

2023 DINA UPDATE FOR EUROPE

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Regional DINA Update for Europe

Technical Note

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Overview

This update revises the Distributional National Accounts (DINA) series for 38 European countries up to 2020, following the method in Blanchet, Chancel and Gethin (2022) (hereafter BCG22). We hence revise and extend last year's update as described in Neef, Morgan and Sodano (2022). In this note, we explain the revisions made for both Western and Eastern European countries.

As before we classify Western Europe as comprising Austria, Belgium, Cyprus, Denmark, Finland, France, Greece, Germany, Iceland, Ireland, Italy, Luxemburg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. Eastern Europe includes Albania, Bosnia and Herzegovina, Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Kosovo, Lithuania, Latvia, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovenia, and Slovakia.

Data availability and quality

Table 1 presents the data used for the update.

Western Europe

For Western European countries, we rely entirely on the EU-SILC for survey data. The survey covers EU countries as well as non-EU countries. The update utilises the

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release of the SILC micro data in 2023 for the wave year 2021, which provides information on incomes received in the previous calendar year, i.e. 2020. Four countries did not have a 2022 data release: Norway (latest survey year 2019 corresponding to 2018 income year), Switzerland (2020 survey year corresponding to 2019 income year), the UK (2018 survey year corresponding to 2018 incomes), Iceland (2018 survey year corresponding to 2017 incomes).

Tax data is available in the form of tabulations for all Western countries, with the exception of Malta, to varying degrees of annual coverage. This update incorporates new data from tax tabulations for France (2017-2021). Access to tax microdata is often not systematic and restricted to country-based researchers.

Some country-based researchers are currently working on producing distributional national accounts for their countries at a greater level of detail and precision than the estimates of this update. Austria, France and Italy are the only countries included in this update that have followed this strategy to date (see Table 1). While the French country authors (Garbinti et al., 2023), could draw on tax microdata, the Austrian (Jestl and List, 2022) and Italian studies (Guzzardi et al., 2022) built DINA based on survey data and tax tabulations. We expect that more countries will be added to this list over time. This is desirable as it will improve cross-country comparability and the precision of our estimates.

As can be seen from Table 1, new tax data is available in raw form that hasn't been used in this update. The use of this new data is problematic given the harmonized methodology used to estimate the DINA series for European countries currently on WID.world. These tax tabulations are not straightforward to use either – many refer to “net taxable incomes”, requiring treatments to correct for deductions, and other items. They thus require more time and resources to process. Further collaboration with local researchers will help us overcome these data obstacles.

Eastern Europe

Eastern Europe is still heterogeneous concerning data quality. We use the EU-SILC survey microdata for EU member states and Serbia. For many non-EU members, PovcalNet, PIP and heterogeneous national surveys are currently the only available survey data source. In this light, the integration of further countries into the EU-SILC, already realized for Serbia and currently underway for North Macedonia, Montenegro, and Albania is a positive development. Tax data in the form of tabulations is still sparse. An additional obstacle for the integration of tax information is that capital incomes are withheld at the source in many Eastern European countries. Therefore, a combination of personal income tax returns and a database on incomes for which tax was withheld at the source would be necessary. [Kump and Novokmet \(2018\)](#) can draw on such a database for Slovenia. Access to tax microdata is even less systematic than in Western Europe.

The constituent republics of the former Federal Republic of Yugoslavia – Bosnia and Herzegovina, Croatia, Montenegro, Northern Macedonia, Serbia and Slovenia – are plotted since 1980 as separate entities. This data is taken from [Maddison Project Database \(2020\)](#) and based on extrapolations. The same applies to the Czech Republic and Slovakia, forming late Czechoslovakia. Kosovo is considered since 1999 a separate entity.

For National Accounts aggregates, we follow BCG22 by using EUROSTAT and OECD data as primary sources. UN SNA is used when the first two sources do not have information. Since detailed data on the composition of national income is sparse before 1995, we impute missing information by retropolation using exponential smoothing. As a last step, regional averages based on the regional classification by the [UN Statistics Division](#) are used to treat cases in which component information is missing for all years. This applies to subcomponents of national income for Albania, Bosnia and Herzegovina, former Czechoslovakia, the former German Democratic Republic, Kosovo, Moldova, Montenegro, and North Macedonia. Little is currently known about income redistribution in the South-eastern European countries, including information on social benefits and health expenditures used to compute posttax incomes in particular. For several Eastern European countries we use National Accounts aggregates directly from WID.world. These aggregates are based on data from UN MADT, OECD, IMF BOPS (see [Blanchet et al. 2021](#), p. 88 for details).

Methodology

The procedure used in BCG22 involves various steps to distribute net national income within countries, sub-regions and the region of Europe as a whole. We provide a brief summary of the methodology, referring the readers to the published paper for further details. First, different household surveys are harmonized at a conceptual level to obtain cross-country distributions of pre-tax and post-tax income.

Second, these surveys are calibrated on top incomes from tax data, ensuring that top income shares calculated in previous research are maintained, while correcting for income under-coverage in surveys. The calibration is also done on top income shares from new tax data, which are estimated by using an internal control total for income from the survey, rather than an external control total from national accounts used in previous research on top incomes.

Third, missing income components are added to the calibrated survey from the national accounts following various distributional assumptions that utilize information from income surveys, consumption surveys and wealth surveys. These comprise imputed rents of households, the undistributed profits of corporations, product and production taxes, and in-kind government expenditure. Imputed rents are imputed to their distribution in the surveys where they are recorded (EU-SILC). Undistributed profits (which includes the corporate tax) are imputed to the distribution of corporate stock holdings from wealth surveys (HFCS) calibrated on top income shares. Taxes on

products and production are imputed proportionally to the distribution of pretax income. Lastly, in-kind government expenditures are imputed proportionally to the distribution of disposable income, except for public health spending, which is imputed in equal lump-sum shares to individuals.

We follow this routine to update the series up to 2020 with the new distributional and aggregate data (the survey microdata reaches 2017 in BCG22). Furthermore, we expand the distributional data by two more years to reach 2022, assuming a constant fiscal income (survey + tax data) distribution. We then add new macro data from national accounts that were updated this year on WID.world to 2022. In Table 1, “+ macro data 2022 (constant fiscal income distribution 2019-2022)” means that we impute these macro incomes assuming that the fiscal distribution remains unchanged. The imputation of these missing macro incomes alters the final distribution, given that they are not all imputed proportionally to fiscal incomes. The benchmark unit of observation used in these inequality series is the adult individual aged 20 or older, with income of couples being divided equally.

A note on the differences with the OECD-Eurostat expert group on disparities in a national accounts framework (EG DNA).

The sole focus of the EG DNA is to distribute the disposable income of the household sector in the SNA. In contrast, the WID.world's DINA series distribute the entirety of national income among resident households (including all income flowing to corporations, the government, and to and from the foreign sector). In this way we account for 100% of macroeconomic growth coming from GDP statistics. If data quality permits, we also present results for numerous concepts (i.e. not only pre-tax national income, but also post-tax disposable income and post-tax national income) across granular percentile groups reaching small fractiles at the very top of the distribution, with greater precision than the EG DINA, which primarily focuses on quintile groups.

For our harmonized European DINA series, we do not scale individual income components in the micro data to their macro equivalents in SNA. This is another difference with the EG DNA. However, for newly incorporated DINAs, like those for Austria, France and Italy, this component scaling to SNA is carried out by the authors.

A note on 2020 & 2021 estimates in light of the COVID-19 pandemic

The new estimates included in this update go up to 2022. But they only partially account for the effects of the pandemic-induced economic crisis. Macro data (national income and its decompositions) cover up to 2022, but micro-level distributional data is not reflective of 2020 incomes, given that they end in 2019 for the most part. As explained above and in Table 1, between 2019 and 2022 we keep the micro-level distribution of income (i.e. the survey + tax distribution) constant. Therefore, we urge caution with the interpretation of the results for 2020 & 2021, given the lack of readily usable distributional information. These results are by no means able to reflect the effects of the crisis on the distribution of income, nor on the role of government spending in affecting this distribution during 2020. To get more insight on the impact of the Covid pandemic, have a look at Adams-Prassl et al. (2020) and further literature.

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Table 1. Data sources and type of update by country

Western Europe							
Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Austria	2020	EU-SILC, microdata	2018	2020	www.statistik.at , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	2003-2017 from Jestl and List (2022) + extrapolations (1980-2002, 2018-2022) based on internal update
Belgium	2020	EU-SILC, microdata	2018	2018	www.statbel.fgov.be , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + macro data 2022 (constant fiscal income distribution 2020-2022)
Cyprus	2020	EU-SILC, microdata		2017	www.mof.gov.cy , tabulation	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2020-2022)
Denmark	2020	EU-SILC, microdata	2010	2020	www.statbank.dk , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2020-2022)

Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Finland	2020	EU-SILC, microdata	2009	2020	www.vero2.stat.fi , tabulations	EUROSTAT & OECD 1980-2020	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2020-2022)
France	2020	EU-SILC, microdata	2021	2021	www.impots.gouv.fr , tabulations	EUROSTAT & OECD 1980-2020	External estimation by Garbinti, Goupille-Lebret and Piketty (2018) for 1900-2014; Bozio et al. (2023) for 2014-2016. 2017-2021 are extrapolated using tax tabulations.
Germany	2020	EU-SILC, microdata	2017	2018	www.destatis.de , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2019-2022)
Greece	2020	EU-SILC, microdata	2018	2018	www.aade.gr , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2019-2022)

Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Iceland	Last available survey refers to 2017 incomes	EU-SILC, microdata	2017	2021	www.px.hagstofa.is , tabulations	EUROSTAT 1995-2020, 1980-1999 UN SNA	Macro data 2022 (constant fiscal income distribution 2017-2022)
Ireland	2020	EU-SILC, microdata	2018	2018	www.statbank.cso.ie , tabulations, updated top income shares for 2016-2018 provided by Brian Nolan.	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2020-2022)
Italy	2020	EU-SILC, microdata	2018	2020	www1.finanze.gov.it , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	2004-2015 from Guzzardi et al. (2022) + extrapolations (1980-2003, 2016-2022) based on internal update
Luxemburg	2020	EU-SILC, microdata	2012	2012	www.ces.public.lu , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2019-2022)
Malta	2020	EU-SILC, microdata				EUROSTAT 1997-2020, UN SNA 1980-2005	Survey microdata 2020 + Macro data 2022 (constant fiscal income

Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Netherlands	2020	EU-SILC, microdata	2014	2014	Salverda (2019)	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2019-2022)
Norway	No update, latest inc. year 2018	EU-SILC, microdata	2018	2020	www.microdata.no , microdata (available to Norwegian-based researchers), www.ssb.no , tabulations	EUROSTAT & OECD 1980-2020	Macro data 2022 (constant fiscal income distribution 2018-2022)
Portugal	2020	EU-SILC, microdata	2019	2021	www.pordata.pt , tabulations	EUROSTAT & OECD 1995-2020, UN SNA 1980-1994	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2019-2022)
Spain	2020	EU-SILC, microdata	2012	2019	www.agenciatributaria.es , tabulations	EUROSTAT 1995-2020	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2019-2022)
Sweden	2020	EU-SILC, microdata	2013	2020	www.statistikdatabasen.scb.se , tabulations	EUROSTAT & OECD, 1980-2020	Survey microdata 2020 + Macro data 2022 (constant

							fiscal income distribution 2019-2022)
Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Switzerland	No update, latest inc. year 2019	EU-SILC, microdata	2014	2016	www.estv.admin.ch , tabulations	EUROSTAT 1995-2020, UN SNA 1980-1994	Macro data 2022 (constant fiscal income distribution 2019-2022)
United Kingdom	No survey data was collected during 2019-2021, so last survey refers to 2018 incomes	EU-SILC, microdata	2017	2017	Advani and Summers (2020)	EUROSTAT 1995-2020, UN SNA 1980-1994	Macro data 2022 (constant fiscal income distribution 2018-2022)
Eastern Europe							
Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Albania	No update, latest income year 2019	PovcalNet, tabulations				WID.world 1980-2022 (only GDP GNI, depreciation)	Macro data 2022 (constant fiscal income distribution 2019-2022)
Bosnia & Herzegovina	No update, latest income year 2015	PovcalNet, tabulations				WID.world 1980-2021 (only GDP GNI, depreciation)	Macro data 2022 (constant fiscal income distribution 2015-2022)

Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Bulgaria	2020	EU-SILC, microdata				EUROSTAT 1999-2022	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)
Croatia	2020	EU-SILC, microdata	2013	2013	Kump and Novokmet (2018)	EUROSTAT 2002-2021, UN SNA 1996-2001	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)
Czech Republic	2020	EU-SILC, microdata	2015 (top shares by Novokmet 2018)	2021	www.financnisprava.cz , tabulations	EUROSTAT 1995-2021	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2020-2022)
Estonia	2020	EU-SILC, microdata	2019 (new)	2020	www.emta.ee , tabulations	EUROSTAT 1995-2021, UN SNA 1980-1994 (only GDP GNI, depreciation)	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)
Hungary	2020	EU-SILC, microdata	2008	2008	Top shares by Mavridis and Mosberger (2017)	EUROSTAT & OECD 1995-2021, UN SNA 1991-1994 (only GDP GNI, depreciation)	Survey microdata 2020+ macro data 2022 (constant fiscal income)

							distribution 2020-2022)
Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Kosovo	No update, latest income year 2017	PovcalNet, tabulations				WID.world 1999-2021 (only GDP GNI, depreciation)	Macro data 2022 (constant fiscal income distribution 2017-2021)
Lithuania	2020	EU-SILC, microdata				EUROSTAT & OECD 1995-2021, 1993-1994 UN SNA	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)
Latvia	2020	EU-SILC, microdata				EUROSTAT & OECD 1995-2021, UN SNA 1980-1994	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)
North Macedonia	No update, latest inc. year 2018	PovcalNet, tabulations				WID.world 1980-2021, UN SNA 1990-1993, 1997-2011	Macro data 2022 (constant fiscal income distribution 2019-2022)
Moldova	No update, latest inc. year 2019	PovcalNet, tabulations				WID.world 1980-2021	Macro data 2022 (constant fiscal income distribution 2019-2022)

Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Montenegro	No update, latest inc. year 2018	PovcalNet, tabulations				WID.world 1980-2021	Macro data 2022 (constant fiscal income distribution 2018-2021)
Poland	2020	EU-SILC, microdata	2015	2017	Top shares provided by Bukowski and Novokmet (2021)	EUROSTAT & OECD 1996-2021	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)
Romania	2020	EU-SILC, microdata	2014	2014	Shares by Andrei, et al. (2017)	EUROSTAT 1995-2022, UN SNA 1990-2017	Survey microdata 2020 + Macro data 2022 (constant fiscal income distribution 2020-2022)
Serbia	No update, latest inc. year 2019	EU-SILC, microdata	2017	2018	Shares provided by Statistical Office of the Republic of Serbia	WID.world 1980-2022, EUROSTAT 2016-2017, UN SNA 1997-2011	Macro data 2022 (constant fiscal income distribution 2019-2022)
Slovenia	2020	EU-SILC, microdata	2012	2019	Shares 1991-2012 provided by Kump & Novokmet (2018) , further microdata access possible through Statistical Office of Slovenia	EUROSTAT & OECD 1995-2022	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020-2022)

Country	New years of survey data used	Survey data source and format	Last/new year(s) of tax data used	Latest year of tax data available	Tax data source and format	Macro data	Type of update
Slovakia	2020	EU-SILC, microdata				EUROSTAT & OECD 1995-2022, UN SNA 1992-1994	Survey microdata 2020+ macro data 2022 (constant fiscal income distribution 2020- 2022)