

METHODOLOGICAL SUMMARY

Economic impact and drug savings' impact measurements for Teva

Methodological background

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WifOR Institute

Teva Pharmaceutical Industries Ltd (hereinafter "Teva") commissioned WifOR Institute to conduct Teva's economic impact and drug savings' impact measurements. As an expert in scientific macroeconomic analysis, WifOR Institute translates data into the basis for comparable, evidence-based, and transparent decision-making. WifOR's 70+ employees – in offices located in Berlin, Darmstadt, Leipzig, and Athens, as well as representatives in Latin America and the USA – have successfully delivered 650+ projects for clients which include companies, government ministries, NGOs, and associations. WifOR cooperates with scientific experts from various universities, project partners from business and politics, and innovative initiatives such as the Value Balancing Alliance (VBA).

THE ECONOMIC IMPACT ANALYSIS

The scope of the economic impact analysis entails the measurement of Teva's own operations (commercial, manufacturing, and R&D activities) related to the organization's network. The analysis is based on Teva's financial statements and procurement data. For the supply chain analysis, a global multi-regional input-output model based on industry statistics was used to quantify the indirect and induced contribution to Gross Domestic Product (GDP), employment, and labor income effects supported by Teva. Our applied methodology is described below:

Teva's direct economic effects describe the immediate effects directly generated by Teva's legal entities in the respective countries. For the measurement of Teva's direct economic effects, Teva's primary data, i.e., employment and labor income data was utilized. The GDP contribution measures the Gross Value Added (GVA) of economic and R&D activities. It is the key figure for measuring a country's economic development and its prospective of growth and economic welfare. For the measurement of Teva's GDP contribution, Teva's financial statements were used. For the direct GDP contribution of Teva's commercial and manufacturing activities, the output approach was used, i.e., the output minus the input. The output of non-R&D activities is the sum of the revenues, the changes in inventory, and the own work capitalized, minus the cost of goods for resale. For the GDP contribution of non-R&D activities, the output related goods and services are subtracted from the output. For the estimation of R&D related activities, the income approach is used, i.e., the compensation of R&D personnel is multiplied with a country and industry-specific virtual mark-up based on national statistics. The estimation of the GVA of R&D activities In accordance to the [Eurostat Manuel of Measuring R&D in ESA 2010](#) which relies on the [Frascati Manual](#). The direct GDP contribution is the sum of the direct GDP contribution of non-R&D and R&D activities.



The economic impact analysis also allows the calculation of indirect upstream effects. Upstream effects arise due to the input Teva demands from other economic agents. Order placements of materials and services result in an increase of economic activity at commissioned agents and their suppliers, and the suppliers of their suppliers. Furthermore, induced effects originate from the expenditure of directly and indirectly generated disposable income and the concomitant increase in demand. Total economic effects refer to the sum of all three (direct, indirect, and induced effects). The two latter effects increase the economic impact along the global supply chain and are summarized under the term spillover effects.

Input-Output analysis (I-O) was originally developed by Wassily Leontief (Leontief, 1936) to describe the industrial structure of an economy and understand how changes in one economic sector may affect other sectors. Leontief earned the Nobel Prize in Economics for his development of its associated theory in 1973. Applying the technique of I-O, it is possible to trace the inputs of production along the entire supply chain based on a multiregional global input-output (MRIO) model covering 188 countries and 57 industries including the endogenized workforce as an additional economic sector. The MRIO table allows the calculation of upstream impacts of a company.

The model comes with an array of assumptions: 1) Constant returns to scale, meaning that regardless of the level of production, the same quantity of inputs is needed per unit of output. 2) No supply constraints which means there are no restrictions to raw materials, services, or other inputs such as employment. 3) Fixed input structure, i.e., there is no input substitution in response to a change in output. However, it is widely agreed that it is suitable for impact analysis.

Economic Impact by US State Methodology

For the country results, the global economic impact of Teva's countries was measured. For the economic impact of the U.S. States, an additional scope was developed. Thus, in addition to Teva U.S.'s global impact, the global impact of all of Teva's countries on U.S. States has been reported. For the regional impact on U.S. States, we used [local economic multipliers](#) provided by the US [Bureau of Economic Analysis](#).



THE GENERIC DRUG SAVINGS' IMPACT ANALYSIS

To estimate Teva's contribution to generic drug savings, WifOR used one methodology for most of the countries analyzed. For the United Kingdom and the United States, WifOR used a separate methodology. All three methodologies are described below:

Primary Generic Savings Methodology

For the majority of the countries, WifOR calculated national generic drug savings using IQVIA data on the prescription drug market for all pharmaceutical forms in each country and for both retail and hospital distribution channels. These data excluded over-the-counter medicines, products for which there is no corresponding innovator on the market, and products with unknown protection status.

Drug savings are equivalent to what would have been spent in the absence of Teva products from the market, assuming no change in drug prices of the innovators. The steps undertaken for the calculation are as follows:

- The average price per standard unit for pharmaceutical form of each product of the Teva portfolio has been calculated incorporating all available strengths.
- The same calculation has been undertaken for the corresponding innovator product.
- The difference between the average price of the Teva product and the innovator has been multiplied by the number of total units of Teva products sold. The resulting number corresponds to the savings produced for the healthcare system.

It must be noted that the basis for the average price calculation is the ex-factory price as it is not affected by any patient co-payments, clawback or volume rebates. This option represents a rather conservative but more transparent approach and allows comparison between different countries; the final savings for the healthcare system are probably higher.

United Kingdom Generic Savings Methodology

WifOR's estimate for Teva's generic savings in the United Kingdom is based on the data from the British Generic Manufacturer's Association on the number of prescriptions and resulting annual savings (<https://www.britishgenerics.co.uk/about-us.html>). The total savings have been calculated based on Teva's market share in the total generic market.

US Generic Savings Methodology

WifOR's estimate of Teva's generic savings in the United States is based on the national generic savings estimate calculated by IQVIA for the Association for Accessible Medicines. WifOR forecast national generic savings is based



on the generated generic savings increased by the average yearly increase over the last 10 years. To calculate Teva's share of these savings, WifOR multiplied this savings estimate by Teva's US generic market share by volume, derived from IQVIA.

Savings by State. To break down Teva's US generic savings by state, WifOR used the report of the Association for Accessible Medicines and extracted the savings per State applying an increase rate across all States based on the national rate as detailed above. WifOR assumes that Teva's share of generic sales is constant across States.

Savings by Payer. To break down Teva's US generic savings by payer, WifOR used the Kaiser Family Foundation report of Retail Sales for Prescription Drugs Filled at Pharmacies by Payer ([Retail Sales for Prescription Drugs Filled at Pharmacies by Payer | KFF](#))



WifOR is an independent economic research institute that originated from a spin-out of the Department of Public Economics and Economic Policy at the Technical University of Darmstadt, Germany. We see ourselves as an academic partner and think tank on a global scale. WifOR's fields of research include Economic, Environmental and Social Impact Analyses as well as Labor Market and Health Economy research.

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