



ODI Global

Modelling the impact of EU aid on EU economies

Yohannes Ayele, Maximilian Mendez-Parra and Dirk Willem te Velde

ODI Global

13 May 2025¹

¹ This paper has been commissioned by the Pandemic Action Network. We are grateful to Eloise Todd and Kasia Lemanska for helpful comments and suggestions in shaping the paper. We also thank ODI Global colleagues Claire Kumar, Nerea Craviotto and Dora Meredith for their reviews and comments. Maros Ivanic provided useful comments on the modelling approach. Any potential errors and shortcomings are those of the authors alone.

Executive summary

This study provides a quantitative assessment of the impact of EU aid on EU economies. EU aid over 2020–2022 averaged \$27.4 billion (€24.2 billion²) a year. Our simulated modelling results show that the impact of such aid from EU institutions on EU exports (\$27.6 billion, €24.4 billion) is actually greater than the amount of aid. Our results also show that the EU redeems 44%, or nearly half, of the value of aid in terms of increases in EU incomes, as a result of trade relationships with partner countries (more exports, cheaper imports).

Economic and social infrastructure accounted for just over 50% of the total aid over 2020–2022. Starting in 2021, however, the distribution of EU aid by sector has been the subject of change, with commodity and humanitarian aid increasing. In 2022, total aid to Africa (\$8.2 billion, €7.2 billion) included \$2.5 billion (€2.2 billion) to North Africa and \$5.7 billion (€5.0 billion) to the Rest of Africa.

We model aid in different ways. First, aid can act as an addition to the country's capital stock. Second, aid is spent on consumption, through a technological shifter affecting the broader economy. Third, aid can be spent on a reduction of trade costs through improved trade facilitation. We combine these ways of modelling aid consistently with how aid was allocated over 2020–2022. We use the Global Trade Analysis Project model for simulations as it is well placed to examine the spillover effects of aid on aid sending countries via trade channels.

While the impact of aid depends on assumptions on how it is being used, we find that, if we simulate EU aid related to how it has been spent previously, and using econometric estimates that underpin our assumptions, the EU itself gains significantly from EU aid through trade linkages. The greatest spillover effect comes from the impact of aid via reducing trade costs – such as improving customs efficiency and transport infrastructure – which generates substantial trade benefits for the EU through more and lower cost trade flows. We find that, if EU aid is distributed during MFF 2028–2034 in the same way as it was over 2020–2022, EU exports will increase by an annual 0.46%, or \$27.6 billion (€24.4 billion) – which is more than the aid provided each year. The annual impact on EU gross domestic product will be 0.08%. These estimates fall within the modelling estimates surveyed in previous studies on international economic spillovers of aid.

² Exchange rate used: 1 USD = 0.8824 EUR, as of May 6, 2025

List of acronyms and abbreviations

AfT	Aid for Trade
CGE	computable general equilibrium
CRS	Creditor Reporting System
DAC	Development Assistance Committee
EU	European Union
FDI	foreign direct investment
GDP	gross domestic product
GNI	gross national income
GTAP	Global Trade Analysis Project
ICT	information and communication technology
LIC	low-income country
MFF	Multiannual Financial Framework
MIC	middle-income country
MNC	multinational corporation
NiGEM	National Institute Global Econometric Model
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
SSA	Sub-Saharan Africa
TFP	total factor productivity
UK	United Kingdom
WTO	World Trade Organization

Table of contents

Executive summary	2
List of acronyms and abbreviations	3
1. Introduction	5
2. Pathways of the effects of aid on recipient and donor countries	7
2.1. How does aid affect economic growth, productivity and trade costs in recipient countries?	7
2.2. Spillover effects of aid beyond recipient countries	9
2.3. An overview of empirical studies on the impact of aid on donor countries	10
2.3.1. Econometric modelling of the effects of (EU) donor aid on (EU) economies	11
2.3.2. Computable general equilibrium modelling examining the impact of aid	13
3. A description of current EU aid (2020–2022)	14
4. Modelling approach and policy scenarios	16
5. Modelling results and discussion	19
5.1. Impact on EU GDP	20
5.2. Impact on EU exports	22
5.3. Impact on EU imports	24
5.4. Impact on other countries/regions	25
6. Conclusions	27
References	28
Appendix A: EU member state exports and imports by source	31
Appendix B: Detailed GTAP simulation results	33
Appendix C. Aggregation	36
Appendix D: EU aid by regions (average of 2020–2022), \$million	37

1. Introduction

The EU plays a critical role in global economic development, particularly through its development cooperation programmes with developing regions. Its Multiannual Financial Framework (MFF) outlines a seven-year financial perspective, which defines budget and funding priorities. As we approach the end of the current MFF (2021–2027), attention is now shifting towards the planning of the next MFF, for 2028–2034. This future framework is expected to continue supporting EU growth and competitiveness while enhancing relations with partner countries worldwide. One area of focus in the MFF is the allocation of aid – including both traditional aid and blended finance – which has the potential not only to improve recipient country economies but also to benefit the EU itself.

This paper provides a quantitative assessment of the impact of EU aid³ on the gross domestic product (GDP), exports and imports of EU economies, shedding light on how aid (transferred from one country to another according to Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) rules) – especially trade-related aid – affects the EU’s economy and its trade dynamics. Previous studies have typically focused on the effects of aid from the recipient’s perspective, often using closed-economy models that overlook the interconnectedness of global trade and the broader economic impacts. And yet, in the global economic system, given interactions between economies, the spillover benefits of aid become evident. These spillovers manifest in various forms, such as reduced trade costs, increased exports and enhanced income levels. Understanding these spillovers is essential, as they provide valuable insights into how EU aid influences not just recipients but also donor nations, including the EU itself. Previous modelling studies such as Holland and te Velde (2012) and Holland and te Velde (2022) use global models and find positive spillover effects on the EU and the UK. Mendez-Parra and te Velde (2022) review existing estimates and provide new estimates with a robust finding: aid significantly enhances exports in aid providers.

The study uses the Global Trade Analysis Project (GTAP) model to assess the impact of EU aid on EU economies (see Box 1). We simulate the impact of the 2020–2022 annual average EU aid allocation (\$27.4 billion, €24.2 billion) and estimate its potential effects on the performance of EU economies. Different categories of aid are modelled differently in GTAP. Some types are modelled as an addition to the capital stock of the recipient country.⁴ Others are modelled as being spent on household consumption, which could be linked to broader economic impacts. Finally, we include aid that is aimed at reducing trade costs by improving trade facilitation. We combine these different aid categories into one simulation integrating

³ EU aid refers to assistance provided by EU institutions, including the European Commission, the European Development Fund, the European Investment Bank, Macro-Financial Assistance and various other programmes. It does not include aid that individual EU member states provide directly to low- and middle-income countries

⁴ Aid directed towards economic infrastructure and services and social infrastructure and services is assumed to contribute to capital stock accumulation. This type of aid enhances long-term productivity by improving the physical and human capital necessary for sustained economic growth.

capital accumulation, consumption and trade cost reduction. This final simulation provides a comprehensive view of how EU aid influences investment, consumption and trade facilitation in the future if it is spent in the way it was over 2020–2022.

Box 1: The Global Trade Analysis Project model – a brief explainer

The study uses the GTAP model to assess the impact of EU aid on EU economies. GTAP is a computable general equilibrium (CGE) model designed to analyse the interconnections between industries and economies at a global scale. GTAP provides a comprehensive representation of production and consumption across sectors, capturing the interactions among industries, households, governments and international trade. The model incorporates spillover effects, whereby economic shocks or policy changes in one country can affect its trading partners. The model uses an input-output framework to ensure all economic goods and production inputs are fully accounted for. The GTAP model is a well-established tool for assessing the economic impacts of trade-related policies, and other external factors (Hertel, 2010; Chepeliev et al., 2019; Narayanan and Villafuerte, 2020; Das et al., 2023). The model has also been used to simulate aid for trade (see Pycroft, 2008). We provide a further description in Section 4, but we refer to Corong et al. (2017) for a detailed technical description of the model.

One contribution of this research lies in its analysis of the spillover effects of EU aid, focusing on how aid can create benefits not only for recipient countries but also for the EU, building on Mendez-Parra and te Velde (2017) and Holland and te Velde (2022). The interconnectedness of the global economy suggests aid can have broader consequences, by influencing trade costs, raising imports and exports and contributing to economic growth in both donor and recipient regions. The simulations in this paper show that EU aid has raised EU exports to countries that see a reduction in trade costs.

The remainder of the paper is organised as follows: Section 2 outlines the pathways through which aid can affect both recipient and donor countries. Section 3 provides a brief overview of EU aid data. Section 4 discusses the GTAP model, and the scenarios used in the simulations. Finally, Section 5 presents the simulation results and a discussion of their implications. Section 6 concludes.

2. Pathways of the effects of aid on recipient and donor countries

Aid affects recipient countries in various ways. It can have significant long-lasting effects on economies and societies depending on how it is spent and used (Section 2.1). This can then have spillover effects on other countries (including the countries that give the aid) through direct economic trade and investment relationships. Aid can also affect donor countries by being invested in global public goods such as a clean environment and global public health systems. We discuss these spillover effects in Section 2.2. Section 2.3 provides an overview of existing empirical estimations of the impact of aid on aid-giving (donor) countries' exports.

2.1. How does aid affect economic growth, productivity and trade costs in recipient countries?

There is extensive research on the effects of aid on recipient countries. Aid spent on consumption (such as humanitarian aid to satisfy human needs) can have immediate and direct benefits. It can also lead to inflation, exchange rate appreciation and Dutch disease effects (Rajan and Subramanian, 2011). However, when directed towards investment in productive capacities, aid can mitigate these potentially negative macroeconomic impacts.

The impact of Aid for Trade (AfT) on trade costs is particularly relevant in this context. This section reviews the general effects of aid and, more specifically, AfT's influence on trade costs, along with insights from previous modelling studies. Other types of aid also support economic growth. For example, aid to appropriate and good-quality education and vocational training equips workers with the necessary skills to adapt to evolving labour market demands and take full advantage of improved trade conditions. A well-trained workforce enhances competitiveness, supports innovation and enables industries to integrate into regional and global value chains. Similarly, strong healthcare systems contribute to economic growth by ensuring a healthy and resilient workforce, reducing illness-related disruptions and increasing overall labour market participation. When workers have access to quality healthcare, they are more productive, which in turn strengthens economic performance and supports sustainable development.

Empirical studies on the relationship between aid and economic growth yield various insights (see Barrell et al., 2009 and Holland and te Velde, 2012 for a summary). Much of the research finds positive effects, including significant effects, especially when aid can enhance capital accumulation, productivity and long-term economic expansion. Others suggest less positive effects, citing inefficiencies in aid allocation, absorptive capacity constraints or dependency effects that may undermine domestic investment incentives. Taking all these earlier studies into account, Tarp (2012) provided new estimations, arguing that aid improved living standards for the world's poorest. His findings suggest that aid as a percentage of gross national income (GNI) has a 0.3 elasticity with income, implying a 0.9% increase in African incomes when aid is at 3% of GNI (which it is currently). Galiani et al. (2017) estimate that, for

low-income countries (LICs), a 1 percentage point increase in the aid-to-GNI ratio raises annual per capita GDP growth by 0.35 percentage points. Given current aid levels (8.7% of GDP in LICs and 2.9% in sub-Saharan Africa (SSA) in 2022), this suggests potential income gains of 3% in LICs and 1% in SSA. Mekasha and Tarp (2019) revisit previous meta-analysis of aid effectiveness and find that their previously reported positive evidence of aid's impact is robust to the inclusion of more recent studies. Massa et al. (2016) suggest that other types of development assistance, such as investments by development finance institutions, present effects complementary to aid, particularly in LICs and middle-income countries (MICs).

Aid is given for different reasons and has a range of different benefits, including related to economic development. The literature distinguishes between aid directed at productive sectors, such as infrastructure, and other types of aid, such as aid to health and education, which also contribute to productivity in the longer term. Infrastructure investment tends to yield high economic returns for recipient countries, with estimates ranging from 30% to 40% for telecommunications, to over 40% for electricity generation and up to 200% for roads – though the average falls to around 80% when outliers are excluded (Estache, 2006). Returns are typically higher in LICs than in MICs (Canning and Bennathan, 2000; Briceño-Garmendia et al., 2004), suggesting the need to channel more finance towards LICs (this notion was also behind the emergence of the G20 development working group).

The economic effects of AfT in general and on trade costs in particular can be large. The benefits of AfT for economic performance are widely recognised.⁵ Several studies assess its impact on various outcomes (Basnett et al., 2012). For instance, Bearce et al. (2010) find that each \$1 of trade-related assistance increases exports by \$42–\$53. Ferro et al. (2012) show that a 10% rise in aid to transport, ICT, energy and banking leads to manufacturing export increases of 2%, 0.3%, 6.8% and 4.7%, respectively.

AfT also significantly reduces trade costs. Busse et al. (2011) found that trade-related aid lowered trading costs in 99 developing countries. Cali and te Velde (2011) estimated that a \$1 million increase in AfT for facilitation reduced the costs of packing, loading and shipping by 6%. The elasticity of trade costs to AfT is around -0.10, implying that a 10% rise in AfT for trade policies and regulations lowers trade costs by 1% (Fic et al., 2014), with broad productivity spillovers.

Reducing trade costs can be more effective than cutting tariffs. Portugal-Perez and Wilson (2008) found that halving trade costs in Africa to Mauritius' level had a greater effect on trade than substantial tariff cuts. For Ethiopia, halving trade costs would be equivalent to a 7.6% tariff reduction. Lower trade costs also support export diversification and economic transformation. Dennis and Shepherd (2011) showed that a 10% drop in transport and

⁵ AfT, launched at the 2005 World Trade Organization (WTO) Ministerial Conference, is intended to address challenges related to trade by building productive capacities, improving trade policy-making, enhancing critical infrastructure and facilitating smoother trade processes (Cadot et al., 2014). The Aid for Trade Task Force has designated a list of OECD's Creditor Reporting System (CRS) codes that qualify as AfT (OECD and WTO, 2015).

domestic exporting costs led to 4% and 3% increases in export diversification, with stronger effects in poorer countries.

While AfT plays a crucial role in enhancing trade facilitation and reducing trade costs, other broader types of aid can also support economic development. As mentioned previously, investments in appropriate education, vocational training and robust healthcare systems ensure workers possess the necessary skills and increase labour market participation to take advantage of improved trade conditions. Employment creation and social safety nets are critical for mitigating the short-term disruptions that can arise from shifts in trade dynamics. Trade liberalisation and increased market integration can lead to sectoral adjustments, potentially displacing workers in less competitive industries. To ensure inclusive economic growth, targeted policies such as active labour market programmes, unemployment benefits and entrepreneurship support can help workers transition into expanding sectors. These complementary social and institutional development investments not only enhance the resilience of local economies and economic growth but also create a more equitable distribution of trade benefits, reinforcing the long-term success of AfT initiatives.

2.2. Spillover effects of aid beyond recipient countries

There are at least three economic channels through which the economies of providers of aid would be affected (apart from the financial resources it takes to fund aid) – trade (imports and exports), foreign direct investment (FDI) and global public goods.

Cheaper imports: One of the direct channels through which aid affects the economies of donor countries is by lowering trade costs and enhancing productivity in recipient countries. For instance, when trade facilitation aid reduces barriers to trade and improves logistics in recipient nations, the cost of imports from these countries decreases. Aid providers benefit from this reduced cost when they import goods from these more efficient economies, particularly if trade patterns are aligned with these reductions. As a result, this fosters a more favourable trading environment for the aid donor, improving the cost competitiveness of imported goods and benefiting consumers. Table A1 in Appendix A reports the share of EU member states imports from regions and countries. This provides a first indication as to which countries are likely to be benefiting the most from lower costs of imports.

Increased levels of exports: Aid can also indirectly stimulate increased demand for exports from donor countries. As aid reduces trade costs and enhances economic growth and trade in recipient nations, these countries experience higher demand for goods and services, including imports. This, in turn, can create new opportunities for aid providers to expand their exports to these growing economies. Therefore, the economic benefits of aid flow not only to the recipient countries but also to the providers by enabling them to access new or expanding markets for their products and services. Table A2 in Appendix A presents the distribution of EU member states' exports across regions receiving EU aid (excluding North

America and Rest of the World). It provides a first indication as to how EU member states may gain from aid through the export route. Countries such as Italy, France and Spain have a large share of their exports going to countries receiving EU aid so are also expected to gain relatively more.

Increased FDI and overseas profits: Aid can act as a catalyst for FDI in LICs and MICs, either by improving the investment climate or by directly targeting sectors that attract international capital. FDI from aid providers to these developing economies can increase as a result, with multinationals benefiting from improved growth prospects and higher rates of return. In particular, aid can enhance infrastructure, support institutional development and improve human capital in recipient countries, creating a more favourable environment for investment. This, in turn, increases overseas profits for multinational corporations (MNCs) based in countries that provide aid. This, in turn, boosts overseas profits for MNCs based in donor countries. Higher profits for European MNCs could lead to increased tax revenues for European governments, as well as potentially higher employment levels within Europe.

Contribution to global public goods: Beyond these primary direct economic channels, there are other spillover effects that extend the benefits of aid to donor countries. Aid often contributes to the provision of global public goods, which can have broad, long-term benefits for both aid recipients and providers. Examples include fostering stable financial systems, promoting environmental sustainability, improving global security, contributing to global health outcomes, such as avoiding global pandemics, and advancing the dissemination of knowledge and technology. These global benefits are crucial for the well-being of all nations, including those providing aid. For instance, a more secure and stable global environment can reduce the risk of natural disasters, conflicts or economic disruptions that might negatively affect both recipients and providers of aid. Additionally, aid that supports global environmental initiatives, such as climate change mitigation, can help avoid the negative spillovers from environmental degradation that may affect donor countries as well.

The economic spillovers from aid to donor countries are multifaceted, encompassing trade benefits, investment opportunities and contributions to global public goods. These channels highlight how aid can produce broader, positive effects beyond the immediate recipients, thus strengthening the case for continued or increased aid provision.

2.3. An overview of empirical studies on the impact of aid on donor countries

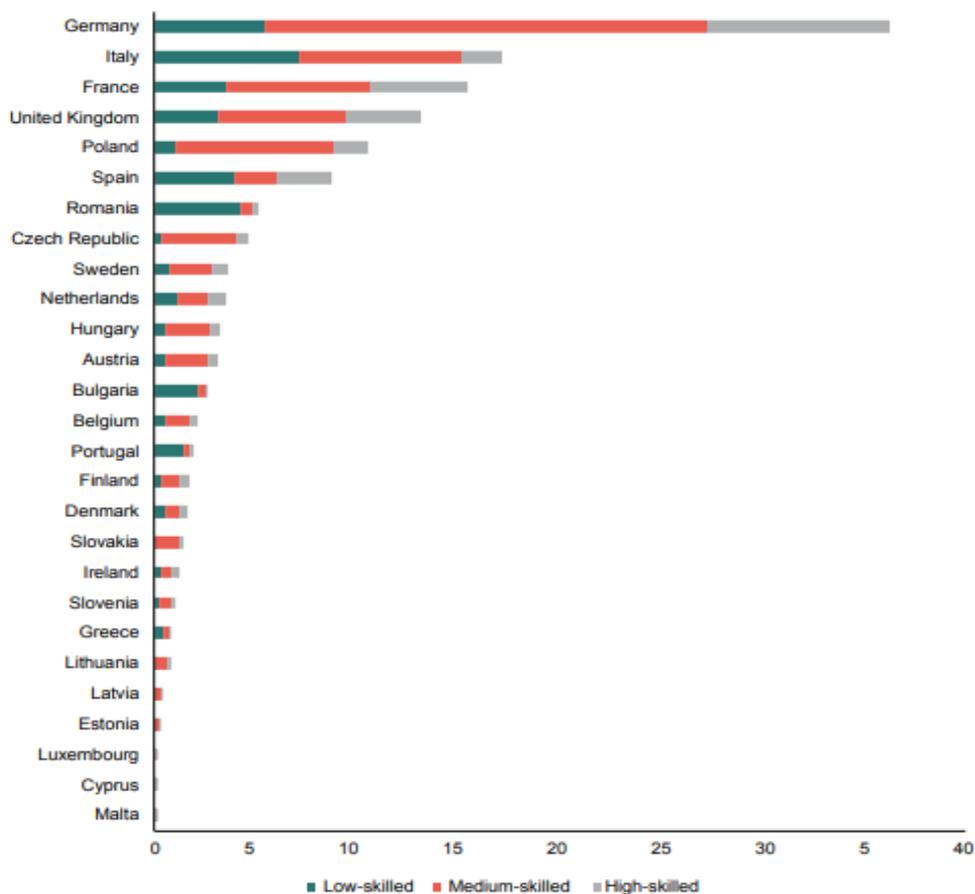
A number of econometric and CGE models have addressed the question of the impact of aid on donor countries (aid providers). These show there is a significant and positive relationship between aid and exports in donor countries. The findings are robust to different time periods, countries and modelling techniques. We first review econometric/partial equilibrium models that estimate the impact of bilateral aid on bilateral trade directly (Section 2.3.1) and then

discuss general equilibrium models that explore the impact of aid on exports via a reduction in trade costs and increased imports and incomes in aid recipients.

2.3.1. *Econometric modelling of the effects of (EU) donor aid on (EU) economies*

There is an emerging literature that presents econometric estimates of the spillover effects of bilateral aid on bilateral exports. The most relevant to this paper, Mendez-Parra and te Velde (2017), uses an econometric approach to assess the impact of EU institutions' aid and finds that, for every \$1 the European Commission spends on aid, EU exports increase by between \$1.02 and \$3.69 (based on an elasticity of exports with respect to aid of between 0.007 and 0.024). Linking exports to job impacts using input-output models, the authors argue that aid provided by the EU has generated over 140,000 jobs in the EU (using 2014 data), often among low- and middle-skilled workers. Business services, basic and fabricated metals and the agriculture, fishing and forestry sectors are among the most important aid-related employment-generating sectors. Figure 1 presents job impacts linked to the additional exports generated by aid in 2014 (if the adjustment falls on jobs and not wages).

Figure 1: European Commission aid job effects (in 2014) by country per year ('000s)



Source: Mendez-Parra and te Velde (2017)

Mendez-Parra and te Velde (2017) reviews other econometric estimations that use gravity models. The evidence is strong and robust: (bilateral) aid significantly supports bilateral exports in donor countries. An early attempt to assess the effects of aid on donor countries' exports using a gravity model (Nilsson, 1997) indicated that a 1% increase in European Commission aid would increase EU exports by 0.23% – or, for every \$1 given in aid, exports would grow by \$2.6. Wagner (2003) found that the elasticity of exports to aid of 20 donors between 1970 and 1990 was between 0.062 and 0.195. This means, on average, an increase in exports of the country giving aid of between \$0.73 and \$2.29 for each \$1 given in aid. Martínez-Zarzoso et al. (2008) examined the effects on German exporters generated by German aid. They found an elasticity of between 0.08 and 0.13, which translates into increases in exports of between \$1 and \$1.5 for each \$1 given in aid by Germany.

In an analysis of the effect of Germany's aid on German exports during the period 1962–2005, Nowak-Lehmann et al. (2009) found an elasticity of 0.09. In the long term, this translates into an increase in exports of \$1.04 for every \$1 spent on aid. In the short term, the effect translates into \$0.69 for every \$1 given in aid.

Massa and te Velde (2009) estimate partial equilibrium effects of bilateral aid loans and aid grants on exports and quantify the impact of additional aid flows (grants or loans) on exports, suggesting that a \$1 million increase in bilateral aid would lead to an increase of bilateral exports of a third of \$1 million (France) and three quarters of \$1 million in Germany and Japan. The percentage return to aid in the form of exports for Germany is 75%, for Japan 76% and for France 31%.

Arvin et al. (2000) suggested untied aid provided by Germany led to an increase of German exports. Lloyd et al. (2010) found the same for France, Germany, the Netherlands and the UK. Silva and Nelson (2012), using a panel from 1962 to 2000 and considering all donors and recipients, found an elasticity of 0.024. Martínez-Zarzoso et al. (2013a) used gravity modelling to assess the effect of Dutch aid on Dutch exports. They found an elasticity of 0.034 estimated for 1973–1999, which translates into an increase of exports of \$0.29 for each \$1 given in aid.

Until the 1990s, around 50% of donor development aid was tied to exports (Martínez-Zarzoso et al., 2008). However, Arvin and Baum (1997), Arvin and Choudhry (1997) and Arvin et al. (2000) found that aid without tying generated the same export-promoting effects as tied aid. They suggested other channels might explain the higher exports from donor countries. They included in these a sense of 'goodwill' towards donor exporters or the existence of trade concessions towards donors' exports. Aid may be seen as an export-promoting activity similar in effect to, for example, the presence of an embassy or consulate in the recipient country and the celebration of trade missions (Moons and van Bergeijk, 2011). In addition, Djajic et al. (2004) suggested aid might alter recipient preferences and technology, creating a permanent link with the exports of donors. For example, previous infrastructure projects financed by aid may create a permanent requirement for inputs produced by the donor.

2.3.2. *Computable general equilibrium modelling examining the impact of aid*

A series of studies using the National Institute Global Econometric Model (NiGEM) simulate the effect of aid on sending countries. Holland and te Velde (2012) examined the impact of aid provided by the European Commission on EU exports. For example, €51 billion of aid provided over the period 2014–2020 would generate an increase in EU GDP of 0.1% every year. In addition, EU exports would increase by on average 0.71% each year.

Carreras et al. (2016) used the same model with an updated database to analyse the effects of EU aid. They found the €77 billion (including the European Development Fund, the Development Cooperation Instrument, the Instrument for Pre-Accession Assistance (IPA) and the European Neighbourhood Instrument) would generate an 0.1% increase in exports.

Fic et al. (2014) used NiGEM to assess the effects of Dutch aid on the Dutch economy. They found that Dutch GDP would increase annually by 0.03% as a result of the aid. Moreover, Dutch exports would increase by on average 0.5%.

Holland and te Velde (2022) complement the broad existing literature that focuses on the social and ethical aspects of aid by exploring aid flows from a macroeconomic perspective. Their analysis estimates that a recent decision to cut UK aid has provided negligible direct savings for the UK, comes at a cost to the UK economy and poses significant humanitarian and social costs in many poor countries.

Their study also suggests that aid delivers good value for money in country. Every £1 spent on aid delivers at least triple its value in the aid-recipient region. In addition, when we take international spillovers of aid into account, well-directed aid delivers a net positive return to the UK. Every £1 of official development assistance (ODA) that is restored (i.e. cuts being reversed) over the period 2021/22–2023/24 can be expected to provide recipient regions with the equivalent of £2.98–£5.31 in goods and services and to raise UK GDP by £0.01–£0.13. The estimates suggest that the decision to cut the UK ODA budget (from 0.7% of GNI to around 0.5% of GNI) has cost in the range of £322 million to £423 million in lost UK exports, while up to 1.5 million more people in SSA may suffer hunger as a result.

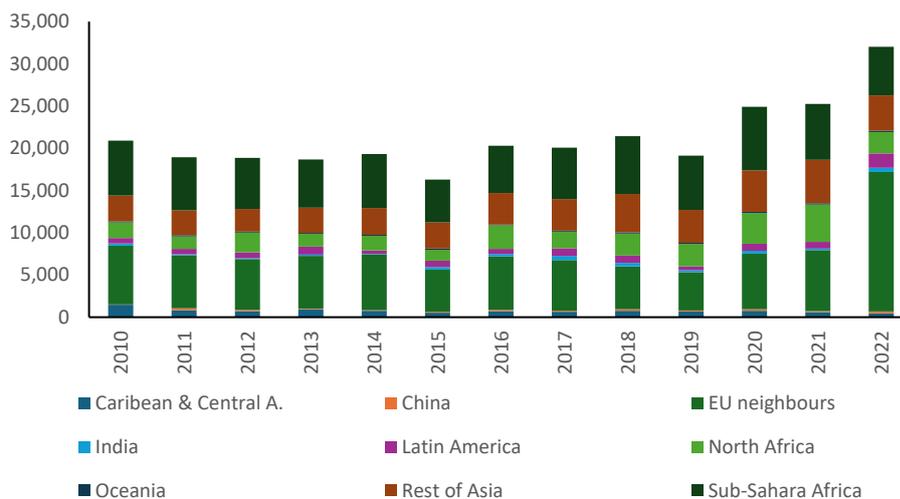
3. A description of current EU aid (2020–2022)

This section examines data on EU aid to developing countries, sourced from the OECD Credit Reporting System (CRS), which provides details on bilateral aid from EU institutions. The EU’s aid includes regional aggregates, such as ‘Africa, regional.’ To allocate this regional aid to individual African countries, we use each country’s share of aid received from EU institutions. Similarly, other regional aggregates, like ‘SSA, regional’ are distributed proportionally based on the same method.⁶

EU institutions’ aid totalled \$24.9 billion (€22.0 billion) in 2020 and \$25 billion (€22.1 billion) in 2021, and increased to \$32 billion (€28.2 billion) in 2022. The average aid for the period 2020–2022 was \$27.4 billion (€24.2 billion). Figure 2 shows the distribution of EU aid by broad regions between 2010 and 2022. In 2022, total aid to Africa included \$5.7 billion (€5.0 billion) to SSA and \$2.5 billion (€2.2 billion) to North Africa. There has been a rise in the share of EU aid to neighbouring countries, driven primarily by aid to Ukraine starting in 2022 following Russia’s invasion of the country. Most of the EU aid consists of ODA grants or ODA loans. In 2022, for example, over 90% of the aid was in the form of ODA grants, followed by ODA loans (4%), equity investments (1%) and other official flows (non-export credit) at 1%.

Between 2020 and 2022, SSA received 24% of the EU’s aid, making it the second-largest recipient region after the EU’s neighbouring countries, which accounted for 37%. North Africa received 13% of the aid. Other developing regions, including the rest of Africa, Asia and Latin America, collectively received smaller shares, with Asia at 17%, Latin America at 4% and India and China receiving just 1% each.

Figure 2: EU institutions’ total aid disbursements, 2010–2023 (\$ million)

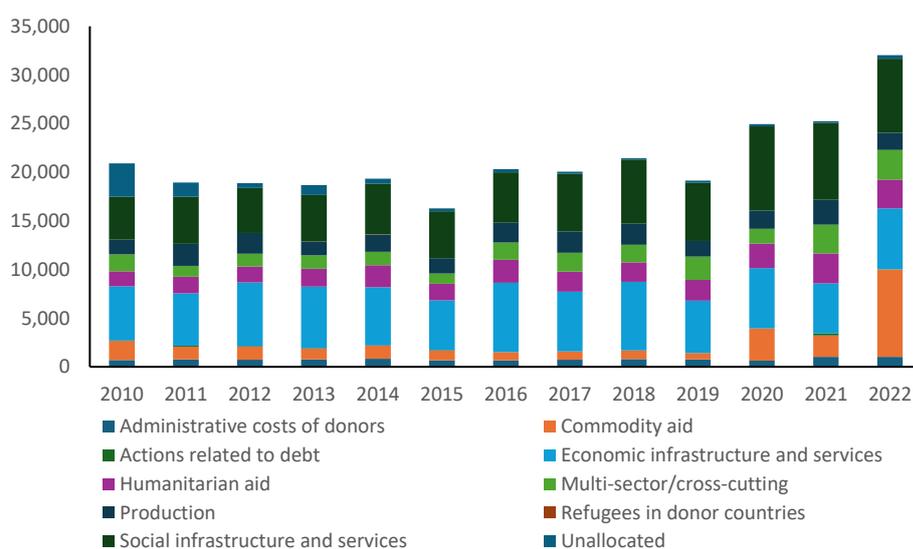


⁶ This is allocated year by year first. This means that, for example, Africa regional aid in 2020 is allocated to African countries based on each country’s aid from the EU institutions in 2020.

Source: OECD CRS

Figure 3 illustrates the distribution of EU aid by sector (we follow OECD CRS definitions). Until 2020, the allocation remained broadly consistent across sectors, with economic infrastructure and services and social infrastructure and services together accounting for just over 50% of total aid. From 2021 to 2022, economic infrastructure and services remained relatively stable, fluctuating between \$5.1 billion (€4.5 billion) and \$6.3 billion (€5.6 billion). Social infrastructure and services, which includes education, health and governance-related support, declined from a peak of \$8.7 billion (€7.7 billion) in 2020 to \$7.5 billion (€6.6 billion) in 2022. Starting in 2021, the distribution of EU aid by sector underwent changes, particularly in commodity aid,⁷ which surged from \$2.2 billion (€1.9 billion) in 2021 to \$8.9 billion (€7.9 billion) in 2022, mainly driven by aid allocated to Ukraine. Additionally, humanitarian aid experienced steady growth, increasing from \$2.5 billion (€2.2 billion) in 2020 to \$3.3 billion (€2.9 billion) in 2023.

Figure 3: EU aid by broad sector (2010-2022; \$ million)



Source: Authors' calculation from OECD CRS

⁷ Commodity aid refers primarily to general budget support, food aid and the provision of essential goods to developing countries.

4. Modelling approach and policy scenarios

This section models the potential impact of actual EU aid programmes on both donor and recipient countries using the GTAP model. As a general equilibrium model, GTAP is a global economic model that examines how different industries and countries interact. Unlike models that focus on just one sector (partial equilibrium) or that group industries into broad categories (macroeconomic models), GTAP provides a detailed picture of production and consumption across many sectors. It incorporates a comparative-static CGE framework based on general equilibrium theory, designed to assess the economy-wide impact of economic policies across multiple regions. It captures interactions among industries, households, investors, governments, importers and exporters while accounting for inter-industry linkages and trade relationships. The model assumes perfect competition, constant returns to scale in production and imperfect substitutability of traded goods. Additionally, it incorporates spillover effects, meaning that policy changes or economic shocks in one country can affect its trading partners through bilateral trade flows.⁸ The GTAP model is built on an input-output accounting framework that ensures all sources and uses of economic goods, as well as production inputs, are fully accounted for. GTAP is widely used to assess the economic impact of policies. We use a comparative-static model, where GTAP compares a baseline scenario with an alternative policy scenario at a fixed point in time. For this study, the standard GTAP closure is used (see Corong et al., 2017 for details on the GTAP model) – that is, that a region's trade balance remains constant.

We use the GTAP 11 database, which covers 160 regions, including 141 individual countries and 19 composite regions. For the purposes of this study, we adjust both the geographical and the sectoral aggregation to better align with the specific focus of the analysis. Consequently, the 160 countries in the GTAP database are consolidated into 12 regions based on their relevance to the study, and the 65 sectors are aggregated into 31 sectors.⁹ The aggregated regions include EU, EU neighbours, North Africa, SSA, Latin America, North America, Oceania, China, India, the Caribbean and Central America, as well as a composite region representing Rest of the World.

The total amount simulated is the average of 2020–2022 EU aid, amounting to \$27.4 billion (€24.17 billion) annually. The distribution of aid across regions is as follows: \$6.6 billion (€5.8 billion) to Africa excluding North Africa, \$4.8 billion (€4.2 billion) to Asia, \$3.5 billion (€3.1 billion) to North Africa, \$10.1 billion (€8.9 billion) to EU Neighbourhood Countries, \$0.6 billion

⁸ In the model, consumers seek to maximise their welfare within budget constraints, with a sophisticated representation of demand that accounts for regional differences in price and income elasticities. Firms aim to maximise profits by utilising the available resources efficiently. The production process integrates five primary factors of production – land, natural resources, physical capital and both skilled and unskilled labour – along with intermediate inputs, including imports, to produce final output. For a comprehensive discussion of the GTAP model, refer to Corong et al. (2017).

⁹ See Appendix C for details of region aggregation. When we report results by EU member state we use a disaggregated model of the EU into 27 individual models.

(€0.5 billion) to the Caribbean and Central America, \$0.18 billion (€0.16 billion) to China and \$0.15 billion (€0.13 billion) to Oceania.

The effectiveness of aid depends on how it is allocated and utilised. Aid directed towards productive investment can enhance the capital stock in recipient countries, leading to sustained increases in potential output. Conversely, aid spent primarily on current consumption may generate short-term benefits but is likely to dissipate unless it indirectly stimulates domestic investment. However, if aid is channelled towards investments that enhance long-term productive capacity, it can contribute to lasting economic growth in recipient countries and with that also generate positive spillover effects for donor economies, particularly through increased export demand from recipient countries experiencing reduced trade costs and higher income growth. We consider all these effects combining different types of aid into one simulation.

We categorise aid into five major components: economic infrastructure and services, social infrastructure and services, production support, AfT and other forms of aid. To assess the economic impact, we conduct model simulations based on these categorisations, examining three key policy scenarios (see Table 1).

Table 1: Summary of shock variables (amounts, million) and summary of how the shock is modelled on GTAP

	2020–2022 average	How is this modelled on GTAP?
Economic infrastructure and services	\$353 (€312)	Aid is added to the capital stock
Social infrastructure and services	\$8,046 (€7,096)	
Production	\$1 (€0.9)	
Other aid	\$11,426 (€10,083)	Other aid is added as a one-off shift in consumption
AfT	\$7,577 (€6,684)	Aid is put on the model as a reduction in trade costs (using econometric estimates)
Combined	\$27,403 (€24,174)	Combined

Source: Authors' calculation from OECD CRS

First, aid directed towards economic infrastructure and services and social infrastructure and services (together amounting to \$8.4 billion (€7.4 billion) on average over 2020–2022) is assumed to contribute to capital stock accumulation. This type of aid enhances long-term productivity by improving the physical and human capital necessary for sustained economic growth. To model this effect, we calculate the share of aid relative to the existing capital stock in recipient economies and introduce it as a capital stock shock in the GTAP model. This approach reflects the long-term benefits of aid by recognising its role in strengthening productivity, improving competitiveness and promoting sustainable economic expansion. Investment in infrastructure and social services not only improves domestic production efficiency but also enhances economic resilience, enabling recipient countries to integrate more effectively into global and regional markets.

Second, some aid flows, particularly those categorised under spending and humanitarian assistance (amounting to \$11.4 billion (€10.1 billion) on average over 2020–2022), support household consumption rather than direct investment in productive capacity. In this scenario, aid is assumed to increase household disposable income, leading to higher consumption expenditures. To model this effect, following Narayanan and Villafuerte (2020), we introduce a technological shifter variable that links aid-driven consumption increases to broader economic activity. This approach ensures the model captures not just the direct impact of aid on consumption but also its indirect effects on domestic production and productivity. While the short-term benefits of increased consumption are clear, the long-term impact depends on whether higher demand stimulates domestic investment and economic expansion.

Third, aid designated for AfT (amounting to \$7.6 billion (€6.7 billion) on average over 2020–2022) is modelled as a trade cost reduction shock, improving market access and efficiency. Within the GTAP model, to quantify this impact, we assume a 2% reduction in trade costs across Africa and a 1% reduction for other aid-recipient regions. These assumptions are based on findings from studies conducted by ODI Global and research by Calì and te Velde (2011), which explore the link between aid and trade cost reductions. The impact is implemented in GTAP using an import-augmenting technical change variable (called *ams* in GTAP) capturing how aid enhances trade efficiency and promotes export growth in recipient economies.

By combining the above mechanisms, we provide a realistic representation of how aid affects economic outcomes. This captures both the immediate and the long-term effects of aid, recognising that investment, consumption and trade facilitation work together to shape economic performance. This integrated approach ensures the simulation reflects the complex interactions of aid allocation and its diverse economic implications.

5. Modelling results and discussion

This section discusses the results of the simulation, focusing mainly on the EU as an aggregate and disaggregated by EU member states.¹⁰ In reporting the results, we focus on three main variables: GDP, exports and imports. We present the results in terms of percentage change from the baseline as well as absolute value of the pre- and post-simulation values.

Before we present the quantitative modelling results, we briefly review the economic pathways through which the aid shocks are expected to have wider impacts on GTAP.

- **Economic pathways via aid to economic and social infrastructure and services:** This type of aid raises the supply of capital for productive activities, which reduces the price of capital in beneficiary economies. This affects production in two ways. First, a general reduction in the price of capital increases demand for all factors of production. This leads to an increase in output in every sector (income effect). Second, as the cost of capital falls relative to prices of other factors, there is a substitution in favour of the use of capital. There will be a general increase in income (because of the increased demand for factors) and demand then increases for both domestic and imported goods. Therefore, exports from the EU will increase.
- **Economic pathways via other types of aid:** Other types of aid (e.g. humanitarian aid) are modelled through a one-off consumption increase, put in GTAP as an increase in total factor productivity (TFP) in recipient countries. This leads to an increase in the price paid for factors of production, leading to an increase in consumption and, consequently, to an increase in imports from all origins, including the EU.
- **Economic pathways via AfT:** AfT raises the efficiency of trading (modelled as lower import costs on GTAP). A reduction in the price of imports in beneficiary countries leads to an income and substitution effect: (i) an overall reduction in the domestic price of goods, which leads to more imports and also greater domestic demand (income effect); and (ii) a change from domestic goods towards imported goods (a substitution effect). The origin of imports is determined by an assumption of imperfect substitution among origins. As a result, EU exports (and exports from other countries) increase thanks to the boost in demand from beneficiary countries. In beneficiary countries, imports and consumption (the income effect highlighted above) increase and, also, exports go up as a result of a reduction in the price of inputs. This leads to a general increase in GDP in the beneficiary countries. For the EU, the reduction in trade costs in beneficiary countries leads to an increase in exports (as mentioned previously), a reduction in trade prices (because prices in beneficiary countries decrease) and a reduction in the value of imports.

¹⁰ See Appendix C for the rest of the regional groupings. When we report data on individual member states we run a disaggregated model where each EU country is modelled individually, whereas when we report on EU level we use an aggregated model. The results are therefore not strictly comparable. The sum of the impacts at EU member state level are not strictly comparable with EU impacts.

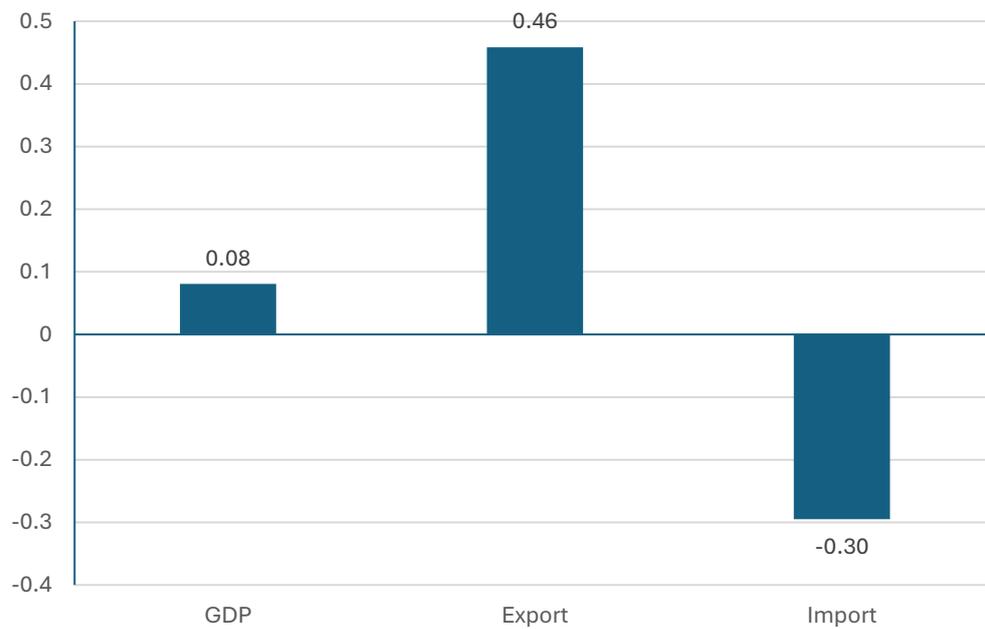
5.1. Impact on EU GDP

The simulation results indicate that EU aid to developing countries generates measurable economic benefits for the EU. Figure 4 provides the results of the simulation on GTAP. It shows that EU aid increases EU GDP by 0.08% (through the routes discussed above). This translates to a \$12.1 billion (€10.7 billion) GDP increase, which is 44% of the EU's \$27.4 billion (€24.2 billion) annual average aid between 2020 and 2022 (see Figure 5).¹¹

The impact on the EU varies by member state, depending on their direct and indirect trade linkages. The simulation results indicate that, while the magnitude of GDP gains varies, all EU member states experience economic benefits from aid to developing countries (see Figure 6). Smaller interconnected economies such as Malta (0.44%), Cyprus (0.25%) and Estonia (0.19%) see the highest relative GDP increases. Similarly, larger economies, including Germany (0.07%), Italy (0.07%) and France (0.05%), also benefit, albeit with smaller percentage gains given their larger economic base. These findings highlight that, while EU aid is designed to support LICs and MICs, it simultaneously fosters economic growth in donor nations. In absolute terms, Germany (\$2.59 billion, €2.29 billion), Italy (\$1.44 billion, €1.27 billion) and France (\$1.26 billion, €1.11 billion) record the largest GDP gains, followed closely by Spain (\$1.25 billion, €1.10 billion) and the Netherlands (\$1.06 billion, €0.94 billion). Belgium (\$899 million, €793 million) and Poland (\$573 million, €506 million) also see increases, demonstrating that the economic benefits of aid are distributed widely across the EU. This reinforces the idea that development assistance not only serves humanitarian and geopolitical objectives but also strengthens economic ties between the EU and recipient countries, ultimately benefiting donor economies.

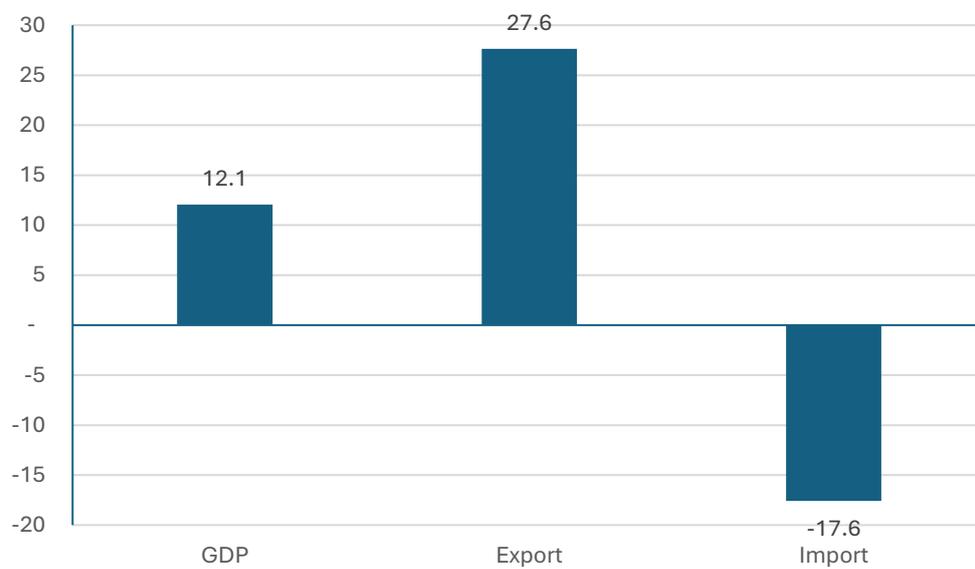
¹¹ In Appendix B, we simulate the impact of aid allocated to capital stock, consumption and AfT separately. We find that both capital and consumption for aid-recipient countries have relatively little impact on EU GDP. On the other hand, AfT targeted at reducing trade costs – such as improving customs efficiency and transport infrastructure – generates relatively greater benefits for the EU by enhancing its competitiveness – a gain of \$ 12.1 billion (€10.7 billion).

Figure 4: Impact of EU aid on EU GDP, exports and imports (percentage change)



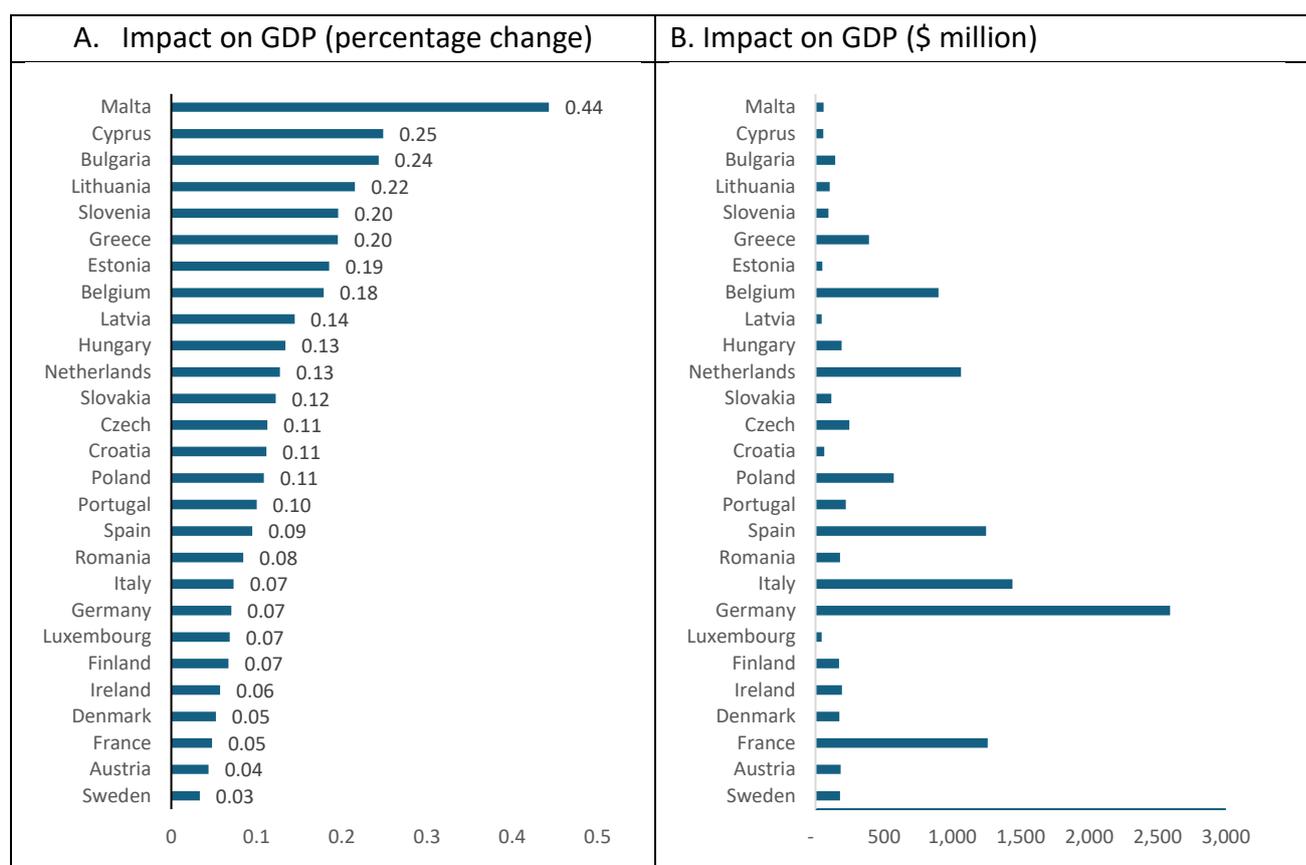
Source: GTAP simulation results

Figure 5: Impact of EU aid on EU GDP, exports and imports (\$ billion)



Source: GTAP simulation results

Figure 6: Impact of EU aid on GDP disaggregated by EU member states



Source: GTAP simulation results

5.2. Impact on EU exports

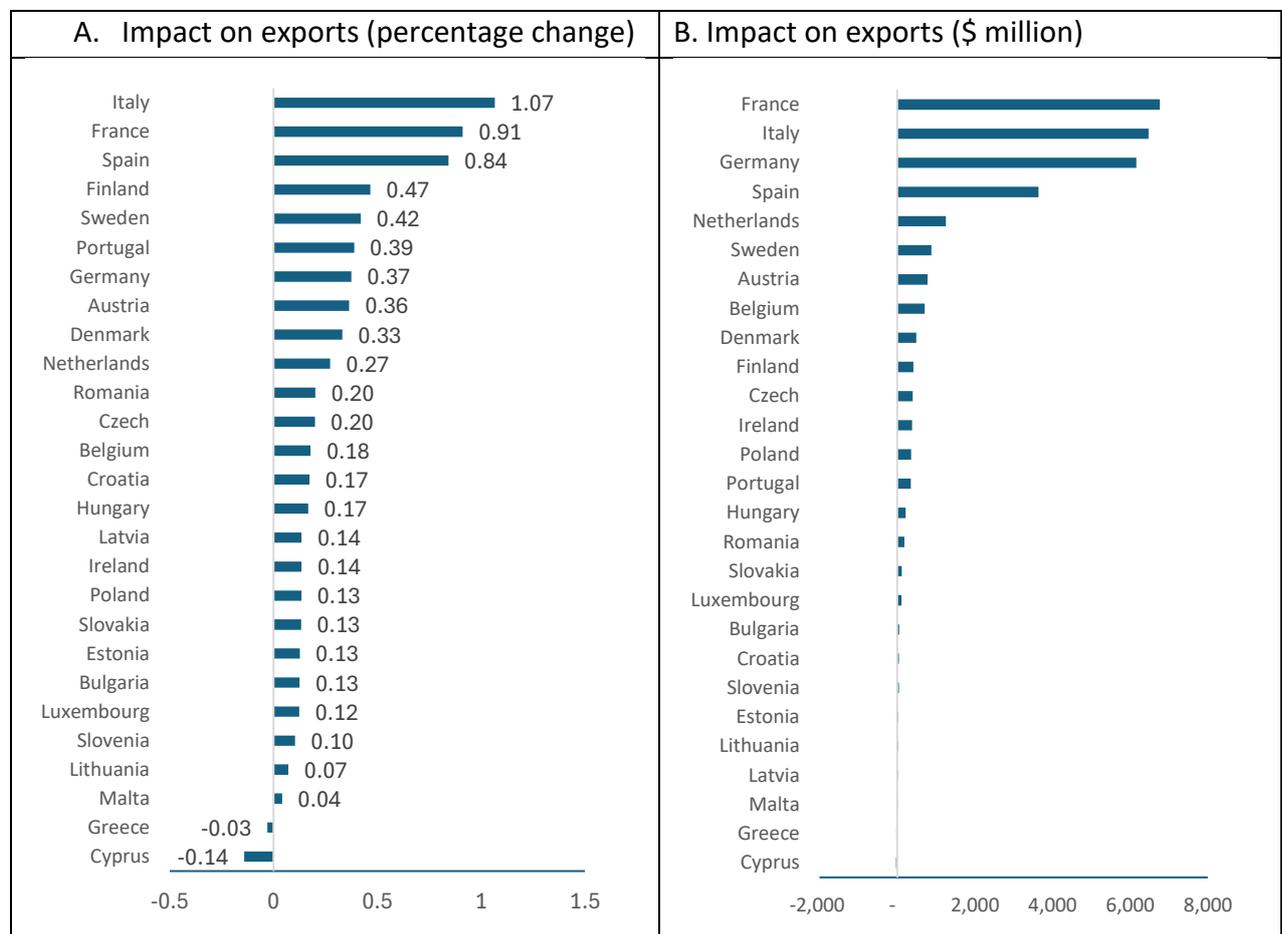
Figure 4 above reported the results of the GTAP simulation on exports; the economic pathways through which this occurs have been described above. The simulation results at the aggregate EU level indicate that total exports increase, with a 0.46% rise, translating to a gain of \$27.6 billion (€24.35 billion). This shows the positive impact of EU aid to developing countries on its own trade performance. Appendix Table B3 in Appendix B shows that most of the export gain comes from AfT channels, which leads to a substantial 0.42% increase in EU exports, amounting to \$27.2 billion (€23.98 billion). This shows that aid targeted at reducing trade costs, improving infrastructure and enhancing trade facilitation in recipient countries generates high economic benefits for the EU. Through the lowering of barriers to trade and by making recipient economies more integrated into global markets, such aid contributes directly to higher demand for EU goods and services as well as cheaper imports.¹²

¹² Other aid categories have smaller effects on EU exports (see Tables B1–B3 in Appendix B). Aid modelled as a consumption TFP shifter leads to a moderate 0.04% increase in EU exports, translating into a \$5.53 (€4.88 billion) billion rise. These small impacts indicate that, while increased household consumption in recipient countries slightly raises demand for EU exports, the effect is limited, likely because a significant portion of this additional spending does not translate into purchases from the EU. Aid directed towards capital stock accumulation results in a 0.002% decline in EU exports, equivalent to a \$132 million (€116.85 million) loss.

Figure 7 presents the impact of EU aid on member states' exports, revealing varying effects across countries. Most EU nations experience export growth, with Spain (0.84%), Italy (1.07%) and France (0.91%) recording the highest relative increases. Smaller economies such as Finland (0.47%), Sweden (0.42%) and Austria (0.36%) also benefit significantly.

In absolute terms, France (\$6.77 billion, €5.97 billion), Italy (\$6.48 billion, €5.72 billion) and Germany (\$6.16 billion, €5.43 billion) register the largest export gains, followed by Spain (\$3.64 billion, €3.21 billion) and the Netherlands (\$1.25 billion, €1.10 billion). Among mid-sized economies, Sweden (\$877 million, €774 million), Austria (\$783 million, €691 million) and Belgium (\$708 million, €625 million) see substantial increases. Portugal (\$351 million, €311 million) and Ireland (\$380 million, €335million) also benefit from expanded market opportunities.

Figure 7: Impact of EU aid on exports disaggregated by EU member state



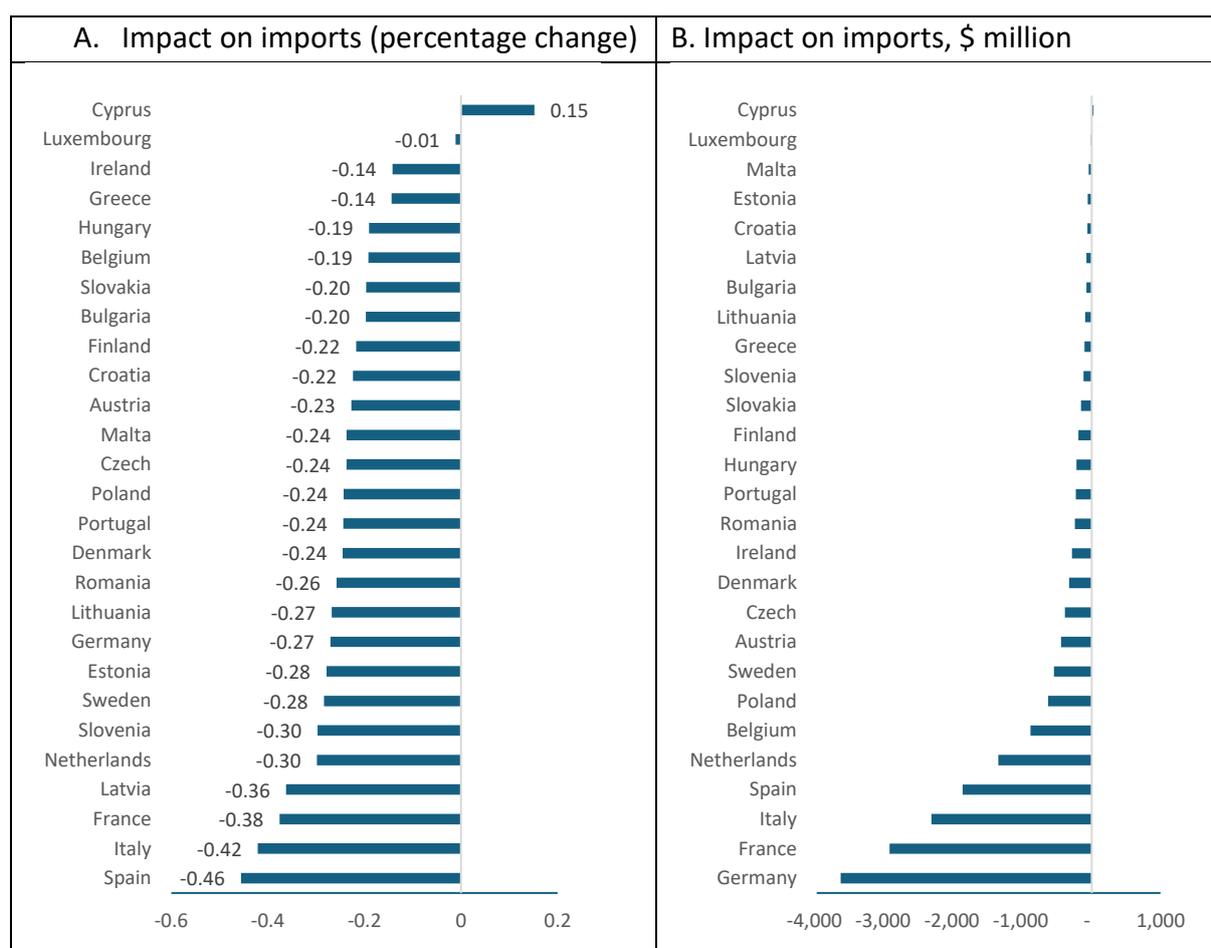
Source: GTAP simulation results

5.3. Impact on EU imports

Figure 4 reported the impact on EU imports. The GTAP simulation results indicate that EU aid to developing countries generally leads to a reduction in the value of EU imports (0.3%).¹³

The simulation results indicate that EU aid to developing countries has a varied impact on member states' imports, with most countries experiencing a decline (see Figure 8). Major economies such as Germany (-\$3.65 billion/-€3.22 billion, -0.27%), France (-\$2.94 billion/ -€2.59 billion, -0.38%) and Italy (-\$2.33 billion/-€2.06 billion, -0.42%) see the largest absolute reductions in imports. Similarly, Spain (-\$1.88 billion/-€1.66 billion, -0.46%) and the Netherlands (-\$1.36 billion/- €1.20 billion, -0.30%) also register declines. Belgium (-\$890 million/-€786 million, -0.19%), Poland (-\$634 million/- €559 million, -0.24%) and Sweden (-\$551 million/-€487 million, -0.28%) follow a similar trend. Among smaller economies, Latvia (-0.36%), Slovenia (-0.30%) and Estonia (-0.28%) experience relatively higher percentage reductions, though in smaller absolute values. Cyprus (0.15%) is the only exception, showing a slight increase of \$27 million (€24 million).

Figure 8: Impact of EU aid on imports disaggregated by EU member state



¹³ The AfT scenario results in a 0.29% decline in EU imports, amounting to a reduction of approximately \$17.6 billion (€15.5 billion). Consumption aid leads to a decline of 0.014% in EU imports, equivalent to a reduction of \$855 million (€755 million). Aid allocated towards capital stock accumulation is the only scenario that results in a modest increase in EU imports. It leads to a 0.003% rise, corresponding to an increase of \$63 million (€56million).

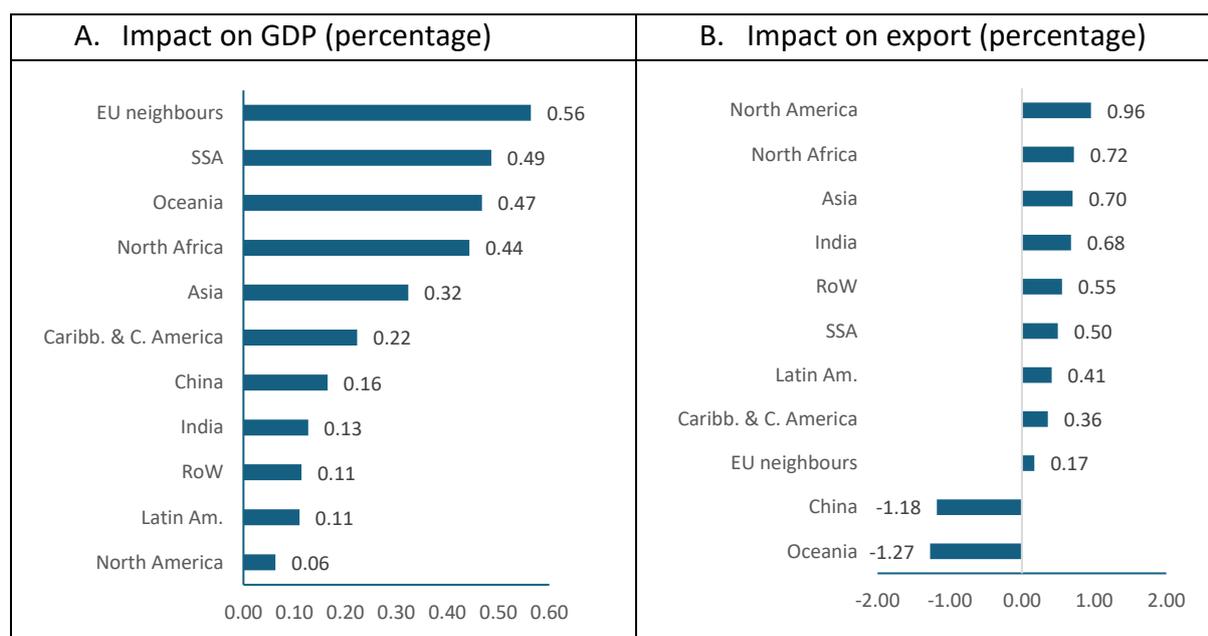
5.4. Impact on other countries/regions

With respect to the impact of EU aid on recipient economies, our simulations show that all recipient countries see increases in GDP (see Figure 9), which is of course one of the main reasons for the economic spillovers onto other countries. The largest GDP increases are observed in Africa (apart from North Africa), EU neighbours and Oceania, each growing at 0.5%. Gains in North Africa (0.44%) and Asia (0.32%) reflect the role of aid in enhancing economic activity, infrastructure and productivity. Other developing regions, such as Latin America (0.11%), the Caribbean and Central America (0.22%) and India (0.13%) also see some gains.

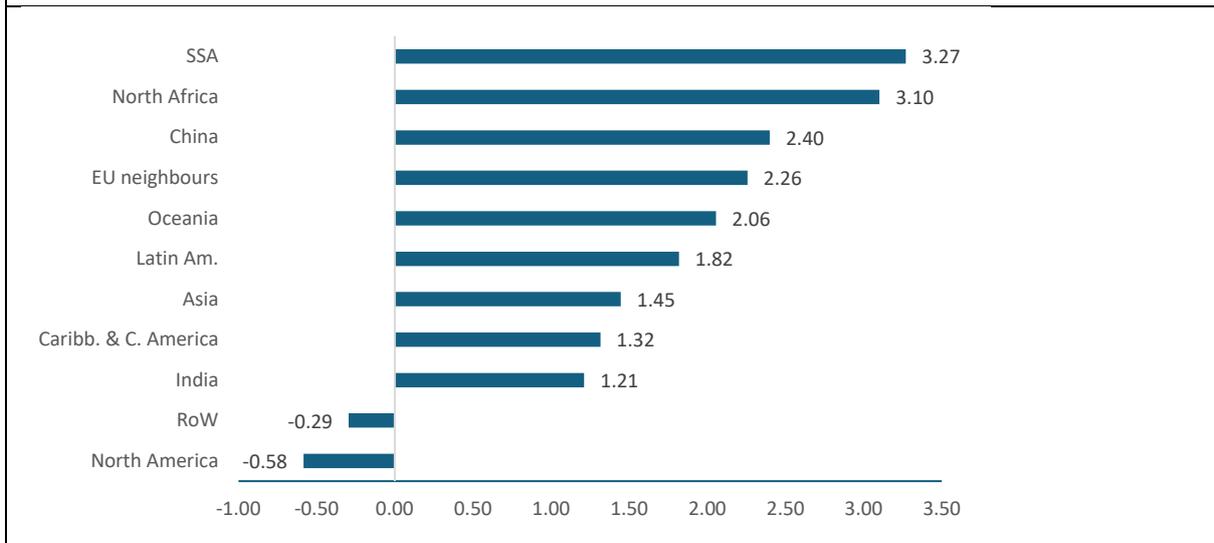
Most regions experience an increase in exports, with North America (0.96%), North Africa (0.72%) and Asia (0.70%) seeing the largest gains. SSA (0.50%) and India (0.68%) also record growth in exports, while Latin America (0.41%) and the Caribbean and Central America (0.36%) show relatively smaller positive effects. The EU’s neighbouring countries (0.17%) register moderate increases. In contrast, China (-1.18%) and Oceania (-1.27%) experience declines, likely because of shifts in trade flows resulting from aid allocation.

On imports, North America (-0.58%) and Rest of the World (-0.29%) see reductions. In contrast, SSA (3.27%) and North Africa (3.10%) register the highest increases. China (2.4%) and Latin America (1.82%) also experience import growth, while Oceania (2.06%), the EU’s neighbouring countries (2.26%) and Asia (1.45%) record moderate increases. The Caribbean and Central America (1.32%) and India (1.21%) show the smallest positive effects.

Figure 9: Impact of EU aid on countries/regions outside the EU



C. Impact on imports (percentage change)



Source: GTAP simulation results

6. Conclusions

This study has examined the impact of EU aid on EU economies. Specifically, we simulate the impact of EU institutions' aid (\$27.4 billion/ €24.2 billion) per year averaged over the period 2020–2022). First, aid can contribute to a country's capital stock by financing infrastructure and productive investments. Second, it can support consumption by acting as a technological shifter that influences broader economic dynamics. Third, it can be directed towards reducing trade costs through improved trade facilitation. Our simulation approach integrates these different channels of aid allocation in line with how aid was distributed between 2020 and 2022. We use the GTAP model. We used this model because it includes detailed bilateral export equations. Model estimates show that 44%, or nearly half, of the value of aid is redeemed by the EU (through the trade and growth effects induced by aid).

While the impact of aid depends on assumptions on how aid is being used, we find that, if we simulate EU aid relating to what it was spent on previously, the EU itself can gain significantly through trade linkages. The greatest spillover effect comes from the impact of aid via reducing trade costs – such as improving customs efficiency and transport infrastructure – which generates substantial trade benefits for the EU through more and lower-cost trade flows. The discussion of the simulation results in Section 5 suggests that, when aid is distributed during MFF 2028–2034 in the same way as EU aid over 2020–2022, the annual impact on GDP is 0.08% and on EU exports 0.46%. Importantly, the impact on EU exports (\$27.6 billion, €24.4 billion) is actually more than the initial EU aid provided.

These simulation estimates fall well within the estimates summarised in Section 2.3 on the impact of aid using modelling studies. It is reassuring that different modelling attempts come to very similar conclusions with respect to the impact of aid.

References

- Arvin, M. and Baum, C. (1997) 'Tied and untied foreign aid: theoretical and empirical analysis'. *Keio Economic Studies* 34(2): 71–79.
- Arvin, M. and Choudry, S. (1997) 'Untied aid and exports: do untied disbursements create goodwill for donor exports?' *Canadian Journal of Development Studies* 18(1): 9–22.
- Arvin, M., Cater, B. and Choudhry, S. (2000) 'A causality analysis of untied foreign assistance and export performance: The case of Germany', *Applied Economics Letters* 7: 315–19
- Ayele, Y., Mendez-Parra, M. and te Velde, D. W. (2024) *The Impact of Aid for Trade in Africa*. ODI Report. London: ODI
- Barrell, R., Holland, D. and te Velde, D. W. (2009) 'A fiscal stimulus to address the effects of the global financial crisis on sub-Saharan Africa'. Report by ODI and NIESR for ONE.
- Basnett, Y., Engel, J., Kennan, Kingombe, C., Massa, I. and te Velde, D. W. (2012) 'Increasing the effectiveness of Aid for Trade: the circumstances under which it works best'. Working Paper 353. London: ODI.
- Bearce, D., Finkel, S. E. and Perez-Linan, A. S. (2010) *The effects of US trade capacity building assistance on trade-related outcomes, 1999-2008*. Washington, DC: USAID.
- Briceño-Garmendia, C., Estache A. and Shafik, N. (2004) 'Infrastructure services in developing countries: access, quality, costs, and policy reform'. Policy Research Working Paper 3468. Washington, DC: World Bank.
- Busse, M., Hoekstra, R. and Koniger, J. (2011) 'The impact of aid for trade facilitation on the costs of trading'. Working Paper. Ruhr: University of Bochum.
- Calì, M. and te Velde, D. W. (2011) 'Does aid for trade really improve trade performance?' *World Development* 39(5): 725–740.
- Canning, D. and Bennathan, E. (2000) 'The social rate of return on infrastructure investment'. Policy Research Working Paper 2390. Washington, DC: World Bank.
- Carreras, O., Kirby, S., Liadze, I., Meaning, J., Mendez-Parra, M., Piggott, R. and te Velde, D. W. (2016) 'The effects of EU development co-operation on the EU'. Report. London: ODI.
- Chepeliev, M., Tyner, W. E. and van der Mensbrugghe, D. (2019) 'How differing trade policies may impact US agriculture: the potential economic impacts of TPP, USMCA, and NAFTA'. <http://dx.doi.org/10.2139/ssrn.3346662>

- Corong, E. L., Hertel, T. W., McDougall, R., Tsigas, M. E. and van der Mensbrugghe, D. (2017) 'The standard GTAP model, version 7'. *Journal of Global Economic Analysis* 2(1): 1–119.
- Das, G., Akgul, Z. and Narayanan, B. (2023) 'How do productivity benefits spill over across firms? Explorations in a heterogeneous firm applied general equilibrium trade model'. *Politická Ekonomie* 71(2): 104–129.
- Dennis, A. and Shepherd, B. (2011) 'Trade facilitation and export diversification'. *The World Economy* 34(1): 101–122.
- Djajic, S., Lahiri, S. and Raimondos-Moller, P. (2004) 'Logic of aid in an intertemporal setting', *Review of International Economics* 12(1): 151–61
- Estache, A. (2006) 'Infrastructure: a survey of recent and upcoming issues'. Draft. World Bank.
- Ferro, E., Portugal-Perez, A. and Wilson, J. S. (2012) 'Aid to the services sector: does it affect manufacturing exports?' Working Paper 5728. Washington, DC: World Bank.
- Fic, T., Kennan, J. and te Velde, D. W. (2014) *The effects of Dutch aid on development and the Netherlands: a modelling approach*. London: ODI.
- Galiani, S., Knack, S., Xu, L., and Zou, B. (2017), The effect of aid on growth: evidence from a Quasi-experiment, *Journal of Economic Growth*, 22 (1), 1-33
- Hertel, T. W. (2010) 'The global supply and demand for agricultural land in 2050: a perfect storm in the making?' *American Journal of Agricultural Economics* 93(2): 259–275.
- Holland, D. and te Velde, D. W. (2012) 'The effects of EU aid on receiving and sending countries'. Report by ODI and NIESR for ONE.
- Holland, D. and te Velde, D. W. (2022) 'The macro-economic effects of UK aid returning to 0.7% of GNI'. Discussion Paper 535. London: NIESR.
- Lloyd, T., McGillivray, M., Morrissey, O. and Osei, R. (2010) 'Investigating the relationship between aid and trade flows'. Research Paper 98/10. Nottingham: CREDIT
- Martínez-Zarzoso, I., Nowak-Lehmann, D., Klasen, S. and Larch, M. (2008) 'Does German development aid promote German exports?' Discussion Paper 170. Goettingen: Ibero America Institute for Economic Research.
- Martínez-Zarzoso, I., Nowak-Lehmann, F. and Klasen, S. (2013a) 'Dutch exports and Dutch bilateral aid'. University of Goettingen. Mimeo.
- Martínez-Zarzoso, I., Nowak-Lehmann D., Klasen, S. and Johannsen, F. (2013b) 'Does German development aid promote German exports and German employment?' Research Discussion Paper 227. Goettingen: Ibero America Institute for Economic Research.

- Massa, I. and te Velde, D.W. (2009) 'The trade distortion implications of loans and grants: An econometric examination'. Report by ODI for KfW Entwicklungsbank.
- Massa, I., Mendez-Parra, M. and te Velde, D. W. (2016) 'The macro-economic effects of development financial institutions in sub-Saharan Africa'. Working Paper. London: ODI.
- Mekasha, T. J. and Tarp, F. (2019) 'A meta-analysis of aid effectiveness: revisiting the evidence'. *Politics and Governance* 7(2): 5–28.
- Mendez-Parra, M. and te Velde, D. W. (2017) 'The effects of aid on EU employment and trade: an econometric investigation'. Working Paper 510. London: ODI.
- Moons, S. and van Bergeijk, P. A. (2011) 'Does economic diplomacy work? A meta analysis on the effect of economic diplomacy on international economic flows'. *The World Economy* 40(2): 336–368.
- Narayanan, B. and Villafuerte, J. (2020) 'Estimating the economic impact of COVID-19: a supply side analysis'. Paper presented during the 23rd Annual Conference on Global Economic Analysis, West Lafayette, IN, 15 March.
- Nilsson, L. (1997) *Essays on north-south trade*. Lund: Lund University
- Nowak-Lehmann, D., Martínez-Zarzoso, I., Klasen, S. and Herzer, D. (2009) 'Aid and trade—a donor's perspective'. *The Journal of Development Studies* 45(7): 1184–1202.
- OECD (Organisation for Economic Co-operation and Development) and WTO (World Trade Organization) (2015) *Aid for trade at a glance: reducing trade costs for inclusive, sustainable growth*. Paris: OECD.
- Portugal-Perez, A. and Wilson, J. S. (2008) 'Trade costs in Africa: barriers and opportunities for reform'. Policy Research Working Paper 4619. Washington, DC: World Bank.
- Pycroft, J. (2008) 'The impact of aid for trade in Ethiopia: a CGE-based simulation analysis'. Paper presented at 11th Annual Conference on Global Economic Analysis, Helsinki, 12–14 June.
- Rajan, R. G. and Subramanian, A. (2011) 'Aid, Dutch disease, and manufacturing growth'. *Journal of Development Economics* 94(1): 106–118.
- Silva, S. and Nelson, D. (2012) 'Does aid cause trade? Evidence from an asymmetric gravity model'. *The World Economy* 35(5): 545–577.
- Tarp, F. (2012) 'Aid effectiveness'. Working Paper. Helsinki: UN WIDER.
- Wagner, D. (2003) 'Aid and trade – an empirical study'. *Journal of Japanese International Economies* 17: 153–173.

Appendix A: EU member state exports and imports by source

Table A1: Import share of EU member states from each trading partner (%)

	China	India	North America	Oceania	Developing Asia	Latin America	Caribbean and Central America	North Africa	EU neighbours	SSA	Intra-EU	Rest of world	Total
Austria	1.6	0.5	3.0	10.4	0.0	4.2	0.3	0.1	0.3	3.4	75.7	0.5	100
Belgium	3.9	1.6	9.8	16.3	0.0	2.6	1.5	0.5	0.5	4.4	56.7	2.2	100
Bulgaria	3.3	0.5	2.6	6.1	0.0	4.8	1.1	0.5	1.5	20.2	58.6	0.8	100
Croatia	4.5	0.7	1.9	5.3	0.1	3.5	0.6	0.2	0.2	10.1	72.3	0.6	100
Cyprus	5.0	2.4	2.6	24.5	0.3	3.1	1.0	1.9	0.6	12.2	45.5	0.9	100
Czech	6.2	0.4	2.3	8.2	0.0	2.6	0.2	0.1	0.3	5.2	74.2	0.3	100
Denmark	6.2	1.1	7.0	16.4	0.2	3.1	1.2	0.6	0.5	3.4	59.3	1.0	100
Estonia	5.6	0.5	2.0	7.5	0.0	2.0	0.7	0.1	0.8	10.1	69.1	1.6	100
Finland	4.3	1.0	4.6	10.4	0.0	2.2	1.2	0.3	0.1	12.5	63.1	0.3	100
France	4.5	1.0	6.9	16.4	0.0	3.6	1.1	0.3	2.8	2.9	58.6	1.9	100
Germany	6.3	0.9	7.1	16.4	0.0	4.1	1.3	0.4	0.6	5.5	56.0	1.4	100
Greece	7.7	0.8	3.6	13.4	0.0	11.3	0.9	0.6	2.9	9.2	44.7	4.9	100
Hungary	6.1	0.5	3.0	7.7	0.0	2.5	0.2	0.1	0.2	7.4	72.1	0.2	100
Ireland	3.3	1.2	32.1	29.0	0.0	1.5	0.8	0.3	0.2	1.5	29.5	0.6	100
Italy	6.0	1.2	5.2	13.7	0.0	5.4	1.8	0.3	3.2	6.0	55.2	2.0	100
Latvia	6.4	0.6	3.9	7.1	0.0	2.5	0.3	0.1	0.1	12.1	66.6	0.3	100
Lithuania	5.1	0.3	2.8	7.8	0.0	3.7	0.4	0.2	0.1	18.2	60.9	0.5	100
Luxembourg	1.4	0.2	12.8	23.0	0.0	0.6	0.3	0.2	0.2	1.0	59.9	0.4	100
Malta	12.7	0.9	7.9	21.8	0.0	5.3	1.2	2.4	1.0	4.3	41.6	0.9	100
Netherlands	6.4	1.2	14.0	17.7	0.1	5.6	2.0	2.0	0.5	4.8	44.1	1.6	100
Poland	7.6	0.7	2.4	10.1	0.0	2.5	0.8	0.2	0.3	9.4	65.6	0.4	100
Portugal	4.3	1.0	3.0	9.1	0.0	3.6	2.8	0.3	1.8	3.5	68.0	2.6	100
Romania	4.4	0.5	2.3	6.0	0.0	2.9	0.5	0.1	0.5	9.8	72.7	0.3	100
Slovakia	3.9	0.3	1.0	8.1	0.0	2.3	0.1	0.1	0.3	7.6	76.2	0.1	100
Slovenia	7.8	0.8	1.8	9.8	0.0	3.4	1.3	0.1	0.3	8.8	65.3	0.6	100
Spain	6.4	1.2	5.8	12.8	0.1	5.2	3.7	0.7	4.4	3.6	52.6	3.5	100
Sweden	4.5	0.9	5.8	16.8	0.0	2.6	0.7	0.2	0.2	3.5	63.8	1.0	100

Source: GTAP 11 database

Table A2: Export share of each trading partner, by EU member state (%)

	China	India	North America	Oceania	Developing Asia	Latin America	Caribbean and Central America	North Africa	EU neighbours	SSA	EU	Rest of world	Total
Austria	4.0	0.6	7.1	0.0	1.9	1.0	0.2	0.5	4.0	0.7	61.0	13.9	100
Belgium	2.7	1.9	6.8	0.0	2.0	1.0	0.2	0.8	2.6	2.7	70.6	19.0	100
Bulgaria	3.9	0.6	3.2	0.0	2.8	0.5	0.3	2.1	16.5	2.3	57.2	8.7	100
Croatia	1.6	0.4	3.5	0.1	1.4	0.4	0.6	1.4	13.5	0.7	45.5	10.6	100
Cyprus	3.1	1.1	5.0	1.1	5.4	0.3	1.3	0.9	23.7	2.7	44.6	30.9	100
Czech	2.6	0.4	3.5	0.0	1.2	0.5	0.1	0.4	5.4	0.5	61.2	10.8	100
Denmark	4.5	0.5	9.6	0.0	2.8	1.3	0.4	0.5	3.4	1.4	62.5	24.2	100
Estonia	2.2	0.5	4.1	0.0	1.4	0.5	0.2	0.5	9.6	0.6	62.8	13.1	100
Finland	6.9	1.6	10.4	0.0	3.6	1.8	0.3	1.1	8.0	1.2	44.1	17.6	100
France	5.2	1.1	10.5	0.3	3.2	1.8	0.3	2.6	3.3	2.5	49.1	21.0	100
Germany	7.5	0.9	11.2	0.0	2.7	1.5	0.3	0.7	4.6	1.2	50.7	20.1	100
Greece	1.9	0.4	6.9	0.2	4.9	1.4	0.4	1.9	11.9	3.2	57.3	18.7	100
Hungary	4.1	0.4	5.9	0.0	1.2	0.7	0.2	0.5	6.7	0.5	52.4	9.6	100
Ireland	5.2	1.3	20.6	0.0	2.0	1.0	0.3	0.4	2.0	1.2	46.7	27.4	100
Italy	4.4	0.8	11.4	0.0	3.5	2.0	0.5	2.1	5.4	1.6	53.2	19.3	100
Latvia	1.7	0.4	4.2	0.0	2.9	0.5	0.4	0.6	11.5	1.2	62.5	15.1	100
Lithuania	1.2	0.4	6.2	0.0	2.9	0.3	0.3	0.6	15.9	1.0	51.4	14.1	100
Luxembourg	1.4	0.4	5.1	0.0	1.3	1.2	0.7	0.3	1.2	1.0	61.0	19.8	100
Malta	6.2	0.7	7.7	0.0	2.3	0.4	0.9	1.2	2.4	2.6	55.7	26.4	100
Netherlands	2.5	0.6	6.4	0.0	2.3	3.0	0.6	0.6	2.9	2.1	66.3	19.9	100
Poland	1.8	0.4	4.4	0.0	1.3	0.5	0.3	0.5	8.2	0.7	65.8	12.7	100
Portugal	3.6	0.3	7.0	0.0	1.2	3.0	0.3	2.0	1.6	5.8	64.4	16.1	100
Romania	2.9	0.6	4.7	0.4	2.4	0.7	0.2	1.9	8.6	1.2	68.3	10.8	100
Slovakia	3.4	0.1	4.4	0.0	0.8	0.3	0.1	0.4	5.6	0.4	77.3	8.1	100
Slovenia	1.8	0.4	2.8	0.0	1.6	0.5	0.1	0.4	11.2	0.4	62.6	7.2	100
Spain	2.8	0.5	7.3	0.0	2.3	3.4	1.0	3.8	3.7	1.9	46.9	18.2	100
Sweden	5.2	0.9	9.1	0.0	2.6	1.7	0.3	0.9	3.2	1.4	74.7	26.4	100

Source: GTAP 11 database

Appendix B: Detailed GTAP simulation results

Table B1: Impact of EU aid on infrastructure modelled as a shock in the capital stock

Region/country	Variable	Percentage change (%)	Pre-simulation value (\$ million)	Post-simulation value (\$ million)	Difference (post-pre) (\$ million)
China	GDP	0.0001	12310,429	12310447	18
	Export	-0.0062	23922,38.5	2392091	-148
	Import	0.0027	2162284.75	2162343	58
India	GDP	0.0001	2651476.25	2651478	2
	Export	-0.0032	407843.4688	407830.4	-13
	Import	0.0018	520252.3125	520261.7	9
EU	GDP	0.0001	14812623	14812638	15
	Export	-0.0020	6461266	6461134	-132
	Import	0.0010	6026822	6026885	63
North America	GDP	0.0000	22328060	22328054	-6
	Export	-0.0033	3206604.5	3206500	-105
	Import	0.0016	3823050.5	3823110	59
Rest of world	GDP	0.0000	14917770	14917777	7
	Export	-0.0019	4768921.5	4768832	-90
	Import	0.0013	4659570.5	4659632	61
Oceania	GDP	0.0091	56733.7813	56738.96	5
	Export	0.0343	21076.6582	21083.89	7
	Import	-0.0102	33961.4141	33957.94	-3
Asia	GDP	0.0055	4561216	4561468	252
	Export	0.0097	1679240.625	1679404	164
	Import	0.0032	1686531.25	1686586	54
Latin America	GDP	0.0007	4013153.25	4013181	28
	Export	0.0031	609265.25	609284.2	19
	Import	-0.0012	580786.625	580779.8	-7
Caribbean and Central America	GDP	0.0053	635707.875	635741.7	34
	Export	0.0109	162021.1406	162038.9	18
	Import	0.0010	202116.2969	202118.3	2
North Africa	GDP	0.0283	557677.3125	557835.4	158
	Export	0.0659	161513.6875	161620.2	107
	Import	0.0003	204794.5469	204795.1	1
EU neighbours	GDP	0.0091	2772250.75	2772504	253
	Export	0.0216	777046.9375	777215.2	168
	Import	0.0002	718227.6875	718229	1
SSA	GDP	0.0162	1776986.375	1777275	288
	Export	0.0564	434712.3125	434957.4	245
	Import	-0.0127	463352.5313	463293.6	-59

Source: GTAP simulation results

Note: This table presents the impact of EU aid on infrastructure modelled as a shock in the capital stock. Specifically, aid allocated to economic infrastructure and services as well as social infrastructure and services is considered to contribute to capital stock accumulation. Of the \$27.4 billion (€24.17 billion) in EU annual aid, these aid categories cover \$8.4 billion (€7.41 billion), or 30.6% of the total aid. In the GTAP model, we introduced the share of this aid in the recipient economy's capital stock as a shock to capital stock. 'Pre-simulation' refers to the values before the simulation, while 'post-simulation' represents the values after the simulation, both measured in millions of US dollars. The 'difference' column indicates the change between the post-simulation and the pre-simulation values, also in millions of US dollars.

Table B2: Impact of EU aid to consumption as a shock in the TFP shifter

Region/country	Variable	Percentage change (%)	Pre-simulation value (\$ million)	Post-simulation value (\$ million)	Difference (post-pre) (\$ million)
China	GDP	-0.00100	12310429	12310304	-125
	Export	0.09610	2392239	2394539	2300
	Import	-0.01120	2162285	2162042	-243
India	GDP	0.00060	2651476	2651491	15
	Export	0.07190	407843.5	408136.7	293
	Import	-0.00550	520252.3	520223.7	-29
EU	GDP	-0.00120	14812623	14812450	-173
	Export	0.04010	6461266	6463857	2591
	Import	-0.00660	6026822	6026423	-400
North America	GDP	0.00070	22328060	22328208	148
	Export	0.08040	3206605	3209183	2579
	Import	-0.02860	3823051	3821958	-1093
Rest of world	GDP	-0.00070	14917770	14917671	-99
	Export	0.04660	4768922	4771145	2223
	Import	-0.01160	4659571	4659032	-539
Oceania	GDP	0.12880	56733.78	56806.85	73
	Export	-0.06050	21076.66	21063.9	-13
	Import	0.22250	33961.41	34036.97	76
Asia	GDP	0.07230	4561216	4564512	3296
	Export	0.01320	1679241	1679463	222
	Import	0.07240	1686531	1687752	1221
Latin America	GDP	0.00830	4013153	4013486	333
	Export	0.05630	609265.3	609608.5	343
	Import	-0.01280	580786.6	580712.1	-75
Caribbean and Central America	GDP	0.03690	635707.9	635942.6	235
	Export	0.00700	162021.1	162032.5	11
	Import	0.04910	202116.3	202215.5	99
North Africa	GDP	0.15800	557677.3	558558.6	881
	Export	-0.02810	161513.7	161468.3	-45
	Import	0.20000	204794.5	205204.1	410
EU neighbours	GDP	0.40530	2772251	2783487	11236
	Export	-0.47900	777046.9	773325.1	-3722
	Import	0.70000	718227.7	723255.6	5028
SSA	GDP	0.18680	1776986	1780306	3319
	Export	-0.17010	434712.3	433972.7	-740
	Import	0.34160	463352.5	464935.2	1583

Source: GTAP simulation results

Note: This table presents the impact of EU aid to consumption as a shock in the TFP shifter. Specifically, EU aid flows to those categorised under commodity aid, humanitarian assistance and others is assumed to contribute to consumption. Of the total \$27.4 billion (€24.17 billion) in aid, these categories account for \$11.4 billion (€10.05 billion), or 41.7%. In the GTAP model, following Narayanan and Villafuerte (2020), we introduce a technological shifter variable to capture how aid-driven increases in consumption translate into broader economic activity. 'Pre-simulation' refers to the values before the simulation, while 'post-simulation' represents the values after the simulation, both measured in millions of US dollars. The 'difference' column indicates the change between the post-simulation and the pre-simulation values, also in millions of US dollars.

Table B3: The impact of EU aid to AfT as a shock in trade cost

Region/country	Variable	Percentage change(%)	Pre-simulation value (\$ million)	Post-simulation value (\$ million)	Difference (post-pre) (\$ million)
China	GDP	0.16583	12310429	12330843	20414
	Export	-1.27112	2392239	2361830	-30408
	Import	2.40827	2162285	2214359	52074
India	GDP	0.12625	2651476	2654824	3348
	Export	0.61095	407843	410335	2492
	Import	1.21571	520252	526577	6325
EU	GDP	0.08171	14812623	14824726	12103
	Export	0.42039	6461266	6488429	27163
	Import	-0.28996	6026822	6009347	-17475
North America	GDP	0.06224	22328060	22341958	13898
	Export	0.88078	3206605	3234848	28243
	Import	-0.55763	3823051	3801732	-21319
Rest of world	GDP	0.11467	14917770	14934876	17106
	Export	0.51029	4768922	4793257	24335
	Import	-0.28482	4659571	4646300	-13271
Oceania	GDP	0.32976	56734	56921	187
	Export	-1.24722	21077	20814	-263
	Import	1.84329	33961	34587	626
Asia	GDP	0.24518	4561216	4572399	11183
	Export	0.67783	1679241	1690623	11383
	Import	1.37073	1686531	1709649	23118
Latin America	GDP	0.10078	4013153	4017198	4045
	Export	0.35366	609265	611420	2155
	Import	1.83277	580787	591431	10645
Caribbean and Central America	GDP	0.18102	635708	636859	1151
	Export	0.34233	162021	162576	555
	Import	1.26554	202116	204674	2558
North Africa	GDP	0.25647	557677	559108	1430
	Export	0.68054	161514	162613	1099
	Import	2.89783	204795	210729	5935
EU neighbours	GDP	0.14923	2772251	2776388	4137
	Export	0.62318	777047	781889	4842
	Import	1.55461	718228	729393	11166
SSA	GDP	0.28253	1776986	1782007	5021
	Export	0.607	434712	437351	2639
	Import	2.93732	463353	476963	13610

Note: This table presents results from the impact of EU aid to AfT as a shock in the iceberg trade cost. EU AfT aims to enhance trade by building capacities, improving policy-making, upgrading infrastructure and facilitating trade. Of the total \$27.4 billion (€24.17 billion) in aid, AfT categories account for \$7.6 billion (€6.71 billion), or 27.7%. We model a reduction in trade cost as a result of AfT as a reduction in the iceberg trade cost. Following Cali and te Velde (2011) and Ayele et al. (2024), we assume AfT reduces trade cost by between 1% and 2%. 'Pre-simulation' refers to the values before the simulation, while 'post-simulation' represents the values after the simulation, both measured in millions of US dollars. The 'difference' column indicates the change between the post-simulation and the pre-simulation values, also in millions of US dollars.

Appendix C. Aggregation of countries into regions on GTAP

Asia	mng,khm,idn,lao,mys,phl,tha,vnm,xse,afg,bgd,npl,pak,lka,kaz,kgz,tjk,uzb,arm,aze,geo,irn,irq,jor,kwt,lbn,omn,pse,syr,xws
Caribbean and Central America	cri,gtm,hnd,nic,pan,slv,xca,dom,hti,jam,pri,tto,xcb
China	chn
EU	aut,bel,bgr,hrv,cyp,cze,dnk,est,fin,fra,deu,grc,hun,irl,ita,lva,ltu,lux,mlt,nld,pol,prt,rou,svk,svn,esp,swe
EU neighbours	xef,alb,srb,blr,rus,ukr,xee,xer,tur
India	ind
Latin America	arg,bol,bra,chl,col,ecu,pry,per,ury,ven,xsm
North Africa	dza,egy,mar,tun
North America	can,usa,mex,xna
Oceania	xoc
SSA	xnf,ben,bfa,cmr,civ,gha,gin,mli,ner,nga,sen,tgo,xwf,caf,tcd,cog,cod,gnq,gab,xac,com,eth,ken,mdg,mwi,mus,moz,rwa,sdn,tza,uga,zmb,zwe,xec,bwa,swz,nam,zaf,xsc
Rest of world	aus,nzl,hkg,jpn,kor,twn,xea,brn,sgp,xsa,gbr,che,nor,xsu,bhr,isr,qat,sau,are,xtw

Appendix D: EU aid by regions (average of 2020-2022), million

Region	Aid 2020–2022 average (million)				GTAP shock	
	Capital stock	Consumption	AfT	Total	Capital stock	Consumption
Caribbean and Central America	\$252 (€226.)	\$164 (€147)	\$184 (€163)	\$601 (€531.3)	0.01004	0.03630
China	\$6 (€5)	\$12 (€11)	\$160 (€140.7)	\$179 (€157.6)	0.00001	0.00026
EU neighbours	\$2061 (€1813)	\$6193 (€5443)	\$1863 (€1639)	\$10118 (€8895)	0.01636	0.39631
India	\$11 (€10)	\$8 (€7)	\$321 (€281.4)	\$339 (€298)	0.00010	0.00048
Latin America	\$331 (€291)	\$236 (€209)	\$535 (€470)	\$1103 (€970)	0.00176	0.00899
North Africa	\$1172 (€1033)	\$589 (€518)	\$1764 (€1551)	\$3525 (€3102)	0.05791	0.15742
Oceania	\$57 (€50)	\$51 (€45)	\$47 (€41)	\$155 (€137.8)	0.02315	0.12239
Asia	\$1836 (€161)	\$2034 (€1797)	\$886 (€780)	\$4756 (€4175)	0.00993	0.07212
Sub-Saharan Africa	\$2673 (€2343)	\$2138 (€1886)	\$1816 (€1599)	\$6627 (€5828)	0.03733	0.18047
Total	\$8400 (€7386)	\$11426 (€10099)	\$7577 (€6670)	\$27403 (€24155)		

Source: Authors' elaboration using OECD CRS

Note: This table reports the amount of aid shocked in the GTAP model. Total aid is \$27.4 billion (€24.2 billion). Capital stock refers to EU aid, specifically aid allocated to economic infrastructure and services, as well as social infrastructure and services. Consumption refers to EU aid, specifically aid allocated to consumption. This includes certain aid flows, particularly those categorised under spending and humanitarian assistance. Of the total \$27.4 billion (€24.17 billion) in aid, these categories account for \$11.4 billion (€10.08 billion), or 41.7%. In the GTAP model, following Narayanan and Villafuerte (2020), we introduce a technological shifter variable to capture how aid-driven increases in consumption translate into broader economic activity. AfT refers to EU aid for AfT. We model a reduction in trade cost as a result of AfT as a reduction in the iceberg trade cost. Following Cali and te Velde (2011) and Ayele et al. (2024), we estimate that AfT reduces trade cost by between 1% and 2%.