WORKING PAPER

Designing "optimal" sanctions on Russian imports

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Global Governance Programme-473

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Abstract

Restricting Russian imports is an important instrument in Allies' sanction toolbox. Rather than arbitrarily choosing the set of targeted imported products and the level of import tariff increasesm (as is typically done in the literature), we follow the recent contributions on "optimal sanction" strategies. Using GTAP, we endogenize the scope of sectors targeted, the magnitude of tariff increases, and the disbursement of tariff revenues in the context of a computable general equilibrium (CGE) model. This allows us to identify the set of Allied import restrictions that best achieves the Allies' objectives of inflicting the highest economic pain on Russia while at the same time keeping self-harm to Allies as low and as equitably distributed as possible.

With regard to scope we find that, instead of targeting Russian imports across the board, the Allies fare better when limiting their import sanctions to products from the eight most-imported Russian sectors. Regarding optimal tariff levels, we find that, rather than imposing all-out import bans, tariff increases in the range of 20 to 25 percentage points best achieve the Allies' objectives. Finally, the Allied coalition could benefit from a burden-sharing arrangement in which proceeds generated from the additional tariff revenues are redistributed among Allies, and other cash transfers are allowed for. Doing so would result in a more equitable distribution of economic losses among Allied countries – at hardly any additional "cost" to the coalition (in terms of extra losses to Allies or reduced losses to Russia). Such an arrangement could significantly strengthen cohesion, resilience, and longevity of the Allied coalition, and thus ought to become a component of an optimal sanction strategy. As an alternative to redistributing tariff revenue among coalition countries, Allies could consider using those funds towards supporting Ukraine directly. Doing so would involve a small sacrifice by Allies and would scarcely compromise the effectiveness of Allied sanctions. However, it could greatly help mitigating the human catastrophe unfolding in and around Ukraine.

Keywords

Acknowledgments

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Introduction

In response to Russia's war of aggression in Ukraine an international coalition of at least 40 countries (the "Allies"[1]) has formed to impose economic sanctions on Russia. The group of Allies consists of economic powerhouses, including the United States, the European Union, the UK, and Japan, but also small economies such as the Bahamas, Micronesia and San Marino, as well hitherto neutral countries, like Liechtenstein, Iceland, Singapore, and Switzerland.[2] While sanctions have been as diverse as the group of Allies itself, they have often included financial measures against Russia's central bank and commercial banks, increased import tariffs or even import bans, export controls, investment bans, travel restrictions, seizure of internationally held assets, or the suspension of international cooperation.[3]

Some observers gloomily predict that sanctions on Russia will fail to achieve their objectives, no matter how stringent the measures, or how large the coalition of Allies. Typical arguments include: (1) Allied sanctions don't hurt Russia's economy enough to force it to modify its behavior; (2) sanctions kick in with a delay, and too late to affect the war in Ukraine; (3) sanctions inflict unsustainable economic pain on imposing countries, particularly on those countries that have developed a dependency on Russian oil and gas, precious metals, and other raw materials; and (4) given that different Allies are affected differently by the imposition of sanctions with some Allies losing out big and others even benefitting, the coalition of sanctioning countries is going to buckle and fall apart before sanctions can unfold their true impact on Russia.

Setting aside the considerable subjectivity of these arguments[4] and the fact that there are many different types of sanctions ranging from investment bans to seizure of internationally held assets, our paper shows that the proper *design* of sanctions can make the difference. Analyzing concerted import tariff increases as the policy intervention of choice for Allies, we conclude that the right design choices enable Allies to impose sanctions that (1) significantly impact Russia's economy (2) in the short term, while (3) inflicting moderate levels of self-harm to Allies, and that such self-harm can be (4) shared equitably among coalition members. In other words: Well-designed sanctions work.

Motivation, methodology, and road map

Given the dependency of the Russian economy on exports,[5] observers have suggested that drastic increases of Allied import tariffs on Russian exports are an important instrument available to the Allies (*see, e.g.*, Hausman 2022, Chaney et al. 2022, Kennedy 2022). Compared to other types of sanctions, such as price caps or quotas, tariff increases have the benefit that they are relatively easy to administer and fast to implement.[6] This means that Allies can coordinate their actions expeditiously and implement a coherent set of sanctions practically overnight. Non-prohibitive tariffs (*i.e.,* tariffs that are not equivalent to an outright import ban) have the additional advantage that they generate extra tariff revenues for sanctioning countries, so-called tariff rents.

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1   Janet Yellen, the US Secretary of Treasury, called the coalition of Allies a *cartel*, noting "… from a general economic point of view ... the larger the cartel, the better". We prefer the term "Allies", although we have no cavils with Secretary Yellen's characterization.

2   At the time of this writing, the sanctioning countries include US, UK, EU27, Montenegro, Albania, North Macedonia, Japan, Korea, Taiwan, Singapore, Canada, Australia, New Zealand, Switzerland, Norway, Iceland, Liechtenstein, and the Bahamas. The most up-to-date list of sanctioning countries is maintained by PIIE. Of course, Ukraine has cut any economic ties with Russia ever since the war began.

3   For an up-to-date overview of Allied sanctions, *see, e.g.,* resources provided by Sidley Austin LLP.

4   Whether a sanction rises to the level of "unsustainable self-harm to Allies", or constitutes "an acceptably high level of hurt imposed on Russia" clearly lies in the eyes of the beholder.

5   We note that it is not only the Russian economy writ large that is dependent on exports, but also the Russian government. According to Sturm and Menzel (2022) 40% of the Russian Federal Budget are collected through taxes and other charges related to the export on oil and gas alone.

6   To impose higher import tariffs on Russia, Allies have to take the initial step of stripping Russia of its most favored nation status granted by the covered agreements of the World Trade Organization. In March of 2022, all members of the G7 as well as the EU 27 have agreed to revoke Russia's most-favored tariff (MFN) status, permitting them to increase import tariffs on Russian imports at their discretion.

A valid critique against the imposition of non-prohibitive import tariffs is that by continuing to import Russian goods and services Allies are indirectly financing Russia's war (*e.g.*, Chaney 2022). Critics thereby assert that the Russian government is making money from exports *directly* through export taxes and the mineral extraction tax (MET) and *indirectly t*hrough its grip over state-controlled and state-affiliated companies, such as Rosneft, Gazprom, Sberbank, or LukOil. While this is a valid concern, defenders of import tariffs have argued that high import tariffs provide economic actors in sanctioning countries with a strong price signal to diversify away from sanctioned products or to substitute them altogether. Furthermore, additional tariff revenue can be used to counteract Russia's war. For example, tariff revenue taken in by individual Allied countries can be used to provide financial aid to Ukraine, to deal with the ongoing refugee crisis caused by Russia's war, or to implement adjustment assistance programs for those individuals, sectors, and/or countries most affected by Allied sanctions on Russia (Gros 2022).

Using computable general equilibrium (CGE) models, a number of recent contributions have estimated the economic effects of Allied import measures on Russia, the Allies, and non-sanctioning countries (*see, e.g.*, Chepeliev et al. 2022; Felbermayr et al. 2022; Evenett and Muendler 2022; Langot et al. 2022; Mahlstein et al. 2022; WTO 2022). These papers have either modeled complete import bans by Allies (*see, e.g.,* Chepeliev et al. 2022; Felbermayr et al. 2022; Mahlstein et al. 2022), or simply assumed tariff increases of a certain magnitude (Evenett and Muendler 2022; WTO 2022, Scenario 2(b)). In addition, all these papers have develop assumptions about the Russian export sectors that would be targeted by Allies.[7]

To the best of our knowledge, this paper constitutes the first attempt to endogenize, in the context of a CGE model, the scope of targeted sectors, the level of tariff increases, and the choice over how to disburse the additional tariff revenues generated.[8] We seek answers to three simple policy questions that may help Allied policymakers design an efficient sanction strategy on Russia:

 i.   Should the Allies target all imports from Russia or only a subset of sectors?;

 ii. By how much should Allies increase tariffs on Russian imports?; and

 iii. Is it economically advantageous to enact burden-sharing arrangements in which Allies redistribute the extra tariff revenue and engage in further cash transfers to support the countries most affected by the sanctions?

When addressing these three research questions we are guided by the assumptions that Allies act in a coordinated fashion, and pursue three objectives: (1) maximizing Russia's economic pain, while at the same time (2) minimizing that of Allies, and (3) keeping the distribution of economic gains and losses among Allies as narrow as possible.[9] We include objective **(**3) because we acknowledge concerns of fairness and equitability across countries: Policymakers, media, and the general public in any Allied country that suffers excessive economic losses relative to the other Allies may feel that their country is "bearing the brunt" of the sanctions efforts. With respect to countries that experience outsized economic *gains* from the imposition of sanctions, public opinion in the other sanctioning countries may be that this country is a "profiteer", benefiting from an otherwise dire situation, and on the back of other, less fortunate, Allies. In that sense, as far as economic effects on Allies go, outliers

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7   These assumptions were not made in a vacuum. Rather, they were based on observation of ongoing events, actions by a subset of Allies, or statements made by Allied policymakers.

8   We are hereby inspired by recent contributions on "optimal sanctions" against Russia (*see, e.g.*, Gros 2022, Sturm and Menzel 2022, Sturm 2022a, Sturm 2022b). This literature applies the microeconomic optimum- tariff theory (Johnson, 1951) to the topic of sanctioning Russia for its invasion of Ukraine.

9   Since individual objectives on their own may yield outcomes incompatible with the other two objectives, any optimal sanction strategy is likely to imply *constrained* maximization/minimization.

in any direction may threaten the cohesiveness, resilience, and longevity of the Allied coalition. Thus, an equitable dispersion of the sanction burden appears to be a worthwhile, albeit probably not the most important, objective from the perspective of the Allies.[10]

To address the above research questions we apply CGE modeling to simulate the effects resulting from Allied import tariff shocks of various magnitude and for different sets of target sectors. Each shock is compared to a pre-sanction baseline, which allows us to estimate the short- to medium term economic effects potential Allied import sanctions.[11]

We conduct our analysis using an approach common among trade economists, the Global Trade Analysis Project (GTAP). GTAP is a micro-founded multi-country, multi-sector macro-economic framework that considers intermediate linkages. The model was specifically designed for trade policy analysis. GTAP is used around the globe for economic impact assessment of trade and investment policy measures.

GTAP has two key elements: (1) a standard modeling framework and (2) a global dataset. The GTAP modeling framework is based on standard economic theory and has been described in detail elsewhere.[12] GTAP is able to report effects in various economic metrics, including changes in real GDP, real income,[13] export and import volumes and prices, exchange rates, and terms of trade.[14]

The second GTAP element is a well-documented global database of international trade, economy-wide inter-industry relationships, and national income accounts. The GTAP dataset and economic parameters we apply are adapted from Narayanan et al. (2012). We updated the version 8 GTAP data inputs to reflect economic conditions around 2017-2019 using macro-economic statistics from IMF's World Economic Outlook data and disaggregated trade statistics from the World Bank's World Integrated Trade Solution (WITS) system. For purposes of our analysis, we defined 32 geographic regions (whereby Russia and the most important Allies and non-Allies are separate regions), and used all 65 available sectors.

The rest of the paper addresses the three research questions posed above: the optimal *scope of sanctions, i.e.,* the selection of sectors to be targeted by Allied import measures; the optimal *level* of Allied import sanctions; and the effectiveness of burden-sharing arrangements among Allies.

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10 Of course, Allies can alternatively or additionally take active steps towards achieving an equitable sanction burden across Allies by engaging in burden-sharing arrangements among Allies. Such arrangements are discussed below.

11 We interpret our results as short-term effects. This is so, because our simulations are run as comparative statics. In other words, the supply for each economy as a whole is fixed, *i.e.,* we do not allow labor or capital growth/contraction of an economy. Note, however, that our model does consider a re-allocation of resources (labor, capital, land) across sectors within each economy.

12 The GTAP model is further documented in Hertel (1997) and in Corong et al. (2017). The simulated general equilibrium effects were obtained using the General Equilibrium Modeling Package (GEMPACK), *see* Harrison et al. (1996), Harrison et al. (2000), and Horridge et al. (2018).

13 Real GDP measures the productive capacity of an economy – the aggregate quantity of goods and services produced. Improvements (deterioration) in real GDP are generated from more (less) efficient allocation of resources, technological progress, changes in productivity, and capital or labor growth. Real GDP does not incorporate relative price changes (such as terms-of-trade effects or inflation). Real income is the income of countries after adjusting for relative price changes. Real income changes are typically interpreted as a useful indicator of changes in a country's economic welfare since real income measures the amount of goods and services that a country can actually purchase.

14 "Terms of trade" is a measure of a country's export prices expressed as a function of import prices. All things equal, a deterioration of terms of trade – lower export prices relative to import prices – is harmful to the welfare of an economy, because it has to export more goods and services to be able to afford the same amount of imports. Conversely, an improvement in terms of trade is beneficial to an economy, because it can enjoy more imports for the same amount of exports. A change in terms of trade can be caused by international supply or demand shocks, exchange rate movements, or structural changes in the domestic economy.

Which Russian export sectors should Allies target?

This section addresses research question (i) on sanction scope: Should Allies target all imports from Russia or only a subset of sectors? ***Figure 1*** reports the simulated effects of various levels of Allied import tariff increases on Russian exports in terms of real GDP and real income.[15] Each panel plots changes in real GDP (vertical axis) resulting from tariff increases of various levels (horizontal axis; measured in percentage point, or "pp", increases[16]). It compares two interventions: Allied import tariff hikes on *all* Russian exports (dashed lines) and on the *eight* sectors in which the majority of Allied imports occur (solid lines).[17] Estimates of the effects on real GDP are provided for Russia (Panel a)) and for the weighted average across Allies (Panel b)).[18],[19] ***Figure 2*** repeats the same exercise for a different economic metric, namely for changes in real income (as a proxy for economic welfare).[20]

Considering the simulated effects for changes in **real GDP**, we see that Russia's economic losses are higher when Allies limit themselves to targeting a subset of sectors only.[21] This is true irrespective of the level of import tariffs, *i.e.*, along the entire x-axes. The reason for higher Russian losses in the context of a more limited scope of sectors appears to be as follows: The imposition of Allied import tariffs on an important subset of the Russian economy forces the country to engage in inefficient reallocation of resources – away from the comparatively efficient export sectors, and towards (non-sanctioned) sectors in which Russia's comparative advantage is smaller. The need for reshuffling of resources is less pronounced if all Russian sectors are equally affected by Allied across-the-board import measures.

For Allies (*see* panel b) of ***Figure 1***), losses for the two interventions are practically identical for tariff increases under 30 pp, from which point onwards Allied losses are smaller for the limited set of target sectors.[22] The reason is straightforward: When limited to eight sectors, Allies can continue to import non-sanctioned Russian products,[23] thus avoiding potential self-harm resulting from sanctions. Lower levels of self-harm from a limited target scope are particularly pertinent at higher tariff increases.

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15 Most Allies have expanded their Russia sanctions on Belarus to punish the country for permitting Russia to use its territory as a staging ground for Russia's invasion of Ukraine. We have considered this in our modeling by extending any Allied sanctions to Belarus. However, since the focus of this paper in the economic impact of sanctions on Russia, we will not report effects on Belarus individually. The interested reader is directed to ***Table 1*** to ***Table 10***, which reports results on a country-by-country basis.

16 We assume that all Allies agree to coordinate their actions and increase their import tariffs by the same magnitude. Suppose the EU imposed import tariffs of 10% on Russian sector *X* pre sanctions, and Japan imposed 20%. Then an increase of 10 pp results in an EU tariff of 20% and a Japanese tariff of 30% with sanctions.

17 The eight Russian sectors that are most imported (in terms of import value by the Allies) include oil, gas, coal, petro and coal products, various non-precious metals, chemical products, and gas distribution. These eight sectors together account for over 80% of all Allied imports from Russia.

18 We define the group of Allies as consisting of US, UK, EU27, Japan, Korea, Taiwan, Singapore, Canada, Australia, Switzerland, and Norway. This appears to capture most countries that have imposed sanctions on Russia, except for smaller players such as New Zealand, Iceland, Liechtenstein, some ex-Warsaw Pact countries, or Micronesia, because each of these countries is hard to separate out in GTAP). The GDP-weighted average gives more relative weight to large economies; it is thus an expression for gains and losses of the *average* household located in any of the Allied countries.

19 We exclude Ukraine from the coalition of Allies. Ukraine's immediate response to Russia's invasion of its sovereign territory has been an imposition of a complete embargo on all trade, finance, and business activities with Russia/Russian individuals. We consider it highly unlikely that the country will scale back its embargo as long as the war rages. Ukraine is thus unlikely to coordinate its sanctions with Allies, least of all if Allied action consists of non-prohibitive import tariffs only. We also note that we do not report estimated effects on Ukraine in our output tables (***Table 1*** through ***Table 10***). The results would be meaningless given that we have not modeled the impact of Russia's invasion on Ukraine, such as the destruction of Ukrainian production factors, increased transaction costs due to destruction of infrastructure, and the country's transition towards a war economy. (For an estimate of the economic effect of Russia's invasion of Ukraine, see WTO (2022), Scenario 1.)

20 On the difference between real GDP and real income, *see* footnote 13, above.

21 As per ***Figure 1***, the solid blue line (Russia's losses) is consistently below the dashed blue line, indicating higher losses for Russia when the target scope of Allied sanctions is limited.

22 As per panel b) of ***Figure 1***, the dashed orange line is consistently below the solid line, indicating smaller losses for Allies overall when the target scope is limited.

23 Next to hydrocarbon fuels and metals (*i.e.*, the eight sectors at issue), Russia is also a leading exporter of agricultural commodities, fertilizer, lumber, and precious stones and metals, to name just a few products. Some of these products are relatively difficult to substitute for from the perspective of Allied economies. The Atlas of Economic Complexity provides a useful at-a-glance overview of the Russian export sector.

Figure 1. Percent change in real GDP for Allies, Russia (all vs. limited set of sectors)[24]
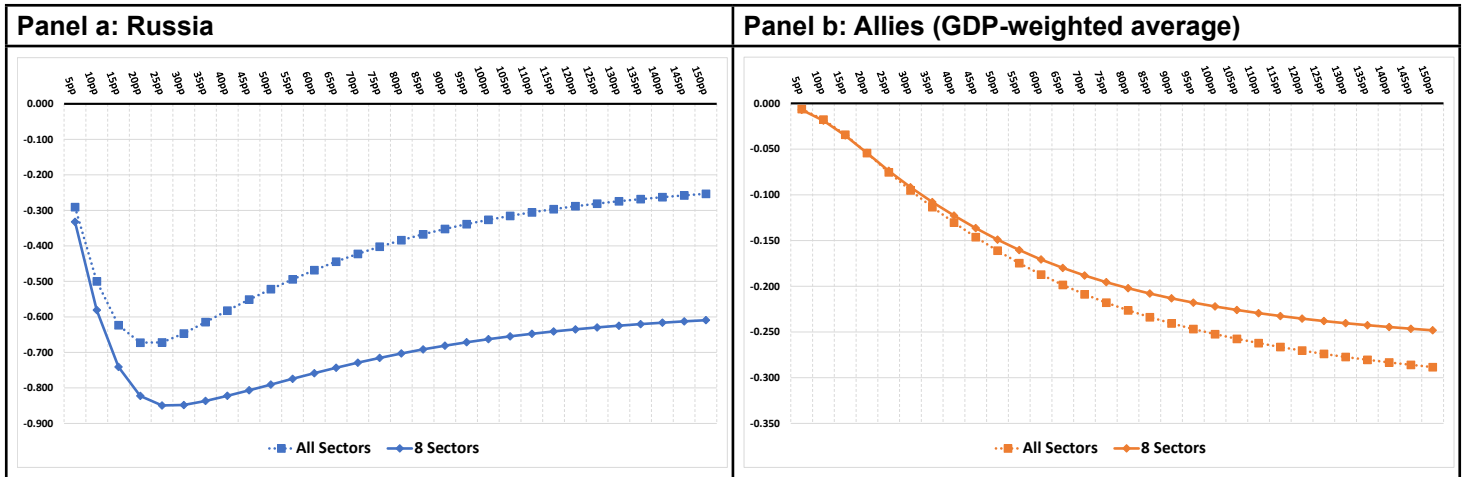
Panel a: Russia	Panel b: Allies (GDP-weighted average)

Source: Authors
Note: Results for Russia and Allies have different scale. Check units.

Figure 2. Percent change in real income for Allies, Russia (all vs. limited set of sectors)[25]

Panel a: Russia	Panel b: Allies (GDP-weighted average)
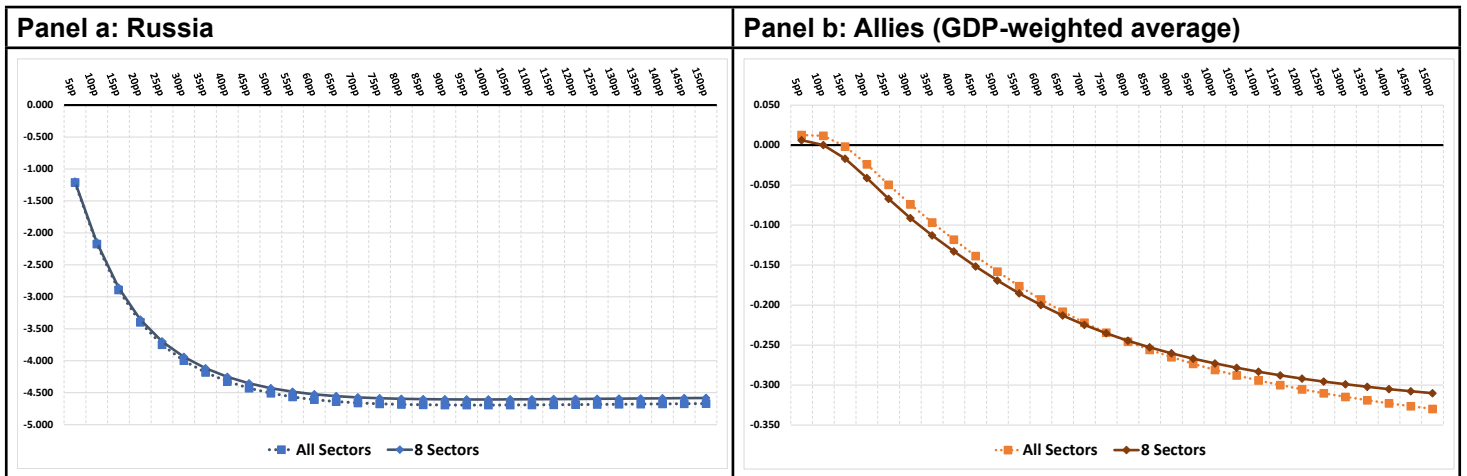
Source: Authors
Note: Results for Russia and Allies have different scale. Check units.

Turning to the simulated effects for changes in **real income**, the choice between targeting all and some Russian export sectors is less clear-cut. While Russian losses from Allied sanctions on all sectors are consistently larger than those on the eight sectors, the results are practically indistinguishable at tariff increases below 30 pp. Even for higher increases, the difference never exceeds one-tenth of a percent (*compare **Table 2** with **Table 4***).

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24 **Table 1** and **Table 3**, attached at the end of this paper, provide country-by-country breakouts of these results.
25 **Table 2** and **Table 4**, attached at the end of this paper, provide country-by-country breakouts of these results.

Looking at the effects of import sanctions on <u>Allies</u> themselves, targeting all versus a subset of sectors produces nearly the same real-income effects. The Allied loss curve for all sectors (dashed line) is consistently above that for the eight products (solid line) for tariff increases under 80 pp, at which point the curves cross. This means that for smaller increases, targeting all Russian imports results in slightly less self-harm on Allies. For tariff increases of higher magnitude, a focus on eight sectors becomes more advantageous for Allies.[26] However, the differences between the two interventions are minor throughout – at no point more than 2/100th of a percent (*compare* Tables 2 and 4).

The above analysis would suggest that the superior scope of target sectors by Allies is not an across-the-board import tariff. Rather, it may be favorable for the Allies to consider selective import tariff increases on particular target sectors. As shown, doing so will result in higher economic losses to Russia, potentially coupled with higher gains or smaller losses to Allies themselves (depending on the size of the tariff sanction). In that sense, focusing Allied import sanctions on the eight sectors in which the majority of Allied imports occur may be a step towards the Allies' optimal sanction strategy.[27] We therefore continue our analysis for the subset of the eight sectors described above.[28]

By how much should Allies raise import tariffs on Russian products?

Having addressed the question of scope of sanctions in the previous section, we now discuss the scale (or magnitude) of sanctions. We analyze by how much Allies should increase tariffs on Russian imports.

Figure 3 plots changes in real GDP for tariff increases of different magnitude for the eight Russian sectors discussed above.[29] Similarly, *Figure 4* reports changes in the same eight sectors, this time for the economic metric real income. Like before, each figure displays Russian losses (Panel a)) and gains/losses across all Allies (Panel b)).

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26 The reason for the intersecting Allied loss curves is that at smaller tariff increases, terms-of-trade gains for Allies amplify economic gains and mitigate losses from reduced access to Russian imports. That is why tariffs on all Russian products are slightly more beneficial for Allies at smaller tariff increases. At higher tariff interventions, however, economic losses from reduced access to Russian imports dominates Allied terms-of-trade gains, thus favoring a limitation of tariff action to eight sectors.

27 We have not run all possible combinations and permutations of Russian export sectors for Allies to target. While we deem it unlikely, we cannot rule out that different combination of target sectors may yield even higher economic losses to Russia and/or higher gains or smaller losses to the Allies. However, we must leave this task for further research.

28 We have run the entire set of results presented below for the alternative intervention, in which all Russian export sectors are targeted. These results are reported in *Table 3* and *Table 4* for the base case, and are available upon request for the extensions discussed below. In general, many, if not all, of the findings reported for the reduced target scope in this paper remain intact when all Russian export sectors are targeted.

29 We assume that Allies impose the *same* sanction level on all target sectors, rather than different tariff increases for different Russian export sectors. We believe that this assumption is reasonable from both a policy and a practicability standpoint.

Figure 3. Percent change in real GDP for Russia and Allies (8 selected sectors)
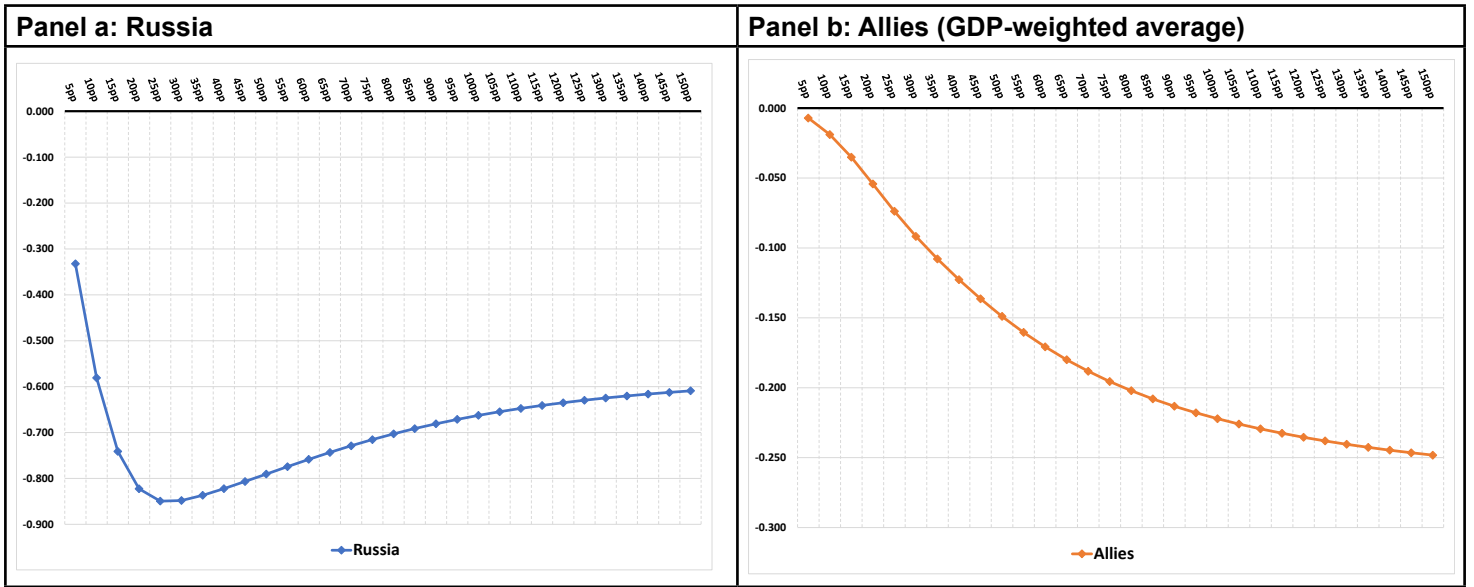
Panel a: Russia	Panel b: Allies (GDP-weighted average)

Source: Authors
Note: Results for Russia and Allies have different scale. Check units.

Figure 4. Percent change in real income effects for Russia and Allies (8 selected sectors)

Panel a: Russia	Panel b: Allies (GDP-weighted average)
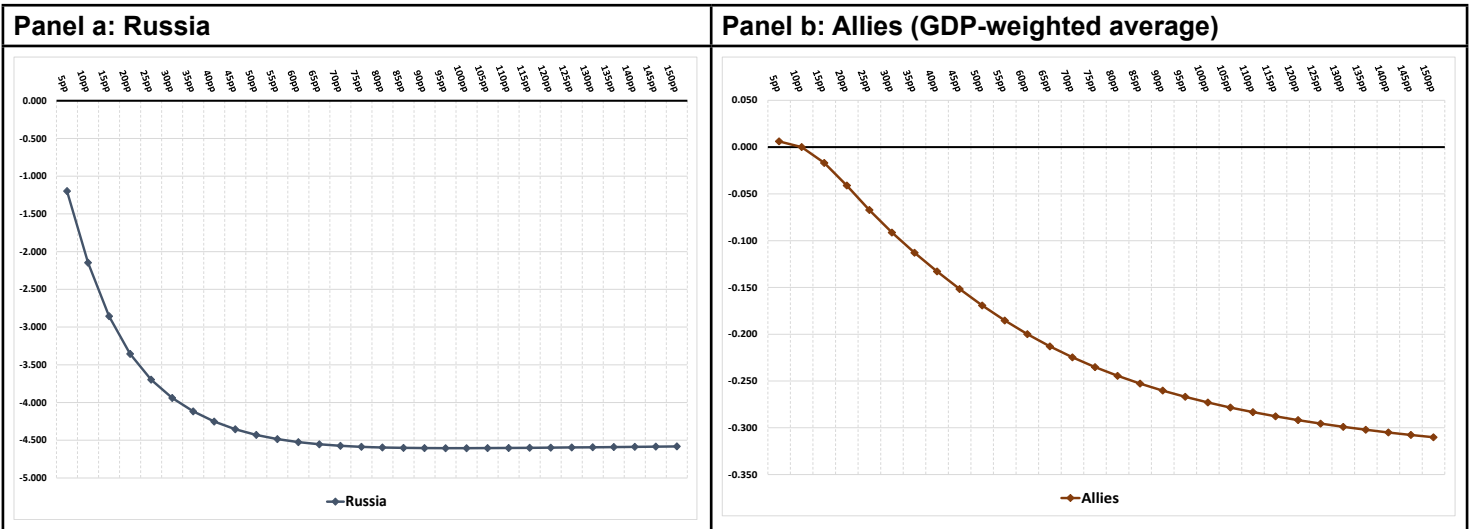
Source: Authors
Note: Results for Russia and Allies have different scale. Check units.

Analyzing **real GDP** effects, *Figure 3* shows that the <u>Russian</u> loss curve hits a minimum (*i.e.,* Russian losses are at a maximum) at the 25 pp mark at which Russia experiences a 0.85% real GDP loss. For higher tariffs, Russia's losses diminish again, and asymptotically approach the terminal loss suffered by a complete import ban (reasonably approximated by a tariff increase of 150 pp) at around 0.61%.[30,31]

<u>Allies</u> must trade off import sanctions with real GDP losses at any level of tariff increase. Losses are small for moderate tariff hikes and then increase as tariff increases become bigger, albeit at a declining rate. Allied real-GDP losses are highest for an import embargo (150 pp tariff hike) at 0.25%. In terms of dispersion of losses within the coalition of Allies, we make two observations. *First,* comparing the weighted average real GDP losses of the two subgroups EU27 and non-EU Allies,[32] we note that the bigger the tariff increases, the more losses of these two groups drift apart (*see Figure 5*). This suggests that the distribution of losses becomes less equitable, the larger tariff increases the Allied coalition would agree upon. *Second*, to further visualize the dispersion of Allied losses at different tariff levels, *Figure 6* plots country-specific results (*see Table 1*) around the Allied loss curve. The tighter the vertical distance between the biggest winner (or the smallest loser) and the biggest loser among Allies, the more equitable the results are from the perspective of Allied policymakers. As *Figure 6* confirms, the dispersion around the Allied loss curve is smallest for small tariff increases, and then expands considerably as tariff hikes get bigger. The dispersion appears to expand particularly rapid above the 30 pp mark.

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30 We have examined the economic dynamics behind the kink in Russia's real GDP loss curve. It can be explained by the existence of high export taxes imposed by Russia on oil, gas, and petroleum and coal products, and on the interaction of these export taxes with Allied import tariffs. At lower levels, Allied import tariffs amplify the harmful effect of Russian export taxes: Import tariffs and export taxes together stymy Russian exports of oil and gas. This results in inefficient reallocation of Russian resources, thus weakening Russia's economy. Yet, as Allied import tariffs increase and Russia's export volumes decrease, the marginal effect of Russian export taxes diminishes at an increasing rate.

31 We note that there has been academic debate regarding the magnitude of Russian export taxes in the GTAP database. Some authors (*e.g.,* Orlov 2016; Orlov and Grethe 2014) point to sizable discrepancies between export tax rates for oil, gas, and petroleum products as mandated in the Russian Tax Code and various Government Decrees on the one hand, and GTAP inputs on the other. In response, these authors have made *ad-hoc* adjustments to the GTAP database with the aim of correcting for such discrepancies. Others (*e.g.,* Laborde et al. 2013) take note of the mentioned discrepancies, but advise against making ad-hoc changes to the GTAP database. They recall that GTAP inputs generally are not based on data collection at the product level (but at the sectoral level). In that sense, GTAP inputs flow from processing of officially reported macrodata generated in social accounting matrices (so-called input-output tables), rather than from tracking product-specific regulation or legislation (*ibid.,* p. 4). Furthermore, in the GTAP database, export taxes on energy products are defined as the price distortion between domestic and export prices. This difference can be the result of explicit taxes, but can also result from different policies, such as export constraints/restrictions or strategic behavior (such as monopoly pricing by Gazprom or heavily subsidized domestic prices). It is thus possible that the specifications of Russian export tax rates on energy products in the GTAP database are a composite of a number of different policies, only one of which is the official export tax rate. Modifying one policy (*e.g.,* export taxes on oil or gas) without changing the others may then result in biased estimates (*ibid.,* p. 5). There has been active discussion within the GTAP community on the issue of (Russian) export taxes on energy products (*see, e.g.,* McDougall 2003). However, so far this discussion has not resulted in any modifications of the GTAP database. We thus follow Laborde et al. (2013) and adopt Russian export tariff data from the GTAP database without any ad-hoc modifications. We also note that we do not model any changes by Russia to its export tax regime as a response to Allied import sanctions (*see Gros 2022,* pp. 2-3, on why such response by Russia is unlikely).

32 We are using the subgroups "EU27" and "non-EU Allies" as proxies for different types of Allies. EU27 countries are (or used to be) more integrated with the Russian economy and particularly dependent on Russian oil and gas. Hence, any import measure will affect the EU27 members relatively strongly (particularly countries like Germany and the Netherlands), as compared to other Allies whose economy is relatively decoupled from Russia's.

Figure 5. Percent change in real GDP for EU27 and non-EU Allies (8 selected sectors)
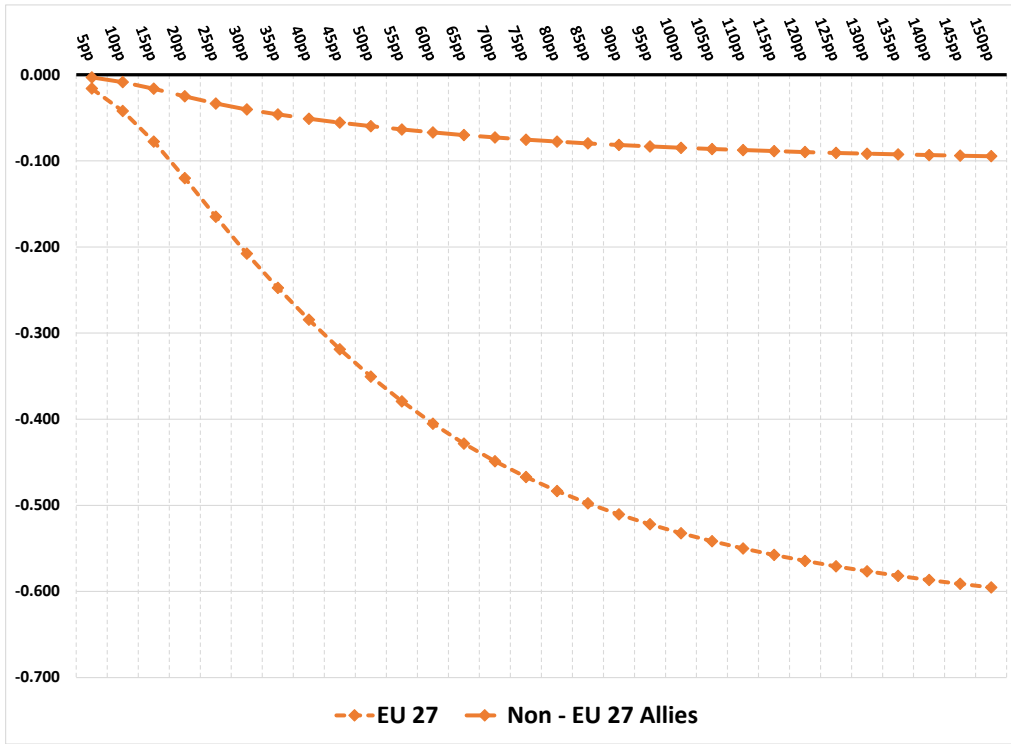
Source: Authors

Figure 6. Dispersion of real GDP effects across Allies (in percent; 8 selected sectors)
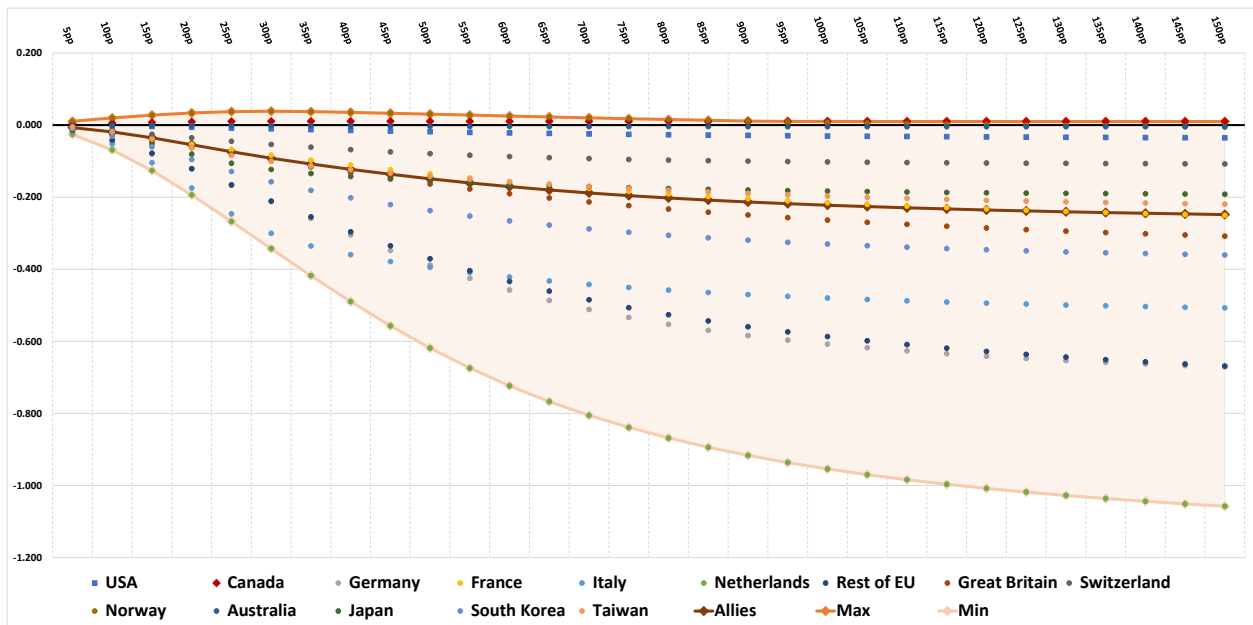
Source: Authors

Gains and losses in terms of real GDP among <u>non-Allies</u> (not pictured in *Figure 3*, but *see Table 1*) are overall small, with no country experiencing more than 0.15% of losses or gains; resource-rich non-Allies and large traders with Russia tend to benefit marginally. The former experience terms-of-trade gains from increased import demand by Allies; the latter benefit from the trade diversion (read: cheaper imports) that results from the Allied import measures.

The results for **real income** are somewhat different from those for real GDP. Overall, the amplitude of gains and losses across countries is higher as compared to results expressed in terms of real GDP.[33] This can be explained by the significant terms-of-trade effects that Allied import sanctions will have globally, and for Russia in particular. Looking at panel a) of *Figure 4*, we see that <u>Russia's</u> loss curve no longer shows a kink, like we observe for real GDP in panel a) of *Figure 3*.[34] Rather, Russia's loss curve declines at a slowing rate, with sharp drops at tariff hikes below 30 pp, and a slow bottoming-out as Allied tariffs increase above the 50 pp mark. Russia's maximum losses are around 4.6% for tariff hikes over 80 pp (Russia's loss curve has a local minimum at the 95 pp mark, where losses are just under 4.61%).

<u>Allies</u> experience small real income gains at small levels of tariff increase below 15 pp.[35] However, already at moderately higher tariff levels, real income gains turn into losses that deteriorate at a declining rate as tariff hikes get larger. The maximum loss sustained across Allies is 0.31% at the 150 pp mark. Compared to real GDP, the divergence of gains and losses between the EU27 and non-EU Allies is of higher magnitude (*compare Figure 7* with *Figure 5*), suggesting a less equitable distribution of gains and losses among Allies. This is confirmed by *Figure 8,* which, like *Figure 6*, visualizes the dispersion of gains and losses among all Allies.[36]

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33 *Compare Figure 3* with *Figure 4* and *Table 1* with *Table 2*, respectively.
34 Comparing real-GDP and real-income results for Russia, the reason for higher real-income losses is a significant terms-of-trade deterioration (as explained in footnote 13, the real-income metric incorporates relative price changes, which includes terms-of-trade effects). Since the price effect dominates the real effects (through the reallocation of resources within Russia, as described above), the kink observed in *Figure 3* evens out due to steady terms-of-trade losses that result from increasing tariff levels. Indeed, a significant terms-of-trade deterioration for Russia appears to be a key motivation for Allies seeking to sanction the Putin regime (*see, e.g.,* Gros 2022; Sturm 2022b).
35 This is an illustration of the optimal-tariff theory (Johnson 1951). Pre-sanctions Allies' import tariffs *vis-à-vis* Russia were suboptimally low – a concession that Allies made in return for market access to the Russian market for Allied exports upon Russia's accession to the World Trade Organization (*see, e.g.,* Bagwell and Staiger 2002). Unilateral tariff increases of up to 15 pp thus improve Allies' welfare.
36 Even without outlier Norway, the dispersion of gains and losses around the Allied loss curve is higher for real income than for real GDP. *Compare Figure 8* with *Figure 6*.

Figure 7. Percent change in real income effects for EU27 and non-EU Allies (8 selected sectors)
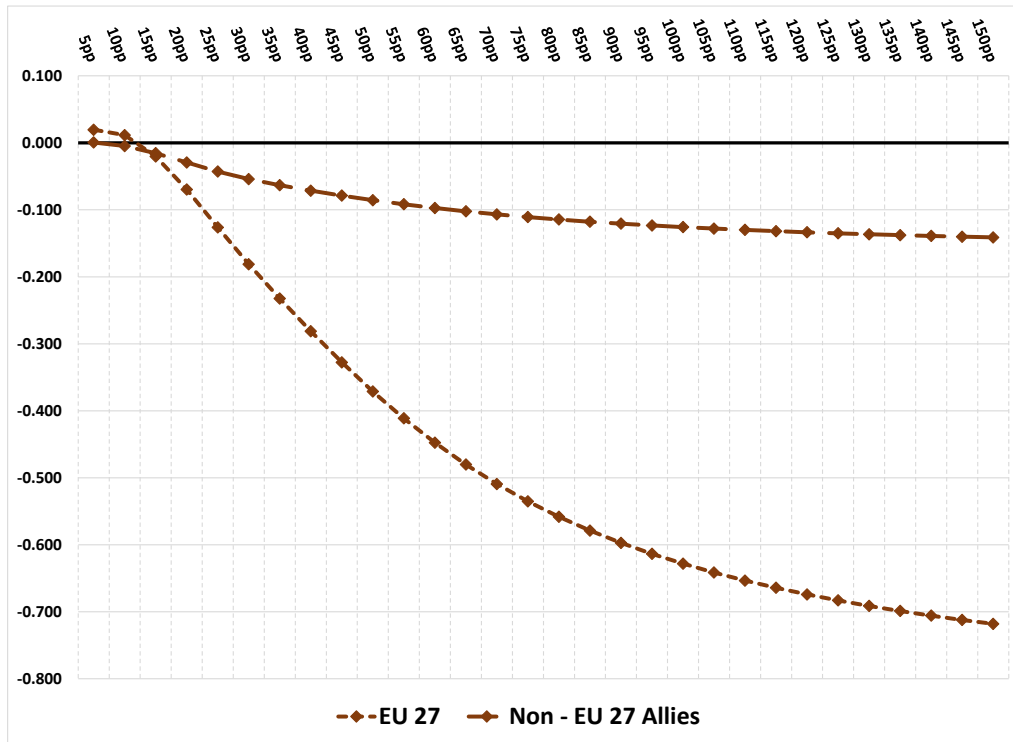
Source: Authors

Figure 8. Dispersion of real income effects across Allies (in percent; 8 selected sectors)
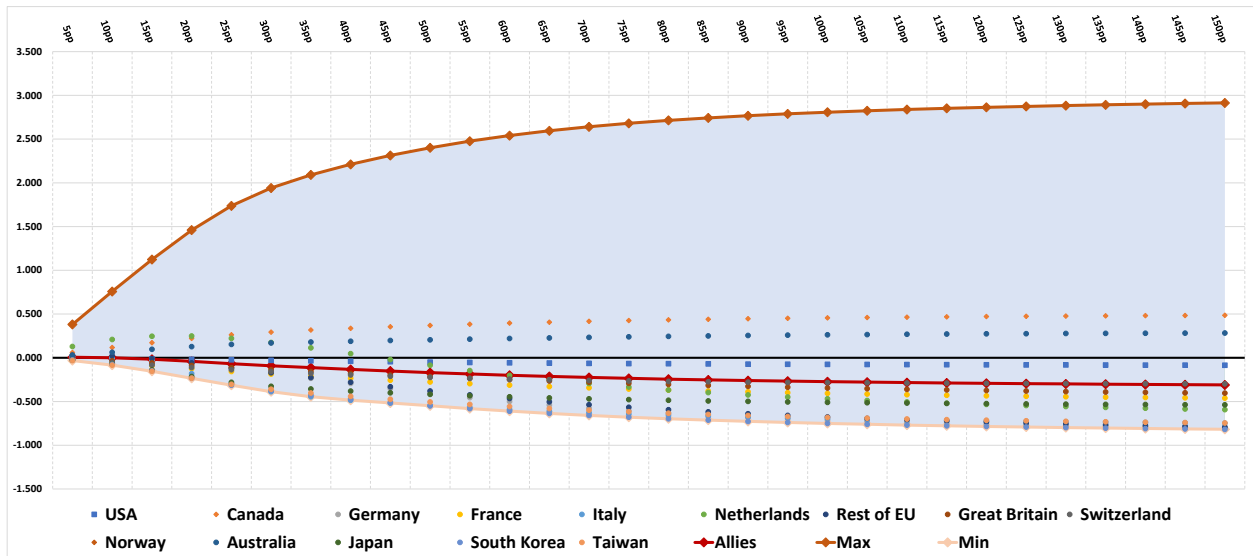
Source: Authors

Real income effects among <u>non-Allies</u> are small, but generally positive (*see Table 2*). Resource-rich countries (*e.g.,* Kazakhstan, Saudi Arabia) tend to benefit from the trade diversion that results from the Allied import measures; interestingly, China and India turn out to be among the few net losers.[37]

How can we interpret these findings from the perspective of an optimal sanctions strategy? At the current state of affairs, if Allies were uniquely interested in their own welfare, they would increase tariffs by 5-10 pp at most, since doing so would result in the highest overall real income gains across all Allies (even across EU27 countries; *see Figure 7*), and in negligible real GDP losses. But doing so would hardly hurt Russia and thus would defy the purpose of imposing sanctions, which is to reduce the welfare of the target country so as to force it to change its behavior. To capture the maxim that the point of sanctions ultimately is to cause harm to the sanctions target, Russia's economic welfare must enter negatively in the Allies' utility function.[38] While it is up to individual Allied policymakers (and subject to agreement among Allies) to determine how exactly to strike the balance between inflicting harm to Russia and sustaining self-harm across Allied economies, *Figure 3* through *Figure 8* (as well as Table 1 and Table 2) can help narrow down the set of efficient policy options.

- If Allies' main intent were to harm Russia to the fullest extent (that is, if Allies' "willingness to pay" for damage to Russia in terms of reduced welfare was high), an import tariff increase of 25 pp appears optimal. At that tariff-increase level, the Russian real GDP loss curve shows a local minimum, which implies that there is a maximum loss to Russia (*see* panel a) of *Figure 3*). Also, and looking at real-income effects, panel a) of *Figure 4* suggests that, to the right of the 25 pp increase mark, the steepness of the Russian loss curve starts petering out. This implies less "bang for the buck" from the perspective of the Allies, *i.e.,* smaller marginal effects for each additional pp tariff increase beyond the 25 pp mark.

  From the perspective of the Allies, economic losses (whether measured in terms of real GDP or real income) are small – less than a tenth of a percent (*see Table 1* and *Table 2)*, while dispersion of economic losses between Allies at the 25 pp mark (*Figure 5* to *Figure 8*) is moderate, *i.e.,* relatively equitable.

- If concerns about the magnitude of self-harm and about a fair distribution of gains and losses entered the Allies' utility function more prominently, then an import tariff increase between 20 pp and 25 pp appears appropriate. To see this, we examine the Russian and Allied economic loss curves against three analytical metrics: absolute effects; marginal effects (steepness of the loss curves); and dispersion (equitability of Allied losses).

  Between sanction levels of 20 pp and 25 pp, **Russia's** real GDP loss curve is at or around the local minimum of 0.85% reached at the 25 pp mark.[39] When measured in terms of real income, Russian losses are significant in the 20 pp to 25 pp range (between 3.35% and 3.70%, which corresponds roughly to between 72% and 80% of maximum achievable losses). Looking at marginal effects, Russia's real income loss curve flattens considerably after the 25 pp mark, thus indicating smaller incremental harm for every further tariff hike – again something that is counter to Allies' interests. Up to the 25 pp mark Allies still get substantial additional mileage out of an incremental tariff increase.

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37 China and India are both highly dependent on oil and gas imports. While Allied sanctions make Russian oil and gas cheaper for these countries, oil and gas imports from other countries become more expensive. Neither China nor India is able (or willing) to entirely source oil and gas from Russia, or to substitute imported fuels with domestic coal. As a result, the overall terms of trade of both countries, driven by fuel imports, deteriorates.

38 *See* Gros (2022), Sturm (2022a), Sturm and Menzel (2022) for a formalization of this in the context of partial-equilibrium models.

39 After the 25 pp mark, the steepness of Russia's loss curve turns positive, which implies that additional tariff increases lead to *smaller* losses, which is not in the Allies' interest. This suggests that increases above the 25 pp mark would only be acceptable if Allies' own losses were to decline between the 25 pp and 30 pp mark, which – as per panels b) of *Figure 3* and *Figure 4* –is not the case.

As for self-harm inflicted on **Allies** in the 20 pp to 25 pp range, economic losses are below a tenth of a percent throughout (between 0.05% and 0.07% of real GDP, and 0.04% and 0.07% of real income, respectively). Moreover, at this range, the Allied loss curves begin flattening out, meaning that additional tariff increases cause less and less incremental self-harm, which is in the Allies' interest. As for the divergence of losses between Allies, we recall *Figure 5* to *Figure 8* where it was shown that economic harm in the 20 pp to 25 pp range is dispersed fairly equitably around the Allied average loss (particularly if one disregards outliers Netherlands in *Figure 6* and Norway in *Figure 8*).

In summary, we see that the optimal sanction level by Allies is *not* a full-on embargo, but rather a concerted tariff increase of between 20 pp and 25 pp,[40] depending on the willingness of Allies to trade off harm to Russia on the one hand, and self-harm to Allies themselves and equitable dispersion of the sanction burden on the other.

Are burden-sharing programs effective?

This section addresses the final research question: is it economically advantageous for the Allies to redistribute extra tariff revenue and engage in further cash transfers to support the countries most affected by the sanctions?

Allied sanctions in the form of tariff hikes on Russian imports generate revenues that Allies would not have otherwise reaped (call those "additional tariff rents").[41] Depending on the size of an Allied economy, its dependency on Russian imports, and the size of the tariff increase, such additional tariff rents can vary in size. While trade models conventionally assume that tariff revenues are "thrown back into the water" – that is, treated as windfall spending for the importing government and dispersed among domestic sectors – this need not be the case. Allies may well decide to use additional tariff rents collected from import sanctions on Russia for different purposes.

In this section we are interested in examining two scenarios. In the first scenario, Allies agree on a burden-sharing arrangement in which every Ally experiences the same magnitude of economic gain or harm as do all the others, regardless of the sanction level chosen. In a second scenario, Allies decide to put the proceeds collected from additional import tariffs into supporting Ukraine. Such help could either take the form of direct aid to the Ukrainian economy, or support for neighboring countries to manage the influx of millions of refugees from Ukraine.[42]

a. Burden-sharing among Allies

Looking at the unequal distribution of economic pains and gains (**Figure 5** through **Figure 8**, above) that may result from an import sanction regime, Allies may wish to develop strategies to soften the blow for extreme and moderate losers, so as to prevent countries from abandoning the group of Allies. This, in turn, would strengthen cohesion, resilience, and longevity of the Alliance. Suppose that Allies enact an adjustment-assistance program, in which coalition members voluntarily provide cash transfers to hardest-hit coalition members with the aim of equalizing the economic burden across Allies. As mentioned above, doing so would positively influence public opinion, which is always at risk of turning sour over the costs that sanctions inflict on implementing countries.

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40 As mentioned above (*see footnote 29),* a core assumption is that Allies impose the *same i*mport tariff hike across all Russian export sectors targeted by Allied sanctions. We have not run our model trying out different tariff increases for different Russian export sectors. While we believe that this assumption is realistic from both a policy and a practicability standpoint it is possible that different combinations of import tariff levels may yield even higher economic losses to Russia and/or higher gains or smaller losses to the Allies. However, we must leave this task for further research.

41 As simple example may illustrate. Suppose that, pre-sanctions, Allied country *X* imported $100 worth of widgets from Russia at a tariff rate of 5%. As a result, country X takes in pre-sanction tariff revenues of $5. Suppose that Allied sanctions are such that the tariff rate for Russian widgets increases by 25 pp to 30%; suppose further that the value of imports decreases from $100 to $80, yielding tariff revenue of $24 ($80 * 0.3). The additional tariff revenue to country *X* from import sanctions is thus $19 ($24 – $5).

42 As discussed in subsection b. below, we only model the first option, namely direct aid to Ukraine.

Moreover, from a policy perspective it is worthy of investigation whether burden-sharing could enable Allies to decrease the level of the tariff sanctions for a given level of Russian losses, or – equivalently – to reduce Allied losses for a sanction of a given tariff level. If that were the case, this would be yet another reason why burden-sharing arrangements should be considered an important policy tool towards achieving the optimal Allied sanction strategy.

To examine the economic effects of burden sharing among Allies, we assume that additional tariff rents collected by individual Allied countries from continued importation of Russian products are first pooled, and then distributed among Allies. If additional tariff revenue is insufficient to equalize economic gains and losses across Allies, we assume further cash transfers between Allies. Those Allies that receive transfers will then reinvest the funds into their own economies. The result is equal losses and gains (in percent) across all Allies.[43]

Panel a) of *Figure 9* compares real-GDP effects for **Allies** in two scenarios: the base case without burden-sharing arrangement (*see* discussion, above), and the case with burden-sharing arrangement. Panel b) compares real-income effects among Allies *as well as* dispersion of gains and losses across Allies in the base case and with burden sharing.[44]

The panels illustrate three important implications about Allied burden-sharing: *First*, when effects are measured in terms of real income, the dispersion around the Allied loss curve vanishes with the introduction of burden sharing.[45] This implies a more equitable distribution of gains and losses across all Allies.[46] *Second,* average Allied real-income losses with and without burden sharing are practically identical; the two loss curves in each panel are nearly superposed. *Third,* when effects are measured in terms of real GDP, the Allied loss curve *with* burden sharing is (marginally) below the original loss curve for low tariff increases, but the curves cross before around the 35 pp mark, after which the burden-sharing curve is above the original curve. This means that for higher levels of Allied import sanctions, having in place a burden-sharing agreement actually reduces losses for Allies overall.[47]

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43 We structure the transfer scheme in a way that equalizes *real-income* gains/losses across Allies. Given the significant terms-of-trade effects generated by Allied import hikes (that are only accounted for in the real-income metric), we prefer this option to that of equalizing real-GDP levels across Allies.

44 In essence, panel b) of *Figure 9* is simply a recreation of *Figure 8*, with the addition of the Allied loss curve under a burden-sharing arrangement (red dashed line).

45 Note that the dispersion of results around the Allied loss curve *with* burden-sharing is zero by definition, because as explained, our model is calibrated such that all Allies suffer the same gains or losses.

46 Even when effects are measured in terms of real GDP, the spread of losses among Allies is smaller in the burden-sharing scenario. *Compare **Table 1** with **Table 5.***

47 Or, equivalently, at a given level of Allied losses, burden sharing allows Allies to impose marginally higher tariff levels on Russia.

Figure 9. Percent change in Allied real GDP and real income <u>with</u> and <u>without</u> a burden-sharing arrangement (8 selected sectors)
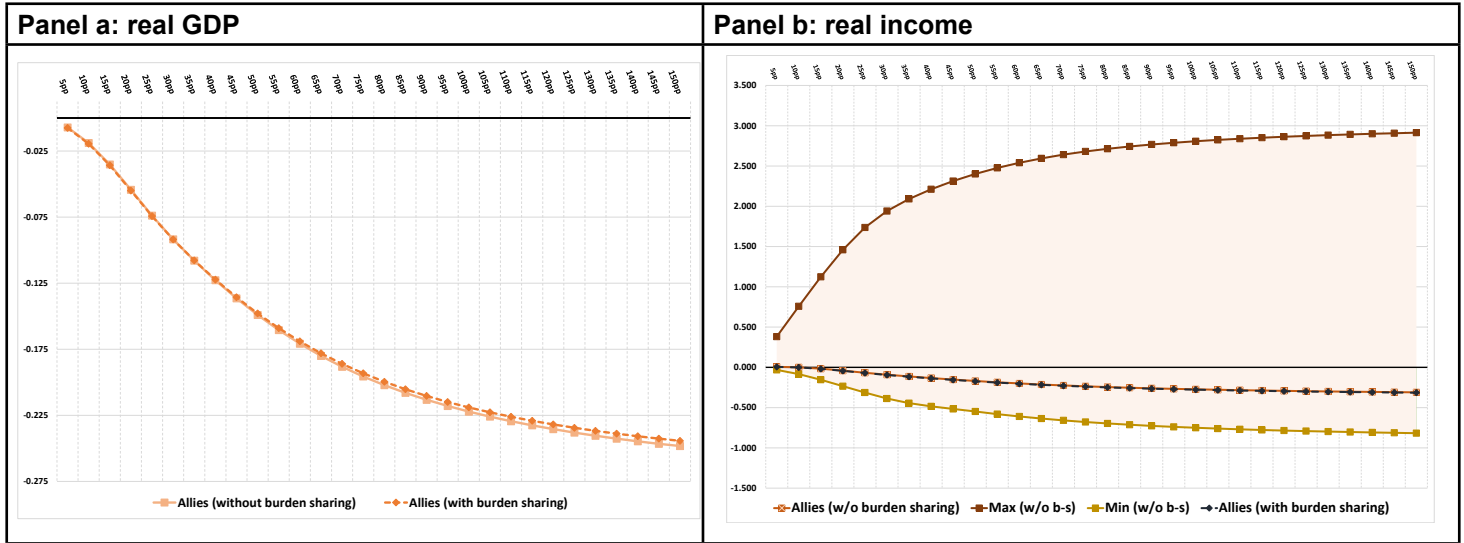
Source: Authors
Note: Results for real GDP and real income have different scale. Check units

Figure 10 again provides a comparison of changes in real GDP (panel a)) and real income (panel b)) respectively, with and without burden sharing, this time from **Russia's** perspective. While for both economic metrics the two loss curves are nearly identical, Russian losses with burden sharing in place are larger than those without, regardless of the magnitude of import tariff increase chosen. This means that, irrespective of the economic metric and tariff sanction chosen, burden-sharing always causes more harm to Russia than no burden sharing. It is then also true that, for a given level of Russian losses, burden sharing allows Allies to reduce the level of the tariff sanction (albeit marginally), as compared to the base case without burden sharing. This allows the infliction of the same level of harm on Russia for a (marginally) reduced level of self-harm.

Figure 10. Percent change in Russian real GDP and real income <u>with</u> and <u>without</u> a burden-sharing arrangement (8 selected sectors)
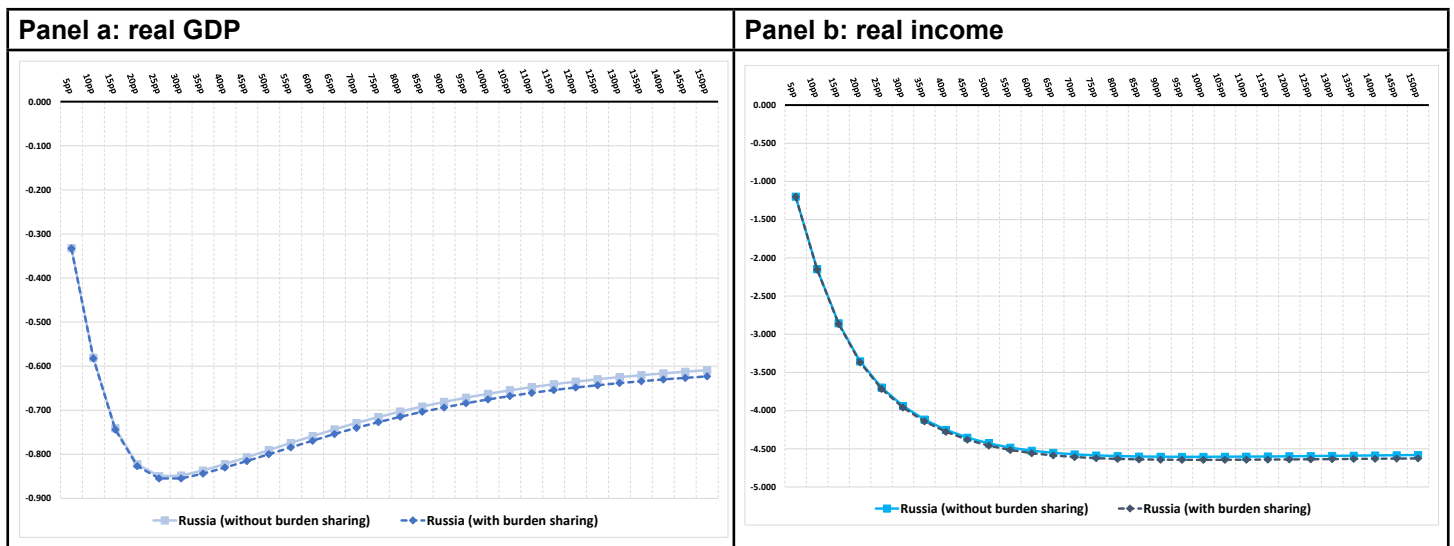
Source: Authors
Note: Results for real GDP and real income have different scale. Check units.

In sum, burden-sharing arrangements between Allies (1) eradicate any controversial divergence in economic gains and losses within the group of Allies, therefore achieving equitability of the sanction burden; (2) decrease Allied average losses (for certain effect metrics and for higher tariff interventions); and (3) increase economic harm for Russia, regardless of the effects metric and the tariff increase chosen. This suggests that burden-sharing arrangements should be considered in the design of any optimal sanction strategy.[48]

b. Using tariff revenues to support Ukraine

As an alternative to a burden-sharing arrangement amongst themselves, Allies may decide to instead use additional tariff rents towards supporting the Ukrainian economy directly or helping neighboring countries manage the millions of refugees that have been displaced by Russia's invasion. In this subsection, we limit ourselves to modeling an aid package in the form of a cash transfer to Ukraine in the amount of additional tariff revenues collected by Allies.[49] Upon receipt of the funds, Ukraine reinvests the funds into its own economy.[50,51]

Figure 11 compares real-GDP effects (panel a)) and real-income effects (panel b)) among Allies in two scenarios: the base case without cash transfers to Ukraine, and the case in which additional tariff revenues are directly transferred to Ukraine. *Figure 12* reports the same effects from the perspective of Russia.

According to *Figure 11*, **Allies** would sustain marginal losses throughout from transferring tariff revenue to Ukraine (as compared to the case of no transfers). This is true regardless of the econometric metric and the level of tariff increase chosen. While Allies lose from donating additional tariff revenues to Ukraine, such loss is never higher than two hundredth of a percent of either real GDP or real income.[52]

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48 Of course this would presuppose the willingness of Allied to engage in cash transfers. *Table 7*, attached at the end of this paper, provides an overview of the cash transfers that would need to occur between Allies*.*

49 The assumption that Allies take tariff revenue out of circulation and donate them to Ukraine in the form of a cash transfer is obviously simplistic. This is not how military and development aid typically works in reality. Oftentimes, such aid is provided in kind and produced in the donor countries, thus contributing economic activity of the donor country. However, modeling the economic effects of such in-kind aid would be quite complex and also require a number of subjective decisions, *e.g.*, what share of the additional tariff rents would, say, the United States put into military aid vs. food aid vs. medical equipment.

50 Since Ukraine has imposed a complete trade embargo on Russia and Belarus ever since the beginning of Russia's invasion, none of the cash transfers received by Ukraine by Allies will be used to procure Russian or Belarusian goods or services. We have implemented this important restriction in our GTAP model by assuming prohibitively high import tariffs and export taxes by Ukraine *vis-à-vis* Russia and Belarus.

51 Recall footnote 19, in which we informed that we refrain from reporting estimated effects on Ukraine. We are thus unable to model the economic impact that Allied cash transfers can have on the Ukrainian economy. We must leave this to further research.

52 To see this, *compare Table 8* with *Table 1* and *Table 9 with Table 2*, respectively. Table 10, attached at the end of this paper, provides an overview of the amounts of tariff revenue transferred by individual Allies to Ukraine.

Figure 11. Percent change in Allied real GDP and real income <u>with</u> and <u>without</u> transfer of tariff revenues to Ukraine (8 selected sectors)
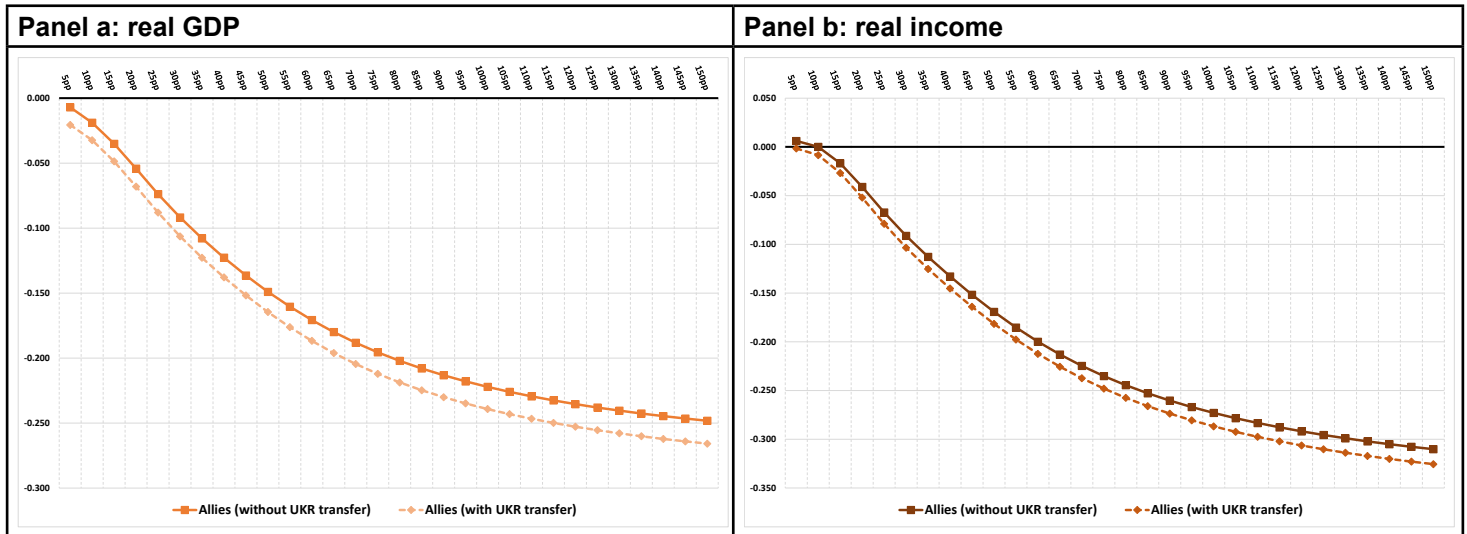
Source: Authors

Looking at effects from the perspective of **Russia**, panel a) of *Figure 12* reports that real-GDP losses are consistently smaller when Allied transfer their additional tariff revenue to Ukraine, regardless of the economic metric. This result, however, is reversed when the economic metric is real income. In that case, Russian losses with cash transfers to Ukraine are consistently higher, regardless of the tariff level chosen.[53]

If one draws the ratio of Russian to Allied losses for each tariff increase level in this Ukraine cash-transfer scenario, we find that Russian losses are consistently more than fourteen times higher than those suffered by Allies when economic losses are measured in terms of real income (*see Table 9*).

In sum, if Allies were to decide to donate the tariff revenue generated from additional tariff sanctions on Russia to Ukraine, this would hardly affect the welfare of the Allies, but could make Russia worse off – depending on the economic metric.

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53 To understand the difference in outcome between Russian real-GDP and real-income losses, recall footnote 46, above, where it was stated that we assume that none of the cash transfers received by Ukraine are used to conduct any trade with Russia or Belarus. Cash transfers from Allies to Ukraine trigger two countervailing dynamics: On the one hand Russia suffers economic losses because it can no longer trade with Ukraine (before the war, Ukraine was an important trading partner for Russia). This results in further terms-of-trade losses to Russia (explaining the relative higher real-income losses generated by the Ukraine aid). On the other hand, Ukraine's trade embargo on Russia makes Allied tariffs less effective, because a fraction of the imports previously made by Ukraine is now di-verted to the Allies. As a result, with Ukraine aid in place, Allied imports of Russian products do not decline as much as they otherwise would (which explains the relative lower real-GDP losses to Russia generated by the Ukraine aid).

Figure 12. Percent change in Russian real GDP and real income <u>with</u> and <u>without</u> transfer of tariff revenues to Ukraine (8 selected sectors)
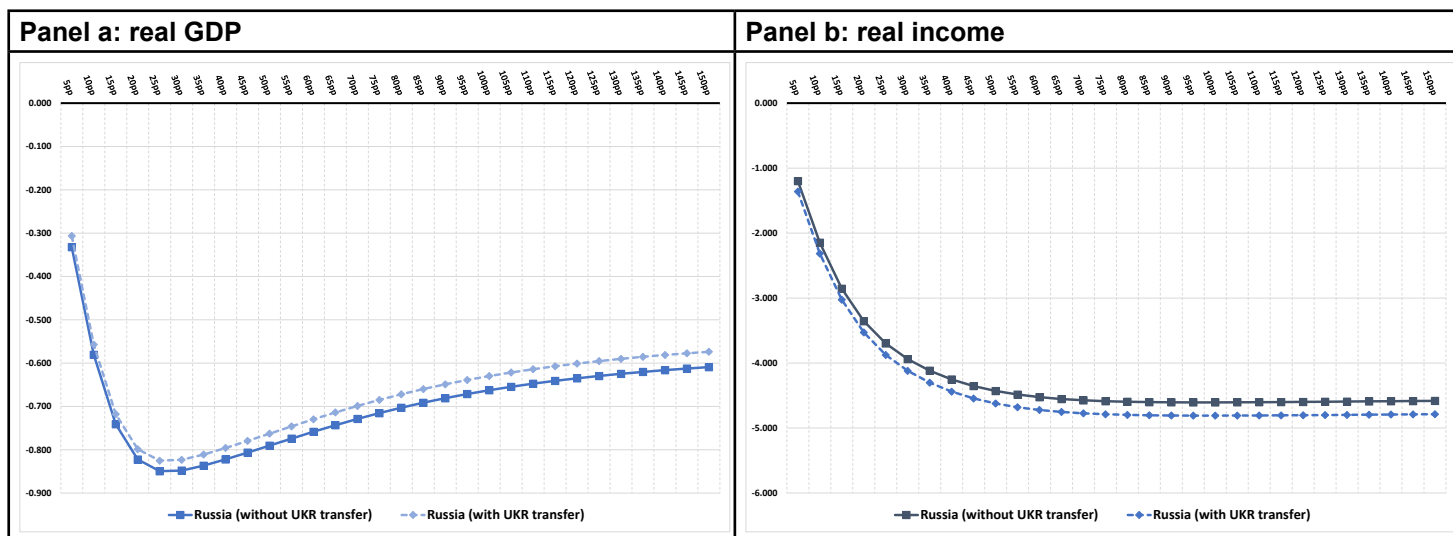
Source: Authors
Note: Results for real GDP and real income have different scale. Check units.

Conclusion

Our paper outlines design choices towards an "optimal sanction" strategy in the context of a CGE model. Using the GTAP framework, we endogenize the choices of (i) scope of targeted sectors, (ii) level of tariff increases, and (iii) how Allies distribute the additional tariff revenues generated by the tariffs sanctions.

Our main findings can be summarized as follows:

- An optimal sanction strategy may *not* involve across-the-board import measures on Russia. Rather, Allies may find it in their interest to limit the <u>scope</u> of sanction targets to a small number of Russian export sectors only. Specifically, we have shown that – compared to an across-the-board tariff increase – targeted sanctions on eight Russian sectors whose products are most imported by Allies (including fossil fuels and their distribution, petroleum and coal products, non-precious metals, and chemical products) can result in higher economic losses to Russia and smaller levels of self-harm (or higher gains) to the Allies themselves.

- The optimal sanction <u>level</u> by Allies is likely not a full-on embargo on target sectors, but rather concerted tariff increases of a magnitude of between 20 and 25 percentage points (pp), with 25 pp as the intervention level of particular interest. The exact magnitude of the tariff intervention however depends on the willingness of Allies to trade off harm to Russia on the one hand, against self-harm to Allies themselves and equitable dispersion of the sanction burden on the other.

- In the 20 pp to 25 pp range of Allied tariff sanctions:

  ○ Russian losses, measured in terms of real GDP, are at or around a maximum achieved at the 25 pp mark (0.84%); Russian losses, measured in terms of real income, in that range are 3.35%-3.70%, which is between 72% and 80% of maximum losses that Allies can inflict with tariff measures;

  ○ Self-harm to Allies is a mere fraction of Russian losses – between 0.05% and 0.07% in terms of real GDP and 0.04% and 0.07% in terms of real income;

- ○ While heterogeneity of Allied losses is relatively moderate in the 20 pp to 25 pp range (as compared to tariff increases of higher magnitude), there is still considerable divergence in economic self-harm sustained by different Allied countries in that sanction range.

- <u>Burden-sharing arrangements</u> that involve redistribution of additional tariff revenue and supplementary cash transfers between Allies (1) will eradicate any differences in economic gains and losses within the group of Allies; (2) can decrease Allied losses; and (3) will increase economic harm for Russia. This may not only strengthen the cohesion, resilience, and longevity of the Allied coalition; it also does so at little to no "cost" (in terms of extra losses to Allies, or reduced losses to Russia) to Allies. Indeed, depending on the level of the tariff intervention and the economic metric used, burden sharing may even be beneficial to Allies, allowing them to impose higher levels of economic pain to Russia without increasing their level of self-harm. Burden sharing should thus be considered an important component in the design of an optimal sanction strategy.

- If, instead of organizing a mutual burden-sharing arrangement, members of the Allied coalition decided to <u>donate additional tariff rents</u> collected from tariff sanctions <u>to Ukraine</u>, doing so would barely affect the welfare of the Allies. However, the economic effect on Russia would be ambiguous. Income transfers to Ukraine could directly help support Ukraine's war-torn economy or combat the refugee crisis in neighboring countries – thus increasing the probability that Russia changes its conduct and cease its war operations in Ukraine.

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Table 1. Percent change in <u>real GDP</u> – <u>8</u> selected sectors

	Percent Change in real GDP	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
	Russia	-0.332	-0.581	-0.741	-0.823	-0.849	-0.848	-0.837	-0.822	-0.807	-0.791	-0.774	-0.759	-0.743	-0.729	-0.715	-0.703	-0.691	-0.681	-0.671	-0.663	-0.655	-0.648	-0.641	-0.635	-0.630	-0.625	-0.620	-0.616	-0.613	-0.609
Non-Allies	China	0.001	0.002	0.003	0.005	0.006	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.010	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.012	0.012	0.012	0.012
	India	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Turkey	0.016	0.030	0.044	0.055	0.066	0.075	0.082	0.089	0.094	0.099	0.102	0.105	0.107	0.109	0.111	0.112	0.113	0.114	0.115	0.116	0.116	0.117	0.117	0.117	0.118	0.118	0.118	0.118	0.119	0.119
	Indonesia	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
	Kazakhstan	0.003	0.010	0.019	0.030	0.042	0.054	0.065	0.075	0.085	0.093	0.100	0.107	0.112	0.117	0.121	0.124	0.128	0.130	0.133	0.135	0.137	0.138	0.140	0.141	0.142	0.143	0.144	0.145	0.146	0.147
	Mexico	-0.001	-0.002	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	Brazil	-0.003	-0.006	-0.009	-0.011	-0.013	-0.015	-0.016	-0.018	-0.019	-0.020	-0.021	-0.022	-0.022	-0.023	-0.024	-0.024	-0.025	-0.025	-0.025	-0.026	-0.026	-0.026	-0.026	-0.027	-0.027	-0.027	-0.027	-0.027	-0.027	-0.027
	Egypt	0.005	0.009	0.013	0.016	0.019	0.021	0.023	0.024	0.025	0.027	0.027	0.028	0.029	0.029	0.030	0.030	0.030	0.031	0.031	0.031	0.031	0.031	0.031	0.032	0.032	0.032	0.032	0.032	0.032	0.032
	Saudi Arabia	0.003	0.006	0.009	0.012	0.015	0.018	0.021	0.023	0.025	0.027	0.029	0.031	0.032	0.033	0.034	0.035	0.036	0.037	0.038	0.038	0.039	0.039	0.040	0.040	0.040	0.041	0.041	0.041	0.041	0.042
	South Africa	-0.002	-0.004	-0.006	-0.008	-0.010	-0.011	-0.013	-0.014	-0.015	-0.016	-0.017	-0.018	-0.018	-0.019	-0.019	-0.020	-0.020	-0.020	-0.021	-0.021	-0.021	-0.021	-0.021	-0.022	-0.022	-0.022	-0.022	-0.022	-0.022	-0.022
	Rest of Asia	0.000	0.000	0.001	0.001	0.000	0.000	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006	-0.006	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.008
	Rest of Americas	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	MENA	0.006	0.012	0.019	0.025	0.030	0.034	0.037	0.040	0.042	0.044	0.046	0.048	0.049	0.050	0.051	0.052	0.053	0.053	0.054	0.054	0.055	0.055	0.055	0.056	0.056	0.056	0.057	0.057	0.057	0.057
	SSA	0.003	0.006	0.010	0.013	0.017	0.020	0.022	0.025	0.027	0.029	0.031	0.032	0.034	0.035	0.036	0.037	0.038	0.039	0.039	0.040	0.041	0.041	0.042	0.042	0.042	0.043	0.043	0.043	0.044	0.044
	Rest of World	0.014	0.032	0.048	0.062	0.071	0.077	0.079	0.081	0.082	0.083	0.084	0.084	0.085	0.085	0.086	0.086	0.087	0.087	0.088	0.088	0.088	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.090
Allies	USA	-0.001	-0.002	-0.004	-0.006	-0.008	-0.010	-0.012	-0.014	-0.016	-0.018	-0.020	-0.022	-0.023	-0.024	-0.026	-0.027	-0.028	-0.029	-0.029	-0.030	-0.031	-0.032	-0.032	-0.033	-0.033	-0.034	-0.034	-0.035	-0.035	-0.035
	Canada	0.003	0.005	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
	Germany	-0.018	-0.046	-0.080	-0.121	-0.165	-0.212	-0.259	-0.304	-0.348	-0.388	-0.425	-0.458	-0.486	-0.512	-0.534	-0.553	-0.569	-0.584	-0.597	-0.608	-0.618	-0.626	-0.634	-0.641	-0.647	-0.653	-0.658	-0.663	-0.667	-0.671
	France	-0.011	-0.024	-0.038	-0.053	-0.069	-0.083	-0.097	-0.111	-0.123	-0.135	-0.147	-0.157	-0.167	-0.175	-0.184	-0.191	-0.198	-0.204	-0.210	-0.215	-0.220	-0.225	-0.229	-0.233	-0.236	-0.239	-0.242	-0.245	-0.248	-0.250
	Italy	-0.019	-0.052	-0.104	-0.174	-0.246	-0.300	-0.335	-0.359	-0.378	-0.395	-0.409	-0.421	-0.432	-0.442	-0.450	-0.458	-0.464	-0.470	-0.475	-0.480	-0.484	-0.488	-0.491	-0.494	-0.497	-0.499	-0.501	-0.503	-0.505	-0.507
	Netherlands	-0.026	-0.069	-0.126	-0.194	-0.267	-0.343	-0.418	-0.490	-0.557	-0.619	-0.674	-0.724	-0.767	-0.805	-0.839	-0.868	-0.894	-0.916	-0.936	-0.954	-0.970	-0.984	-0.997	-1.008	-1.018	-1.028	-1.036	-1.044	-1.051	-1.058
	Rest of EU	-0.014	-0.041	-0.078	-0.121	-0.166	-0.211	-0.254	-0.296	-0.335	-0.371	-0.404	-0.434	-0.461	-0.485	-0.507	-0.526	-0.544	-0.559	-0.574	-0.587	-0.598	-0.609	-0.619	-0.628	-0.636	-0.644	-0.651	-0.657	-0.663	-0.668
	Great Britain	-0.012	-0.027	-0.044	-0.062	-0.081	-0.099	-0.116	-0.132	-0.148	-0.163	-0.177	-0.190	-0.202	-0.213	-0.223	-0.233	-0.241	-0.249	-0.257	-0.263	-0.270	-0.275	-0.281	-0.285	-0.290	-0.294	-0.298	-0.302	-0.305	-0.308
	Switzerland	-0.007	-0.016	-0.025	-0.035	-0.045	-0.053	-0.061	-0.068	-0.074	-0.079	-0.084	-0.087	-0.090	-0.093	-0.095	-0.097	-0.099	-0.100	-0.101	-0.102	-0.103	-0.104	-0.105	-0.105	-0.106	-0.106	-0.107	-0.107	-0.107	-0.108
	Norway	0.011	0.020	0.028	0.034	0.038	0.039	0.037	0.035	0.033	0.031	0.028	0.025	0.023	0.020	0.018	0.016	0.013	0.011	0.009	0.008	0.006	0.004	0.003	0.001	0.000	-0.001	-0.002	-0.003	-0.004	-0.005
	Australia	0.000	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	Japan	-0.010	-0.026	-0.051	-0.080	-0.106	-0.123	-0.134	-0.142	-0.149	-0.155	-0.160	-0.164	-0.168	-0.171	-0.174	-0.176	-0.178	-0.180	-0.182	-0.183	-0.185	-0.186	-0.187	-0.188	-0.189	-0.189	-0.190	-0.191	-0.191	-0.192
	South Korea	-0.010	-0.030	-0.060	-0.095	-0.129	-0.157	-0.181	-0.202	-0.221	-0.237	-0.252	-0.266	-0.278	-0.288	-0.297	-0.305	-0.313	-0.319	-0.325	-0.330	-0.335	-0.339	-0.342	-0.346	-0.349	-0.352	-0.354	-0.356	-0.358	-0.360
	Taiwan	-0.005	-0.018	-0.039	-0.063	-0.084	-0.101	-0.113	-0.124	-0.133	-0.142	-0.150	-0.157	-0.164	-0.170	-0.176	-0.181	-0.185	-0.190	-0.194	-0.197	-0.200	-0.203	-0.206	-0.208	-0.211	-0.213	-0.215	-0.216	-0.218	-0.219
	Allies	-0.007	-0.019	-0.035	-0.054	-0.074	-0.092	-0.108	-0.123	-0.136	-0.149	-0.160	-0.171	-0.180	-0.188	-0.196	-0.202	-0.208	-0.213	-0.218	-0.222	-0.226	-0.229	-0.233	-0.235	-0.238	-0.240	-0.243	-0.245	-0.246	-0.248
	EU 27	-0.016	-0.042	-0.078	-0.120	-0.165	-0.208	-0.247	-0.284	-0.319	-0.350	-0.379	-0.405	-0.428	-0.449	-0.467	-0.483	-0.498	-0.511	-0.522	-0.532	-0.542	-0.550	-0.558	-0.565	-0.571	-0.577	-0.582	-0.587	-0.591	-0.595
	Non - EU 27 Allies	-0.003	-0.009	-0.016	-0.025	-0.033	-0.040	-0.046	-0.051	-0.056	-0.060	-0.064	-0.067	-0.070	-0.073	-0.075	-0.078	-0.080	-0.082	-0.083	-0.085	-0.086	-0.088	-0.089	-0.090	-0.091	-0.092	-0.093	-0.093	-0.094	-0.095

Table 2. Percent change in <u>real income</u> – <u>8</u> selected sectors

Percent Change in real Income	5 pp	10 pp	15 pp	20 pp	25 pp	30 pp	35 pp	40 pp	45 pp	50 pp	55 pp	60 pp	65 pp	70 pp	75 pp	80 pp	85 pp	90 pp	95 pp	100 pp	105 pp	110 pp	115 pp	120 pp	125 pp	130 pp	135 pp	140 pp	145 pp	150 pp
Russia	-1.198	-2.147	-2.856	-3.355	-3.698	-3.939	-4.117	-4.252	-4.354	-4.429	-4.485	-4.525	-4.553	-4.573	-4.587	-4.596	-4.601	-4.604	-4.605	-4.605	-4.604	-4.602	-4.600	-4.598	-4.595	-4.593	-4.590	-4.587	-4.585	-4.582
Non-Allies: China	-0.012	-0.019	-0.023	-0.026	-0.027	-0.027	-0.028	-0.029	-0.030	-0.030	-0.031	-0.032	-0.033	-0.034	-0.035	-0.035	-0.036	-0.037	-0.037	-0.038	-0.038	-0.039	-0.039	-0.040	-0.040	-0.041	-0.041	-0.041	-0.042	-0.042
India	-0.027	-0.054	-0.081	-0.108	-0.132	-0.153	-0.172	-0.189	-0.204	-0.218	-0.231	-0.241	-0.251	-0.259	-0.267	-0.273	-0.279	-0.284	-0.289	-0.293	-0.296	-0.299	-0.302	-0.305	-0.307	-0.309	-0.311	-0.313	-0.315	-0.317
Turkey	0.014	0.032	0.055	0.081	0.108	0.136	0.162	0.185	0.204	0.219	0.231	0.241	0.248	0.254	0.259	0.263	0.266	0.269	0.270	0.272	0.273	0.274	0.275	0.276	0.276	0.277	0.277	0.277	0.277	0.277
Indonesia	0.040	0.081	0.122	0.157	0.181	0.191	0.194	0.194	0.194	0.193	0.194	0.194	0.195	0.196	0.197	0.199	0.200	0.201	0.202	0.203	0.204	0.205	0.206	0.206	0.207	0.207	0.208	0.208	0.209	0.209
Kazakhstan	0.274	0.556	0.836	1.106	1.360	1.596	1.812	2.006	2.178	2.329	2.460	2.572	2.670	2.753	2.825	2.887	2.941	2.988	3.029	3.065	3.098	3.126	3.152	3.175	3.196	3.215	3.233	3.248	3.263	3.276
Mexico	-0.014	-0.022	-0.025	-0.021	-0.012	0.001	0.017	0.033	0.048	0.062	0.074	0.084	0.093	0.101	0.107	0.113	0.118	0.123	0.126	0.130	0.133	0.136	0.138	0.141	0.143	0.144	0.146	0.148	0.149	0.150
Brazil	-0.011	-0.021	-0.029	-0.035	-0.039	-0.042	-0.044	-0.046	-0.048	-0.049	-0.050	-0.051	-0.052	-0.053	-0.054	-0.055	-0.056	-0.056	-0.057	-0.057	-0.058	-0.058	-0.058	-0.059	-0.059	-0.059	-0.060	-0.060	-0.060	-0.060
Egypt	0.060	0.117	0.171	0.220	0.262	0.296	0.324	0.347	0.367	0.384	0.400	0.413	0.424	0.433	0.441	0.449	0.455	0.460	0.465	0.469	0.473	0.476	0.479	0.481	0.484	0.486	0.488	0.490	0.491	0.493
Saudi Arabia	0.093	0.205	0.332	0.469	0.611	0.753	0.890	1.018	1.136	1.242	1.336	1.419	1.491	1.555	1.610	1.658	1.701	1.738	1.771	1.801	1.827	1.851	1.872	1.892	1.910	1.926	1.941	1.955	1.968	1.979
South Africa	-0.020	-0.039	-0.057	-0.073	-0.088	-0.101	-0.113	-0.123	-0.132	-0.140	-0.147	-0.152	-0.157	-0.161	-0.164	-0.167	-0.169	-0.171	-0.173	-0.174	-0.176	-0.177	-0.178	-0.179	-0.180	-0.181	-0.182	-0.182	-0.183	-0.184
Rest of Asia	0.000	0.000	0.001	0.001	-0.002	-0.011	-0.021	-0.032	-0.043	-0.052	-0.061	-0.068	-0.075	-0.081	-0.086	-0.091	-0.095	-0.098	-0.101	-0.104	-0.107	-0.109	-0.111	-0.113	-0.114	-0.116	-0.117	-0.119	-0.120	-0.121
Rest of Americas	0.011	0.023	0.036	0.050	0.063	0.074	0.083	0.091	0.099	0.106	0.112	0.118	0.122	0.127	0.131	0.134	0.137	0.140	0.142	0.144	0.146	0.148	0.149	0.151	0.152	0.153	0.154	0.155	0.156	0.157
MENA	0.191	0.388	0.591	0.788	0.958	1.088	1.188	1.272	1.345	1.410	1.468	1.518	1.562	1.600	1.634	1.663	1.688	1.710	1.730	1.748	1.764	1.778	1.791	1.802	1.813	1.822	1.831	1.840	1.847	1.854
SSA	0.058	0.120	0.185	0.251	0.314	0.371	0.423	0.470	0.512	0.551	0.586	0.617	0.643	0.667	0.687	0.705	0.721	0.735	0.747	0.758	0.768	0.777	0.785	0.792	0.798	0.805	0.810	0.815	0.820	0.824
Rest of World	0.102	0.209	0.312	0.408	0.488	0.548	0.594	0.631	0.663	0.690	0.713	0.733	0.751	0.765	0.778	0.788	0.798	0.806	0.813	0.819	0.824	0.829	0.834	0.838	0.841	0.844	0.847	0.850	0.852	0.854
Allies: USA	-0.003	-0.007	-0.012	-0.017	-0.023	-0.028	-0.034	-0.039	-0.044	-0.049	-0.053	-0.056	-0.060	-0.063	-0.065	-0.068	-0.070	-0.071	-0.073	-0.075	-0.076	-0.077	-0.079	-0.080	-0.081	-0.082	-0.082	-0.083	-0.084	-0.085
Canada	0.061	0.118	0.173	0.222	0.263	0.294	0.317	0.337	0.355	0.370	0.384	0.397	0.408	0.417	0.426	0.434	0.440	0.446	0.452	0.457	0.461	0.465	0.468	0.472	0.475	0.477	0.480	0.482	0.484	0.486
Germany	0.014	0.005	-0.024	-0.067	-0.119	-0.175	-0.234	-0.292	-0.350	-0.404	-0.454	-0.500	-0.540	-0.575	-0.606	-0.633	-0.657	-0.677	-0.695	-0.711	-0.725	-0.738	-0.749	-0.759	-0.768	-0.776	-0.783	-0.790	-0.796	-0.802
France	-0.025	-0.056	-0.089	-0.124	-0.157	-0.185	-0.210	-0.234	-0.255	-0.276	-0.295	-0.312	-0.328	-0.343	-0.356	-0.368	-0.379	-0.389	-0.398	-0.406	-0.414	-0.421	-0.428	-0.433	-0.439	-0.444	-0.449	-0.453	-0.457	-0.461
Italy	0.018	-0.003	-0.071	-0.180	-0.298	-0.387	-0.444	-0.485	-0.517	-0.545	-0.570	-0.592	-0.611	-0.628	-0.643	-0.656	-0.668	-0.678	-0.688	-0.696	-0.703	-0.710	-0.716	-0.722	-0.727	-0.731	-0.735	-0.739	-0.743	-0.746
Netherlands	0.130	0.209	0.247	0.249	0.223	0.175	0.114	0.047	-0.020	-0.085	-0.146	-0.201	-0.250	-0.294	-0.333	-0.367	-0.397	-0.424	-0.448	-0.469	-0.487	-0.504	-0.519	-0.533	-0.545	-0.556	-0.567	-0.576	-0.585	-0.592
Rest of EU	0.028	0.022	-0.010	-0.058	-0.114	-0.170	-0.225	-0.279	-0.331	-0.379	-0.424	-0.465	-0.502	-0.536	-0.566	-0.593	-0.617	-0.639	-0.659	-0.677	-0.693	-0.708	-0.721	-0.734	-0.745	-0.756	-0.765	-0.774	-0.782	-0.790
Great Britain	-0.014	-0.034	-0.060	-0.087	-0.113	-0.136	-0.157	-0.178	-0.197	-0.215	-0.233	-0.249	-0.264	-0.279	-0.292	-0.304	-0.315	-0.326	-0.335	-0.344	-0.353	-0.360	-0.367	-0.374	-0.380	-0.385	-0.390	-0.395	-0.400	-0.404
Switzerland	-0.026	-0.055	-0.083	-0.111	-0.135	-0.158	-0.178	-0.195	-0.211	-0.224	-0.235	-0.244	-0.252	-0.259	-0.265	-0.270	-0.274	-0.277	-0.280	-0.283	-0.285	-0.287	-0.289	-0.291	-0.292	-0.294	-0.295	-0.296	-0.297	-0.298
Norway	0.381	0.758	1.124	1.460	1.737	1.941	2.091	2.211	2.313	2.401	2.476	2.540	2.595	2.641	2.680	2.714	2.743	2.767	2.789	2.808	2.824	2.839	2.852	2.863	2.874	2.883	2.892	2.900	2.907	2.914
Australia	0.031	0.063	0.097	0.128	0.153	0.170	0.181	0.190	0.198	0.206	0.213	0.221	0.227	0.234	0.240	0.245	0.250	0.255	0.259	0.263	0.266	0.269	0.272	0.274	0.276	0.278	0.280	0.281	0.283	0.284
Japan	-0.026	-0.072	-0.139	-0.214	-0.280	-0.326	-0.357	-0.380	-0.400	-0.417	-0.433	-0.446	-0.458	-0.468	-0.477	-0.485	-0.492	-0.498	-0.504	-0.509	-0.513	-0.517	-0.521	-0.524	-0.527	-0.529	-0.532	-0.534	-0.536	-0.538
South Korea	-0.024	-0.075	-0.149	-0.234	-0.313	-0.377	-0.428	-0.472	-0.512	-0.548	-0.581	-0.610	-0.636	-0.659	-0.679	-0.697	-0.713	-0.727	-0.739	-0.750	-0.760	-0.770	-0.778	-0.785	-0.792	-0.798	-0.803	-0.808	-0.813	-0.817
Taiwan	-0.032	-0.084	-0.154	-0.232	-0.303	-0.359	-0.402	-0.440	-0.474	-0.504	-0.532	-0.557	-0.579	-0.599	-0.617	-0.633	-0.647	-0.660	-0.671	-0.681	-0.691	-0.699	-0.707	-0.714	-0.720	-0.726	-0.731	-0.736	-0.740	-0.745
Allies	0.006	0.000	-0.017	-0.041	-0.067	-0.091	-0.113	-0.133	-0.152	-0.169	-0.185	-0.200	-0.213	-0.225	-0.235	-0.244	-0.253	-0.260	-0.267	-0.273	-0.278	-0.283	-0.288	-0.292	-0.296	-0.299	-0.302	-0.305	-0.308	-0.310
EU 27	0.020	0.012	-0.020	-0.070	-0.126	-0.181	-0.232	-0.281	-0.328	-0.371	-0.411	-0.448	-0.480	-0.509	-0.535	-0.558	-0.579	-0.597	-0.614	-0.628	-0.641	-0.653	-0.664	-0.674	-0.683	-0.691	-0.699	-0.706	-0.712	-0.718
Non - EU 27 Allies	0.001	-0.005	-0.015	-0.029	-0.043	-0.054	-0.063	-0.071	-0.079	-0.086	-0.092	-0.097	-0.102	-0.107	-0.111	-0.114	-0.118	-0.121	-0.123	-0.126	-0.128	-0.130	-0.132	-0.133	-0.135	-0.136	-0.138	-0.139	-0.140	-0.141

Table 3. Percent change in <u>real GDP</u> – <u>All</u> sectors

	Percent Change in real GDP	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
	Russia	-0.291	-0.500	-0.623	-0.673	-0.672	-0.647	-0.615	-0.582	-0.551	-0.522	-0.494	-0.468	-0.444	-0.422	-0.402	-0.384	-0.367	-0.352	-0.339	-0.327	-0.316	-0.306	-0.297	-0.288	-0.281	-0.274	-0.268	-0.263	-0.258	-0.253
Non-Allies	China	0.001	0.002	0.003	0.005	0.006	0.008	0.009	0.009	0.010	0.011	0.011	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
	India	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004
	Turkey	0.021	0.040	0.058	0.073	0.087	0.100	0.110	0.119	0.126	0.132	0.138	0.142	0.145	0.148	0.151	0.153	0.155	0.156	0.158	0.159	0.160	0.160	0.161	0.162	0.162	0.163	0.163	0.164	0.164	0.165
	Indonesia	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
	Kazakhstan	-0.002	-0.001	0.004	0.011	0.019	0.029	0.038	0.046	0.054	0.062	0.068	0.074	0.078	0.083	0.086	0.089	0.092	0.095	0.097	0.099	0.100	0.102	0.103	0.104	0.106	0.107	0.108	0.108	0.109	0.110
	Mexico	-0.001	-0.001	-0.001	-0.002	-0.002	-0.001	-0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	Brazil	-0.003	-0.005	-0.007	-0.009	-0.011	-0.012	-0.013	-0.014	-0.015	-0.016	-0.017	-0.017	-0.018	-0.019	-0.019	-0.019	-0.020	-0.020	-0.020	-0.021	-0.021	-0.021	-0.021	-0.021	-0.022	-0.022	-0.022	-0.022	-0.022	-0.022
	Egypt	0.006	0.011	0.016	0.020	0.023	0.026	0.029	0.031	0.033	0.034	0.036	0.037	0.038	0.038	0.039	0.040	0.040	0.041	0.041	0.041	0.042	0.042	0.042	0.042	0.042	0.043	0.043	0.043	0.043	0.043
	Saudi Arabia	0.002	0.004	0.006	0.009	0.011	0.014	0.016	0.018	0.020	0.022	0.024	0.025	0.026	0.027	0.028	0.029	0.030	0.031	0.031	0.032	0.032	0.033	0.033	0.034	0.034	0.034	0.035	0.035	0.035	0.035
	South Africa	-0.001	-0.002	-0.003	-0.005	-0.006	-0.007	-0.008	-0.009	-0.010	-0.011	-0.011	-0.012	-0.012	-0.013	-0.013	-0.014	-0.014	-0.014	-0.015	-0.015	-0.015	-0.015	-0.015	-0.016	-0.016	-0.016	-0.016	-0.016	-0.016	-0.016
	Rest of Asia	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.006
	Rest of Americas	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
	MENA	0.006	0.012	0.018	0.024	0.029	0.033	0.036	0.039	0.041	0.043	0.045	0.047	0.048	0.049	0.050	0.051	0.052	0.053	0.053	0.054	0.054	0.055	0.055	0.055	0.056	0.056	0.056	0.056	0.057	0.057
	SSA	0.002	0.004	0.007	0.010	0.012	0.015	0.017	0.020	0.022	0.024	0.025	0.027	0.028	0.030	0.031	0.032	0.033	0.034	0.034	0.035	0.036	0.036	0.037	0.037	0.038	0.038	0.038	0.039	0.039	0.039
	Rest of World	0.014	0.031	0.047	0.061	0.070	0.076	0.079	0.080	0.081	0.082	0.083	0.084	0.085	0.085	0.086	0.086	0.087	0.087	0.088	0.088	0.088	0.089	0.089	0.089	0.089	0.090	0.090	0.090	0.090	0.090
Allies	USA	-0.001	-0.002	-0.004	-0.006	-0.009	-0.012	-0.014	-0.017	-0.020	-0.022	-0.024	-0.027	-0.029	-0.031	-0.032	-0.034	-0.035	-0.037	-0.038	-0.039	-0.040	-0.041	-0.042	-0.043	-0.044	-0.044	-0.045	-0.046	-0.046	-0.047
	Canada	0.002	0.003	0.004	0.004	0.004	0.003	0.001	0.000	-0.002	-0.003	-0.005	-0.006	-0.007	-0.008	-0.009	-0.010	-0.011	-0.012	-0.013	-0.013	-0.014	-0.015	-0.015	-0.016	-0.016	-0.017	-0.017	-0.018	-0.018	-0.018
	Germany	-0.017	-0.043	-0.078	-0.120	-0.166	-0.216	-0.266	-0.315	-0.362	-0.407	-0.447	-0.484	-0.517	-0.546	-0.571	-0.594	-0.614	-0.631	-0.646	-0.660	-0.672	-0.683	-0.693	-0.701	-0.709	-0.716	-0.723	-0.729	-0.734	-0.739
	France	-0.009	-0.021	-0.035	-0.050	-0.066	-0.082	-0.097	-0.112	-0.126	-0.140	-0.152	-0.164	-0.176	-0.186	-0.195	-0.204	-0.212	-0.220	-0.227	-0.233	-0.239	-0.245	-0.250	-0.254	-0.259	-0.263	-0.267	-0.270	-0.273	-0.276
	Italy	-0.016	-0.046	-0.095	-0.164	-0.236	-0.293	-0.330	-0.356	-0.377	-0.395	-0.411	-0.425	-0.437	-0.448	-0.458	-0.467	-0.475	-0.482	-0.488	-0.493	-0.498	-0.503	-0.507	-0.511	-0.514	-0.518	-0.520	-0.523	-0.526	-0.528
	Netherlands	-0.023	-0.063	-0.120	-0.188	-0.263	-0.342	-0.420	-0.496	-0.569	-0.635	-0.696	-0.751	-0.799	-0.842	-0.880	-0.914	-0.943	-0.969	-0.993	-1.013	-1.032	-1.048	-1.063	-1.077	-1.089	-1.101	-1.111	-1.120	-1.129	-1.137
	Rest of EU	-0.013	-0.041	-0.080	-0.127	-0.178	-0.229	-0.279	-0.328	-0.374	-0.418	-0.458	-0.495	-0.529	-0.559	-0.587	-0.613	-0.636	-0.657	-0.676	-0.694	-0.710	-0.725	-0.739	-0.752	-0.763	-0.774	-0.785	-0.794	-0.803	-0.812
	Great Britain	-0.010	-0.024	-0.041	-0.060	-0.079	-0.099	-0.118	-0.137	-0.156	-0.173	-0.190	-0.205	-0.220	-0.233	-0.246	-0.257	-0.268	-0.278	-0.287	-0.296	-0.304	-0.311	-0.318	-0.324	-0.330	-0.335	-0.340	-0.345	-0.349	-0.353
	Switzerland	-0.006	-0.014	-0.024	-0.035	-0.046	-0.057	-0.067	-0.076	-0.085	-0.092	-0.099	-0.105	-0.110	-0.115	-0.119	-0.122	-0.126	-0.128	-0.131	-0.133	-0.136	-0.138	-0.139	-0.141	-0.142	-0.144	-0.145	-0.146	-0.147	-0.148
	Norway	0.006	0.010	0.012	0.011	0.008	0.002	-0.006	-0.015	-0.024	-0.033	-0.042	-0.051	-0.059	-0.066	-0.074	-0.080	-0.087	-0.093	-0.098	-0.104	-0.109	-0.113	-0.118	-0.122	-0.125	-0.129	-0.132	-0.135	-0.138	-0.141
	Australia	-0.001	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.008	-0.009	-0.010	-0.011	-0.012	-0.013	-0.014	-0.014	-0.015	-0.015	-0.016	-0.016	-0.017	-0.017	-0.018	-0.018	-0.018	-0.019	-0.019	-0.019	-0.019	-0.020	-0.020
	Japan	-0.008	-0.024	-0.048	-0.077	-0.104	-0.122	-0.135	-0.144	-0.151	-0.158	-0.164	-0.169	-0.173	-0.178	-0.181	-0.184	-0.187	-0.190	-0.192	-0.194	-0.196	-0.198	-0.199	-0.201	-0.202	-0.203	-0.204	-0.205	-0.206	-0.207
	South Korea	-0.010	-0.030	-0.061	-0.098	-0.135	-0.167	-0.194	-0.219	-0.241	-0.261	-0.280	-0.297	-0.312	-0.325	-0.338	-0.349	-0.359	-0.367	-0.376	-0.383	-0.389	-0.395	-0.401	-0.406	-0.411	-0.415	-0.419	-0.422	-0.426	-0.429
	Taiwan	-0.005	-0.018	-0.039	-0.065	-0.088	-0.107	-0.122	-0.135	-0.147	-0.158	-0.168	-0.178	-0.187	-0.195	-0.203	-0.209	-0.216	-0.222	-0.227	-0.232	-0.237	-0.241	-0.245	-0.248	-0.251	-0.254	-0.257	-0.260	-0.262	-0.264
	Allies	-0.006	-0.018	-0.034	-0.054	-0.075	-0.095	-0.113	-0.130	-0.146	-0.161	-0.175	-0.187	-0.199	-0.209	-0.218	-0.226	-0.234	-0.241	-0.247	-0.252	-0.258	-0.262	-0.266	-0.270	-0.274	-0.277	-0.280	-0.283	-0.286	-0.288
	EU 27	-0.014	-0.040	-0.076	-0.120	-0.168	-0.214	-0.258	-0.299	-0.338	-0.375	-0.408	-0.439	-0.466	-0.491	-0.513	-0.533	-0.551	-0.567	-0.582	-0.595	-0.607	-0.618	-0.628	-0.637	-0.646	-0.653	-0.661	-0.667	-0.673	-0.679
	Non - EU 27 Allies	-0.003	-0.008	-0.016	-0.025	-0.035	-0.043	-0.049	-0.056	-0.061	-0.066	-0.071	-0.076	-0.080	-0.084	-0.087	-0.090	-0.093	-0.096	-0.098	-0.101	-0.103	-0.105	-0.106	-0.108	-0.109	-0.111	-0.112	-0.113	-0.114	-0.115

Table 4. Percent change in <u>real income</u> – <u>All</u> sectors

Percent Change in real Income	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
Russia	-1.212	-2.173	-2.892	-3.399	-3.750	-3.999	-4.183	-4.323	-4.429	-4.508	-4.566	-4.609	-4.639	-4.660	-4.674	-4.683	-4.689	-4.692	-4.693	-4.693	-4.692	-4.691	-4.689	-4.686	-4.684	-4.681	-4.678	-4.675	-4.673	-4.670
China	-0.015	-0.024	-0.030	-0.033	-0.034	-0.035	-0.036	-0.037	-0.038	-0.039	-0.040	-0.040	-0.041	-0.042	-0.043	-0.044	-0.045	-0.045	-0.046	-0.047	-0.047	-0.048	-0.048	-0.049	-0.049	-0.050	-0.050	-0.051	-0.051	-0.051
India	-0.020	-0.039	-0.060	-0.080	-0.098	-0.115	-0.130	-0.143	-0.156	-0.167	-0.177	-0.187	-0.195	-0.202	-0.209	-0.214	-0.219	-0.224	-0.228	-0.231	-0.235	-0.238	-0.240	-0.243	-0.245	-0.247	-0.249	-0.251	-0.252	-0.254
Turkey	0.040	0.084	0.132	0.180	0.227	0.271	0.312	0.347	0.376	0.400	0.420	0.436	0.450	0.461	0.470	0.477	0.484	0.489	0.494	0.497	0.501	0.503	0.506	0.508	0.509	0.511	0.512	0.513	0.514	0.515
Indonesia	0.031	0.064	0.098	0.127	0.147	0.155	0.155	0.153	0.151	0.149	0.148	0.147	0.147	0.147	0.147	0.148	0.149	0.149	0.150	0.151	0.152	0.152	0.153	0.153	0.154	0.154	0.155	0.155	0.155	0.155
Kazakhstan	0.281	0.576	0.870	1.156	1.428	1.680	1.911	2.121	2.307	2.472	2.615	2.740	2.848	2.940	3.021	3.090	3.151	3.204	3.251	3.292	3.328	3.361	3.390	3.417	3.441	3.462	3.482	3.500	3.517	3.532
Mexico	-0.015	-0.023	-0.024	-0.020	-0.011	0.003	0.019	0.035	0.051	0.064	0.076	0.087	0.096	0.104	0.111	0.117	0.123	0.127	0.132	0.135	0.139	0.141	0.144	0.147	0.149	0.151	0.153	0.154	0.156	0.157
Brazil	-0.007	-0.012	-0.015	-0.017	-0.017	-0.017	-0.016	-0.015	-0.015	-0.014	-0.014	-0.013	-0.013	-0.013	-0.013	-0.012	-0.012	-0.012	-0.012	-0.012	-0.011	-0.011	-0.011	-0.011	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010
Egypt	0.065	0.128	0.188	0.243	0.291	0.331	0.364	0.393	0.417	0.439	0.457	0.473	0.487	0.500	0.510	0.519	0.527	0.534	0.540	0.546	0.550	0.555	0.559	0.562	0.565	0.568	0.571	0.573	0.575	0.577
Saudi Arabia	0.045	0.111	0.197	0.299	0.411	0.527	0.643	0.754	0.858	0.953	1.039	1.115	1.182	1.241	1.293	1.339	1.379	1.414	1.446	1.474	1.500	1.523	1.544	1.563	1.580	1.596	1.610	1.624	1.636	1.648
South Africa	-0.015	-0.029	-0.042	-0.054	-0.064	-0.073	-0.081	-0.089	-0.095	-0.101	-0.105	-0.109	-0.112	-0.115	-0.117	-0.118	-0.119	-0.120	-0.120	-0.121	-0.121	-0.121	-0.121	-0.121	-0.121	-0.121	-0.121	-0.121	-0.121	-0.121
Rest of Asia	0.002	0.006	0.010	0.012	0.012	0.007	-0.001	-0.010	-0.018	-0.026	-0.033	-0.040	-0.046	-0.050	-0.055	-0.059	-0.062	-0.065	-0.068	-0.070	-0.073	-0.075	-0.077	-0.078	-0.080	-0.081	-0.082	-0.084	-0.085	-0.086
Rest of Americas	0.007	0.017	0.027	0.039	0.051	0.061	0.070	0.078	0.086	0.093	0.099	0.105	0.110	0.115	0.119	0.123	0.126	0.129	0.132	0.135	0.137	0.139	0.141	0.143	0.144	0.146	0.147	0.149	0.150	0.151
MENA	0.146	0.302	0.467	0.634	0.781	0.894	0.980	1.052	1.116	1.173	1.225	1.271	1.311	1.347	1.378	1.405	1.429	1.451	1.469	1.486	1.502	1.515	1.528	1.539	1.549	1.559	1.568	1.576	1.583	1.590
SSA	0.037	0.079	0.126	0.177	0.228	0.275	0.318	0.359	0.397	0.432	0.464	0.492	0.518	0.540	0.560	0.577	0.593	0.607	0.619	0.630	0.640	0.649	0.657	0.664	0.671	0.678	0.684	0.689	0.694	0.699
Rest of World	0.097	0.202	0.304	0.400	0.483	0.547	0.596	0.637	0.672	0.702	0.729	0.751	0.771	0.788	0.803	0.815	0.826	0.836	0.844	0.852	0.858	0.864	0.870	0.875	0.879	0.883	0.887	0.890	0.893	0.896
USA	-0.001	-0.004	-0.008	-0.014	-0.019	-0.025	-0.031	-0.037	-0.043	-0.048	-0.053	-0.057	-0.061	-0.064	-0.068	-0.071	-0.073	-0.076	-0.078	-0.080	-0.082	-0.083	-0.085	-0.086	-0.088	-0.089	-0.090	-0.091	-0.092	-0.093
Canada	0.048	0.093	0.135	0.173	0.205	0.229	0.247	0.261	0.274	0.286	0.297	0.306	0.315	0.323	0.329	0.336	0.341	0.346	0.350	0.354	0.358	0.361	0.364	0.367	0.369	0.372	0.374	0.376	0.377	0.379
Germany	0.024	0.022	-0.002	-0.043	-0.095	-0.152	-0.213	-0.276	-0.337	-0.396	-0.451	-0.501	-0.547	-0.587	-0.622	-0.653	-0.681	-0.705	-0.727	-0.746	-0.763	-0.778	-0.792	-0.804	-0.815	-0.826	-0.835	-0.843	-0.851	-0.858
France	-0.014	-0.035	-0.061	-0.090	-0.119	-0.145	-0.169	-0.191	-0.213	-0.234	-0.253	-0.272	-0.289	-0.304	-0.319	-0.332	-0.344	-0.355	-0.366	-0.375	-0.384	-0.392	-0.400	-0.406	-0.413	-0.419	-0.424	-0.429	-0.434	-0.439
Italy	0.037	0.033	-0.021	-0.118	-0.230	-0.318	-0.374	-0.413	-0.445	-0.473	-0.498	-0.521	-0.541	-0.560	-0.576	-0.590	-0.603	-0.615	-0.625	-0.634	-0.643	-0.650	-0.658	-0.664	-0.670	-0.675	-0.680	-0.685	-0.689	-0.693
Netherlands	0.138	0.222	0.262	0.266	0.239	0.190	0.126	0.054	-0.018	-0.089	-0.155	-0.216	-0.271	-0.321	-0.365	-0.404	-0.439	-0.470	-0.497	-0.522	-0.544	-0.564	-0.582	-0.598	-0.613	-0.627	-0.639	-0.650	-0.661	-0.671
Rest of EU	0.048	0.057	0.035	-0.008	-0.062	-0.120	-0.179	-0.238	-0.295	-0.350	-0.402	-0.450	-0.494	-0.534	-0.571	-0.605	-0.635	-0.663	-0.688	-0.712	-0.733	-0.753	-0.771	-0.788	-0.804	-0.818	-0.832	-0.844	-0.856	-0.867
Great Britain	-0.001	-0.011	-0.028	-0.050	-0.073	-0.095	-0.115	-0.136	-0.156	-0.176	-0.195	-0.213	-0.231	-0.247	-0.262	-0.276	-0.290	-0.302	-0.314	-0.324	-0.334	-0.343	-0.352	-0.360	-0.367	-0.374	-0.381	-0.387	-0.392	-0.397
Switzerland	-0.025	-0.053	-0.083	-0.112	-0.140	-0.166	-0.190	-0.211	-0.230	-0.247	-0.262	-0.275	-0.287	-0.296	-0.305	-0.313	-0.319	-0.325	-0.330	-0.335	-0.339	-0.343	-0.346	-0.349	-0.352	-0.355	-0.357	-0.359	-0.361	-0.363
Norway	0.311	0.619	0.920	1.201	1.435	1.603	1.723	1.817	1.895	1.963	2.022	2.071	2.113	2.148	2.177	2.202	2.222	2.240	2.255	2.267	2.278	2.288	2.297	2.304	2.311	2.317	2.322	2.327	2.331	2.335
Australia	0.022	0.046	0.072	0.097	0.117	0.129	0.136	0.142	0.147	0.152	0.157	0.163	0.168	0.173	0.177	0.182	0.186	0.190	0.193	0.196	0.199	0.202	0.204	0.206	0.208	0.210	0.211	0.213	0.214	0.215
Japan	-0.014	-0.048	-0.105	-0.173	-0.235	-0.279	-0.308	-0.330	-0.349	-0.366	-0.381	-0.395	-0.407	-0.417	-0.427	-0.435	-0.443	-0.450	-0.456	-0.461	-0.466	-0.471	-0.475	-0.478	-0.482	-0.485	-0.488	-0.490	-0.493	-0.495
South Korea	-0.011	-0.051	-0.116	-0.196	-0.273	-0.337	-0.389	-0.435	-0.477	-0.516	-0.552	-0.584	-0.613	-0.640	-0.663	-0.684	-0.703	-0.720	-0.735	-0.749	-0.762	-0.773	-0.784	-0.793	-0.802	-0.810	-0.817	-0.824	-0.830	-0.836
Taiwan	-0.018	-0.058	-0.119	-0.190	-0.258	-0.311	-0.355	-0.392	-0.426	-0.458	-0.487	-0.514	-0.538	-0.560	-0.579	-0.597	-0.613	-0.628	-0.641	-0.653	-0.664	-0.674	-0.683	-0.691	-0.699	-0.706	-0.712	-0.718	-0.724	-0.729
Allies	0.013	0.012	-0.002	-0.024	-0.049	-0.074	-0.097	-0.118	-0.139	-0.158	-0.176	-0.193	-0.208	-0.222	-0.234	-0.246	-0.256	-0.265	-0.273	-0.281	-0.288	-0.294	-0.300	-0.305	-0.310	-0.315	-0.319	-0.323	-0.326	-0.330
EU 27	0.035	0.038	0.015	-0.029	-0.084	-0.139	-0.193	-0.244	-0.294	-0.342	-0.386	-0.427	-0.464	-0.498	-0.528	-0.556	-0.580	-0.602	-0.622	-0.641	-0.657	-0.672	-0.686	-0.698	-0.710	-0.721	-0.731	-0.740	-0.748	-0.756
Non - EU 27 Allies	0.004	0.001	-0.008	-0.022	-0.035	-0.047	-0.057	-0.066	-0.074	-0.082	-0.089	-0.096	-0.102	-0.108	-0.113	-0.117	-0.122	-0.125	-0.129	-0.132	-0.135	-0.138	-0.140	-0.142	-0.145	-0.146	-0.148	-0.150	-0.152	-0.153

Non-Allies (rows China through Rest of World)

Allies (rows USA through Taiwan)

Table 5. Percent change in <u>real GDP</u> with burden-sharing arrangement between Allies (8 selected sectors)

Percent Change in real GDP	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
Russia	-0.333	-0.583	-0.744	-0.827	-0.855	-0.855	-0.844	-0.830	-0.815	-0.800	-0.784	-0.769	-0.754	-0.740	-0.727	-0.715	-0.703	-0.694	-0.684	-0.675	-0.668	-0.661	-0.654	-0.648	-0.643	-0.638	-0.634	-0.630	-0.627	-0.623
China	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.009	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
India	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Turkey	0.016	0.031	0.044	0.056	0.066	0.075	0.083	0.090	0.095	0.100	0.103	0.106	0.109	0.111	0.113	0.114	0.115	0.116	0.117	0.117	0.118	0.118	0.119	0.119	0.120	0.120	0.120	0.120	0.120	0.121
Indonesia	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Kazakhstan	0.003	0.010	0.019	0.029	0.041	0.052	0.063	0.074	0.083	0.091	0.098	0.104	0.110	0.114	0.118	0.122	0.125	0.127	0.130	0.132	0.134	0.135	0.137	0.138	0.139	0.140	0.141	0.142	0.143	0.144
Mexico	-0.001	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
Brazil	-0.003	-0.006	-0.009	-0.011	-0.013	-0.015	-0.016	-0.017	-0.018	-0.020	-0.020	-0.021	-0.022	-0.023	-0.023	-0.024	-0.024	-0.025	-0.025	-0.025	-0.026	-0.026	-0.026	-0.026	-0.026	-0.027	-0.027	-0.027	-0.027	-0.027
Egypt	0.005	0.009	0.012	0.016	0.019	0.021	0.023	0.025	0.026	0.027	0.028	0.029	0.030	0.030	0.031	0.031	0.032	0.032	0.033	0.033	0.033	0.033	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
Saudi Arabia	0.003	0.005	0.008	0.012	0.015	0.017	0.020	0.022	0.025	0.027	0.028	0.030	0.031	0.032	0.033	0.034	0.035	0.036	0.036	0.037	0.038	0.038	0.038	0.039	0.039	0.039	0.040	0.040	0.040	0.040
South Africa	-0.002	-0.004	-0.006	-0.008	-0.010	-0.011	-0.012	-0.013	-0.014	-0.015	-0.015	-0.016	-0.017	-0.017	-0.017	-0.018	-0.018	-0.018	-0.018	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019	-0.019
Rest of Asia	0.000	0.000	0.001	0.001	0.000	0.000	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.008	-0.008	-0.008	-0.008	-0.008	-0.008
Rest of Americas	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
MENA	0.006	0.012	0.018	0.024	0.030	0.034	0.037	0.040	0.042	0.044	0.045	0.047	0.048	0.049	0.050	0.051	0.052	0.053	0.053	0.054	0.054	0.054	0.055	0.055	0.055	0.056	0.056	0.056	0.056	0.057
SSA	0.003	0.006	0.009	0.013	0.016	0.019	0.021	0.024	0.026	0.028	0.030	0.031	0.033	0.034	0.035	0.036	0.037	0.037	0.038	0.038	0.039	0.039	0.040	0.040	0.041	0.041	0.041	0.042	0.042	0.042
Rest of World	0.014	0.031	0.048	0.062	0.071	0.077	0.079	0.081	0.082	0.083	0.084	0.085	0.085	0.086	0.086	0.087	0.087	0.088	0.088	0.088	0.089	0.089	0.089	0.089	0.090	0.090	0.090	0.090	0.090	0.090
USA	0.000	-0.002	-0.004	-0.007	-0.010	-0.013	-0.015	-0.018	-0.020	-0.023	-0.025	-0.027	-0.028	-0.030	-0.032	-0.033	-0.034	-0.035	-0.036	-0.037	-0.038	-0.039	-0.040	-0.040	-0.041	-0.041	-0.042	-0.042	-0.043	-0.043
Canada	-0.001	-0.003	-0.007	-0.011	-0.015	-0.018	-0.022	-0.025	-0.028	-0.030	-0.032	-0.035	-0.036	-0.038	-0.040	-0.041	-0.042	-0.043	-0.044	-0.045	-0.046	-0.046	-0.047	-0.048	-0.048	-0.049	-0.049	-0.049	-0.050	-0.050
Germany	-0.019	-0.046	-0.080	-0.119	-0.161	-0.205	-0.249	-0.292	-0.333	-0.370	-0.404	-0.434	-0.461	-0.485	-0.505	-0.523	-0.538	-0.552	-0.563	-0.574	-0.583	-0.591	-0.598	-0.605	-0.611	-0.616	-0.621	-0.625	-0.629	-0.633
France	-0.009	-0.020	-0.033	-0.047	-0.062	-0.076	-0.090	-0.103	-0.116	-0.127	-0.138	-0.148	-0.158	-0.166	-0.174	-0.182	-0.188	-0.194	-0.200	-0.205	-0.210	-0.214	-0.218	-0.222	-0.225	-0.228	-0.231	-0.234	-0.236	-0.239
Italy	-0.020	-0.052	-0.100	-0.164	-0.229	-0.278	-0.310	-0.332	-0.350	-0.366	-0.378	-0.391	-0.401	-0.410	-0.418	-0.425	-0.431	-0.437	-0.441	-0.446	-0.450	-0.453	-0.456	-0.459	-0.462	-0.464	-0.466	-0.468	-0.470	-0.472
Netherlands	-0.035	-0.084	-0.145	-0.214	-0.288	-0.362	-0.434	-0.502	-0.566	-0.624	-0.676	-0.722	-0.763	-0.799	-0.830	-0.857	-0.881	-0.902	-0.921	-0.937	-0.952	-0.965	-0.977	-0.988	-0.997	-1.006	-1.014	-1.021	-1.028	-1.034
Rest of EU	-0.016	-0.043	-0.079	-0.120	-0.162	-0.204	-0.245	-0.284	-0.320	-0.353	-0.383	-0.411	-0.436	-0.458	-0.478	-0.496	-0.512	-0.527	-0.540	-0.552	-0.562	-0.572	-0.581	-0.589	-0.597	-0.604	-0.610	-0.616	-0.622	-0.627
Great Britain	-0.011	-0.025	-0.041	-0.059	-0.077	-0.095	-0.112	-0.129	-0.144	-0.159	-0.173	-0.186	-0.197	-0.208	-0.218	-0.227	-0.236	-0.243	-0.250	-0.257	-0.263	-0.268	-0.273	-0.278	-0.282	-0.286	-0.290	-0.293	-0.296	-0.299
Switzerland	-0.006	-0.015	-0.024	-0.034	-0.044	-0.052	-0.060	-0.067	-0.073	-0.078	-0.083	-0.087	-0.090	-0.093	-0.095	-0.097	-0.099	-0.100	-0.101	-0.102	-0.103	-0.104	-0.105	-0.106	-0.106	-0.107	-0.107	-0.107	-0.108	-0.108
Norway	-0.009	-0.020	-0.033	-0.046	-0.058	-0.070	-0.080	-0.090	-0.099	-0.107	-0.114	-0.121	-0.128	-0.133	-0.138	-0.143	-0.147	-0.151	-0.155	-0.158	-0.161	-0.163	-0.166	-0.168	-0.170	-0.172	-0.174	-0.175	-0.177	-0.178
Australia	-0.002	-0.005	-0.008	-0.012	-0.015	-0.018	-0.021	-0.023	-0.025	-0.027	-0.029	-0.030	-0.032	-0.033	-0.034	-0.035	-0.036	-0.037	-0.038	-0.038	-0.039	-0.040	-0.040	-0.041	-0.041	-0.041	-0.042	-0.042	-0.042	-0.042
Japan	-0.009	-0.025	-0.050	-0.078	-0.103	-0.120	-0.131	-0.139	-0.145	-0.151	-0.156	-0.160	-0.164	-0.167	-0.169	-0.172	-0.174	-0.176	-0.178	-0.179	-0.180	-0.182	-0.183	-0.184	-0.184	-0.185	-0.186	-0.187	-0.187	-0.188
South Korea	-0.009	-0.027	-0.055	-0.087	-0.119	-0.145	-0.168	-0.187	-0.205	-0.221	-0.235	-0.248	-0.259	-0.269	-0.278	-0.285	-0.292	-0.298	-0.304	-0.309	-0.313	-0.317	-0.320	-0.324	-0.327	-0.329	-0.331	-0.334	-0.336	-0.337
Taiwan	-0.005	-0.018	-0.038	-0.062	-0.083	-0.100	-0.112	-0.122	-0.132	-0.140	-0.148	-0.155	-0.162	-0.169	-0.174	-0.179	-0.184	-0.188	-0.192	-0.195	-0.199	-0.202	-0.204	-0.207	-0.209	-0.211	-0.213	-0.214	-0.216	-0.218
Allies	-0.007	-0.019	-0.036	-0.055	-0.074	-0.092	-0.108	-0.122	-0.136	-0.148	-0.159	-0.169	-0.178	-0.186	-0.193	-0.200	-0.205	-0.210	-0.215	-0.219	-0.223	-0.226	-0.229	-0.232	-0.234	-0.237	-0.239	-0.241	-0.243	-0.244
EU 27	-0.017	-0.043	-0.077	-0.118	-0.160	-0.201	-0.238	-0.272	-0.304	-0.334	-0.361	-0.385	-0.406	-0.426	-0.443	-0.458	-0.471	-0.483	-0.494	-0.503	-0.512	-0.520	-0.527	-0.533	-0.539	-0.544	-0.549	-0.554	-0.558	-0.562
Non - EU 27 Allies	-0.003	-0.009	-0.017	-0.027	-0.036	-0.044	-0.050	-0.056	-0.061	-0.065	-0.070	-0.073	-0.077	-0.080	-0.083	-0.085	-0.087	-0.089	-0.091	-0.093	-0.094	-0.096	-0.097	-0.098	-0.099	-0.100	-0.101	-0.102	-0.103	-0.104

Row groups: *Non-Allies* = China through Rest of World. *Allies* = USA through Taiwan.

Table 6. Percent change in <u>real income</u> with burden-sharing arrangement between Allies (8 selected sectors)

Percent Change in real Income		5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
Non-Allies	Russia	-1.200	-2.153	-2.865	-3.369	-3.715	-3.960	-4.140	-4.277	-4.381	-4.459	-4.516	-4.558	-4.587	-4.608	-4.623	-4.632	-4.638	-4.643	-4.644	-4.645	-4.644	-4.643	-4.641	-4.639	-4.637	-4.635	-4.633	-4.630	-4.628	-4.625
	China	-0.013	-0.021	-0.025	-0.026	-0.026	-0.026	-0.026	-0.026	-0.026	-0.026	-0.027	-0.027	-0.027	-0.028	-0.028	-0.028	-0.029	-0.029	-0.029	-0.030	-0.030	-0.030	-0.031	-0.031	-0.031	-0.032	-0.032	-0.032	-0.032	-0.033
	India	-0.027	-0.054	-0.080	-0.106	-0.129	-0.149	-0.167	-0.183	-0.197	-0.211	-0.222	-0.233	-0.242	-0.250	-0.257	-0.263	-0.268	-0.273	-0.277	-0.281	-0.284	-0.287	-0.290	-0.292	-0.295	-0.297	-0.299	-0.300	-0.302	-0.303
	Turkey	0.014	0.033	0.057	0.083	0.111	0.140	0.167	0.191	0.210	0.226	0.239	0.249	0.257	0.263	0.269	0.273	0.276	0.279	0.281	0.283	0.284	0.285	0.286	0.287	0.288	0.288	0.288	0.289	0.289	0.289
	Indonesia	0.039	0.079	0.119	0.153	0.177	0.187	0.190	0.190	0.189	0.189	0.189	0.190	0.191	0.192	0.193	0.194	0.195	0.196	0.198	0.199	0.199	0.200	0.201	0.202	0.202	0.203	0.203	0.204	0.204	0.204
	Kazakhstan	0.272	0.552	0.828	1.094	1.345	1.578	1.791	1.983	2.154	2.303	2.432	2.544	2.640	2.722	2.793	2.854	2.907	2.954	2.994	3.030	3.062	3.090	3.115	3.138	3.159	3.177	3.195	3.210	3.224	3.237
	Mexico	-0.015	-0.024	-0.026	-0.022	-0.013	0.001	0.018	0.034	0.050	0.063	0.076	0.086	0.095	0.103	0.110	0.116	0.122	0.126	0.130	0.134	0.137	0.140	0.143	0.145	0.147	0.149	0.151	0.152	0.154	0.155
	Brazil	-0.011	-0.021	-0.029	-0.035	-0.040	-0.044	-0.046	-0.048	-0.050	-0.052	-0.054	-0.055	-0.056	-0.058	-0.059	-0.060	-0.060	-0.061	-0.062	-0.062	-0.063	-0.064	-0.064	-0.065	-0.065	-0.065	-0.066	-0.066	-0.066	-0.067
	Egypt	0.060	0.116	0.170	0.218	0.259	0.292	0.319	0.342	0.362	0.379	0.394	0.407	0.418	0.427	0.435	0.442	0.448	0.453	0.458	0.462	0.466	0.469	0.472	0.474	0.477	0.479	0.481	0.483	0.484	0.486
	Saudi Arabia	0.090	0.199	0.321	0.454	0.592	0.731	0.866	0.992	1.108	1.213	1.306	1.387	1.459	1.521	1.575	1.623	1.665	1.701	1.734	1.763	1.789	1.813	1.834	1.853	1.871	1.887	1.901	1.915	1.927	1.939
	South Africa	-0.020	-0.039	-0.058	-0.075	-0.090	-0.104	-0.116	-0.126	-0.136	-0.144	-0.151	-0.157	-0.162	-0.166	-0.169	-0.172	-0.174	-0.177	-0.178	-0.180	-0.181	-0.183	-0.184	-0.185	-0.186	-0.187	-0.188	-0.189	-0.189	-0.190
	Rest of Asia	-0.001	0.000	0.001	0.001	-0.002	-0.010	-0.020	-0.030	-0.040	-0.049	-0.057	-0.065	-0.071	-0.076	-0.081	-0.085	-0.089	-0.092	-0.095	-0.098	-0.100	-0.102	-0.104	-0.106	-0.108	-0.109	-0.110	-0.112	-0.113	-0.114
	Rest of Americas	0.010	0.022	0.034	0.047	0.059	0.070	0.079	0.087	0.094	0.101	0.107	0.113	0.117	0.122	0.125	0.129	0.132	0.134	0.137	0.139	0.141	0.142	0.144	0.145	0.146	0.147	0.148	0.149	0.150	0.151
	MENA	0.188	0.383	0.583	0.776	0.943	1.071	1.169	1.251	1.323	1.387	1.443	1.493	1.536	1.573	1.606	1.634	1.659	1.681	1.700	1.717	1.733	1.747	1.759	1.770	1.781	1.790	1.799	1.807	1.814	1.821
	SSA	0.057	0.118	0.181	0.245	0.306	0.362	0.412	0.458	0.499	0.537	0.571	0.601	0.627	0.650	0.670	0.688	0.703	0.716	0.728	0.739	0.748	0.757	0.765	0.772	0.778	0.784	0.789	0.794	0.799	0.803
	Rest of World	0.101	0.207	0.310	0.404	0.482	0.542	0.587	0.623	0.654	0.681	0.704	0.724	0.741	0.755	0.767	0.778	0.787	0.795	0.801	0.807	0.813	0.817	0.822	0.825	0.829	0.832	0.835	0.837	0.839	0.842
Allies	USA	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Canada	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Germany	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	France	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Italy	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Netherlands	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Rest of EU	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Great Britain	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Switzerland	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Norway	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Australia	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Japan	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	South Korea	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Taiwan	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Allies	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	EU 27	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315
	Non - EU 27 Allies	0.006	-0.001	-0.019	-0.044	-0.070	-0.095	-0.117	-0.137	-0.156	-0.173	-0.190	-0.204	-0.217	-0.229	-0.240	-0.249	-0.257	-0.265	-0.272	-0.278	-0.283	-0.288	-0.292	-0.296	-0.300	-0.304	-0.307	-0.310	-0.312	-0.315

Table 7. Allied cash transfers necessary to enable burden-sharing agreement (in million US$ and in % of economy; 8 selected sectors)

Allied transfers in million USD	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
USA	1,086	697	-1,030	-3,668	-6,521	-9,064	-11,282	-13,318	-15,229	-17,015	-18,659	-20,152	-21,503	-22,706	-23,773	-24,731	-25,585	-26,334	-27,026	-27,631	-28,178	-28,679	-29,132	-29,539	-29,910	-30,256	-30,567	-30,857	-31,119	-31,369
Canada	-531	-1,165	-1,881	-2,625	-3,308	-3,869	-4,331	-4,738	-5,108	-5,448	-5,756	-6,032	-6,280	-6,500	-6,695	-6,870	-7,024	-7,161	-7,287	-7,397	-7,497	-7,588	-7,671	-7,746	-7,814	-7,877	-7,934	-7,988	-8,036	-8,083
Germany	-217	-178	62	473	1,055	1,797	2,650	3,556	4,459	5,321	6,116	6,831	7,463	8,016	8,496	8,910	9,268	9,578	9,845	10,077	10,281	10,459	10,616	10,756	10,880	10,990	11,089	11,178	11,260	11,333
France	499	887	1,158	1,329	1,436	1,514	1,581	1,643	1,702	1,759	1,814	1,868	1,921	1,973	2,025	2,074	2,122	2,169	2,213	2,255	2,295	2,332	2,368	2,402	2,434	2,464	2,492	2,519	2,544	2,567
Italy	-161	9	605	1,600	2,676	3,444	3,865	4,105	4,260	4,394	4,491	4,593	4,667	4,735	4,790	4,839	4,883	4,921	4,951	4,980	5,004	5,026	5,047	5,065	5,080	5,094	5,103	5,120	5,131	5,140
Netherlands	-636	-1,079	-1,362	-1,503	-1,508	-1,390	-1,191	-952	-703	-461	-235	-28	156	320	465	591	702	800	886	962	1,030	1,090	1,144	1,192	1,236	1,275	1,311	1,344	1,374	1,401
Rest of EU	-817	-870	-362	498	1,555	2,726	3,954	5,194	6,398	7,540	8,595	9,567	10,445	11,240	11,958	12,602	13,189	13,718	14,196	14,630	15,027	15,388	15,718	16,024	16,303	16,560	16,796	17,017	17,221	17,409
Great Britain	322	553	682	726	724	713	709	714	727	748	777	814	857	905	956	1,009	1,062	1,117	1,168	1,219	1,269	1,315	1,360	1,403	1,443	1,480	1,516	1,550	1,581	1,611
Switzerland	156	264	322	340	339	337	334	327	314	297	277	256	234	213	193	174	156	139	123	108	95	82	70	60	49	40	31	23	15	8
Norway	-1,023	-2,072	-3,122	-4,114	-4,951	-5,580	-6,054	-6,441	-6,773	-7,063	-7,313	-7,531	-7,718	-7,877	-8,013	-8,131	-8,232	-8,320	-8,399	-8,465	-8,524	-8,579	-8,626	-8,669	-8,707	-8,743	-8,775	-8,805	-8,831	-8,857
Australia	-210	-540	-972	-1,447	-1,882	-2,230	-2,511	-2,761	-2,993	-3,211	-3,413	-3,601	-3,773	-3,929	-4,069	-4,197	-4,311	-4,414	-4,508	-4,590	-4,665	-4,734	-4,795	-4,850	-4,900	-4,946	-4,987	-5,025	-5,059	-5,091
Japan	1,057	2,366	3,967	5,624	6,907	7,603	7,897	7,986	7,993	7,955	7,919	7,848	7,804	7,745	7,677	7,633	7,580	7,514	7,484	7,438	7,390	7,359	7,323	7,288	7,249	7,229	7,202	7,177	7,146	7,131
South Korea	311	769	1,347	1,957	2,486	2,877	3,169	3,406	3,612	3,792	3,952	4,090	4,215	4,322	4,416	4,499	4,571	4,632	4,691	4,740	4,783	4,823	4,858	4,887	4,918	4,943	4,966	4,987	5,004	5,023
Taiwan	164	360	584	809	994	1,122	1,212	1,281	1,339	1,390	1,435	1,474	1,511	1,543	1,571	1,597	1,620	1,639	1,659	1,675	1,691	1,704	1,716	1,727	1,738	1,747	1,755	1,763	1,769	1,776
Allies	0	0	0	0	0	-2	1	1	-2	-2	0	-2	-2	0	-2	-1	0	-2	-5	1	0	-2	-2	-1	-2	-2	-1	1	0	-1

Allied transfers in percent of each economy's income	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
USA	0.006	0.004	-0.006	-0.022	-0.039	-0.054	-0.067	-0.079	-0.090	-0.101	-0.111	-0.120	-0.128	-0.135	-0.141	-0.147	-0.152	-0.156	-0.160	-0.164	-0.167	-0.170	-0.173	-0.175	-0.178	-0.180	-0.181	-0.183	-0.185	-0.186
Canada	-0.040	-0.089	-0.143	-0.199	-0.251	-0.293	-0.328	-0.359	-0.387	-0.413	-0.436	-0.457	-0.476	-0.493	-0.507	-0.520	-0.532	-0.543	-0.552	-0.560	-0.568	-0.575	-0.581	-0.587	-0.592	-0.597	-0.601	-0.605	-0.609	-0.612
Germany	-0.007	-0.006	0.002	0.016	0.036	0.061	0.089	0.120	0.151	0.180	0.207	0.231	0.252	0.271	0.287	0.301	0.313	0.324	0.333	0.341	0.348	0.354	0.359	0.364	0.368	0.372	0.375	0.378	0.381	0.383
France	0.024	0.043	0.056	0.065	0.070	0.074	0.077	0.080	0.083	0.086	0.088	0.091	0.094	0.096	0.099	0.101	0.103	0.106	0.108	0.110	0.112	0.114	0.116	0.117	0.119	0.120	0.122	0.123	0.124	0.125
Italy	-0.011	0.001	0.042	0.110	0.185	0.238	0.267	0.284	0.294	0.304	0.310	0.317	0.323	0.327	0.331	0.334	0.338	0.340	0.342	0.344	0.346	0.347	0.349	0.350	0.351	0.352	0.353	0.354	0.355	0.355
Netherlands	-0.095	-0.161	-0.204	-0.225	-0.226	-0.208	-0.178	-0.142	-0.105	-0.069	-0.035	-0.004	0.024	0.048	0.070	0.089	0.106	0.120	0.133	0.145	0.155	0.164	0.172	0.179	0.186	0.192	0.197	0.202	0.207	0.211
Rest of EU	-0.018	-0.019	-0.008	0.011	0.035	0.061	0.088	0.115	0.142	0.168	0.191	0.213	0.232	0.250	0.266	0.280	0.294	0.305	0.316	0.326	0.335	0.343	0.350	0.357	0.363	0.369	0.374	0.379	0.383	0.388
Great Britain	0.015	0.026	0.032	0.034	0.034	0.033	0.033	0.033	0.034	0.035	0.036	0.038	0.040	0.042	0.044	0.047	0.049	0.052	0.054	0.057	0.059	0.061	0.063	0.065	0.067	0.069	0.070	0.072	0.073	0.075
Switzerland	0.028	0.048	0.059	0.062	0.062	0.061	0.061	0.060	0.057	0.054	0.051	0.047	0.043	0.039	0.035	0.032	0.028	0.025	0.022	0.020	0.017	0.015	0.013	0.011	0.009	0.007	0.006	0.004	0.003	0.001
Norway	-0.324	-0.654	-0.984	-1.294	-1.555	-1.750	-1.897	-2.017	-2.120	-2.209	-2.286	-2.353	-2.411	-2.460	-2.502	-2.538	-2.569	-2.596	-2.620	-2.640	-2.659	-2.675	-2.690	-2.703	-2.715	-2.726	-2.736	-2.745	-2.753	-2.761
Australia	-0.019	-0.050	-0.090	-0.134	-0.174	-0.206	-0.232	-0.255	-0.276	-0.296	-0.315	-0.332	-0.348	-0.363	-0.376	-0.387	-0.398	-0.407	-0.416	-0.424	-0.431	-0.437	-0.443	-0.448	-0.452	-0.456	-0.460	-0.464	-0.467	-0.470
Japan	0.027	0.059	0.100	0.141	0.174	0.191	0.199	0.201	0.201	0.200	0.199	0.197	0.196	0.195	0.193	0.192	0.191	0.189	0.188	0.187	0.186	0.185	0.184	0.183	0.182	0.182	0.181	0.180	0.180	0.179
South Korea	0.025	0.062	0.109	0.158	0.201	0.232	0.256	0.275	0.292	0.306	0.319	0.330	0.341	0.349	0.357	0.364	0.369	0.374	0.379	0.383	0.387	0.390	0.393	0.395	0.398	0.400	0.401	0.403	0.405	0.406
Taiwan	0.033	0.072	0.116	0.161	0.198	0.224	0.242	0.256	0.267	0.277	0.286	0.294	0.302	0.308	0.314	0.319	0.323	0.327	0.331	0.335	0.338	0.340	0.343	0.345	0.347	0.349	0.351	0.352	0.353	0.355
Allies	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: A positive number/percentage represents a cash inflow; a negative number/percentage represents a cash outflow.

Table 8. Percent change in <u>real GDP</u> with transfer of tariff revenues to Ukraine (8 selected sectors)

	Percent Change in real GDP	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
	Russia	-0.307	-0.557	-0.718	-0.799	-0.825	-0.823	-0.811	-0.796	-0.780	-0.763	-0.746	-0.730	-0.714	-0.699	-0.685	-0.672	-0.660	-0.649	-0.639	-0.630	-0.622	-0.614	-0.607	-0.601	-0.595	-0.590	-0.586	-0.581	-0.577	-0.574
Non-Allies	China	0.002	0.003	0.004	0.006	0.007	0.008	0.009	0.010	0.010	0.011	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
	India	0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
	Turkey	0.018	0.029	0.041	0.052	0.063	0.073	0.081	0.089	0.095	0.100	0.105	0.108	0.111	0.114	0.116	0.118	0.120	0.121	0.122	0.123	0.124	0.125	0.126	0.126	0.127	0.127	0.128	0.128	0.128	0.129
	Indonesia	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
	Kazakhstan	0.003	0.009	0.018	0.029	0.041	0.053	0.064	0.075	0.084	0.093	0.100	0.107	0.112	0.117	0.121	0.125	0.128	0.131	0.133	0.135	0.137	0.139	0.140	0.142	0.143	0.144	0.145	0.146	0.147	0.148
	Mexico	-0.001	-0.003	-0.004	-0.004	-0.005	-0.005	-0.004	-0.004	-0.004	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	Brazil	-0.002	-0.005	-0.008	-0.010	-0.012	-0.013	-0.015	-0.016	-0.017	-0.018	-0.019	-0.020	-0.021	-0.022	-0.022	-0.023	-0.023	-0.024	-0.024	-0.024	-0.025	-0.025	-0.025	-0.025	-0.026	-0.026	-0.026	-0.026	-0.026	-0.026
	Egypt	0.006	0.011	0.016	0.019	0.022	0.024	0.026	0.027	0.028	0.029	0.030	0.031	0.031	0.032	0.032	0.032	0.032	0.032	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
	Saudi Arabia	0.002	0.005	0.008	0.011	0.014	0.017	0.020	0.023	0.025	0.027	0.029	0.030	0.032	0.033	0.034	0.035	0.036	0.037	0.037	0.038	0.038	0.039	0.039	0.040	0.040	0.040	0.041	0.041	0.041	0.041
	South Africa	-0.002	-0.004	-0.007	-0.009	-0.010	-0.012	-0.013	-0.014	-0.015	-0.016	-0.017	-0.018	-0.018	-0.019	-0.019	-0.019	-0.020	-0.020	-0.020	-0.020	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021
	Rest of Asia	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
	Rest of Americas	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	MENA	0.004	0.009	0.014	0.020	0.025	0.029	0.033	0.036	0.038	0.040	0.042	0.044	0.046	0.047	0.048	0.049	0.050	0.051	0.052	0.053	0.053	0.054	0.054	0.054	0.055	0.055	0.056	0.056	0.056	0.056
	SSA	0.003	0.006	0.009	0.013	0.016	0.019	0.021	0.024	0.026	0.028	0.030	0.032	0.033	0.035	0.036	0.037	0.038	0.039	0.039	0.040	0.041	0.041	0.042	0.042	0.042	0.043	0.043	0.043	0.044	0.044
	Rest of World	0.040	0.058	0.075	0.090	0.100	0.106	0.108	0.110	0.111	0.112	0.113	0.114	0.115	0.115	0.116	0.116	0.117	0.117	0.117	0.118	0.118	0.118	0.118	0.119	0.119	0.119	0.119	0.119	0.120	0.120
	USA	-0.001	-0.002	-0.004	-0.006	-0.008	-0.011	-0.013	-0.015	-0.017	-0.019	-0.020	-0.022	-0.023	-0.025	-0.026	-0.027	-0.028	-0.029	-0.030	-0.030	-0.031	-0.032	-0.032	-0.033	-0.033	-0.034	-0.034	-0.035	-0.035	-0.035
	Canada	0.003	0.005	0.007	0.009	0.010	0.011	0.011	0.011	0.011	0.011	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
	Germany	-0.020	-0.053	-0.091	-0.134	-0.180	-0.227	-0.274	-0.319	-0.361	-0.401	-0.437	-0.469	-0.497	-0.521	-0.543	-0.561	-0.577	-0.592	-0.604	-0.615	-0.624	-0.633	-0.640	-0.647	-0.653	-0.658	-0.663	-0.668	-0.672	-0.675
	France	-0.010	-0.024	-0.039	-0.055	-0.070	-0.085	-0.099	-0.113	-0.125	-0.137	-0.149	-0.159	-0.168	-0.177	-0.185	-0.192	-0.199	-0.205	-0.211	-0.216	-0.221	-0.225	-0.229	-0.233	-0.236	-0.240	-0.243	-0.245	-0.248	-0.250
Allies	Italy	-0.024	-0.063	-0.118	-0.187	-0.257	-0.311	-0.345	-0.369	-0.388	-0.404	-0.418	-0.430	-0.440	-0.450	-0.458	-0.465	-0.471	-0.476	-0.481	-0.486	-0.490	-0.493	-0.496	-0.499	-0.501	-0.504	-0.506	-0.508	-0.510	-0.511
	Netherlands	-0.032	-0.085	-0.150	-0.221	-0.296	-0.372	-0.447	-0.518	-0.583	-0.643	-0.697	-0.745	-0.787	-0.824	-0.856	-0.884	-0.909	-0.931	-0.950	-0.967	-0.982	-0.995	-1.007	-1.018	-1.028	-1.037	-1.045	-1.052	-1.059	-1.065
	Rest of EU	-0.017	-0.050	-0.091	-0.137	-0.184	-0.229	-0.273	-0.314	-0.352	-0.387	-0.419	-0.448	-0.475	-0.498	-0.519	-0.538	-0.554	-0.570	-0.583	-0.596	-0.607	-0.617	-0.626	-0.635	-0.642	-0.650	-0.656	-0.662	-0.668	-0.673
	Great Britain	-0.012	-0.029	-0.047	-0.066	-0.085	-0.103	-0.121	-0.137	-0.153	-0.168	-0.182	-0.195	-0.207	-0.218	-0.228	-0.237	-0.246	-0.254	-0.261	-0.267	-0.273	-0.279	-0.284	-0.289	-0.293	-0.297	-0.301	-0.305	-0.308	-0.311
	Switzerland	-0.006	-0.015	-0.025	-0.035	-0.044	-0.053	-0.061	-0.068	-0.074	-0.079	-0.083	-0.087	-0.090	-0.093	-0.095	-0.097	-0.099	-0.100	-0.101	-0.102	-0.103	-0.104	-0.105	-0.105	-0.106	-0.106	-0.107	-0.107	-0.108	-0.108
	Norway	0.010	0.019	0.027	0.033	0.037	0.038	0.037	0.035	0.032	0.030	0.027	0.025	0.022	0.020	0.017	0.015	0.013	0.011	0.009	0.007	0.005	0.004	0.002	0.001	0.000	-0.001	-0.002	-0.003	-0.004	-0.005
	Australia	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	Japan	-0.009	-0.026	-0.051	-0.080	-0.106	-0.124	-0.136	-0.144	-0.150	-0.156	-0.161	-0.165	-0.169	-0.172	-0.175	-0.178	-0.180	-0.182	-0.183	-0.185	-0.186	-0.187	-0.188	-0.189	-0.190	-0.191	-0.192	-0.192	-0.193	-0.193
	South Korea	-0.012	-0.034	-0.065	-0.100	-0.134	-0.163	-0.186	-0.207	-0.226	-0.242	-0.257	-0.270	-0.282	-0.292	-0.301	-0.310	-0.317	-0.323	-0.329	-0.334	-0.338	-0.342	-0.346	-0.349	-0.352	-0.355	-0.357	-0.359	-0.361	-0.363
	Taiwan	-0.005	-0.018	-0.039	-0.063	-0.085	-0.102	-0.115	-0.126	-0.135	-0.144	-0.152	-0.160	-0.166	-0.173	-0.179	-0.184	-0.188	-0.193	-0.197	-0.200	-0.204	-0.207	-0.209	-0.212	-0.214	-0.216	-0.218	-0.220	-0.221	-0.223
	Allies	-0.021	-0.032	-0.049	-0.068	-0.088	-0.106	-0.123	-0.138	-0.152	-0.165	-0.176	-0.187	-0.196	-0.205	-0.212	-0.219	-0.225	-0.230	-0.235	-0.239	-0.243	-0.247	-0.250	-0.253	-0.255	-0.258	-0.260	-0.262	-0.264	-0.266
	EU 27	-0.018	-0.050	-0.089	-0.133	-0.179	-0.222	-0.261	-0.298	-0.332	-0.363	-0.391	-0.416	-0.439	-0.459	-0.476	-0.492	-0.506	-0.518	-0.529	-0.539	-0.548	-0.556	-0.563	-0.570	-0.576	-0.581	-0.586	-0.591	-0.595	-0.599
	Non - EU 27 Allies	-0.022	-0.025	-0.031	-0.039	-0.048	-0.055	-0.061	-0.067	-0.072	-0.077	-0.081	-0.085	-0.089	-0.092	-0.095	-0.098	-0.100	-0.103	-0.105	-0.107	-0.108	-0.110	-0.111	-0.113	-0.114	-0.115	-0.116	-0.117	-0.118	-0.119

Table 9. Percent change in <u>real income</u> with transfer of tariff revenues to Ukraine (8 selected sectors)

Percent Change in real Income	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
Russia	-1.361	-2.315	-3.026	-3.528	-3.875	-4.120	-4.302	-4.440	-4.544	-4.622	-4.680	-4.722	-4.752	-4.773	-4.788	-4.798	-4.804	-4.807	-4.809	-4.809	-4.808	-4.807	-4.805	-4.803	-4.800	-4.798	-4.795	-4.792	-4.790	-4.787
China	-0.008	-0.015	-0.018	-0.020	-0.020	-0.021	-0.021	-0.021	-0.022	-0.022	-0.023	-0.023	-0.024	-0.025	-0.025	-0.026	-0.027	-0.027	-0.028	-0.028	-0.029	-0.029	-0.030	-0.030	-0.031	-0.031	-0.031	-0.032	-0.032	-0.032
India	-0.024	-0.053	-0.082	-0.108	-0.132	-0.153	-0.171	-0.187	-0.202	-0.215	-0.226	-0.237	-0.246	-0.254	-0.261	-0.267	-0.272	-0.277	-0.281	-0.285	-0.288	-0.291	-0.294	-0.296	-0.298	-0.300	-0.302	-0.304	-0.305	-0.307
Turkey	0.029	0.041	0.061	0.088	0.117	0.148	0.177	0.203	0.224	0.242	0.257	0.269	0.279	0.287	0.294	0.299	0.304	0.308	0.311	0.313	0.316	0.317	0.319	0.320	0.321	0.322	0.323	0.324	0.324	0.325
Indonesia	0.041	0.085	0.127	0.163	0.187	0.198	0.201	0.200	0.199	0.198	0.197	0.197	0.198	0.198	0.199	0.200	0.201	0.202	0.203	0.204	0.204	0.205	0.206	0.206	0.207	0.207	0.208	0.208	0.208	0.209
Kazakhstan	0.363	0.637	0.914	1.184	1.440	1.679	1.898	2.096	2.273	2.428	2.563	2.681	2.782	2.869	2.944	3.009	3.066	3.115	3.159	3.197	3.231	3.262	3.289	3.313	3.336	3.356	3.374	3.391	3.406	3.420
Mexico	-0.013	-0.021	-0.022	-0.019	-0.010	0.004	0.020	0.036	0.051	0.065	0.077	0.087	0.096	0.104	0.111	0.117	0.122	0.126	0.130	0.134	0.137	0.140	0.142	0.144	0.146	0.148	0.150	0.151	0.153	0.154
Brazil	-0.004	-0.010	-0.015	-0.020	-0.024	-0.027	-0.030	-0.032	-0.034	-0.036	-0.038	-0.040	-0.042	-0.043	-0.045	-0.046	-0.047	-0.048	-0.049	-0.050	-0.051	-0.051	-0.052	-0.053	-0.053	-0.054	-0.054	-0.055	-0.055	-0.055
Egypt	0.046	0.085	0.128	0.173	0.216	0.252	0.282	0.308	0.332	0.353	0.372	0.389	0.403	0.416	0.427	0.437	0.445	0.453	0.460	0.465	0.471	0.475	0.480	0.483	0.487	0.490	0.493	0.496	0.498	0.500
Saudi Arabia	0.062	0.167	0.289	0.423	0.563	0.704	0.841	0.969	1.088	1.196	1.292	1.376	1.450	1.515	1.572	1.621	1.665	1.703	1.737	1.768	1.795	1.819	1.842	1.862	1.880	1.897	1.912	1.926	1.939	1.951
South Africa	-0.003	-0.019	-0.034	-0.050	-0.064	-0.077	-0.089	-0.100	-0.109	-0.118	-0.125	-0.131	-0.136	-0.140	-0.144	-0.146	-0.149	-0.151	-0.153	-0.154	-0.156	-0.157	-0.158	-0.159	-0.160	-0.161	-0.162	-0.163	-0.163	-0.164
Rest of Asia	0.002	0.003	0.004	0.004	0.001	-0.007	-0.017	-0.028	-0.038	-0.047	-0.056	-0.063	-0.070	-0.075	-0.081	-0.085	-0.089	-0.092	-0.095	-0.098	-0.101	-0.103	-0.105	-0.107	-0.109	-0.110	-0.111	-0.113	-0.114	-0.115
Rest of Americas	0.014	0.031	0.046	0.061	0.073	0.084	0.093	0.100	0.107	0.113	0.119	0.124	0.128	0.132	0.135	0.138	0.141	0.143	0.145	0.147	0.149	0.150	0.151	0.152	0.154	0.154	0.155	0.156	0.157	0.158
MENA	0.159	0.349	0.547	0.742	0.914	1.046	1.148	1.233	1.307	1.374	1.433	1.485	1.530	1.570	1.604	1.635	1.661	1.684	1.705	1.723	1.740	1.755	1.768	1.780	1.791	1.801	1.810	1.819	1.827	1.834
SSA	0.045	0.104	0.167	0.232	0.294	0.351	0.402	0.449	0.493	0.532	0.567	0.599	0.626	0.650	0.671	0.690	0.706	0.720	0.733	0.744	0.754	0.763	0.772	0.779	0.786	0.792	0.798	0.803	0.808	0.813
Rest of World	0.153	0.254	0.354	0.450	0.532	0.595	0.643	0.682	0.716	0.745	0.771	0.793	0.812	0.829	0.843	0.855	0.866	0.875	0.883	0.891	0.897	0.903	0.908	0.912	0.917	0.920	0.924	0.927	0.930	0.932
USA	-0.007	-0.015	-0.022	-0.029	-0.036	-0.042	-0.047	-0.052	-0.057	-0.061	-0.064	-0.067	-0.070	-0.072	-0.074	-0.076	-0.077	-0.079	-0.080	-0.081	-0.082	-0.083	-0.083	-0.084	-0.085	-0.085	-0.086	-0.086	-0.087	-0.087
Canada	0.053	0.111	0.166	0.215	0.256	0.287	0.311	0.330	0.348	0.363	0.377	0.390	0.401	0.410	0.419	0.427	0.434	0.440	0.445	0.450	0.454	0.458	0.462	0.465	0.468	0.471	0.474	0.476	0.478	0.480
Germany	-0.069	-0.153	-0.234	-0.310	-0.379	-0.439	-0.491	-0.537	-0.577	-0.611	-0.642	-0.667	-0.690	-0.709	-0.725	-0.739	-0.752	-0.762	-0.771	-0.780	-0.787	-0.793	-0.799	-0.804	-0.809	-0.813	-0.816	-0.820	-0.823	-0.826
France	-0.038	-0.084	-0.130	-0.173	-0.212	-0.244	-0.271	-0.295	-0.316	-0.335	-0.352	-0.367	-0.381	-0.393	-0.403	-0.412	-0.421	-0.428	-0.434	-0.440	-0.446	-0.450	-0.455	-0.459	-0.462	-0.466	-0.469	-0.471	-0.474	-0.476
Italy	-0.091	-0.197	-0.301	-0.397	-0.474	-0.527	-0.563	-0.590	-0.613	-0.632	-0.649	-0.663	-0.675	-0.686	-0.696	-0.704	-0.711	-0.717	-0.723	-0.728	-0.732	-0.736	-0.739	-0.743	-0.746	-0.748	-0.751	-0.753	-0.755	-0.757
Netherlands	-0.029	-0.078	-0.125	-0.170	-0.215	-0.260	-0.304	-0.345	-0.381	-0.414	-0.442	-0.466	-0.488	-0.506	-0.522	-0.536	-0.549	-0.559	-0.569	-0.578	-0.585	-0.592	-0.598	-0.603	-0.608	-0.613	-0.617	-0.621	-0.624	-0.627
Rest of EU	-0.064	-0.151	-0.233	-0.309	-0.376	-0.434	-0.483	-0.526	-0.564	-0.597	-0.626	-0.652	-0.674	-0.694	-0.711	-0.726	-0.739	-0.750	-0.761	-0.770	-0.778	-0.786	-0.792	-0.798	-0.804	-0.809	-0.814	-0.818	-0.821	-0.825
Great Britain	-0.037	-0.079	-0.121	-0.159	-0.193	-0.222	-0.245	-0.266	-0.285	-0.301	-0.316	-0.330	-0.342	-0.353	-0.362	-0.371	-0.379	-0.385	-0.392	-0.397	-0.402	-0.407	-0.411	-0.415	-0.418	-0.421	-0.424	-0.427	-0.429	-0.432
Switzerland	-0.033	-0.065	-0.094	-0.121	-0.145	-0.166	-0.185	-0.201	-0.216	-0.228	-0.239	-0.248	-0.255	-0.262	-0.267	-0.272	-0.276	-0.280	-0.283	-0.285	-0.288	-0.290	-0.291	-0.293	-0.295	-0.296	-0.297	-0.298	-0.299	-0.300
Norway	0.323	0.692	1.053	1.386	1.664	1.870	2.021	2.142	2.245	2.334	2.410	2.476	2.533	2.581	2.622	2.657	2.688	2.714	2.737	2.758	2.776	2.792	2.806	2.819	2.830	2.841	2.850	2.859	2.867	2.875
Australia	0.032	0.069	0.105	0.137	0.162	0.179	0.189	0.197	0.205	0.212	0.219	0.226	0.232	0.238	0.244	0.249	0.254	0.258	0.263	0.266	0.270	0.273	0.275	0.278	0.280	0.282	0.283	0.285	0.286	0.288
Japan	-0.063	-0.135	-0.205	-0.268	-0.318	-0.354	-0.380	-0.400	-0.417	-0.432	-0.445	-0.457	-0.467	-0.476	-0.484	-0.490	-0.496	-0.502	-0.506	-0.510	-0.514	-0.518	-0.521	-0.523	-0.526	-0.528	-0.530	-0.532	-0.534	-0.535
South Korea	-0.086	-0.179	-0.267	-0.348	-0.417	-0.470	-0.511	-0.546	-0.576	-0.602	-0.626	-0.647	-0.665	-0.681	-0.695	-0.707	-0.718	-0.727	-0.735	-0.743	-0.750	-0.756	-0.761	-0.766	-0.770	-0.774	-0.778	-0.781	-0.784	-0.787
Taiwan	-0.076	-0.158	-0.239	-0.313	-0.376	-0.427	-0.468	-0.502	-0.533	-0.561	-0.585	-0.606	-0.625	-0.642	-0.657	-0.669	-0.681	-0.691	-0.700	-0.708	-0.715	-0.721	-0.727	-0.732	-0.736	-0.741	-0.745	-0.748	-0.751	-0.754
Allies	-0.002	-0.008	-0.027	-0.052	-0.079	-0.103	-0.125	-0.145	-0.164	-0.182	-0.198	-0.212	-0.226	-0.237	-0.248	-0.257	-0.266	-0.274	-0.281	-0.287	-0.292	-0.297	-0.302	-0.306	-0.310	-0.314	-0.317	-0.320	-0.323	-0.326
EU 27	-0.062	-0.141	-0.217	-0.288	-0.351	-0.403	-0.447	-0.485	-0.519	-0.548	-0.574	-0.596	-0.616	-0.633	-0.647	-0.660	-0.672	-0.681	-0.690	-0.698	-0.705	-0.711	-0.717	-0.722	-0.726	-0.731	-0.734	-0.738	-0.741	-0.744
Non - EU 27 Allies	0.023	0.047	0.052	0.046	0.034	0.021	0.008	-0.004	-0.017	-0.030	-0.042	-0.053	-0.064	-0.074	-0.083	-0.091	-0.098	-0.105	-0.111	-0.116	-0.121	-0.126	-0.130	-0.134	-0.138	-0.141	-0.144	-0.147	-0.150	-0.152

Row groups: Non-Allies (China through Rest of World); Allies (USA through Taiwan).

Table 10. <u>Transfer of tariff revenues</u> from Allies to Ukraine (in million US$ and in % of economy; 8 selected sectors)

Allied transfers in million USD	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
USA	817	1,377	1,739	1,956	2,067	2,104	2,089	2,038	1,964	1,876	1,779	1,679	1,579	1,480	1,385	1,293	1,206	1,123	1,046	973	904	840	780	724	671	622	576	533	493	456
Canada	34	56	69	75	76	75	72	68	64	59	54	50	46	42	39	36	33	30	28	25	23	22	20	18	17	16	15	14	13	12
Germany	2,360	4,148	5,414	6,220	6,633	6,728	6,580	6,260	5,835	5,358	4,868	4,394	3,951	3,548	3,187	2,867	2,584	2,335	2,115	1,921	1,749	1,597	1,460	1,338	1,229	1,129	1,040	958	883	815
France	413	725	952	1,110	1,213	1,272	1,298	1,299	1,280	1,248	1,206	1,158	1,106	1,052	998	944	891	840	791	744	699	657	616	578	542	509	477	447	418	392
Italy	1,440	2,425	2,855	2,698	2,193	1,731	1,458	1,297	1,178	1,075	979	891	811	737	671	612	559	511	468	429	394	362	333	306	282	260	240	221	204	188
Netherlands	941	1,616	2,062	2,317	2,422	2,415	2,330	2,195	2,032	1,860	1,689	1,527	1,377	1,242	1,121	1,014	919	835	760	694	635	582	534	491	452	416	384	355	327	302
Rest of EU	4,221	7,150	8,990	9,996	10,421	10,456	10,223	9,811	9,291	8,719	8,132	7,556	7,005	6,487	6,005	5,560	5,150	4,772	4,424	4,104	3,809	3,537	3,286	3,053	2,837	2,637	2,451	2,279	2,116	1,966
Great Britain	530	928	1,220	1,426	1,564	1,647	1,687	1,695	1,678	1,642	1,594	1,536	1,472	1,404	1,335	1,267	1,199	1,133	1,069	1,007	949	893	840	790	743	698	656	616	578	543
Switzerland	58	88	101	103	98	90	81	72	64	56	49	42	37	32	28	24	21	19	16	15	13	11	10	9	8	7	6	6	5	4
Norway	41	72	95	112	123	129	133	133	132	129	126	121	116	111	106	101	96	91	86	82	78	74	70	66	63	60	57	54	51	49
Australia	12	20	24	26	27	26	25	24	22	21	19	18	16	15	13	12	11	10	9	8	8	7	6	6	5	5	5	4	4	4
Japan	1,596	2,493	2,642	2,225	1,662	1,265	1,052	928	838	761	690	626	568	515	468	425	387	353	322	294	269	247	227	209	192	177	163	151	139	128
South Korea	778	1,228	1,386	1,343	1,220	1,097	987	882	778	675	577	486	401	324	255	192	136	85	40	-2	-39	-73	-103	-131	-156	-179	-200	-219	-237	-254
Taiwan	236	376	424	406	370	343	326	314	300	286	270	254	237	221	206	191	177	163	151	140	129	119	110	101	93	86	79	73	67	61
Allies	13,477	22,704	27,973	30,012	30,089	29,378	28,341	27,017	25,457	23,763	22,032	20,337	18,722	17,213	15,818	14,538	13,368	12,300	11,325	10,434	9,620	8,874	8,190	7,560	6,979	6,443	5,948	5,490	5,062	4,666

Allied transfers in percent of each economy's income	5pp	10pp	15pp	20pp	25pp	30pp	35pp	40pp	45pp	50pp	55pp	60pp	65pp	70pp	75pp	80pp	85pp	90pp	95pp	100pp	105pp	110pp	115pp	120pp	125pp	130pp	135pp	140pp	145pp	150pp
USA	-0.005	-0.008	-0.010	-0.012	-0.012	-0.012	-0.012	-0.012	-0.012	-0.011	-0.011	-0.010	-0.009	-0.009	-0.008	-0.008	-0.007	-0.007	-0.006	-0.006	-0.005	-0.005	-0.005	-0.004	-0.004	-0.004	-0.003	-0.003	-0.003	-0.003
Canada	-0.003	-0.004	-0.005	-0.006	-0.006	-0.006	-0.005	-0.005	-0.005	-0.004	-0.004	-0.004	-0.004	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Germany	-0.080	-0.140	-0.183	-0.210	-0.224	-0.227	-0.222	-0.211	-0.197	-0.181	-0.164	-0.148	-0.133	-0.120	-0.107	-0.096	-0.087	-0.078	-0.071	-0.064	-0.058	-0.053	-0.049	-0.044	-0.041	-0.037	-0.034	-0.032	-0.029	-0.027
France	-0.020	-0.035	-0.046	-0.054	-0.059	-0.062	-0.063	-0.063	-0.062	-0.061	-0.059	-0.056	-0.054	-0.051	-0.049	-0.046	-0.043	-0.041	-0.038	-0.036	-0.034	-0.032	-0.030	-0.028	-0.026	-0.025	-0.023	-0.022	-0.020	-0.019
Italy	-0.099	-0.167	-0.197	-0.186	-0.151	-0.119	-0.100	-0.089	-0.081	-0.074	-0.067	-0.061	-0.055	-0.050	-0.046	-0.042	-0.038	-0.034	-0.031	-0.029	-0.026	-0.024	-0.022	-0.020	-0.019	-0.017	-0.016	-0.014	-0.013	-0.012
Netherlands	-0.141	-0.242	-0.308	-0.346	-0.362	-0.361	-0.348	-0.328	-0.304	-0.278	-0.252	-0.228	-0.206	-0.185	-0.167	-0.151	-0.137	-0.124	-0.113	-0.103	-0.094	-0.086	-0.079	-0.072	-0.066	-0.061	-0.056	-0.052	-0.048	-0.044
Rest of EU	-0.094	-0.159	-0.200	-0.222	-0.232	-0.232	-0.227	-0.218	-0.206	-0.194	-0.180	-0.168	-0.155	-0.144	-0.133	-0.123	-0.114	-0.105	-0.098	-0.090	-0.084	-0.078	-0.072	-0.067	-0.062	-0.058	-0.053	-0.050	-0.046	-0.043
Great Britain	-0.025	-0.043	-0.057	-0.066	-0.073	-0.076	-0.078	-0.079	-0.078	-0.076	-0.074	-0.071	-0.068	-0.065	-0.062	-0.059	-0.056	-0.053	-0.050	-0.047	-0.044	-0.041	-0.039	-0.037	-0.034	-0.032	-0.030	-0.028	-0.027	-0.025
Switzerland	-0.010	-0.016	-0.018	-0.019	-0.018	-0.016	-0.015	-0.013	-0.012	-0.010	-0.009	-0.008	-0.007	-0.006	-0.005	-0.004	-0.004	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Norway	-0.013	-0.023	-0.030	-0.035	-0.038	-0.041	-0.042	-0.042	-0.041	-0.041	-0.039	-0.038	-0.037	-0.035	-0.033	-0.032	-0.030	-0.029	-0.028	-0.026	-0.025	-0.024	-0.023	-0.021	-0.020	-0.019	-0.019	-0.018	-0.017	-0.016
Australia	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.000	0.000
Japan	-0.040	-0.063	-0.066	-0.056	-0.042	-0.032	-0.026	-0.023	-0.021	-0.019	-0.017	-0.016	-0.014	-0.013	-0.012	-0.010	-0.009	-0.009	-0.008	-0.007	-0.007	-0.006	-0.005	-0.005	-0.005	-0.004	-0.004	-0.004	-0.003	-0.003
South Korea	-0.063	-0.099	-0.112	-0.108	-0.098	-0.088	-0.079	-0.071	-0.063	-0.054	-0.046	-0.039	-0.032	-0.026	-0.020	-0.015	-0.010	-0.006	-0.003	0.001	0.004	0.007	0.009	0.011	0.013	0.015	0.017	0.019	0.020	0.021
Taiwan	-0.047	-0.075	-0.084	-0.081	-0.074	-0.068	-0.065	-0.062	-0.060	-0.057	-0.054	-0.050	-0.047	-0.044	-0.041	-0.038	-0.035	-0.032	-0.030	-0.027	-0.025	-0.023	-0.021	-0.020	-0.018	-0.017	-0.015	-0.014	-0.013	-0.012

Note: A positive number/percentage represents a cash inflow; a negative number/percentage represents a cash outflow.

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