



NARODOWY BANK POLSKI

Report on Cash Circulation in Poland in 2019



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Warsaw 2020

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Chapter 1

Summary



Summary

The central bank is an institution of major importance in the monetary system. Narodowy Bank Polski (hereinafter referred to as NBP), as the central bank of the Republic of Poland fulfils tasks defined in the Constitution of the Republic of Poland, the Act on Narodowy Bank Polski and the Banking Law. Within its core functions, NBP also acts as the issuing bank and the bank of banks. Holding the exclusive right to issue banknotes and coins, NBP ensures their adequate quality 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 the NBP have the status of legal tender on the territory of the Republic of Poland, i.e. they are commonly accepted as a form of cash settlements. The universal acceptance of cash is fundamental to the smooth functioning of cash settlement in society, in particular for certain groups of consumers who perform settlements primarily with the use of banknotes and coins.¹

NBP activity in the scope of cash cycle comprises: orders for the production of banknotes and coins placed at manufacturers, the verification of the authenticity and fitness of banknotes and coins, their storage and distribution. In practice, the area which NBP has an influence on by means of regulations on the withdrawal and lodgement of Polish currency comprises mainly banks.² Besides the central bank and banks, domestic cash cycle participants also include manufacturers of banknotes and coins, CIT companies processing cash on behalf of banks, ATM deployers, retailers and consumers.

This “Report on Cash Circulation in Poland in 2019”, hereinafter referred to as the Report, is the latest report prepared by NBP representing the set of information on the functioning of the domestic cash cycle. Its purpose is, among others, to present statistical data on the phenomena occurring in the cash circulation market as well as to monitor the factors influencing the behaviour of its participants.

The Report presents the major factors influencing the cash cycle model operating in Poland, the relationships between the central bank and cash cycle participants, and statistical data reflecting the trends in the cash circulation observed in 2019 as well as preliminary information regarding the impact of the coronavirus pandemic on the cash circulation market. The subject matter of this Report covers cash circulation related to banknotes and coins of the Polish currency with the transaction (circulation) function as their major economic function. In connection with the foregoing, the data do not include so-called collector coins and notes which play a payment function and have the status of a legal tender, but are not treated as a universal means of payment.

¹ Press release of NBP of 10 April 2020: NBP calls for the universal acceptance of cash payments, www.nbp.pl.

² 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.

In the case of the value of cash in circulation, an upward trend has been observed for several years. In the years 2013–2016 the average growth exceeded 10% y/y. In 2013, it amounted to 11.0%, and in 2016 to 14.9%. However, in 2017 and 2018, a lower increase in the value of cash in circulation was recorded, at a level of 5.9% and 8.8%, respectively. As at 31 December 2019, the value of cash in circulation³ amounted to PLN 238.5 billion, which means that since 31 December 2012 it has more than doubled, i.e. by PLN 125.1 billion. At the same time, the value of circulation at the end of April 2020 amounted to PLN 289.3 billion and increased by PLN 51.0 billion, i.e. by as much as 21.4%, compared to the situation at the beginning of March. Thus, over just 2 months, a record increase in the value of cash in circulation has been recorded, considerably exceeding the growth recorded so far in annual terms.

At the end of 2019, the highest share was recorded for the 100 zł banknote: 61.0% (in 2018 – 61.4%) and the 200 zł banknote: 15.9% (in 2018 – 14.9%). With regard to coins, the following coins had a significant share in circulation: 1 gr – 37.5% (in 2018 – 37.5%) and 2 gr – 17.1% (in 2018 – 17.3%).

The volume of banknotes and coins withdrawn by banks from NBP in 2019 exceeded 3.7 billion pieces and increased by 0.6% in relation to the previous year.⁴ On the other hand, the volume of banknotes and coins lodged in NBP by banks amounted to almost 2.6 billion pieces and was 1.5% higher than in the previous year. At the same time, the value of banknotes and coins withdrawn from NBP in 2019 amounted to PLN 203.5 billion and increased by 2.6% in relation to the previous year. The value of banknotes and coins lodged in NBP in 2019 amounted to PLN 184.2 billion and increased by 3.7% in relation to the previous year. Despite an increase in the volume of withdrawn and lodged coins and banknotes, in 2019 growth of so-called banknote and coin recirculation was observed, which shows the tendency of diminishing frequency rate of return to NBP. This means that in 2019, a banknote returned to the NBP regional cash centre, on average, after 389 days from the moment of its withdrawal by a bank (for comparison: in 2014, a banknote returned to NBP after 236 days and in 2018 – after 370 days). In the case of coins, the recirculation rate in 2019 reached approximately 12,361 days, which means that compared to 2018, a coin returned to NBP 857 days less frequently.

The developments in the value of cash in circulation are related to the following factors:

- fundamental (e.g. exchange rate, GDP, inflation, interest rates),
- seasonal (i.e. occurring cyclically during public holidays, holidays, the beginning of the school year, etc.),
- one-off (financial crisis, unforeseen events of significant range and impact, such as the pandemic).

At the same time, it can be observed that:

- in 2019, the value of circulation in relation to GDP amounted to 10.5% and reached a similar level as in 2018, i.e. 10.3%,
- in 2019, the value of M1 exceeded PLN 1 trillion and, compared to 2018, increased by PLN 142.5 billion, i.e. by 14.1%,
- the share of cash in M1 in 2019 amounted to 19.4% and decreased by 0.7 percentage points compared to 2018.

³ Value of cash in circulation is provided without collector coins and banknotes.

⁴ Full figures are used to calculate the changes.

In parallel, as part of the monitoring of the quality of banknotes in circulation and the identification of the needs and preferences of Poles in this respect, NBP commissioned a public opinion survey, which was conducted in 2019. The qualitative survey was conducted at the turn of July and August 2019 in five cities of different size, located in various regions of Poland. The next stage involved conducting (at the turn of October and November 2019) a quantitative survey, which covered respondents from all provinces (voivodships). They confirmed that the quality of the banknotes, like their fitness and general appearance, is important to them. At the same time, it was observed that the respondents have great confidence in the Polish currency banknotes and perceive a banknote as a national symbol.

In order to optimise and standardise the flow of banknotes and coins and their movement throughout the chain, as well as to ensure electronic exchange of information according to a specified standard, in 2019 NBP introduced further amendments under the provisions of the Regulation 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.⁵ This decision was associated, among others, with the planned implementation of the GS1 standards in the processes of banknote and coin circulation for the purpose of automation of operations related to supplying banks with Polish currency and processing of cash. Since January 2020, barcodes in the GS1-128 standard on the packaging of banknotes and coins have been used by NBP and by the banknote manufacturer. Work on the introduction of barcodes by banks and other cash circulation market participants will be carried out successively at subsequent stages.

At the same time, in accordance with the adopted schedule of changes in the cash circulation, the following system requirements were introduced pursuant to Regulation No. 19/2016:

- the necessity of counting, sorting and checking the authenticity of banknotes by means of devices (e.g. sorting machines) in the case of their assignment to customer operated machines (e.g. ATMs) – from 1 January 2020,
- the introduction of a 10-per cent limit of manual counting of banknotes, their sorting and checking in terms of authenticity – from 1 January 2022.

These amendments were consulted at each stage with representatives of the cash cycle market and discussed in detail during dedicated meetings held at NBP.

Work has also started on the amendment of Regulation No. 19/2016, which aims to further optimise the functioning of the cash circulation market. The implementation of lodgement of banknotes in one stream covering ON banknotes, without the need to separate NS banknotes is foreseen. This will enable the simplification and reduction of the labour intensity of cash processing and reduce costs both on the part of banks and NBP. The planned change will also allow to increase the automation of the banknote sorting process.

In 2019, the supply of Polish currency to banks was stable. In view of the timing of the preparation of this Report, the analyses presented determining the impact of the coronavirus pandemic on the cash circulation take into account data available until the end of May 2020.

⁵ Regulation No. 19/2016 of the President of Narodowy Bank Polski of 17 August 2016, hereinafter referred to as Regulation No. 19/2016.

The key concepts contained in this Report are explained in the glossary. Key statistical data regarding the cash circulation market in 2018 and 2019 are presented in Table 1.

Table 1. Key data for 2018 and 2019

	2018	2019	Change (2019/2018)
Value of circulation (status as at 31.12.2019)	PLN 219.2 bn	PLN 238.5 bn	increase by PLN 19.3 bn (+8.8%)
Number of banknotes in circulation (as at 31.12.2019)	2,119,922,805 pcs	2,325,021,905 pcs	increase by 205,099,100 pcs (+9.7%)
Number of coins in circulation (as at 31.12.2019)	18,382,707,375 pcs	19,412,511,127 pcs	increase of 1,029,803,752 pcs (+5.6%)
Value of Polish currency withdrawals from NBP	PLN 198.4 bn	PLN 203.5 bn	increase of PLN 5.1 billion (+2.6%)
Number of banknotes withdrawn from NBP	2,133,613,000 pcs	2,169,935,000 pcs	increase of 36,322,000 pcs (+1.7%)
Number of coins withdrawn from NBP	1,613,644,500 pcs	1,601,009,500 pcs	decrease of 12,635,000 pcs (-0.8%)
Value of Polish currency lodgements in NBP	PLN 177.6 bn	PLN 184.2 bn	increase of PLN 6.6 billion (+3.7%)
Number of banknotes lodged in NBP ¹	1,996,009,377 pcs	2,042,436,123 pcs	increase of 46 426 746 pcs (+2.3%)
Number of coins lodged in NBP ²	565,864,753 pcs	557,193,000 pcs	decrease of 8,671,753 pcs (-1.5%)
Banknotes – frequency rate of return (status as at 31.12.2019)	in cycles: 0.99 in days: 370	in cycles: 0.94 in days: 389	decrease in cycles: 0.05 increase in days: 19
Coins – frequency rate of return (status as at 31.12.2019)	in cycles: 0.032 in days: 11,504	in cycles: 0.030 in days: 12,361	decrease in cycles: 0.002 increase in days: 857
GDP ³	PLN 2,120.5 bn	PLN 2,273.6 bn	increase of PLN 153.1 bn (+7.2%) ⁴
Value of circulation / GDP	10.3%	10.5%	increase by 0.2 percentage point
Value of M1 aggregate	PLN 1,012.4 bn	PLN 1,154.9 bn	increase of PLN 142.5 bn (+14.1%)
Value of circulation / M1 aggregate	20.1%	19.4%	decrease of 0.7 percentage points

¹ Number or value of Polish currency transferred to NBP by banks.

² See above.

³ Nominal gross domestic product (current prices) according to GUS data for 2018 and 2019 (Statistics Poland No. 03/2019, publication date 24 April 2020).

⁴ GDP growth in nominal terms; according to GUS data of 24 April 2020, GDP in 2019 in relation to 2018 increased by 4.1% in real terms, against 5.3% in 2018.

Chapter 2

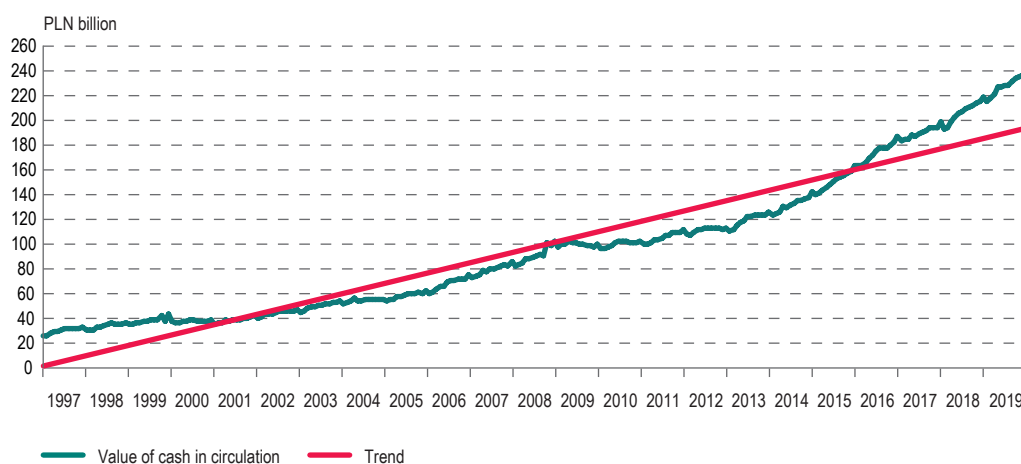
Banknotes and coins in circulation



Banknotes and coins in circulation

The value of cash in circulation as at 31 December 2019 amounted to PLN 238.5 billion. An increase in the value of cash in circulation by 8.8%, i.e. PLN 19.3 billion, was recorded as compared to 31 December 2018.

Figure 1. Value of cash in circulation in monthly terms in 1997–2019



Source: study of NBP Cash and Issue Department.

Figure 1 illustrates the growth in value of cash in circulation. In Poland, in the years 1997–2019, the share of cash in the M1 aggregate decreased from approx. 36% to approx. 19%, which means that the growth rate of current deposits in banks exceeded the growth rate of cash in circulation. This trend changed in 2008 in connection with the financial crisis. In this period, the share of cash in the M1 aggregate increased: in December 2008, it increased to 26% from 23% at the beginning of the year, i.e. by 3 percentage points. In 2009, this indicator returned to the level of 23.1%. A decline in the indicator was also noted in 2010 when it reached the level of 20.6%. After 2011, a growth of the indicator was observed to 21.6% in 2015, followed by its decline to 20.1% in 2018. In December 2019, the share of cash in the M1 aggregate amounted to 19.4%. This means that in 2019, the share of cash in the M1 money supply aggregate dropped below a level that stabilised in the range of 20–22% in the years 2010–2018.⁶

2.1. Value and volume of banknotes and coins in circulation⁷

Throughout 2019, the value of banknotes in circulation increased by over PLN 19.0 billion, i.e. by 8.8%. Growth was recorded in relation to banknote denominations: 500 zł, 200 zł,

⁶ Comparison of selected elements of the Polish payment system with the systems of other European Union Member States for 2017, Narodowy Bank Polski, 2018.

⁷ The value and number of banknotes and coins in circulation were presented as at the end of the quarters of 2019.

100 zł, 20 zł, 10 zł, whereas a decline was noted in the case of the banknote with the face value of 50 zł.

Table 2. Value of banknotes in circulation by denomination in 2019 (in PLN)

As at end of quarter	500 zł	200 zł	100 zł	50 zł	20 zł	10 zł	Total
1	2	3	4	5	6	7	8
2018 Q4	7 111 082 000	63 376 755 200	130 209 026 600	9 508 380 450	2 464 264 220	1 733 457 790	214 402 966 260
2019 Q1	7 874 035 500	64 699 904 000	130 253 090 000	9 196 535 650	2 425 035 760	1 733 017 280	216 181 618 190
2019 Q2	8 581 469 500	67 054 056 000	133 555 708 100	9 432 345 450	2 503 879 620	1 770 084 510	222 897 543 180
2019 Q3	9 543 019 000	69 632 719 600	135 732 756 600	9 269 522 050	2 481 806 860	1 757 529 580	228 417 353 690
2019 Q4	10 423 225 500	71 749 478 000	137 386 957 400	9 444 906 100	2 533 335 480	1 818 200 750	233 356 103 230

Source: study of NBP Cash and Issue Department.

In this period, the highest growth in value was observed in the case of the highest denomination banknotes – 500 zł and 200 zł (by 46.6% and 13.2%, respectively). This is related to the extension of the banknote denomination structure from February 2017 by introducing 500 zł banknotes and the store of value function they play in the cash cycle.

In the banknote structure by value, the share of 500 zł and 200 zł denominations increased, respectively, by 1.2 percentage points and 1.1 percentage points, whereas the share of 100 zł and 50 zł denominations decreased, respectively, by 1.8 percentage points and 0.4 percentage points, respectively. The share of 20 zł and 10 zł denominations has not changed.

Throughout 2019, the volume of banknotes in circulation increased by 130.9 million pcs, i.e. by 6.2%. At the same time, no significant changes were noted in the share of the individual denominations in circulation. Banknotes with the face value of 100 zł had the highest share in circulation (61.0%). The second denomination in this respect was 200 zł denomination (15.9%), while 50 zł banknotes accounted for 8.4% of the circulation (Table 3). It can also be indicated that the share of 500 zł and 200 zł banknotes increased slightly compared to the 2018 Q4, by 0.2 and 1.0 percentage points, respectively, which may reflect an increased market demand for higher-denomination banknotes.

Table 3. Volume of banknotes in circulation by denomination in 2019

As at end of quarter	500 zł	200 zł	100 zł	50 zł	20 zł	10 zł	Total
1	2	3	4	5	6	7	8
2018 Q4	14 222 164	316 883 776	1 302 090 266	190 167 609	123 213 211	173 345 779	2 119 922 805
2019 Q1	15 748 071	323 499 520	1 302 530 900	183 930 713	121 251 788	173 301 728	2 120 262 720
2019 Q2	17 162 939	335 270 280	1 335 557 081	188 646 909	125 193 981	177 008 451	2 178 839 641
2019 Q3	19 086 038	348 163 598	1 357 327 566	185 390 441	124 090 343	175 752 958	2 209 810 944
2019 Q4	20 846 451	358 747 390	1 373 869 574	188 898 122	126 666 774	181 820 075	2 250 848 386

Source: study of NBP Cash and Issue Department.

Throughout 2019, the value of coins in circulation increased by PLN 328.2 million, i.e. by 6.8%. In the denomination structure, in terms of value, the highest growth was recorded

in the case of 5 zł, 2 zł (excluding 2 NG⁸) and 1 zł coins, respectively, by 9.1%, 6.8%, and 7.4%. The share of 5 zł and 1 zł coins increased by 0.8 percentage points and 0.1 percentage points, respectively. The share of 2 zł, 50 gr, 10 gr, 5 gr, 2 gr and 1 gr coins remained at the same level, whereas the share of 2 NG and 20 gr coins fell, respectively, by 0.7 percentage points and 0.1 percentage points.

Table 4. Value of banknotes in circulation by denomination in 2019 (in PLN)

As at end of 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
2018 Q4	1 709 406 610	925 656 712	478 249 162	604 506 513	324 362 986	272 893 202	231 173 826	116 251 095	63 770 290	68 959 000	4 795 229 396
2019 Q1	1 727 210 035	922 189 804	478 190 730	601 763 013	325 429 142	274 648 122	233 499 601	117 092 564	64 165 753	69 595 087	4 813 783 850
2019 Q2	1 792 741 525	949 757 344	478 211 472	621 047 135	332 481 361	278 419 900	237 563 034	118 774 045	64 793 992	70 612 298	4 944 402 104
2019 Q3	1 820 412 310	970 028 744	478 221 070	635 493 483	339 417 711	282 647 131	241 974 172	120 554 964	65 509 595	71 709 168	5 025 968 348
2019 Q4	1 865 630 690	988 750 922	478 190 858	649 039 093	346 257 249	287 001 526	246 639 503	122 582 599	66 380 758	72 922 680	5 123 395 877

Source: study of NBP Cash and Issue Department.

Throughout 2019, the volume of coins in circulation increased by over PLN 1,029.8 million pcs, i.e. by 5.6%. Growth was recorded for all coins (5 zł – 9.1%, 2 zł – 6.8%, 1 zł – 7.4%, 50 gr – 6.7%, 20 gr – 5.2%, 10 gr – 6.7%, 5 gr – 5.4%, 2 gr – 4.1% and 1 gr – 5.7%). In the case of 2 zł NG denomination, no changes were observed.

Table 5. Volume of coins in circulation by denomination in 2019

As at end of 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
2018 Q4	341 881 322	462 828 356	239 124 581	604 506 513	648 725 972	1 364 466 010	2 311 738 260	2 325 021 905	3 188 514 509	6 895 899 947	18 382 707 375
2019 Q1	345 442 007	461 094 902	239 095 365	601 763 013	650 858 283	1 373 240 608	2 334 996 012	2 341 851 278	3 208 287 647	6 959 508 709	18 516 137 824
2019 Q2	358 548 305	474 878 672	239 105 736	621 047 135	664 962 721	1 392 099 500	2 375 630 337	2 375 480 894	3 239 699 595	7 061 229 752	18 802 682 647
2019 Q3	364 082 462	485 014 372	239 110 535	635 493 483	678 835 422	1 413 235 654	2 419 741 719	2 411 099 276	3 275 479 774	7 170 916 838	19 093 009 535
2019 Q4	373 126 138	494 375 461	239 095 429	649 039 093	692 514 498	1 435 007 628	2 466 395 027	2 451 651 972	3 319 037 907	7 292 267 974	19 412 511 127

Source: study of NBP Cash and Issue Department.

At the same time, no significant changes were noted in the share of the individual denominations in the structure of coin circulation by volume. The so-called low-denomination coins, i.e. 1–5 gr, represented the highest volume of coins in circulation, reaching 67.3% in total. In practice, however, these coins show the lowest frequency rate of return in cycles (see subsection “2.2. Frequency rate of return of banknotes and coins”).

2.2. Frequency rate of return of banknotes and coins

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

⁸ Commemorative 2 zł coins made of Nordic Gold alloy, being legal tender.

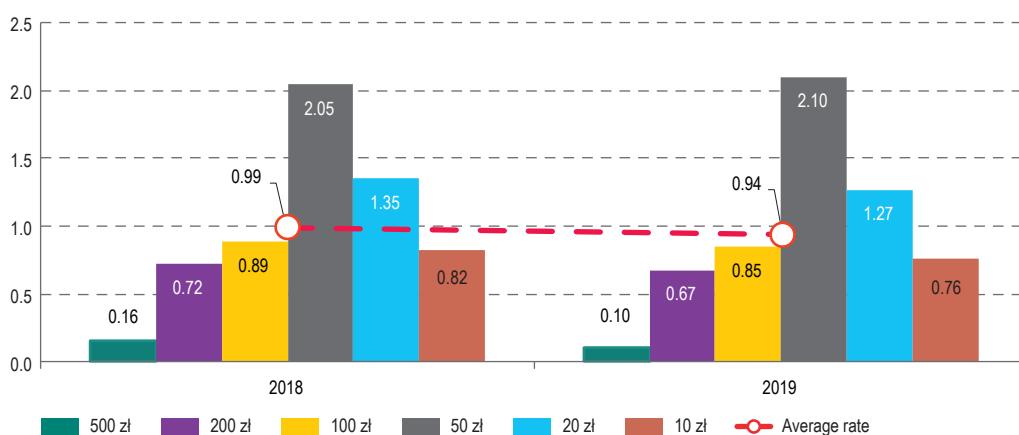
The frequency rate of return in cycles is the quotient of the volume of banknotes or coins lodged in NBP by banks in the adopted period and the average volume of banknotes or coins in circulation in the same period. On the other hand, the frequency rate of return in days is the quotient of the average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

On average, in 2019, a banknote was recirculated to the sorting room of the NBP regional branch after 389 days calculated from the moment of its withdrawal from NBP by a bank. Compared to 2018, the frequency rate of a banknote return to NBP decreased by 19 days. In the case of coins, the estimated time of return to NBP in 2019 amounted to 12,361 days and it increased by 857 days compared to 2018.

The developments in banknote (Figure 2) and coin (Figure 3) recirculation rates by denomination are illustrated below. The frequency rate of return in cycles for all banknote denominations at the end of 2019 was 0.94, which means a decrease of 0.05 compared to 2018. As at the end of 2019, the frequency rate of return for individual banknote denominations varied. 50 zł and 20 zł denomination banknotes returned to NBP most frequently while the 500 zł denomination banknote was recorded least frequently. In 2019, the frequency rate of return in cycles decreased compared to 2018 in the case of all banknote denominations, except the 50 zł banknote. The decrease amounted to, respectively: 500 zł – 0.06, 200 zł – 0.05, 100 zł – 0.04, 20 zł – 0.08, and 10 zł – 0.06. In the case of the 50 zł denomination, the increase reached 0.05 (Figure 2).

In the case of high denomination banknotes, i.e. 500 zł and 200 zł, a less frequent return from the market to NBP may indicate that they act as a store of value. The banknotes most frequently returned from the market to NBP are 50 zł and 20 zł banknotes, which may indicate their transactional role.

Figure 2. Frequency rate of return of banknotes in cycles



Source: study of NBP Cash and Issue Department.

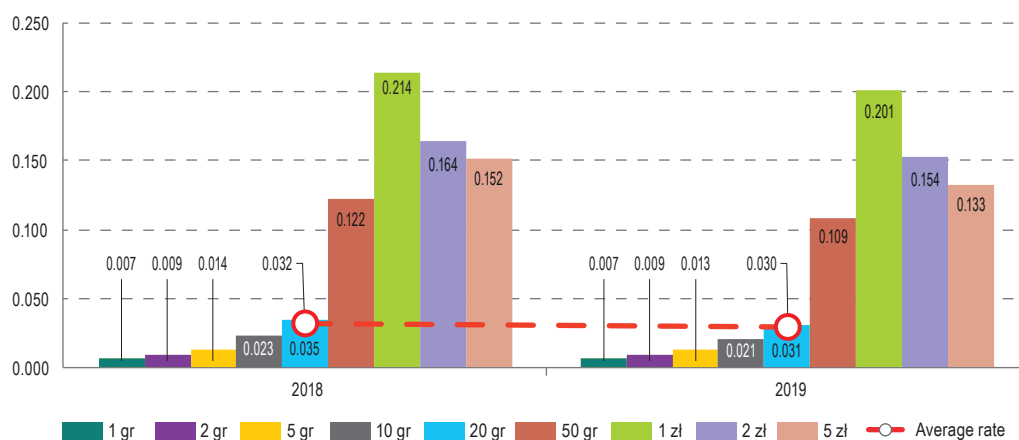
Note: for analytical purposes, source figures were rounded up to the nearest decimal place.

The coin frequency rate of return has demonstrated a downward trend for many years. At the end of 2014, it amounted to 0.042 (i.e. on average coins returned to NBP almost every 24 years), and at the end of 2019, it amounted to 0.030, i.e. coins returned to NBP almost every 34 years (Figure 3).

Similar to banknotes, the frequency rate of return for individual coin denominations varied. As at the end of 2019, coins most frequently returned to NBP included coins with the denomination of 1 zł (the ratio exceeded 0.2, which means that a coin was recirculated to NBP more or less every 5 years) as well as 5 zł and 2 zł coins. In their case, the frequency rate of return amounted to 0.133 and 0.154, respectively, i.e. they returned to NBP every 8 and 7 years. The overall coin recirculation rate was affected by low denomination coins, i.e. 5 gr, 2 gr and 1 gr, which in practice returned to NBP to a minor extent (according to calculations, approximately once in 75, 111 and 148 years, respectively). It should be noted that the frequency rate of return for 10 gr and 20 gr coins is more similar to the rate of coins from the group of low denominations (5 gr) than to the frequency rate of return of coins with a higher denomination (50 gr).

In order to increase the frequency of return of coins to NBP, on 8 March 2019 a self-service device enabling customers to exchange coins was launched on a pilot basis in one of the NBP regional branches. It allows for a quick exchange of a high amount of coins to higher-denomination banknotes or coins. Upon completion of the acceptance of coins, the device prints out a confirmation based on which the equivalent of the accepted coins is paid out at the cash desk of the NBP Regional Branch. No commission is charged on the exchange of coins. In the period from 8 March till the end of 2019, the device accepted 3 million coins with the total value of PLN 1.6 million. Among them, the highest share was seen for the 1 gr coin (23.3%). The so-called low-denomination coins, i.e. 1–5 gr, accounted for nearly half of all coins deposited in the device.

Figure 3. Frequency rate of return of coins in cycles



Source: study of NBP Cash and Issue Department.

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

2.3. Cash and cashless means of payment

The contemporary consumer operates in a world offering a variety of means of payment. The time of progressive digitisation is conducive to the development of electronic means of payment, but does not exclude the operation of banknotes and coins.

Cash continues to be a popular means of payment, including in highly developed world economies such as Japan and the USA. According to data of the European Central Bank, in 2016, 79% of transactions carried out at retail outlets were completed using banknotes and coins. The leaders in the statistics were the inhabitants of Germany, Austria and Slovenia, where the share of cash transactions exceeded even 80%. In terms of the value of transactions in the euro area, payments effected with the use of banknotes and coins accounted for 54%.⁹

In France, the share of cash transactions in the total number of transactions reached 68%, while cash payments in terms of value accounted for 28% of total transactions. Cash was mostly used for lower value transactions. As some estimates indicate, 35–40% of banknotes could be stored for transaction purposes. In addition to their typical payment function, banknotes also act as a store of value, particularly popular in the face of unexpected economic events. The European Central Bank estimates that, in terms of value, 25% of the euro banknotes put into circulation are held by citizens from countries outside the euro area¹⁰.

The global map of payment habits also clearly shows the leading countries in the use of electronic payment instruments, such as Sweden, Norway and Finland. In 2018, 13% of Swedes paid for goods with banknotes and coins, while in 2010 the figure stood at 39%. In Sweden, transactions executed using cash represent 6% of transactions, while those settled by payment cards account for 58%. The central bank in this country reports a decline in the value of cash in circulation and assumes that in 2020 the decrease may be as high as 50% in relation to 2012.¹¹ Over a decade, the average Swede has doubled the number of payment card transactions compared with 2008. Sweden is undoubtedly one of the countries with the highest use of non-cash means of payment.¹² However, the Riksbank draws attention to the financial exclusion of a number of Swedes in connection with the rapid development of electronic payment instruments and calls for the protection of cash as a means of payment.¹³ The payment data concerning Norway are similar to the statistics for Sweden. In 2018, Norwegians settled 11% of transactions with the use of banknotes and coins, which accounted for 6% of the value of all payment transactions¹⁴.

⁹ European Central Bank, *The use of cash by households in the euro area*, Occasional Paper Series, No. 201, November 2017, <https://www.ecb.europa.eu/pub/pdf/scopops/ecb.op201.en.pdf>.

¹⁰ Banque de France, *The use of cash in France and in the euro area*, 11 April 2019, <https://www.banque-france.fr/en/banknotes/analysing-and-anticipating/use-cash-france-and-euro-area>.

¹¹ Article posted in the service Sweden.se, *Sweden – the first cashless society?*, 11 September 2019, <https://sweden.se/business/cashless-society/>.

¹² Sveriges Riksbank, *Payments in Sweden 2019*, 7 November 2019, <https://www.riksbank.se/en-gb/payments-cash/payments-in-sweden/payments-in-sweden-2019/>.

¹³ Sveriges Riksbank, Cecilia Skingsley: *Considerations for a cashless future*, SNS finance panel, 22 November 2018, <https://www.riksbank.se/en-gb/press-and-published/speeches-and-presentations/2018/skingsley-considerations-for-a-cashless-future/>.

¹⁴ European Payments Council, *Taking a closer look at Norway's payment landscape*, interview with Dag-Inge Flatraaker, 3 October 2018, <https://www.europeanpaymentscouncil.eu/news-insights/insight/taking-closer-look-norways-payment-landscape>.

A similar situation was seen in the case of Finland. In 2018, 2.9 billion transactions were performed using a credit or debit card, which accounts for as much as 96% of all transactions¹⁵.

According to the statistical data of the Bank of England, despite the dynamic development of payment innovation, over GBP 70 billion is in circulation, which means a doubling of the value of the circulation in a decade. Converted to per capita, this is approximately GBP 1,000. However, this does not mean that this cash is stored in consumers' wallets, since it mainly circulates between market participants or is stored for savings and precautionary purposes.¹⁶ According to the 2018 surveys, 97% of consumers carried banknotes and coins while 54% of Britons paid with banknotes and coins each day for essential products.¹⁷ On the other hand, payment cards have been representing the most popular means of payment in British society since 2017, while 7 out of 10 citizens use online banking. It should also be noted that for every GBP 5 spent, almost GBP 1 will be paid online.¹⁸

Australian consumers have been using cash payments at retail outlets slightly less frequently over the recent years. Nevertheless, in 2016, around 20% of them used banknotes and coins in more than 80% of their daily transactions, and 12% of them carried out all their daily transactions with the use of banknotes and coins. Statistics show that there is a group of Australians who choose cash deliberately and knowingly.¹⁹ At the same time, in 2019, 40% of consumers confirmed that they use cash not only for transaction purposes. They keep it primarily for precautionary reasons and also because they believe that the use of banknotes and coins facilitates the management of their own financial resources. In addition, trust in cash money and its general availability plays an extremely important role.²⁰

According to the survey on consumer preferences conducted in the USA in 2018, 26% of payments were settled with banknotes and coins. This represents a decrease of 4 percentage points compared to the previous year, since in 2018 the statistical consumer carried out 11 cash transactions per month, i.e. one transaction less than in 2017.²¹ On the other hand, cash remains an extremely popular means of payment for lower value transactions. 42% of transactions up to USD 25 are settled with the use of banknotes and coins. At the same time, the volume of cash withdrawals from ATMs in 2018 amounted to 5.1 billion, a fall of 0.1 billion compared to 2015.

¹⁵ Suomeni Pankki, *Payment statistics 2018*, 12 June 2019, <https://www.suomenpankki.fi/en/Statistics/payments-statistics/older-news/2019/Payment-statistics-2018-contactless-payments-have-become-commonplace-for-Finns/>.

¹⁶ Bank of England, *Will cash die out?*, 30 August 2016, <https://www.bankofengland.co.uk/knowledgebank/will-cash-die-out>.

¹⁷ Link Scheme Holdings Ltd, *Preserving access to cash*, July 2019, https://www.link.co.uk/media/1510/v-ops-management-method4-method4-change-2019-l081_19-preserving-access-to-cash-july-2019.pdf.

¹⁸ Bank of England, *How has money changed over time?*, 18 December 2018, <https://www.bankofengland.co.uk/knowledgebank/how-has-money-changed-over-time>.

¹⁹ Luc Delaney, Aidan O'Hara, Richard Finlay, *Cash withdrawal symptoms*, Reserve Bank of Australia, June 2019, <https://www.rba.gov.au/publications/bulletin/2019/jun/cash-withdrawal-symptoms.html>.

²⁰ James Caddy, Luc Delaney, Chay Fisher, Clare Noone, *Consumer payment behaviour in Australia*, Reserve Bank of Australia, 19 March 2020, <https://www.rba.gov.au/publications/bulletin/2020/mar/consumer-payment-behaviour-in-australia.html>.

²¹ Raynil Kumar, Shaun O'Brien, *The 2019 diary of consumer payment choice*, Federal Reserve System, June 2019, <https://www.frbsf.org/cash/files/2019-Findings-from-the-Diary-of-Consumer-Payment-Choice-June2019.pdf>.

In the same period, the average value of a cash withdrawal increased by 7% to USD 156.²² Thus, the Americans perform fewer cash withdrawals from ATMs, whilst withdrawing larger amounts at any one time.

In the case of the German population, a survey published in January 2020 shows that as many as 59% of consumers indicated banknotes and coins as their preferred form of payment. The average German stores the equivalent of EUR 52 in his/her wallet – the highest amount in economically advanced countries – and declares that the value of the banknotes and coins he/she uses will increase over the next 6 months.²³ In the total volume of transactions on the German consumer market, transactions executed using banknotes and coins accounted for as much as 77.9%.²⁴

On the other hand, according to the data of the Chamber of Electronic Economy, Poles pay for purchases in brick-and-mortar stores primarily with cash, which was used to settle 67% of transactions. Statistical data show that, on average, every fifth Pole over the last 6 months paid more than 10 times with banknotes and coins in a brick-and-mortar store. In addition, 62% of respondents were against withdrawing banknotes and coins from the payment market. The development of the payment market affects the diversification of payment habits in Poland. Every fourth Pole pays bills by mobile methods, i.e. using smartphones and tablets, while nearly half of Poles (i.e. 48%) make online payments. At the same time, the number of consumers who pay their bills at a fixed location is decreasing, which is indicative of, among others, the increasing use of the Internet for basic, regular payments.²⁵

²² Federal Reserve System, *The 2019 Federal Reserve Payments Study*, 6 January 2020, <https://www.federalreserve.gov/newsevents/pressreleases/files/2019-payments-study-20191219.pdf>.

²³ Deutsche Bank Research, *The future of payments. Part I. Cash: the dinosaur will survive... for now*, January 2020, https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD000000000504353/The_Future_of_Payments_-_Part_I__Cash:_the_Dinosau.pdf.

²⁴ Johana Cabinakova, Fabio Knümann, Frank Horst, *The costs of cash payments in the retail sector. Study to determine and evaluate the costs arising from cash payments in the retail sector*, Deutsche Bundesbank, EHI Retail Institute, March 2019, <https://www.bundesbank.de/resource/blob/808970/64a7bec1196c6e3677eb09eb3e827191/mL/kosten-der-bargeldzahlung-im-einzelhandel-data.pdf>.

²⁵ Chamber of Electronic Economy, *Report: digital payments 2018*, https://eizba.pl/wp-content/uploads/2018/12/Platnosci_Cyfrowe_2018.pdf.

Chapter 3

Cash circulation market characteristics



Cash circulation market characteristics

3.1. The cash circulation cycle and its participants

The role of NBP in the cash cycle in Poland is defined in the Constitution of the Republic of Poland, the Banking Law Act and the Act on Narodowy Bank Polski. 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. NBP is also responsible for the value of Polish currency, its adequate volume and quality in circulation as well as liquidity of cash settlements, putting in circulation banknotes and coins being the legal tender in the territory of the Republic of Poland.

The cash cycle, illustrated in Diagram 1, shows the route of the banknotes and coins. Banknotes and coins withdrawn from NBP regional branches by banks or CIT companies operating on behalf of banks go to the cash centres of banks or CIT companies dealing with cash processing on behalf of banks, and subsequently to consumers via bank branches, ATM networks and retailers. Cash covers the opposite route when returning to the central bank. The stream of banknotes and coins from consumers, via large retailers and customer-operated machines reaches banks' cash centres or CIT companies dealing with cash processing on behalf of banks. There it is divided into banknotes and coins fit for circulation and unfit for circulation. A part of the banknotes and coins deemed fit for circulation is recirculated in accordance with the needs reported by banks and their customers. The surplus of banknotes and coins are lodged in NBP.

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

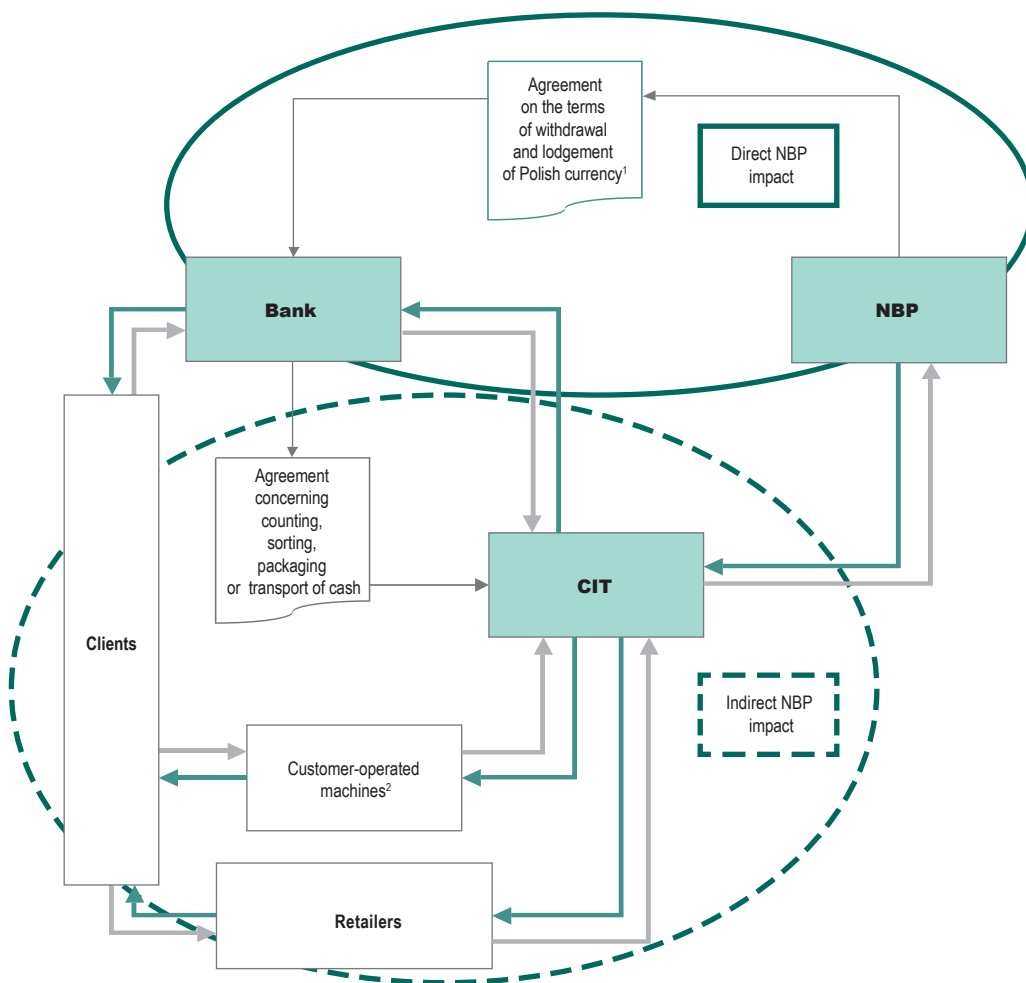
- putting banknotes or coins into circulation; this is performed on the basis of the Regulation of the President of Narodowy Bank Polski announced in Monitor Polski, which sets the date of putting into circulation and the volume of issue, as well as the design and face value of banknotes or coins and 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 Regulation of the President of Narodowy Bank Polski announced in Monitor Polski, which specifies 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.

Besides the central bank and banks, participants of national cash transactions also include manufacturers of banknotes and coins, CIT companies processing cash on behalf of banks, ATM operators, retail trade chains and consumers.

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

The supply of banks with 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.

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.

In accordance with Article 37 of the Act of 29 August 1997 on Narodowy Bank Polski, NBP organises the management of banknotes and coins of the Republic of Poland. NBP performs its main tasks related to ensuring the functioning of cash transactions in cooperation with banks. Pursuant to § 4 of Regulation No. 19/2016 of the President of NBP 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 Narodowy Bank Polski of 2020 item 3), NBP concludes and implements agreements defining the conditions of withdrawal and lodging of Polish currency.

16 regional branches supplying Polish currency to banks operate within the organisational structure of NBP. Four of them act as supply centres for other branches of the central bank.

In agreements concluded by NBP with banks, the following terms are determined: security requirements, rules of participation in the SESCO system²⁶ as well as withdrawal and lodging of Polish currency in the basic²⁷ and deposit system²⁸ and the method of settlement of cash differences.

At the end of 2019, the number of concluded agreements was 19 and NBP regional branches cooperated with about 280 organisational units of banks.

Box A. Cash Circulation Council

The sound functioning of the domestic cash flow depends not only on a smooth supply of the market with coins and banknotes of a balanced denomination structure, but also on the cooperation of all participants in the cash cycle and the ongoing, undisturbed communication between them. Narodowy Bank Polski, as the exclusive issuer of coins and banknotes in the territory of the Republic of Poland and the cash market regulator, undertakes numerous measures to facilitate communication between market participants and dialogue between them. Encouraging them to cooperate in this respect is of key importance for maintaining the security and quality of cash transactions.

One of NBP's initiatives in this respect was the establishment of the Cash Circulation Council (hereinafter referred to as the Council). The Council is the opinion-making and advisory body operating at the Management Board of Narodowy Bank Polski. It was established in February 2019 as part of the efforts aimed at standardising the functioning of the cash circulation market and to enhance its efficiency and security by involving cash circulation market participants other than banks in this process. Meetings of the Council shall be held at least once every 6 months. The Council is composed of representatives of, among others, banks playing a key role in the withdrawal and lodgement of the Polish currency, organisations associating the retail sector, CIT companies and NBP.

²⁶ The IT system administered by NBP, allowing the bank's organisational unit and NBP regional branch and DES to transfer or to receive messages. Its aim is to support the process of Polish currency supply to banks in the basic and deposit system and to ensure service of associated activities performed under agreements on the terms and conditions of withdrawal and lodging of Polish currency and the associated activities, concluded between NBP and banks.

²⁷ Withdrawal and lodgement of Polish currency by banks under the concluded agreement on the terms and conditions of withdrawal and lodgement of Polish currency.

²⁸ Polish currency lodged as NBP deposit is the property of NBP and it 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 storage of NBP deposits are set out with banks on a case by case basis in the agreements.

The main tasks of the Council include:

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

Two Council meetings were held in 2019. During the meetings, the current information and trends in the functioning of the domestic cash circulation market were reviewed. The planned activities aimed at improving the cash circulation were presented and a discussion was opened on the possibilities of standardising cash processes carried out by the cash circulation market participants. Members of the Council also work in working groups, appointed as advisory and opinion-forming units at the Council, analysing issues in the scope of activities of individual cash circulation market participants.

Narodowy Bank Polski, expecting the participation of stakeholders in the discussion on the current situation and the future of the cash circulation, has been establishing a dialogue with its participants. Communication between all market participants – NBP as the regulator, banks as well as entities representing, among others, cash processing companies or retail market associations – is an extremely valuable source of information. It plays a key role in the ongoing analysis of the proper functioning of the cash circulation.

3.2. Changes in cash circulation introduced pursuant to amended provisions of Regulation No. 19/2016

The security of coins and banknotes in circulation and, consequently, of all market participants is one of the key elements of the proper functioning of cash circulation. In order to optimise and standardise the process of circulation of banknotes and coins and their transfer across the chain, including ensuring electronic exchange of information in accordance with a uniform standard, in 2019 NBP introduced further amendments under the provisions of Regulation No. 19/2016. This decision resulted from the implementation of barcodes in the GS1-128 standard on the packaging of Polish currency banknotes and coins, which was preceded by long-term preparations of NBP. The implementation of the GS1 standards in the processes of circulation of banknotes and coins makes it possible, in particular, to standardise the processes of withdrawal and lodgement of banknotes and coins through:

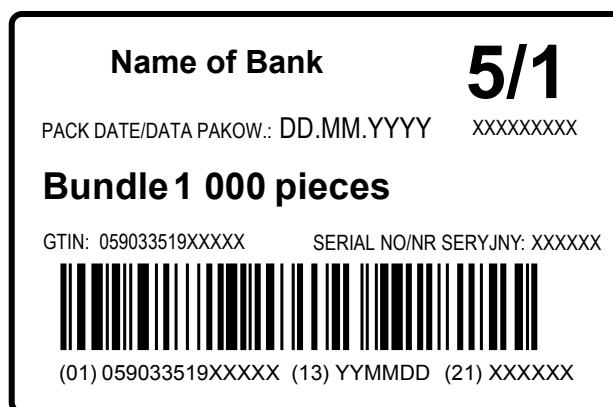
- automatic entry of information on the supplied packages of banknotes and coins into the IT system and updating the data in the IT system,
- limiting manual activities and elimination of most of the paper documentation currently transferred between NBP and banks,
- reducing the risk of errors resulting from manual data entry into systems,
- smooth data transfer between participants of the cash circulation market,
- harmonising the labelling of the packaging of banknotes and coins and the data format.

Regulation No. 19/2016 has been adjusted in the scope of all activities related to labelling the packaging of banknotes and coins with barcodes.

Since January 2020, barcodes in the GS1-128 standard on the packaging of banknotes and coins have been used by NBP and by the banknote manufacturer. Works on the introduction of barcodes by banks and other cash circulation market participants will be carried out successively at subsequent stages.

A specimen of the label to be affixed to the bundle²⁹ of banknotes is shown in Drawing 1.

Drawing 1. Example of a GS1-128 label for a bundle of banknotes



As part of the adopted schedule of changes in the cash circulation, the following system requirements were introduced in Regulation No. 19/2016, including the effective term:

- the necessity of counting, sorting and checking the authenticity of banknotes by means of devices (e.g. sorters) in the case of their assignment to devices operated by clients (e.g. ATMs) – from 1 January 2020,
- the introduction of a 10-per cent limit of manual counting of banknotes, their sorting and checking in terms of authenticity – from 1 January 2022.

²⁹ A bundle is defined as 10 full packets of banknotes of the same face value packaged in transparent film, arranged in such a way that all the ties are on top of each other, the first 5 full packets in the bundle are arranged on the left-hand side of the bundle and the next 5 full packets on the right-hand side of the bundle, in the case of bundles formed by the manufacturer. A full package consists of 100 banknotes of the same face value and size, arranged in any direction to which the band is applied.

The form of implementation of the aforementioned systemic requirements (i.e. adoption of technological solutions or change in processes) depends on cash circulation market participants.

3.3. Reporting in the scope of cash circulation

As of 1 July 2018, banks which signed an agreement with NBP, specifying the terms and conditions for withdrawal and lodgement of the Polish currency, pursuant to Regulation No. 19/2016, are 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 an undertaking to whom the bank has entrusted the processing of banknotes (e.g. sorters), as well as the conversion and sorting of banknotes and coins, and their subsequent recirculation.

3.3.1. Legal conditions

As part of the guidelines defining the rules for accurate filing of reports, the "Instructions concerning quarterly reporting related to the number of devices, counting and sorting of banknotes and coins and their recirculation" were published on the NBP website. The Instructions were developed in 2017 and have been updated several times since then.

In accordance with the aforementioned instructions, banks:

- as of 1 July 2018, are 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 ATMs and ATMs owned by deployers;
- as of 1 January 2020, in addition to the above information, banks are obliged to include in the reports data on banknotes and coins processed at the bank's cash desks and subsequently put into circulation, except for the following operations: the records of denomination of suspected counterfeit banknotes, 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.

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

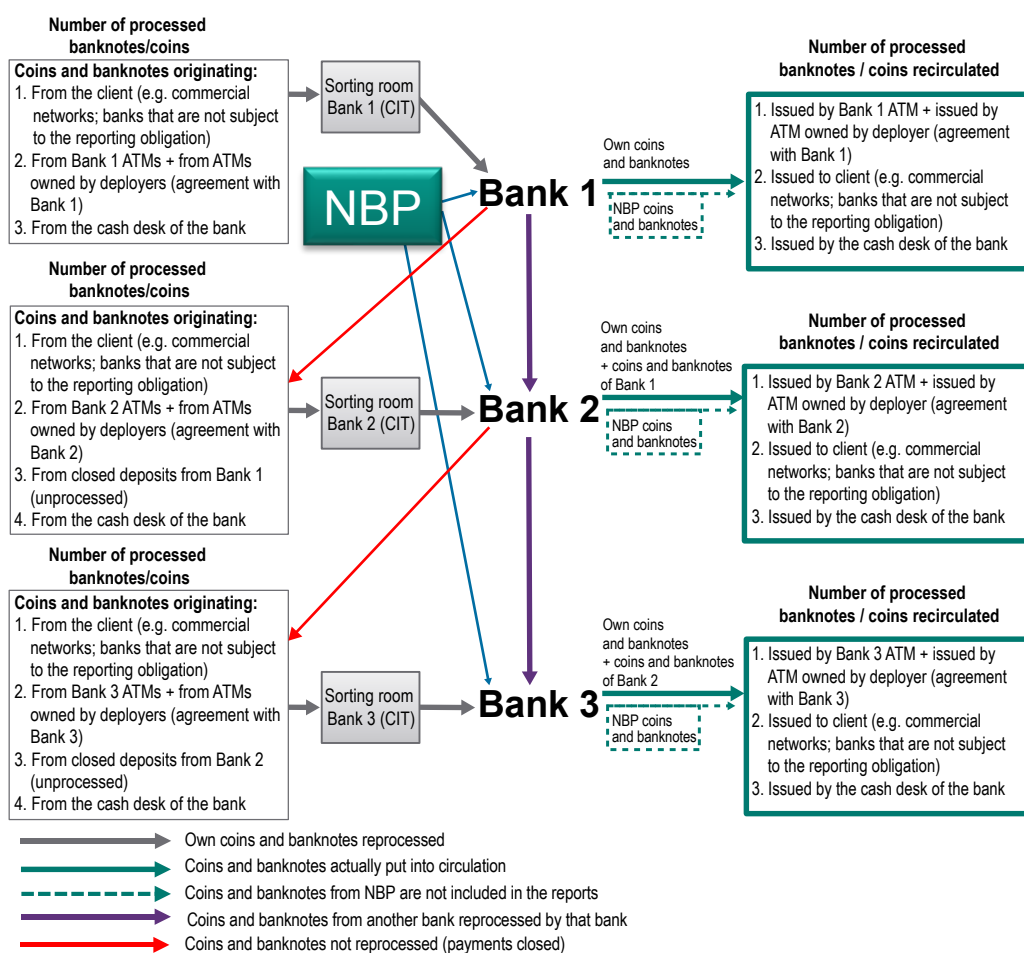
NBP uses the quarterly reporting, among others, to monitor market trends in the area of putting banknotes and coins into circulation by banks without the participation of NBP and to analyse cash flows in banks. The interpretation of data received within the reporting framework allows, among others, to 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 banks and the use of specialised equipment for this purpose is subject to analysis.

The aforementioned analyses will also be used, among others, to forecast circulation and plan orders for banknotes and coins. Accordingly, they will support the central bank's efforts to reduce the costs of issuance of banknotes and coins and increase the security of all cash cycle participants.

3.3.2. Statistical data

In 2019, the banks obliged to submit quarterly reports under the agreement on the terms and conditions of withdrawal and lodgement of Polish currency,³⁰ sent completed forms for individual quarters to NBP.³¹ The statistical data presented below do not include information on banknotes and coins processed and put back into circulation through the bank's cash desks. In a longer perspective, presentation of the data in a broader context is foreseen, taking into account the systemic conclusions. Diagram 2 illustrates the cash flows within the bank's structures.

Diagram 2. Cash flows between market participants



Source: study of NBP Cash and Issue Department.

³⁰ The reporting obligation does not apply to the entire banking sector.

³¹ The Bank may at any time adjust its report for the selected quarter.

In 2019 Q4, banks carried out tasks related to cash circulation through 8,755 organisational units, which means that their number decreased by 1,597³² compared to 2018 Q4.

In 2019 Q4, the banks converted, sorted and checked 1.5 billion banknotes for authenticity, 10.5% more than in 2018 Q4. At the same time, a downward trend in the volume of banknotes put back into circulation is observed. In 2019 Q4, the volume amounted to 947.5 million and decreased by 5.7% compared to 2018 Q4. At the end of 2019, 64.7% of processed banknotes were recirculated by banks, compared with 75.8% the year before (Table 6).

Table 6. Volume of banknotes processed and recirculated in 2018 Q4 and 2019 Q4

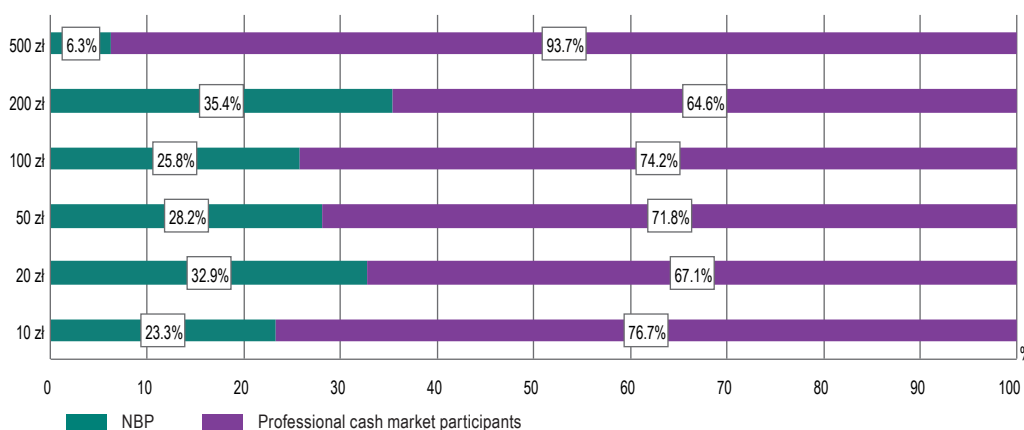
Denomination	2018 Q4			2019 Q4		
	Volume of banknotes processed	Volume of banknotes recirculated	Ratio of the number of recirculated banknotes to the number of processed banknotes	Volume of banknotes processed	Volume of banknotes recirculated	Relation of the number of recirculated banknotes to the number of processed banknotes
500 zł	1 606 987	796 862	49.6%	2 130 528	1 303 118	61.2%
200 zł	95 741 494	38 465 330	40.2%	112 912 589	50 530 521	44.8%
100 zł	765 524 342	655 251 972	85.6%	878 476 060	607 432 994	69.1%
50 zł	243 007 862	204 768 181	84.3%	271 499 106	186 381 893	68.6%
20 zł	93 658 359	43 880 763	46.9%	80 300 106	61 607 968	76.7%
10 zł	126 062 515	61 029 174	48.4%	118 903 271	40 222 513	33.8%
Total	1 325 601 559	1 004 192 282	75.8%	1 464 221 660	947 479 007	64.7%

Source: study of NBP Cash and Issue Department.

Among all the denominations of banknotes, 100 zł banknotes accounted for the highest volume of processed and recirculated banknotes in 2019 Q4 (respectively: 60.0% and 64.1%). The second most frequently processed and recirculated denomination was the 50 zł banknote. Similar results were obtained in 2018 Q4 – banknotes with 100 zł denomination accounted for 57.7% of processed banknotes and 65.3% of banknotes recirculated.

Aggregate figures indicate that the processing of banknotes is largely carried out by the commercial sector. In 2019, 72.7% of the banknotes were counted, sorted and checked for authenticity by banks and CIT companies, while the remaining 27.3% were processed at NBP sorting plants. This distribution is also visible in nominal terms (Figure 4).

³² In accordance with the “Instructions concerning quarterly reporting related to the number of devices, counting and sorting of banknotes and coins and their recirculation”, these are the units performing the bank’s tasks related to cash circulation, in particular: branches, agencies, franchise branches, cash points, subsidiaries, head office units, bank head office units (the registered office of the institution).

Figure 4. Processing of banknotes in 2019 by denomination structure broken down into NBP and other market participants

Source: study of NBP Cash and Issue Department.

The frequency rate of return of banknotes for the market³³ in 2019 indicates that a banknote returned to the sorting rooms of banks and CIT companies, on average, every 146 days. The denomination most frequently processed by market representatives, more than 5 times a year, was the 50 zł banknote. The 50 zł banknotes returned most frequently (every 174 days) also to the sorting facilities of the NBP district branches; however, it happened more than twice as often as in the commercial sector. Another denomination most frequently returned to the sorting facilities of banks and CIT companies was the 20 zł banknote, commonly used in everyday transactions.

Table 7. Frequency rate of return of banknotes in cycles and in days

Denomination	NBP		Market	
	Frequency rate of return (cycles)	Frequency rate of return (days)	Frequency rate of return (cycles)	Frequency rate of return (days)
500 zł	0.10	3 699	0.51	711
200 zł	0.67	541	1.23	298
100 zł	0.85	430	2.44	149
50 zł	2.10	174	5.34	68
20 zł	1.27	288	2.67	137
10 zł	0.76	479	2.46	148
Total	0.94	389	2.50	146

Source: study of NBP Cash and Issue Department.

In 2019 Q4, the banks counted, sorted and checked 624.5 billion coins for authenticity, 24.9% more than in 2018 Q4. At the same time, as in the case of banknotes, a downward trend in the number of coins put back into circulation was observed. In 2019 Q4, the number amounted to 291.4 million and decreased by 13.8% compared to 2018 Q4. At the end of 2019, 46.7% of processed coins were recirculated by banks, compared with 67.6% the year before (Table 8).

³³ 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.

Table 8. Volume of coins processed and recirculated in 2018 Q4 and 2019 Q4

Denomination	2018 Q4			2019 Q4		
	Volume of processed coins	Volume of recirculated coins	Ratio of the number of coins recirculated to the number of processed coins	Volume of processed coins	Volume of recirculated coins	Relation of the number of coins recirculated to the number of processed coins
5 zł	43 826 172	24 948 746	56.9%	48 899 874	23 371 338	47.8%
2 zł	83 794 876	47 748 499	57.0%	90 144 772	44 893 721	49.8%
1 zł	97 873 204	61 094 533	62.4%	107 096 188	58 046 156	54.2%
50 gr	62 388 111	38 258 191	61.3%	68 683 364	31 326 757	45.6%
20 gr	42 500 691	23 528 174	55.4%	45 847 364	21 759 145	47.5%
10 gr	60 484 340	43 454 827	71.8%	69 160 949	40 494 302	58.6%
5 gr	33 174 963	25 666 732	77.4%	41 267 871	19 250 561	46.6%
2 gr	25 871 773	22 752 995	87.9%	54 024 664	15 334 310	28.4%
1 gr	50 093 101	50 485 132	100.8%	99 377 718	36 899 659	37.1%
Total	500 007 231	337 937 829	67.6%	624 502 764	291 375 949	46.7%

Source: study of NBP Cash and Issue Department.

Out of all coin denominations in 2019 Q4, the volume of one-zloty coins processed was the highest, at 17.1%. The second most frequently processed denomination was 1 gr (15.9%). In comparison with 2018 Q4, coins with the face value of 1 zł continued to prevail (then they accounted for 19.6% of all processed coins), while the second most frequently processed denomination was 2 zł (16.8%).

In the case of coins recirculated in 2019 Q4, the one-zloty coin had the highest share, which accounted for 19.9%. The second denomination most frequently recirculated was the 2 zł coin (15.4%). Coins with the face value of PLN 1 retained their dominant share (in 2018 Q4, they accounted for 18.1% of coins put into circulation), while the second most frequently recirculated denomination was the 1 gr coin – 14.9% at the end of 2018.

Chapter 4

Cooperation with banks in the scope of Polish currency supply



Cooperation with banks in the scope of Polish currency supply

4.1. Withdrawing Polish currency from NBP by banks

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 2019 was 2.6% and 0.6% higher, respectively, than in 2018 (Table 9).

Table 9. Total value (PLN million) and volume (million) of banknotes and coins withdrawn from NBP

Value or volume	2018	2019	Change in volume (column 3 – column 2)
1	2	3	4
Value	198 381.7	203 528.1	5 146.4
Volume	3 747.3	3 770.9	23.6

Source: study of NBP Cash and Issue Department.

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

Among all banks supplied with cash by NBP, a group of so-called key banks can be distinguished, consisting of 5–7 entities generating over 80% of banknote and coin withdrawals in terms of their value and volume (Table 10).

Table 10. Total number of banks that have withdrawn at least 80% of the value or volume of banknotes or coins from the NBP

Value or volume	Banknotes, coins	2018		2019	
		Total share	Number of banks	Total share	Number of banks
1	2	3	4	5	6
Value	banknotes and coins	82.2%	5	83.3%	5
	banknotes	82.5%	5	83.6%	5
	coins	81.5%	5	82.8%	5
Volume	banknotes and coins	82.0%	7	82.0%	7
	banknotes	86.4%	6	80.6%	5
	coins	83.5%	5	83.3%	5

Source: study of NBP Cash and Issue Department.

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

4.1.1. Banknotes

The value and volume of banknotes withdrawn by banks in 2019 was 2.6% and 1.7% higher, respectively, than a year ago (Table 11).

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

Value or volume	2018	2019	Change in volume (column 3 – column 2)
1	2	3	4
Value	197 433.0	202 577.8	5 144.8
Volume	2 133.6	2 169.9	36.3

Source: study of NBP Cash and Issue Department.

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

The analysis of the denomination structure of banknote withdrawals in 2019 shows that the highest share in banknote withdrawals, both in terms of value and volume, was recorded in the case of the 100 zł denomination. In 2018, it was also the banknote most frequently withdrawn from NBP. In 2019, in numerical terms, banknotes with the denomination of 10 zł and 500 zł were withdrawn least frequently (Table 12).

In 2019, as compared to 2018, both the value and the volume of withdrawals increased for the following denominations: 200 zł, 100 zł and 50 zł (in the case of value of withdrawn banknotes, respectively by: PLN 3,163.4 million, PLN 1,709.7 million, PLN 548.5 million and in the case of the volume of withdrawals, respectively by: 15.8 million pcs, 17.1 million pcs, and 11.0 million pcs). On the other hand, in 2019, the value and the volume of withdrawals for banknotes with the denomination of 500 zł, 20 zł and 10 zł, compared to the previous year, decreased (in case of the value of withdrawals, respectively, by: PLN 158.0 million, PLN 92.8 million, and PLN 26.1 million and in the case of the volume of withdrawals, respectively by: 0.3 million pcs, 4.7 million pcs, and 2.6 million pcs).

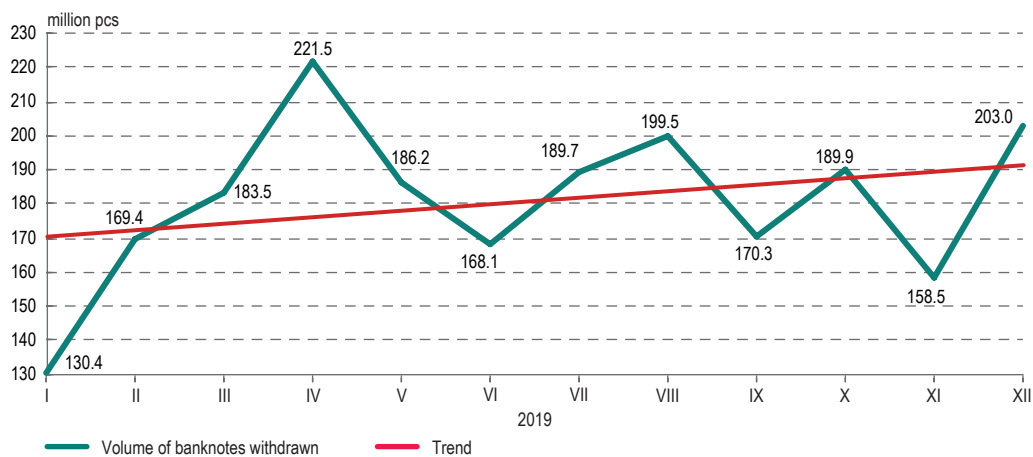
Table 12. Value (PLN million) and volume (million) of banknotes withdrawn from NBP by banks

Denomination	Value		Volume		Structure by value		Structure by volume	
	2018	2019	2018	2019	2018	2019	2018	2019
1	2	3	4	5	6	7	8	9
500 zł	4 179.0	4 021.0	8.4	8.1	2.1%	2.0%	0.4%	0.4%
200 zł	50 797.6	53 961.0	254.0	269.8	25.7%	26.6%	11.9%	12.4%
100 zł	118 852.6	120 562.3	1 188.5	1 205.6	60.2%	59.5%	55.7%	55.6%
50 zł	18 937.3	19 485.8	378.7	389.7	9.6%	9.6%	17.7%	18.0%
20 zł	3 253.2	3 160.4	162.7	158.0	1.6%	1.6%	7.6%	7.3%
10 zł	1 413.4	1 387.3	141.3	138.7	0.7%	0.7%	6.6%	6.4%
Total	197 433.1	202 577.8	2 133.6	2 169.9	100.0%	100.0%	100.0%	100.0%

Source: study of NBP Cash and Issue Department.

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

The volume of banknotes withdrawn from NBP by banks grew in consecutive months in 2019. The lowest volume of banknotes was withdrawn by banks in January: 130.4 million pcs, and the highest in April: 221.5 million pcs (Figure 5). A factor influencing this situation is, among others, the seasonality of banknote withdrawals. It means that banknotes are withdrawn more frequently during the holiday and public holiday periods.

Figure 5. Volume of coins withdrawn from NBP by banks in 2019

Source: study of NBP Cash and Issue Department.

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

4.1.2. Coins

The value of coins withdrawn by banks in 2019 was 0.2% higher than in 2018, whereas the volume of coins withdrawn was 0.8% lower (Table 13).

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

Value or volume	2018	2019	Change in volume (column 3 – column 2)
1	2	3	4
Value	948.7	950.4	1.7
Volume	1 613.7	1 601.0	-12.7

Source: study of NBP Cash and Issue Department.

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

The analysis of the denomination structure of coin withdrawals in 2019 shows that in terms of numbers, the 1 gr denomination had the highest share. In 2018, coins of this denomination were also most frequently withdrawn from NBP. In terms of volume, both in 2019 and in 2018, coins with the denomination of 5 zł were withdrawn least frequently (Table 14).

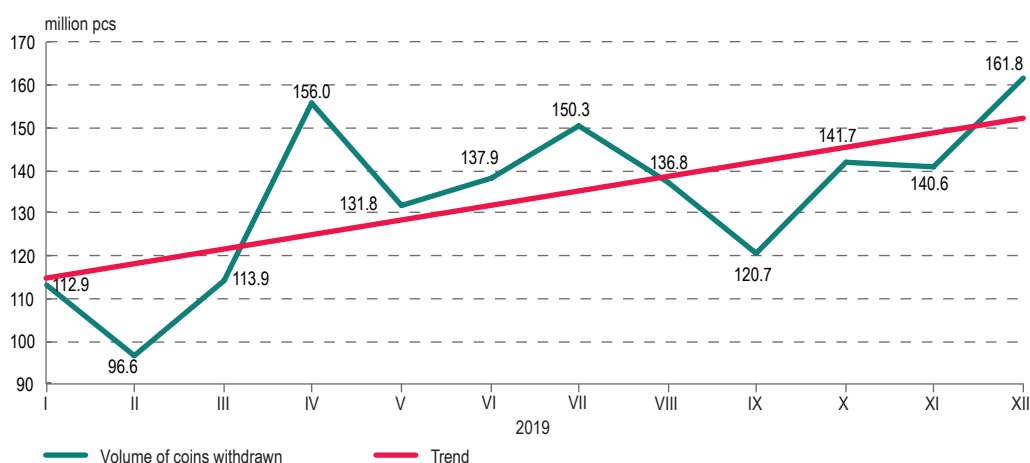
In 2019, compared to the previous year, the value of withdrawals increased for all coins (by PLN 1.7 million), while their volume dropped by 12.6 million pcs.

Table 14. Value, volume and structure of coins withdrawn from NBP (in million)

Denomination	Value		Volume		Structure by value		Structure by volume	
	2018	2019	2018	2019	2018	2019	2018	2019
1	2	3	4	5	6	7	8	9
5 zł	375.1	384.1	75.0	76.8	39.5%	40.4%	4.6%	4.8%
2 zł	286.4	279.4	143.2	139.7	30.2%	29.4%	8.9%	8.7%
1 zł	166.4	169.0	166.4	168.9	17.5%	17.8%	10.3%	10.5%
50 gr	60.0	58.4	120.1	116.9	6.3%	6.1%	7.4%	7.3%
20 gr	25.1	23.0	125.3	114.8	2.6%	2.4%	7.8%	7.2%
10 gr	19.5	20.6	195.1	206.0	2.1%	2.2%	12.1%	12.9%
5 gr	8.0	8.1	159.9	162.0	0.8%	0.9%	9.9%	10.1%
2 gr	3.8	3.3	188.2	163.9	0.4%	0.3%	11.7%	10.2%
1 gr	4.4	4.5	440.4	452.0	0.5%	0.5%	27.3%	28.2%
Total	948.7	950.4	1 613.6	1 601.0	100.0%	100.0%	100.0%	100.0%

Source: study of NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to one decimal place; the sum may not add up to 100%.

Figure 6. Volume of coins withdrawn from NBP by banks in 2019


Source: study of NBP Cash and Issue Department.

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

The volume of coins withdrawn from NBP by banks increased in consecutive months in 2019. The lowest volume of coins was withdrawn by banks in February – 96.6 million pcs, and the highest in December – 161.8 million pcs (Figure 6).

4.2. Lodging Polish currency in NBP by banks

In accordance with the provisions of Regulation No. 19/2016, in 2019, banks lodged in NBP:

- banknotes in one stream, i.e. the ON banknotes;
- coins in one stream, i.e. the ON coins.

In addition, banks lodged separated NS notes in NBP.

In 2019, the value of banknotes and coins lodged by banks in NBP was 3.7% higher compared to 2018, whereas, the volume of banknotes and coins lodged by banks in NBP was 1.5% higher than in the previous year (Table 15).

Table 15. Value and volume of banknotes and coins lodged in NBP (in million)

Value or volume	2018	2019	Change in volume (column 3 – column 2)
1	2	3	4
Value	177 607.8	184 210.3	6 602.5
Volume	2 561.9	2 599.6	37.7

Source: study of NBP Cash and Issue Department.

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

Table 16. 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	2018		2019	
		Total share	Number of banks	Total share	Number of banks
1	2	3	4	5	6
Value	banknotes and coins	84.0%	6	81.2%	5
	banknotes	84.1%	6	81.3%	5
	coins	80.1%	7	81.0%	6
Volume	banknotes and coins	82.1%	7	81.2%	6
	banknotes	82.6%	6	80.5%	5
	coins	80.9%	7	81.4%	6

Source: study of NBP Cash and Issue Department.

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

In 2019, a group of 5–9 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 16).

4.2.1. Banknotes

In terms of value, the share of banknotes lodged in NBP in 2019 was as follows:

- ON banknotes accounted for 99.8% of the total volume of banknotes lodged,
- NS banknotes accounted for 0.2% of the total volume of banknotes lodged (Table 17).

Table 17. Value of banknotes lodged by banks in NBP in 2019

Denomination	ON banknotes	NS banknotes	Total banknotes lodged in NBP column 2 + 3
1	2	3	4
500 zł	868 000 000	2 398 000	870 398 000
200 zł	45 492 000 000	55 948 200	45 547 948 200
100 zł	112 966 500 000	181 677 500	113 148 177 500
50 zł	19 450 500 000	82 018 550	19 532 518 550
20 zł	3 097 400 000	38 427 320	3 135 827 320
10 zł	1 301 050 000	39 270 740	1 340 320 740
Total	183 175 450 000	399 740 310	183 575 190 310

Source: study of NBP Cash and Issue Department.

In terms of volume, the share of banknotes lodged in NBP in 2019 by banks was as follows:

- ON banknotes – 99.5% of the total volume of banknotes lodged,
- NS banknotes – 0.5% (Table 17).

Table 18. Volume of banknotes lodged in NBP by banks in 2019

Denomination	ON banknotes	NS banknotes	Total banknotes lodged in NBP column 2 + 3
1	2	3	4
500 zł	1 736 000	4 796	1 740 796
200 zł	227 460 000	279 741	227 739 741
100 zł	1 129 665 000	1 816 775	1 131 481 775
50 zł	389 010 000	1 640 371	390 650 371
20 zł	154 870 000	1 921 366	156 791 366
10 zł	130 105 000	3 927 074	134 032 074
Total	2 032 846 000	9 590 123	2 042 436 123

Source: study of NBP Cash and Issue Department.

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

Value or volume	2018	2019	Change in volume (column 3 – column 2)
1	2	3	4
Value	176 953.5	183 575.2	6 621.7
Volume	1 996.0	2 042.4	46.4

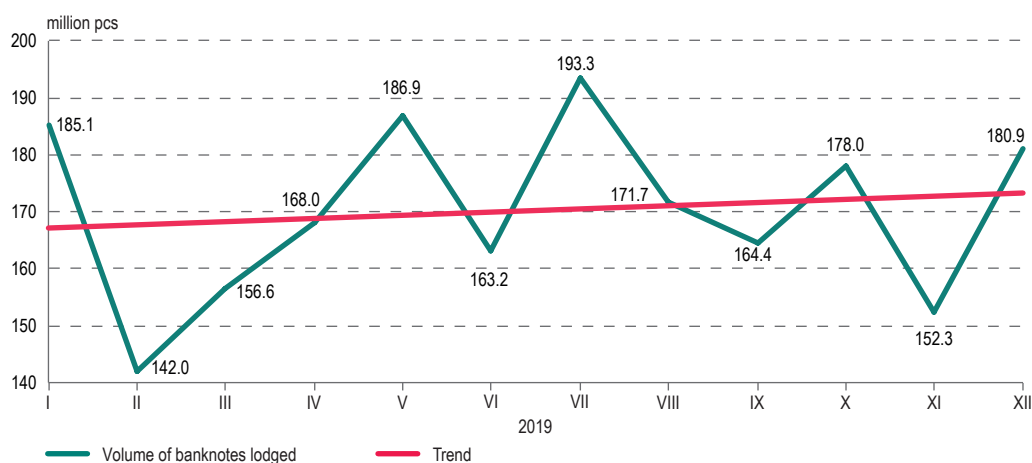
Source: study of NBP Cash and Issue Department.

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

In terms of value and volume, in 2019, banks lodged more banknotes than in the previous year, by 3.7% and 2.3% respectively (Table 19).

While analysing the volume of banknotes lodged in NBP by banks in the consecutive months of 2019, an upward tendency was observed. Banks lodged the lowest volume of banknotes in February – 142.0 million pcs and the highest volume in July – 193.3 million pcs (Figure 7).

Figure 7. Volume of banknotes lodged in NBP by banks in 2019



Source: study of NBP Cash and Issue Department.

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

Table 20. Value, volume and structure of banknotes lodged in NBP in 2018 and 2019 – by denomination

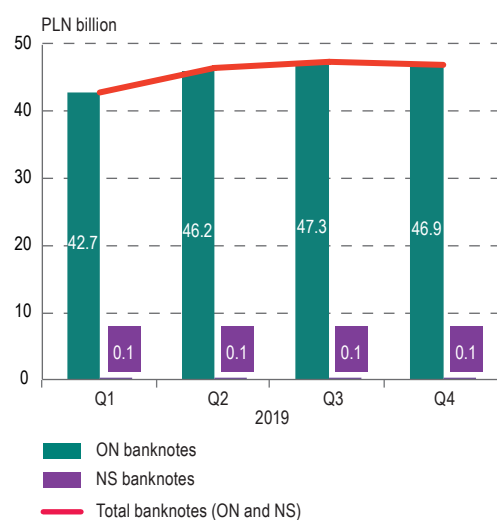
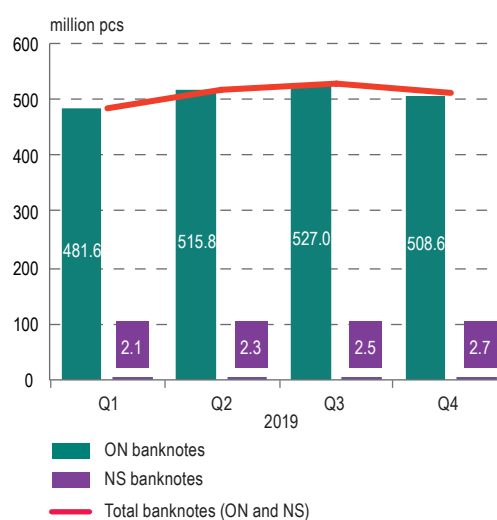
Denomination	Value		Volume		Structure by value		Structure by volume	
	2018	2019	2018	2019	2018	2019	2018	2019
1	2	3	4	5	6	7	8	9
500 zł	858.6	870.4	1.8	1.7	0.5%	0.5%	0.1%	0.1%
200 zł	42 306.4	45 548.0	211.5	227.7	23.9%	24.8%	10.6%	11.1%
100 zł	110 292.2	113 148.2	1 102.9	1 131.5	62.3%	61.6%	55.3%	55.4%
50 zł	18 805.9	19 532.5	376.1	390.7	10.6%	10.6%	18.8%	19.1%
20 zł	3 306.4	3 135.8	165.3	156.8	1.9%	1.7%	8.3%	7.7%
10 zł	1 384.0	1 340.3	138.4	134.0	0.8%	0.7%	6.9%	6.6%
Total	176 953.5	183 575.2	1 996.0	2 042.4	100.0%	100.0%	100.0%	100.0%

Source: study of NBP Cash and Issue Department.

Note: for analytical purposes, source figures were rounded to one decimal place; the sum may not add up to 100%.

Banknotes with 100 zł denomination represent the highest volume of banknotes lodged in NBP, whereas the volume of lodged banknotes with the denomination of 500 zł and 10 zł was the lowest (Table 20).

In 2019 Q4, the value of the ON banknotes lodged increased by 9.8% compared to 2019 Q1 and by 1.5% compared to 2019 Q2. The value of banknotes lodged decreased by 0.9% compared to 2019 Q3. Throughout 2019, the value of NS banknotes lodged remained unchanged (Figure 8).

Figure 8. Value of banknotes lodged in NBP**Figure 9.** Volume of banknotes lodged in NBP

Source: study of NBP Cash and Issue Department.

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

The volume of ON banknotes lodged in 2019 was increasing until the end of Q3. In Q4, their volume fell compared to Q3 and Q2 by 3.5% and 1.4% respectively. Compared to 2019 Q1,

in 2019 Q4, the volume of banknotes lodged increased by 5.6%. In 2019, the volume of NS banknotes lodged in NBP increased in quarter-to-quarter terms. At the end of the year it was 28.6% higher than in Q1, 17.4% higher than in Q2 and 8.0% higher than in Q3 (Figure 9).

4.2.2. Coins

The value and volume of coins lodged by banks in NBP in 2019 decreased, respectively, by PLN 19.2 million, or 2.9%, and 8.7 million, or 1.5%, compared to the previous year (Table 21).

Table 21. Value and volume of coins lodged in NBP in 2018–2019 (in million)

Value or volume	2018	2019	Change in volume (column 3 – column 2)
1	2	3	4
Value	654.3	635.1	-19.2
Volume	565.9	557.2	-8.7

Source: study of NBP Cash and Issue Department.

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

As of 2018, the denominations of 5 zł, 2 zł and 1 zł had the largest share in the value structure of the coins lodged (91.7% of all coins lodged). In terms of the volume of coins lodged in NBP, the following denominations prevailed: 2 zł, 1 zł and 50 gr, which jointly accounted for 55.3% of all coins lodged. In terms of value, in 2019 the lowest volume of coins lodged was recorded for low denominations, i.e. 5 gr, 2 gr and 1 gr. They accounted for 0.4% of all coins lodged. In numerical terms, the lowest volume of coins lodged was recorded for coins with the face value of 5 gr and 2 gr – 11.0% (Table 22).

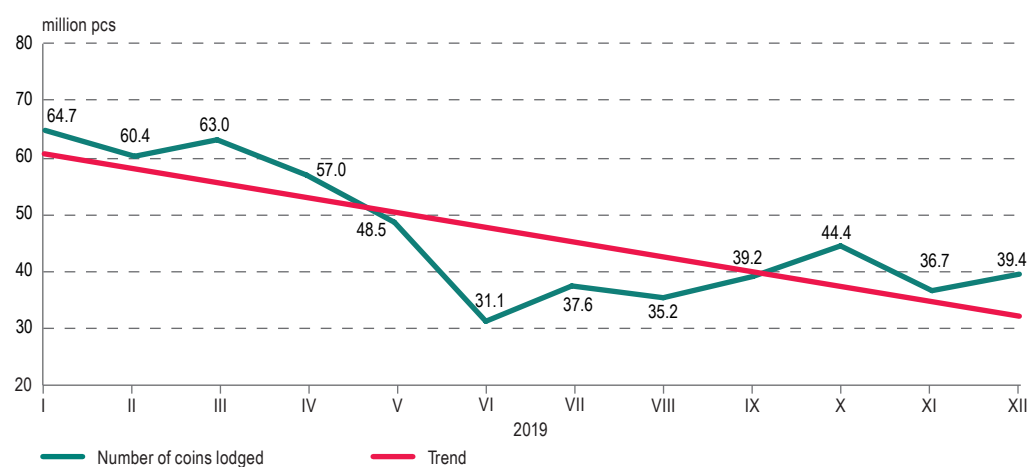
Table 22. Value and volume of coins lodged in NBP in 2018–2019 (in million)

Denomination	Value		Volume		Structure by value		Structure by volume	
	2018	2019	2018	2019	2018	2019	2018	2019
1	2	3	4	5	6	7	8	9
5 zł	250.1	237.3	50.0	47.5	38.2%	37.4%	10.4%	8.5%
2 zł	224.7	219.9	112.4	109.9	34.3%	34.6%	19.6%	19.7%
1 zł	124.3	125.4	124.3	125.4	19.0%	19.7%	21.1%	22.5%
50 gr	38.1	36.3	76.2	72.6	5.8%	5.7%	13.5%	13.0%
20 gr	9.3	8.6	46.4	43.2	1.4%	1.4%	8.5%	7.8%
10 gr	5.2	4.9	52.5	49.5	0.8%	0.8%	9.7%	8.9%
5 gr	1.5	1.6	30.8	31.8	0.2%	0.3%	5.2%	5.7%
2 gr	0.6	0.6	27.9	29.3	0.1%	0.1%	4.9%	5.3%
1 gr	0.5	0.5	45.4	48.0	0.1%	0.1%	7.0%	8.6%
Total	654.3	635.1	565.9	557.2	100.0%	100.0%	100.0%	100.0%

Source: study of NBP Cash and Issue Department.

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

In the case of coins lodged in NBP by banks in individual months of 2019, a downward tendency was observed. Banks lodged the lowest volume of coins in June (31.1 million pcs) and the highest volume in January (64.7 million pcs) (Figure 10).

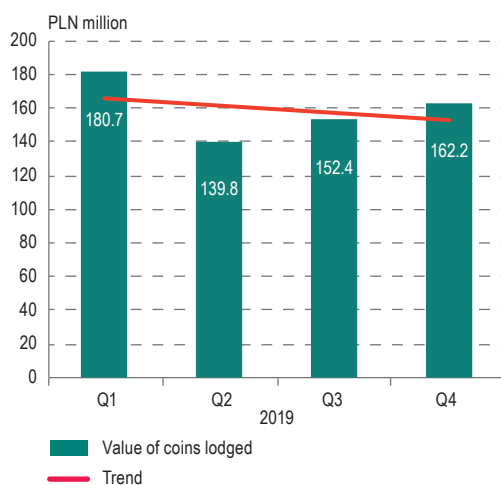
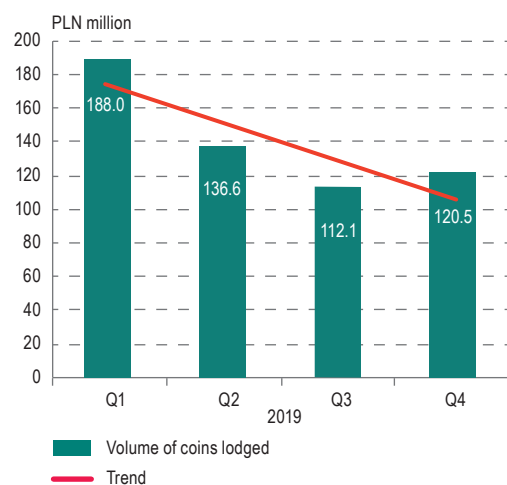
Figure 10. Volume of coins lodged in NBP by banks in 2019

Source: study of NBP Cash and Issue Department.

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

In 2019 Q4, the value of coins lodged in NBP decreased by 10.2% compared to 2019 Q1, while in the 2019 Q2 and Q3, it increased by 16.0% and 6.4%, respectively (Figure 11).

The volume of coins in 2019 Q4, compared to Q1 and Q2, decreased by 35.9% and 11.8%, respectively, while compared Q3 an increase of 7.5% was recorded (Figure 12).

Figure 11. Value of coins lodged in NBP**Figure 12.** Volume of coins lodged in NBP

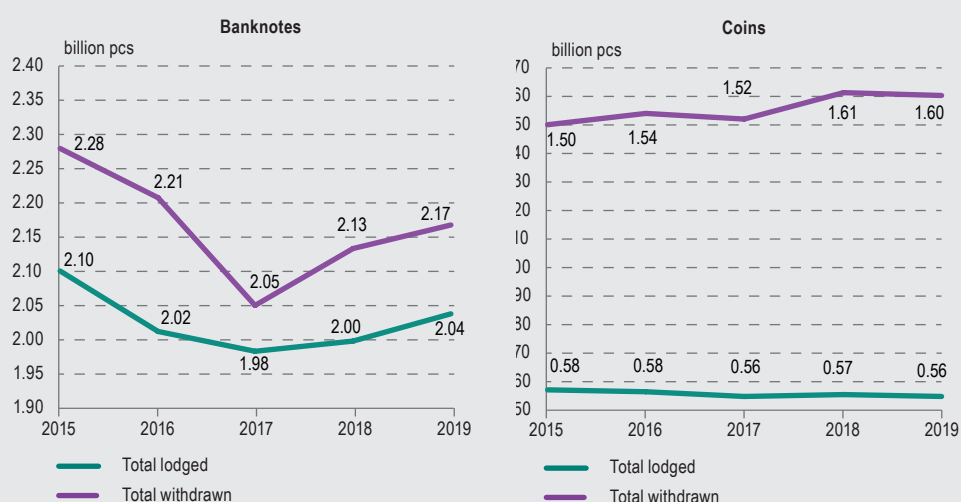
Source: study of NBP Cash and Issue Department.

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

Box B. Tendencies in supplying Polish currency to banks in 2015–2019**1. Withdrawal of banknotes and coins from NBP**

Banknotes. In 2015–2017, the volume of banknotes withdrawn from NBP was gradually decreasing year by year (Figure B1 and Table B1). In 2016, compared to 2015, their volume decreased by 3.1% and in 2017 compared to 2016, their volume decreased by 7.2%. In the subsequent years, a change occurred and the volume of banknotes withdrawn from NBP increased. In 2018, compared to the previous year, an increase of 4.1% was recorded, while in 2019 the volume increased by 1.7% compared to the previous year. It should be noted that despite this growth, the volume of banknotes withdrawn was still lower than in 2016 (by 3.4% and 1.8%, respectively). This is associated, among others, with the fact that in 2017 the decline in the volume of banknotes withdrawn was almost twice as high as in previous years.

Figure B1. Volume of banknotes and coins withdrawn and lodged from/in NBP in 2015–2019



Source: study of NBP Cash and Issue Department.

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

Coins. The volume of coins withdrawn from NBP in 2015–2016 increased (Figure B1 and Table B1). On the other hand, in 2016, it increased by 2.7% while in 2017 a decrease of 1.3% compared to the previous year was recorded. In 2018, the volume of coins withdrawn from NBP increased by 6.0% compared to the previous year and by 4.7% compared to 2016. In 2019, the volume of coins withdrawn decreased by 0.8% compared to 2018.

Table B1. Volume of banknotes and coins withdrawn in 2015–2019

Description		2015	2016	2017	2018	2019
Banknotes	total volume	2 278 663 000	2 208 782 500	2 049 518 500	2 133 613 000	2 169 935 000
	change: year/previous year	x	-3.1%	-7.2%	4.1%	1.7%
Coins	total volume	1 500 368 000	1 541 346 500	1 521 794 500	1 613 644 500	1 601 009 500
	change: year/previous year	x	2.7%	-1.3%	6.0%	-0.8%

Source: study of NBP Cash and Issue Department.

2. Lodging of banknotes and coins in NBP

Banknotes. In the years 2015–2017, the volume of banknotes lodged in NBP decreased year on year (Figure B1 and Table B2); in 2017 it decreased by 1.8% compared to the previous year. In 2018–2019, the volume of banknotes lodged in NBP increased by 0.8% and 3.2%, respectively, compared to 2017. In 2019, the volume of banknotes withdrawn increased by 2.3% compared to the previous year, but was still approx. 2.9% lower than in 2015.

Table B2. Lodging banknotes and coins in NBP in 2015–2019

Description		2015	2016	2017	2018	2019
Banknotes	total volume	2 104 180 900	2 015 759 117	1 979 899 584	1 996 009 377	2 042 436 123
	change: year/previous year	x	-4.2%	-1.8%	0.8%	2.3%
Coins	total volume	582 916 037	575 967 355	559 062 118	565 864 753	557 193 000
	change: year/previous year	x	-1.2%	-2.9%	1.2%	-1.5%

Source: study of NBP Cash and Issue Department.

Coins. The volume of coins lodged in NBP in 2016 decreased by 1.2% in relation to the previous year, and in 2017 it decreased by 2.9% in relation to the previous year (Figure B1 and Table B2). In 2018, compared to the previous year, the volume of coins increased by 1.2% and in 2019 it increased by 1.5% compared to 2018; however, it was still approx. 4.4% lower than the volume of coins lodged in 2015.

4.3. Demand for cash in the period of the COVID-19 pandemic

The coronavirus pandemic has exerted a major impact on the cash transaction market and consumers' payment preferences worldwide. With the emergence of COVID-19, above-average demand for cash was recorded in successive countries. In Poland, the pandemic had a significant impact on the scale of withdrawal and lodgement of Polish currency and the value of circulation. Preliminary analyses indicate a clear growth in withdrawals of the Polish currency from NBP by banks with a simultaneous decrease in lodgements.

4.3.1. Trends in selected countries

Phenomena occurring during the pandemic on the cash circulation market in Poland were a part of the trends recorded in other countries. According to the data of the European Central Bank, until 10 April 2020, the value of euro banknotes in circulation increased by EUR 41.2 billion, or more than 3% in four weeks, amounting to EUR 1.33 trillion. It is the highest increase recorded since the financial crisis associated with the bankruptcy of Lehman Brothers in 2008 (at the time, the increase reached EUR 41.4 billion in four weeks of October 2008).³⁴ As the European Central Bank points out, access to cash is essential for a well-functioning economy, and three-fourths of transactions in the euro area were carried out using banknotes and coins, including in countries such as Germany, Spain and Italy. However, during the pandemic, the demand for cash became less predictable, and in mid-March 2020, the weekly increase in circulation reached almost EUR 19 billion.³⁵ Many Europeans responded to the pandemic by storing considerable amounts of cash for precautionary reasons. During this time, some countries have seen an increase in the value of their cash circulation of a few or more per cent in just one quarter. Deutsche Bundesbank indicated that in mid-March 2020 Germans withdrew twice as many banknotes from ATMs as usual.³⁶ The Bank of England reported that at the end of February 2020 there were 3.9 billion pcs of banknotes in circulation with a total value of approximately GBP 71 billion. This means a 4% increase in circulation during the year in terms of the volume of banknotes and a 0.5% increase in terms of value.³⁷

At the same time, at the early stages of the pandemic, in connection with massive withdrawals of funds by consumers, reports appeared in the global media concerning the possibility of COVID-19 infection through direct contact with banknotes or coins. Discussions on this issue have intensified following the WHO representative's statement suggesting that contact with banknotes could pose a risk of infection and therefore the use of electronic payments is recommended.³⁸ In the following days, the WHO corrected this information and indicated that the coronavirus could be transmitted after contact with any contaminated surface, for example a banknote, followed by human direct contact with the mouth, eyes or nose.³⁹

The alarming reports concerning the potential transmission of COVID-19 via banknotes prompted some central banks to implement additional security procedures in the form of quarantine of the banknotes, lasting from several to several dozen days. Such solutions

³⁴ European Central Bank, *Key euro area indicators*, May 2020, https://www.ecb.europa.eu/stats/ecb_statistics/key_euro_area_indicators/html/index.en.html.

³⁵ European Central Bank, *Beyond monetary policy – protecting the continuity and safety of payments during the coronavirus crisis*, 28 April 2020, <https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200428-328d7ca065.en.html>.

³⁶ Deutsche Bundesbank, *The vaults are full*, 14 April 2020, <https://www.bundesbank.de/en/press/interviews/the-vaults-are-full-830942>.

³⁷ Bank of England, *Banknote statistics*, 25 March 2020, <https://www.bankofengland.co.uk/statistics/banknote>.

³⁸ Bill Gardner, *Dirty banknotes may be spreading the coronavirus*, WHO suggests, "The Telegraph", 2 March 2020, <https://www.telegraph.co.uk/news/2020/03/02/exclusive-dirty-banknotes-may-spreading-coronavirus-world-health/>.

³⁹ Merra Jagannathan, World Health Organization: *We did NOT say that cash was transmitting coronavirus*, "Market Watch", 9 March 2020, <https://www.marketwatch.com/story/who-we-did-not-say-that-cash-was-transmitting-coronavirus-2020-03-06>.

were used, among others, in China⁴⁰, South Korea⁴¹, Indonesia⁴² in Hungary⁴³ and in Poland.⁴⁴ On the other hand, the US Federal Reserve System, quarantined banknotes returning to the US from Asia for 7–10 days.⁴⁵

As a result of discussions on the safety of banknote or coin use, the Bank for International Settlements published a report⁴⁶ indicating that the probability of virus transmission via a banknote is low compared to the risk of touching other surfaces, such as the keyboard of a payment terminal. Experts consistently recommended washing hands, including immediately after contact with banknotes and coins. Security messages concerning the use of cash were issued, among others, by Deutsche Bundesbank,⁴⁷ the Bank of England,⁴⁸ Banque Centrale du Luxembourg,⁴⁹ the Reserve Bank of New Zealand⁵⁰ and the Swedish Riksbank.⁵¹ On the other hand, Narodowy Bank Polski⁵² and the Bank of Canada⁵³ appealed for the general acceptance of cash. At the same time, the ATM Industry Association, which brings together ATM operators and entities involved in the processing of cash and the provision of technology in this area, issued an appeal for the protection of cash as a means of payment, which is extremely important for the balance of the system. According to its representatives, contact of a customer or a cashier with banknotes and coins carries no greater risk than making electronic payments. The authors also drew attention to the risk of financial exclusion, in particular of people who do not hold a bank account, estimated at a level of as many as 1.7 billion worldwide.⁵⁴

⁴⁰ “The Guardian”, *Chinese banks disinfect banknotes to stop spread of coronavirus*, 15 February 2020, <https://www.theguardian.com/world/2020/feb/15/chinese-banks-disinfect-banknotes-to-stop-spread-of-coronavirus>.

⁴¹ Hayoung Choi, *S.Korea's central bank burns, quarantines cash in coronavirus precaution*, Reuters, 6 March 2020, <https://www.reuters.com/article/health-coronavirus-southkorea-money/s-koreas-central-bank-burns-quarantines-cash-in-coronavirus-precaution-idUSL4N2AZ1TL>

⁴² Ejsya A. Eloksari, *Bank Indonesia, OJK limit direct services as social distancing measure to contain virus*, “The Jakarta Post”, 7 March 2020, <https://www.thejakartapost.com/news/2020/03/17/bank-indonesia-ojk-limit-direct-services-as-social-distancing-measure-to-contain-virus.html>.

⁴³ Péter Cseresnyés, *Coronavirus: Hungary's central bank quarantines and cleans banknotes*, “Hungary Today”, 11 March 2020, <https://hungarytoday.hu/coronavirus-hungarys-central-bank-quarantines-and-cleans-banknotes/>.

⁴⁴ NBP Twitter of 19 March 2020.

⁴⁵ Pete Schroeder, Anna Irrera, *Fed quarantines U.S. dollars repatriated from Asia on coronavirus caution*, Reuters, 6 March 2020, <https://www.reuters.com/article/us-health-coronavirus-fed-dollars/fed-quarantines-u-s-dollars-repatriated-from-asia-on-coronavirus-caution-idUSKBN20T1YT>.

⁴⁶ Raphael Auer, Giulio Cornelli, Jon Frost, *Covid-19, cash, and the future of payments*, Bank for International Settlements, 3 April 2020, <https://www.bis.org/publ/bisbull03.htm>.

⁴⁷ Deutsche Bundesbank, *Cash poses no particular risk of infection for public*, 18 March 2020, <https://www.bundesbank.de/en/tasks/topics/cash-poses-no-particular-risk-of-infection-for-public-828762>.

⁴⁸ Miles Brignall, Patrick Collinson, Rebecca Smithers, *Coronavirus: your guide to safer shopping and travel*, “The Guardian”, 14 March 2020, <https://www.theguardian.com/world/2020/mar/14/coronavirus-safer-shopping-travel-trains-buses>.

⁴⁹ Banque Centrale du Luxembourg, *Possible impact of euro banknotes on the spread of the coronavirus*, 17 March 2020, <http://www.bcl.lu/en/Media-and-News/Press-releases/2020/03/coronavirus/index.html>.

⁵⁰ Reserve Bank of New Zealand, *Cash and other payments systems ready for COVID-19*, 19 March 2020, <https://www.rbnz.govt.nz/news/2020/03/cash-and-other-payments-systems-ready-for-covid-19>.

⁵¹ Sveriges Riksbank, *No evidence that the coronavirus spreads via banknotes*, 26 March 2020, <https://www.riksbank.se/en-gb/press-and-published/notices-and-press-releases/notices/2020/the-coronavirus-is-not-spread-via-banknotes-and-coins/>.

⁵² Narodowy Bank Polski, *NBP calls for universal acceptance of cash payments*, 10 April 2020, https://www.nbp.pl/home.aspx?f=aktualnosci/wiadomosci_2020/10042020dsp.html.

⁵³ Bank of Canada, *Bank of Canada asks retailers to continue accepting cash*, 18 March 2020, updated on 28 May 2020, <https://www.bankofcanada.ca/2020/05/bank-canada-asks-retailers-continue-accepting-cash/>.

⁵⁴ *Cash matters: now, more than ever in the time of coronavirus*, ATMIA, 15 April 2020.

At the same time, during the pandemic in Thailand, the number of payment transactions performed using electronic means of payment increased by nearly 93% compared to the previous year.⁵⁵ The Central Bank of the United Arab Emirates issued a communication recommending bank customers to use contactless forms of payment in shops and to avoid the use of payment terminals and limit the exchange of banknotes and coins. In some countries, including Poland, Austria, Germany, Ireland, the Netherlands and the United Kingdom, the limit for payment card transactions without entering the PIN number has been raised, which reduces the number of different people who touch the terminal keyboard.

The increase in the value of cash in circulation may be the result of its prudent accumulation by society, as was the case during the financial crisis in 2008.

According to American experts, avoiding cash payments for some consumers can be a big challenge. In the USA, despite the decline in the popularity of cash payments, every fourth transaction is still carried out using banknotes and coins.⁵⁶ On the other hand, the dynamic digitisation of society may lead to a distortion of universal access to individual payment instruments. For this reason, a service called *payout now* was introduced in the UK during the pandemic to authorise a close relative, a volunteer or a neighbour to withdraw a certain amount from the bank account of the account holder.⁵⁷

4.3.2. Trends observed in Poland

A significant increase in the demand for cash during the pandemic, observed in other countries, also occurred in Poland. The average daily value of banknotes and coins withdrawn from NBP in March 2020, as compared to the corresponding month of the previous year, increased from PLN 807.8 million to PLN 1,791.1 million, i.e. by 121.7%. In April 2020, an increase in withdrawals was also recorded: from PLN 973.1 million to PLN 1,247.5 million, i.e. by 28.2%, as compared to April of the previous year. May 2020, on the other hand, was marked by a decrease in demand for banknotes and coins compared to the previous year. At that time, the average daily value of withdrawals decreased from PLN 834.1 million to PLN 721.9 million, i.e. by 13.5% (Table 23).

Table 23. Value of banknotes and coins withdrawn from NBP in the period from March to May 2020, compared to the same period of the previous year (in PLN million)

Description	March	April	May
2019	807.8	973.1	834.1
2020	1 791.1	1 247.5	721.9
Change 2020 / 2019 (value)	983.3	274.4	-112.2
Change 2020 / 2019 (%)	121.7%	28.2%	-13.5%

Source: study of NBP Cash and Issue Department.

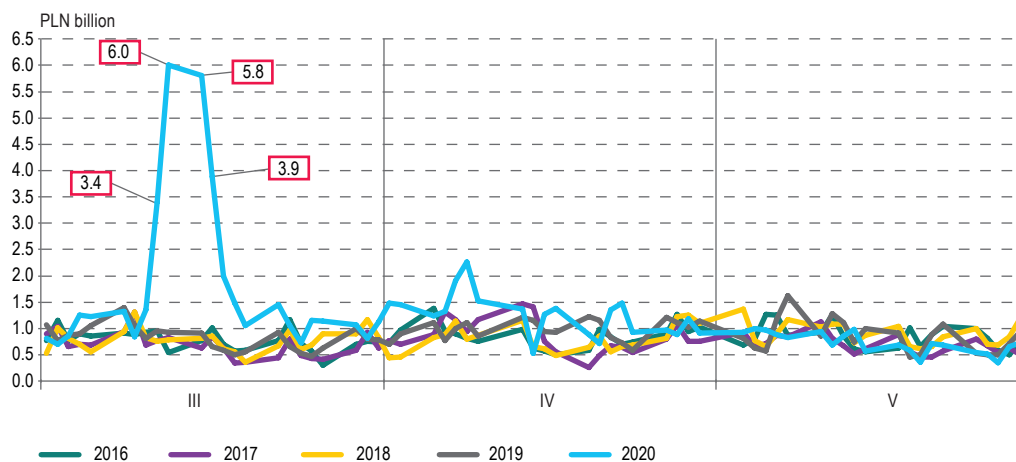
Note: for analytical purposes, source figures were rounded to one decimal place.

⁵⁵ *Digital payments nearly double in March amid virus outbreak*, “Bangkok Post”, 1 April 2020.

⁵⁶ *Coronavirus and cash: Why consumers should be cautious, but not fearful of handling dollars*, “Bankrate”, 27 March 2020.

⁵⁷ *Coronavirus: Ask-a-friend cash access scheme extended*, BBC News, 13 April 2020.

Figure 13. Value of banknotes and coins withdrawn from NBP in the period from March to May 2020, compared to the same periods of previous years

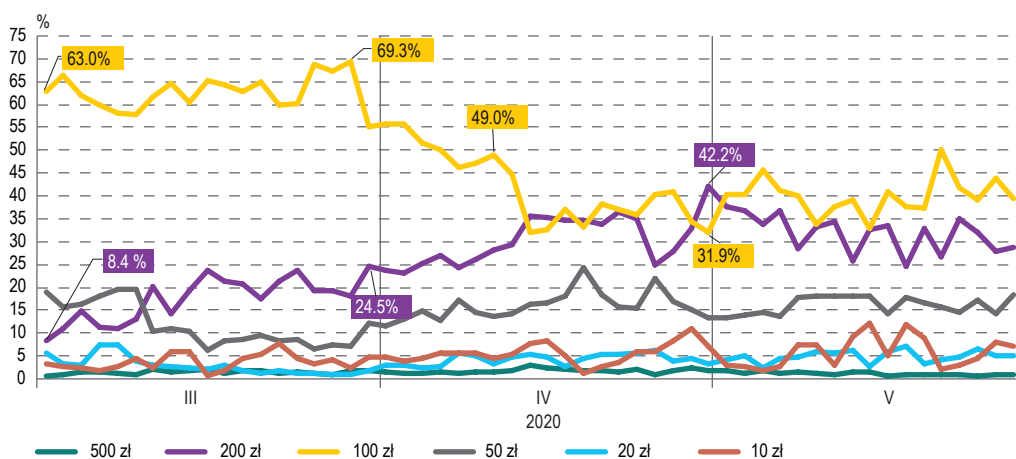


Source: study of NBP Cash and Issue Department.

The highest value of withdrawals was recorded in the period 12–17 March 2020, and the highest daily value of withdrawals, about PLN 6 billion, was recorded on 13 March this year (Figure 13).

The significant increase in demand for cash, which began on 12 March 2020, resulted mainly from intensified cash withdrawals performed by consumers at bank branch cash desks and from ATMs. In particular, banknotes with the denomination of 100 zł were withdrawn at that time. As a consequence, the share of this banknote in the denomination structure of NBP withdrawals on 6 April 2020 reached 69.3% (Figure 14). This was largely caused by the fact that the vast majority of ATMs were adjusted to withdraw the denominations of 100 zł and 50 zł, rather than 200 zł. These devices also did not handle the 500 zł denomination banknotes. As a consequence, even high withdrawals were mostly performed with 100 zł banknotes.

Figure 14. Denomination structure of the volume of banknotes withdrawn from NBP in the period from 12 March to 30 May 2020



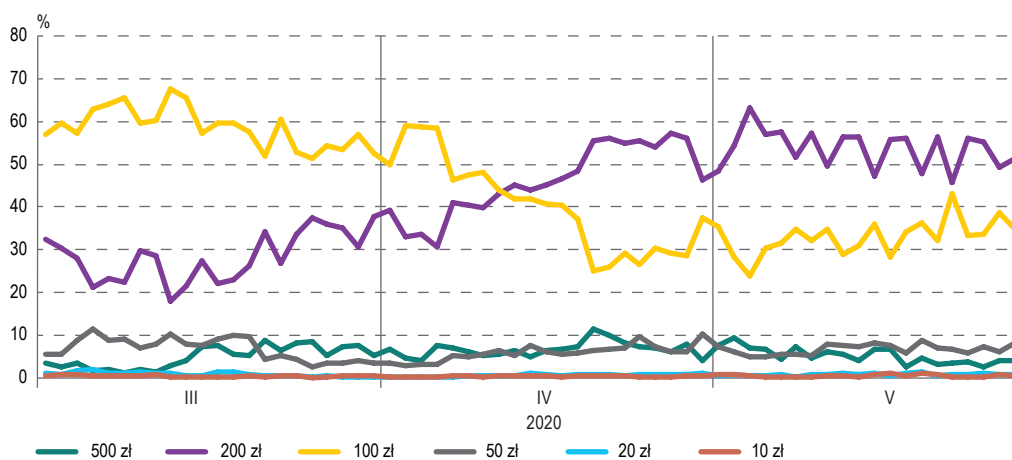
Source: study of NBP Cash and Issue Department.

Due to the fact that one of the main effects of the smooth and undisturbed supply of cash to banks is the maintenance of universal access to cash and its acceptance, Narodowy Bank Polski monitored the situation particularly intensively and maintained constant contact with banks and institutions representing entities operating on the cash circulation market. As a result of the cooperation between NBP and the banks, the efficient functioning of cash circulation and access to cash in the full denomination structure was ensured. At the turn of April and May 2020, the share of the 200 zł denomination banknotes in NBP withdrawals was systematically increasing. In the first days of this period, its share in the denomination structure ranged from 8% to 14%, and then reached over 30% (the highest level, 42.2%, was recorded on 6 May 2020).

The average daily value of banknotes and coins lodged in NBP in March 2020, as compared to March of the previous year, decreased from PLN 658.0 million to PLN 391.7 million, i.e. by as much as 40.5%. In April 2020, the decline was deeper than in the same month of the previous year. The average daily value of lodgements decreased from PLN 719.8 million in April 2019 to PLN 285.8 million in April 2020, i.e. by 60.3%. The increase in the average daily value of banknotes and coins lodged in NBP in May 2020 may demonstrate a slow return to the pre-pandemic situation. The average daily value of lodgements in May 2020 decreased by 32.2% compared to May of the previous year; however, the decline was lower than in previous months (Table 24).

The denomination structure of banknote withdrawals from NBP was gradually changing: the importance of the 200 zł denomination banknote increased while the importance of the 100 zł denomination banknote decreased. In terms of value, the share of the 200 zł denomination in the withdrawals from NBP exceeded the share of the 100 zł denomination banknote on 10 April 2020 (Figure 15).

Figure 15. Denomination structure of the value of banknotes withdrawn from NBP in the period from 12 March to 30 May 2020



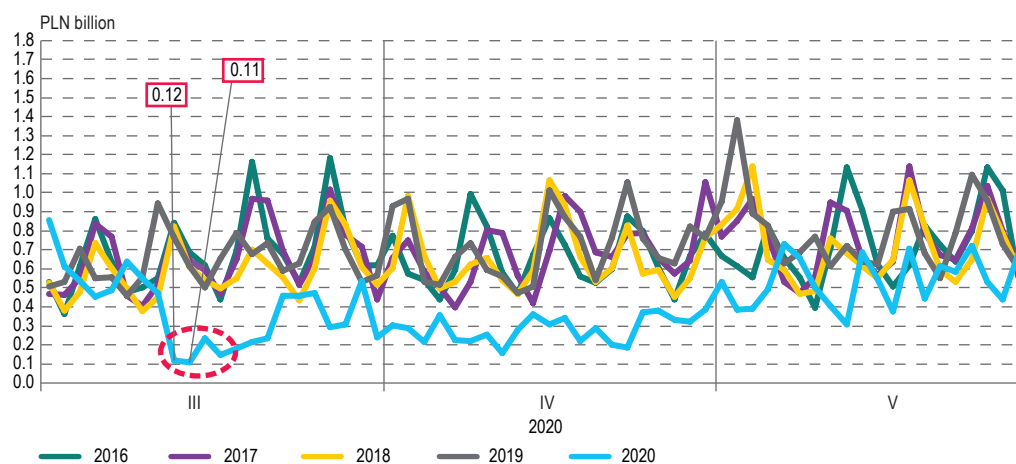
Source: study of NBP Cash and Issue Department.

Table 24. Value of banknotes and coins lodged in NBP in the period from March to May 2020, compared to the same period of the previous year (in PLN million)

Description	March	April	May
2019	658.0	719.8	790.7
2020	391.7	285.8	536.0
Change 2020 / 2019 (value)	-266.3	-434.0	-254.7
Change 2020 / 2019 (%)	-40.5%	-60.3%	-32.2%

Source: study of NBP Cash and Issue Department.

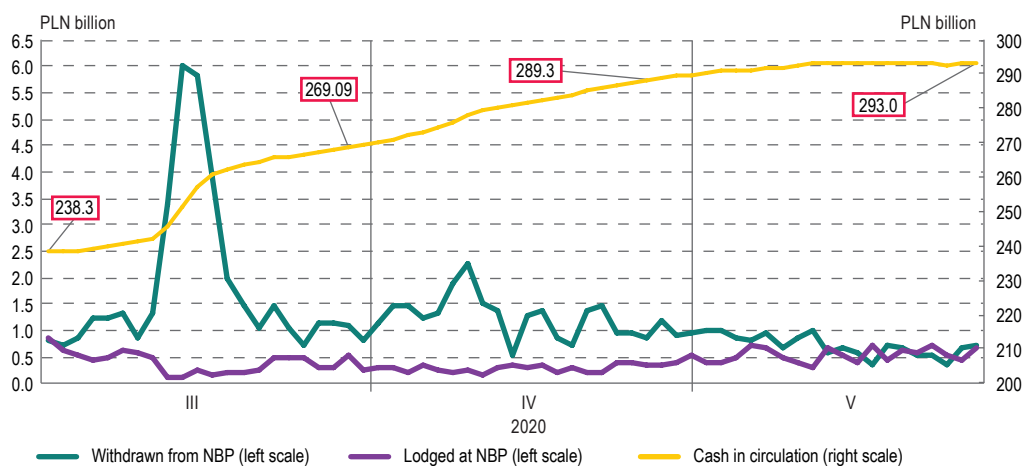
The lowest value of lodgements was recorded on 12 and 13 March 2020, i.e. PLN 0.12 billion and PLN 0.11 billion, respectively. The record low value of the lodgements in these days started the continued low level of lodgements over the whole period March–May 2020.

Figure 16. Value of banknotes and coins lodged in NBP in the period from March to May 2020, compared to the same periods of previous years

Source: study of NBP Cash and Issue Department.

In the period from March to April 2020, as a result of a significant increase in the value of withdrawals from NBP and a decrease in the value of lodgements in NBP, a significant change in the value of cash in circulation occurred (Figure 17). At the end of April 2020, it amounted to PLN 289.3 billion and increased by PLN 51.0 billion, i.e. 21.4% over 2 months. This increase should be seen as a record. It exceeded the annual growth of the value of circulation over recent years, which amounted to 5.9% in 2017, 10.5% in 2018 and 8.8% in 2019. In March 2020 alone, the value of circulation increased by 12.9% compared to the previous month, and in April 2020 by 21.4% compared to February 2020. Such a high increase in the value of cash in circulation was previously recorded in October 2008; at that time, it amounted to 11.0% (i.e. PLN 9.9 billion). A detailed comparison of the developments in cash demand in 2008 and 2020 is provided in Box C.

Figure 17. Value of banknotes and coins withdrawn and lodged from/in NBP and the value of cash in circulation in the period March–May 2020



Source: study of NBP Cash and Issue Department.

A relative stabilisation of the value of cash in circulation was observed in May 2020. The share of cash in M1 amounted to 20.9%, while still in April it reached 21.4%. An increase in the share of cash in M1, associated with a significant increase in the demand for coins and banknotes, often occurs in crisis situations. The phenomena observed may indicate that consumers collected cash for precautionary rather than transactional purposes. Therefore, the highest denomination banknotes, i.e. 200 zł and 500 zł, should be used more frequently for withdrawals with an increased value.

Box C. Comparison of the scale of withdrawal and lodgement of the Polish currency and the value of circulation during the coronavirus pandemic in 2020 and the crisis in 2008

In March and April 2020, in the initial period of the coronavirus pandemic in Poland, a significant change in the demand for cash occurred. The previous significant increase in the demand for cash was recorded in October 2008. It was associated with the global economic crisis (Table C1).

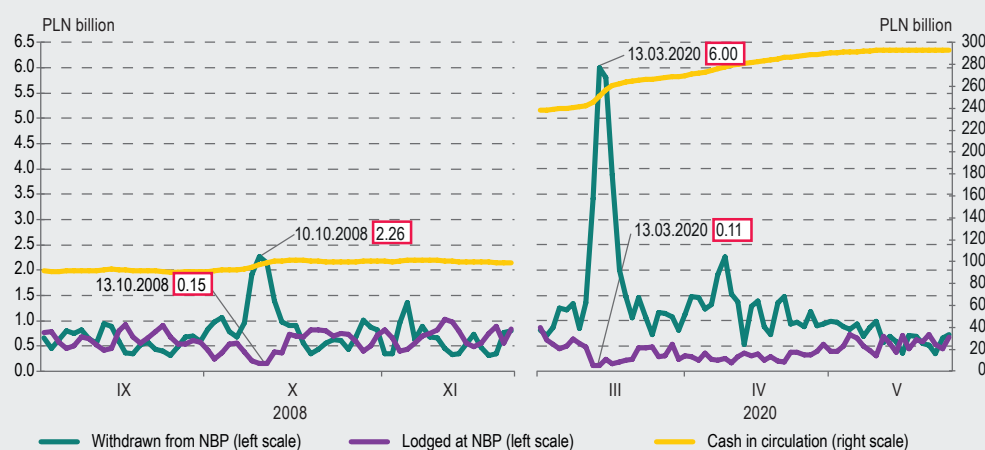
Table C1. Comparison of key indicators related to periods of increased cash demand in 2008 and 2020

Description	2008		2020			
	October		March		April	
	value	change: October 2008 / September 2008	value	change: March 2020 / February 2020	value	change: April 2020 / February 2020
Cash in circulation	PLN 100.2 bn	increase of 11.0%	PLN 269.1 bn	increase of 12.9%	PLN 289.3 bn	increase of 21.4%
Withdrawn from NBP	PLN 21.9 bn	increase of 67.1%	PLN 39.4 bn	increase of 160.6%	PLN 26.2 bn	increase of 73.2%
Lodged in NBP	PLN 12.0 bn	increase of 14.8%	PLN 8.6 bn	decrease of 29.8%	PLN 6.0 bn	decrease of 51.1%

Source: study of NBP Cash and Issue Department.

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

Figure C1. Value of banknotes and coins withdrawn and lodged from/in NBP and the value of cash in circulation in the periods September–November 2008 and March–May 2020



Source: study of NBP Cash and Issue Department.

In 2008, demand for cash peaked on 10 October. On that day, the banks withdrew banknotes and coins with the total value of PLN 2.3 billion from NBP. At the same time, the value of lodgements in NBP, which on 13 October 2008 reached a minimum of PLN 0.1 billion, fell significantly. In total, in October 2008, the banks withdrew Polish currency worth PLN 21.9 billion from NBP and lodged PLN 12.0 billion. As a consequence, the value of the Polish currency in cash circulation increased from PLN 90.7 billion to PLN 100.6 billion, compared to the previous month, i.e. by PLN 9.9 billion or 11.0%, year on year (Figure C1).

In 2020, the demand for cash peaked on 13 March 2020. On that day, the banks withdrew banknotes and coins with a total value of PLN 6.0 billion from NBP. A record low value of lodgements in NBP also occurred – PLN 0.1 billion. In total, in March and April 2020, the banks withdrew Polish currency from NBP with a value of PLN 39.4 billion and PLN 26.2 billion respectively. In March 2020, they lodged PLN 8.6 billion in NBP and in April PLN 6.0 billion. As a consequence, the value of the Polish currency in circulation increased in March 2020 compared to the previous month, from PLN 238.3 billion to PLN 269.1 billion, i.e. by 12.9%, and in April 2020 it increased compared to February 2020 by PLN 289.3 billion or 21.4% (Table C1).

The initial above-average increase in the value of withdrawals with a simultaneous decrease in lodgements was characteristic and similar for both periods. In the periods of increased demand for cash, an unprecedented increase in demand for the 100 zł banknote was observed, i.e. an increase in its share in the denomination structure of banknotes withdrawn from NBP. In both periods, i.e. in October 2008 and in March 2020, a similar increase in the share of this banknote in the denomination structure of the volume of banknotes withdrawn from NBP was observed amounting to 4.3 percentage points and 4.7 percentage points, respectively.

In April 2020, the share of the 100 zł banknote in the denomination structure of banknotes withdrawn from NBP dropped by 7.1 percentage points compared to February. This change in the share of banknotes withdrawn from NBP is a result of the central bank's cooperation with the cash circulation market, aimed at providing market participants with access to banknotes in a full structure, taking into account the demand for higher-denomination banknotes, i.e. 200 zł and 500 zł.

Summarising the conclusions of the above analysis, it can be concluded that:

- In 2008 and 2020, a significant increase in consumer cash withdrawals was recorded, while the share of cash in the M1 aggregate increased.
- Cash in circulation increased in both periods; however, the duration of the upward trend was different. In October 2008, this increase was 11.0%, and in March 2020, it was 12.9%, and it remained at an elevated level in April 2020 (compared to February 2020, the cumulative growth reached 21.4%).
- The increase in demand for cash in denomination terms in 2008 and 2020 is incomparable due to the significant difference between the value of circulation during these periods. In 2008, the value of circulation at the end of September amounted to PLN 90.7 billion and increased to PLN 100.6 billion during the month, while in February 2020 it reached PLN 238.3 billion and increased to PLN 269.1 billion during the month.
- In 2020, the increase in the value of cash in circulation was much higher than in 2008 as a result of a decrease in the value of banknote lodgements in NBP (lodegements from banks have not returned to pre-pandemic levels and are still low).
- In 2020, the increased demand for cash has been continuing much longer than in 2008 and has been persisting for several weeks.
- In 2020, the highest value of daily withdrawals amounted to PLN 6 billion and was almost three times higher than in 2008; at that time, it amounted to PLN 2.3 billion.
- The total value of withdrawals in 2020 (in March, PLN 39.4 billion, in April, PLN 26.2 billion) was much higher than in October 2008, when it amounted to PLN 21.9 billion.

Glossary of terms

NS banknotes – banknotes unfit for automated sorting, i.e. banknotes fixed with tape, glue or otherwise, torn, stapled or broken.

ON banknotes – total fit and unfit banknotes.

CIT companies (*cash-in-transit*) – undertakings commissioned by banks to perform activities related to 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.

ON coins – total fit and unfit coins.

Circulation – the volume (or value) of general circulation 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.

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

Recirculation (also referred to as turnover or recycling) – means putting into circulation banknotes fit or 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.

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

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.

Supply – number (or value) of banknotes or coins which were lodged in NBP or were withdrawn from NBP by banks. 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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