Assessment of the forecasting performance of the National Institute of Economic Research, 2014[1]

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Introduction

1. The Expert Group has reviewed the performance of the National Institute of Economic Research (KI), looking at both its forecasting record and the methods and procedures used in forecasting and macroeconomic policy analysis. As part of the review, a series of interviews were undertaken in Sweden with the KI and a number of other public and private sector experts. All interlocutors agreed that the KI is doing a fine job and is a central actor in discussions about economic developments and policy in Sweden. We have not found strong reasons to disagree. Nonetheless, in the context of a rapidly evolving economic environment, we consider that there are a number of ways in which the KI could become even more useful, keep up with best-practice forecasting and modelling procedures, and do a fine job even better. Our main recommendations (summarised in Box 1) should be viewed in this light, rather than as reflecting serious shortcomings in the current forecasting performance of the KI.

Box 1
Summary of main recommendations for the National Institute

General

- The overall purpose of the KI could be made more precise and institutional arrangements, including the position vis-à-vis the Ministry of Finance and the Fiscal Policy Council, could be adjusted to reflect such clarification. In this context, it may also be considered to what extent KI forecasts can be directly used by other actors in the Swedish government sphere, which currently seems characterised by a number of decentralized forecasting operations, not least as regards the government budget.

[1] The Expert Group would like to thank the National Institute for its very open and helpful approach in answering questions and providing data. Thanks also go to all the interlocutors that have been willing to discuss with us. The Statistical Appendix (appendix 4) and the estimations and data manipulations contained therein were undertaken by David Sundén, Asger Lunde and Carl von Utfall Danielsson who provided very efficient service. Furthermore, the Swedish Agency for Public Management, and in particular Carl Holmberg, is thanked for organizing our visit to Sweden and for providing the necessary administrative underpinning to write the report. Finally, Anja Løkken Stiil is thanked for providing secretarial assistance.

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- Related to the overall purpose, the balance could be considered between work related to the short- and medium-term conjuncture and the associated policy issues, on the one hand, and more specific, and often long-term, issues on the other hand.
- The KI may wish to consider whether its contacts to international fora and policy-analytic environments are sufficiently strong. In a similar vein, the links to the academic world as well as to domestic business and financial sectors should possibly be considered.

Forecasts and their presentation

- The degree of detail in the forecasts appears to have little impact on accuracy and could be reconsidered. In this context, the respective roles of bottom-up vs. top-down forecasting in different areas should also be considered.
- Forecasts could usefully be characterized in terms of the risk distributions around them, and analysis of risks and alternative scenarios using the available models could be undertaken more systematically. Applying the results from the VAR models used for now-casting could be helpful in this regard.
- The respective roles of modelling tools and judgement in producing the forecasts and the way these change over the forecast horizon could be made more transparent. This can be both a healthy discipline and give incentives to keep model instruments up to date.
- Providing a systematic breakdown of changes in estimates of potential output, and differences with government estimates of potential output could also be useful.
- A more systematic presentation of crucial assumptions regarding features such as asset prices, private wealth and financial conditions may be useful together with an explicit description of how they affect the forecast.
- The KI may wish to consider the gains and costs of being in charge of its own tax forecast rather than entrusting this to the Swedish National Financial Management (ESV). Concerning budget data, it could be considered to publish information also on an accruals basis.
- While forecasts are based on quarterly data, there is little communication about this, in part because of a reluctance to expose differences of view concerning recent past developments relative to Statistics Sweden. However, such differences are to be expected and can be handled in a transparent manner that allows for more explicit communication in terms of quarterly numbers.

Model use

- More use could be made of the KIMOD model, provided that it keeps being maintained, to provide a cross-check on projections by looking at equation residuals. Moreover, the model could be used to provide decomposition of changes in forecasts, and also to produce "ready reckoners", illustrating the broad economic effects of a variety of economic shocks.
- More systematic use could be made of models to analyse alternative policy scenarios, including as a background to discuss the overall policy mix.
- If no expansion in model use is foreseen, it may be useful to consider whether the current model set-up should be maintained.

Policy analysis

- The risk that an overly low implicit cyclical budget elasticity leads to pro-cyclical fiscal policy advice points to a need to undertake further work to identify cyclical effects, even if the quantitative significance of any procyclicality may be limited. In this context, more explicit consideration of uncertainty about output gaps and the effects of alternative estimates may be useful. In view of current low interest rates and high asset prices, work to identify the effects on fiscal balances may have high returns.
- While the KI can legitimately adopt different fiscal policy assumptions from those of the government for its analysis over the short, medium and long term, there is something to be said for including more information and discussion in the quarterly reports of variant scenarios based on assumptions corresponding to those of the government (for various public spending components, for example). This would help identify the effect of these assumptions. Where government assumptions are not known in detail, such analysis obviously has to be based on KI's interpretation.
- Long-term fiscal sustainability analysis is a useful activity and should be conducted on the basis of assumptions that are reasonable, which is not always the case presently (eg. for retirement, health spending projections). Assumptions should also be unchanged from one assessment to the next, so as to allow analysis of the reasons for changing assessments.
- The KI is well placed to undertake systematic analysis of the evolving overall policy mix and to consider possible alternatives. This could include the relationships between fiscal, monetary, prudential and structural policies and, if thought useful, wage formation.
- It may be worth considering ways in which to assess the impact of the KI's Wage Formation reports.

Resources (other than those implied above)

- The KI responded flexibly to the crisis by devoting more resources to the analysis of financial issues and influences on the economy, but this reorientation appears to have been only temporary which raises the question whether it should be made permanent.
- The resources devoted to following international developments have been reduced and could be further slimmed unless a decision were made to draw more on international perspectives in the reports in general.
- Given the high quality of KI's work on specific policy and economic issues, it is important that this should not be constrained by resources being tied up elsewhere or by human resources being insufficiently equipped to take on such topics.

The role of KI

2. While all can agree that the KI is doing a fine job, there is less clarity as to what that job is. While possibly at the limit of the Expert Group's remit, we consider that it would be worthwhile for the Swedish government to clarify the role of the KI. Some of the roles it has played in the past have disappeared, such as preparing economic forecasts directly for the Ministry of Finance. Instead the KI has become an increasingly independent forecaster and independent policy discussant, whilst remaining largely financed through the Ministry of Finance with an agency status. The Ministry of Finance increasingly uses the KI to get second or third opinions on matters of ad hoc policy analyses – requests the KI has undertaken despite their typically unfunded nature. The main macroeconomic model of the KI is also at the disposal of the Ministry of Finance. The desirable degree of independence of the KI, and the institutional arrangement that goes with it, may thus be worth considering.

3. An independent Fiscal Policy Council has been established outside the KI. To some extent it relies on the analysis of the KI, and provides funds if special projects are undertaken by the KI, but differences in the approaches to analysing fiscal policy sometimes appear. Moreover, some of the one-off analyses dealt with by the KI are related to those undertaken by the Fiscal Policy Council – such as the recent work on the lower VAT rate for hotels and restaurants. Articulation of the roles of the KI and the Fiscal Council, and possible changes therein, would seem worth considering. Clarification of the role of the KI would in some cases help to determine whether its present analytical and empirical approaches are appropriate. For example, there is a question as to how the government's adherence to its budget rules is best assessed – by using the KI's own simple, but transparent, metrics or by a more judgemental review of the

indicators that the government is using to monitor its adherence to the stated target. Finally, the KI is also not the only independent macroeconomic forecaster financed by the government, with forecasts also being produced separately by two other government agencies - the Swedish National Financial Management Agency (ESV) and the Riksgälden. Depending on what role is seen for the KI, consideration could be given as to whether these agencies could make greater direct use of the KI macroeconomic projections.

The approach of the Expert Group

4. Clarification of the role of the KI is arguably a recommendation that goes beyond what the Expert Group was requested to do. Otherwise, we have covered our mandate to examine and suggest potential improvements to the forecasting activity of KI, as well as its analysis of the general economic framework for wage formation and of long-term fiscal sustainability, as set out in the Government decision of 7. November 2013 (see Fi2013/3980 and the corresponding annex 1). In this context, we have also covered the contributions – actual and potential – by the KI to a range of economic policy issues, although this is not explicitly called for in the mandate.

5. Two caveats follow from the mandate and from our interpretation of it. First, a large share of KI activities is not covered by the mandate. For example, the reports, analysis and modelling tools associated with environmental policy assessment are not covered. A second caveat concerns the Expert Group's ability to treat certain issues in substance. In particular, while we have been able to gain a broad impression of the modeling tools used and constructed at the KI, our knowledge is insufficiently detailed to allow us to express strong views on the adequacy of these instruments. Hence, our report only raises some questions concerning the use of these models. It is also the case that we feel ill-equipped to take a strong stand on the adequacy of the overall resources allocated to the KI. On this point, we restrict ourselves to noting the difficulties that can be created for the KI when ad hoc demands by the Ministry of Finance crowd out investment in model development.

6. The approach adopted has been as follows. Based on an initial study of key KI documents and our general experience with analysis of forecasting performance and the associated literature, a questionnaire was prepared and served as background to a range of discussions with different interlocutors during a mission to Sweden. A full list of those interviewed is provided in Annex A. Likewise, a request for various empirical analyses of KI's forecasting record was discussed and agreed with consultants at Copenhagen Economics.

Following our mission to Sweden, and based on the lessons learned together with further reading and the results of the empirical analysis, the present report has been written up.

Outline of the report

7. The remainder of this report sets out by providing an overview of the recent forecasting performance of the KI. It begins by reviewing the KI's forecasting record, supported by quantitative analysis undertaken by Copenhagen Economics (see appendix 3 and appendix 4). After considering some specific issues related to short-term forecasting, the report goes on to discuss the fiscal policy analysis of the KI and, subsequently, its work on wage formation. This provides background for a discussion of more general analysis of the overall policy mix. After some considerations on resource allocation, a brief summing-up is offered at the end.

The historical record of short-term forecasting and implications for forecast practice

8. The forecasts considered in appendix 3 and appendix 4 to this report in general relate to the years from 1997 to 2013. This period covers a number of distinct phases in the Swedish economy, which have posed a variety of different challenges to the KI forecast team:

    - As in the OECD as a whole, the period before the financial crisis was one of relative macroeconomic stability, with steady output growth and only moderate inflation. Over the decade to 2007, growth in Sweden averaged 3.4% per annum, with inflation, based on the consumers' expenditure deflator, averaging just over 1% per annum. Labour market outcomes improved consistently, with the unemployment rate declining from 11 per cent in 1997 to just over 6% in 2007-08. In an environment of low interest rates, with the repo rate being lowered to 1½ per cent in the summer of 2005, before being raised to 4¾ per cent during 2008, asset prices rose strongly, with Swedish house prices rising by close to 8% per annum in real terms over the decade to 2007. Globalisation also led to Sweden becoming more integrated in global value chains and global financial markets, raising the potential for cross-border and cross-market transmission of economic and financial shocks.

    - Once the financial crisis began to intensify and morphed into an economic crisis in the latter half of 2008, it spread rapidly across economies, leading to frequent and strong downward revisions to growth forecasts. Global trade collapsed in late 2008 and the early part of 2009, and private sector sentiment fell sharply. Output declined by 5% in Sweden in 2009, the unemployment rate rose by over 2 percentage points and the general government balance moved from a surplus of 2% of GDP

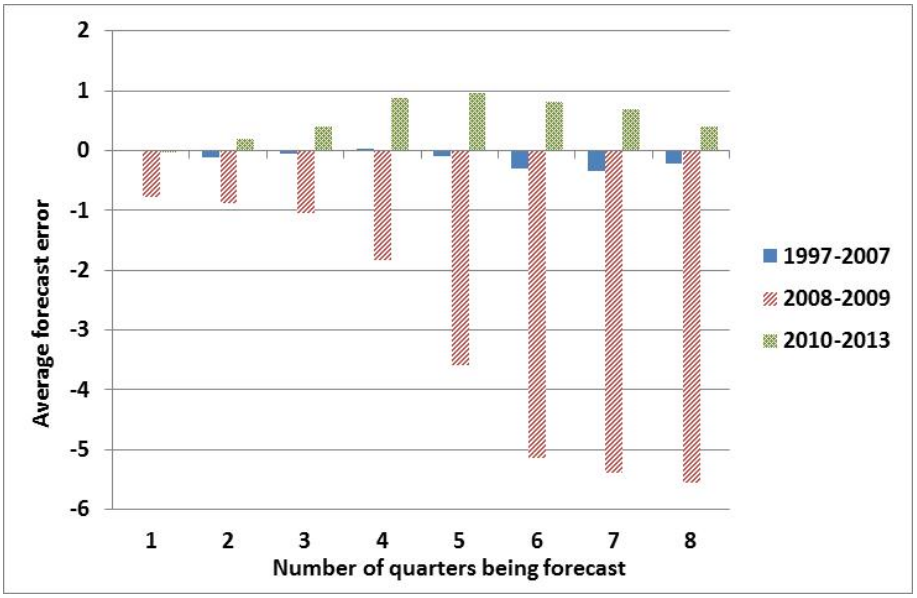
to a deficit of 1%. Consumer price inflation rose to 3% in 2008, pushed up in part by rising oil prices, but dropped back quickly as the recession took hold, oil prices plummeted and resource utilisation declined.

- The initial recovery beginning in the course of 2009 was rapid, with output growth in 2010 of over 6%, but thereafter growth has moderated, to just below 2% per annum over 2011-13, in part due to the headwinds from the euro area crisis. The unemployment rate has remained close to 8%, and, with relatively low levels of resource utilisation, inflation has steadily moderated to well below 1%.

9. A broad impression of the KI forecasting performance over this span of years is provided by a number of simple metrics, including the degree of bias in the forecasts and summary statistics of forecast accuracy (see Box 2 for details and Tables 2.1 to 2.3 in appendix 4 to this report). These metrics, as well as this report´s discussion of forecasting performance in general, consider a maximum forecast horizon of 8 quarters. Key features include:

   - The crisis period (2008-09) stands out as one in which forecast performance deteriorated markedly, especially for the forecasts made in the year ahead of that being forecast. Growth was much weaker than expected (Figure 1), unemployment higher, and government net lending much lower. This was not an isolated feature of KI forecasts but affected all national and international forecasters. There is some evidence, however, that by comparison with most other national forecasters, KI was relatively slow to appreciate the full scale of the recession (see Section 11 in appendix 4 and Figure 3, below).

Figure 1: Average errors in the KI annual GDP growth forecasts (percentage points)

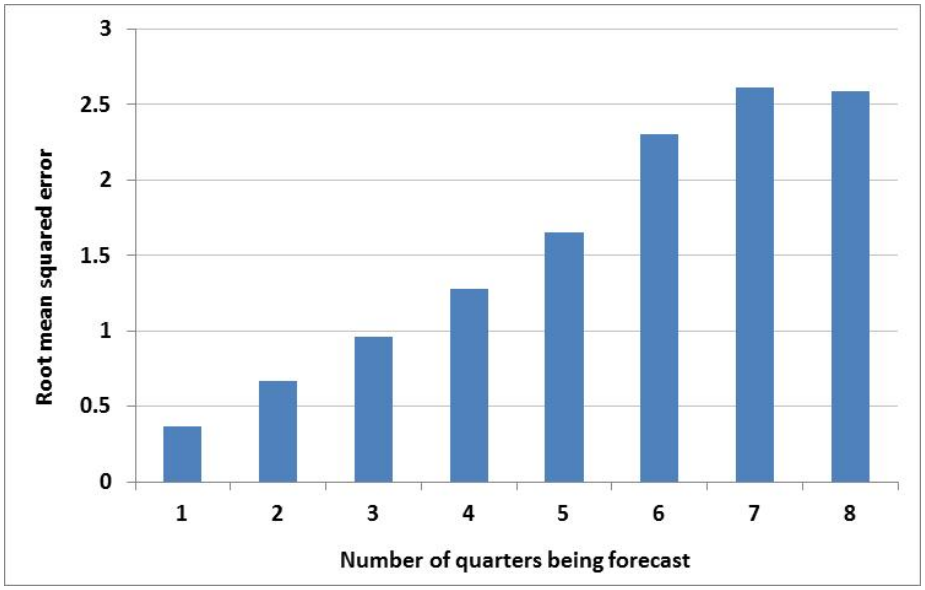


Note: A negative errors indicates that growth has been weaker than projected.
Source: Table 2.1 in appendix 4.

- Outside the immediate crisis years, forecast performance was broadly similar over 1997-07 and 2010-13, especially in terms of accuracy, indicating that the crisis years did not result in a lasting deterioration in forecasting ability.

- Looking across the forecasts at different forecast horizons, it is clear that forecasting is less accurate at more distant horizons, as would be expected. The largest errors occur in the set of forecasts for outcomes in the year following that in which the forecast was made. It is satisfying, if not unexpected, that indicators of error margins, such as absolute forecast errors and the root mean squared errors (Figure 2), generally tend to decline as the forecast horizon narrows.

Figure 2: Accuracy of the KI annual GDP growth forecasts (1997-2013)



Source: Table 2.3 in the appendix 4.

- Over the full sample, GDP growth has, on average been over-estimated by KI, especially in the year-ahead forecasts (Table 2.1 in appendix 4). This reflects relatively minor errors in the years leading up to the crisis, as well as large errors in the crisis itself. In contrast, over 2010-13, growth has been stronger than projected, although this stems from an under-estimate of the initial bounce-back from the crisis in 2010, with growth subsequently proving weaker than expected in 2012 and 2013.

- The bias in the GDP growth forecasts has implications for the other components of the KI forecasts (Table 6.1 in appendix 4). For instance, it is notable that unemployment usually turns out to be higher than projected when growth turns out to be weaker than expected, and vice-versa. Generally, forecast errors are not strongly correlated across variables, however. But when they are the correlations are mostly what would be expected, to the extent forecast errors are driven by unanticipated demand developments. An exception, observed at a few forecast horizons, is that stronger than expected GDP growth has been associated with inflation being weaker than anticipated (or vice-versa). This could either point to an influence from unanticipated supply shocks or some incoherence in the original forecasts.

- Somewhat surprisingly, given the tendency for growth outturns to be weaker than projected, general government net lending is, on average, more positive than projected (Table 2.1 in appendix 4). That

said, correlations between errors in the two tend to have the expected positive sign (Table 6.1 in appendix 4).

- The inflation errors are generally small, but there has been a tendency for core consumer price inflation (CPIF inflation) to surprise to the downside in recent years. In contrast, the rate of growth of the private consumption deflator has been consistently under-estimated. A full exploration of these differences is beyond the scope of this report, but it appears worthwhile to look into the causes of the seemingly inconsistent pattern of errors. At any rate, correlations between errors in the two inflation measures have tended to be positive.

Box 2. Data and definitions

Data

The results in this document make use of data sets of calendar year projections made by the National Institute and a number of other forecasters for a range of different economic variables in Sweden, over the period 1997-2013 in most cases. Eight different sets of projections are considered:

- Projections from the March, June, August and December issues of The Swedish Economy for outcomes in the following year. (These projections are labelled Q8, Q7, Q6 and Q5 respectively in appendix 4 to this report.)
- Projections from the March, June, August and December issues of The Swedish Economy for outcomes in the current year. (These projections are labelled Q4, Q3, Q2 and Q1 respectively appendix 4 to this report.)

The projection error is defined as the outturn less the projection, with the outcome in any given year being taken as the first officially published result in the year immediately after that being forecasted.

An issue for all evaluations of forecasting performance is the appropriate vintage of data to use, since the initial outturn estimates may not be especially reliable, particularly at times of rapid changes in the economy. But use of the latest vintages of data can result in the calculated forecast errors being misleading, since they can also contain changes to national accounting procedures and concepts that were not known about at the time of the projection. Thus the calculations in this report follow standard practice in using early realisations of the outcome.

Use is also made of a more detailed dataset of other forecasters' projections, with these projections assigned to the relevant quarter in which they are made. For example, January, February or March projections for the current year are all assumed to be comparable to the KI March projection (labelled Q4), even though there may differences in the information sets available for the different forecasters. The May and November projections published by the OECD and the European Commission are also included in the statistical analysis.

Key metrics

The descriptive evidence used in the main report focuses on two key measures of the size of the errors:

- The **average error**, a measure of bias, given by the average projection error (defined as above) over a given period (Table 2.1 in appendix 4).

- The **root mean squared error (RMSE)**, which is a measure of accuracy, calculated by squaring individual errors, then averaging these over the time period shown and taking the square root of the result (Table 2.3 in appendix 4).

In addition, the report considers the correlation of errors across different variables at various forecasting horizons (Table 6.1 in appendix 4) and it also breaks down the error metrics for the most important variables into contributions from errors in sub-components (Tables 3.1 to 3.3 in appendix 4).

Analysis of forecast errors in Sweden is frequently undertaken by combining all of the separate forecasts of outcomes in a given calendar year (i.e. Q8 through to Q1) and calculating the key forecast metrics by averaging across these forecasts. While a useful summary measure, this mixes together forecasts for very different forecast horizons. When making comparisons across forecasters, it also becomes more difficult to assess whether some forecasters are better or worse at particular forecast horizons, or are quicker to revise their forecasts as new information appears. In the analysis in this report an alternative, widely-used approach is adopted, comparing each set of competing forecasts for a given forecast horizon (i.e. all Q8 forecasts, all Q7 forecasts, etc). This gives a better sense of differences across forecasters over time, and also enables the less frequent international organisation forecasts to be included.

Forecast evaluation tests

A number of statistical tests of forecast properties are discussed in the main text of this report, with a more detailed analysis in the accompanying appendix 3 and appendix 4. Those discussed include the following:

- **Unbiasedness**: tested by a pooled regression of projection errors on a constant (see, for example, Figures 4.1 to 4.15 in appendix 4). Unbiasedness requires that α=0 in:

$$Error_{it} = \alpha + \varepsilon_{it}$$

- **Information content and efficiency**: tested by a pooled regression (Table 5.1 in appendix 4). Informative projections have a statistically significant β in:

$$Outcome_{it} = \alpha + \beta Forecast_{it} + \varepsilon_{it}$$

  Efficient projections have α=0 and β=1. An informal requirement for efficiency is that the RMSE gets smaller as the forecast horizon shortens (i.e. the RMSE of Q7 forecasts should be smaller than those of Q8 forecasts etc.)

- **Encompassing**: tested by regression of the outturn on the KI projection and the projection of an alternative forecaster (Section 10 in appendix 4). If the alternative forecast contains information relevant for predicting the outcome over and above the information in the KI forecast, then the estimated coefficient on that forecast should be statistically significant.

10. Formal statistical tests of the properties of the KI forecasts can be used to identify whether any of the issues above are statistically important, and areas for concern. The properties assessed include whether the projections are unbiased and efficient (see Box 2 for details and Figures 4.1 to 4.15 and Table 5.1 in appendix 4 to this report). These tests generally provide favourable findings for the KI projections. Key results include:

    - For the main forecast variables (GDP growth, inflation, unemployment and government net lending), the observed biases are generally not statistically different from zero. The sole exception is for net lending, where there is some evidence of significant under-estimation of net lending, related to some overestimation of expenditure. At a more detailed level, there is evidence of some over-prediction

of household consumption and under-prediction of public consumption. Both employment and the labour force are under-predicted at some forecast horizons.

- Standard forecast evaluation tests generally suggest that the majority of KI forecasts are weakly efficient in the sense that the eventual outcome reflects the projection on a one-to-one basis with no bias; indeed the core inflation projections are weakly efficient at all forecast horizons. The main exceptions are: the year-ahead forecasts of unemployment and inflation (as measured by the private consumption deflator); and the net lending forecasts made just before and just after the beginning of the year being forecasted.

11. Additional insights into the sources of errors in the KI forecasts can be obtained by looking at the components of the main forecast aggregates and their properties (see Tables 3.1 to 3.3 in appendix 4 to this report). These highlight a number of areas in which it might be possible for the KI to improve its forecast practices:

- The GDP growth errors largely stem from the tendency to over-estimate private consumption growth, the largest component of GDP, as well as investment and exports, with a corresponding over-estimation of import growth providing a partial offset (Table 3.1 in appendix 4).

- Improvements may be needed in the techniques used to forecast private consumption growth. Most of the forecasts made for growth in the following year exhibit statistically significant bias (Figure 4.2 in appendix 4). Moreover, the accuracy of the forecasts are not very different (and in some cases poorer) than the accuracy of the forecasts of fixed capital formation, even though the latter is much more volatile and difficult to forecast. The assumptions KI makes about asset price developments and household wealth could usefully be published, to help users understand the consumption forecasts and assess whether these assumptions are a source of error. It may be significant that private consumption is forecasted in considerable detail by the KI – at a minimum, the resources used in this exercise do not appear to have had much impact on the accuracy of the aggregate forecasts and there could possibly be a risk of missing the overall picture.

- Some improvements may also be needed to the methods used to project labour supply and labour demand. Labour force growth is consistently under-estimated in the projections, sometimes significantly (Figure 4.12 in appendix 4). This suggests that improvements could be necessary in the methods for projecting labour force participation and possibly also the impact of active labour

market programmes. In addition, employment growth is often stronger than forecast, despite the tendency to over-estimate output growth, raising questions about the ways in which these factors are linked in the projection process. In part, this mix of errors may reflect a tendency to be over-optimistic about labour productivity growth.

- The tendency for government net lending to be higher than projected stems largely from over-estimates of the future growth rate of government expenditure, sometimes significantly so (Table 3.1 and Figures 4.7 and 4.9 in appendix 4). Over 1997-2007 this is likely related in part to the projection convention of forecasting expenditure based on "unchanged rules". It is worth verifying that current methods to project the short-term growth of government expenditure have removed the past tendency for forecast error.

12. A further indication of the performance of the KI forecasts is provided through a comparison of their forecasts relative to those made by other forecasters (see Tables 8.1 to 10.3 and Section 11 in appendix 4). Key findings include:

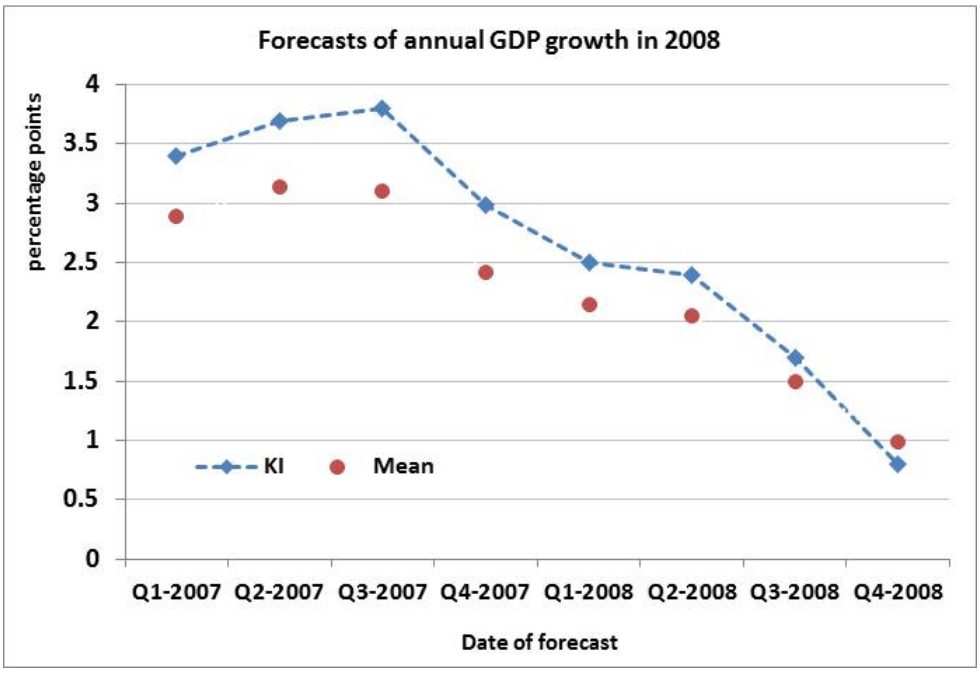
- Overall, the properties of the KI projection errors are very similar to the errors in the projections made by other forecasters of the Swedish economy, including the OECD and the European Commission. In part this may reflect a tendency towards "groupthink" amongst forecasters, with the KI forecasts acting as an important benchmark for others.

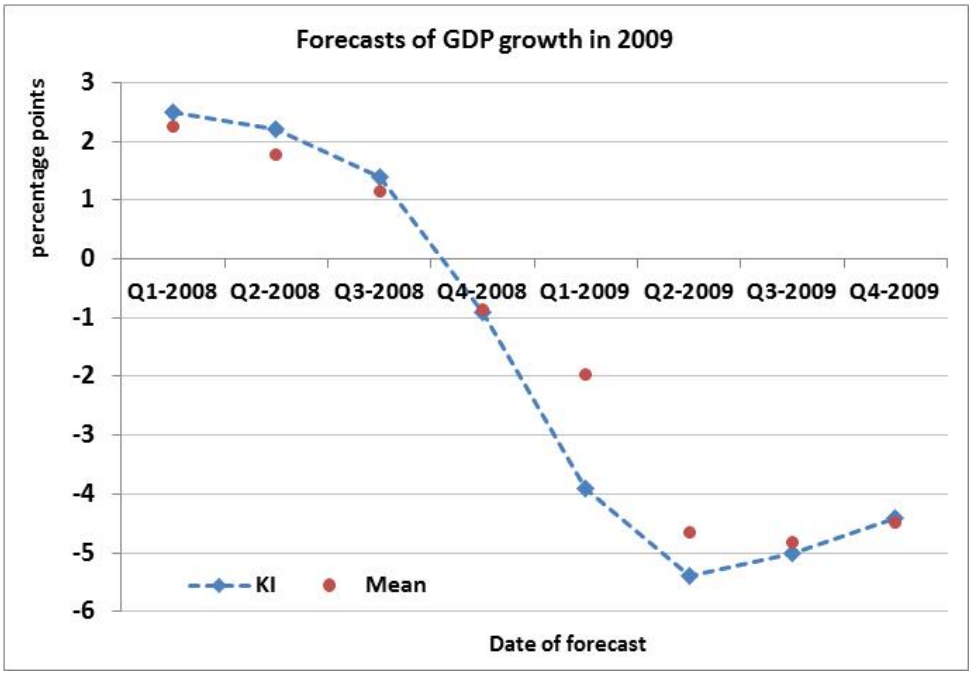
- The tendency of the KI to over-estimate future GDP growth outcomes is more pronounced than the average of the set of alternative forecasts. This seems largely to stem from the crisis years, when KI was relatively slow to revise down their GDP growth projections as the crisis deepened, lagging other forecasters (Figure 3), but there has also been some tendency for the KI to be relatively optimistic at times in recent years.

- Formal statistical forecast comparison tests of the different forecast institutions generally suggest that the institutions perform equally well, and that there is relatively little information in other forecasts that could be used to improve the KI forecast, other than possibly for GDP growth and unemployment at more distant forecast horizons (i.e. the forecasts made in the first half of a year for outcomes in the following year).

13. All of the metrics discussed above are necessary components of a full assessment of forecast accuracy. On an absolute basis, forecast accuracy needs to be evaluated using both quantitative indicators, based on formal statistical tests, and qualitative measures, such as whether forecast accuracy improves as the forecast horizon shrinks. Efforts should also be made to try and identify some of the factors behind errors in forecasts of aggregate measures such as GDP growth. On a relative basis, it is important to evaluate the performance of an individual forecast against alternative competing forecasts. Assessments of relative performance also need to make use of both quantitative indicators, such as statistical tests of whether other forecasts contain useful information that could improve the forecast being considered, and quantitative indicators such as the evolution of different forecasts around particular events.

Figure 3: The evolution of KI and consensus forecasts for annual GDP growth in 2008 and 2009





Note: Mean denotes the average of the projections made by other Swedish forecasters in the quarter concerned.

Source: Based on material in Section 11 in appendix 4.

Additional issues for consideration in the context of short-term forecasting

The KI forecasts of external developments

14. The expert group has not considered the performance of the KI forecasts of economic developments in other countries. This is a large undertaking by KI, although the resources devoted to the exercise have been declining over time. Quarterly growth and inflation forecasts are made for up to 16 countries that are among Sweden's largest trading partners, and annual forecasts are made for up to 25 other economies. Given the importance of these projections for outcomes in the open Swedish economy, a review of the performance of the KI forecasts for other economies is merited. Consideration should be given as to whether forecasts from international organisations or consensus forecasts could be used instead, with a further shift of resources away from this activity.

The use of quarterly data

15. The KI forecasts are constructed using quarterly national accounts data, but the main presentation of the forecasts is on an annual basis. Whilst the annual forecasts are normally the main focus of interest, quarterly forecasts also contain useful information for consumers of forecasts. They show the path by which the annual outcomes are obtained, and, in particular, whether growth and inflation rise or slow over the course of the year, or what happens around turning points in economic activity. Some information on the KI quarterly forecasts is available on the KI website, but not communicated directly in the main forecast publications (except in figures). The main reason for this is that, in a context of sometimes volatile national accounts data, it is judged to be too difficult to communicate the need to either adjust the most recent official data from Statistics Sweden or offset it in the following quarter to derive what is thought to be plausible annual outcomes. However, these issues are natural ones facing all forecasters and should be handled by KI in a transparent manner, with explicit publication of the quarterly path for a number of key forecast variables, including GDP growth, consumer price inflation and unemployment.

The KI projections of tax revenues

16. A peculiarity of the KI fiscal projections is that the initial forecasts for tax receipts are based on estimates supplied to KI by the Swedish National Financial Management Authority (ESV). The ESV makes use of the KI macroeconomic information to derive the revenue projections, which are supplied to KI on an accruals basis (the standard accounting format for the public finances) and then converted by the KI into a national accounts basis. The final KI numbers for tax revenues may also include additional revisions made by KI if

its final macroeconomic forecast differs from that initially provided to the ESV. This process lacks transparency and reduces the independence of the KI projections. Accordingly, the KI should consider whether it has sufficient internal resources available to undertake a sufficiently detailed set of tax projections itself, something which is common in most other forecasting organisations. This would ensure full consistency between the projections of the tax base and tax revenues. Second, it would help the public debate and improve transparency if KI were able to also publish their fiscal forecasts on an accruals basis, since this would enable direct comparisons to be made between their fiscal projections and those of the Ministry of Finance. Finally, KI could also consider the potential usefulness for its forecasts of the high-frequency information on central government tax accruals available from the Swedish National Debt Office.

Assessments of the output gap

17. Judgements about the extent of spare capacity in the economy, as reflected in the economy-wide output gap, play an important role in assessments of macroeconomic policy and associated policy advice. At the same time, the output gap is highly uncertain, being unobserved and frequently prone to revision as new data emerges. The KI measure of the output gap is built up from estimates of potential productivity and potential hours worked.

    - Potential productivity consists of a model-based estimate of business sector productivity, plus an assumption that public sector productivity will rise by 0.2% per annum, in line with its historical average growth. No direct allowance is made for the capital stock in the calculation of potential output.

    - Potential hours worked reflects a combination of potential employment and estimates of potential hours worked per person in employment derived by using a statistical filter. Potential employment is obtained by combining estimates of the equilibrium unemployment rate (the unemployment rate prevailing when the labour market is in equilibrium) and estimates of the potential labour force. The equilibrium unemployment rate estimates are, in effect, largely judgemental, based on evidence from econometric models and from considerations of broader developments in the labour market, including changes in government policies, movements in long-term unemployment, and information from the Economic Tendency Survey. Historical estimates of potential labour force growth are based on actual growth adjusted for cyclical fluctuations (the difference between actual and equilibrium unemployment). Future labour force growth is projected using demographic trends, with

judgements about any economic policies that are likely to influence labour force participation. As noted above, there has been a tendency for under-prediction of labour force growth.

18. Overall, the methods used by the KI to estimate potential GDP seem reasonable and in line with those used elsewhere. A large number of different calculations and judgements are required, but this is also the case in other approaches, with the full production-function-based estimates of the OECD and the European Commission, that include capital stock estimates, being even more complicated. Like these other institutions, the KI is focussing on a concept of the cycle that is related to productive capacity and inflationary pressures and is, hence, open to the objection that the nature of the cycle may have changed with a greater role for financial developments and asset prices in shaping cyclical developments. In consequence, a decomposition of economic developments into trend (potential) and cycle that is based on notions of capacity alone may lead to faulty assessments.

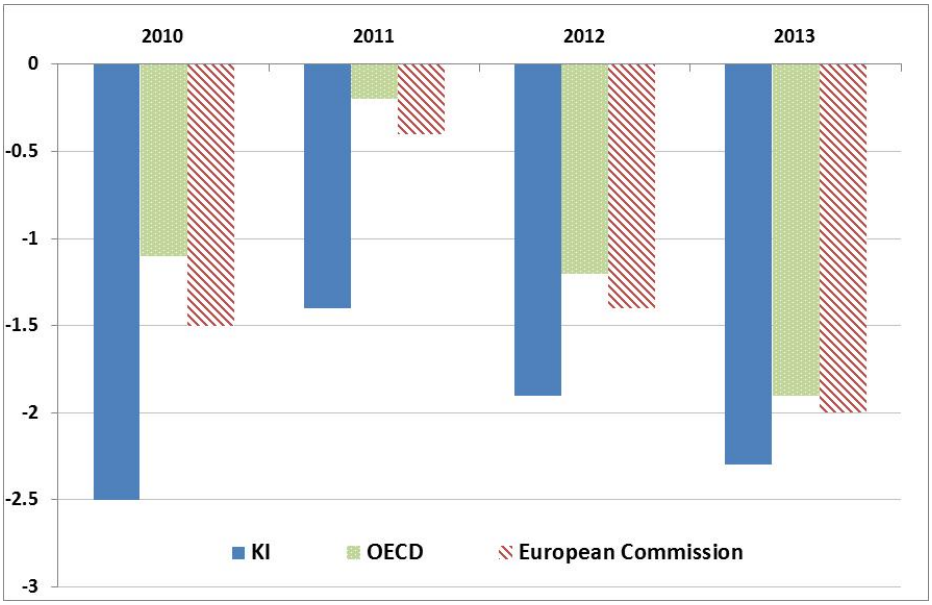
19. Keeping that issue aside, and given the importance of the output gap in the policy debate, there are some aspects of the KI estimates that need to be examined closely and could be incorporated into KI policy assessments:

- The KI estimates of the output gap are different from those of other forecasters, including international organisations. For instance, over 2010-13, the KI estimate of the output gap in Sweden has been over ½ percentage point more negative than the estimates by the OECD and the European Commission (Figure 4), implying that KI considers that there is more spare capacity in the economy than the other two forecasters do. Indeed, this seems to be a long-standing consideration; over 1995-2013, the average output gap in the KI June 2014 release is around -1.4 percentage points, whereas the corresponding average gaps in the OECD and European Commission May 2014 estimates are only -0.3 and -0.5 percentage points respectively. These differences point to the uncertainty in output gap calculations, including estimates of potential output growth (see below). Accordingly, KI should consider whether to give greater prominence to this uncertainty in its policy assessment and advice.

- The KI output gap estimates also differ noticeably from those of the Ministry of Finance. The government output gap estimate in 2013 is -2.9 percentage points (based on the April 2014 Convergence Programme sent to the European Commission) compared with the -2.3 percentage points estimate of the KI. This influences the policy debate, since it will likely account for a considerable part of the differences between the government and KI assessments of the fiscal

situation and future policy needs. The factors behind the different output gap judgements are not easy to identify, but include an assessment of potential growth by the KI that is less buoyant than that of the government. Divergences seem likely to reflect, inter alia, differing views on the speed at which past economic policy reforms, such as the tax credit on earned income and changes in the unemployment insurance system, have their full impact in the labour market. The KI is of course free to disagree with the government (and international organisations), but could usefully consider whether it can contribute to the public debate by identifying more clearly the differences between its views on the output gap and potential growth and those of the government, and quantifying the impact on its fiscal assessments from adopting the government's estimates.

Figure 4: Different estimates of the output gap (per cent of potential GDP)



Source: NIER, *The Swedish Economy*, June 2014; OECD *Economic Outlook*, May 2014; European Commission *Spring Forecast*, May 2014.

The use of background models in the forecast process

20. KI has a longstanding annual dynamic macroeconomic model of the Swedish economy, KIMOD, recently converted to a quarterly basis. This is used to derive forecasts two to five years ahead (and sometimes for a year ahead), and also for different scenarios around the baseline forecast. An example of the latter is the use of the government's fiscal policy assumptions instead of KI's own assumptions. In addition, KI have a sizeable number of different smaller models that are used as inputs in the forecast process,

including a "nowcasting" indicator model for GDP growth making use of information from the business tendency survey and other monthly variables. Despite this, the forecast itself is not model generated, but instead reliant on expert judgement and a number of background assumptions, which are informed by the different model outputs. The roles of these different factors are discussed in the KI quarterly forecast reports, but more could be done to aid transparency for forecast users, to identify the sources of forecast errors and to make the models used more visible in the forecast publications. In particular:

- Consideration could be given to including a box in the regular forecast publications setting out in detail the main background assumptions made, including asset price developments (especially house prices) and household balance sheets. Boxes could also be included setting out some of the main model-based analyses to aid users' understanding of the main economic forces at work, including the results of the nowcasting model of GDP growth.

- The implicit add factors in the forecasts could be explored more systematically by the KI, making use of KIMOD. This would be a useful discipline, by identifying more clearly when forecast judgements depart from model-based estimates, or new national accounts data are outside past norms. It could also be used by KI to decompose their forecast errors into the contributions from judgements, errors in background assumptions and data revisions. Moreover, this would also enhance incentives to keep the main macro-model fully up to date.

- A common use of macro models is to provide simulation "ready reckoners", setting out the typical economic impact of a variety of different macroeconomic and financial shocks. Examples of such shocks include a change in the exchange rate, a change in interest rates or an expansion in government expenditure. Such simulations provide a way of identifying particular problems in the model and also a way for others, especially policymakers, to obtain a broad guide to the likely effect of these shocks on GDP growth, inflation and unemployment. If KIMOD was used for this purpose, it would further enhance the incentives to keep the model up to date.

The analysis of risks

21. All projections are subject to sizeable uncertainty and prone to error. The financial crisis serves to highlight how rare, but extremely costly, events can result in exceptionally large forecast errors, with the speed and depth of cross-country and cross-sector spill overs proving far greater than anticipated. Given the limits to what can be expected from forecasts, as much attention should be paid to the distribution

of risks as to the point forecasts themselves, with the risks communicated fully to forecast users. Risks are discussed occasionally in boxes in the KI quarterly forecast publications, and historical forecast errors are published annually, but much more should be done by the KI to inform users of risks around the forecasts. In particular:

- The KI forecasts are, in principle, modal forecasts (i.e. the most probable out of a set of different possible forecasts) and thus the distribution of risks around the main forecast can be either balanced or skewed or bimodal. In practice, however, the use of time series models to calibrate the short-term forecast may render it close to a mean forecast. Qualitative guidance on the shape and balance of risks around the projection, and how it is changing, should be communicated clearly in all the main KI forecast publications, alongside discussion of the principal national and international risks identified.

- Consideration could also be given to the presentation of the assessed numerical risk distribution in the form of a fan chart or in the form of forecast ranges for key variables. Putting confidence bounds around the fiscal projections – representing the subjective assessment of macroeconomic risk - would be an important contribution to the public debate and to the ongoing monitoring of fiscal developments, as would publication when relevant of alternative scenarios under different fiscal policy assumptions.

- More generally, greater use should be made of quantitative scenario analyses to illustrate alternative outcomes and their implications for the Swedish economy. These could include analyses of external shocks to demand or commodity prices, or internal shocks such as changes in house prices.

The "top-down" component of the forecast process

22. The aftermath of the global financial crisis has led to changes in forecasting procedures in many forecast organisations, including some in Sweden. In particular, the forecast process typically has become more centralised in its early stages, with the "top-down" component of the forecast process having been increased. Many forecasters now make an early identification of key developments and risks and their quantitative importance for the overall forecasts of the economy. This ensures a consistent view across the forecast team of the main forces shaping the forecast and the implications for the outlook and minimises the resources needed to bring about a more consistent picture at a later stage. In contrast, the information provided to the expert group suggests that the KI forecasts in many areas remain a

"bottom-up" process, with each component of the forecast being undertaken separately and then, if necessary, reconciled to give the finished picture.

Fiscal forecasts and analysis of budget sustainability

23. Projections of the government budget and advice about the appropriate fiscal stance are among the crucial outputs of the KI. This includes both the near-term views on the appropriate use of fiscal policy as an influence on activity while at the same time respecting the medium-term fiscal rules, and the analysis of long-term fiscal sustainability.

Fiscal policy in the projections

24. The KI fiscal projection for the first year of the forecast period is an essentially positive projection of the most likely fiscal outcomes based on government budgets, announcements, proposals and statements. Thereafter, over the medium term, the fiscal projection embodies a return towards the government's stated fiscal policy rule (to the extent there is an initial discrepancy). The speed of return is judgemental, reflecting the KI assessment of what is likely given other aspects of the forecast (for the fiscal/monetary/prudential policy mix, see the relevant section below). Overall, this approach seems sensible. However, its implementation raises a number of issues concerning the assumptions and discrepancies vis-a-vis the government's stated intentions.

25. The KI has operationalised the fiscal rule in a way that allows the Institute to assess deviations from the government's rule in individual years (see Box 3). This approach permits a transparent quantification to be made of the change in fiscal policy required to return to the fiscal norm. This metric could usefully be given greater emphasis in the quarterly forecast reports. It should be kept in mind, however, that the fiscal policy assumptions that result from applying the operationalisation of the fiscal rule do not necessarily correspond to those that would result if the fiscal rule was applied as stated by the government. In contrast, the government assumptions embody a significant degree of judgement including the dating of the business cycle. Experience in other countries, not least the United Kingdom, has shown that fiscal rules expressed as behaviour over the business cycle can lead to significant uncertainty as to whether fiscal policy is on course to meet the norm or not. Against this background, we think the operationalisation applied by the KI is very useful.

Box 3

The National Institute's operationalisation of the main fiscal rule

The main fiscal rule of ensuring general government net lending of 1 per cent of GDP over the cycle leaves scope for interpretation, given that it is rare to be at a point in time when a business cycle can be declared finished. Against this background, the KI has developed an operationalisation based on the premise that the average output gap is not equal to zero over the business cycle. The Institute's estimates suggest that the average output gap is around -0.5. With the KI's implicit elasticity of the budget balance wrt. to output of -0.4, the "required" structural budget balance is 1.2 per cent of GDP. With the KI calculating the structural budget balance in any given year, it can gauge the deviation from the government's main fiscal rule and, hence, the need for correction over the medium term. While the estimate of the cyclical elasticity may appear surprisingly low, a higher elasticity of, say, -0.6 would only raise the required structural budget balance to 1.3 per cent of GDP. Hence, in terms of gauging the deviation from the "required" budget position, uncertainties around the estimated output gap are likely to far outweigh the uncertainties relating to the budget elasticity.

26. In practice, the KI estimates are based on a cyclical adjustment of budget outcomes. This adjustment seems surprisingly modest in quantitative terms. OECD estimates would put the cyclical sensitivity of government budgets in Sweden somewhat higher - a 1 percentage point output gap change leading to a change in net lending of 0.55 per cent of GDP, as opposed to 0.4 per cent under the typical cyclical adjustment applied by the KI. The KI cyclical adjustment seems to be a fairly simple one, assuming that individual tax bases return to their historical shares in GDP as GDP returns to potential (and the output gap is closed) and applying the current implicit tax rate to that hypothetical tax base. Hence, no allowance is made for tax payments reacting disproportionately to changes in tax bases. There is no adjustment made for the effect of the asset price cycle on revenues, though, admittedly, this is very difficult to implement. Nonetheless, it should be kept in mind that there is such an effect in practice. It is beyond our capacity to assess the quantitative effect of what appears to be a surprisingly low cyclical budget elasticity. However, to the extent there is an effect, it will make fiscal policy advice and fiscal policy in the KI projections overly pro-cyclical, since an excessive part of a fiscal deficit in a weak conjuncture will be ascribed to the structural position. Overall, it would seem that there could be a need to review the assumed government budget sensitivity and to consider ways in which to assess the budgetary implications of asset price developments.

27. The need for fiscal policy change to observe the budget norm depends on what is assumed about government spending in the absence of new decisions, i.e. what is the baseline level of government expenditure. The KI follows a set of fairly simple and transparent rules in this regard. These rules have the advantage that they seem consistent with economically and politically sustainable developments over the long term. Thus, constant replacement rates are assumed in various social transfer systems and government employment is set to grow in line with demographic influences on user demands. With the expenditure side essentially fixed on this basis, and a need to return to the fiscal norm over the medium term, changes to taxation over and above cyclical effects are essentially determined residually. While this is a sensible approach, more could perhaps be done to clearly communicate the results.

28. While the expenditure assumptions adopted by the KI are clear and defensible, they suffer from a weakness in not being similar to those employed by the government. For instance, the government projections are based on income transfers being either fixed in nominal terms or adjusted for price inflation only. Moreover, only very slow government consumption growth is assumed. The KI includes in its quarterly reports a few headline budget indicators based on a variant projection based on "unchanged rules", which comes close to applying government assumptions. Nonetheless, given the important role of the KI in providing a second opinion on fiscal developments, it is unfortunate that so little information and systematic comparison is provided on the two scenarios. Indeed, it may be useful to present the fiscal assumptions behind KI's main projection in a way that allows it to be seen where changes in budget outcomes come from: cyclical changes, changes in government spending due to the assumptions made, and the residual need for higher tax revenue. The latter could then be broken down into the effect of higher baseline spending growth than assumed by the government and the need for tax increases that would exist even under government assumptions.

Long-term fiscal sustainability

29. The KI has in recent years undertaken assessments of long-term fiscal sustainability. While these assessments have made use of the S2 metric employed in EU policy discussions, KI has sensibly chosen not to over-emphasize a single number produced under strong assumptions. Furthermore, the Institute has undertaken the assessment based on different sets of assumptions and pays attention to the trends over time in various budget items. Indeed, this focus on underlying trends could usefully be strengthened even further.

30. With this exercise having been started only very recently, there have understandably been some changes to procedures and assumptions employed from one vintage to the next. Regrettably, these changes have made it impossible to compare the results between different vintages of the sustainability analysis. However, the objective must be to ensure that the exercise is stabilised in a way that makes such comparison possible, allowing a breakdown of changes in sustainability results to be attributed to various well-identified causes, including changes in the starting point of the exercise.

31. Stabilisation of the exercise may not be imminent, however, because certain assumptions would still seem to be in need of some recalibration. For example, the assumption of a constant retirement age would appear unreasonable in a context of rising longevity and with a pension system that takes such increases into account. It is already planned to alter this assumption. The way demographic change enters the government spending projections may also require refinement. For example, it is assumed that relative spending between age groups is frozen, whereas much evidence suggests that rising longevity is accompanied by changes in such relativities when it comes to spending on health and long-term care, two of the most dynamic spending components. The assumptions presently made by the KI would seem to provide an overly gloomy impression of spending pressure in that area and could usefully be re-visited. Such specific issues apart, however, the overall approach used in the analysis of long-term sustainability issues seems like a sensible one.

32. As for the near- and medium-term projections (discussed above), comparability with government analysis is also an issue for the sustainability exercise. More specifically, none of the three sets of assumptions on which the KI's three long-term budget scenarios are based correspond to that of the Government. To facilitate discussion and to ease identification of causes for divergent results, the KI might usefully produce a long-term budget scenario with assumptions as close to those of the government as feasible given differences in publication dates.

Wage Formation Reports

33. Once a year, the KI issues a report which serves as a backdrop to wage negotiations. The basic idea behind the request to produce such a report, first made in 2000, is to provide wage bargainers with a picture of the macroeconomic environment. This, it is believed, will allow them to better internalise economy-wide framework conditions in their bargaining positions. A precondition for such an effect is that the KI be seen as an unbiased observer and that its forecasts are seen as informative. Indeed, the KI underlines that the report does not provide normative views on wage developments.

34. In practice, it is difficult to provide information on the macroeconomic environment without also conveying a sense of what it implies for wages. Thus, the reports not only provide the KI's forecasts for wages but also provide projections of wage increases based on estimated wage equations. Moreover, the reports discuss the return on capital in the business sector which is obviously related to enterprises' ability to pay wage increases. The 2013 report, like some of its precedents, also included model simulations illustrating the effects of lower wage increases than in the KI's main projection. These simulations were useful in illustrating the importance of the monetary policy reaction to lower wage inflation for the overall outcomes, hence highlighting the potential importance of credible commitments on the side of wage bargainers that would allow forward looking monetary policy to react to wage moderation. But it seems a little hard to argue that there were no normative overtones in the discussion. At the same time, however, it illustrated the potentially important role the KI could play in identifying trade-offs and interdependencies in-between different policy areas and private sector behaviour, as discussed further below.

35. The interlocutors met by the Expert Group generally agreed that the KI was playing a useful role in providing an analytical background to wage negotiations. The implication seemed to be that a better alignment of interests between those involved in the wage negotiations was achieved, thus allowing better employment outcomes for a given rate of inflation. We do not have information that would allow us to either affirm or infirm that view. Indeed, since the counterfactual does not exist it is very hard to say what the Wage Formation Reports achieve. To our knowledge no attempts have been made to try to ascertain whether there are any effects. Although faced with the fundamental problem of the non-existent counterfactual, it would seem warranted to examine circumstantial evidence, and possibly also survey evidence, to see whether such effects seem likely or not.

36. A possible indication can be gleaned from the 2013 Wage Formation Report, which contained estimated equations for negotiated wages and for actual wage outcomes. If the wage reports have an effect, it would seem likely to relate to negotiated wages only - decentralised wage-drift being unlikely to take information on the broader macroeconomic environment into account. The equation for negotiated wages has been estimated over the period since 1980 and does not - judged by the residuals - seem to reveal any breaks in this aspect of wage formation following the publication of Wage Formation Reports (though if a change in behaviour were reflected in the wage share – one of the explanatory variables - it could be picked up in the equation by this variable and hence not show up as a structural break). Hence, no prima facie evidence appears in favour of an effect. Turning to total wage inflation, the preferred equation for this wage concept implies an impact of negotiated wages which is substantial, but less than

unity. Hence, to the extent negotiated wages are affected, this could carry through into actual wages to a considerable extent. Put differently, persistently lower negotiated wages as a result of the Wage Formation Reports could in principle have led to lower unemployment than would otherwise have been the case. Overall, this at best flimsy evidence does not identify any direct effects of the reports on negotiated wages but to the extent such effects exist, the equations point to better employment outcomes as a potential benefit. Clearly it must be possible to do much better to identify effects of the Wage Formation Reports.

37. Over time, the Wage Formation Reports have increasingly taken up a number of specific labour market and wage related issues for in-depth analysis. Indeed, very useful contributions have been made on topics like structural unemployment, wage inequality, gender differences, matching efficiency, and the effects of structural policies. Whereas the jury would seem to be still out as concerns the wage effects of the Wage Formation Reports, there can be little doubt about the utility of these analytical contributions.

The policy mix in the forecast and the discussion

38. In its projections, the KI sets short-term interest rates based on what it assumes to be the central bank´s reaction pattern, including to asset price developments, without being overly transparent about the exact implementation of this principle. In recent circumstances, with strong asset prices, the resulting projected activity and inflation pattern has then been weaker for longer than would be desirable on the basis of price stability grounds alone. At the same time the KI has argued that, in such weak circumstances, it is unwarranted to take into account asset prices. The monetary policy path built into the projection has thus been one that the KI considered inappropriate for the projection. With the pace of return to conformity with the main fiscal policy rule being set in a judgemental manner, reflecting KI´s assessment of how the government responds to the broader economic environment, including the weakness created by a tighter monetary policy than judged desirable, fiscal policy in the projection might be seen as dependent on a monetary policy path that the KI disagrees with. At the same time, however, this has led the projections to be closer to what the KI regards as the most likely outcome.

39. There is clearly something to be said for aiming to forecast the most likely outcome, as the KI does. However, the trade-offs between fiscal and monetary policy involved in the projection could usefully be set out more clearly than is currently the case. This remains the case even after the recent monetary policy easing, which has taken policy in the direction desired by KI and hence alleviated the conflict described above. A clearer statement could also be made about the terms of the trade-offs that lie

behind the short-term interest rate projection. Indeed, the KI would seem well placed to discuss and to analyse, including by means of macroeconomic model simulations, these policy mixes and trade-offs. Clearly, the separate macroeconomic policy institutions (the Riksbank and the Ministry of Finance) do not openly engage in such a discussion for fear that any statements perceived as revealing disagreements would lead to a loss of credibility. But the KI is in a much better position to lead this discussion, which is extremely important for Sweden.

40. Actually, the KI has taken the lead in discussing the interactions between wage formation and monetary policy setting, illustrating that wage moderation can lead to superior employment outcomes – but only if monetary policy responds to it (see above). It is a matter of debate whether wage moderation is actually something that can be committed and adhered to in a way that makes it possible for monetary policy to respond. The example is nonetheless illustrative of the kinds of discussions that could take place.

41. Indeed, there is a wide variety of policy interactions and trade-offs that could usefully be discussed and analysed. In addition to those mentioned above, there is the relationship between prudential and monetary policy. More generally, this may be a topic that could merit greater interest from KI. And the interactions between structural reforms, fiscal policy and monetary policy could also usefully be analysed. This could cover both the influence of interactions and trade-offs on a particular projection and also discussion of superior policy approaches to the ones embedded in the projection.

Resources

42. As noted in the introduction, the Expert Group does not feel equipped to express views on the adequacy of the overall resources of the KI. However, the above analysis clearly has some implications for resource allocation.

43. According to the accounts, approximately three quarters of the KI forecasting department's resources go into forecasting and related analysis and communication. However, in the accounts most of the department's overheads are attributed to this item. A judgemental estimate provided by the KI suggests that with a more proportional allocation of overheads, forecasting and related activities absorb approximately two-thirds of resources. On the same basis, modelling would account for about 10 per cent of resources. And various specialised analyses (the words ad hoc may have a negative connotation that we would not attribute to these typically very useful analyses) absorb about a quarter of resources.

Specific considerations for resource allocation

44. Many of the recommendations and considerations presented above have implications for the allocation of resources. In particular:

- The KI has already reduced the resources it devotes to monitoring of the international economy. Still, the presentation of the international context could easily build more on work by international institutions, which provide estimates of market growth, effective exchange rates, etc. as a matter of course. Hence, unless further use can be made of international inputs throughout the quarterly reports, rather than just in the section devoted to the international economy, we think further reallocation of resources away from this area may be warranted.

- The degree of detail of the projections may in some cases be warranted, for example in order to provide projections of relevant individual tax bases. However, the overall forecasting record of the KI does not indicate that the returns to detail are particularly high in terms of overall forecast accuracy. This may suggest reallocating some resources away from areas where forecasts are currently very detailed. To the extent there is external demand for detailed information, such demand may be of a nature that would argue for at least some co-payment.

- An area which may seem somewhat under-emphasised in the present set-up and where resources seem not to have been allocated on a durable basis, despite a temporary reallocation during the crisis, is the analysis of financial market influences on economic developments. Apart from better understanding these influences in general, a reallocation of resources in this direction could also provide a basis for taking more informed views on prudential policy and its interplay with other policies and the economy at large.

- The KI is under obligation to produce and maintain models for the Ministry of Finance. Hence, resources going into model development and maintenance can probably not be reduced further. However, once resources have been ploughed into development and maintenance, greater use should be made of the models, in particular KIMOD, and it should be considered whether to allocate further resources for that purpose. In particular, further illustrative policy analysis – including discussion of policy trade-offs – would seem to hold promise as would greater use of the model as a cross-check on short-term projections (through examination of equation residuals).

- Related to increased use of KIMOD, the analysis of trade-offs and interdependencies between fiscal, monetary, prudential and structural policies, and possibly also wage formation behaviour, would seem to be currently under-developed area that could usefully receive more resources.

- As stated at the outset, we do not feel equipped to take a view on the kind of activities that might be pursued by an institution such as the KI. However, to the extent it would not undermine credibility, an amalgamation of the KI and the Fiscal Policy Council could be considered. According to the OECD, such a change would save resources for the government at large. It might also be seen to correspond to the set-up in Denmark, provided that the KI were granted further formal independence. In the Swedish context, this could entail considering whether KI should be placed under Parliament. Doing that could, however, compromise any efforts to streamline government forecast operations through other agencies being forced to adopt the KI projections.

- We have been impressed by the quality and depth of the KI's work on specific issues, whether such issues have been taken up at the Institute's own initiative or analysis has been instigated by the Ministry of Finance. Considering the relative scarcity of institutions that can undertake such analysis, which contrasts with the crowded nature of the forecasting business, the returns to shifting resources in this direction, could be high. Work could focus on both structural policy analysis but also on structural aspects of macroeconomic developments and policies.

- It is important for the KI's forecasting ability and its ability to identify vulnerabilities that it keeps in close contact with the business sector and financial institutions. Likewise, interaction with academia and with international counterparts can help stimulate KI's analytical environment and abilities. Hence, it is important that sufficient resources be provided for such interactions and that they be actively encouraged.

Fungibility and flexibility in allocation

45. Apart from any changes in steady-state resource allocation, it is also worth considering whether the KI has enough flexibility to respond to new demands, including through resource reallocation. We have not seen or heard anything that would raise particular concerns in this area.

46. The crisis obviously gave reason to reallocate resources to better understand the influence of financial factors on economic outcomes. Such reallocation actually took place, although it happened within

existing institutional structures rather than by establishing new structures. Perhaps for that reason, the crisis-induced reallocation appears not to have been maintained, even though it is recognised that financial factors were a weak spot pre-crisis.

47. The KI has also been able to adjust in a flexible manner to a number of specific (ad hoc) requests from the Ministry of Finance and a number of specific issues that it has taken up of its own volition. This again is suggestive of a capacity to adjust when required. Given the utility of addressing such specific issues, it is important for the KI to be agile in the distribution of its resources between cyclical assessments and structural, and macro-structural, analysis.

48. Obviously, the capacity to adjust relies on human resources having sufficiently general skills to allow reallocation. It is clearly important that recruitment and training support such flexibility going forward - especially if the KI were to engage even more strongly in structural analyses, where more specialised skills can sometimes be needed. Such work may also sometimes have to rely on human resources that are associated with the KI on a more ad hoc basis.

Summing up

49. Overall, the KI is clearly well regarded and is seen as having a very important role in Swedish economic and policy discussion. It is generally thought to be performing this role well. This report contains a number of suggestions that we feel could enable the KI to undertake its role even more effectively. All institutions should continuously examine their own methods and procedures in order to become more effective. We hope that the suggestions made above will serve as an input in such a process for the National Institute of Economic Research.

Annex A

Interlocutors met by the Expert Group or participating in telephone interviews

National Institute

- Mats Dillén
- Jesper Hansson
- Erik Glans
- Peter Svensson
- Helena Bångman
- Erika Färnstrand Damsgaard
- Erik Höglin
- Erik Jonasson
- Pär Stockhammar

Ministry of Finance

- Fredrik Bystedt
- Ylva Hedén
- Thomas Bergman

Swedish National Financial Management Authority (ESV)

- Ann-Sofie Öberg

Statistics Sweden

- Andreas Lenmalm

Swedish Fiscal Policy Council

- Joakim Sonnegård

Swedish National Debt Office

- Mårten Bjellerup
- Håkan Carlsson

The Riksbank

- Christina Nyman
- Jan Alsterlind
- Ulf Söderström

Skandinaviska Enskilda Banken

- Håkan Frisén

- Olle Holmgren

Independents

- Lars E.O. Svensson