ANNEXES

ANNEX 1. Estimation of household disposable income and the saving ratio at quarterly frequency

The Lithuanian Economic Review of December 2014 provided the analysis of the development of household disposable income in Lithuania during the period from 1996 to 2012. It came to the conclusion that, although the largest impact on the development of this income is made by the compensation of employees paid by an employer, it is also necessary to analyze the development of other household disposable income sources. Such a conclusion was made after considering the fact that the development of compensation of employees often differs from the development of other income sources. Unfortunately, the currently available Statistics Lithuania data are only sufficient for analysing the annual development of household disposable income up to 2013. The availability of only annual data and the large delay of their publication limit their use for monitoring the economy in the current period. This motivates to estimate of household disposable income at quarterly frequency.

This Annex to the Review describes two methods of estimating the quarterly development of household disposable income. The first method is relatively simple, but less accurate. The second method is more complex, but also more accurate and provides more information on the development of household disposable income.

When applying the first method, an assumption is made that the development of household disposable income coincides with the development of disposable income of the whole economy published on a quarterly basis. This assumption is based on the fact that all institutional sectors are closely interrelated and their disposable income is highly interdependent. Chart A shows the annual growth rates of disposable income of both households and the whole domestic economy. As seen from the chart, the developments of household disposable income and the whole economy’s disposable income are very similar. Their development trends diverged only during the period from 2007 to 2008.

The main drawback of the first method of estimation of household disposable income is the fact that it does not allow to explain which type of income determines the development of household disposable income. This problem is solved by the second method of estimation of disposable income. When applying the second method, the estimate of each income source is made and then these estimates are summed up to obtain the estimate of total household disposable income. Only those statistical indicators that are published at least quarterly are used for the estimation of the income sources. When calculating the development of household disposable income in Lithuania, it is useful to calculate these six estimates (their comparison with the actual data is provided in Chart F):

- **Compensation of employees.** It is calculated as the sum of the compensation of employees estimated using the GDP income method and net foreign labour income.

- **Net social benefits.** It is calculated as a difference between general government social payments and social contributions. This difference is adjusted by the change of household net equity in pension funds and net foreign social contributions.

- **Current taxes on income, wealth, etc.** It is calculated as a sum of personal income tax and land tax paid by residents.

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8 Household disposable income accounted for nearly two thirds of total disposable income of Lithuania’s economy in 2013.

9 More information about household disposable income sources is provided in the Lithuanian Economic Review of December 2014.
• **Value added.** The adjusted growth rate of added value generated by the whole economy is used for its calculation.

• **Net current transfers.** It is calculated as a sum of net current transfers receivable from abroad and net other current transfers payable by the general government.

• **Property income.** In calculating this estimate, an assumption is made that corporations\(^{10}\) pay a constant share of operating surplus to their owners. This share is the long-term average of the ratio of household property income\(^{11}\) to operating surplus of corporations.

The estimate of household disposable income is obtained by summing up the above-mentioned estimates. Its growth rate comparison with the actual data and with disposable income of the whole economy is provided in Chart B.\(^{12}\) As seen from the chart, disposable income, estimated according to components, represents the development of household disposable income more accurately than disposable income of the whole economy. Judging from mean absolute error and root mean squared error, the disposable income estimated according to components represented the development of household disposable income more accurately by almost one fifth.

After confirming that the annual development of the household disposable income estimate is close to the actual development, it is also worth calculating and analysing the quarterly estimate of such income. In order to calculate it, an assumption should be made that the correlation of the estimate and the actual data inherent in the annual development is also inherent in the quarterly development.\(^{13}\) The obtained estimate is further adjusted to ensure that the estimated amount of a certain year corresponds to the actual data. In order to express household disposable income at constant prices, the household consumption expenditure deflator is applied to it. The quarterly estimate of household disposable income annual growth, calculated using this method, is provided in Chart C, whereas the household saving ratio calculated on its basis is presented in Chart D.

The quarterly estimate of household disposable income obtained by estimating all household disposable income sources not only helps assess the quarterly development of total disposable income, but also provides information on the contributions to this income. The quarterly development of household disposable income and its contributions are presented in Chart E. As seen from the chart, the growth of household disposable income subsided in 2014 and its development was mostly affected by current transfers received by households. The growth of the latter was fast in the second half of 2013, but slowed down in 2014, whereas at the end of the year current transfers declined. Such development of income from current transfers was determined by foreign personal transfers. Household property income also grew slower in the second half of 2014. Taking into account the assumption made, it can be stated that such development of property income was determined by slower growth of

\(^{10}\) The European national accounts define corporations as institutional units whose economic and financial activities are different from those of their owners. Corporations are divided into financial corporations and non-financial corporations. Financial corporations are engaged in financial intermediation and auxiliary financial activities. Meanwhile, non-financial corporations are involved in the production of goods and non-financial services.

\(^{11}\) The largest share of household property income consists of dividends paid by corporations and the income of quasi-corporations that households withdraw to satisfy their own needs. Quasi-corporations are entities which keep a complete set of accounts, but have no independent legal status. These corporations are market producers and their economic and financial activity is different from that of their owners. Due to the latter reason, an assumption is made that quasi-corporations have autonomy of decision and are considered as distinct institutional units.

\(^{12}\) Only the data of the period from 2008 to 2012 is used for comparison, since the publication of the data required for estimating current income, wealth and other taxes was started only in 2007.

\(^{13}\) Only those statistical indicators that are published at least quarterly are used for the calculation of the annual estimates of household disposable income.
operating surplus of corporations. The main factor that boosted household disposable income in 2014 was compensation of employees. Its fast growth can be explained by employment and wage growth. Owing to the fast growth of household labour income, net social benefits negatively affected the development of household disposable income. However, such impact of this household disposable income source could be expected, since net social benefits act as an automatic stabiliser — the improvement in the labour market situation determines higher social contributions and lower social fund payments and vice versa.

It can be seen after the analysis that the household disposable income estimate calculated using these two methods shows that the growth of household disposable income slowed down in 2014. The main factor that determined such development was the decline of workers’ remittances from abroad.

Chart F. Estimates of household disposable income sources and the actual values at current prices

Sources: Eurostat, Statistics Lithuania and Bank of Lithuania calculations.