8%, and 43.1 million pieces, i.e. 2.8%, respectively (Table 19).

In 2020, banks lodged in NBP significantly fewer banknotes than in the previous year (by 25.5%), whereas an increase in this number was observed in 2021. The decline in lodgements in 2020 was related to the phenomena that occurred as a consequence of the COVID-19 pandemic, which increased the demand for cash. This resulted in increased withdrawals by

consumers, often accompanied by an accumulation of savings. However, it should be noted that the number of banknotes lodged in 2021 was 23.4% lower than in 2019.

While analysing the number of banknotes lodged in NBP by banks in consecutive months of 2021, an upward tendency was observed. Banks lodged the lowest volume of banknotes in February – 109.2 million pieces, in January – 112.8 million pieces and in April – 113.2 million pieces, and the highest volume in December – 156.2 million pieces, in August – 141.6 million pieces and in June – 139.5 million pieces (Figure 13).

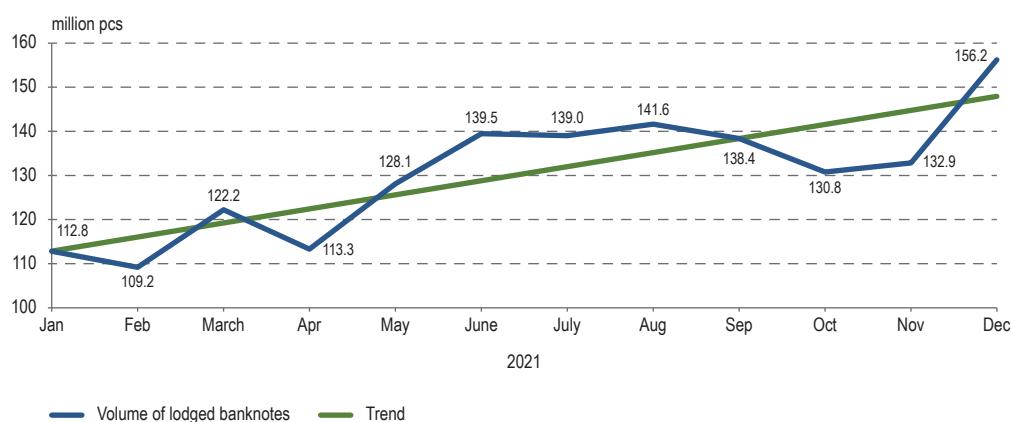
Table 19. Value (PLN million) and volume (million pieces) of banknotes lodged in NBP

Value or volume	2020	2021	Change (col. 4 – col. 3)	Change in % (col. 4 / col. 3 – 100%)
1	2	3	4	5
Value	139 373.8	151 707.7	12 333.9	8.8%
Volume	1 520.9	1 564.0	43.1	2.8%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

Figure 13. Volume of banknotes lodged in NBP by banks



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

The highest share in banknotes lodged in 2021, both in terms of value and volume, was recorded in the case of the 100 zł denomination (it was also the banknote most frequently lodged in NBP in 2020). In terms of volume, banknotes with the denomination of 50 zł and 200 zł were the most frequently lodged banknotes in 2021, while banknotes with the denomination of 10 zł, 20 zł and 500 zł were lodged least frequently (Table 20).

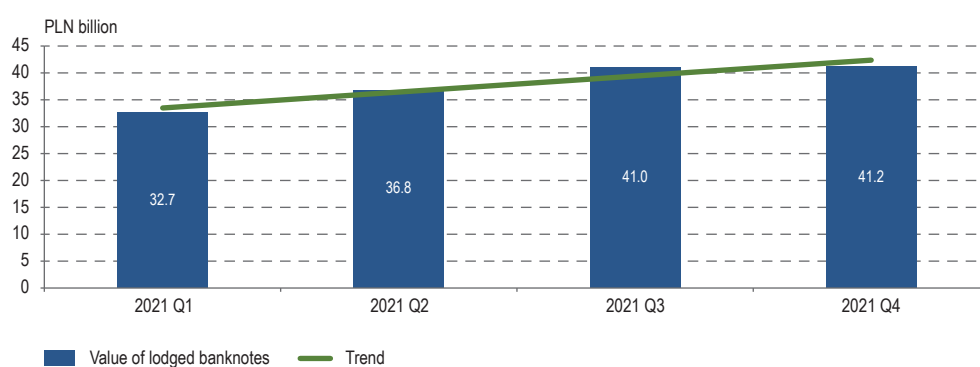
In terms of the value of banknotes lodged in NBP, an upward trend was observed in consecutive quarters. The value of banknotes lodged at the end of 2021 Q4 increased by 25.9% compared to 2021 Q1 (Figure 14).

Table 20. Value (PLN million), volume (million pieces) and structure of banknotes lodged in NBP in 2020 and 2021 – by denomination

Denomination	Value		Volume		Structure by value		Structure by volume	
	2020	2021	2020	2021	2020	2021	2020	2021
1	2	3	4	5	6	7	8	9
500 zł	1 632.7	2 315.5	3.3	4.6	1.2%	1.5%	0.2%	0.3%
200 zł	42 052.7	51 661.0	210.3	258.3	30.2%	34.0%	13.8%	16.5%
100 zł	77 073.5	80 678.5	770.7	806.8	55.3%	53.2%	50.7%	51.6%
50 zł	15 119.6	13 847.5	302.4	277.0	10.8%	9.1%	19.9%	17.7%
20 zł	2 306.2	2 064.1	115.3	103.2	1.6%	1.4%	7.6%	6.6%
10 zł	1 189.0	1 141.1	118.9	114.1	0.9%	0.8%	7.8%	7.3%
Total	139 373.7	151 707.7	1 520.9	1 564.0	100.0%	100.0%	100.0%	100.0%

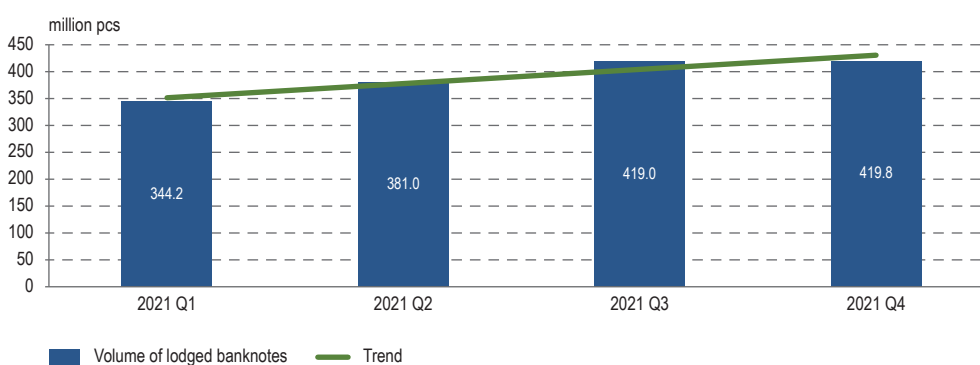
Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

Figure 14. Value of banknotes lodged in NBP by banks

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

Figure 15. Volume of banknotes lodged in NBP by banks

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

While examining the volume of banknotes lodged, it should be pointed out that, as in terms of value, the volume grew on a quarter to quarter basis. At the end of 2021 Q4, the number of banknotes lodged by banks increased by 22% compared to 2021 Q1 (Figure 15).

5.2.2. Coins

The value and volume of coins lodged by banks in NBP in 2021 decreased by PLN 59.9 million, i.e. 12.7%, and 127.3 million pieces, i.e. 30.6%, respectively, compared to 2020 (Table 21).

Table 21. Value (PLN million) and volume (million pieces) of coins lodged in NBP in 2020–2021

Value or volume	2020	2021	Change (col. 3 – col. 2)	Change in % (col. 3 / col. 2 – 100%)
1	2	3	4	5
Value	470.3	410.4	-59.9	-12.7%
Volume	415.5	288.2	-127.3	-30.6%

Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

As in 2020, the denominations of 5 zł, 2 zł and 1 zł had the largest share in the value structure of the coins lodged (94.6% of all coins lodged).

In terms of the volume of coins lodged in NBP, the following denominations prevailed: 5 zł, 2 zł, 1 zł and 50 gr (74.1% of all coins lodged). In numerical terms, the lowest volume of coins lodged was recorded for coins with the face value of 10 gr, 5 gr and 2 gr – 13.7% of all coins lodged.

Table 22. Value (PLN million), volume (million pieces) and structure of coins lodged in NBP

Denomination	Value		Volume		Structure by value		Structure by volume	
	2020	2021	2020	2021	2020	2021	2020	2021
1	2	3	4	5	6	7	8	9
5 zł	183.1	168.3	36.6	33.7	38.9%	41.0%	8.8%	11.7%
2 zł	157.1	143.8	78.6	71.9	33.4%	35.0%	18.9%	24.9%
1 zł	95.1	76.2	95.1	76.1	20.2%	18.6%	22.9%	26.4%
50 gr	24.2	16.0	48.5	32.0	5.2%	3.9%	11.7%	11.1%
20 gr	5.2	3.5	26.1	17.6	1.1%	0.9%	6.3%	6.1%
10 gr	3.3	1.6	32.6	15.8	0.7%	0.4%	7.8%	5.5%
5 gr	1.3	0.5	26.5	11.0	0.3%	0.1%	6.4%	3.8%
2 gr	0.5	0.3	25.3	12.6	0.1%	0.1%	6.1%	4.4%
1 gr	0.5	0.2	46.1	17.5	0.1%	0.0%	11.1%	6.1%
Total	470.3	410.4	415.4	288.2	100.0%	100.0%	100.0%	100.0%

Source: study of the NBP Cash and Issue Department.

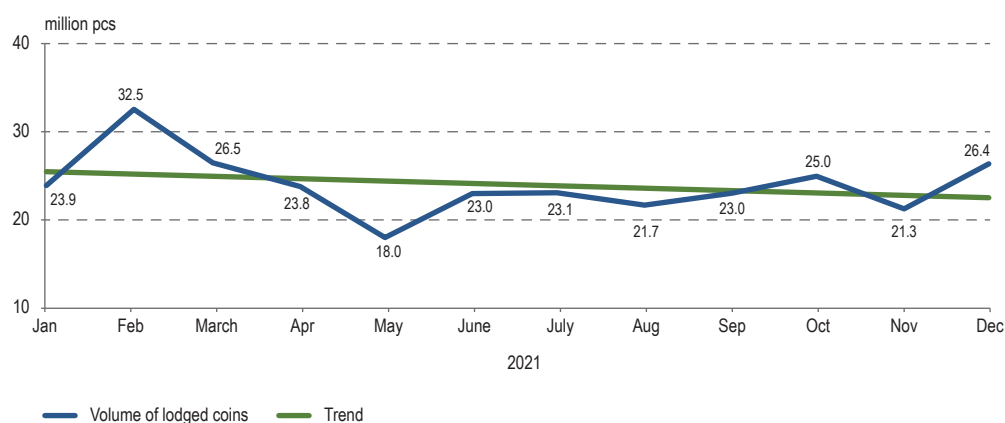
Note: for analytical purposes, source figures were rounded to the nearest decimal place.

In terms of value, in 2021, the highest number of coins lodged were denominations of 5 zł and 2 zł (76% of all coins lodged), while the lowest number of coins lodged was recorded for low denominations, i.e. 5 gr, 2 gr, 1 gr – 0.2% of all coins lodged (Table 22).

In the case of coins lodged in NBP by banks in individual months of 2021, a downward tendency was observed. Banks lodged the lowest volume of coins in May (18.0 million pieces) and in November (21.3 million pieces) and the highest volume in February – 32.5 million pieces, in March – 26.5 million pieces, and in December – 26.4 million pieces (Figure 16).

While analysing the value of coins lodged in NBP, an upward trend can be observed. The value of coins lodged by banks at the end of 2021 Q4 increased by 7.4% compared to 2021 Q1 (Figure 17).

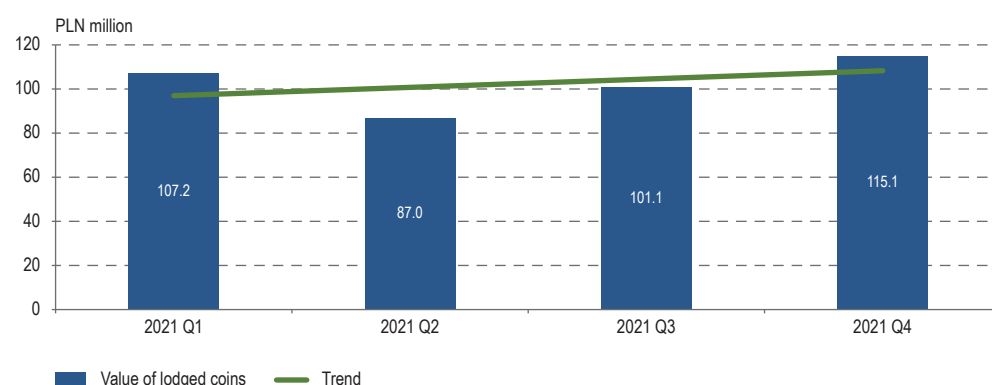
Figure 16. Volume of coins lodged in NBP by banks



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

Figure 17. Value of coins lodged in NBP by banks

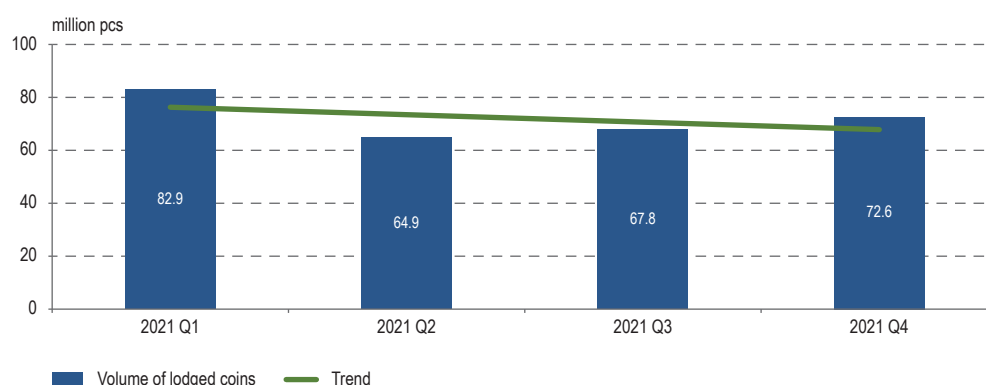


Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

In the case of the volume of coins lodged in NBP, as in terms of value, the lowest number of coins was lodged by banks in 2021 Q2. The number of coins lodged in 2021 Q4 fell by 12.4% compared to 2021 Q1 (Figure 18).

Figure 18. Volume of coins lodged in NBP by banks



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

Box. Trends in supplying Polish currency to banks in 2017–2021

1. Withdrawal of banknotes from NBP and lodging of banknotes in NBP

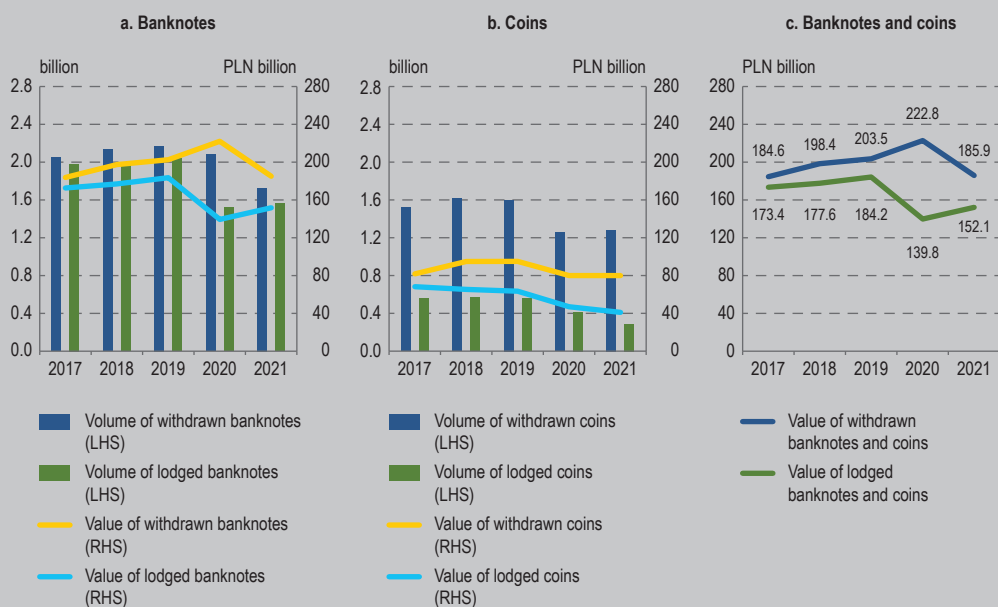
From 2017 to 2019, the volume of banknotes withdrawn from NBP showed an upward trend; however, since 2020 this volume has decreased and this phenomenon intensified in 2021. In terms of value, an upward trend was observed in 2017–2020, which reversed in 2021. Banknotes prevail in withdrawals of the Polish currency, accounting for 99.5–99.6% of the value of withdrawals. A similar situation was recorded for lodgements, where 99.6–99.7% of the value is attributable to banknotes (Figure B1).

Figures B2 and B3 illustrate the changes in the denomination structure of the volume of banknotes withdrawn from and lodged in NBP.

In 2021, the 100 zł denomination continued to dominate in terms of the volume of banknotes withdrawn from NBP, although its share fell by 7 percentage points compared to 2017. The share of the highest denomination banknote, i.e. 500 zł in the number of banknotes withdrawn amounted to 1.1% and increased by 0.73 percentage points. On the other hand, the highest change over five years was recorded for the 200 zł denomination, whose share by the number of banknotes withdrawn doubled to 21.9% (Figure B2).

In 2021, the 100 zł denomination prevailed in the denomination structure of banknotes lodged in NBP (51.6%). The share of banknotes lodged with the face value of PLN 200 increased significantly and stood at 16.5% in 2021. The 500 zł denomination shows the lowest share in the structure discussed – 0.3% (Figure B3).

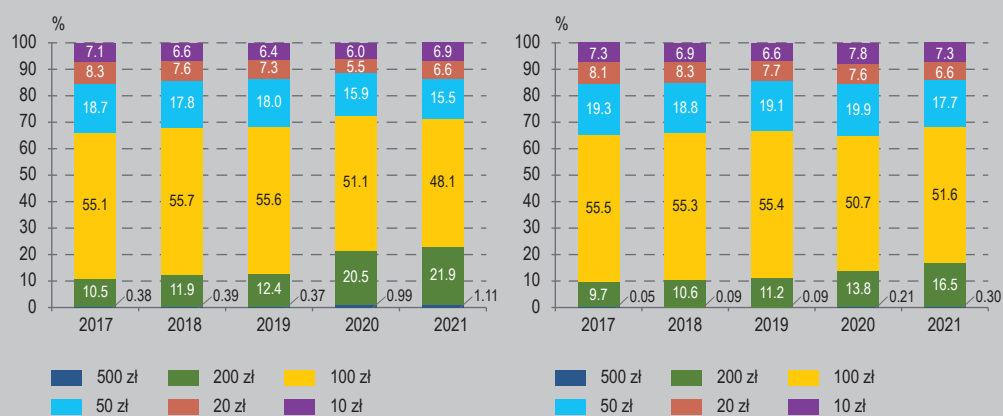
Figure B1. Withdrawal and lodging of banknotes and coins from/in NBP in 2017–2021



Source: study of NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to the nearest decimal place.

Figure B2. Denomination structure by volume of banknotes withdrawn from NBP in 2017–2021 **Figure B3. Denomination structure by volume of banknotes lodged in NBP in 2017–2021**



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

In 2021, the number of banknotes withdrawn fell by almost 17% compared to the previous year, while the value of withdrawn banknotes and coins in the Polish currency increased by 16.6%.

Table B1. Volume of banknotes withdrawn from NBP and lodged in NBP in 2017–2021

Specification	2017	2018	2019	2020	2021
1	2	3	4	5	6
Withdrawals from NBP	2 049 518 500	2 133 613 000	2 169 935 000	2 080 353 000	1 727 821 000
Change: year/previous year	x	4.1%	1.7%	-4.1%	-16.9%
Lodgements in NBP	1 979 899 584	1 996 009 377	2 042 436 123	1 520 871 012	1 563 986 000
Change: year/previous year	x	0.8%	2.3%	-25.5%	2.8%

Source: study of the NBP Cash and Issue Department.

It should also be noted that in 2017–2021, the number of banknotes withdrawn outweighed the number of banknotes lodged (Table B1). A surplus of the value of the Polish currency withdrawn over the value of the Polish currency lodged was also recorded (Figure B1a, Table B2).

Compared to 2020, 2021 saw an increase in the number of banknotes lodged (by 2.8%) and a rise in the value of the Polish currency lodged (by 8.8%).

Table B2. Value of banknotes and coins withdrawn from NBP and lodged in NBP in 2017–2021

Specification	2017	2018	2019	2020	2021
1	2	3	4	5	6
Withdrawals from NBP	184 581 129 320	198 381 706 720	203 528 114 400	222 818 279 080	185 884 034 610
Change: year/previous year	x	7.5%	2.6%	9.5%	-16.6%
Lodgements in NBP	173 401 331 515	177 607 793 970	184 210 333 785	139 844 134 040	152 118 054 420
Change: year/previous year	x	2.4%	3.7%	-24.1%	8.8%

Source: study of the NBP Cash and Issue Department.

2. Withdrawal and lodging of coins from/in NBP

In terms of the volume of coins withdrawn from NBP, a weak upward trend was observed following a significant decline recorded in 2020 (Figure B1b, Table B3).

Table B3. Volume of coins withdrawn and lodged from/in NBP in 2017–2021

Specification	2017	2018	2019	2020	2021
1	2	3	4	5	6
Withdrawals from NBP	1 521 794 500	1 613 644 500	1 601 009 500	1 258 730 500	1 283 151 500
Change: year/previous year	x	6.0%	-0.8%	-21.4%	1.9%
Lodgements in NBP	559 062 118	565 864 753	557 193 000	415 456 550	288 207 500
Change: year/previous year	x	1.2%	-1.5%	-25.4%	-30.6%

Source: study of the NBP Cash and Issue Department.

Changes in the denomination structure of the volume of coins withdrawn from and lodged in NBP are illustrated in Figures B4 and B5.

Figure B4. Denomination structure by volume of coins withdrawn from NBP in 2017–2021

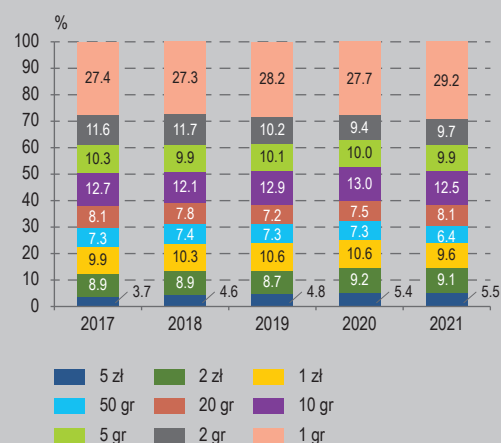
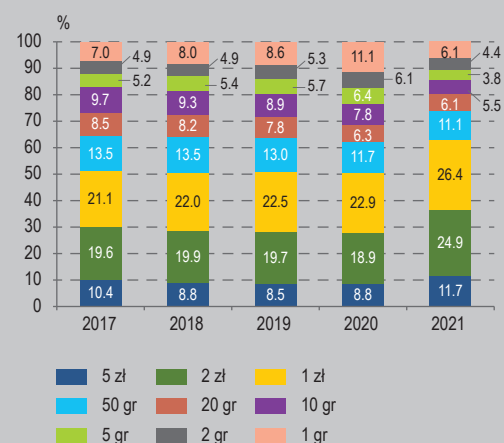


Figure B5. Denomination structure by volume of coins lodged in NBP in 2017–2021



Source: study of the NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to nearest decimal place.

The share of individual denominations in the volume structure of coins withdrawn is stable and has not changed significantly. In 2021, the 1 gr denomination dominated – its share was similar to previous years and stood at nearly 30%. In 2017–2021, low denomination coins consistently accounted for a total of approx. 50% of the volume of coin denominations withdrawn. Coins with the denomination of 5 zł were least frequently withdrawn (5.5%), although their share is increasing in year on year terms (Figure B4).

In 2021, coins of the following denominations had the highest share in the denomination structure of the volume of coins lodged in NBP: 1 zł (26.4%) and 2 zł (24.9%) and their prevalence has continued since 2017. It should also be pointed out that in the case of the volume of low-denomination coins, an upward trend was recorded in their lodgements in NBP until 2020, while in 2021 their share decreased and amounted to slightly over 14% (Figure B5).

The trend in the scope of supply in 2020 and 2021 was affected by factors related to the COVID-19 pandemic. In 2020, the number of coins lodged in NBP fell sharply (by 25%) compared to the previous year. In 2021, this trend strengthened and the decline reached 30.6%. At the same time, it should be noted in the years 2017–2020 that the volume of coins withdrawn was three times higher than the volume of coins lodged, while in 2021 it was four times higher.

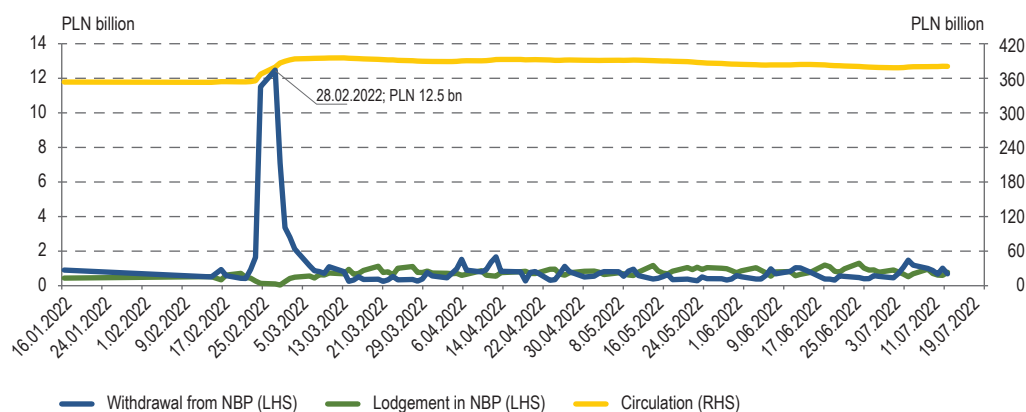
Increased demand for cash due to the outbreak of Russian military aggression against Ukraine

Increased demand for cash due to the outbreak of Russian military aggression against Ukraine

From 24 February 2022, an above-average increase in demand for cash was observed in Poland in connection with the Russian aggression on the territory of Ukraine (Figure 19). In the following days, the increased demand persisted and then gradually stabilised. Consequently, the periods below can be distinguished in which the following trends were observed:

- a) increased withdrawals of the Polish currency from NBP from 24 February to 7 March 2022 (8 operating days) and increased value of withdrawals and their relative stabilisation on the subsequent 5 operational days (8–14 March 2022),
- b) return of cash to NBP, falling in the periods:
 - 15 March – 4 April 2022 (15 operating days),
 - 13 May – 8 June 2022 (18 operating days),
 - 20 June – 5 July 2022 (12 operating days).

Figure 19. Value of banknotes and coins withdrawn and lodged from/in NBP and value of circulation in January–July 2022

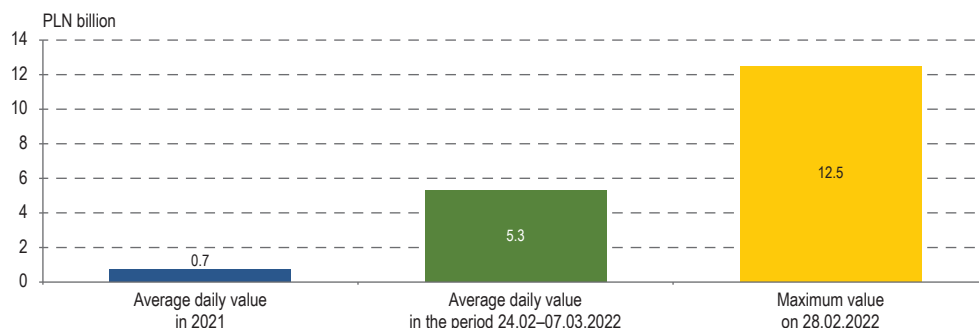


Source: study of the NBP Cash and Issue Department.

6.1. Increase in cash demand

In the first period of increased withdrawals of the Polish currency, banks withdrew, on average, PLN 5.3 billion from NBP on a daily basis during eight operating days (Figure 20). This value corresponded to 7 times the daily average of withdrawals from NBP for the stable period, i.e. 2021 (PLN 0.7 billion). On 28 February 2022, a record high withdrawal of PLN 12.5 billion was recorded. This value represented 17 times the daily average of 2021 withdrawals. As a result, from 24 February to 7 March 2022, banks withdrew a total of PLN 42 billion from NBP. The scale of the demand for cash in this period is illustrated by the fact that this amount is close to the value of the Polish currency withdrawn from NBP in the whole of 2021 Q1 (PLN 44 billion).

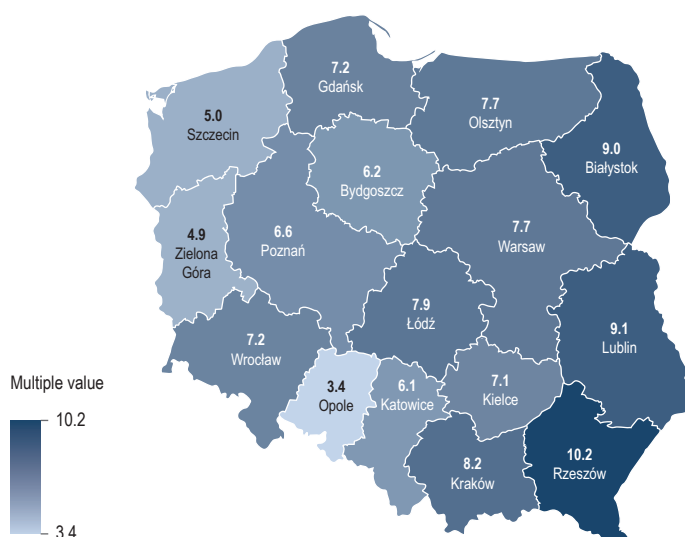
Figure 20. Value of withdrawals from NBP



Source: study of the NBP Cash and Issue Department.

When analysing the increase in the value of withdrawals of the Polish currency by regional structure of NBP regional branches in the period from 24 February to 7 March 2022, the average daily value of withdrawals in the aforementioned period was compared with the stable period, i.e. 2021 (on average, NBP regional branches experienced a 7-fold increase in the value of cash withdrawn). The highest increase in cash demand occurred in the voivodeships with a border with Ukraine and Belarus. In the NBP Regional Branch in Rzeszów the increase was 10-fold, while in Lublin and Białystok it was 9-fold. In the other NBP regional branches, the increase was lower (from 3-fold to 8-fold). A 5-fold increase in demand occurred in the western voivodeships, in NBP regional branches in Szczecin and Zielona Góra.

Figure 21. Withdrawals from NBP regional branches (comparison of daily averages): period from 24 February to 7 March 2022 vs. 2021 – multiple value

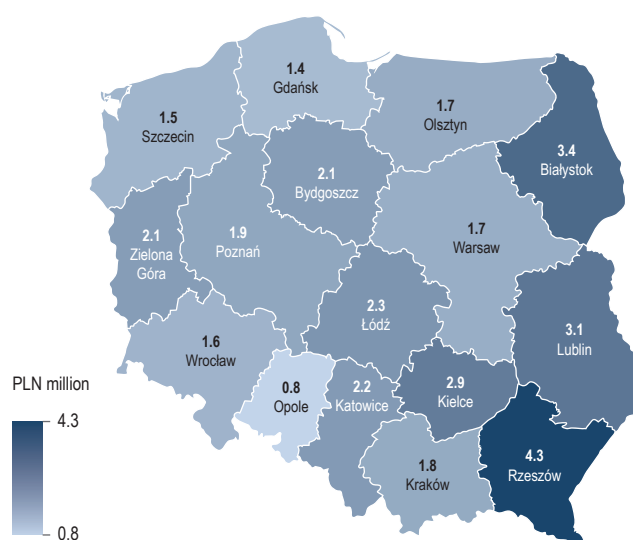


Source: study of the NBP Cash and Issue Department.

At the same time, the theoretical value of cash withdrawals from ATMs in the voivodeships during the period of increased withdrawals, i.e. from 24 February to 7 March 2022, was

calculated for analytical purposes. For this purpose, it was assumed that the cash withdrawn from NBP by banks would then be withdrawn fully through ATMs (Figure 22).

Figure 22. The theoretical total value of cash withdrawals from ATMs (average per ATM) from 24 February to 7 March 2022



Source: study of the NBP Cash and Issue Department.

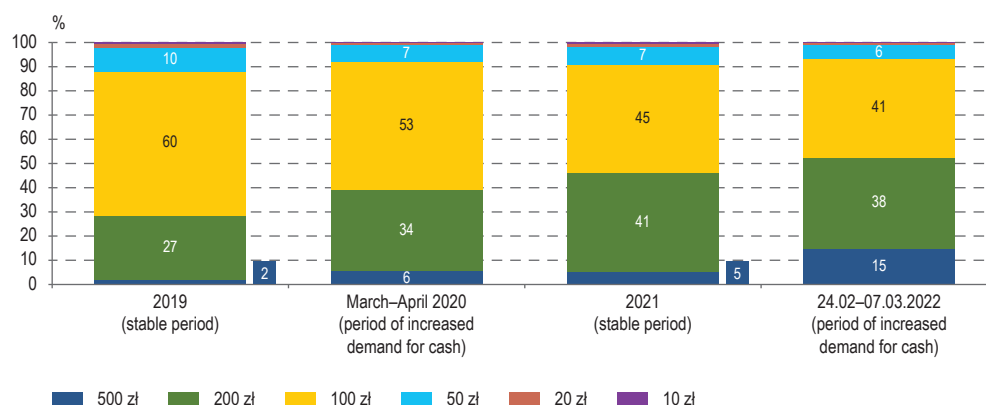
The average value of withdrawals per ATM would amount to PLN 2.0 million. The highest levels of withdrawals would occur in NBP branches in: Rzeszów (PLN 4.3 million), Białystok (PLN 3.4 million) and Lublin (PLN 3.1 million). A significant increase in the value of withdrawals would occur in the voivodeships with borders with Ukraine and Belarus: the Podlaskie and Lubelskie Voivodeships and, above all, the Podkarpackie Voivodeship.

From 24 February to 7 March 2022, an increase in demand for the highest denomination banknotes, i.e. 200 zł and 500 zł, was mainly observed. In this period, their total share in the value of banknotes withdrawn from NBP reached 53% (Figure 23), compared to 46% in the previous stable period (2021). The share of these denominations was at its highest level at that time. On the other hand, in the March–April 2020 period, the total share of the highest denominations of banknotes amounted to 40%, while in the previous stable period of 2019, it amounted to 29%. It is worth noting that in 2021, i.e. during the stable period, the share of the highest denominations consolidated at a high level and has not returned to the level of the previous stable period, i.e. 2019. Furthermore, it should be highlighted that the share of the 100 zł denomination has been steadily decreasing. It is still high and reached 41% in the last period and was as high as 60% in 2019. On the other hand, the significance of the 500 zł denomination is steadily increasing, with its share of 2% in 2019 rising to 15% in the period from 24 February to 7 March 2022. This confirms that the role of cash as a store of value increased during the aforementioned period, i.e. it was accumulated for precautionary reasons.

Apart from the highest withdrawals from NBP from 24 February to 7 March 2022, a significant decrease in the value of lodgements was also recorded, with an average of PLN 0.3 billion daily, i.e. approx. 50% of the average daily value of lodgements in 2021 (PLN 0.6 billion).

On 1 March 2022, banks lodged in NBP cash of a record low value of PLN 43.4 million, representing only 7% of the average daily value of lodgements in 2021. This may suggest that banks were hoarding cash as a precautionary measure, not only increasing withdrawals from NBP, but also failing to lodge cash in NBP.

Figure 23. Comparison of the denomination structure of the value of banknotes withdrawn from NBP in the periods analysed (2019, March–April 2020, 2021 and from 24 February to 7 March 2022)



Source: study of the NBP Cash and Issue Department.

6.2. Return of cash to NBP

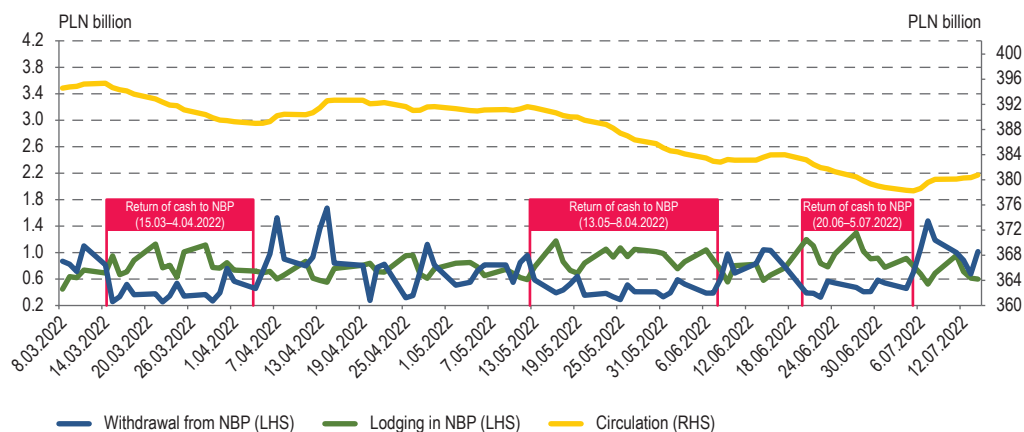
The precautionary hoarding of cash by banks is further evidenced by the fact that the return of cash to NBP was recorded after a period of rapidly increasing demand for cash. The increased lodging fell in three periods:

- from 15 March to 4 April 2022,
- from 13 May to 8 June 2022,
- from 20 June to 5 July 2022.

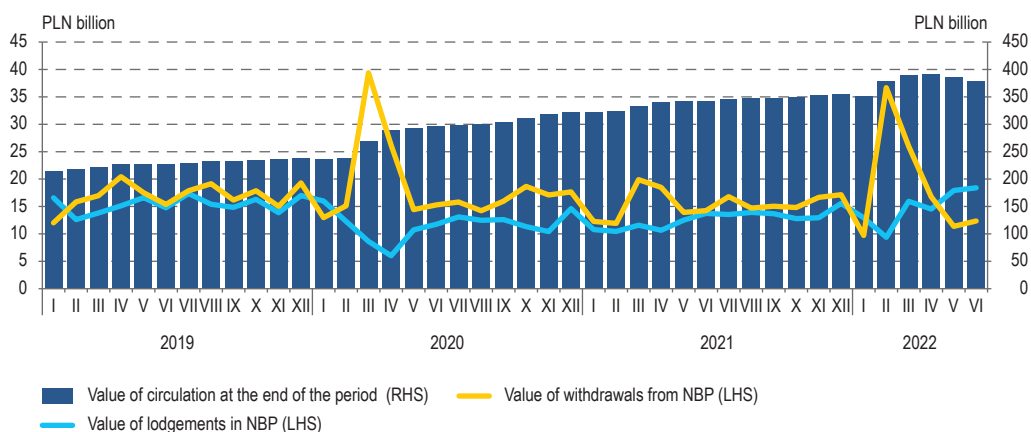
On these days, banks lodged significantly more cash in NBP on a daily basis than they withdrew. As a consequence, the total value of lodgements amounted to PLN 41 billion (Figure 24).

As a result of the periodic return of cash to NBP in May and June 2022, the value of withdrawals from NBP was lower than the value of lodgements in NBP, which was unusual in the cycle of withdrawals and lodgements of the Polish currency from/in NBP. It should also be noted that the phenomenon of cash returns to NBP in the case of the COVID-19 pandemic did not occur on such a large scale as in the initial period of the Russian aggression against Ukraine (Figure 25).

As a result of periodic cash returns to NBP, a steady decline in the value of cash circulation was recorded, from the peak level of PLN 395 billion (14 March 2022) to PLN 380 billion at the beginning of July 2022.

Figure 24. Return of cash to NBP

Source: study of the NBP Cash and Issue Department.

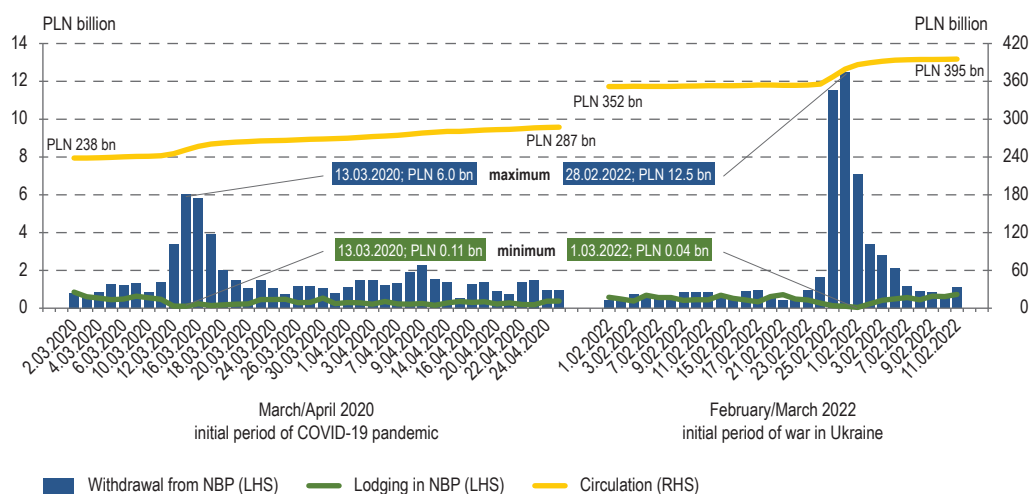
Figure 25. Value of banknotes and coins withdrawn and lodged from/in NBP and value of circulation in monthly terms, in the period from January 2019 to June 2022

Source: study of the NBP Cash and Issue Department.

6.3. Comparison of periods of increased cash demand

When analysing the sharp increase in cash demand that occurred from 24 February to 7 March 2022, it can be concluded that such a situation was previously observed in March/April 2020 (Figure 26), in the initial period of the COVID-19 pandemic. As early as the first days of the compared periods (i.e. March–April 2020 and 24 February – 7 March 2022), withdrawals from NBP reached a record high. The highest value of withdrawals in the first of the analysed periods occurred on 13 March 2020 and amounted to PLN 6 billion. It represented more than 7 times the average daily value of withdrawals in the stable period (PLN 0.8 billion). The highest value of withdrawals in the second of the analysed periods occurred on 28 February 2022 (PLN 12.5 billion). This was double the record of withdrawals of 13 March 2020 and more than 15 times the average daily value of withdrawals in the stable period, i.e. 2019.

Figure 26. Value of banknotes and coins withdrawn and lodged from/in NBP and the value of circulation in the periods of the highest increase in the demand for cash



Source: study of the NBP Cash and Issue Department.

It is noteworthy that the maximum withdrawal values occurred despite significant differences between the values of circulation. In the period preceding the increase in cash demand due to the Russian aggression in 2022, the value of circulation reached approximately PLN 352 billion, while before the COVID-19 pandemic it stood at PLN 238 billion. This means that before the Russian aggression, cash circulation was 47.3% higher than before the pandemic.

Summarising this analysis, it can be concluded that the increase in cash demand that occurred in February/March 2022 due to the Russian aggression against Ukraine was a record high. During eight operational days, banks withdrew cash worth PLN 42 billion from NBP. This amount is comparable to the value of cash withdrawn by banks in the whole 2021 Q1 (PLN 44 billion). Contrary to the situation during the COVID-19 pandemic, however, there were clear periods of cash returning to NBP. In both cases, the role of cash as a store of value increased. Cash accumulated for precautionary reasons had a stabilising function.

It should be added that, due to the high increase in the demand for cash, NBP intensively monitored the situation on an ongoing basis and maintained daily contact with cash circulation market participants, i.e. banks, ATM network operators, cash processing companies, as well as with the Polish Bank Association and central state institutions. The cash demand notified by banks was satisfied by NBP on an ongoing basis. Narodowy Bank Polski met the expectations in terms of smooth supply of the Polish currency, with the involvement of all cash circulation market participants.

Chapter 7

Glossary of terms

Glossary of terms

Cash back – the service consisting in cash withdrawal while paying for shopping in a retail establishment by payment card, cf. *Assessment of the Polish payment system functioning in the second half of 2021*, NBP Payment System Department, April 2022.

Circulation – the volume (or value) of general circulation banknotes and coins remaining in cash circulation, less the volume (or value) of banknotes and coins at NBP cash desks and vaults, deposited by NBP in vaults of other banks, and withdrawn from circulation by NBP due to being worn out or damaged.

CIT companies (cash-in-transit) – undertakings commissioned by banks to perform activities related to the counting and sorting of banknotes and coins (entrusting actual activities in accordance with Article 6a(1)(2) of the Act of 29 August 1997 – Banking law) and transporting cash.

Collector coins and banknotes – gold and silver collector coins, collector banknotes, numismatic items (i.e. banknotes and coins which were not put into circulation as well as banknotes and coins withdrawn from circulation) as well as gold ounce coins issued by NBP.

Digital wallet – (e.g. e-wallet, e-purse) – an account set up with a third-party online payment company to which payment cards are linked. The account acts as a substitute for a physical debit/credit card and allows for performing cashless transactions (deposit and withdrawal of funds by transfer or card) and transfer of funds between electronic wallets.

Polish currency – banknotes and coins within the meaning of Article 2(1)(7) of the Act of 27 July 2002 – Foreign Exchange Law.

Processing banknotes and coins – counting, sorting and checking of authenticity of banknotes or coins.

Recirculation (also referred to as turnover or recycling) – means putting into circulation banknotes fit for circulation via banks' cash points, devices operated by their clients (i.e. ATMs) formerly processed by the bank or on its behalf by an undertaking. This process takes place without the participation of NBP. Coins undergo a similar process.

Supply – number (or value) of banknotes or coins which were lodged in NBP or were withdrawn from NBP by banks. The supply of banks by NBP stems from Article 68(2) of the Act of 29 August 1997 – Banking Law and it implements Article 37 of the Act of 29 August 1997 on Narodowy Bank Polski.

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