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## Economic Comment

### How much did refugees add to consumption?

Marcin Luziński, +48 510 027 662, [marcin.luzinski@santander.pl](mailto:marcin.luzinski@santander.pl)

We estimate that the weak result of private consumption in 4Q22 (about -1.6% y/y) was partially caused by lower number of refugees from Ukraine. However, this was not a key factor and it could have deducted about 0.2-0.3% q/q from consumption, while contribution of refugees was positive in annual terms (1 percentage point). In entire 2022, refugees added about 0.9% in real terms to domestic consumption or about PLN15bn in nominal terms. In 2023, assuming their number remains at current level, they will add 0.1% y/y in real terms to total private consumption and the nominal value of their consumption will amount to cPLN20bn.

The quite pronounced decline in consumption in 4Q2022 (by about 1.6% y/y) led us to wonder whether other factors besides a decline in consumer optimism and real wages were in play.

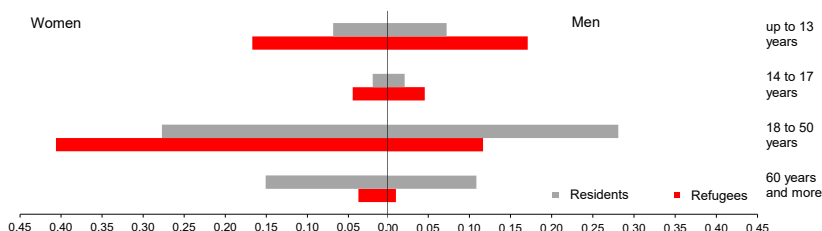
The decline in the number of refugees from Ukraine in Poland could be a potential factor. According to data on PESEL (identification numbers) granted to refugees, there were on average 1.045 million refugees in Poland in 4Q2022 compared to 1.297 million in 3Q2022. A very clear and rapid decline occurred in October: from over 1.35 million at the beginning of the month to 1 million at the end of the month. A refugee's PESEL number disappears from the register when they leave Poland's borders. In our view, however, it is puzzling why such massive refugee departures would occur in October. Rather, we assume that the figures were simply corrected this month on the basis of information from the Border Guard. These figures should therefore be taken with a pinch of salt. Still, it is the best data available.

#### Estimate of 2022 refugees consumption – maximum

However, to say how much did refugee departures subtract from consumption in 4Q2022, we need to consider how much do refugees actually consume. The starting point for this estimate is the average consumption in Poland, which in 2022 was around PLN45k per person (we divide the nominal consumption in 2021: PLN1454bn by 37mn citizens and adjust for CPI inflation). If we assume, theoretically, that spending per refugee was on average equal to that residents, then this back-of-the-envelope estimate yields that at the peak of refugee presence in Poland (3Q2022), they would add about 3.5% y/y to consumption, and the decline in their numbers in 4Q2022 would subtract about 0.7% q/q. Total consumption in 2022 would nominally sit at about PLN40bn.

However, we may doubt whether an average refugee from Ukraine has actually consumed as much as the average permanent resident of Poland.

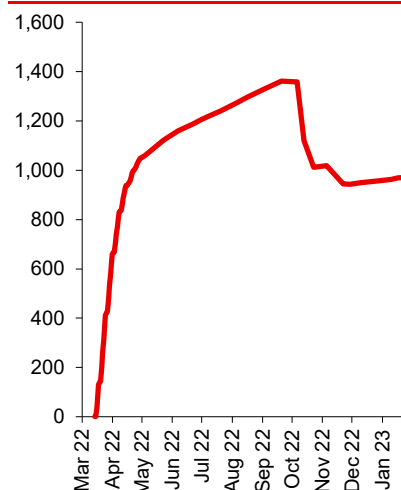
**Demographic breakdown - share in total population of specific groups by sex and age: refugees vs. permanent residents of Poland, data as at the end of 2022.**



Source: dane.gov.pl, GUS, Santander

Firstly: the demographic breakdown of refugees is quite different from that of residents. About half of the refugees are children, with almost no men or people of retirement age among them. E.g. children consume less than adults, and in bigger households some spending items are spread on a bigger number of people (like rent, television, internet, purchase of car or furniture). GUS, when comparing households of different sizes and

Number of refugees in Poland, according to PESEL, thousands



Source: dane.gov.pl, Santander

#### Economic Analysis Department:

al. Jana Pawła II 17, 00-854 Warszawa  
 email: [ekonomia@santander.pl](mailto:ekonomia@santander.pl)  
 website: [santander.pl/en/economic-analysis](https://santander.pl/en/economic-analysis)  
 Piotr Bielski +48 691 393 119  
 Jarosław Kosaty +48 887 842 480  
 Marcin Luziński +48 510 027 662  
 Grzegorz Ogonek +48 609 224 857

demographic breakdown, uses the so-called equivalence scales, in which the first adult is assigned a weight of 1 and each subsequent adult or child aged 14 and over: a weight of 0.5, and a child under 14: a weight of 0.3.

Secondly: it is difficult to imagine that a war refugee, who has often left the lion's share of his belongings in his home country, will be able to consume on average as much as the average citizen of the host country. The expenditure profile over time is also different: it can be assumed that immediately upon arrival in the new country, the refugee has to incur additional expenses for clothes or furnishings, then his or her expenditure will be lower, but will converge to the average expenditure of residents over time.

**Intuition suggests that the average expenditure of a refugee from Ukraine should be lower than that of a permanent resident. The estimate presented above (PLN40bn) should therefore be regarded as an upper limit.**

### Model-based estimate of 2022 refugees consumption

We have examined refugee consumption using econometric analysis. We added the number of refugees according to PESEL data as an explanatory variable to our model, in which consumption is explained by, among other things, the situation of the labour market, the economic activity, consumer credit or social benefits. **The model estimates that the average consumption of a refugee was equal around 37% of the average consumption of a resident in 2022.** Annual per capita spending (annualised) equals about PLN16.5k. This would mean that, at the peak of refugee presence in Poland, they added about 1.3% y/y to consumption, the decline in their numbers in 4Q2022 subtracted about 0.2-0.3% q/q, and the total consumption of refugees in 2022 was nominally equal to about PLN15bn. Interestingly, this estimate of the total impact on consumption is in line with our assumptions presented in April's MACROscope ([link](#)). We did, however, expect a somewhat higher number of refugees.

That having said, a caveat should be made here - in the quarterly private consumption model we have so far only 4 non-zero observations of the number of refugees, which means that the reliability of the estimate cannot be high. The 90% confidence interval of the parameter estimate indicates that the consumption of the average refugee may be between 9% and 65% of the consumption of the average Polish resident. The value of the parameter was quite robust to changes in the model specification.

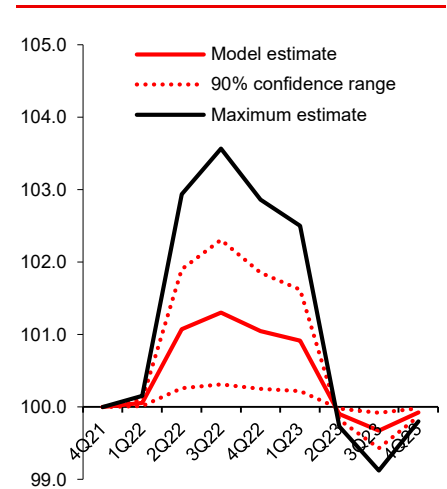
### Slightly negative impact of demographic breakdown

How does the different demographic breakdown affect the average consumption of refugees? Probably slightly negatively. We do not have certainty due to the lack of reliable data on refugee household size.

If we convert the Polish population into equivalent units according to the equivalence scales used by GUS (we assume an average number of persons in a resident household equal to 2.55, according to the GUS data for 2021), we would obtain approximately 24.7 million such units, which translates into average consumption of PLN67k per equivalent unit in 2022. If we assume the same average household size for refugees, this group will obtain a consumption of approximately PLN26k per equivalent unit, i.e. approximately 39% of the average for residents (against 37% for the average consumption per capita). In this case, the average number of children sets the difference between refugee and resident household. Thus, the higher number of children in refugee households reduces their average consumption by around 6% or 2 percentage points (compared to residents).

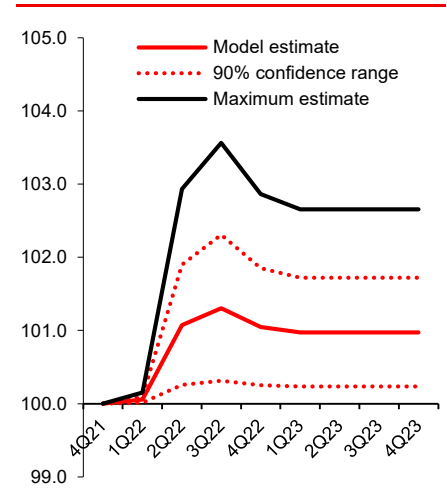
The number of children is not the only demographic factor affecting average consumption. The average household size is also important. Why? If households are small, there are simply more of them, so there will be more 'first adults' or 'heads of households' with a weight of 1 and fewer 'subsequent adults' with a weight of 0.5 in the equivalence scales. Smaller households will therefore spend more per capita on average than larger ones. According to our calculations, the positive effect of more heads of families balances out with the negative effect of more children at an average household size of 2.12. If households are larger, the negative effect prevails, if they are smaller, the positive effect is stronger. Our estimates based on NBP data suggest that refugee households are slightly smaller than resident households (2.30), while UNHCR data suggest they are slightly bigger (2.70). **In both cases, the demographic effect reduces average consumption by a few per cent.**

Refugees' impact on domestic consumption, corresponding period of the preceding year = 100



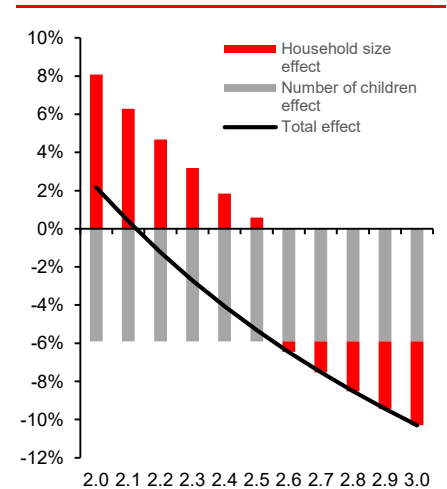
Source: Santander

Refugees' impact on domestic consumption, 4Q2019 = 100



Source: Santander

Average size of refugee household (in persons) and its impact on average consumption (%)



Source: Santander

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*Additional information is available on request. Please contact Santander Bank Polska S.A. Financial Management Division, Economic Analysis Department, al. Jana Pawła II 17, 00-854 Warsaw, Poland, phone +48 22 534 18 87, email [ekonomia@santander.pl](mailto:ekonomia@santander.pl), <http://www.santander.pl>.*