Debt Office Commentary

The central government's net borrowing requirement is a measure of its cash flow

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The central government net borrowing requirement shows how much money the central government needs to borrow to cover its ongoing operations. The Debt Office makes independent forecasts of the net borrowing requirement, which have an important role in the development of borrowing plans. Accurate forecasts enable the Debt Office to plan and manage borrowing in a way that helps minimise the long-term cost of central government debt. Despite some challenges in the forecasting process, the accuracy of the forecasts has increased in recent years. Capital investments in tax accounts have in particular been an uncertainty factor.

Good planning is important for the central government's payments

The Swedish National Debt Office is the central government's financial manager and is therefore responsible for the management of central government debt. One important objective is to keep the cost of the debt management low.[2] This is faciliateted by good planning, which relies heavily on forecasts of the central government's short-term and long-term borrowing requirements.

1 Sofia Nilsson and Elin Stenbacka are economists at the Swedish National Debt Office's Economic Analysis Department. The views expressed in this Debt Office Commentary are the authors' own and should not be perceived to be the Debt Office's view on these matters. This Commentary has been produced in consultation with an editorial board consisting of Tord Arvidsson, Jill Billborn, Mårten Bjellerup, Malin Hasselblad Wennström, Ellen Karlberg and Mattias Persson. The authors would also like to express their appreciation to Johan Sandberg and Göran Robertsson for their invaluable comments.

2 Chapter 5, §5 of the Swedish Budget Act.

In the shorter term, the forecasts are important in order for the Debt Office to be able to manage the daily surpluses and deficits within the central government's cash management operations in the best possible manner. This is done by investing or borrowing funds. Every day, the net of central government's incoming and outgoing payments are collected together in Swedish kronor (SEK) in the main account of the central government at Sweden's central bank, the Riksbank. The Debt Office is responsible for borrowing funds in the event of a deficit and making investments in the event of a surplus. By offsetting the public authorities' cash flows against one another, the central government's liquidity management is streamlined as a whole and transaction costs are kept down. The central liquidity management gives the Debt Office a unique overview of the central government's cash flows, which makes it possible to reduce the central government's borrowing costs and to ensure that the central government can always meet its payments on time.

Over the longer term, the forecasts are important for the Debt Office to be able to make a balanced judgment for how future deficits in the central government budget are to be financed. Together with the loans that mature, they essentially add up to the total need for borrowing, i.e. the borrowing requirement. This in turn forms the basis for how much the Debt Office chooses to issue in bonds and treasury bills in the capital and money markets.

Therefore, conducting efficient borrowing planning requires reliable forecasts of the central government's borrowing and investment needs.[3] How the borrowing requirement develops depends upon several factors. However, the most important in the long term are the economic situation and the fiscal policy.

The purpose of this Debt Office Commentary is to explain how the net borrowing requirement is influenced by various factors. It describes how the net borrowing requirement is defined, which components are included, and how the Debt Office develops the forecasts upon which the borrowing plan is based.

The net borrowing requirement is the same as the central government's budget balance with the opposite sign

The purpose of the Debt Office's borrowing is to cover deficits in the central government's operations and to replace existing loans that mature. The central government borrowing requirement can be expressed as net and gross borrowing requirements.

The net borrowing requirement is the difference between the central government payments received from, and payments made to, governmental entities, citizens and others, and can be seen as a measure of the central government's cash flow. When the payments made are greater than the payments received measured over an extended period of time, the Debt Office borrows money on behalf of the central government by issuing debt instruments in the capital and money markets. When the payments received, which consist primarily of income from taxes, are greater than the outgoing payments, the money is used to pay off the central government debt. Short-term fluctuations between surpluses and deficits are averted via liquidity management.

3 The Debt Office forecasts are communicated to the market and the general public three times a year via the report *Central Government Borrowing – Forecast and Analysis*. The Debt Office also calculates and publishes the outcome of the central government borrowing requirement at the beginning of each month, within the framework of Sweden's official statistics. A comparison with the most recent forecast is also published in conjunction with the outcome.

The gross borrowing requirement is the central government net borrowing requirement plus the borrowing made by the Debt Office to refinance loans that mature.

The central government net borrowing requirement can also be expressed as the central government's budget balance with the opposite sign. In the case of a budget surplus, the budget balance is positive and the net borrowing requirement is negative, and the Debt Office pays down the central government debt. In the reverse situation, a budget deficit means that there is a net borrowing requirement and the government debt increases.

Over the past four years, the central government's operations have resulted in a budget surplus calculated on an annual basis, which has meant that the net borrowing requirement has been negative (see Figure 1).

Figure 1: The central government net borrowing requirement

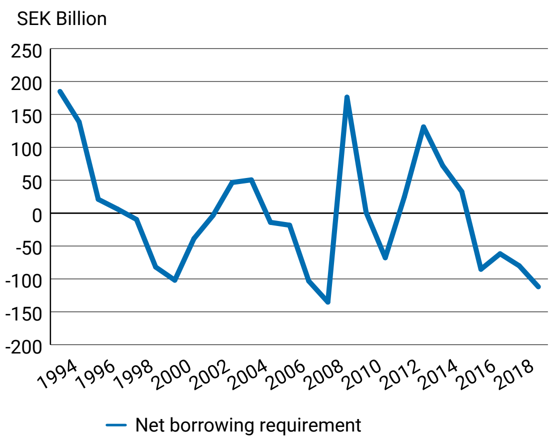
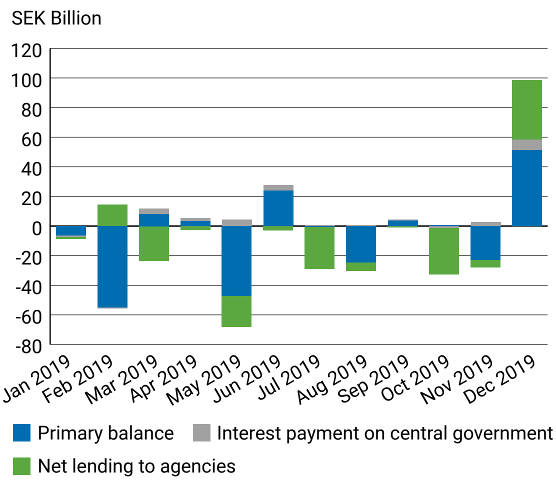


Figure 2: The central government net borrowing requirement by month in 2019



Source: The Debt Office

The net borrowing requirement varies considerably over the year. The design of the tax system usually leads to central government borrowing being lower in the spring when tax receipts are higher. This means that the central government usually shows a higher surplus in the spring than in the autumn (see Figure 2).

Even one-off events can significantly affect the central government's borrowing requirements in a particular year. For example, sales of state-owned enterprises can generate significant income, as occurred in 2013 for example, when the central government sold its shares in Nordea.

The Debt Office also raises loans on behalf of the Riksbank, which can also give rise to significant variations in the central government borrowing requirement between individual years. An example of this was in 2019 when the Riksbank reduced the size of its foreign exchange reserve, which led to a decrease in the central government net borrowing requirement by close to SEK 69 billion.

The net borrowing requirement is made up of three components

The net borrowing requirement is the total of three subflows: the **primary balance, net lending by the Debt Office to government agencies** and **interest on central government debt.**

The **primary balance** is the difference between the central government's current incoming and outgoing payments. Central government income consists primarily of income from taxes paid by private individuals and companies. The central government also has other income such as dividends from state-owned enterprises and from the sale of state-owned enterprises. The income of the central government may show significant variation between years. Income from the sale of state-owned enterprises often generates larger lump sums, while tax income varies with the business cycle (see section *The economy is one of the factors that drive the central government net borrowing requirement*).

For example, central government expenditures consist of payments to public agencies and authorities such as the social insurance system and the judiciary. The size of these expenditures is limited by the expenditure ceiling, which is established three years in advance by the Riksdag (Swedish Parliament) based on a proposal from the Swedish Government and is part of the fiscal framework.

Net lending by the Debt Office to government agencies is the difference between the **lending** and **deposits in the central government's internal bank**. This is outside the expenditure ceiling and therefore has no upper limit. The borrowed funds will eventually be repaid to the central government's cash management operations, which means that not all net lending by the Debt Office to agencies affects central government net lending (refer to the section *Central government net lending*).

Net lending by the Debt Office to agencies is a form of lending whereby the central government's internal bank at the Debt Office lends funds to governmental entities, commercial transactions, and state-owned enterprises. These loans are often used for various investments, in particular infrastructure projects. The central government also lends money in the form of student loans to support academic studies. The Debt Office receives deposits as well. One example is fund resources for specific purposes, such as the Nuclear Waste Fund (KAF), the deposit insurance scheme, and the resolution reserve. The deposits vary greatly over a given year. The premium pension system, which is part of the old-age pension system that sits alongside the central government budget, is set aside in the Debt Office continuously during the year, to be invested in managed investment funds in December.

Net lending to agencies also includes on-lending, i.e. loans that the central government takes out on behalf of another party. Examples of on-lending are the loans in foreign currency that the Debt Office has made on behalf of the Riksbank for the purpose of strengthening its foreign exchange reserve. Net lending to agencies can often be significant and have a major impact on the central government net borrowing requirement in individual months.

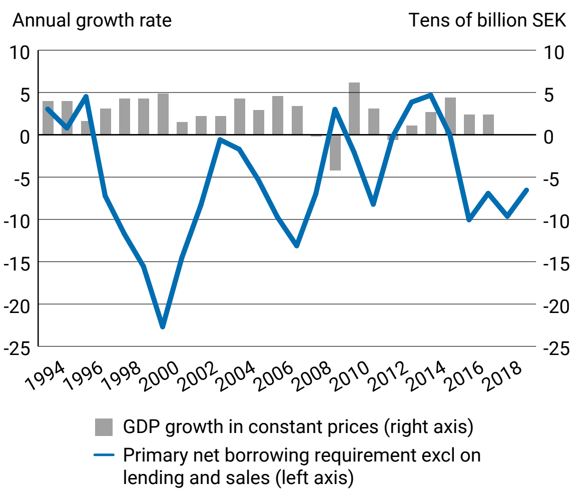
The third and final item in the Debt Office's breakdown of the net borrowing requirement is **interest on central government debt.** This component consists of the interest paid by the Debt Office during a defined period. In addition to ordinary coupon payments, interest payments also include the inflation compensation that occurs when inflation-linked bonds mature. In addition, when the Debt Office sells or repurchases bonds at a price that is different from the nominal value, a premium or discount (with a sales transaction) is recognised and a gain or loss (with a purchase transaction) is recognised under interest on central government debt. Finally, foreign exchange gains and losses are also included in the item “Interest on central government debt”.

The economy is one of the factors that drive the central government net borrowing requirement

Over time, the state of the economy is the primary driver of the development of the central government’s borrowing requirement. In particular, the net of the central government’s current income and expenditure (the primary balance) varies from the business cycle when income from sales has been excluded.

Figure 3 shows how the primary balance covaries with GDP growth. Between 1998 and 2000, when Swedish GDP growth was good, the primary balance showed a surplus. During the global financial crisis of 2008–2009, the situation was the reverse. GDP fell markedly, and the primary balance showed a deficit in 2009. The budget surplus in recent years is partly a result of the good economic climate, which has contributed to a corresponding strong primary balance.

Figure 3. GDP growth and the net of income and expenditure, excl. sale of government property



Sources: Statistics Sweden and the Debt Office

The central government’s income comes primarily from taxation of business enterprises and private individuals. In a strong economic climate, more people are working and profits from companies are increasing. The central government’s income from taxes therefore increases. In a weaker economic climate, tax income shrinks and government expenditure rises (for example, payments increase from the unemployment benefit fund). This means that the central government borrowing requirement will be greater.

Table 1 provides an overview of the impact that the increase in key macroeconomic variables has on the central government net borrowing requirement. The first column shows the macroeconomic variable that is increasing, the second column shows the primary direction of the impact that the variable has on the net borrowing requirement, and the third column shows how the variable affects the net borrowing requirement.

Table 1. Examples of impacts of increases in macroeconomic variables on the central government net borrowing requirement

Macroeconomic variables that increase	Primary direction of the impact on the net borrowing requirement	How?
GDP at current prices	-	Higher growth of tax bases
Exports	-	Higher corporate tax from export companies
Imports	-	Higher income from customs duties and VAT
Investments	-	Higher income from VAT
Household consumption	-	Higher income from i.a. VAT
Governmental consumption	+	Higher governmental expenditure
CPI	+	Higher price base amounts, which means higher expenditure for certain social welfare benefits and lower tax income when certain cut-off points are higher.
Payroll	-	Higher income from wage taxes
Unemployment	+	Higher expenditures for i.a. the unemployment benefit and activity support

The economic situation also affects the central government net borrowing requirement via interest rates. Normally, this is done primarily via the item “Interest on government debt”, but the low interest rates of recent years have led to large capital inflows into tax accounts. This is counted as tax income. However, a larger proportion of the inflows in the preceding year have not, according to the Debt Office’s assessment, been money intended for tax payments, but rather investments of capital driven by interest rate differences. In a situation in which interest rates are rising, these investments are expected to flow out of tax accounts (see more in the section *Tax Accounts – a challenge to forecasting*).

Expenditures also vary with the macroeconomic climate. However the amount of the expenditure is limited by the expenditure ceiling. In the Government’s budget proposal, central government expenditures are allocated to different areas of expenditure. Among the largest areas of expenditure for the central government are social insurance, the labour market, and financial support to local governments. Labour market-related expenditures are impacted at an early stage by a declining economy with higher costs for the unemployment benefit and activity compensation. Social insurance does not have the same direct link, however the expenditures are affected over the longer term as many social insurance benefits are indexed to the price base amount or dependent upon wage developments and unemployment. In poorer economic times, it is common that the Government injects money into municipal governments and Regions.

There is also a limitation over time for the entire public sector, what is referred to as the surplus target. This means that general government net lending for the entire public sector should amount to one-third of a percent over one business cycle, which partly limits, for example, how much taxes can be lowered in Sweden.

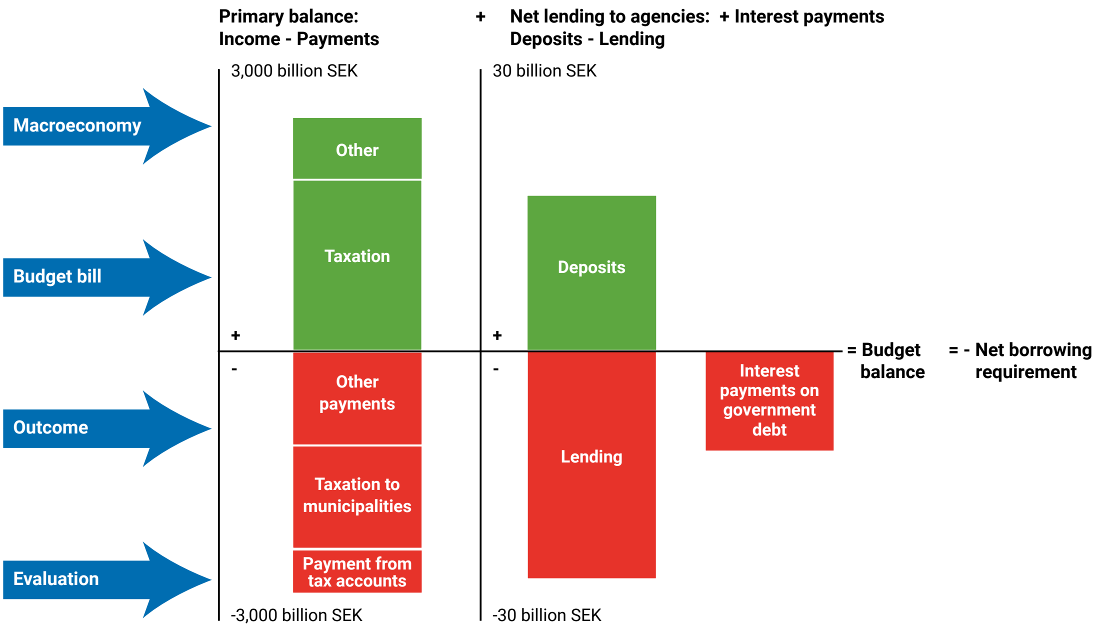
The Debt Office's forecasting process

In order to make a forecast of the central government net borrowing requirement, the Debt Office needs to first make a forecast of how the economy will develop. Together with an analysis of the Budget Bill in particular, this then constitutes a basis for the analysis and forecast of the various items included in the net borrowing requirement (see Table 1). It is primarily the values of various variables at current prices that are used to produce forecasts of the central government net borrowing requirement. GDP at current prices gives a picture of the growth of the tax bases in Sweden, while GDP at constant prices indicates the general activity of the economy that affects, for example, corporate profits and capital gains.

The forecasts for the macroeconomic variables and the net borrowing requirement are also communicated together with the borrowing plan to the market through the report *Central Government Borrowing – Forecast and Analysis*.

However, the forecast work is also ongoing between the report publications. In order to make as balanced forecasts of the daily net borrowing requirement as possible, the Debt Office continually updates its assessments in the light of new outcomes and new information. The figure summarises the Debt Office's forecasting process.

Figure 4: The Debt Office's forecasting process



Note: The figure is schematic and not scalable. The height of the bars may vary between years.

Tax accounts – a challenge to forecasting

In the past five years, there have been larger payments into tax accounts than have been justified for tax reasons. These extra payments have been assessed by the Debt Office to be investments of capital in tax accounts, a phenomenon that has made forecasting more difficult.

The low and even negative interest rates of recent years have led companies and individuals to use their tax accounts to invest capital because the interest rate paid has been more favourable than that in ordinary bank accounts. Thus, tax accounts have increasingly functioned almost as a form of savings account.

For the central government, capital investments in tax accounts have been an expensive form of borrowing considering that the central government has been able to borrow at negative interest rates in the market. In order to dampen the inflows into tax accounts, the interest rate has therefore been reduced to zero percent. Despite this, tax accounts remain an attractive investment alternative. This is in part because the alternative for some parties is a negative interest rate, and in part because tax accounts effectively have unlimited deposit insurance. In October 2019, the Debt Office estimated that there was approximately SEK 75 billion in tax accounts.[4]

4 See *Statsupplåning – prognos och analys 2019:3 / Central Government Borrowing – Forecast and Analysis 2019:3,* the Swedish National Debt Office.

As interest rates rise or companies need cash, the investments of capital will flow out of tax accounts. The central government's borrowing requirement may therefore increase as the outflow then becomes a payment for the central government. The timing of when the outflows will occur is difficult to predict, as it is influenced by both real economic developments and the preferences of companies and individuals. From a forecasting perspective, the latter in particular presents a challenge.

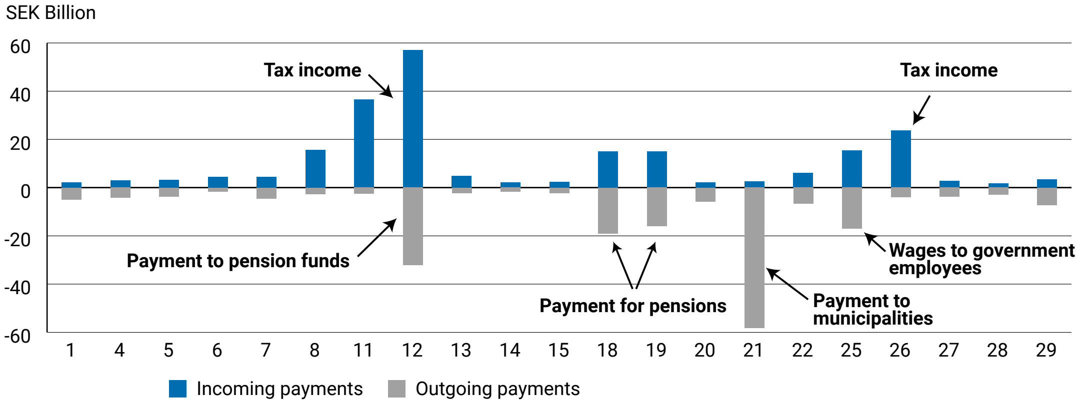
The Debt Office makes forecasts on a monthly and daily basis

When the Debt Office has produced an annual forecast, it is then broken down on a monthly and on a daily basis.[5] Figure 2 shows the central government's net monthly borrowing requirement during 2019, broken down by the three sub-components. The graph clearly shows how the primary balance is affected by large tax receipts in the spring and the repayment of excess taxes withheld in December. Net lending by the Debt Office to government agencies also clearly shows the disbursements of premium pensions in December. In addition, the effect of the repayments of foreign currency loans made by the Riksbank during the year on net lending to agencies is evident in May, July and October.

The primary balance varies both between months and over the days of the month. The distribution over the days of a typical month is illustrated by Figure 5. Twice a month there are large receipts of payments of tax. Preliminary withholdings for corporate tax, personal income taxes and employer's social insurance contributions must be paid no later than the 12th of the month, while VAT must be paid no later than the 26th. However, as a general rule the receipt of the payments usually starts some days in advance. Among the larger payments made are disbursements of pension contributions to the Swedish National Pension Funds made on the 12th of the month, and the disbursement of municipal tax funds and government grants to local governments on the 21st.

5 See *Statsupplåning – prognos och analys 2019:3, / Central Government Borrowing – Forecast and Analysis 2019:3*, the Swedish National Debt, for examples of monthly distribution.

Figure 5: The distribution of the central government's incoming and outgoing payments that are part of the primary balance over a typical month



Source: The Debt Office

Several agencies produce forecasts of the net borrowing requirement

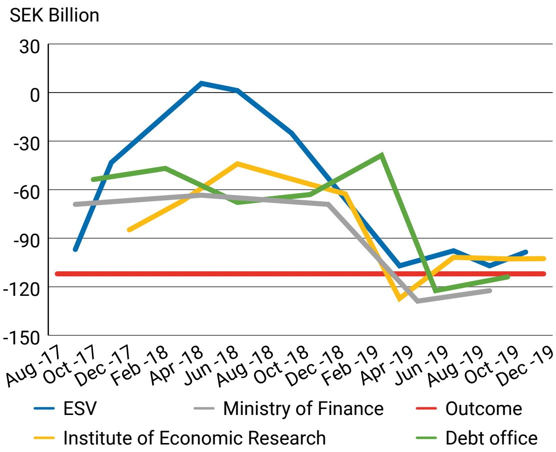
Different government agencies have different purposes for their forecasts. The National Institute of Economic Research (NIER) produces forecasts of the central government's budget balance, i.e. the net borrowing requirement with the opposite sign. In these forecasts, NIER uses a different measure – central government net lending – as the basis for calculating the budget balance. The fact that NIER relies on central government net lending reflects that it has a greater focus on public finances than on the cash flow of the central government. Ekonomistyrningsverket, the Swedish National Financial Management Authority (ESV) also produces forecasts of the budget balance. ESV makes its forecasts based on the rules in effect at the time of the forecast, for the purpose of producing a basis for the decision-making framework for the analysis of fiscal policy. The Government Offices of Sweden produces a forecast of the budget balance to establish the framework for the central government budget.

In order to achieve the purpose of the Debt Office's forecasts, i.e. to contribute to good and efficient planning for borrowing, all information that increases the precision of the forecast is used. In the forecasts, the Debt Office can count on reforms for which no decision has yet been made if the likelihood of them being adopted is high. For example, the Debt Office usually includes the Swedish Government's Budget Bill in its October forecast, even if it has not yet been adopted in the Riksdag. The Debt Office also tends to include new fiscal reforms (unfunded reforms) of approx. SEK 10–15 billion, against the background of how the outcomes have been historically. In the central government budget, there is room for reform as a result of the fact that income normally increases faster than expenditure. The Debt Office therefore assumes that this room for reform is being utilised.

Better accuracy in recent years

Even though the Debt Office, ESV, NIER and the Government Offices have different purposes associated with the forecasts of the net borrowing requirement, quite often the assessments are very similar.[6] For example, the development of forecasts of the net borrowing requirement for 2019 had a coherent profile over time (see Figure 6).

Figure 6: Net borrowing requirement in 2019, forecast and outcome



Sources: Swedish National Financial Management Authority (ESV), National Institute of Economic Research (NIER), Swedish Ministry of Finance, and the Debt Office.

The Debt Office is the only forecasting institution that forecasts the net borrowing requirement on a monthly and daily basis (see Figures 2 and 5 for typical patterns). This reflects the starting points of the various agencies, whereby the Debt Office's forecasts provide support in the management of government debt and the day-to-day liquidity management in the central government.

It is common to compare different forecasting entities when evaluating the accuracy of forecasts. However, since the Debt Office is the only party that makes forecasts on a monthly basis, an alternative is to compare forecasting errors over time. To calculate the size of the errors, the Root Mean Square Error is used in the forecast (RMSE)[7]. In addition, an adjusted RMSE is calculated, which excludes the on-lending and sales of state-owned enterprises.

6 See Bruér, M. *Forecast evaluation – Macroeconomic and fiscal forecasts 2013 to 2018*, Riksgälden 2020.

7 RMSE is defined $\sqrt{(e_1^2+e_2^2+e_3^2+e_4^2)/4}$ where e_t is the forecast error (the outcome in relation to the most recent published forecast) for month "t". The Debt Office updates the forecasts every four months, which is why the RMSE is calculated based on the forecast errors over the past four months.

Figure 7 shows the RMSE for the period 2015 to 2019. The graph shows that errors have decreased over the past two years, especially for the adjusted measure. The difference between the two measures in 2019 clearly shows the impact of the Riksbank's repayment of foreign currency loans that were not known at the time of the forecast published in February 2019.

Figure 7. Root mean square error

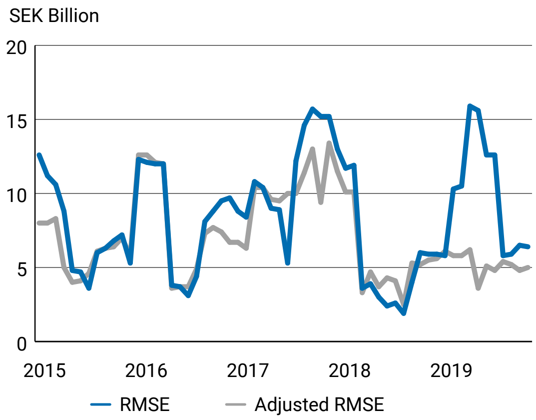
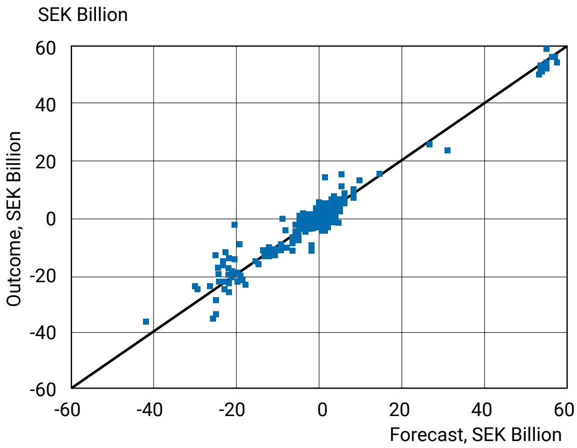


Figure 8. Daily outcome and adjusted forecast in 2019



Source: The Debt Office

The daily forecasts are continually updated as new information is added. It is therefore difficult to evaluate the daily forecasts over time in the same way as the monthly forecasts because the new information appears irregularly. However, the adjusted forecast and outcome per day can be compared, as is done in Figure 8.

From Figure 8, it is clear that the outcomes and forecasts are close together because the points are centred along the line where they are exactly the same.[8] This indicates that the daily forecasts have value as information. The accumulation of points in the upper right corner comes from the large borrowing requirements that occur on the days when the central government transfers by disbursement wage taxes to the municipalities.

8 Patterns are typical for the daily forecasts; see the report *Central Government Debt Management – Basis for Evaluation 2019*, which the Debt Office publishes annually in the month of February. This year's report is only available in Swedish.

Central government net lending complements the net borrowing requirement

The Debt Office also produces a forecast of central government net lending. Central government net lending is the difference between accrued income and expenditure. Thus, central government net lending distributes payments to the point in time when the financial activity took place. This measure is also adjusted for capital investments in tax accounts for instance, and also for certain parts of the net lending by the Debt Office to government agencies.

Central government net lending thereby differs for the central government net borrowing requirement. The net borrowing requirement is a cash measure, which measures cash receipts and payments made. Due to accruals and other adjustments, central government net lending is generally a better indicator of underlying central government finances than the net borrowing requirement.

Borrowing costs decrease with good forecasting ability

In recent years, the Debt Office's forecasts of the net borrowing requirement have improved compared with 2016 and 2017, despite several challenges to the forecasting process. One difficulty that the Debt Office faces is that it continually assesses the timing of the outflow of investments of capital in tax accounts.

As the net borrowing requirement is cyclically sensitive, forecasting capacity is tested, especially in the event of large cyclical fluctuations. This is especially true in the current situation when the spread of the coronavirus has caused a rapid and sharp slowdown in the Swedish economy. This development will lead to a decrease in tax income and an increase in the central government's disbursements for, among other things, short-time working allowances, which will affect in particular the primary balance and thus the central government's borrowing requirements.[9]

In conclusion, accurate forecasts of the net borrowing requirement are important for The Debt Office's mandate and responsibilities for managing the central government debt. The forecasts contribute to good borrowing planning, both in the short term and over the long term. Good foresight improves the conditions under which the Debt Office borrows and invests and also reduces the risks in liquidity management.

9 For an assessment of how the economic crisis in the wake of the coronavirus may affect the net borrowing requirement and borrowing plan, see *Statsupplåning – prognos och analys 2020:2* (*Central Government Borrowing – Forecast and Analysis 2020:2*), published on 19 May 2020.

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