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Impact of the central bank's financial result on the transfers of benefits across sectors of the economy

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Abstract

This paper presents an analysis of the impact of the central bank's financial result and its components on the inter-sectoral transfers of benefits and the creation of central bank money. Transfers of benefits depend on the structure of the central bank's balance sheet and its financial result. The structure of its balance sheet, its financial result as well as profit distribution influence central bank money creation. If the central bank records a profit, fully transferred to the state budget, and its assets are mainly denominated in domestic currency, then the central bank's financial result can be seen only as a tool for intermediation in the transfer of benefits between different sectors of the national economy. In such a situation, the bank's financial result does not affect the volume of the central bank's money. On the other hand, if the central bank records a profit, fully paid to the state budget, and its assets are mainly denominated in foreign currency, then there is a transfer from foreign entities to the domestic economy, and there is simultaneously an increase in central bank money volume. However, if the central bank incurs a loss and the loss is not covered, for example, by the government, then the central bank transfers benefits directly from itself to other sectors of the economy, and regardless of the structure of its balance sheet, there is an increase in the central bank's money issuance.

Keywords: central bank, financial result, balance sheet, transfers between sectors of the economy.

JEL: E51, E58

Introduction

The central bank is perceived mainly through its functions in the economy, most commonly in the context of its monetary policy, which aims to maintain a stable value of money. However, it is less frequently seen as an economic entity whose activity is reflected in its balance sheet and profit and loss account.

At the same time, it should be borne in mind that it is the functions and tasks performed by the central bank that determine both the structure of its balance sheet and the profit and loss account. On the other hand, cash flows reflected in the profit and loss account of a central bank as income or expenses, respectively, are in fact transfers of benefits between different sectors of the economy. Moreover, these transfers also affect the level of macroeconomic variables, primarily the size of central bank money creation or gross domestic product.

The aim of the paper is to demonstrate the role of the central bank's financial result, the income and expenses determining it, contributions from profit distribution to the state budget as well as the situation of occurrence of uncovered loss, in the transfers of benefits between different sectors of the economy. The directions of these transfers depend on the structure of assets of the central bank balance sheet¹ as well as on the result of its activities for a given period (the financial result), i.e. whether the bank shows a profit or incurs a loss. The paper also shows cases where the central bank's financial result and its components can influence the size of central bank money creation. Thus, the considerations focus on the central bank's financial result.

The analysis was based on a simplified accounting model of an open economy. It was assumed to consist of the central bank, the domestic private banking sector (commercial banks, hereinafter also referred to as the "banking sector"), the domestic non-banking private sector and the government sector (referred to as the "government"). The foreign sector has also been distinguished.

¹ The currency structure of assets in the central bank balance sheet indicates the share of assets denominated in foreign currencies and assets in domestic currency (i.e. in the currency issued by the central bank to which the balance sheet relates) in the central bank's total assets.

The paper comprises four chapters. Chapter 1 discusses the simplified central bank balance sheet as well as the simplified balance sheets of the other sectors of the economy. In Chapter 2, the central bank's profit and loss account is presented. On this basis, the impact of individual elements of the financial result and its distribution on transfers of benefits between economic sectors was analysed. Chapter 3 focuses on an analysis of the impact of the structure of the central bank balance sheet on the central bank's financial result and, consequently, on the transfers of benefits between individual sectors of the economy. The determinants of the impact of benefit transfers on the volume of central bank money creation are also discussed in this chapter. Chapter 4 presents an empirical analysis of transfers of benefits for selected central banks in 2018-2019. A summary of the discussion is presented at the end of the paper, including the conclusions stemming from the analysis.

1. Simplified balance sheets of the central bank and other sectors of the economy

The analysis conducted in the paper focuses on the flows between various sectors of the open economy, tentatively referred to here as “benefits”. The concept of benefits will be explained later in the paper (cf. Chapter 2). The economic sectors analysed are presented here. They include the central bank, the private (commercial) banking sector, the domestic non-banking private sector and the government sector.²

Flows of benefits will be analysed from the perspective of changes in the balance sheets of individual sectors of the economy (cf. e.g. Gross and Siebenbrunner, 2019, pp. 11-16). The benefits themselves, on the other hand, are ultimately reflected in changes in the equity of individual sectors.

The central bank is the sole issuer of central bank money, which will be understood here as the sum of the monetary base (Polanski, 2008b, pp. 125-126) and the balance of government accounts held at the central bank. For the purpose of this analysis it has also been assumed that central bank money additionally comprises the balances of liquidity-absorbing operations. The central bank money so understood appears in the form of liabilities of the central bank in domestic currency and is presented in the balance sheet under liabilities. These liabilities may include cash issued by the central bank (banknotes and coins³), cash in the bank accounts of the domestic banking sector or the government, as well as liabilities from liquidity-absorbing operations (e.g. accepted deposits, issued short-term debt securities).

The liabilities of the central bank balance sheet also include the bank’s equity. This is the amount that would be transferred to the owners of the bank in the event of its liquidation (cf. e.g. Kjellberg, Vestin, 2019, pp. 8-9). Equity comprises statutory funds provided by the owners of the central bank upon its establishment as well as

² There is also the local government sector, which is similar to the government sector, but for the sake of simplification of the analysis conducted in the paper, the authors have not included it in the analysis. On the other hand, foreign countries sector is treated as debtor of the central bank in the paper. Financial instruments denominated in foreign currency, issued by foreign entities constitute assets of the central bank.

³ Provided that the central bank issues coins.

funds created by the banks themselves, e.g. from retained profits (reserve funds) or specific provisions (e.g. for financial risks), the creation of which constitutes the central bank's expenses and reduces its financial result. The central bank's equity also includes the bank's generated financial result (profit or loss) before distribution (cf. e.g. Bholat, Darbyshire, 2016, p. 14).

Since, as indicated by the literature studies, the financial result generated is an element of capital, the change in the value of the central bank's equity can be treated as corresponding to the transfer of benefits. The increase in the value of a bank's equity, resulting, for example, from the surplus of income over expenses (bank's profit) achieved, is a net transfer of benefits from other sectors of the economy to the central bank. On the other hand, a decline in equity due to, for example, distribution of the central bank's profit, is a transfer of benefits from the bank to other sectors of the economy.

The asset side of the central bank includes financial instruments⁴, which are financed by the central bank money issued and its equity. The type and currency of financial instruments held in its portfolio are diversified and depend on the circumstances under which the central bank operates. They can comprise either foreign currency, i.e. receivables from the foreign sector, or assets denominated in domestic currency, representing receivables from the domestic banking sector, the government and the non-banking private sector. In addition, the assets of the central bank comprise tangible and intangible assets (e.g. real property, equipment, machinery, computer software). The same assets also appear on the balance sheets of other sectors of the economy; however, for the purposes of this analysis their presentation in the balance sheets of individual sectors is omitted. The following figure shows a simplified balance sheet of a central bank.⁵ Hereinafter in the paper, an analysis of potential cases of the structure of central bank financial assets and their

⁴ According to Z. Polański, financial instruments should be understood as financial liabilities, i.e. claims concerning assets of one economic entity against another; for issuers, financial instruments are liabilities, and for holders – components of assets; thus, in the case of an issuer, a financial instrument is a component of its liabilities, while for its holder (purchaser) it is an element of its assets (Polanski, 2008a, p. 21).

⁵ A more detailed analysis of the central bank balance sheet, taking into account the impact of the functions performed by the central bank, is presented in Annex 1.

impact on the change in central bank money creation will be performed, including the transfer of benefits between individual sectors of the economy.

Figure 1. Simplified balance sheet of the central bank

Central bank	
Assets	Liabilities
Financial instruments	Central bank money - <i>cash</i> - <i>domestic banking sector accounts</i> - <i>government accounts</i> - <i>liquidity-absorbing operations</i>
	Equity - <i>statutory fund and reserve fund</i> - <i>specific provisions</i> - <i>financial result (before distribution)</i>

Source: own study.

The domestic private banking sector collects deposits from the domestic non-banking private sector, which constitute its liabilities. Liabilities may also include liabilities to the central bank related to operations that inject liquidity into the private banking sector. On the other hand, this sector presents receivables from the central bank in assets (including funds held on the account with the central bank). Moreover, the domestic private banking sector grants loans to the domestic non-banking private sector as well as purchasing debt securities issued by this sector. These loans may also be provided to the government. Private banks can also purchase Treasury securities to cover accumulated budget deficits. All these receivables are then presented under assets. The domestic commercial banking sector also holds equity, which is presented in the liabilities of its balance sheet. The next figure shows a simplified consolidated balance sheet of the commercial banking sector.

Figure 2. Simplified consolidated balance sheet of the domestic private banking sector

Domestic private banking sector	
Assets	Liabilities
Receivables from the central bank	Deposits of non-banking private sector
Lending to non-banking private and government sectors	Liabilities to central bank
Debt securities of the non-banking private and government sectors	Equity

Source: own study.

The domestic non-banking private sector is identified with enterprises (manufacturing, providing non-financial services) and households. The assets of this sector comprise cash issued by the central bank as well as deposits held in the domestic banking sector; for simplicity of the analysis, it has been assumed that this sector does not purchase Treasury securities. On the other hand, the liabilities of the domestic non-banking private sector consist of liabilities due to loans drawn from the domestic commercial banking sector and liabilities due to debt securities issued by enterprises. The equity of this sector is also presented in liabilities. The figure below shows a simplified balance sheet of the domestic non-banking private sector.

Figure 3. Simplified balance sheet of the domestic non-banking private sector

Domestic non-banking private sector	
Assets	Liabilities
Cash	Credits and loans of the domestic banking sector
Deposits in the domestic banking sector	Issued debt securities
	Equity

Source: own study.

The last sector analysed is the government sector (the government). From the monetary point of view, the assets of the government balance sheet comprise deposits held in the account with the central bank. On the other hand, liabilities consist of liabilities incurred in order to cover accumulated budget deficits (loans and Treasury securities issued). This item will be hereinafter referred to as “public debt”. The difference between assets and liabilities represents the equity of the government sector. This sector generally operates under the circumstances of accumulated surplus of expenditure over income (deficits), therefore, its capital is usually negative. It is therefore shown with a negative sign in our simplified model. The next figure presents a simplified balance sheet of the government sector.

Figure 4. Simplified balance sheet of the government sector

Government sector (Government)	
Assets	Liabilities
Account with the central bank	Public debt
	Equity (-)

Source: own study.

2. Financial result of the central bank – an attempt to identify benefits

The assets and liabilities of individual sectors of the economy identified in the previous chapter are associated with specific revenue and costs. They also involve specific types of risks (Martínez-Resano, 2004, p. 18). In particular, central bank's income and expenses will be the focus of interest for the purpose of this analysis. However, it should be noted – as presented in detail hereinafter – that the income and expenses of the central bank simultaneously constitute expenses and income of the other sectors of the economy, respectively.

From the perspective of the central bank, three major categories of income or expenses related to its assets and liabilities can be distinguished. First of all, they include interest, secondly, they are differences resulting from a change in the value (price) of assets (so-called price differences), and thirdly, they are differences resulting from changes in foreign exchange rates (so-called exchange rate differences).

For each of the categories of income and expenses mentioned above, a distinction can be made between those paid (realised) and those not paid (unrealised). Thus, interest accrued but not yet paid will be treated as unrealised gains (on assets) or losses (on liabilities). Under such circumstances, real cash flows between sectors of the economy are missing. They will become realised when the actual payment of interest takes place, which is associated with the actual cash flow. A similar situation will occur with respect to price differences that result from changes in the value (price) of assets. These differences result from the periodic measurement of assets, i.e. the comparison of their book value with their current market value (e.g. at the end of a month or a year) and they are unrealised. They will be realised when the assets are sold. On the other hand, exchange rate differences result from the periodic measurement of assets and liabilities (financial instruments) in foreign currencies (e.g. at month-end or year-end), i.e. the comparison of their book value (determined as the equivalent in domestic currency) with the current market rates of foreign currencies

and are similar to price differences. They result from the fluctuations in the exchange rates of foreign currencies against domestic currency.

In the case of central bank assets, interest income occurs in respect of almost every asset of the central bank (excluding, for example, tangible fixed assets). A similar situation exists with respect to price differences, which are most common with respect to debt securities held by the central bank. On the other hand, foreign exchange differences relate to financial instruments denominated in foreign currency.

On the contrary, in the case of central bank liabilities which due to their nature generate costs, it should be noted that some important items of liabilities do not generate expenses for the central bank. This applies above all to liabilities due to money in circulation⁶, or the bank's equity.

Moreover, certain expenses related to resources that do not appear on its balance sheet are associated with the activities of the central bank. This applies, for example, to the remuneration of the bank's employees or to expenses incurred in connection with services provided to the bank by external entities (e.g. IT services, renovation services). While for the central bank these costs reduce its financial result, for other sectors (e.g. the non-banking private sector) they represent revenues.

The central bank's income and expenses constitute its financial result. On the other hand, the method of calculation of the central bank's financial result depends on the accounting policy applied.⁷ This policy or, to be more precise, the accounting rules determine such issues as:

- 1) whether the specific income or expenses are identified by the bank,
- 2) whether the specific income or expenses identified by the bank are recognised in its financial result,
- 3) when and how the specific income and expenses are taken into account in the determination of the financial result of the central bank.

⁶ However, it should be borne in mind that the sole production of cash and keeping it in circulation entails certain costs incurred by the central bank.

⁷ The following three paragraphs of the discussion refer to a significant extent to the study by Szadkowski (2019), pp. 73-78.

With regard to the first issue, it is worth bearing in mind that some central banks do not take into account all income and expenses related to assets and liabilities in their financial management (cf. e.g. BIS, 2013, pp. 27-30). Most commonly, this refers to the aforementioned unrealised gains and losses resulting from valuation, i.e. the price and foreign exchange differences arising from valuation as at the balance sheet date (*mark-to-market*). These banks do not revalue their holdings of assets and liabilities to current prices and market rates (i.e. they apply historical cost). Only when assets are sold or liabilities are settled (derecognised from the balance sheet as a result of their realisation), realised gains and losses from valuation arise and they are recognised in the bank's financial result.

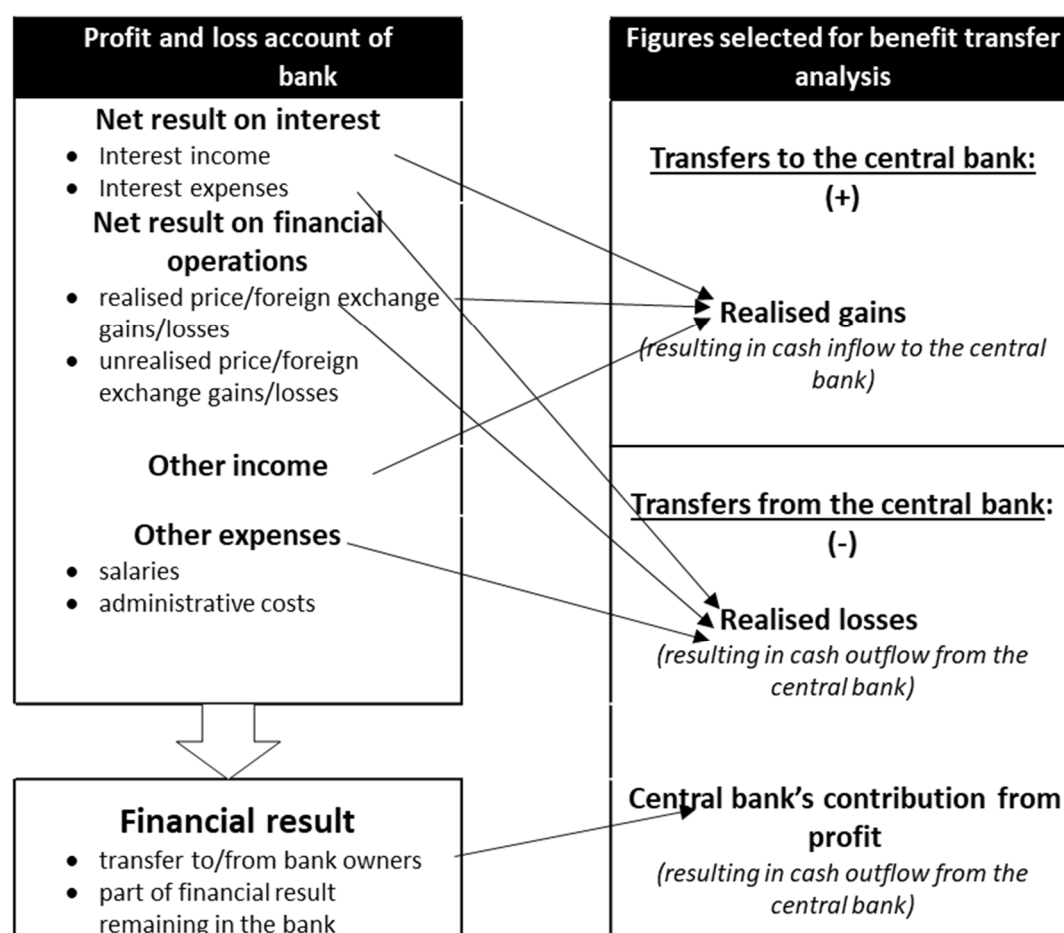
Referring to the second issue, some central banks that identify unrealised gains and losses from valuation (i.e. apply *mark-to-market* measurement) do not recognise them in the financial result. It is associated with the fact that central banks usually apply the prudence principle in their financial management. According to this principle, the financial result is not increased by unrealised gains arising from valuation but is decreased by unrealised losses arising from valuation (sometimes a prohibition to decrease the financial result by unrealised losses arising from valuation also occurs). The effects of revaluation of balance sheet items are therefore not a part of the bank's financial result until they are realised (e.g. due to the aforementioned sale of assets). This ensures that they are not subject to further distribution (Schwarz, Karakitsos, Merriman, Studener, 2014, pp. 11-12).

Finally, the third issue concerns the timing of the recognition of income and expenses in the central bank's profit and loss account. It should be understood as the moment of their impact on the financial result of the financial year. It is possible to apply the accrual method of accounting, which requires recognition of income and expenses in the financial result in the period they relate to, regardless of the moment when they are actually paid (the moment of accrual). On the other hand, an alternative is the cash approach, which requires recognition of income and expenses in the financial result in the period when the actual related cash flow occurs (the moment of payment). When discussing how the revenues and costs are recognised in the financial result, it is important to consider, among others, the method applied to calculate them.

This refers, for example, to issues such as the calculation method of price and exchange rate differences (e.g. detailed identification – i.e. transaction by transaction, use of averaged prices or purchase prices⁸) or the calculation method of interest (straight-line or internal rate of return).⁹

The aforementioned analysis of income and expenses allows to outline a simplified profit and loss account of the central bank which is shown below (Figure 5, left-hand panel).

Figure 5. Simplified profit and loss account of the central bank



Source: own study.

⁸ Kruszewski (2006) writes more extensively on the calculation of exchange rate differences based on the averaged purchase rate.

⁹ More on the central bank accounting principles, cf. e.g. Kurtzig and Mander (2003, pp. 25-26) and KPMG (2012: pp. 12-20).

The key component of the central bank's profit and loss account (Figure 5, left-hand panel) is usually the net result on interest. It comprises interest income on financial assets (inflow of benefits) less interest expenses on financial liabilities (outflow of benefits). In practice, the result on financial operations is often an equally important component of this account. It is determined by realised price and foreign exchange gains/losses (due to the sale of assets, settlement of liabilities) and unrealised price and foreign exchange gains/losses from valuation (depending on the accounting policy applied by the central bank). The central bank's profit and loss account may additionally distinguish other income, e.g. on fees and commissions for operating bank accounts or for performing banking activities. On the other hand, other costs cover a wide range of central bank activities, such as costs of salaries, administrative expenses¹⁰, expenses related to the production or purchase of cash and its issuance.

Summing up, the considerations concerning the central bank's financial result presented so far lead to the following conclusions.

First of all, the functions and tasks of the central bank determine not only the content and structure of the balance sheet but also its profit and loss account. The central bank's financial result is mainly determined by revenues and costs related to financial assets and liabilities (financial instruments), i.e. primarily interest and realised price and exchange rate differences.

Secondly, the content and structure of the central bank's profit and loss account depend not only on the function of the central bank but also on the accounting principles adopted.

As shown in Figure 5 (bottom left-hand panel), the central bank's financial result is subject to further distribution. The whole financial result generated by the bank, or a part thereof, can be distributed to recipients (as a contribution from profit) or covered by, for example, the owners of the bank (in case of loss) or may remain in the central bank (e.g. as undistributed profit or uncovered loss).

¹⁰ E.g. IT services, renovation costs and other services.

The benefits mentioned earlier, while discussing the central bank's equity, are associated with its financial result. Thus, the benefits flowing into the bank – increasing its financial result – represent income. On the other hand, the benefits flowing out of the bank – reducing its financial result – represent expenses. It should be emphasised that benefits are understood very broadly, as gains (benefits) for specific sectors of the economy. The analysis focuses on benefits considered from the central bank's perspective. Thus, the income of the central bank is benefits with the central bank acting as their beneficiary. On the other hand, the costs of the central bank are benefits for other sectors of the economy. The financial result of the central bank, where the profit occurs, is the net benefit of the central bank. On the contrary, when the loss occurs, it is the net benefit for other sectors of the economy. On the other hand, profit transfers from the central bank to an eligible recipient (e.g. the owners of the central bank, the government) constitute the benefit of the latter.

From the perspective of the benefits analysed here, it is therefore important to consider individual elements of the central bank's profit and loss account, i.e. its income (benefits that increase the bank's financial result) and expenses (benefits that decrease the bank's financial result) as well as the method of profit distribution.

Figure 5 (right-hand panel) presents the results of the analysis of the central bank's financial result impact on the direction of the benefits transfer. Indeed, it should be noted that not all elements included in the central bank's financial result have an impact on the volume of benefit transfers.

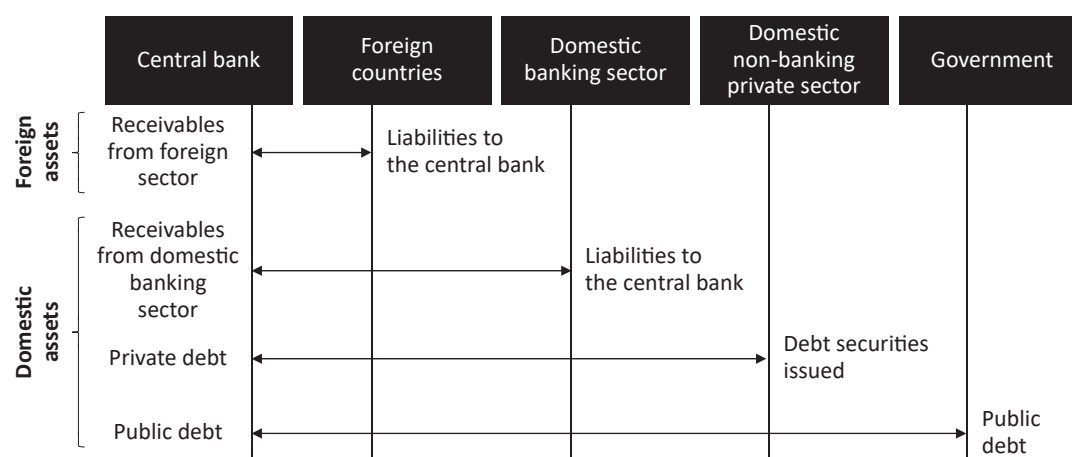
Thus, if central bank income is realised, it implies the transfer of benefits to the central bank from other sectors of the economy. On the other hand, if the central bank incurs expenditure generating expenses, they trigger an outflow of benefits from the central bank and their transfer to other sectors of the economy. On the contrary, if the central bank distributes the profit (as a payment to the state budget), then the effects of the operation are similar to the operation associated with incurring expenses by the central bank. Thus, it means the outflow of benefits from the central bank and their transfer to the government.

3. Structure of the central bank balance sheet and transfers of benefits associated with its financial result

Summarising the considerations of the previous chapter, it should be noted that the central bank's expenses imply an outflow of benefits from the central bank to other sectors of the economy. The direction of the transfer depends on the type of expenses and their beneficiary. As already mentioned, expenses mainly relate to central bank's liabilities (Figure 1). Therefore, interest expenses may relate to interest on deposits held as the required minimum reserve or interest on other financial operations aimed at absorbing the liquidity of the banking sector (e.g. in the form of cash received or debt securities issued by the central bank¹¹) as well as interest on balances in government accounts. These expenses therefore result in the transfer of benefits to the domestic banking sector and the government, respectively. They imply the inflow of cash into banks' accounts with the central bank and an increase in their equity (Figure 2) as well as the inflow into the government account and a decrease in the government's negative equity, respectively (Figure 4). On the other hand, the operating expenses of the central bank which are not associated with the remuneration of its liabilities relate mainly to salaries paid (central bank employees) and expenses on services, mostly purchased from the private sector (enterprises). Therefore, they result in the transfer of benefits from the central bank to the private sector. They imply an increase in the deposits of these entities held in private banks and an increase in their equity (Figure 3).

As already stated, the central bank's income constitutes the transfer of benefits to the central bank. The question of who transfers these benefits to the central bank depends primarily on the type of assets that the central bank holds (cf. Figure 6).

¹¹ As in the case of, for example, Narodowy Bank Polski, which issues NBP bills, or the central bank of Sweden which, in turn, issues deposit certificates.

Figure 6. Structure of central banks' assets

Source: own study.

As the central bank's assets comprise primarily financial instruments, they are mainly the source of interest income. If the central bank holds in its assets loans granted to the domestic banking sector, the transfer of benefits in the form of interest paid takes place from that sector to the central bank. On the other hand, when the central bank conducts e.g. quantitative easing (QE) operations and as their result purchases Treasury securities (public debt), the transfer of benefits (in the form of interest) from the government sector to the central bank occurs. However, when the bank purchases debt securities of the domestic non-banking private sector (e.g. corporate bonds) as a result of these operations, the transfer of benefits from this sector to the central bank takes place. On the other hand, if foreign assets constitute the central bank's assets (i.e. receivables from the foreign sector), the transfer of benefits from foreign countries to the central bank in the currency of another country (foreign currency) constitutes revenues.

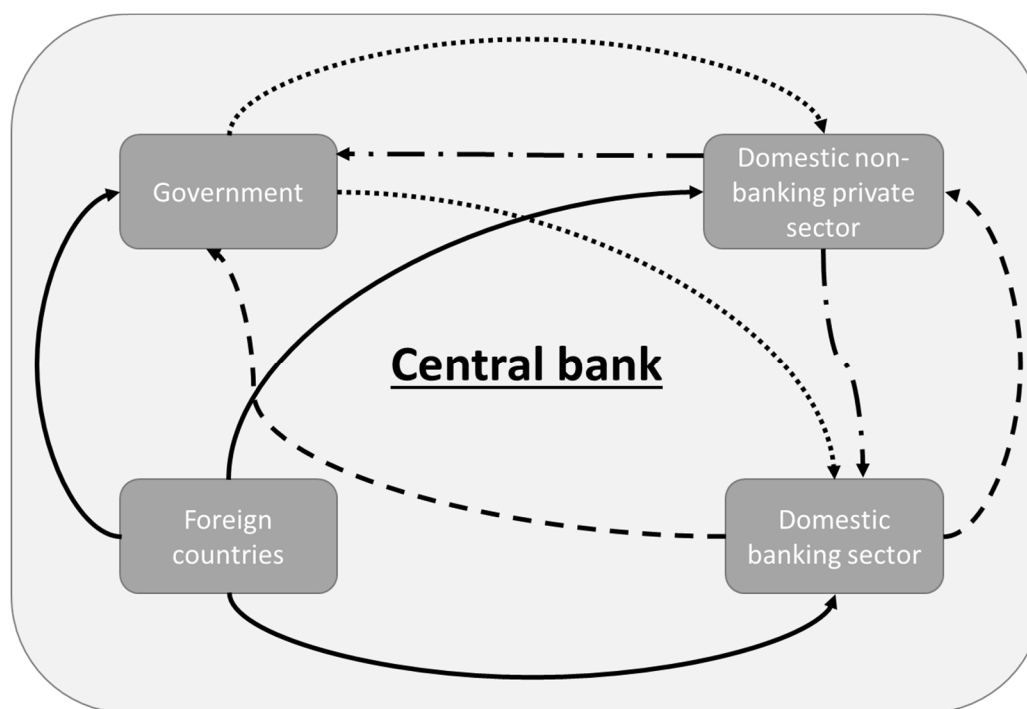
The central bank's financial assets may generate not only interest income but also income arising from changes in their value (price differences – e.g. debt securities; foreign exchange differences – assets denominated in foreign currency). If the price/foreign exchange differences are realised and are positive, which means that the debt securities were sold at a price higher than their purchase price, the transfer of net benefits to the central bank takes place. In the opposite case, i.e. when negative differences occur, the transfer of net benefits from the central bank to other sectors takes place.

As specified earlier, transfers of benefits are also affected by the central bank's profit distribution. It should be pointed out that the bank's profit means the surplus of transfers of benefits to the central bank (income) over transfers from the central bank to other sectors of the economy (expenses). It is obvious that profit distribution implies the assignment of the central bank's benefits to its owner. The determination of transfer directions is affected by the distribution rules of the central bank's financial result. Nowadays, the beneficiary of the central bank's profit transfers is usually its owner, i.e. the state (the government, the state budget). Originally, central banks were generally private entities, thus, they constituted entities separate from the state authority. Today, central banks are essentially state-owned banks (Owsiak, 2005, p. 352). Therefore, the beneficiary of the central bank's profit distribution is generally the government sector (the government).

The figure below presents the aggregate impact of the structure of central bank's assets on the direction of transfers of benefits in the economy associated with the central bank's financial result (Figure 7). At the same time, the assumption has been adopted that the bank generates the profit which is fully transferred to the state budget and operates in the environment of positive interest rates.¹² In addition, in order to present the directions of transfers more clearly, the assumption has been made that the central bank's assets are dominated by the particular type of assets, and examples of such banks are indicated. Later in the paper some of the assumptions adopted here will be loosened.

¹² In the case of negative interest rates, the central bank's liabilities may generate income while the bank's assets may generate expenses. Then, the direction of the transfers will be different.

Figure 7. Final transfer of benefits in the case of central bank's profits depending on the structure of its assets



Legend:

The direction of net benefit transfers when the central bank's assets are dominated by:

- foreign exchange reserves (foreign countries)
- - - - -→** receivables from the domestic private banking sector
-→** public debt
-→** private debt (domestic non-banking private sector)

Source: own study.

When the central bank's assets are dominated by foreign assets¹³, the transfer of benefits from foreign countries (income on foreign assets) to the domestic banking sector (due to expenses such as interest on bank accounts), the domestic non-banking

¹³ Examples of central banks whose balance sheets at the end of 2018 and 2019 were dominated by foreign assets (more than 90% of total assets) include the central banks of Bulgaria, Chile, Croatia, the Czech Republic, Norway, Poland, Romania or Switzerland (cf. annual reports of the aforementioned banks for 2018 and 2019).

private sector (refers to the operating costs of central bank – e.g. salaries) and the government (profit distribution) will take place.¹⁴

On the other hand, when the central bank's assets are dominated by domestic assets¹⁵, the direction of the transfers of benefits will depend on the type of assets held by the central bank. In other words, the sector of the domestic economy from which the central bank holds claims; if these are mainly assets of the domestic banking sector, the transfer of benefits from this sector occurs (surplus of income over expenses from operations with the banking sector) to the private sector (due to the operating costs of the central bank) and the government (profit distribution).¹⁶ However, if the central bank holds securities purchased from the private sector, the transfer of benefits will take place from that sector (the surplus of income on private sector securities over the operating costs of the central bank) to the banking sector (this refers to the expenses of the interest on bank accounts) and, as in all previous cases, to the government (profit distribution).¹⁷ The case of transfers of benefits is worth particular attention when the central bank's assets include public debt¹⁸. Under such circumstances, the transfer of benefits from the government sector to the domestic banking sector and the non-banking private sector occurs. Indeed, the interest income received by the central bank on government bonds will finance its interest expenses on banking sector accounts and its operating costs, i.e. transfers to the private sector.¹⁹ On the other hand, the remaining surplus of income over expenses will be used for the payment from the bank's profit to the state budget. However, if central bank expenses in the form of interest on domestic bank accounts did not occur²⁰ and the operating costs of central bank were negligible, the transfer of benefits in the form of interest on public debt from the government to the central bank (interest

¹⁴ Details concerning the flows of the transfers are presented in Annex 2 (cf. Figure A2.1.).

¹⁵ Examples of central banks whose balance sheets at the end of 2018 and 2019 were dominated by domestic assets (more than 90% of total assets) include the central banks of Japan, Canada, the United States and the United Kingdom (cf. annual reports of the aforementioned banks for 2018 and 2019).

¹⁶ Cf. Figure A2.2. in Annex 2.

¹⁷ Cf. Figure A2.4 in Annex 2.

¹⁸ Issues of how the central bank came into possession of the public debt are omitted, bearing in mind, of course, for example, the prohibition of financing (monetisation) of public debt with central bank funds, which applies in the European Union.

¹⁹ Cf. Figure A2.3. in Annex 2.

²⁰ In contemporary practice, this would mean a situation where the central bank on the liabilities side has only liabilities due to issued cash (money in circulation).

would be the cost for the government and the income for the central bank) would be offset in the form of payment from the central bank's profit to the state budget. This, in turn, would be equivalent to issuing of interest-free debt by the government (Sławiński, 2016, p. 239).

It should be stressed that in the cases discussed so far, while maintaining the assumption that the central bank makes profits which it fully transfers to the state budget, this bank only acts as an intermediary in the transfer of benefits between individual sectors of the economy. It is therefore placed at the centre of Figure 7 and is neither a beneficiary nor a provider of net benefits to any sector of the economy. If one of the assumptions is loosened and the central bank is permitted to incur a loss, the situation is more complicated for two reasons.

First of all, the central bank's loss means a surplus of its expenses over its income, i.e. transfers of benefits from the central bank exceed transfers of benefits to the bank. This means that in addition to the transfers discussed above, the central bank transfers its net benefits to other sectors of the economy.²¹

Secondly, there are no uniform rules of loss coverage. This issue is therefore regulated on a case-by-case basis in individual national jurisdictions.²² For the analysis conducted in this paper, it is important whether the central bank's loss is covered, for example, by the government (the so-called recapitalisation of the bank is performed) or whether the loss remains in the central bank's balance sheet (carried forward in its equity) and is not covered or will be covered, for example, by future central bank profits. In the first case (recapitalisation), the transfer of benefits from the government sector to the central bank will occur. In the second case, if losses remain in the central bank's capital, the transfer of net benefits from the central bank to other sectors of the economy will take place, as indicated above.

The case where the central bank becomes an entity transferring its net benefits to other sectors of the economy is not limited to incurring a loss by the bank that is not

²¹ Details of transfer flows when the central bank incurs a loss are shown in Annex 3 (cf. Figures A3.1.-A3.4.)

²² Even in the euro area, the issue of the rules concerning distribution of the central bank profits or covering losses is regulated individually for each national central bank. Cf. also Brunea, Karakitsos, Merriman, Studener (2016), pp. 30-33.

covered by, for example, the government. Such a situation is also possible when the bank uses its capital to finance deficit-generating activities in other areas of its operation. It takes the form of using previously established provisions to cover identified risk, the occurrence of which may result in expenses.

Besides, the central bank may also set aside in its capital a portion of net income from other activities. This takes place either through creating so-called provisions, i.e. before the financial result is determined, or reserve funds – as a result of the distribution of the financial result, i.e. retaining part of the profit in the central bank. This, in turn, means that if one of the assumptions adopted earlier, regarding the payment of all profits to the state budget, is loosened in favour of the central bank retaining a part of the revenue generated, then the central bank can not only transfer its net benefits to other sectors of the economy but it can be also the beneficiary of the net benefits transferred from other sectors. However, it should be indicated that the source of creation of these provisions, or reserve funds, is the financial result of central banks, i.e. transfers of benefits from other sectors of the economy. As a consequence, creating such provisions or reserve funds in one period and using them in another period practically means the redistribution of benefits between sectors of the economy with the difference that it occurs in different periods.

Finally, it is worth considering the case where another assumption is loosened, i.e. the diversification of central bank assets will be permitted, which means that the bank will hold assets both in domestic currency and in foreign currency, without indicating what assets prevail. In such a case, while maintaining the assumption of generating profit and allocating it entirely to payments to, for example, the government, the central bank will continue to act as an intermediary in the transfers of benefits. However, it is much more difficult to identify the clear direction of benefit transfers between sectors of the national economy. They will then be determined by the difference between the income on assets and the expenses on the central bank's liabilities towards the relevant sector of the economy. For example, if the central bank's income due to claims on the domestic banking sector are greater than the expenses of liabilities associated with banks' accounts and potential liquidity absorption operations, the transfer of net benefits from the banking sector to other

sectors of the economy will take place. In the opposite situation, i.e. if the central bank's expenses on banks' accounts are higher than its income on claims on those banks, the transfer of net benefits from other sectors of the economy to the banking sector will take place.

3.1. Impact of transfers of benefits associated with the central bank's financial result on its money creation

The central bank's income and expenses, which are identified with transfers of benefits, can also be analysed from the perspective of their impact on central bank money creation (issuance). It should be recalled that in Chapter 1 a broad definition of central bank money was adopted, which in addition to the monetary base (the sum of cash in circulation and banks' reserves with the central bank) also comprises the government accounts in domestic currency held with the central bank as well as the central bank's liabilities due to banking sector liquidity-absorbing operations (e.g. through the issue of NBP bills mentioned earlier, but also, for example, repo operations).²³

Money creation is affected by those benefits (income and expenses) that are reflected in the actual flows of money in domestic currency between the central bank and entities in different sectors (Figure 5, right-hand panel). Therefore, in this context, income and expenses paid (realised) are of interest. However, it should be noted that accrued, but not yet paid, income and expenses recognised in the central bank's financial result will also be realised in future periods.²⁴ This means that conclusions

²³ The last two central bank liabilities, although they are not a part of the monetary base, can be converted into cash or reserve money (bank deposits) in the banking system within a short time, owing to the high liquidity characteristic for them. More on central bank money, cf. Kucharski, Rączkowski (1960), p. 35 and deposit money and the creation of bank deposits cf. Kucharski, Rączkowski, Wierzbicki (1973), pp. 19-20 and 31 et seq.

²⁴ Therefore, hereinafter in the paper (including the empirical section, Chapter 4), where it will not significantly affect the reasoning conducted, the assumption adopted here will be loosened. At this point it is worth mentioning that the adoption in 1999 of the rules mandating the switch by NBP from the cash approach to the accrual approach raised some doubts that the central bank would pay profit determined by income accrued but not yet paid, mainly on financial instruments denominated in foreign currencies. This gave rise to concerns that by distributing profit to the state budget, the bank would issue new money before it received money issued by other central banks. These doubts have been

drawn for the amounts recognised in the financial result, irrespective of the principle adopted for their recognition, will not differ substantially from reality, if a sufficiently long period of analysis is taken into account.

Income realised in domestic currency (whether from interest or from gains on the sale of assets) leads to a reduction in central bank money creation. The reason is that this is a withdrawal of a certain amount of central bank money issued from the economy. When a counterparty pays, for example, interest to the central bank, the corresponding payment is made by reducing the balance of the commercial bank's reserves held with the central bank. The reason is that the reduction in a central bank's liability towards a commercial bank means an increase in its income, i.e. an increase in the central bank's financial result. On the other hand, the increase in the financial result is reflected through an increase in the central bank's equity (see Figure 1).

On the other hand, if the central bank incurs expenses, resulting in an outflow of funds in domestic currency, they trigger an outflow of benefits from the bank and a transfer to other sectors of the economy as well as an increase in its money creation. Since the central bank is the sole issuer of domestic currency, it does not need to have money resources to spend on its needs.²⁵ Therefore, the central bank creates money when realised losses occur (associated with incurring expenses, whether from interest, loss on a sale of assets, or related to its operating costs). Therefore, the central bank's costs incurred in domestic currency result in an increase in the central bank's liabilities in domestic currency and a simultaneous decrease in the bank's equity, which is due to the fact that the financial result before profit distribution is reported in the equity (cf. Figure 1).

Finally, the case of central bank profit distribution to the government is worth considering. In such a case, a situation with effects analogous to expenses in domestic currency occurs. This is because an increase in the creation of central bank money occurs, by crediting the government's account with the central bank (an increase in

alleviated by studies indicating that the payment of accrued income usually occurs before profit distribution to the state budget (cf. Kruszewski, Wielgórska-Leszczynska, 2014, p. 529).

²⁵ In practice, such spending is constrained by the financial plans (budget) and investments plans of central banks.

funds in the government account) and, at the same time, a decrease in the central bank's equity where, as mentioned before, the financial result before profit distribution is shown.

The figure below illustrates the presented conclusions concerning the impact of the financial result of the central bank on the volume of creation (issuance) of central bank money.

Figure 8. Impact of the financial result of the central bank on the volume of the central bank's money creation



Source: own study.

It is worth noting at this point that the size of central bank money creation is influenced by the composition of the bank's balance sheet itself. As already indicated, the transfer of profit to the government sector results in an increase in central bank money creation. It should be noted that if the assets and liabilities of the central bank are denominated in domestic currency, the income earned and the expenses incurred are also denominated in domestic currency exclusively. Then, combined with the payment of the entire profit to the state budget, the activity of the central bank does not result in a change in the volume of central bank money creation. Indeed, a situation occurs where the transfer of (the entire) profit to the state budget (to the account of the government sector) compensates the depletion of central bank money resources as a result of the central bank's positive financial result, i.e. a situation where the central bank's income (inflows) exceeded its expenses (outflows; cf. Figure 9, left-hand

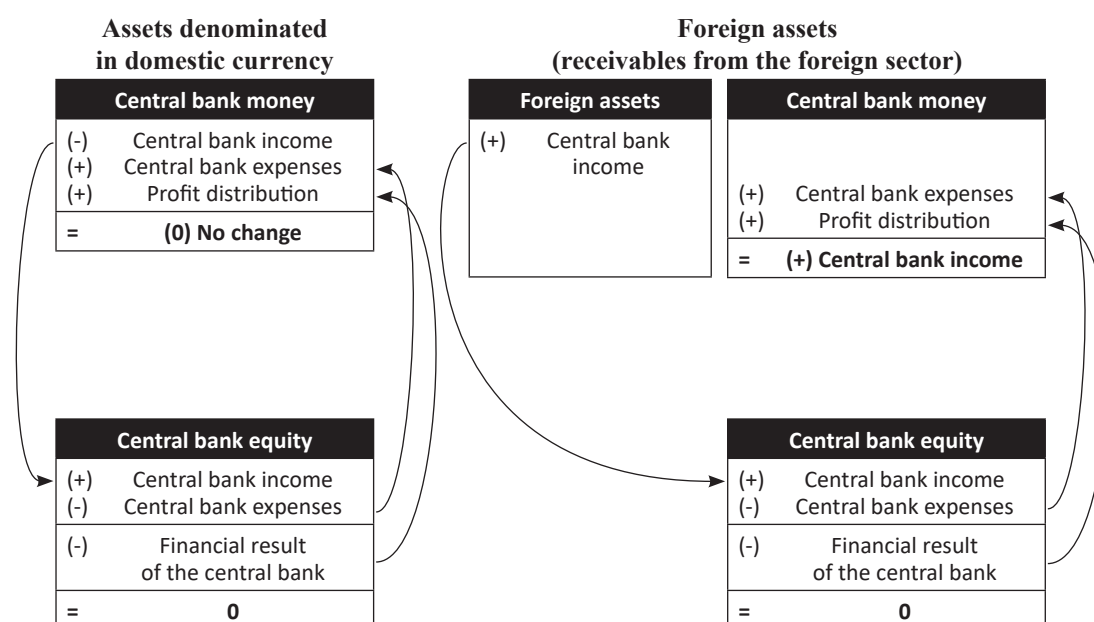
panel). The extent of the central bank's liabilities denominated in domestic currency remains unchanged. Only a kind of redistribution of benefits takes place between sectors of the economy using central bank money.

On the other hand, if the central bank's income is denominated in foreign currency, then the revenues received represent a transfer from foreign countries to the central bank. The central bank continues to hold foreign currency cash receipts (revenues) in foreign accounts. This means that income received does not increase the central bank's money issuance. On the other hand, as already mentioned, profit distribution generates an increase in central bank money creation. Thus, in such a case, an increase in central bank money creation equal to the sum of the expenses in domestic currency and the distribution of the central bank profit. Consequently, this implies an increase in money creation at a level of the equivalent in domestic currency of income on foreign currency assets (cf. Figure 9, right-hand panel).

The figure below presents the discussed aggregate effect of benefit transfers in the economy on the change in the amount of money created by the central bank.²⁶

²⁶ Details concerning the flows of the transfers are presented in Annex 2.

Figure 9. Impact of a positive financial result (profit) of the central bank on central bank money creation depending on the structure of its assets



Source: own study.

Finally, it is worth considering the case of the central bank's loss and its impact on the volume of central bank money creation. The loss itself²⁷ is associated with an increase in money creation by the central bank (surplus of expenses – creation of central bank money over income – decrease in money creation) at least until the central bank is able to cover the losses with profits generated in the subsequent years.²⁸ However, if the latter is not the case, a situation will occur where the bank will incur expenses by creating central bank money that is not covered by its assets. In other words, the bank will not have sufficient assets which could be treated as a collateral for the money issued. In turn, this may to some extent make this situation similar to public expenditure financing with new central bank money (cf. Allen, 2017, p. 66).

It should be noted that when a recapitalisation of the central bank occurs (loss covered by the government), it can be performed in different ways.²⁹ For example,

²⁷ I.e. a loss resulting from reasons other than the valuation of financial instruments (unrealised losses) or the creation of provisions.

²⁸ Details concerning the flows of the transfers are presented in Annex 3.

²⁹ Cf. e.g. Dalton and Dziobek (2005), pp. 8-9.

if it is carried out in the form of debt issuance by the government and its transfer to the central bank (transfer of Treasury bonds to the central bank to cover a loss), such an operation will be neutral to the volume of central bank money creation (an increase in the central bank's assets in the form of Treasury securities received will occur against the increase in the central bank's liabilities in the form of an increase in the bank's capital – i.e., the coverage of the loss recognised on the liabilities side of the bank's balance sheet with a negative sign). However, combined with the loss-generating surplus of expenses over income, a net increase in central bank money creation will continue until Treasury bonds are sold or redeemed. On the other hand, if a recapitalisation takes place through a transfer of cash to the central bank, such an operation will result in a decrease in central bank money creation (an operation carried out within the government's account recognised in the liabilities of the central bank's balance sheet – a simultaneous decrease in balance of the government's account and an increase in the central bank's capital will occur, i.e. loss coverage).

4. Empirical analysis of the transfers of benefits for selected central banks

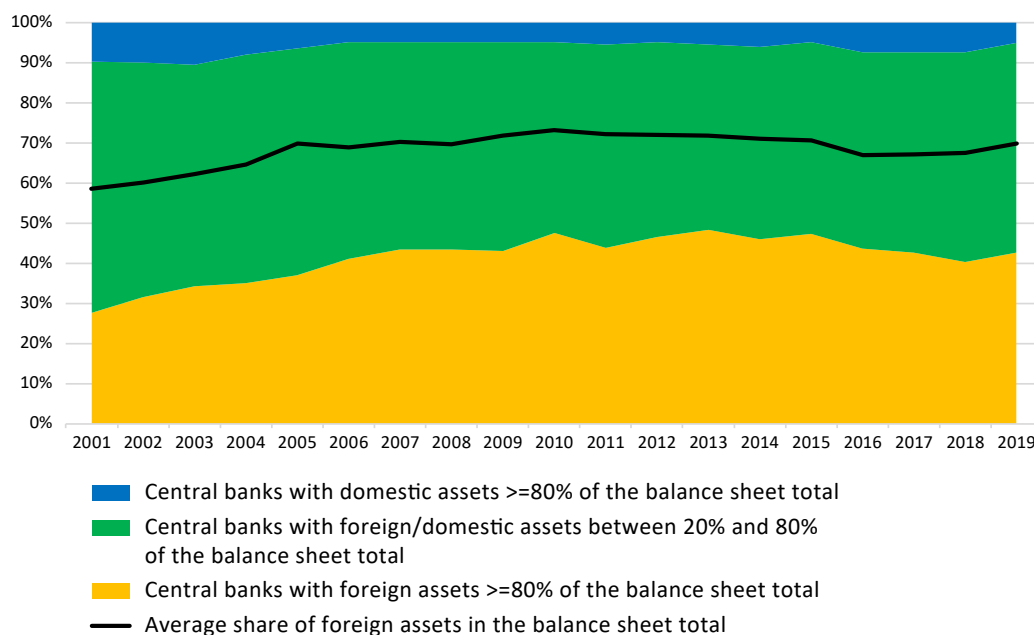
The analysis of the transfers of benefits for selected central banks should begin with a review of the asset structure of these banks. For this purpose, the database of the International Monetary Fund (International Financial Statistics) and information posted on the websites of selected central banks was used. Figure 10 presents the structure of central banks for the last 19 years (2001-2019) broken down into³⁰:

- banks, where foreign assets (receivables from the foreign sector) accounted for more than 80% of the balance sheet total,
- banks where domestic assets accounted for more than 80% of the balance sheet total,
- and banks where foreign and domestic assets ranged from 20% to 80% of their balance sheet total.

Moreover, the figure shows the average share of foreign assets in the balance sheet total of central banks. The analysed size of the sample of banks, depending on data availability, varied over time and ranged from 123 to 149 central banks.

³⁰ Figures calculated as unweighted arithmetic means.

Figure 10. Structure of central banks' assets, 2001-2019



Source: own study based on IMF database (International Financial Statistics, accessed on 6 May 2020) and websites of selected central banks.

As one can see, in the recent period about 40% of central banks have mainly held foreign assets on their balance sheets. On the other hand, there are central banks whose domestic assets dominate their balance sheet totals. While at the beginning of the 21st century they accounted for 10% of the surveyed banks, in recent years their percentage has decreased to only 5%. Central banks whose assets were not dominated by either foreign or domestic assets represented the largest group. Their share in the analysed sample fluctuated at a level of 50% of the population. However, when the average share of foreign assets in central banks' balance sheet totals is calculated, it has accounted for around 70% of the balance sheet totals of central banks under consideration over the recent years (black line in Figure 10). This means that in the majority of cases foreign assets make up more than a half of the central bank's assets.

In the following part of the analysis, based on the profit and loss account and information concerning the distribution of the financial result provided in the reports of selected central banks for the last two years (2018-2019), the directions of benefit transfers are presented depending on the structure of the central bank's assets. Seven central banks were selected for this purpose:

- 3 central banks where foreign assets dominated in the assets – the central banks of the Czech Republic, Poland and Switzerland, which were mentioned earlier,
- 3 central banks where domestic assets dominated in the assets – the central banks of Japan, Canada and the United States, also mentioned earlier,
- and a central bank where neither foreign nor domestic assets dominated – the central bank of Sweden.

Table 1 shows the results for central banks whose balance sheets were dominated by foreign assets. Annex 4 provides detailed calculations for individual central banks. In order to simplify the analysis carried out at this point (bearing in mind the observations made at the end of Chapter 2), it has been assumed that all income and expenses recognised in the central bank's financial result are realised. In addition to the size and direction of transfers between individual sectors of the economy, the figures of the financial results themselves and the balance sheets of banks³¹ as well as the share of foreign assets in their balance sheet total, are also presented.

Table 1. Transfers of benefits in central banks where foreign assets dominate (in relation to GDP, in %)

Central bank	Year	Net transfers of benefits					Financial result	Balance sheet total	Share of foreign assets in the balance sheet total
		Foreign countries	Government	Banking sector	Private sector	Central bank			
Czech Republic	2018	-0.75	0.00	0.69	0.03	0.03	0.03	61.2	99.5
	2019	-2.14	0.00	1.08	0.04	1.02	1.02	61.0	99.2
Poland	2018	-0.31	0.00	0.07	0.05	0.18	0.00	21.07	94.2
	2019	-0.58	0.33	0.06	0.05	0.14	0.34	21.51	95.8
Switzerland	2018	2.37	0.29	-0.30	0.06	-2.42	-2.17	118.49	99.4
	2019	-5.77	0.57	-0.28	0.04	5.44	6.99	123.22	98.6

Notes:

- 1) In columns representing transfers of benefits, positive figures represent net transfers to this sector (green shading) while negative figures represent net transfers from this sector to other sectors (red shading).
- 2) For Switzerland, the result on gold is treated as part of central bank transfers.

Source: own study based on the financial statements of central banks, AMECO database (accessed on 6 May 2020) and IMF (International Financial Statistics, accessed on 6 May 2020).

³¹ All figures calculated in relation to the GDP of a given year.

As outlined in the previous chapter, if the central bank's assets are dominated by foreign assets, then transfers from foreign countries to sectors of the domestic economy occur. The exception to this is the situation of Switzerland in 2018, when transfers in the opposite direction took place. This resulted from the appreciation of the Swiss franc, resulting in losses from the revaluation of foreign assets. Moreover, as one can see, the beneficiaries of these transfers in addition to the domestic banking sector, the private sector and the government, are central banks themselves. This results from the aforementioned possibility for central banks to create provisions and reserve funds. Banks retain a portion of income;/profits which are used in subsequent periods. This means that such retained profits can be treated as transfers between sectors of the economy that are shifted in different periods.³²

The next group of central banks analysed are the banks whose balance sheets are dominated by domestic assets. Table 2 presents the results obtained for the central banks of Japan, Canada and the United States.

Table 2. Transfers of benefits in central banks where domestic assets dominate (in relation to GDP, in %)

Central bank	Year	Net transfers of benefits					Financial result	Balance sheet total	Share of domestic assets in the balance sheet total
		Foreign countries	Government	Banking sector	Private sector	Central bank			
Japan	2018	-0.07	-0.04	0.03	-0.09	0.18	0.20	101.8	98.7
	2019	0.00	0.02	0.03	-0.11	0.06	0.23	109.1	98.7
Canada	2018	0.00	-0.01	-0.01	0.02	0.00	0.05	5.23	99.6
	2019	0.00	-0.02	-0.01	0.02	0.01	0.06	5.21	99.6
United States	2018	0.00	-0.23	0.21	0.03	-0.01	0.31	19.72	98.8
	2019	0.00	-0.22	0.18	0.03	0.00	0.26	19.48	98.9

Note: as in Table 1. (item 1).

Source: own study based on the financial statements of central banks, AMECO database (accessed on 6 May 2020) and IMF (International Financial Statistics, accessed on 6 May 2020).

³² Cf. the case of Switzerland – a transfer from the central bank in 2018 and transfer to the bank in 2019.

As in the case of central banks where foreign assets dominate, the results obtained confirmed the findings presented in the previous chapter. In this case, the foreign sector plays virtually no significant role in the transfers of benefits (apart from the central bank of Japan in 2018). Moreover, in those banks where Treasury securities dominate in the assets (central banks of the United States, Canada), despite payments from the central bank's profits to the state budget, the transfer of benefits from the government sector to other sectors of the domestic economy ultimately occurs: in the case of Canada – to the private sector, and in the case of the United States – to the banking sector. A slightly different direction of transfers was observed for Japan. This results, on the one hand, from holding shares in investment funds purchased through custodian banks in assets in addition to government bonds (*pecuniary trust*), which is associated with generating high income for the central bank. This income is translated into net transfers from the private sector to other sectors. On the other hand, the central bank creates provisions for potential losses related to the securities holdings and the exchange rate risk and sets aside part of the profit generated for reserve funds, making the bank itself a significant beneficiary of the net benefit.

The last bank analysed in this paper is the central bank of Sweden, whose foreign assets account for just over a half of its balance sheet total. The remaining assets are mainly Treasury bonds purchased by the central bank. It is therefore an example of a bank with a diversified asset structure. Table 3 shows the results obtained for this bank.

Table 3. Transfers of benefits in the central bank of Sweden (in relation to GDP, in %)

Central bank	Year	Net transfers of benefits					Financial result	Balance sheet total	Share of foreign assets in the balance sheet total
		Foreign countries	Government	Banking sector	Private sector	Central bank			
Sweden	2018	-0.12	0.16	-0.05	0.01	-0.01	0.07	19.3	57.6
	2019	-0.55	0.16	-0.02	0.02	0.40	0.51	17.9	57.8

Note: as in Table 1. (item 1).

Source: own study based on the financial statements of the central bank of Sweden, AMECO database (accessed on 6 May 2020) and IMF (International Financial Statistics, accessed on 6 May 2020).

In the case of the central bank of Sweden, a direction of transfers similar to that observed for central banks whose assets are dominated by foreign assets occurs. There are transfers from the foreign sector to sectors of the domestic economy. Despite the considerable share of Treasury bonds in the central bank assets, unlike the central banks of the United States and Canada, the beneficiary of the net benefit is the government sector. This results from the low interest rate on Treasury bonds held by the central bank (it was even negative in 2018), the payments made by the bank to the public debt management institution on account of the FX loan granted to the bank (*Swedish National Debt Office*; cf. Polański and Szadkowski, 2020, p. 39) and the applied rule for determining the payment to the state budget, which depends on the average size of the adjusted financial result of the central bank for the last five years (cf. Riksbank, 2019).

Summary

The study proves, on the basis of theoretical considerations concerning the simplified model of the balance sheet and profit and loss account of the central bank, that the financial result of the central bank and the elements forming it as well as the distribution of profit to the state budget serve to transfer benefits between different sectors of the economy. In this respect, the central bank acts as an intermediary in the flow of these benefits. The directions of the transfers indicated depend on the structure of central bank assets, which also determines changes in the volume of central bank money creation.

Thus, when the central bank generates a profit, when its assets are dominated by receivables from the domestic private banking sector, transfers of benefits from the domestic private banking sector to the domestic non-banking private sector and the government occur.³³ On the other hand, when, as a result of quantitative easing (QE) operations the central bank purchases public debt, i.e. Treasury securities, the transfer of benefits from the public sector (the government) to the domestic non-banking private sector and the domestic private banking sector will take place.³⁴ On the other hand, if the central bank purchases domestic private sector debt under the quantitative easing programme³⁵, the transfer of benefits from the domestic non-banking private sector to the government and to the domestic private banking sector will occur. The situation is different again for central banks where assets are dominated by receivables from the foreign sector.³⁶ Under such circumstances, the transfer of benefits from the foreign sector to the private banking sector and non-banking private sector and to the government occurs.

Another aim of the analysis was to answer the question whether the central bank's financial result affects the volume of central bank money creation. Indeed, if the central bank holds assets denominated in domestic currency and generates a profit

³³ This was the case, for example, in the Eurosystem before the outbreak of the 2007 global financial crisis.

³⁴ Cf. for example the measures taken by the US Federal Reserve.

³⁵ Such as the Eurosystem's *Corporate Sector Purchase Programme - CSPP*.

³⁶ For example, Swiss National Bank or Narodowy Bank Polski.

which it transfers entirely to the state budget, its activity does not affect the net volume of central bank money creation. Consequently, a change in the volume of central bank money depends only on external (autonomous) factors, such as the demand for cash. On the other hand, if the central bank's assets are dominated by foreign currencies, then its activities result in an increase in central bank money creation approximately equal to the central bank's revenues earned in foreign currencies converted into domestic currency.

The paper also examines the impact of the loss incurred by the central bank on the direction of benefit transfers and central bank money creation. It has been assumed that the government does not recapitalise the central bank. Conclusions were formulated that in such a situation net transfers from the central bank to individual sectors of the economy take place, which does not occur when the central bank earns a profit. Moreover, whenever the central bank incurs a loss, an increase in central bank money creation is recorded, regardless of the structure of its assets.

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Japan	http://www.boj.or.jp/en/
Canada	https://www.bankofcanada.ca/
Poland	http://www.nbp.pl/
Switzerland	http://www.snb.ch/
Sweden	http://www.riksbank.com/
USA	http://www.federalreserve.gov/

AMECO: https://ec.europa.eu/info/business-economy-euro/indicatorsstatistics/economic-databases/macro-economic-databaseameco/ameco-database_en

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Annexes

Annex 1.

Central bank balance sheet and representation of central bank functions in the balance sheets of other sectors

The central bank balance sheet is the primary source of information about its economic and financial position and the primary means of the bank's communication with its environment (stakeholders).³⁷ Its construction is based on two fundamental accounting methods: the entity (enterprise) method and the balance sheet method. The entity approach is based on the rule that the balance sheet is drawn up from the point of view of the central bank. On the other hand, the balance sheet method (cf. e.g. Wiatr, 2013, p. 59) is based on the assumption that the assets of a central bank (i.e. what the bank has – assets) can be assigned to their sources (the origin – liabilities). Together with the profit and loss account, the central bank balance sheet is one of the main analytical tools used in the daily operations of the central bank.

In general, central banks prepare their balance sheets according to the two-sided model (either account-based or vertical³⁸). In the case of NBP³⁹, for purely practical

³⁷ Under the regime of International Financial Reporting Standards (IFRS), the report that corresponds to the balance sheet is the statement of financial position. The requirements for this statement are set out in the International Accounting Standard No. 1 “Presentation of Financial Statements” (IFRS, 2020, pp. 1107-1164). It indicates the list of items that should be disclosed (para. 54, pp. 1129-1130). It does not indicate the formula and the order of presenting individual items, i.e. assets and liabilities and capital (para. 57, p. 1132). However, it specifies the need to classify assets and liabilities, according to their expected date of termination or settlement, into short-term (up to 12 months) or long-term (more than 12 months).

³⁸ In the case of central banks of the European Union, the possibility to draw up the balance sheet either in an account-based or in a vertical format is indicated in the ECB Accounting Guideline, cf. ECB (2016, p. 60).

³⁹ In terms of its composition, the balance sheet of NBP is very similar to the balance sheet of the Eurosystem central banks. It results from the fact that the NBP accounting concept (conceptual framework) is based on the accounting guidelines of the European Central Bank, to which the Polish central bank is obliged pursuant to the Act on Narodowy Bank Polski (Article 67 indicates that the accounting principles of NBP should correspond to the standards applied in the European System of Central Banks). At the same time, the layout of the balance sheet and the profit and loss account is consistent with those of the Eurosystem central banks. It should be emphasised that NBP introduced the Eurosystem-compliant accounting rules on 1 January 2004, even before the accession to the European Union. It was therefore the first central bank among the so-called “new European Union Member States” to unify its accounting principles and the layout of its balance sheet and profit and loss account in compliance with the accounting guidelines of the European Central Bank. In the same year, the central bank of Sweden (Sveriges Riksbank) also introduced such accounting principles, however,

reasons, aimed at increasing the transparency of the data presented (legibility), the two-sided layout has either the traditional account-based form (the form of the T letter) or the vertical form (first the assets, followed by the liabilities). The account-based form, where assets are presented on the left-hand side and liabilities on the right-hand side, is adopted, for example, in the announcements of the President of NBP on the publication of the balance sheet and the profit and loss account of Narodowy Bank Polski in the Official Journal of NBP. On the other hand, in the annual financial statements of NBP, it is published vertically. Thus, the assets table is presented first, with the liabilities table below.

The specific role of the central bank in the banking system, its complicated nature, intertwined with its specialised and unique functions in the economy, raises numerous questions and doubts. They often relate to the sources of funding and therefore the liabilities of the bank. However, the expectation to alternately indicate under each synthetically presented asset item the source of its financing could be difficult to meet and would require the use of many simplifications. Nevertheless, should the central bank decide to apply such a form of balance sheet presentation, the prevailing source of financing would be the money issued by the central bank (central bank money), whether in form of coins and banknotes or in form of balances on accounts held with central bank.

This raises the question of what distinguishes the central bank balance sheet from the balance sheets of the non-banking private sector (enterprises) or the domestic private banking sector (banks).

The balance sheet of an enterprise focuses on its production activities. Hence, its assets are dominated by tangible fixed assets (such as machinery, equipment, factory buildings, structures), intangible assets, inventories and trade receivables. On the other hand, its liabilities are dominated by equity and external capital in the form of various types of short- and long-term liabilities, e.g. loans incurred, trade payables, debt securities issued. Assets are divided according to their useful life into non-current (fixed) and current assets. They are recognised according to increasing liquidity, from

Sweden joined the European Union in 1995. In the case of NBP, the template of the balance sheet, profit and loss account and the contents of the additional information, are determined by the Monetary Policy Council pursuant to Article 68(3) of the Act on Narodowy Bank Polski.

non-current to current assets. On the other hand, liabilities are divided according to an increasing degree of maturity, from the non-current to current liabilities. These criteria are closely related to each other, determining the liquidity of the enterprise, i.e. the ability to repay its liabilities on time (Gabrusewicz, Kołaczyk, 2005, p. 29).

On the other hand, in the balance sheet of a commercial bank, the share of fixed assets is less significant. Receivables in form of credits granted make the basic group of assets while liabilities in the form of deposits taken represent the basic group of liabilities. In assets, limited share of fixed assets occurs while in liabilities, a limited share of own funds is recorded (Gierusz, 1999, p. 29). On the side of both assets and liabilities, financial instruments dominate, in assets – mainly receivables on account of credits and loans granted, deposits made, debt securities purchased, while in liabilities – liabilities on account of cash received with repayable title, accumulated on current and term accounts, credit and loans drawn or debt securities issued. Contrary to the enterprise balance sheet, this balance sheet displays a breakdown of assets according to decreasing liquidity (from current to non-current) and liabilities according to decreasing maturity (from current to non-current).

The central bank balance sheet is generally focused on money. It is similar to the balance sheet of a commercial bank and the main similarity is the prevalence of financial instruments⁴⁰, both in the asset structure (debt securities purchased, foreign currency held, credit claims) and in the liability structure (liabilities on account of funds received from customers – customer accounts, debt securities issued). An important element that distinguishes the central bank balance sheet from the balance sheets of other sectors is the presentation of cash in domestic currency, i.e. banknotes and coins issued by the central bank. While in the balance sheets of other sectors it is a component of their assets (cash in hand shown on the assets side), in the case of a central bank it is an important item of its liabilities (cash in circulation), i.e. one of the sources of financing of the central bank's assets. A simplified layout of the central bank balance sheet in the form expanded in relation to that presented in the main text, is presented below.

⁴⁰ A definition of financial instruments is presented in Chapter 1. A classic example of financial instrument is a loan granted by a bank. For the bank it represents an asset while for the borrower it is a financial liability.

Figure A1.1. Simplified balance sheet of the central bank

Central bank			
Assets		Liabilities	
Financial instruments	Gold	Cash (banknotes and coins)	Central bank money issuance
	Current accounts in foreign currency Term deposits in foreign currency Debt securities purchased in foreign currency	Current accounts in domestic currency Term deposits in domestic currency Debt securities issued in domestic currency	
	Loans and credits extended in domestic currency Debt securities purchased in domestic currency	Statutory fund and reserve fund Provisions for risks Unrealised revaluation gains Financial result for the current year before distribution	Equity
Fixed assets			

Source: own study.

In composing balance sheets, both of an enterprise and of a commercial bank, attention is paid to the expected terms of asset realisation and maturity of liabilities. This should facilitate assessment of the liquidity and solvency of an entity.⁴¹ From the central bank's point of view, such an assessment is different. However, one cannot say that it is less important simply because the central bank is the issuer of national money and thus has the ease of settlement of its liabilities in domestic currency and

⁴¹ Cf. IFRS (2020, para 65, p. 1133).

that in general – as, for example, in case in Poland⁴² – it is impossible to declare the bankruptcy of the central bank. Central bank tasks require that the balance sheet is structured according to the currency criterion (gold, foreign currency, domestic currency) and counterparty/issuer (e.g. in the EU by resident/non-resident, credit institution/government sector/other). While producing the central bank balance sheet, it is important to undertake an attempt with the aim to reflect how it fulfils its objectives and tasks. Therefore, its layout should be subordinated to the needs of the recipients of information⁴³ and oriented towards the possibility to evaluate both past actions (retrospective evaluation of achievements) and support the decisions concerning future actions of the central bank (prospective evaluation implying future decisions). Summing up, the balance sheet should enable stakeholders to answer the question of how the central bank performs its functions.⁴⁴ The basic functions of the central bank should therefore be recalled.

The central bank, also known as the reserve bank or monetary authority, can be considered as an agent of the state which entrusted it with a specific scope of activities, changing in successive eras (Leszczyńska, 2010, p. 4).⁴⁵ This agent of monetary policy, focusing its attention on money, is assigned many functions and these define the institution of the central bank (Gronkiewicz-Waltz, 1992, p. 19). However, the prevailing function of the prototype central bank was the issuing function (of banknotes and sometimes coins) and the function of the bank of the state (the so-called banker of the government). However, over the years, the need to hold stable and reliable money has become a driving force for the emergence of new functions. In contemporary terms, the essential functions of the central bank, apart from issuing money and controlling the amount of money in circulation, or providing banking services to state budget units, is also to act as a bank of banks (both as a lender of last

⁴² Article 58 of the Act on Narodowy Bank Polski indicates that NBP cannot be declared bankrupt.

⁴³ E.g. the balance sheets of the Eurosystem central banks are subordinated to analytical and operational purposes for the needs of liquidity management for the purposes of conducting the single monetary policy, for the calculation of monetary income, for monetary and economic analysis, and for statistical analysis, cf. ECB (2016, p. 25).

⁴⁴ More on the central bank functions and their impact on the central bank balance sheet, cf. Szadkowski (2019, pp. 63-78).

⁴⁵ H. Gronkiewicz-Waltz indicates that the prevailing view in banking theory is that the establishment of the central bank was not a consequence of the natural development of banking but a symptom of a broader state influence on economic processes. Cf. Gronkiewicz-Waltz (1992, p.18).

resort and as a monetary clearing institution). The 2008 financial crisis was followed by an expansion of the mandate of central banks to include financial stability (Kokoszcyński, 2019, pp. 88 and 91). The literature of the subject also specifies many other functions, and the way they are defined (named) depends, among others, on the convention adopted by the authors.⁴⁶ On the other hand, central bank practice has also developed its own way of classifying the functions performed. For example, a report by the Bank for International Settlements in Basel, based on extensive surveys and other information provided by central banks and monetary authorities, distinguishes six functions, with the last one identified as other functions (BIS, 2009, p. 30-1). These functions were additionally assigned specific tasks (Table A1.1.).

Table A1.1. Functions of central banks according to the survey of the Bank for International Settlements in Basel

Function	Specific tasks
1. Monetary stability functions	Monetary Policy
	Exchange rate policy
2. Financial stability and regulatory functions	Prudential policy development
	Supervision/oversight
3. Policy operation functions	FX intervention
	FX reserves
	Liquidity management
	Lender of last resort
4. Financial infrastructure provision functions	Currency position
	Banking/accounts management services
	Payment system (interbank-bank)
	Settlement system for central bank money
	Other settlement systems
5. Other public good functions	Registry provision
	Debt management
	Asset management
	Development functions
	Research (other than for functions above)
	Statistics
6. Other functions	Consumer services

Source: BIS, 2009, pp. 30-31.

The functions of the central bank are defined primarily in acts of law (Gronkiewicz-Waltz, 1992, p. 19). In the case of Poland, these functions are indicated

⁴⁶ Cf. for example, Baka (2009, 82-3), Bofinger (2001, pp. 234-239), Singleton (2011, pp. 4-11), or Sławiński (2011, pp. 13-65).

in the Constitution⁴⁷ and in the Act on Narodowy Bank Polski.⁴⁸ The table below attempts to assign functions:

- a) issuing function (issue of cash money),
 - b) bank of banks (lender of last resort, conducting monetary policy with the aim to achieve the bank's objective of maintaining a stable level of prices or for the needs of maintaining the stability of the system, organising payments),
 - c) bank of the State (providing banking services for the state budget, ensuring the payment liquidity of the country, managing the foreign exchange reserves),
- expressed in the objective and specific tasks of NBP, to items of the NBP balance sheet and its profit and loss account.

⁴⁷ Article 227(1) of the Constitution of the Republic of Poland says that Narodowy Bank Polski is the central bank of the State and it has the exclusive right to issue money and to formulate and implement monetary policy and that NBP is responsible for the value of Polish currency.

⁴⁸ More on the functions and tasks of NBP, cf. e.g. Kasprzak (2010, pp. 13-16)

Table A1.2. Representation of NBP functions and responsibilities in the balance sheet and in the profit and loss account* — simplified approach

Function	Purpose and tasks	Balance sheet item		Profit and loss account	
		Assets	Liabilities		
Issuance	NBP has the exclusive right to issue the currency of the Republic of Poland.		1. Banknotes and coins in circulation	9. Expenses on issue of banknotes and coins	
	maintaining price stability		2. Liabilities to other domestic monetary financial institutions related to monetary policy operations denominated in domestic currency		
	regulating the liquidity of banks and providing them with refinancing facilities	5. Claims on other domestic monetary financial institutions related to monetary policy operations denominated in domestic currency	3. Other liabilities to other domestic monetary financial institutions denominated in domestic currency		
	organising payments	6. Other claims on other domestic monetary financial institutions denominated in domestic currency	4. Liabilities due to issued securities denominated in domestic currency 7. Liabilities to residents denominated in foreign currency (TARGET2)	1. Net result on interest, discount and premium 2. Net result on financial operations 3. Net result on fees and commissions	
	acting towards the stability of the domestic financial system	5. Claims on other domestic monetary financial institutions related to monetary policy operations denominated in domestic currency 6. Other claims on other domestic monetary financial institutions denominated in domestic currency			6. Salaries 7. Administrative expenses 8. Depreciation and amortisation expenses
	managing the foreign exchange reserves	1. Gold and gold receivables 2. Claims on non-residents denominated in foreign currency	7. Liabilities to non-residents denominated in foreign currency 8. Liabilities to the IMF	1. Net result on interest, discount and premium 2. Net result on financial operations 3. Net result on fees and commissions	
Bank of the State	being a member of international financial and banking institutions	2.1. Receivables from the IMF 10. Other assets	8. Liabilities to the IMF	1. Net result on interest, discount and premium 4. Income on shares and participating interests	
	providing banking services to the state budget		5. Liabilities to other residents denominated in domestic currency 6. Liabilities to residents denominated in foreign currency	1. Net result on interest, discount and premium 3. Net result on fees and commissions	

*Numbers and names of the NBP balance sheet and profit and loss account items correspond to the NBP balance sheet layout defined in Resolution No. 16/2003 of the Monetary Policy Council of 16 December 2003 on the accounting principles, layout of assets and liabilities in the balance sheet and profit and loss account of Narodowy Bank Polski (NBP, 2020a, Appendix 1 and 2).

Source: own study.

How these central bank functions are reflected in the central bank balance sheet and the balance sheets of other sectors is presented below. For better illustration of the issue and greater clarity, the requirements of the balance sheet method which prescribes the application of the principle of double entry of economic events (transactions), balancing the assets and liabilities of the balance sheet of a given sector, have been omitted and the balance sheets have been simplified to the items discussed.

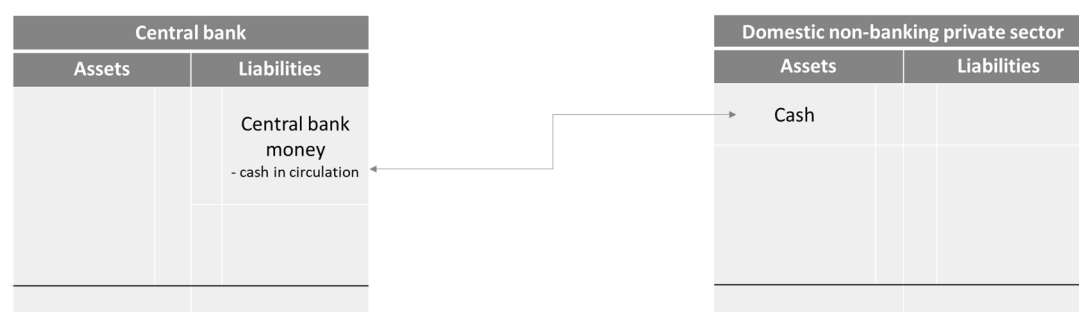
Issuing function – cash issuance

It is most often indicated in the Constitutions that central banks are the sole issuers of cash. In the case of Poland, as already mentioned, the right to issue banknotes and coins⁴⁹ has been assigned to NBP. Cash in circulation is a classic example of the financial instrument, i.e. a contract that creates assets for the cash holder and liabilities for the other party to the contract, i.e. the central bank. While, as already mentioned, in the balance sheets of other sectors it is a component of their assets, in the case of the central bank it is an item of its liabilities (banknotes and coins in circulation), with the nature of a non-interest bearing liability. Therefore, it does not generate costs for the central bank.⁵⁰ Banknotes and coins in circulation are recognised in the balance sheet of the central bank and in the balance sheets of the remaining sectors at the face value of the banknotes and coins issued by the central bank. The figure below reflects the issuing function in the balance sheet of the central bank and in the balance sheet of the domestic non-banking private sector.

⁴⁹ It should be mentioned that not all central banks have the right to issue coins. Sometimes this power is assigned to the government. In such a case, banks present coins as inventory in their assets instead of presenting them as a liability in their liabilities. The bank is then only an intermediary between the government and the remaining participants of economic transactions. More on this issue, see in: Szadkowski (2019, pp. 66-67).

⁵⁰ As already indicated, expenses associated with this component of central bank liabilities obviously include the expenses of issuing banknotes and coins, i.e. their production, transport and storage.

Figure A1.2. Issuing function in the balance sheet of the central bank and in the balance sheet of the domestic non-banking private sector



Source: own study.

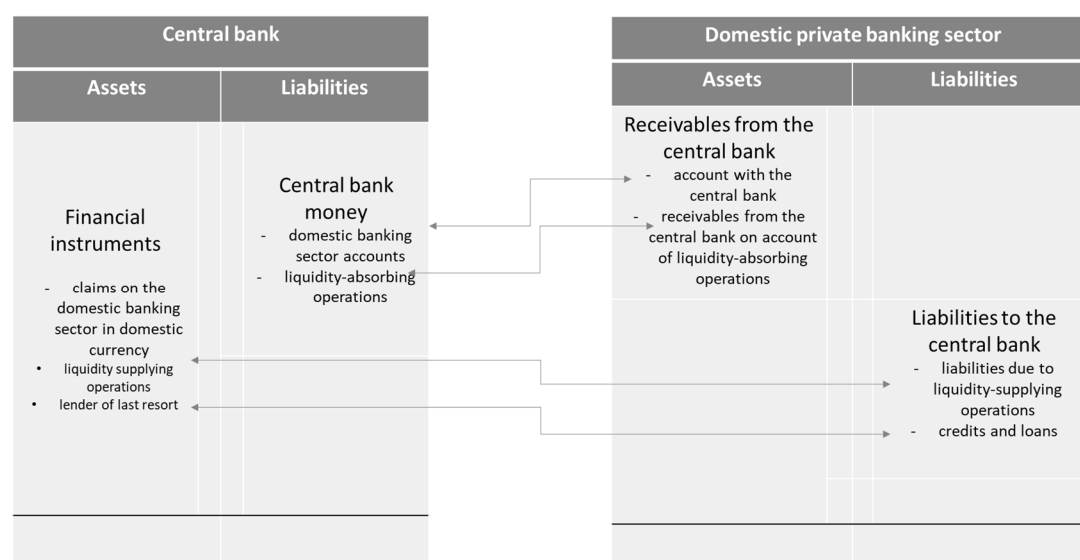
The “bank of banks” function, including measures to support financial stability

The bank of banks function means that the central bank is the bank for the domestic private banking sector. It is mainly expressed by the central bank operating accounts for domestic banks in the currency issued by the central bank.⁵¹ These accounts are used for monetary settlements between the central bank and the domestic private banking sector as well as for the current settlement of claims and liabilities within the private banking sector itself. They represent a liability for the central bank, often interest-bearing and therefore expense generating. On the other hand, for a commercial bank they represent one of the assets associated with the earning of income. However, accounts operated for commercial banks are also used by the central bank for conducting its monetary policy. They are used both to provide liquidity to the banking sector (supplying operations) and to absorb liquidity (absorbing operations). The provision of liquidity by the central bank to a commercial bank, e.g. in the form of loans or credits or reverse repo transactions (placing a deposit collateralised by debt securities), implies an increase in the central bank’s assets (which will allow it to earn certain income) and the recognition of liabilities in the commercial bank, which will generate expenses. On the other hand, liquidity-absorbing transactions (accepting a deposit from a commercial bank) or the issuance of the central bank’s debt securities (e.g. NBP bills) will be recognised in liabilities on the central bank’s balance sheet. However, for a commercial bank, these will be

⁵¹ The central bank may also operate foreign currency accounts for domestic banks.

assets. The figure below reflects the bank of banks function in both the central bank balance sheet and the domestic bank balance sheet.

Figure A1.3. Bank of banks function in the balance sheet of the central bank and in the balance sheet of the domestic private banking sector

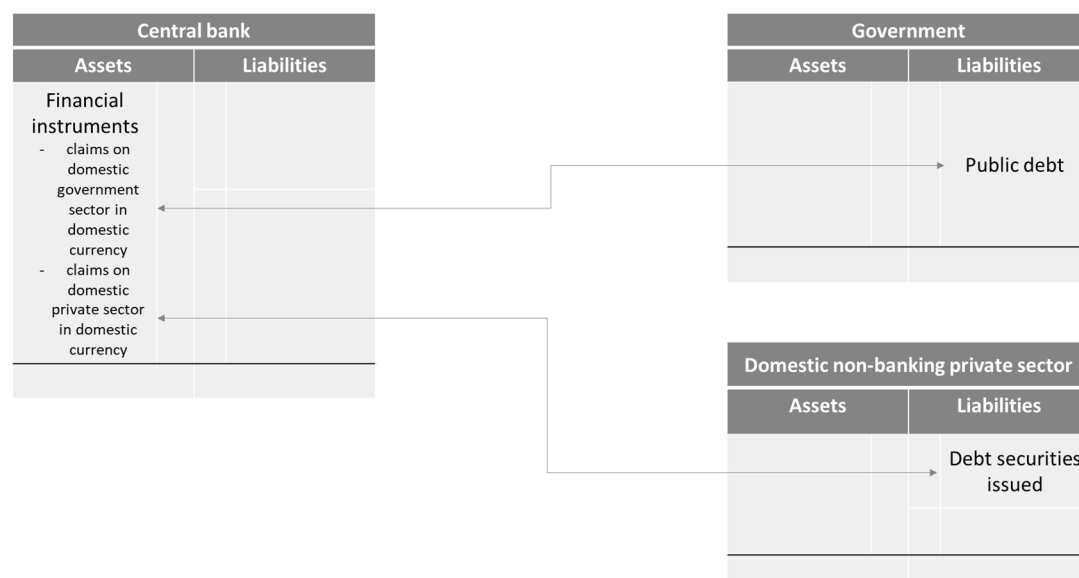


Source: own study.

As already mentioned, in response to the financial crisis and turmoil in national economies, in the first decade of the 21st century central banks were charged with the responsibility of taking stabilisation measures as part of their monetary policy. These involve, for example, the purchase of financial assets (e.g. debt securities, whether government or corporate) from domestic banks. The purpose of such programmes is, for example, to provide liquidity (cash) for the domestic economy, to be used for the implementation of specific aid programmes. If the central bank buys Treasury debt securities from a domestic bank, it will thereby increase its assets denominated in domestic currency and provide liquidity to the commercial bank. However, the liability due to Treasury securities issued is reflected in the liabilities of the government (public debt). The same situation will occur in the case of purchase of corporate debt securities by the central bank. The enterprise that issued the securities purchased by the central bank will become the debtor of the central bank. The

illustration of the central bank's stabilisation measures in the balance sheets of selected sectors is presented below.

Figure A1.4. Stabilisation operations in the balance sheet of the central bank, the domestic non-banking private sector and the government sector



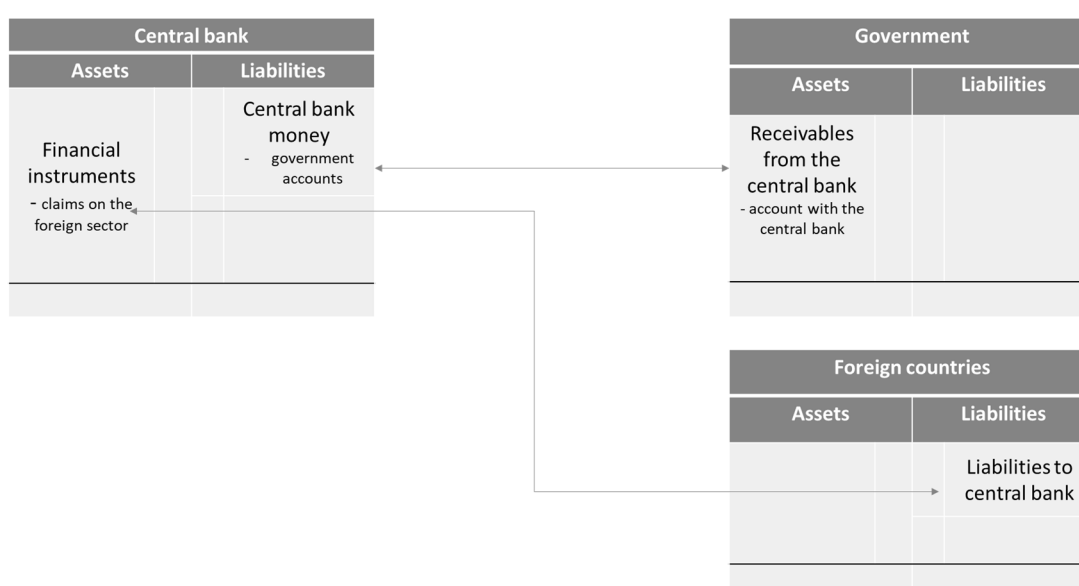
Source: own study.

Function of the bank of the State

This function is primarily associated with providing banking services to the state budget (government). Its implementation is related to the central bank operating accounts for budgetary units, including the central account of the state budget which records inflows (revenues) and outflows (expenditures) of the government sector. The funds maintained by the government in this account represent liabilities of the central bank which generate expenses for it in the form of interest paid. On the other hand, for the government they represent a revenue-generating asset. While performing the function of the bank of the State, the central bank is also responsible for the payment liquidity of the country. This means that it is obliged to hold foreign currencies which can be used to settle the country's current obligations to foreign countries. In order to carry out these tasks, the central bank must hold adequate financial instruments denominated in foreign currencies (foreign exchange reserves). In addition to funds

accumulated in accounts with foreign banks, the central banks most commonly hold debt securities issued by foreign governments. These reserves represent assets for the central bank and generate income. On the other hand, for the foreign sector (issuers of debt securities or current account banks), they represent liabilities associated with costs. The implementation of the bank of the State function is illustrated below.

Figure A1.5. The function of the bank of the State in the balance sheet of the central bank, the government sector and foreign countries

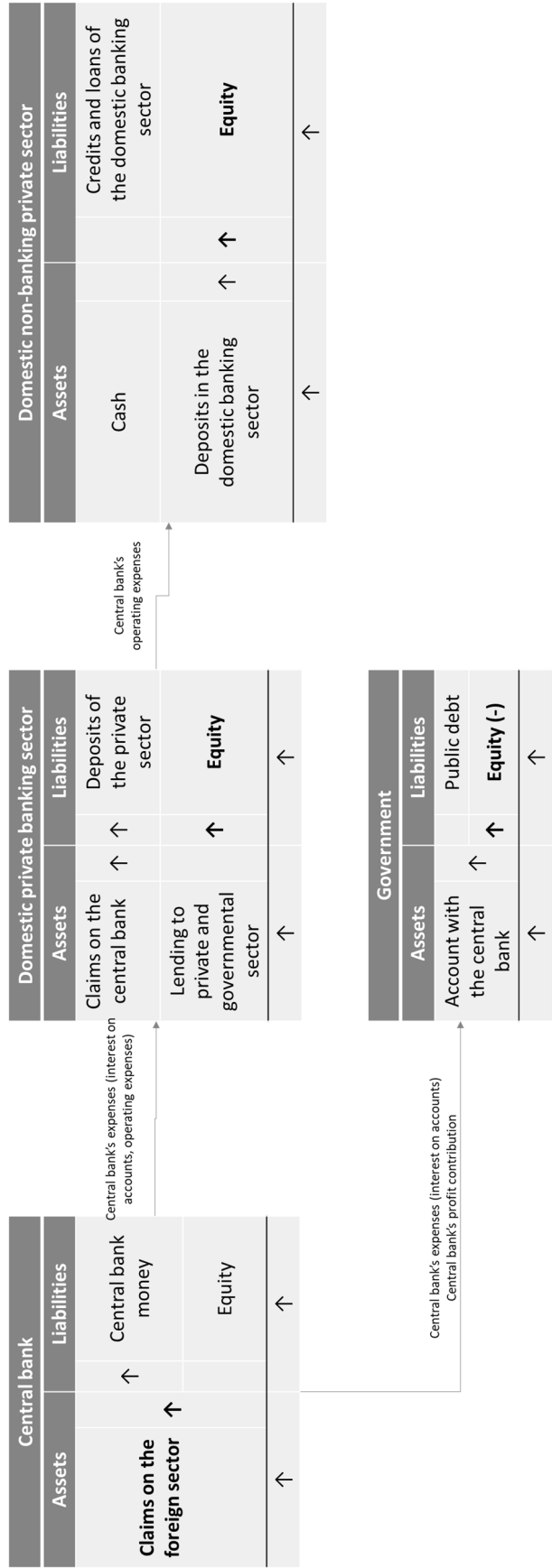


Source: own study.

Annex 2.

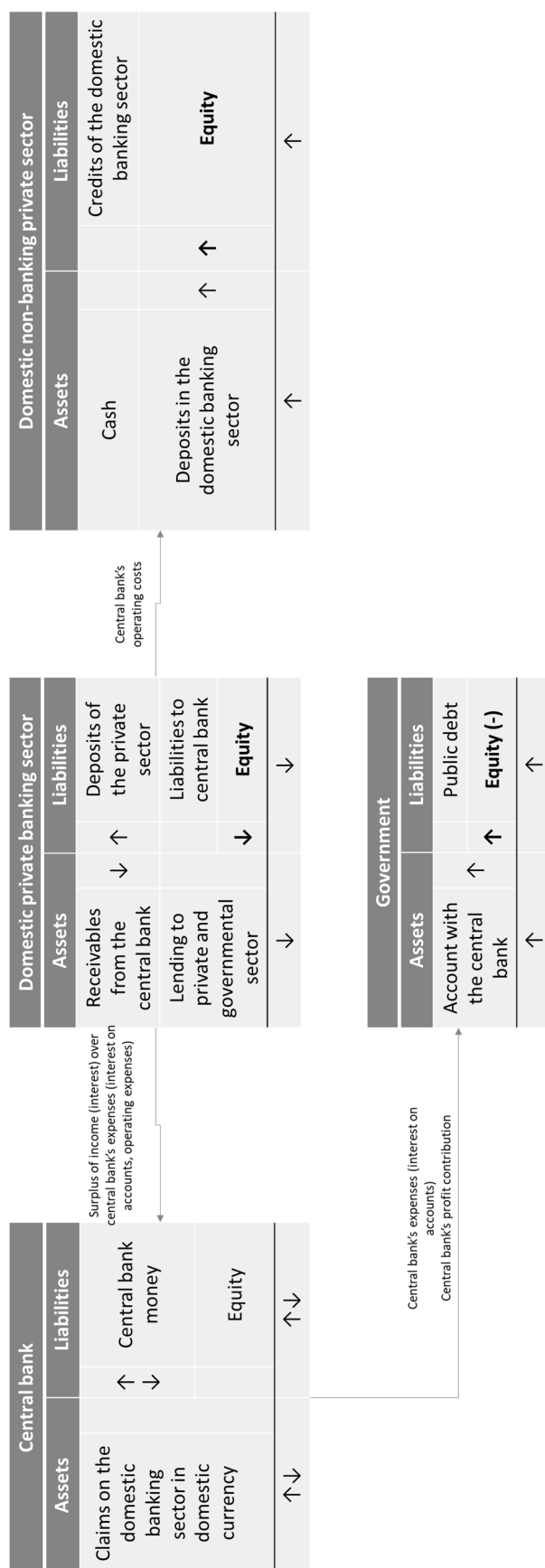
The impact of the central bank’s asset structure on its profit-related benefit transfers in the economy and the change in the volume of money created

Figure A2.1. Central bank assets in the form of receivables from the foreign sector (foreign assets)



Note: ↑ means growth.

Source: own study.

Figure A2.2. Central bank assets in the form of claims on the domestic private banking sector in domestic currency

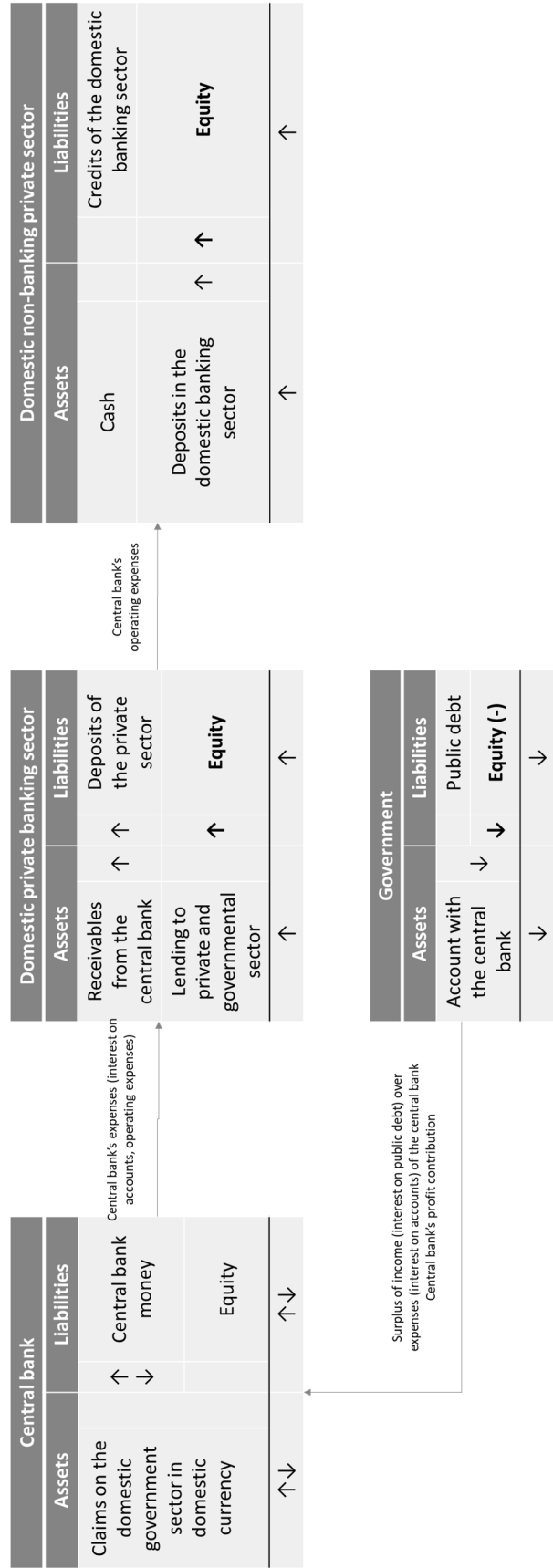
Notes: as in Figure A2.1. and:

↓ means decline,

↑ ↓ means no change.

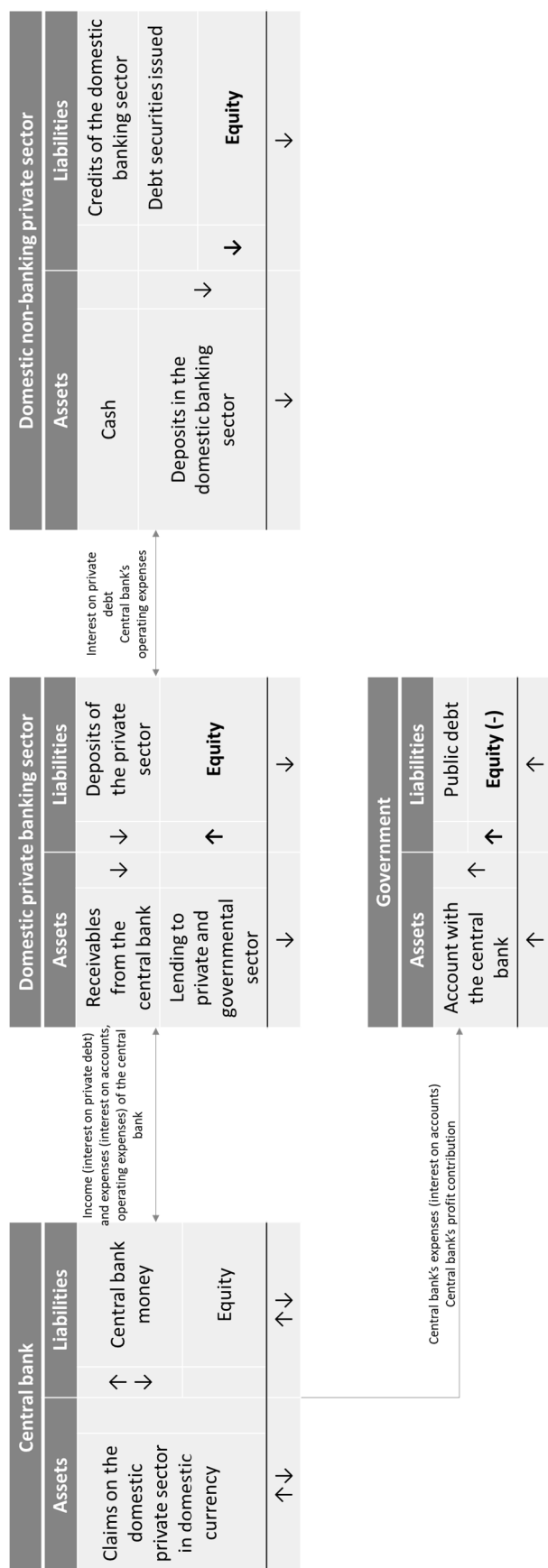
Source: own study.

Figure A2.3. Central bank assets in the form of Treasury securities (public debt)



Note: as in Figure A2.2.

Source: own study.

Figure A2.4. Central bank assets in the form of securities of the domestic non-banking private sector (domestic debt of the private sector)

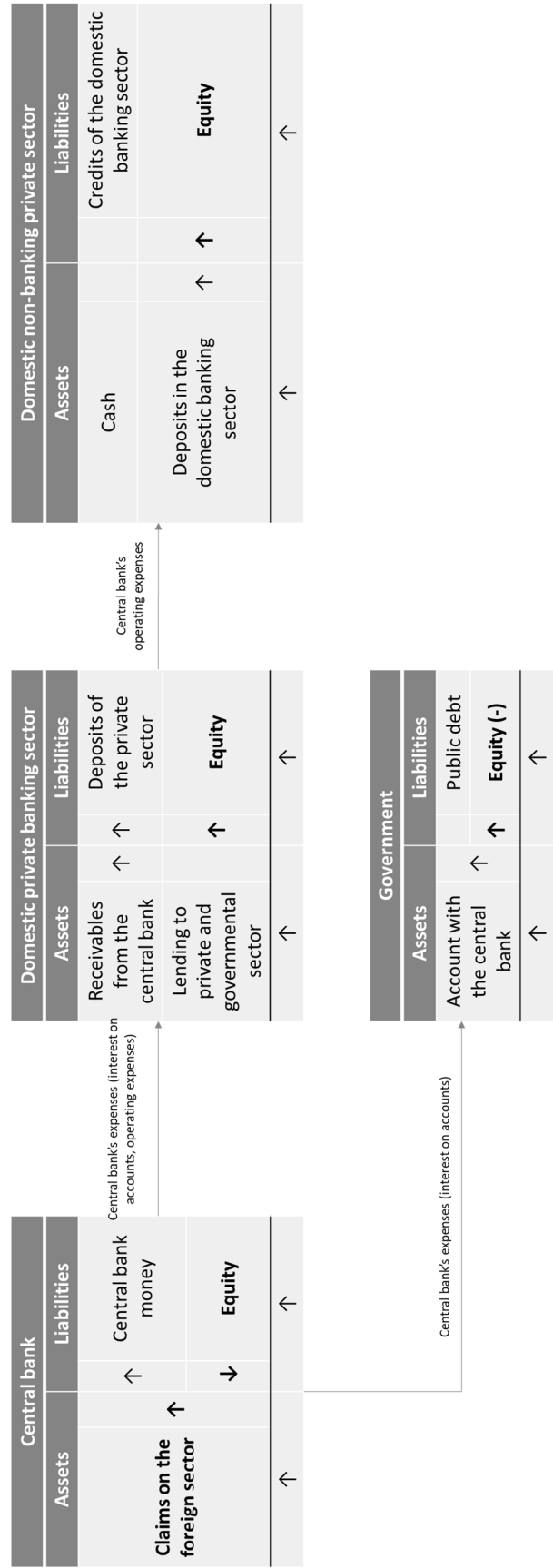
Note: as in Figure A2.2.

Source: own study.

Annex 3.

The impact of the central bank’s asset structure on its loss-related benefit transfers in the economy and the change in the volume of money created

Figure A3.1. Central bank assets in the form of claims on the foreign sector (foreign assets)

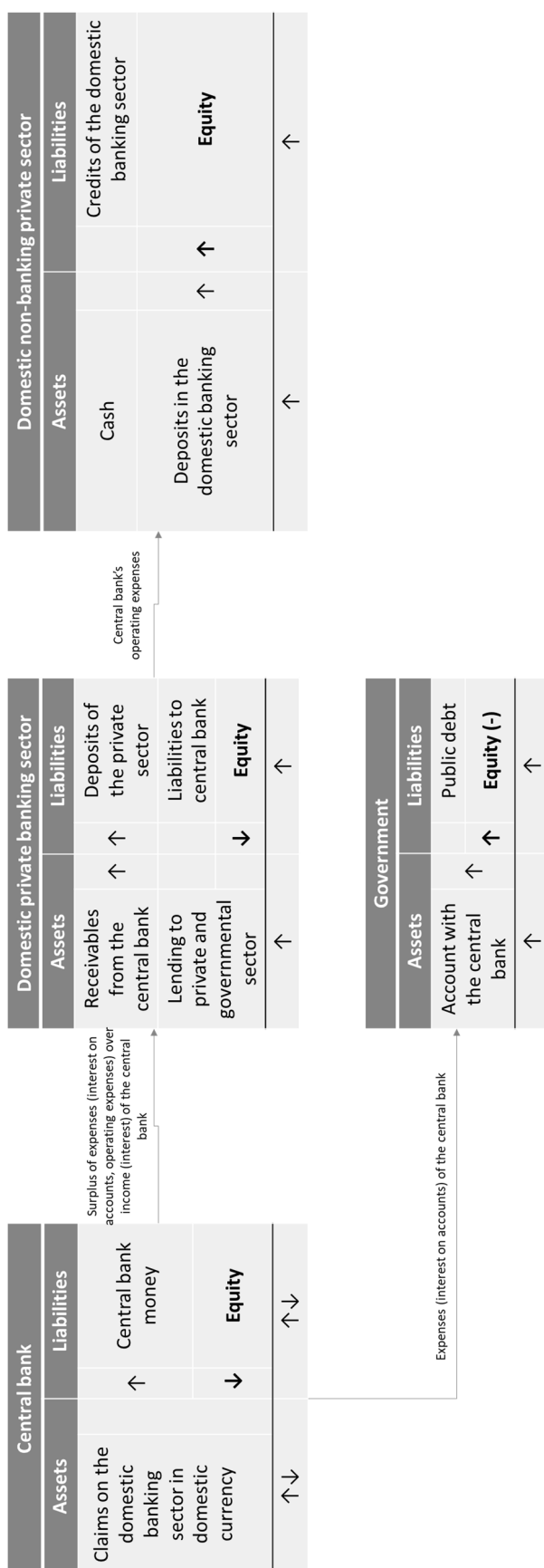


Notes:

↑ means growth,

↓ means decline.

Source: own study.

Figure A3.2. Central bank assets in the form of claims on the domestic private banking sector in domestic currency

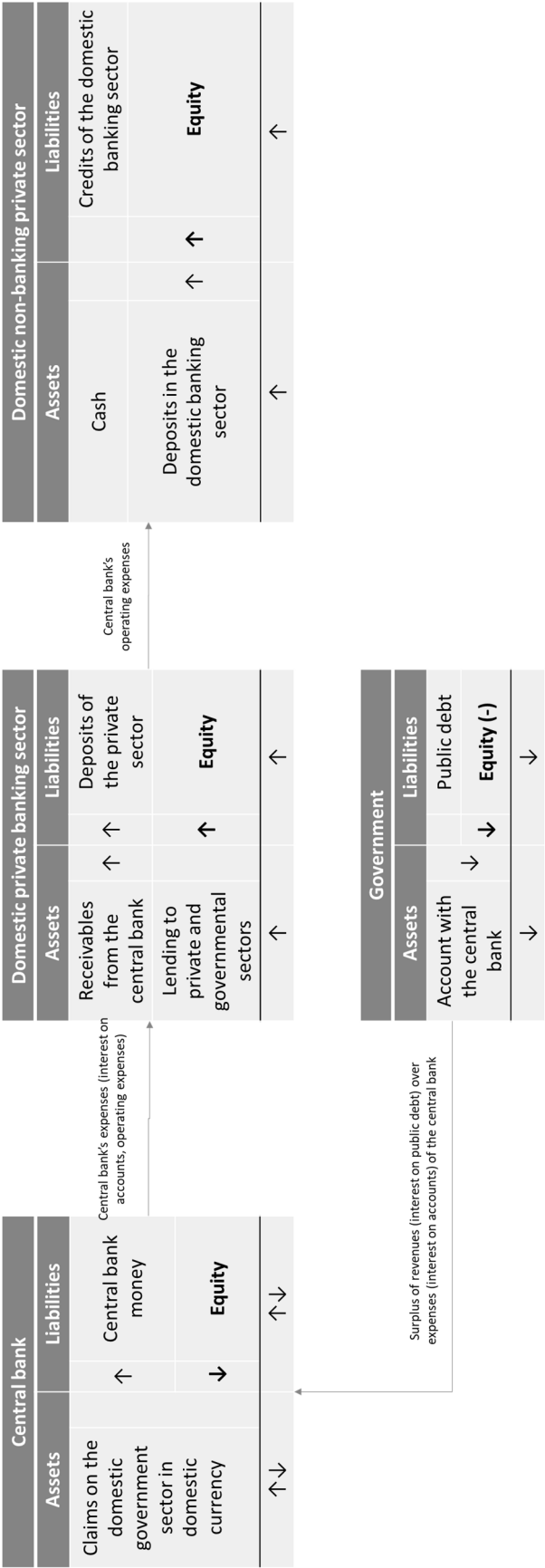
Assumptions:

- 1) Central bank's operating costs + Interest expenses on bank accounts > Income on claims on domestic banking sector denominated in domestic currency.
- 2) Interest expenses on bank accounts < Income on claims on domestic banking sector denominated in domestic currency.

Notes: as in Figure A3.1. and ↑ ↓ indicates no change.

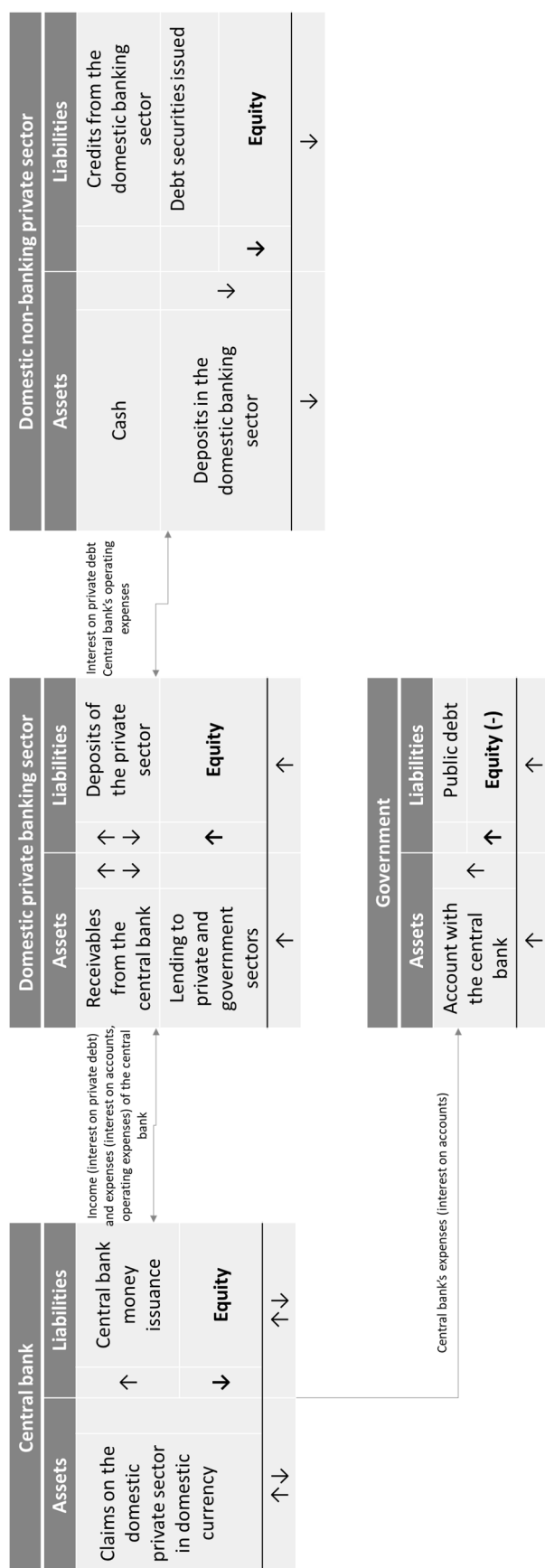
Source: own study.

Figure A3.3. Central bank assets in the form of Treasury securities (public debt)



Note: as in Figure A3.2.

Source: own study.

Figure A3.4. Central bank assets in the form of securities of the domestic non-banking private sector (domestic debt of the private sector)

Assumptions:

- 1) Central bank's operating expenses < Interest on private debt.
- 2) Central bank's operating expenses + Interest expenses on accounts of domestic private banks > Interest on private debt.

Note: as in Figure A3.2.

Source: own study.

Annex 4.

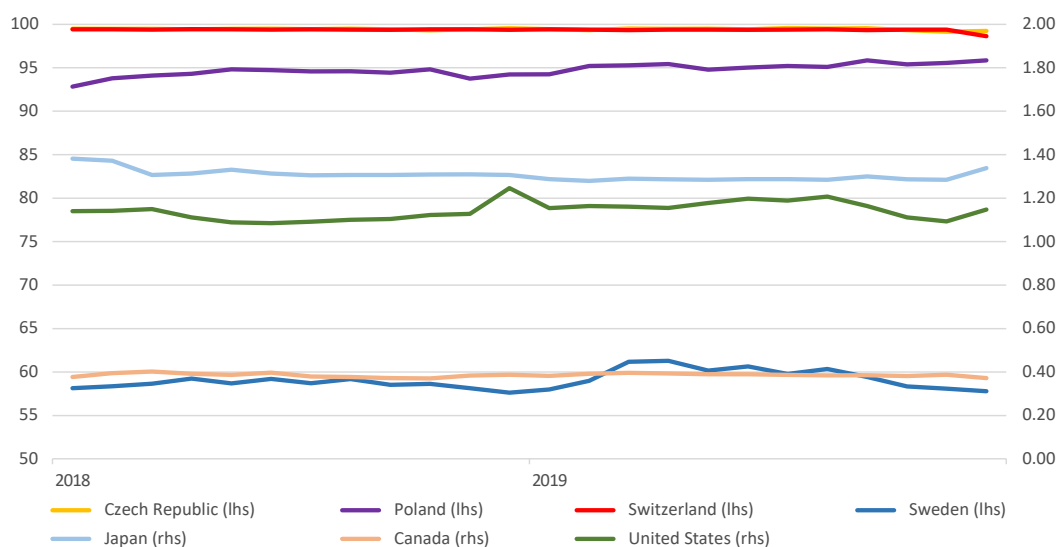
Calculation of the transfers of benefits for selected central banks

In the analysis presented in the main body of the text (Chapter 4), central banks with diversified asset structures were selected, i.e.:

- banks where foreign assets dominate (Czech Republic, Poland, Switzerland),
- banks where domestic assets dominate (Canada, Japan, United States),
- and a bank with similar levels of foreign and domestic assets (Sweden).

Figure A.4.1 shows the share of foreign assets in the balance sheet totals of the banks analysed at the end of each month in 2018-2019.

Figure A.4.1. Share of foreign assets in the balance sheet totals of selected central banks in 2018-2019 (in %)



Source: own study based on IMF database (International Financial Statistics, accessed on 6 May 2020) and the websites of the central bank of Switzerland.

For the calculation of benefit transfers, the financial statements of individual central banks were mainly used. To this end, on the basis of the information contained in their profit and loss accounts and the explanatory notes to these reports, tables have been drawn up in which individual income and expenses (according to the layout used by the bank analysed) have been converted into net transfers of the economic sector concerned. In tables A.4.1.-A.4.7, the results obtained for individual central banks are shown.

In the section of individual tables called “Profit and loss account”, the income and positive partial results of the central bank are presented with a positive sign. They should be interpreted as transfers from a particular sector of the economy (without indicating to whom the transfer is made). Therefore, in the section of the table called “Distribution of benefits between sectors” these figures are recognised with a negative sign – as a transfer from the specific sector of the economy. On the other hand, expenses and negative partial results in the central bank’s profit and loss account are presented with a negative sign. They should be interpreted as transfers from the particular sector of the economy (without indicating to whom the transfer is made). Therefore, in the section concerning the distribution of benefits, these figures are recognised with a positive sign – as a transfer to the specific sector of the economy.

In addition, information concerning the method of the central bank’s financial result distribution for a given year was used in the benefit transfer volumes (section of the tables called “Distribution of financial result”). Contributions to the state budget presented with a “minus” sign are treated as a transfer to the government sector. Therefore, in the section related to the distribution of benefits, they increase the benefit inflows to the government sector. On the other hand, retained earnings – although also presented with a negative sign – represent a transfer to the central bank. They are recognised in this way in the section concerning the distribution of benefits. However, if an uncovered loss occurs, although shown in the table with a positive sign, it will be treated as a transfer from the central bank to other sectors of the economy (without indicating the beneficiary). This is also how it is presented in the section concerning distribution of benefits.

Banks where foreign assets dominate (Czech Republic, Poland, Switzerland),

Table A4.1. Benefit transfers in the central bank of the Czech Republic

Item	Data in CZK billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Net interest income	-18.02	-37.39	-0.34	-0.66
- Net income on debt securities	18.13	22.28	0.34	0.39
- Net income on interbank deposits	0.65	1.73	0.01	0.03
- Expenses due to liabilities to banks	-36.77	-61.31	-0.69	-1.08
- Other	-0.03	-0.09	0.00	0.00
Income on shares and participating interests	7.50	9.21	0.14	0.16
Net result on fees and commissions	0.55	0.48	0.01	0.01
Net result on financial operations	13.87	87.71	0.26	1.55
Other operating income/expenses	0.09	0.09	0.00	0.00
Operating expenses and depreciation/amortisation expenses	-2.29	-2.46	-0.04	-0.04
Transfers from provisions	0.99	0.27	0.02	0.00
Transfers to provisions	-0.91	0.00	-0.02	0.00
Financial result for the current period	1.79	57.90	0.03	1.02
Distribution of financial result				
Profit retained in the central bank	-1.79	-57.90	-0.03	-1.02
Distribution of benefits across sectors				
Foreign countries			-0.75	-2.14
Government			0.00	0.00
Banking sector			0.69	1.08
Private sector			0.03	0.04
Central bank			0.03	1.02
Total			0.00	0.00

Notes:

- 1) Almost all assets consist of financial instruments in foreign currencies. Therefore, the net income on debt securities, net income on interbank deposits, income on shares and participating interests and the net result on financial operations (exchange rate and price differences) were allocated as transfers to/from foreign countries.
- 2) Due to the lack of detailed information, the net result on fees and commissions has been conventionally allocated to the private sector.
- 3) Income and expenses on the release/creation of provisions are classified similarly to retained earnings (transfers from/to the central bank itself).

Source: own study based on CNB (2020) and AMECO database (accessed on 6 May 2020).

Table A4.2. Transfers of benefits in Narodowy Bank Polski

Item	Data in PLN billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Net income on interest, discount	2.56	3.29	0.12	0.14
- <i>Investment instruments of foreign exchange reserves</i>	4.15	4.79	0.20	0.21
- <i>International Monetary Fund</i>	-0.03	-0.02	0.00	0.00
- <i>Monetary policy instruments</i>	-1.57	-1.46	-0.07	-0.06
- <i>Other</i>	0.01	-0.02	0.00	0.00
Net result on financial operations	-1.52	5.62	-0.07	0.25
- <i>foreign exchange gains/losses</i>	3.52	5.62	0.17	0.25
- <i>price gains/losses (foreign currency instruments)</i>	-1.17	2.81	-0.06	0.12
- <i>transfer to/from FX risk provision</i>	-3.87	-2.81	-0.18	-0.12
Net result on fees and commissions	0.01	0.01	0.00	0.00
Income on shares and participating interests	0.01	0.02	0.00	0.00
Other income	0.09	0.10	0.00	0.00
Operating expenses and depreciation/amortisation expenses	-1.14	-1.21	-0.05	-0.05
Other expenses	-0.01	-0.01	0.00	0.00
Financial result for the current year	0.00	7.82	0.00	0.34
Distribution of financial result				
Contribution to the state budget	0.00	-7.43	0.00	-0.33
NBP's reserve fund	0.00	-0.39	0.00	-0.02
Distribution of benefits between sectors				
Foreign countries			-0.31	-0.58
Government			0.00	0.33
Banking sector			0.07	0.06
Private sector			0.05	0.05
Central bank			0.18	0.14
Total			0.00	0.00

Notes:

- 1) Income on shares and participating interests refers to dividends from domestic entities.
- 2) Transfer to/from FX risk provision is classified similarly to NBP's reserve fund (transfers to/from the central bank itself).

Source: own study based on NBP (2020) and AMECO database (accessed on 6 May 2020).

Table A4.3. Transfers of benefits in the central bank of Switzerland

Item	Data in CHF billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Net result from gold valuation	-0.26	6.87	-0.04	0.98
Net result from foreign currency positions	-16.34	40.33	-2.37	5.77
Net result from Swiss franc positions	2.05	2.06	0.30	0.29
- <i>Negative interest rates on current accounts</i>	2.05	1.94	0.30	0.28
- <i>Securities</i>	0.00	0.12	0.00	0.02
Net result on other positions	0.00	0.00	0.00	0.00
Gross result	-14.55	49.26	-2.11	7.05
General overheads	-0.38	-0.40	-0.06	-0.06
Result for the current year	-14.93	48.86	-2.17	6.99
Distribution of financial result				
Allocation to provisions for currency reserves	-5.42	-5.86	-0.79	-0.84
Profit distribution to the Confederation and cantons	-2.00	-4.00	-0.29	-0.57
Profit/loss retained in the central bank	22.35	-39.00	3.24	-5.58
Distribution of benefits between sectors				
Foreign countries			2.37	-5.77
Government			0.29	0.57
Banking sector			-0.30	-0.28
Private sector			0.06	0.04
Central bank			-2.42	5.44
Total			0.00	0.00

Notes:

- 1) Due to the specific nature of gold (no issuer), it is assumed that the net result from gold is a part of central bank transfers.
- 2) The Bank holds debt securities in domestic currency issued by both the government sector and enterprises. Due to the absence of information in the financial statements concerning the allocation of the net result on these securities to individual sectors, given the higher share of corporate securities in the structure of assets, the net result on securities in domestic currency was allocated to the private sector.
- 3) Negative interest rates on current accounts refer to banks (current accounts of the Confederation are non-interest-bearing).

Source: own study based on SNB (2020) and AMECO database (accessed on 6 May 2020).

Banks where domestic assets dominate (Canada, Japan, the United States)

Table A4.4. Transfers of benefits in the central bank of Japan

Item	Data in JPY billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Operating income	2,393.40	2,240.71	0.44	0.40
- Interest and discount on Japanese Treasury securities	1,283.95	1,196.02	0.23	0.22
- Interest and discount on corporate debt securities	-1.07	-0.79	0.00	0.00
- Profits from foreign currency assets	372.28	203.65	0.07	0.04
- Profits from investments in pecuniary trusts and dividends	714.51	818.39	0.13	0.15
- Other income	23.73	23.44	0.00	0.00
Operating expenses	-392.49	-603.12	-0.07	-0.11
- Losses on foreign currency assets	0.00	-214.46	0.00	-0.04
- Operating expenses and depreciation/amortisation expenses	-198.06	-198.76	-0.04	-0.04
- Interest costs on excess reserve balances under complementary deposit facility	-186.60	-188.25	-0.03	-0.03
- Other expenses	-7.83	-1.65	0.00	0.00
Operating result	2,000.91	1,637.59	0.37	0.30
Extraordinary gains	2.47	113.23	0.00	0.02
- Transfers from the provision for potential losses associated with transactions denominated in foreign currency	0.00	107.23	0.00	0.02
- Other	2.47	6.00	0.00	0.00
Extraordinary losses	-928.58	-383.91	-0.17	-0.07
- Transfers to the provision for potential losses associated with transactions in securities and transactions denominated in foreign currency	-928.30	-383.72	-0.17	-0.07
- Other	-0.28	-0.19	0.00	0.00

Item	Data in JPY billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Pre-tax profit	1,074.80	1,366.91	0.20	0.25
Taxes	-487.84	-71.63	-0.09	-0.01
Net result	586.96	1,295.28	0.11	0.23
Distribution of financial result				
Write down to reserve funds	-29.35	-64.76	-0.01	-0.01
Contribution to the budget	-557.61	-1230.51	-0.10	-0.22
Distribution of benefits across sectors				
Foreign countries			-0.07	0.00
Government			-0.04	0.02
Banking sector			0.03	0.03
Private sector			-0.09	-0.11
Central bank			0.18	0.06
Total			0.00	0.00

Notes:

- 1) Profits from pecuniary trusts and dividends were classified in the private sector.
- 2) Transfers to/from the provisions were classified similarly to the write-down to the bank's reserve funds (transfers in relation to the central bank itself).

Source: own study based on BoJ (2019), BoJ (2020) and AMECO database (accessed on 6 May 2020).

Table A4.5. Transfers of benefits in the central bank of Canada

Item	Data in CAD billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Interest income	2.01	2.27	0.09	0.10
- <i>Investments</i>	1.89	2.08	0.09	0.09
- <i>Reverse repo transactions</i>	0.12	0.19	0.01	0.01
Interest expenses	-0.36	-0.41	-0.02	-0.02
- <i>Current accounts and deposits</i>	-0.36	-0.41	-0.02	-0.02
Net interest income	1.64	1.87	0.07	0.08
Other income (dividends and other income)	0.01	0.01	0.00	0.00
Operating expenses and depreciation/amortisation expenses	-0.53	-0.58	-0.02	-0.03
Financial result	1.12	1.30	0.05	0.06
Distribution of financial result				
Other comprehensive income	0.09	-0.13	0.00	-0.01
Contributions to the state budget	-1.22	-1.17	-0.05	-0.05
Distribution of benefits across sectors				
Foreign countries			0.00	0.00
Government			-0.01	-0.02
Banking sector			-0.01	-0.01
Private sector			0.02	0.02
Central bank			0.00	0.01
Total			0.00	0.00

Notes:

- 1) The Central Bank of Canada does not present detailed notes to the profit and loss account. Therefore, the allocation of individual income and expenses to individual sectors was performed on the basis of an analysis of the bank's balance sheet structure.
- 2) Assets are dominated by Treasury securities, therefore investment income has been allocated to the government sector.
- 3) Reverse repo transactions are carried out with banks, therefore the related income has been allocated to the banking sector.
- 4) In liabilities, accounts and deposits are held mainly for the government sector, therefore interest has been allocated to this sector.
- 5) Other comprehensive income mainly relates to the valuation of assets and liabilities relating to employee benefits (net defined benefit liability/asset) and is classified as transfers to/from the central bank itself.

Source: own study based on BoC (2019), BoJ (2020) and AMECO database (accessed on 6 May 2020).

Table A4.6. Transfers of benefits in the United States (US) central bank

Item	Data in USD billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Interest income	112.26	102.74	0.55	0.48
- <i>Treasury debt securities (Treasury securities, Government-sponsored enterprise debt securities, Federal agency and government-sponsored enterprise mortgage-backed securities)</i>	112.28	101.79	0.55	0.48
- <i>Reverse repo transactions</i>	0.00	0.97	0.00	0.00
- <i>Other</i>	-0.02	-0.02	0.00	0.00
Interest expenses	-43.05	-40.95	-0.21	-0.19
- <i>Current accounts and deposits</i>	-38.49	-34.94	-0.19	-0.16
- <i>Repo transactions</i>	-4.56	-6.01	-0.02	-0.03
Net interest income	69.21	61.79	0.34	0.29
Other income (expenses)	0.97	1.11	0.00	0.01
- <i>Foreign currency gains/losses</i>	-0.39	-0.17	0.00	0.00
- <i>Fees and commissions income</i>	0.44	0.44	0.00	0.00
- <i>Income on services provided to the government sector</i>	0.71	0.73	0.00	0.00
- <i>Other</i>	0.21	0.11	0.00	0.00
Operating expenses and depreciation/amortisation expenses	-7.08	-7.44	-0.03	-0.03
Financial result	63.10	55.46	0.31	0.26
Distribution of financial result				
Contribution to the state budget	-65.32	-54.89	-0.32	-0.26
Retained profits (losses)	2.22	-0.57	0.01	0.00
Distribution of benefits across sectors				
Foreign countries			0.00	0.00
Government			-0.23	-0.22
Banking sector			0.21	0.18
Private sector			0.03	0.03
Central bank			-0.01	0.00
Total			0.00	0.00

Notes:

- 1) Reverse repo and repo transactions are carried out with the banking sector, therefore income/expenses have been allocated to this sector.
- 2) The liabilities are dominated by accounts of the banking sector, therefore interest expenses have been allocated to this sector.

Source: own study based on Fed (2019) and AMECO database (accessed on 6 May 2020).

Bank with similar levels of foreign and domestic assets (Sweden)

Table A4.7. Transfers of benefits in the central bank of Sweden

Item	Data in SEK billion		in relation to GDP (in %)	
	2018	2019	2018	2019
Profit and loss account				
Interest income	8.15	11.37	0.17	0.23
- on assets denominated in foreign currency	5.83	9.03	0.12	0.18
- on assets and liabilities denominated in domestic currency	2.32	2.34	0.05	0.05
* Negative interest rates on deposits	0.00	0.05	0.00	0.00
* Debt securities	0.00	1.16	0.00	0.02
* Current accounts	0.00	0.00	0.00	0.00
* Employee loans	0.00	0.00	0.00	0.00
* Negative interest rate on fine-tuning operations	0.40	0.12	0.01	0.00
* Negative interest on issued certificates of deposit	1.91	1.01	0.04	0.02
Interest expenses	-4.62	-4.46	-0.10	-0.09
- on liabilities denominated in foreign currency	-4.40	-4.46	-0.09	-0.09
* Deposits held with Swedish National Debt Office (a public debt management institution)	-3.68	-3.73	-0.08	-0.07
* repo transactions	-0.13	-0.23	0.00	0.00
* SDR allocation	-0.26	-0.30	-0.01	-0.01
* Derivatives	-0.33	-0.21	-0.01	0.00
- On liabilities and assets denominated in domestic currency	-0.23	0.00	0.00	0.00
* Debt securities	-0.23	0.00	0.00	0.00
Net result on financial operations	0.46	19.52	0.01	0.39
- Price differences on revaluation of debt securities in foreign currency	-0.37	3.96	-0.01	0.08
- Price differences on revaluation of debt securities in domestic currency	0.00	0.05	0.00	0.00

Item	Data in SEK billion		in relation to GDP (in %)	
	2018	2019	2018	2019
- Foreign exchange revaluation differences	0.83	15.52	0.02	0.31
Fees and commissions income	0.09	0.10	0.00	0.00
Fees and commissions expenses	-0.02	-0.02	0.00	0.00
Dividends received	0.05	0.06	0.00	0.00
Other income	0.28	0.06	0.01	0.00
Net income	6.06	50.95	0.13	1.01
Operating expenses and depreciation/amortisation expenses	-0.86	-0.98	-0.02	-0.02
Financial result	5.20	49.97	0.11	0.99
Distribution of financial result				
Contributions to the state budget	-3.80	-5.30	-0.08	-0.11
Allowance for contingency fund	-1.31	-16.18	-0.03	-0.32
Transfer to/from the balancing reserve fund (<i>Riksbank's balancing account</i>)	1.58	-4.17	0.03	-0.08
Distribution of benefits across sectors				
Foreign countries			-0.12	-0.55
Government			0.16	0.16
Banking sector			-0.05	-0.02
Private sector			0.01	0.02
Central bank			-0.01	0.40
Total			0.00	0.00

Notes:

- 1) The bank's holdings of domestic currency debt securities relate mainly to Treasury securities.
- 2) Other income mainly relates to income on the sale of collector banknotes and coins. They have therefore been allocated to the private sector.
- 3) The Riksbank's balancing account is similar in nature to the retained earnings item.

Source: own study based Riksbank (2019), Riksbank (2020), Riksbank (2020a) and AMECO database (accessed on 6 May 2020).

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