Brief

EIB Group macroeconomic impact assessment

Why a macroeconomic impact assessment?

Whereas cost-benefit analyses and technical impact assessments are often readily available for specific investments, for a macroeconomic impact assessment of EIB operations a broader macro-modelling approach is needed. In addition to the direct impact of investments on the beneficiaries, EIB operations produce indirect effects in the economy, both positive and negative, which should be taken into account. Building a road will create employment in the construction phase, but by lowering transport costs the possible impact on the economy can be much larger by making the region more accessible, or by lowering costs for goods and services. Such a project would foster exports and imports, however, the overall effects on net trade cannot be predicted a priori. These and many other interlinkages can be taken into account in a large-scale macroeconomic model that explicitly looks at such relationships and takes such trade-offs into account.

Which model do we use?

Such a comprehensive macroeconomic modelling is based on RHOMOLO. The approach used to assess the macroeconomic impact of EIB Group activities is a spatial computable general equilibrium (SCGE) macroeconomic model, called RHOMOLO, developed by the European Commission Joint Research Center (JRC) to estimate the impact of structural funds across Europe, both in terms of investments and grants, as well as structural implications on productivity, trade, and research and development. It is a well-established methodology, thoroughly based on academic research, publicly scrutinized and discussed in technical publications and scientific fora. In the tradition of General Equilibrium models, RHOMOLO relies on an equilibrium framework where supply and demand respond to price changes to clear all the markets. All decisions in the economy are reflected in the model through optimising behaviour of different economic agents (see Figure 1 for an overview). Goods and services are consumed by households, government and firms, and are produced in domestic and foreign markets. Spatial interactions between territories are captured through trade matrices, factor mobility (capital and labour) and knowledge spill-overs. Policies are introduced as perturbations in the baseline equilibrium, causing agents' supply and demand choices to adjust following the same optimising behaviours under the new conditions. The system thus evolves towards a new equilibrium in terms of prices and allocations of goods and services. RHOMOLO, therefore, provides an evaluation of the interaction effects between all agents through markets, ensuring full consistency and accounting of financial flows. Particular attention is devoted to the explicit modelling of spatial linkages, interactions and spill-overs between economies.

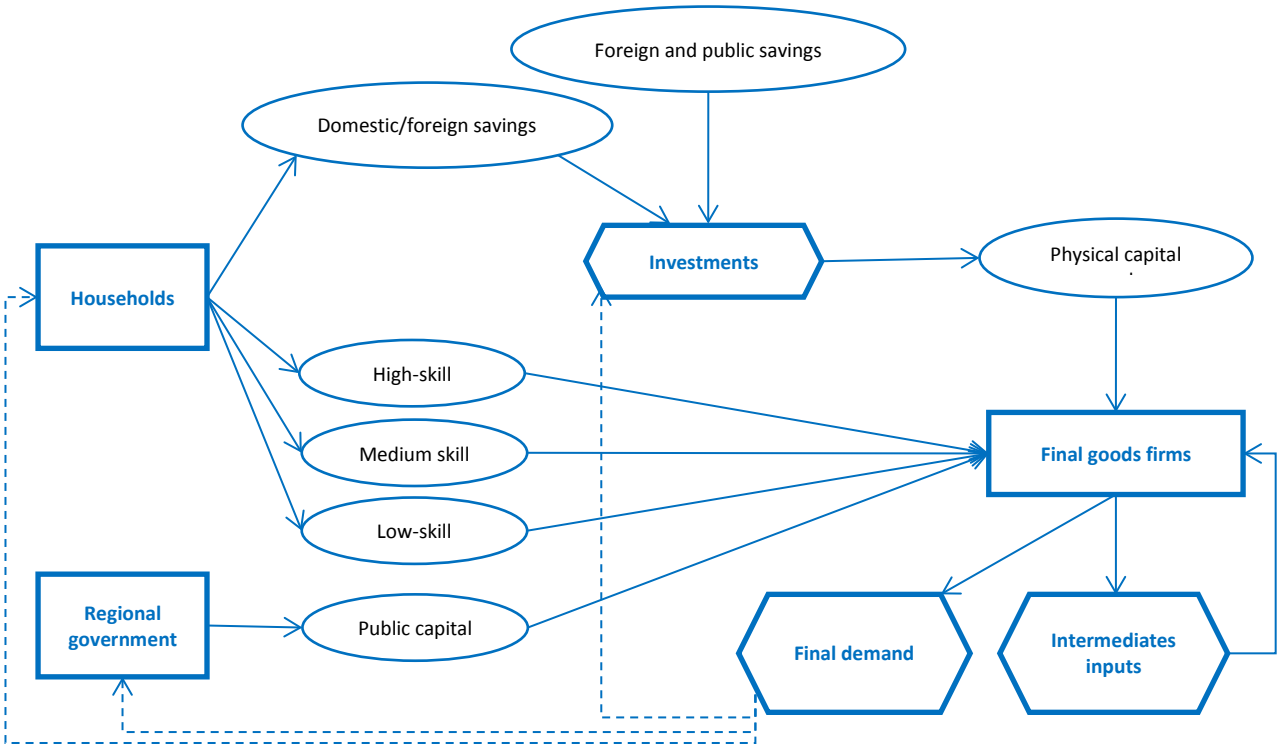

Figure 1: Overview of RHOMOLO-EIB model.

How do we reflect EIB activities in the model?

Inputs into RHOMOLO need to closely reflect the way the EIB Group works. EIB-supported operations affect the EU economy through two main channels, an investment effect and a structural effect (see Figure 2 for a stylized representation of the two channels). The investment effect is most pronounced in the short term and reflects higher demand for goods and services as the investments take place, especially during the construction phase. The longer-term structural effect associated with the completed investments reflects the impact on the structure and competitiveness of the economy, such as the availability of cheaper traded goods due to a better transport network, or the increase in productivity due to the greater availability of research facilities and enhancing technologies. For full details of the model, please refer to the model description.[1]

[1] Mercenier, J., Álvarez-Martínez, M., Brandsma, A., Di Comite, F., Diukanova, O., Kancs, d'A., Lecca, P., López-Cobo, M., Monfort, Ph., Persyn, D., Rillaers, A., Thissen M., and Torfs, W. (2016). "RHOMOLO-v2 Model Description: A spatial computable general equilibrium model for EU regions and sectors," JRC Technical reports JRC100011, European Commission, DG Joint Research Centre, EUR 27728 EN, doi:10.2791/18446. (http://publications.jrc.ec.europa.eu/repository/handle/JRC100011)

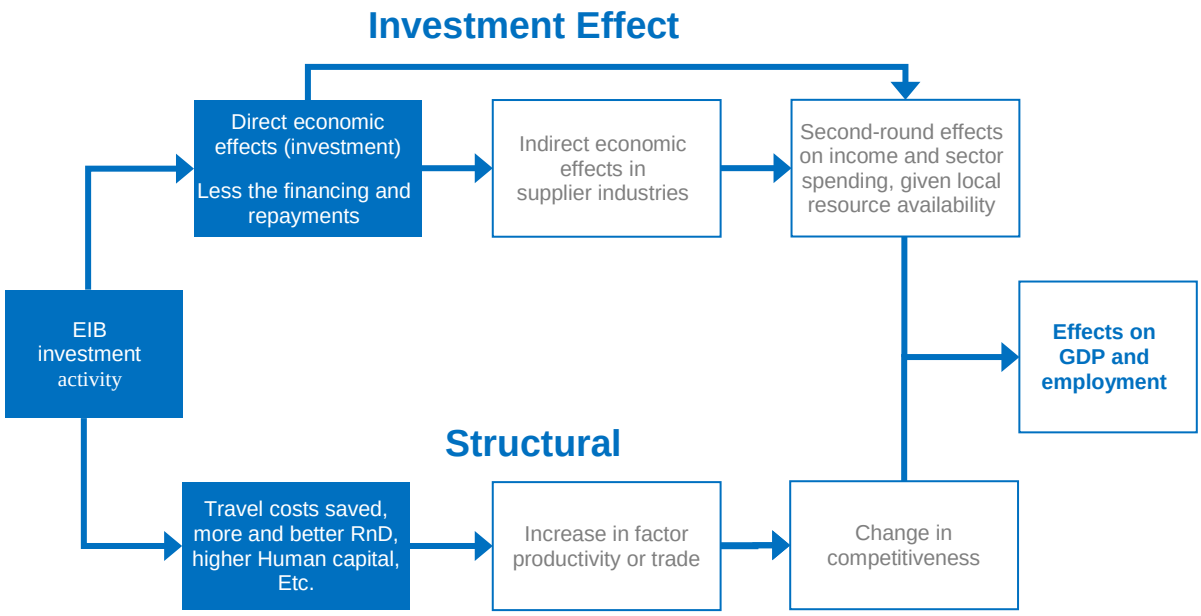

Figure 2: The two key logical intervention channels.

The investment effect comes from the jobs and inputs used for the operations, but also from the financing needed for such operations. Investments are the EIB-Group-supported operations in the EU. This means the EIB Group together with co-financiers channels funding to a specific sector and region. This has a direct effect on the local economy through capital deepening and attraction of new workers into the market during the project implementation phase (or fund' disbursement). It increases the investment and wages in this area which, in turn, has an effect on other sectors in the region and affects other regions, for example, through trade and factor mobility. Such investments need to be financed from existing sources. Unlike EU Structural Funds that are based on taxation revenues, the EIB draws funds from the capital market. The EIB issues bonds on the market to finance its operations. These operations are co-financed by private investors and/or public institutions. Funding can come either from the EU or from abroad. As these are not grants but loans, funds need to be repaid over time. Initially, the financing impact on the receiving region is income-positive since a project region experiences a capital inflow, but the effect is income-negative when the loan is repaid to its lenders. The reverse holds for those regions providing the funding. In this sense, additionality can be understood as macro-additionality. Whether a specific project would or would not have happened with or without EIB support can only be assessed at a project level. What can be shown with RHOMOLO-EIB is different and potentially even more relevant from a macroeconomic point of view. By channelling financing into more productive use, the EIB supports additional investments overall in the European economy. Whether a specific operation may have happened or not is not relevant in this context. What matters is that with the EIB Group more such investments are taking place.

The long-term structural effect of a project can work through one of the five structural channels. In addition to any impact of the investment financing and repayment, typically a structural effect on the model sets in once the investment is

completed. RHOMOLO-EIB allows mapping the EIB operations into five structural channels:

- Transport infrastructure operations aim to better connect people and markets across Europe and beyond. New transport routes are constructed (e.g. a new road or rail, or port) or existing ones improved or expanded (e.g. ports, motorway extension, rehabilitation, etc.). This reduces costs of transport and facilitates trade and better connects the people of Europe;
- Non-transport infrastructure operations aim to upgrade or expand existing infrastructure, especially in network industries that represent key inputs for other sectors of the economy. This offers more affordable and more reliable infrastructure affecting means of production in a region, especially through the energy perspective;
- Human capital operations aim at increasing the productivity of the human capital stock. This increases labour productivity, the relative factor composition of the economy is affected, and so are the returns to investments;
- Industry and Services. Investments in new corporate capital formation are typically associated with the deployment of more modern and productive technologies. New investments expand the capital stock or replace old capital which is composed of less productive vintages of capital, with more productive capital to the extent such renewal is not taking place in already;
- R&D operations aim to boost the number of innovations through greater efforts in the R&D sector, and consequently to increase the productivity and competitiveness of companies, which are expected to benefit from better products or more efficient production processes.

What data do we use?

The data reflects the relevant details of the EIB Group supported operations, both EIB and EIF, with input data for the model being the overall leveraged effect. Each EIB Group operation has a detailed set of data available on the timing, implementation, location, and sector of the activities supported. Granular data is available on when, where and which sector will be supported to closely reflect the details of the EIB Group supported activities in the economy. As ex-post data becomes available the data will be successively updated to reflect the most recent and most accurate information.

What are the results?

The model is used to assess the expected contribution of the EIB Group supported operations to GDP and employment in the EU economy. Cumulatively, in 2015 and 2016 together, the EIB Groups has approved operation that aim to support investments in the EU economy of some EUR 544bn. As the operations are implemented the investments will materialize in the economy. This, depending also on how they are financed, will lead to so called “investment effects”, and once completed, “structural effects” will set in. It will lead to effects on both GDP and employment. Both effects will complement each other, but “investment effects” will by construction fade out over time whereas “structural effects” will set in later and grow and mostly persist over time.

EIB Group supported investments are expected to have a major impact on Europe's economy (see Figure 3 for expected GDP impact and Figure 4 for expected employment impact). Overall cumulative investments supported by the EIB Group that were approved in 2015 and 2016, are expected to have added around 2.3 percent to EU GDP by 2020 and by then will have added 2.25 million jobs. In the long term, by 2036, as the investment effects wears out, loans are being repaid and capital starts to depreciate, and the structural effect will have grown to a sizable and longer term impact, EIB group supported investments are expected to still have added around 1.5 percent to GDP and some 1.27 million jobs.

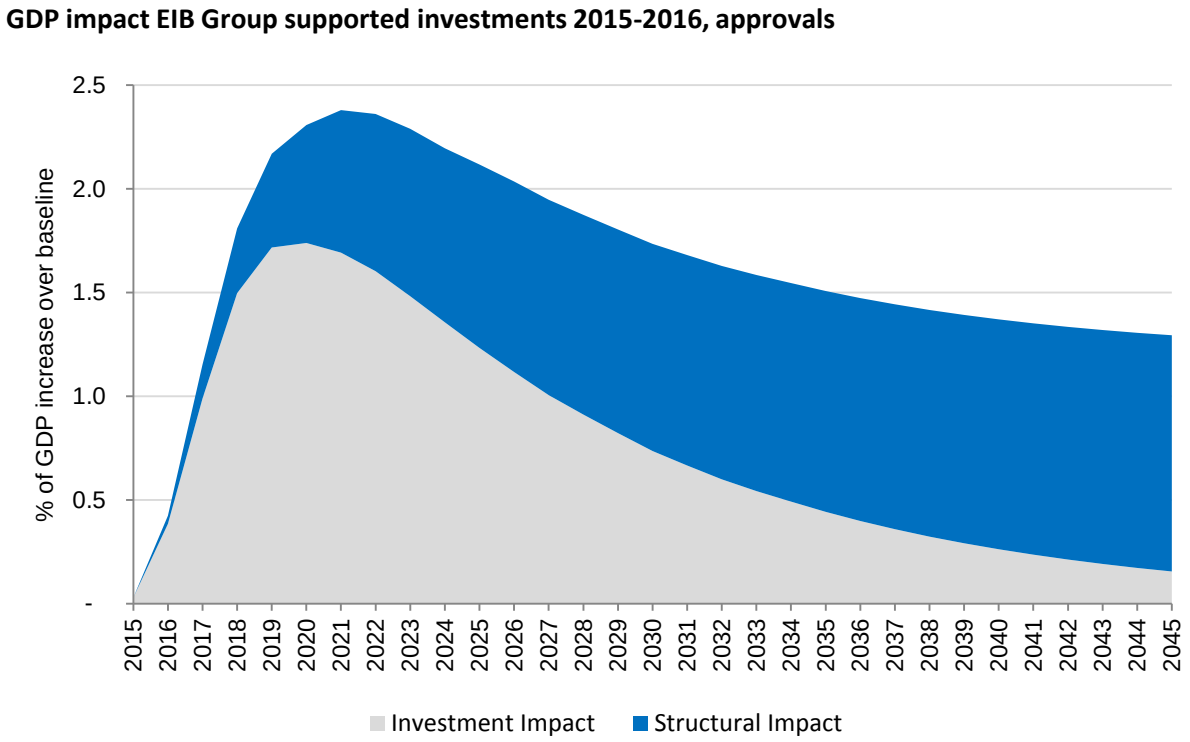

Figure 3: Expected impact on EU GDP from EIB Group supported investments approved in 2015 and 2016

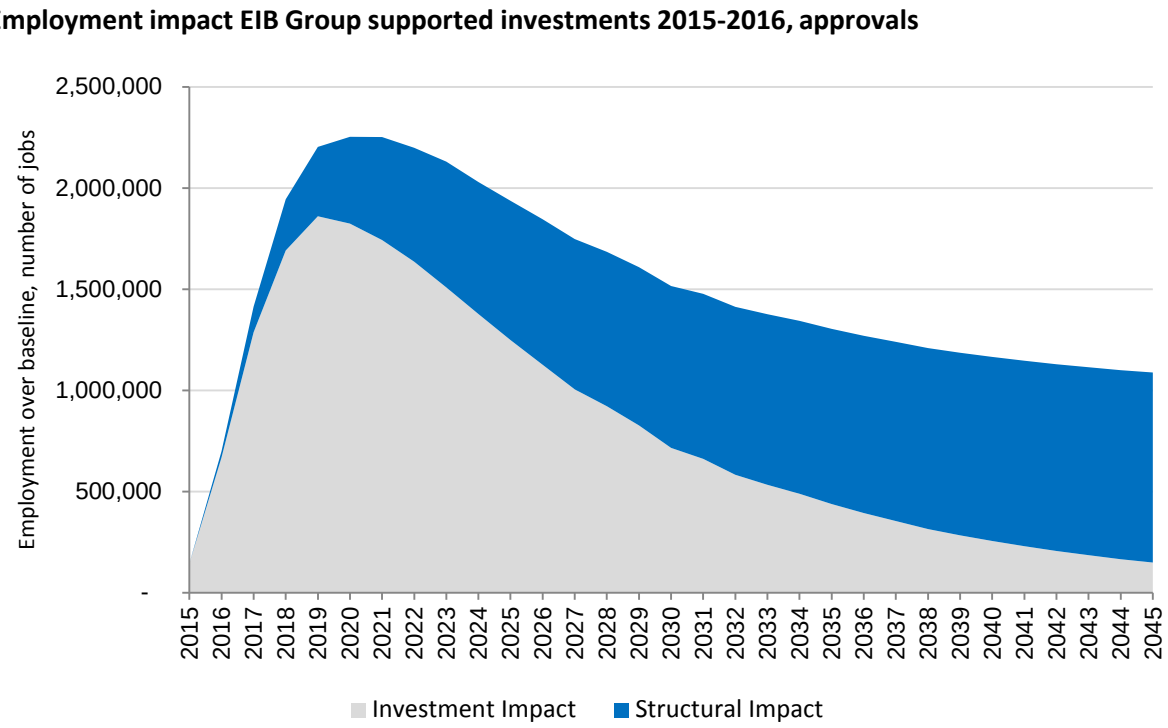

Figure 4: Expected impact on EU employment from EIB Group supported investments approved in 2015 and 2016

The European Fund for Strategic Investments is an integral part of the EIB Group activities. It reflects a sizable part of the EIB group supported investments. The operations that have been approved from its inception to the end of 2016 are expected to support investments in the EU economy in the coming years of some EUR 161 bn. By 2020 GDP European GDP is expected to increase by 0.67 percent and some 690,000 jobs are expected to be created. In the long term, similar to the EIB Group impact, as the investment effects fades away and the structural impact is the more dominant, by 2036 (i.e. after 20 years) European GDP is still 0.4 percent higher than it would have been and there are still about 340,000 thousand jobs more than would exist without such EFSI supported investments.