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# Effective Aid for Ukraine by OECD Countries

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**Summary:**

The Russo-Ukrainian war has given rise to a broad discussion about adequate aid for Ukraine across the Western world and within the OECD country group in particularly. Essentially, policymakers and the wider public would like to have an economic aid indicator which allows to understand whether or not individual donor countries are carrying a "fair" share of the burden: Humanitarian aid would naturally include the commitments of OECD countries for Ukrainian refugees plus other humanitarian expenditure items. The sum of humanitarian, financial and military aid provided by various countries to Ukraine has been presented by the Kiel Institute for the World Economy (Kiel IfW) in April 2022 and thus many new data points became available, including a table with a ranking of the countries on the basis of combined aid – relative to GDP – which shows that the aid ratio of the US is larger than that of the whole EU, including EU funds for Ukraine. The IfW, however, omits the commitments with regard to refugee support made by OECD countries which, for most countries considered, indeed represents the largest share of overall support commitments for the Ukrainian people. The IfW approach is quite misleading as it ignores commitments of the respective OECD countries for Ukrainian refugees. If one includes the relevant expenditures and commitments for 2022, the donor country ranking looks quite different from the ranking calculated by Antezza et al. (2022). It is also noteworthy that the press release by the Kiel Institute for the World Economy on publication of the IfW Discussion Paper No. 2218 does not mention that the IfW summary aid indicator for support for the Ukraine does not take expenditures for Ukrainian refugees into consideration, while the paper mentions this peculiar point – this might be an error in the press release. The IfW has emphasized that its calculations show that US support clearly exceeds that of the EU in nominal terms. The Kiel IfW press release seems to have been aimed at arousing maximum media attention on the basis "bad news is good news" which might be acceptable for selling newspapers, but which is clearly in contradiction to the concept of sound research in Economics. As is shown in this research note, the commitments of EU countries (plus the EU's own commitment) – with commitments for refugees included - were about five times higher than that of the US in the period February 24$^{th}$ to March 27$^{th}$, 2022. Moreover, the correct ranking for the sum of humanitarian, financial and military aid - including commitments for Ukrainian refugees - in the EIIW approach differs significantly in most cases from the aid-GDP ratio ranking of the Kiel IfW. In the analytical discussion, the Russia-Ukraine conflict shocks are partly viewed through the lens of the Heckscher-Ohlin theorem, the Stolper-Samuelson theorem and the Rybczynski theorem, respectively; it is argued that there is some equivalence of the Heckscher-Ohlin theorem and the Rybczynski theorem.

**Zusammenfassung:**

Der russisch-ukrainische Krieg hat in der westlichen Welt und insbesondere innerhalb der OECD-Ländergruppe eine breite Diskussion über angemessene Hilfe für die Ukraine ausgelöst. Im Wesentlichen wünschen sich die politischen Entscheidungsträger und die breite Öffentlichkeit einen Indikator für die wirtschaftliche Hilfe, der es ermöglicht zu verstehen, ob die einzelnen Geberländer einen "fairen" Anteil an der Last tragen oder nicht: Die humanitäre Hilfe würde natürlich die Zusagen der OECD-Länder für die ukrainischen Flüchtlinge sowie andere humanitäre Ausgabenposten umfassen. Die Summe der humanitären, finanziellen und militärischen Hilfe verschiedener Länder für die Ukraine wurde vom Kieler Institut für Weltwirtschaft (IfW) im April 2022 vorgelegt, und damit wurden viele neue Daten verfügbar, darunter eine Tabelle mit einer Rangfolge der Länder auf der Grundlage der kombinierten Hilfe - im Verhältnis zum BIP -, aus der hervorgeht, dass die Hilfequote der USA größer ist als die der gesamten EU, einschließlich der EU-Mittel für die Ukraine. Das IfW lässt jedoch die von den OECD-Ländern eingegangenen Verpflichtungen zur Unterstützung von Flüchtlingen außer Acht, die bei den meisten betrachteten Ländern tatsächlich den größten Anteil an den gesamten Unterstützungszusagen für die ukrainische Bevölkerung ausmachen. Der IfW-Ansatz ist ziemlich irreführend, da er die Zusagen der jeweiligen OECD-Länder für ukrainische Flüchtlinge ignoriert. Bezieht man die relevanten Ausgaben und Zusagen für 2022 mit ein, sieht die Rangliste der Geberländer ganz anders aus als die von Antezza et al. (2022) errechnete Rangliste. Bemerkenswert ist auch, dass in der Pressemitteilung des Kieler Instituts für Weltwirtschaft zur Veröffentlichung des IfW-Diskussionspapiers Nr. 2218 nicht erwähnt wird, dass der zusammenfassende IfW-Hilfsindikator für die Unterstützung der Ukraine die Ausgaben für ukrainische Flüchtlinge nicht berücksichtigt, während das Papier diesen merkwürdigen Punkt erwähnt - möglicherweise handelt es sich um einen Fehler in der Pressemitteilung. Das IfW hat betont, dass seine Berechnungen zeigen, dass die US-Unterstützung die der EU nominal deutlich übersteigt. Die Kieler IfW-Pressemitteilung scheint darauf abzuzielen, nach dem Motto "bad news is good news" maximale Medienaufmerksamkeit zu erregen, was zwar für den Verkauf von Zeitungen akzeptabel sein mag, aber dem Konzept einer soliden wirtschaftswissenschaftlichen Forschung eindeutig widerspricht. Wie in diesem Forschungsbericht gezeigt wird, waren die Verpflichtungen der EU-Länder (plus die Verpflichtung der EU selbst) - einschließlich der Verpflichtungen für Flüchtlinge - im Zeitraum vom 24. Februar bis 27. März 2022 etwa fünfmal höher als die der USA. Darüber hinaus weicht die korrekte Rangfolge für die Summe der humanitären, finanziellen und militärischen Hilfe - einschließlich der Zusagen für ukrainische Flüchtlinge - im EIIW-Ansatz in den meisten Fällen deutlich von der Rangfolge des Verhältnisses zwischen Hilfe und BIP des Kieler IfW ab. In der analytischen Diskussion werden die Schocks des Russland-Ukraine-Konflikts teilweise durch die Linse des Heckscher-Ohlin-Theorems, des Stolper-Samuelson-Theorems bzw. des Rybczynski-Theorems betrachtet; es wird argumentiert, dass eine gewisse Äquivalenz zwischen dem Heckscher-Ohlin-Theorem und dem Rybczynski-Theorem besteht.

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# 1. Introduction

The war between the Russian Federation and Ukraine which started on February 24th, 2022, has brought massive destruction to Ukraine, the death of thousands of civilians and of Ukrainian and Russian military personnel, very many injured plus about five million refugees in the period March-April 2022. Moreover, the Western world plus Japan, the Republic of Korea, Australia and some others, have followed a policy of enacting successive waves of massive sanction measures against Russian sectors, firms and individuals. By early May, the Russian military had been only partly successful in conquering Ukrainian territory primarily in the east and south of Ukraine. It is obvious that Russian aggression has not been successful in military terms; Western military support – including intelligence information from the US and the UK – have contributed to the success of the military defense of Ukraine which, however, has nevertheless suffered massive destruction in terms of infrastructure and in major cities and towns. As regards the economic effects of the Russo-Ukrainian war there are many aspects to be considered (e.g. Welfens, 2022; Astrov et al., 2022; Roeger/Welfens, 2022).

Due to war-related destruction and the loss of civilian and military lives, as well as Russia's blocking of the Ukraine's major ports and export shipping facilities, the output of Ukraine is expected to contract very sharply in 2022: The IMF (2022a; 2022b) expects an output decline of about 35% so that the challenge of government deficits and related problems will strongly increase for the Ukrainian government. Hence the US will also need – besides humanitarian and military aid – financial aid where bilateral financial support as well as support from the IMF, the World Bank and the European Bank for Reconstruction and Development (EBRD) are crucial. In order to get some transparency about activities and commitments of major OECD donor countries, it would be useful to collect relevant data; such data could also allow to obtain an international ranking of donor countries which provides useful information in a descriptive perspective but which could also be a basis for an international debate about burden sharing with respect to the support for Ukraine.

As regards publications analyzing the humanitarian, financial and military aid provided to Ukraine, the Kiel Institute for the World Economy (IfW) has been a pioneer with a paper by Antezza et al. (2022) who cover the period February 24th to March 27th, 2022. However, this paper has a very biased approach and could be somewhat misleading when it comes to the international ranking of countries in terms of overall aid – the sum of humanitarian, financial and military aid relative to GDP. The authors do not include commitments/expenditures on Ukrainian refugees which is an inadequate approach; actually, expenditures on Ukrainian refugees represent a high share of humanitarian aid and indeed also of overall aid in the case of many countries. While figures for Ukrainian refugees on a country-by-country basis are not always easily obtainable, this technical problem should not be an acceptable reason for publishing aid figures without including expenditures for Ukrainian refugees. The Antezza et al. figures have been widely quoted in both the national media in Germany and indeed in the international media; The Economist (May 2022) has published the ranking of aid for the top ten countries – with figures for aid provided to Ukraine relative to gross domestic product; publishing the top 10 aid table is, however, a very doubtful exercise even when the Economist mentions that figures on expenditures for refugees are not included in the IfW table. The Economist notes that the IfW figures show that the combined EU27 countries' commitments is

smaller than the aid-GDP ratio of the United States. The IfW publication has contributed to a lively international debate about why many EU countries' support for Ukraine appears rather modest. The ranking of the IfW working paper and the publication by the Economist is, however, totally misleading as will be shown subsequently.

This affair shows not only that the well-known think tank from Kiel occasionally publishes very doubtful analyses, it also testifies to a surprising lack of critical reflections on the side of The Economist and of the many journalists and politicians who have blindly followed the ranking table which is quite misleading. The IfW ranking of the top ten countries reads: Estonia, Poland, Lithuania, Slovakia, Sweden, United States, Czechia, Croatia, United Kingdom and France. However, the correct ranking – which includes expenditures on Ukrainian refugees – is very different; e.g., Croatia is very much down the correct ranking, almost all countries have a different ranking position in the corrected table and the combined EU27 figures are much higher than the US indicator.

## 2. Ukraine Support by Selected OECD Countries

One may argue that an international comparison of government aid given to Ukraine in the early months of the 2022 could be really useful; and it might also be interesting to analyze the possible reasons behind major cross country differences in terms of the aid-GDP rations of OECD countries. Considering the challenges of the Ukrainian refugee waves in early 2022, one may expect that for geographical and cultural reasons, and also simply due to the cost of international transportation, a relatively high share of Ukrainian refugees would try to go to eastern European EU countries – with the number of Ukrainian families fleeing to Russia remaining a rather small share of Ukraine refugees (possibly mostly from eastern regions of Ukraine). One might assume that geographical proximity is not only important for refugee numbers but also with respect to military aid for Ukraine: governments of countries which are geographically close to Russia consider Ukrainian attempts to staunchly defend against Russian aggression to partly reflect an implicit reinsurance against potential Russian military attacks on their own countries anytime soon. As regards financial aid, one may assume that countries which have strong trade relations with Ukraine or are geographically close to Ukraine – and thus might face particularly strong immigration pressure if the Ukrainian fight against Russia is not successful – can be expected to give rather high donations relative to gross domestic product.

The Kiel Institute for the World Economy was indeed a pioneer in the field of Economics research when it published early insights into the international data on humanitarian, financial and military aid provided to Ukraine; this view of individual countries partly included indirect expenditures via membership in major international organizations – but not private donations to people in Ukraine. The abstract of the Kiel IfW Discussion Paper 2218 (in which it is argued to some extent that the paper offers useful data for the scientific community and the broader public as well as policymakers) published in April 2022 reads as follows (p. 1):

*"This paper introduces the "Ukraine Support Tracker", which lists and quantifies military, financial and humanitarian aid to Ukraine since Russia's invasion on February 24, 2022. We measure support from Western governments, namely by G7 and European Union member countries. Due to our focus on government-to-government commitments, we do not gather systematic data on private donations or aid by international organizations in this version of the*

*database. To value in-kind support like military equipment or weapons, we use market prices and consider upper bounds to avoid underestimating the true extent of bilateral assistance. We find significant differences in the scale of support across countries, both in absolute terms and as percent of donor GDP. In total amounts, by far the largest supporter of Ukraine is the United States, followed by Poland and the United Kingdom. In percent of donor GDP, small Eastern European countries stand out as particularly generous. Strikingly, the United States alone provides more support to Ukraine than all of the 27 EU member countries taken together, even after adding EU-level support. The gap is particularly large for military support, with the US committing more than twice as much weapons and military equipment than all other countries combined."*

Interestingly, the abstract provides readers with some potentially very misleading findings which, of course, are related to the strange approach of the authors to omit expenditures on Ukrainian refugees. The subsequent tables indicate the original figures from the Kiel IfW Discussion Paper 2218 by Antezza et al (2022) in absolute terms and as national relative indicators (ratio of commitments to GDP). In addition, the table based on IfW figures to some extent also presents data on two EIIW estimates for the overall sum of humanitarian, financial and military aid – a "more generous" (B) one and a "more conservative" one (A) as calculated; the EIIW figures always include expenditures on refugees. While Table 2 offers information about the ratios, Table 3 indicates in a separate column the share of expenditures/commitments on refugees based on certain assumptions, namely both about the number of refugees and about expenditures required to support one refugee from the Ukraine on average.

**Table 1: Total commitments of aid to Ukrainians by selected European and other countries – extension of Antezza et al./IfW Kiel (2022): Addition of commitments for refugees (in two scenarios), sorted by minimum total commitment in the second last column**

| | | Commitments in billion € (Antezza et al., 2022) | | Number of registered refugees | | Annual commitments for refugees in billion € [b,c] | | Sum of commitments in billion € | |
|---|---|---|---|---|---|---|---|---|---|
| Rank[* is IfW ranking] | Country | Hum. | Total | Border crossing (mln) | Destination (>10000) | MIN [b] | MAX [b] | Min. Total | Max. Total |
| 1 [2] | Poland[a] | 0.003 | 2.397 | 2.99 | *(2205795.7[b])* | 12.884 | 17.955 | **15.281** | 20.353 |
| 2 [1] | United States[d] | 4.482 | 10.314 | | 100000 | 1.000 | 1.000 | **11.314** | 11.314 |
| 3 [5] | Germany | 0.472 | 1.815 | | 379123 | 4.549 | 4.549 | **6.364** | 6.364 |
| 4 [28] | Romania[a] | 0.001 | 0.004 | 0.80 | *(590742.6[b])* | 3.450 | 4.809 | **3.454** | 4.813 |
| 5 [3] | UK | 0.495 | 2.096 | | 27100 | 0.325 | 0.325 | **2.421** | 2.421 |
| 6 [27] | Hungary[a] | 0.007 | 0.007 | 0.51 | *(378752.0 [b])* | 2.212 | 3.083 | **2.220** | 3.090 |
| 7 [19] | Czech Republic | 0.018 | 0.089 | | 310961 | 1.866 | 1.866 | **1.955** | 1.955 |
| 8 [4] | Canada | 0.147 | 1.948 | | 0 | 0.000 | 0.000 | **1.948** | 1.948 |
| 9 [13] | Slovakia[a] | 0.005 | 0.201 | 0.37 | *(271178.2[b])* | 1.584 | 2.207 | **1.785** | 2.409 |
| 10 [9] | Italy | 0.005 | 0.265 | | 102654 | 1.232 | 1.232 | **1.497** | 1.497 |
| 11 [6] | France | 0.116 | 0.567 | | 48776 | 0.585 | 0.585 | **1.152** | 1.152 |
| 12 [25] | Austria | 0.001 | 0.011 | | 64400 | 0.773 | 0.773 | **0.784** | 0.784 |
| 13 [7] | Sweden | 0.099 | 0.316 | | 32000 | 0.384 | 0.384 | **0.700** | 0.700 |
| 14 [15] | Denmark | 0.018 | 0.124 | | 30000 | 0.360 | 0.360 | **0.484** | 0.484 |
| 15 [16] | Belgium | 0.083 | 0.103 | | 30807 | 0.370 | 0.370 | **0.473** | 0.473 |
| 16 [12] | Estonia | 0.002 | 0.222 | | 39500 | 0.237 | 0.237 | **0.459** | 0.459 |
| 17 [14] | Netherlands | 0.018 | 0.149 | | 21000 | 0.252 | 0.252 | **0.401** | 0.401 |
| 18 [18] | Lithuania | 0.040 | 0.093 | | 49300 | 0.296 | 0.296 | **0.388** | 0.388 |
| 19 [11] | Latvia | 0.001 | 0.226 | | 25594 | 0.154 | 0.154 | **0.380** | 0.380 |
| 20 [17] | Ireland | 0.065 | 0.098 | | 23000 | 0.276 | 0.276 | **0.374** | 0.374 |
| 21 [20] | Spain | 0.042 | 0.046 | | 51957 | 0.312 | 0.312 | **0.358** | 0.358 |
| 22 [8] | Japan | 0.000 | 0.276 | | 0 | 0.000 | 0.000 | **0.276** | 0.276 |
| 23 [21] | Finland | 0.014 | 0.025 | | 20396 | 0.245 | 0.245 | **0.269** | 0.269 |
| 24 [10] | Luxembourg | 0.000 | 0.253 | | 0 | 0.000 | 0.000 | **0.253** | 0.253 |
| 25 [26] | Portugal | 0.000 | 0.010 | | 33106 | 0.199 | 0.199 | **0.209** | 0.209 |
| 26 [24] | Greece | 0.000 | 0.014 | | 21230 | 0.127 | 0.127 | **0.141** | 0.141 |
| 27 [22] | Slovenia | 0.002 | 0.020 | | 18415 | 0.110 | 0.110 | **0.131** | 0.131 |
| 28 [23] | Croatia | 0.001 | 0.018 | | 16051 | 0.096 | 0.096 | **0.114** | 0.114 |
| 29 [29] | Cyprus | 0.002 | 0.002 | | 0 | 0.000 | 0.000 | **0.002** | 0.002 |
| 30 [30] | Malta | 0.001 | 0.001 | | 0 | 0.000 | 0.000 | **0.001** | 0.001 |
| | EU(EC+EUCO) | 1.015 | 2.215 | | | | | | |
| | EU27 + EU[e] | 2.034 | 9.291 | | | 32.553 | 40.477 | **41.844** | 49.768 |
| | Moldova[a] | | | 0.04 | *(325378.6 [b])* | 2.649 | 1.952 | **1.952** | 2.649 |
| **Total** | | | **23.925** | | | **35.779** | **44.451** | **59.703** | **68.376** |

**Source:** Own representation and calculations; data from Antezza et al. (2022), UNHCR (2022), Wikipedia (2022, "2022 Ukrainian refugee crisis", compiled secondary data from national government reported figures); all numbers as of April 27, 2022.

**Notes:**
Time range: Data from Ukraine Tracker (Antezza et al., 2022), version 2, 02.05.2022; covers commitments up to April 23, 2022. Data concerning refugees as of April 27/28, 2022.
[*] Ranking according to Antezza et al. 2022, February 24, 2022 to March 27, 2022
[a] Numbers of registered refugees are published by the UNHCR (2022) only for border countries of Ukraine (marked in blue). Belarus and Russia are not included in this table as refugees first registered there are unlikely to continue their journey to Europe. Moldova is listed separately as it is not included in the list by Antezza et al. (2022).
[b] Own calculations based on following two scenarios:
1) **MIN**: Minimum assumed number of refugees – every refugee registered in a country not bordering Ukraine is assumed to have been counted once before at the border. Due to free travel (Schengen area), individual movements within the EU cannot be tracked. The numbers in destination countries are therefore subtracted in proportionate shares from the number of registered refugees in these border countries (*numbers in italics)*. This results in a minimum additional annual commitment of almost € 35.4 billion.
2) **MAX**: Maximum assumed number of refugees – every registered refugee both from border and destination countries is counted individually. This results in a maximum additional annual commitment of almost € 44.5 billion.
[c] Average commitments per refugee per month are assumed to be €1,000 in higher income countries (UK, Germany, France, Italy, Sweden, Netherlands, Finland, Denmark, Belgium, Austria, Ireland) and €500 in all other countries.
[d] President Biden announced in March 2022 that the US would welcome 100,000 Ukrainian refugees; assuming government expenditures of €10,000 per refugee per annum, this implies €1 billion in annual US expenditures.
[e] Sum of commitments by EU27 countries and the EU (European Commission and European Council)

As is shown in the subsequent table, Table 2, with the aid-GDP ratios, the commitments of EU countries (plus the EU's commitment as a bloc) – including commitments for refugees in 2022 - were almost five times higher than that of the US in the period February 24th to March 27th, 2022. Moreover, the correct ranking for the sum of humanitarian, financial and military aid (including commitments for Ukrainian refugees) in the EIIW approach clearly differs in most cases from the ranking of the Kiel Institute for the World Economy; interestingly, the position of Germany in both rankings is the same, but the ranking for the United States in the comprehensive aid approach considered here shows a much weaker position than the paper of Antezza et al. (2022) would suggest.

From a theoretical perspective, one should not overemphasize that the table is (only) a donor perspective as many refugees will integrate into the respective host country's labor market; this process will take place within a rather short time period if Ukrainian refugees arrive in countries which have a language that is broadly similar to the Ukrainian language or where cultural and historical bridges are strong: Here, Poland stands out in terms of neighboring Eastern EU countries. Clearly, not every refugee will be integrated in the medium term into the labor market of the respective host country, but large numbers of refugees are likely to find some kind of job in the short term, and a job more in line with their respective skills and competences in the medium term (a job which will be paid relatively better than earlier jobs). With regard to Poland, Strzelecki/Growiec/Wyzynski (2022) found in the context of a growth accounting framework that Ukrainian migrant workers in Poland have accounted for 0.5 percentage points of economic growth annually in the period 2013-18.

**Table 2: Total commitments of aid to Ukrainians by selected European and other countries – extension of Antezza et al. (2022): Addition of commitments for refugees (in 2 scenarios) in % of country GDP (2020), sorted by minimum total commitment in second last column**

| Antezza et al ranking= * | | Commitments in % of GDP[f] (based on Antezza et al., 2022) | | Number of registered refugees | | Annual commitments for refugees % of GDP [b,c,f] | | Sum of commitments in % of GDP[f] | |
|---|---|---|---|---|---|---|---|---|---|
| Rank[*] | Country | Hum. | Total | Border crossing (mln) | Destination (>10000) | MIN [b] | MAX [b] | Min. Total | Max. Total |
| 1 [3] | Poland[a] | 0.00% | 0.46% | 2.99 | *(2205795.7[b])* | 2.50% | 3.48% | **2.96%** | 3.94% |
| 2 [5] | Slovakia[a] | 0.01% | 0.22% | 0.37 | *(271178.2[b])* | 1.74% | 2.43% | **1.96%** | 2.65% |
| 3 [1] | Estonia | 0.01% | 0.84% | | 39500 | 0.89% | 0.89% | **1.73%** | 1.73% |
| 4 [26] | Hungary[a] | 0.01% | 0.01% | 0.51 | *(378752.0[b])* | 1.64% | 2.29% | **1.65%** | 2.29% |
| 5 [30] | Romania[a] | 0.00% | 0.00% | 0.80 | *(590742.6[b])* | 1.60% | 2.23% | **1.61%** | 2.24% |
| 6 [2] | Latvia | 0.00% | 0.78% | | 25594 | 0.53% | 0.53% | **1.30%** | 1.30% |
| 7 [13] | Czech Republic | 0.01% | 0.04% | | 310961 | 0.88% | 0.88% | **0.92%** | 0.92% |
| 8 [6] | Lithuania | 0.08% | 0.19% | | 49300 | 0.60% | 0.60% | **0.79%** | 0.79% |
| 9 [4] | Luxembourg | 0.00% | 0.40% | | 0 | 0.00% | 0.00% | **0.40%** | 0.40% |
| 10 [12] | Slovenia | 0.00% | 0.04% | | 18415 | 0.24% | 0.24% | **0.28%** | 0.28% |
| 11 [15] | Croatia | 0.00% | 0.04% | | 16051 | 0.19% | 0.19% | **0.23%** | 0.23% |
| 12 [29] | Austria | 0.00% | 0.00% | | 64400 | 0.21% | 0.21% | **0.21%** | 0.21% |
| 13 [11] | Germany | 0.01% | 0.05% | | 379123 | 0.14% | 0.14% | **0.19%** | 0.19% |
| 14 [14] | Denmark | 0.01% | 0.04% | | 30000 | 0.12% | 0.12% | **0.16%** | 0.16% |
| 15 [9] | Sweden | 0.02% | 0.07% | | 32000 | 0.08% | 0.08% | **0.15%** | 0.15% |
| 16 [7] | Canada | 0.01% | 0.14% | | 0 | 0.00% | 0.00% | **0.14%** | 0.14% |
| 17 [21] | Finland | 0.01% | 0.01% | | 20396 | 0.10% | 0.10% | **0.12%** | 0.12% |
| 18 [27] | Portugal | 0.00% | 0.01% | | 33106 | 0.10% | 0.10% | **0.11%** | 0.11% |
| 19 [18] | Belgium | 0.02% | 0.02% | | 30807 | 0.08% | 0.08% | **0.10%** | 0.10% |
| 20 [16] | Ireland | 0.02% | 0.03% | | 23000 | 0.07% | 0.07% | **0.10%** | 0.10% |
| 21 [8] | UK | 0.02% | 0.09% | | 27100 | 0.01% | 0.01% | **0.10%** | 0.10% |
| 22 [20] | Italy | 0.00% | 0.02% | | 102654 | 0.08% | 0.08% | **0.09%** | 0.09% |
| 23 [24] | Greece | 0.00% | 0.01% | | 21230 | 0.08% | 0.08% | **0.09%** | 0.09% |
| 24 [10] | United States[d] | 0.02% | 0.06% | | 100000 | 0.01% | 0.01% | **0.06%** | 0.06% |
| 25 [19] | Netherlands | 0.00% | 0.02% | | 21000 | 0.03% | 0.03% | **0.05%** | 0.05% |
| 26 [17] | France | 0.01% | 0.02% | | 48776 | 0.03% | 0.03% | **0.05%** | 0.05% |
| 27 [28] | Spain | 0.00% | 0.00% | | 51957 | 0.03% | 0.03% | **0.03%** | 0.03% |
| 28 [22] | Malta | 0.01% | 0.01% | | 0 | 0.00% | 0.00% | **0.01%** | 0.01% |
| 29 [23] | Cyprus | 0.01% | 0.01% | | 0 | 0.00% | 0.00% | **0.01%** | 0.01% |
| 30 [25] | Japan | 0.00% | 0.01% | | 0 | 0.00% | 0.00% | **0.01%** | 0.01% |
| | EU(EC+EUCO) | | | | | | | | |
| | EU27 + EU[e] | 0.01% | 0.03% | | | 0.25% | 0.31% | **0.32%** | 0.38% |
| | Moldova[a] | | | 0.04 | *(325378.6[b])* | 18.93% | 25.69% | **18.93%** | 25.69% |

**Source:** Own calculations; data from Antezza et al. (2022), ECB Data Warehouse (2022), World Bank (World Development Indicators, 2022), UNHCR (2022), Wikipedia (2022, "2022 Ukrainian refugee crisis", compiled secondary data from national government reported figures); numbers as of end of March, 2022.

**Notes:**
Time range: Data from Ukraine Tracker (Antezza et al., 2022), version 2, 02.05.2022; covers commitments up to April 23, 2022. Data concerning refugees as of April 27/28, 2022.
[*] Ranking (with spending on refugees from Ukraine) according to Antezza et al. 2022, Kiel IfW Discussion Paper 2218
[a] Numbers of registered refugees are published by the UNHCR (2022) only for border countries of Ukraine (marked in blue). Belarus and Russia are not included in this table as refugees first registered there are unlikely to continue their journey to Europe. Moldova is listed separately as it is not included in the list by Antezza et al. (2022).
[b] Own calculations based on following two scenarios:
1) **MIN**: Minimum assumed number of refugees – every refugee registered in a country not bordering Ukraine is assumed to have been counted once before at the border. Due to free travel (Schengen area), individual movements within the EU cannot be tracked. The numbers in destination countries are therefore subtracted in proportionate shares from the number of registered refugees in these border countries (*numbers in italics)*. This results in a minimum additional annual commitment of almost €35.4 billion.
2) **MAX**: Maximum assumed number of refugees – every registered refugee both from border and destination countries is counted individually. This results in a maximum additional annual commitment of almost €44.5 billion.
[c] Average commitments per refugee per month are assumed to be €1,000 in higher income countries (UK, Germany, France, Italy, Sweden, Netherlands, Finland, Denmark, Belgium, Austria, Ireland) and €500 in all other countries.
[d] President Biden announced in March 2022 that the US would welcome 100,000 Ukrainian refugees, assuming government expenditures of €10,000 per refugee per annum this implies €1 billion in annual US expenditures.
[e] Sum of commitments by EU27 countries and EU (European Commission and European Council)
[f] The latest value of GDP is available for 2020 and originally indicated in current US$ (World Bank: World Development indicators, 2022). It is then converted into € based on an unweighted average of daily exchange rate values between Jan 2, 2020, (year of GDP) and April 29, 2022 (most recent, close to the date of Antezza et al.'s data sourcing; ECB, 2022), resulting in an average exchange rate of $1 to €0.865.

While the original Antezza et al. figures implied a country ranking (top 10) with Estonia as No. 1, followed by Poland, Lithuania, Slovakia, Sweden, United States, Czechia, Croatia, United Kingdom and France, Table 2 shows a top 10 led by Poland, with Slovakia, Estonia, Hungary, Romania, Czechia, Lithuania, Latvia, Slovenia and Croatia (with large countries such as the US, UK and France thus dropping out of the top 10) to be replaced by smaller central and eastern European countries.

The following Table 3 shows that expenditures on refugees for the top 23 countries represent between 51.68 percent and 99.96 percent of the overall commitments (including expenditures on Ukrainian refugees). In this context, the Antezza et al. (2022) presentation could be considered to be quite misleading; the Kiel IfW data would really be useful only if data on commitments for refugees would be included.

**Table 3: Total commitments of aid to Ukrainians by selected European and other countries – extension of Antezza et al. (2022): Addition of commitments for refugees (in two scenarios) in % as the share of total commitments, sorted by share of refugee commitments**

| | | Number of registered refugees | | Annual commitments for refugees / total com. [b,c] | Sum of commitments in billion € | |
|---|---|---|---|---|---|---|
| Rank | Country | Border crossing (mln) | Destination (>10000) | in % of total commitments | Min. Total | Max. Total |
| 1 | Romania[a] | 0.80 | *(590742.6[b])* | 99.88% | 3.454 | 4.813 |
| 2 | Hungary[a] | 0.51 | *(378752.0[b])* | 99.67% | 2.220 | 3.090 |
| 3 | Austria | | 64400 | 98.60% | 0.784 | 0.784 |
| 4 | Czech Republic | | 310961 | 95.44% | 1.955 | 1.955 |
| 5 | Portugal | | 33106 | 95.21% | 0.209 | 0.209 |
| 6 | Finland | | 20396 | 90.84% | 0.269 | 0.269 |
| 7 | Greece | | 21230 | 90.15% | 0.141 | 0.141 |
| 8 | Slovakia[a] | 0.37 | *(271178.2[b])* | 88.72% | 1.785 | 2.409 |
| 9 | Spain | | 51957 | 87.08% | 0.358 | 0.358 |
| 10 | Slovenia | | 18415 | 84.46% | 0.131 | 0.131 |
| 11 | Croatia | | 16051 | 84.40% | 0.114 | 0.114 |
| 12 | Poland[a] | 2.99 | *(2205795.7[b])* | 84.31% | 15.281 | 20.353 |
| 13 | Italy | | 102654 | 82.31% | 1.497 | 1.497 |
| 14 | Belgium | | 30807 | 78.18% | 0.473 | 0.473 |
| 15 | Lithuania | | 49300 | 76.18% | 0.388 | 0.388 |
| 16 | Denmark | | 30000 | 74.42% | 0.484 | 0.484 |
| 17 | Ireland | | 23000 | 73.81% | 0.374 | 0.374 |
| 18 | Germany | | 379123 | 71.49% | 6.364 | 6.364 |
| 19 | Netherlands | | 21000 | 62.91% | 0.401 | 0.401 |
| 20 | Sweden | | 32000 | 54.85% | 0.700 | 0.700 |
| 21 | Estonia | | 39500 | 51.67% | 0.459 | 0.459 |
| 22 | France | | 48776 | 50.80% | 1.152 | 1.152 |
| 23 | Latvia | | 25594 | 40.42% | 0.380 | 0.380 |
| 24 | United Kingdom | | 27100 | 13.43% | 2.421 | 2.421 |
| 25 | United States[d] | | 100000 | 8.84% | 11.314 | 11.314 |
| 26 | Canada | | 0 | 0.00% | 1.948 | 1.948 |
| 27 | Cyprus | | 0 | 0.00% | 0.002 | 0.002 |
| 28 | Japan | | 0 | 0.00% | 0.276 | 0.276 |
| 29 | Luxembourg | | 0 | 0.00% | 0.253 | 0.253 |
| 30 | Malta | | 0 | 0.00% | 0.001 | 0.001 |
| | EU(EC+EUCO) | | | | | |
| | EU27 + EU[e] | | | **Min. 77.80%<br>Max. 81.33%** | 41.844 | 49.768 |
| | Moldova[a] | 0.04 | *(325378.6[b])* | **(100%)** | 1.952 | 2.649 |
| **Total** | | | | **Min. 59.93%<br>Max. 65.01%** | 59.703 | 68.376 |

**Source**: Own calculations; data from Antezza et al. (2022), UNHCR (2022), Wikipedia (2022, "2022 Ukrainian refugee crisis", compiled secondary data from national government reported figures); all numbers as of April 27, 2022.

**Notes:**

Time range: Data from Ukraine Tracker (Antezza et al., 2022), version 2, 02.05.2022; covers commitments up to April 23, 2022. Data concerning refugees as of April 27/28, 2022.

[a] Numbers of registered refugees are published by the UNHCR (2022) only for border countries of Ukraine (marked in blue). Belarus and Russia are not included in this table as refugees first registered there are unlikely to continue their journey to Europe. Moldova is listed separately as it is not included in the list by Antezza et al. (2022).

[b] Own calculations based on following two scenarios.

1) **MIN**: Minimum assumed number of refugees – every refugee registered in a country not bordering Ukraine is assumed to have been counted once before at the border. Due to free travel (Schengen area), individual movements within the EU cannot be tracked. The numbers in destination countries are therefore subtracted in proportionate shares from the number of registered refugees in these border countries (*numbers in italics)*. This results in a minimum additional annual commitment of almost €35.4 billion.

2) **MAX**: Maximum assumed number of refugees – every registered refugee both from border and destination countries is counted individually. This results in a maximum additional annual commitment of almost € 44.5 billion.

[c] Average commitments per refugee per month are assumed to be €1,000 in higher income countries (UK, Germany, France, Italy, Sweden, Netherlands, Finland, Denmark, Belgium, Austria, Ireland) and €500 in all other countries.

[d] President Biden announced in March 2022 that the US would welcome 100,000 Ukrainian refugees; assuming government expenditures of €10,000 per refugee per annum, this implies €1 billion in annual US expenditures.

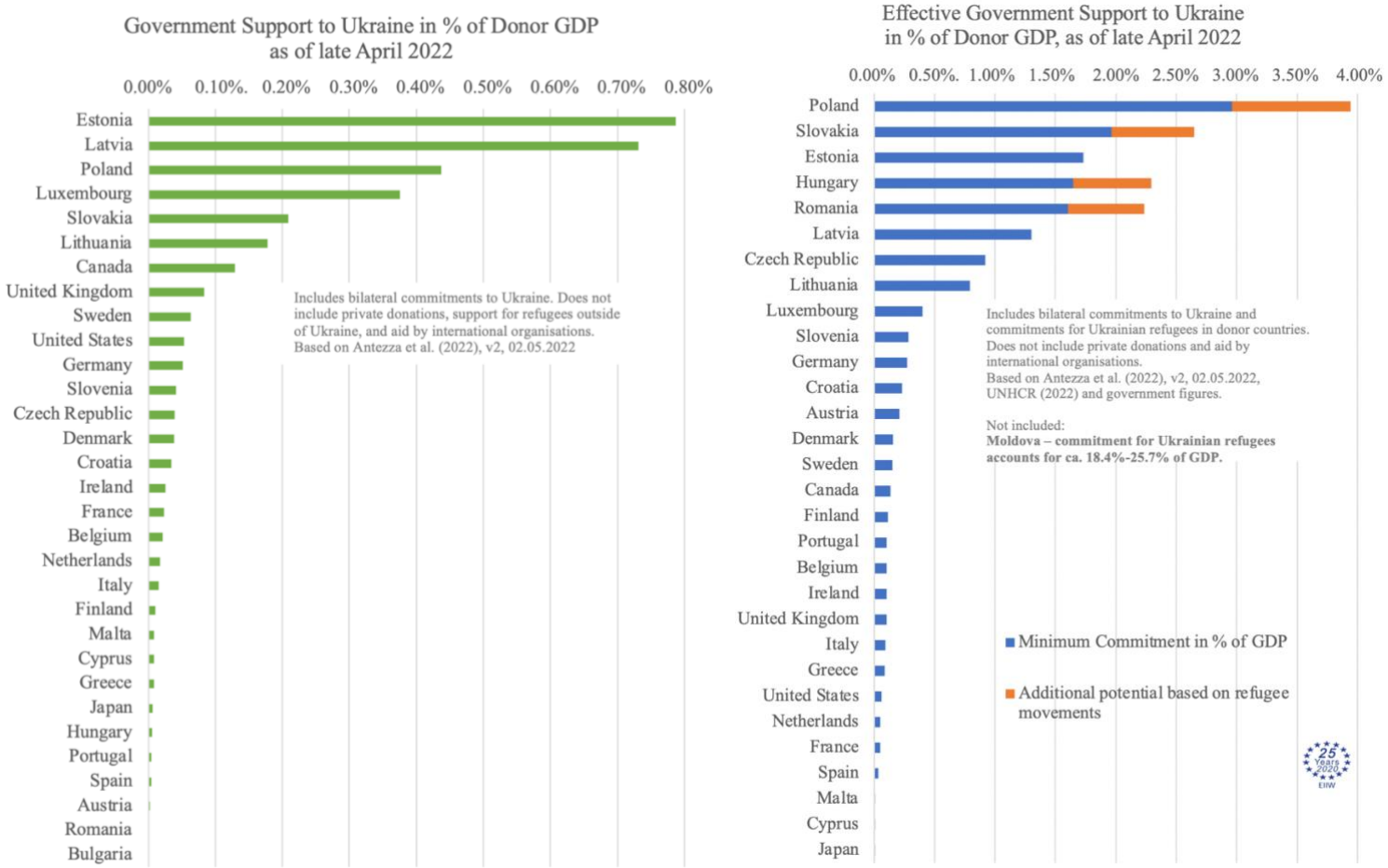
[e] Sum of commitments by EU27 countries and EU (European Commission and European Council)

[f] The latest value of GDP is available for 2020 and originally indicated in current US$ (World Bank: World Development indicators, 2022). It is then converted into € based on an unweighted average of daily exchange rate values between Jan 2, 2020, (year of GDP) and April 29, 2022 (most recent, close to the date of Antezza et al.'s data sourcing; ECB, 2022), resulting in an average exchange rate of $1 to €0.865.

Comparing IfW ratio figures and EIIW ratio figures – the latter including implicit commitments for refugees - concerning aid to Ukraine, the two subsequent two graphs regarding figures from late April 2022 show very different rankings (see the subsequent figure). Such a ranking is politically sensitive and important; not least because a low ranking position on the IfW's table could obviously be used as an argument in public debates that, for example, Germany or Italy are not contributing sufficient aid to Ukraine and that therefore these countries should increase both financial and military aid to Ukraine; incidentally, the ranking position of Germany in both the IfW ranking and the EIIW ranking is – by coincidence – the same. However, one may anticipate that both Germany and Italy will be major recipient countries in western Europe of refugee flows from Ukraine so that the refugee-inclusive approach of the EIIW provides quite a different picture.

Comparing the IfW ranking and the EIIW approach, the latter ranking suggests that the support of the UK, Canada and US – each a G7 country - is rather modest (with the Biden Administration's announcement from early May 2022 about increasing military support, it could be mainly the UK which appears to be relatively weak in terms of the aid ratio for Ukraine). The government of Prime Minister Boris Johnson seems to be reluctant to accept a considerable inflow of Ukrainian refugees which, from an EU perspective, might be considered to be an inadequate free-rider position in western Europe. The EU should discuss the relatively modest British support for refugees from Ukraine in bilateral political talks. One may also point out that neither of the rankings discussed here have taken into account the value of (military) intelligence support in kind for Ukraine – valuing the coverage of such support would clearly be beyond the possibilities of economists; only in the future could historians perhaps include this aspect as well.

**Figure 1: Comparison of Government Aid for the Ukraine in Percent of Gross Domestic Product by Antezza et al. (IfW Kiel, 2022) and Welfens (EIIW, 2022) – the Role of Refugees**




**Source:** Own representation. Data from Antezza et al. (2022), "Ukraine Support Tracker – 2nd Version, May 2, 2022"; UNHCR (2022); Wikipedia (2022, "2022 Ukrainian refugee crisis", compiled secondary data from national government reported figures); number for Ukrainian refugees in Germany: https://www.zdf.de/nachrichten/panorama/fluechtlinge-deutschland-bamf-ukraine-krieg-russland-100.html; other data up to April 27, 2022.

# 3. Additional International Perspectives on Refugees

The economic perspectives relating to a high number of Ukrainian refugees in the EU for probably several years is quite interesting. A simplified analytical perspective goes as follows for the recipient countries:

- In the short term the inflow of refugees reflects rather unskilled workers almost across the board unless refugees speak the language of the host country or, for example, a good standard of English. From this perspective, the temporary language barrier for those refugees who want to work implies that the number of jobs in construction, agriculture and the services sector (e.g., hotels and restaurants) will increase. After the very short term, when immigrants are mainly a driver for aggregate demand, positive supply-side effects will thus become visible. In the short term therefore, the output share of sectors which use unskilled labor intensively could expand, namely in line with the Heckscher-Ohlin theory.

- In the medium term – after many of the early cohorts of refugees have acquired sufficient proficiency of the recipient country's language or of English – a large share of immigrants (at some point even a majority of refugees) will find work often in the tradables sector and sometimes also in skill-intensive or knowledge-intensive firms which pay rather high wages. In a medium-term perspective, rather the skill- and knowledge-intensive sectors should increase their output shares in the overall economy.

- As the language barrier for most Ukrainian refugees will be rather limited in Poland, and indeed in some other eastern European EU accession countries, one may expect that economic growth in Eastern Europe will benefit in the medium term. Moreover, one may anticipate considerable self-selection on the part of skilled refugees with knowledge of say German, French or English language to work in Germany, the Netherlands, Belgium, France and Italy as well as in some Scandinavian countries. In the long run, more "refugee-workers" from the Ukraine will move westwards to EU countries with relatively high wages (and also to Switzerland). Based on wage differentials for immigrant men and women – as compared to Swiss workers and employees with a Swiss passport (Rochlitz/Wunsch, 2022) – one may anticipate that skilled male immigrants might be able to obtain a wage premium compared to domestic skilled workers. Such a premium could reflect an implicit international flexibility bonus payment in international firms.

In the context of the Russo-Ukrainian war, the first quarter of 2022 has witnessed a strong increase of relative oil and gas prices: an international price shock which is exogenous. The fossil fuel sector may be assumed to be skill-intensive in production so that we can use the Samuelson-Stolper theorem: If the relative price of a tradable good *i* is exogenously increased in a neoclassical world with free trade, one can show that the relative factor price of that factor will be raised which is used relatively intensively in the production of the respective good. Hence the wage ratio of skilled workers (nominal wage of skilled workers relative to the wage of unskilled workers) will increase.

The refugee wave from Ukraine to EU countries could also be understood through the Rybczynski theorem: An exogenous increase in the endowment of production factor *j* (here labor) – given relative goods prices – will lead to a higher output of that good which is using the more abundant factor relatively intensively. Output of the other good will fall in absolute terms. An example: We assume that refugees are coming to country I, then the production of those goods which are relatively labor intensive will increase (unskilled labor-intensive in the short term: construction, agriculture, hotels & restaurant services; in the medium term, the situation is different - once most refugees have acquired a certain proficiency in the language of the recipient country, then the skilled-intensive sector will expand which is the tradables sector in which a considerable share of "refugee-migrant" workers will find a job after a few years of integration in the host countries' labor markets). The assumption here is that many Ukrainian refugees will indeed stay several years in EU27 countries and that a considerable share of those refugees will ultimately effectively become migrant workers. To some extent, the implications of the Heckscher-Ohlin theorem and the Rybczynski theorem are equivalent, namely when the allocation of resources is considered. As regards the Ukrainian refugee wave, there is, however, at first a strong emphasis on the expansion of the non-tradables sector – including care services offered, for example, by Ukrainian female refugees who stand for the majority of adult refugees as since the passing of martial law in response to Russia's invasion, most men in the age bracket of 18-60 years of age cannot leave Ukraine and must be available to be drafted by the military. In the medium term, the Heckscher-Ohlin theorem becomes particularly relevant as the expansion of the tradables sector's output share can be expected and international factor prize equalization could play a considerable long-term role in the context of a rising trade intensity in recipient eastern EU accession countries.

A further implication is that Ukrainian refugees or migrant workers in the EU will contribute in the medium term to a rising intra-EU trade intensity. To the extent that the expansion of the tradables sector in EU countries in the medium term stimulates structural change in favor of a rising high-tech and "high-knowledge" share in production, exports in high-tech sectors and high-knowledge sectors of EU countries should gradually increase in the long run. To the extent that the Russo-Ukrainian war raises the risk premium of multinational companies' investment in Russia and China, Western investors' attention could shift more towards eastern Europe and south-western countries in the EU. This could contribute – beyond the trade effects mentioned – to a stronger intra-EU economic convergence in the long run.

One may assume that the share of military expenditures in the overall support commitment for the Ukraine will be relatively large in EU countries which are adjacent – or at least geographically close - to Ukraine. Here, the logic is that EU countries' governments will fear that a Russian victory in Ukraine would encourage the Russian military to attack further countries in Europe. Military support may also be expected to play a rather prominent role in relation to those leading NATO members and Western countries which are major exporters of arms and have a positive revealed comparative advantage in arms production. Humanitarian support as defined here – namely as including expenditures for refugees – will play a relatively large role in countries which are geographically close to Ukraine or have special cultural or historical links with Ukraine, for example Poland or Austria. The structural breakdown of Germany's aid may be expected to have a relatively small share of military aid as the historical role of Germany in the 20$^{th}$ century – in terms of the outbreak of both World War I and World War II – has created a special political reluctance amongst post-World War II governments of the Federal Republic of Germany to emphasize military options in international policy (after

German unification the military expenditures of Germany remained below 1.5 percent for two decades; with visible major problem in the efficiency of the procurement procedures of the German military).

# 4. Conclusions and Further Research

Taking a close look at OECD countries' combined humanitarian, financial and military support for Ukraine is an interesting field of research. Such analysis should definitely include the expenditures of recipient countries on Ukrainian refugees. The Kiel IfW approach is thus inadequate – is seems to be an accidental pitfall in research (but it is a surprising one if one considers the reputation of the IfW); the Antezza et al. (2022) paper could be quite misleading as the authors chose to omit the commitments of the respective OECD countries vis-à-vis Ukrainian refugees. If one includes the relevant expenditures and commitments for 2022, the donor country ranking looks quite different from the ranking calculated by Antezza et al. in their IfW Discussion Paper 2218. Only the ranking of Germany is not changed.

It is also noteworthy that the press release by the Kiel Institute for the World Economy on the publication of the aforementioned IfW Discussion Paper No. 2218 did not mention that the IfW summary aid indicator for support for the Ukraine fails to take expenditures for Ukrainian refugees into account, while the paper indeed acknowledges this; this might be an error in the press release. It is obvious that exact figures on Ukrainian refugees are hard to come by, but difficult access at reliable statistics cannot be an easy excuse to ignore an important economic variable altogether.

The IfW has emphasized that its calculations show that the US support for Ukraine clearly exceeds that of the EU in nominal terms. The Kiel IfW press release seems to have been intended to garner maximum media attention on the basis that "bad news is good news" which might be acceptable for newspapers and other media, but which undermines the goals of accuracy and thorough research in the field of Economics. As is shown in this research note, the commitments of EU countries (plus the EU's commitment as a bloc) – with commitments for refugees included - were about five times higher than that of the US in the period February 24th to March 27th, 2022. Whether or not the combined Western aid for the Ukraine will help this country to somehow win the war or achieve an acceptable compromise in peace negotiations with Russia remains to be seen.

A special supporting aid element of the EU countries concerns the exchange of cash balances of Ukrainian refugees; the challenge is linked to the willingness of national governments and the ECB and the national central banks of EU countries which are not Eurozone member countries to offer Ukrainian refugees an exchange of Ukrainian currency – up to a critical limit – into national currency; e.g. the National Bank of Poland wants to allow refugees from the Ukraine to convert hryvnia (UAH) to Polish zloty (the National Bank of Poland also will offer a $ 1 billion swap line to the central bank of the Ukraine). The exchange rate is bilaterally fixed for this transaction as the Communiqué of NBP of March 31, 2022 (NBP website), has stated: "The exchange rate, set for this operation by the National Bank of Ukraine, is PLN 0.14 for one hryvnia. NBP will resell the purchased hryvnias to the National Bank of Ukraine at the same exchange rate. None of the participants involved in the operation charges fees for exchanging

the Ukrainian hryvnia for the Polish zloty." This partly amounts to a one-off transfer of Polish resources to the refugees from the Ukraine; the choice of the bilateral exchange rate in EU countries should be consistent so that not bilateral negotiations with a fixing of a single bilateral exchange rout would take place – rather simultaneous negotiations of the Ukraine with all 27 EU countries and the ECB seem to be adequate.

The European Commission had proposed in early April that every refugee should be entitled to convert about 10 000 hrynias in cash into currencies of the respective EU recipient country which amounts to about 310 €. If six million refugees come to the EU by the end of 2022 this will amount to about two billion € for all the refugees from the Ukraine together. It should be noted that in early 2022 the Ukrainian currency was convertible only to a modest degree.

Moreover, the correct ranking for the sum of humanitarian, financial and military aid - including commitments for Ukrainian refugees - in the EIIW approach clearly differs in almost all cases from the aid-GDP ratio ranking of the Kiel IfW. In the analytical discussion, the Russo-Ukrainian war shocks are partly viewed through the lens of the Heckscher-Ohlin theorem, the Stolper-Samuelson theorem and the Rybczynski theorem, respectively; it is argued that there is some equivalence of the Heckscher-Ohlin theorem and the Rybczynski theorem.

Further research could include an empirical analysis of the structural breakdown of Western support for the Ukraine. Moreover, as regards the EU, it will be interesting to analyze how the split between supranational EU support and the support of EU member countries will evolve over time. Another interesting research question could be to analyze whether or not the support for Ukraine is efficient from the perspective of Ukraine and to which extent the split between supranational and national support for Ukraine is optimal in economic terms. Finally, the relative ratio of EU to US support for the Ukraine will be interesting to observe in the medium term and the long run.

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