ESTIMATION OF GLOBAL WEALTH AGGREGATES IN WID.WORLD: METHODOLOGY

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TECHNICAL NOTE N°2024/14

UPDATED VERSION
MARCH 2025

WORLD INEQUALITY LAB

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Version: March 19, 2025

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Overview

The present note updates and revises Bauluz et al. (2023) and Chancel and Piketty (2023) to describe and explain how wealth aggregate estimates available on wid.world are assembled, whether imputed or not.

In Section 1, we define the various wealth concepts and asset categories on which we rely, while Section 2 explains the methodology to provide full coverage of key wealth components for 1980-2023 imputing wealth whenever missing. In Section 3, we detail our data sources. We start from countries for which authors' estimates providing us with full balance sheet data in subsection 3.1. In many instances, only financial balance sheets are available, which we list in subsection 3.2. In subsection 3.3, we detail the data sources that we directly make use of to infer certain wealth components like private pension assets, government non-financial assets or foreign wealth. Subsection 3.4 presents the variables that serve as inputs for our imputation method. Finally, in subsection 2.9, we present our main results for wealth aggregates by world region and main asset category together with some robustness checks and additional results.

1 Wealth Concepts

This section defines the various concepts of wealth and assets categories that we use. Our wealth concepts are defined using the 2008 System of National Accounts (United-Nations 2010). We only deviate from these concepts in the treatment of unfunded employers' pensions. This is the same treatment of wealth concepts adopted in the Distributional National Accounts Guidelines (Alvaredo et al. 2024) of the World Inequality Database, to which our project adheres.

For a given country, the SNA-2008 defines 6 basic institutional sectors: 5 resident sectors and the foreign sector. The five resident sectors are households (S.14), non-profit institutions serving households (S.15), non-financial corporations (S.11), financial corporations (S.12), and the general government (S.13). We re-group the five sectors into three: (i) the private sector (the sum of households and non-profit institutions serving households), (ii) the corporate sector (financial plus non-financial corporations), and (iii) the general government.

For a given resident sector i (i.e., private, corporate, or government sectors), wealth (or net worth) is the sum of non-financial assets plus financial assets, less liabilities: $W_i = A_i^{NF} + A_i^F - L_i$. At the country-level, we follow the two definitions of national wealth used by Piketty and Zucman (2014). The first one, market-value national wealth (W_N^M), is the sum of private wealth (W_P) and public sector wealth (W_G): $W_N^M = W_P + W_G$. In it, corporate sector wealth is included in private wealth through market-value equity & debt security holdings. That first definition may be rewritten as: $W_N^M = A_N^{NF} + NFW$; where NFW refers to net foreign wealth[1] and where domestic non-financial assets (A_N^{NF}) can in turn be broken down into housing and business assets (including agricultural land).

The second definition, called book-value national wealth, differs from the first one to the extent that corporate wealth is valued as stated in firms' books: that is, total financial and non-financial assets minus (non-equity) liabilities. One way to understand the link between these to definitions is to start from a closed economy, where financial assets cancel out liabilities, and

[1] In the SNA, the Rest of the World sector only holds financial positions, with non-financial asset holdings being accounted as financial. In the ESA-2010, non-financial assets of non-residents are classified under 'AF.519 Other equity'.

national wealth equals the national stock of non-financial assets. Given that in an open economy, net foreign wealth equals the sum of financial assets A_i^F minus liabilities L_i of resident sectors: $NFW = A_P^F - L_P + A_C^F - L_C + A_G^F - L_G$, then the book-value of national wealth equals the market-value definition plus the residual wealth of the corporate sector: $W_N^B = W_N^M + W_C$. These two definitions of national wealth coincide when residual corporate wealth (net book value assets minus equity liabilities) is equal to 0, that is, when the ratio between market and book values (Tobin's Q) is equal to 1. In what follows, we favor the market-value definition of national wealth, but we also present results for book-value national wealth whenever possible.

Intuitively, in case Tobin's Q is less than 1, e.g. because equity holders do not have full control over company assets and need to share power with workers, representatives and other stakeholders (or alternatively because the book value of company assets is overestimated), then residual corporate wealth is positive, and book-value national wealth is larger than market-value national wealth, for good or bad reasons. Conversely, in case Tobin's Q is larger than 1, e.g. because intangible assets (like R&D) are underestimated in company assets, or alternatively because firms benefit from market power (which raises their market value for given company assets), then residual corporate wealth is negative, and market-value national wealth is larger than book-value national wealth, again for good or bad reasons. We refer to Piketty and Zucman (2014)[2] and Bauluz et al. (2025) for a more extensive discussion.

As a rule, all financial assets and liabilities of resident sectors are unconsolidated. This means that the financial accounts of each entity belonging to a resident sector (e.g., the central and local government in the case of the public sector) are aggregated without canceling out assets and liabilities held across entities belonging to the same sector.[3] For the rest of the world, series are consolidated.

[2] See in particular pp. 1281-1282.

[3] The SNA-2008 guidelines indicate that "the accounting entries in the System are not consolidated. Therefore, the financial balance sheet of a resident sector or subsector is to be presented on a non-consolidated basis" United-Nations (2010).

Decomposition of the stock of wealth

In what follows, we explain the decomposition of wealth into the assets and liabilities of a given sector. We use as an example the household sector in France. The details of the computations are given in Table 1, where we also provide a number of decompositions into different classes of assets.

	Gross personal wealth	16,468.5
AN, S14	Non-financial assets owned by households	9,662.3
	Housing assets of households	*8,515.1*
AN111, S14	*Dwellings owned by households*	*4,847.2*
AN21111, S14	*Land underlying dwellings owned by households*	*3,667.9*
	Business and other non-financial assets of households	*1,147.2*
AN2112, S14	*Agricultural land of households*	*179.8*
	Other domestic capital of households	*967.4*
AF, S14	Financial assets owned by households	6,806.2
AF2+AF3+AF4, S14	*Currency, deposits, bonds and loans of households*	*2,036.0*
AF5+AF7+AF8, S14	*Equity and investment fund shares, derivatives and other financial assets of households*	*2,656.9*
AF6, S14	*Life insurance and pension funds of households*	*2,113.3*
AF, S14	Minus: Liabilities of households	2,095.4
	Equals: Net personal wealth	**14,373.0**

Adapted from the SNA-2008 "Sequence of accounts" (United-Nations, 2010) and the French Table of Integrated Economic Accounts (INSEE, 2023). Amounts are in current billion euros.
N.B.: (i) Natural capital (like mineral and energy reserves, or water and other natural resources, and with the exception of 'Land underlying dwellings') is included under 'Other domestic capital'. (ii) In French National Accounts, households do not hold any 'Monetary gold and special drawing rights' (AF.1).

Table 1: Net Personal Wealth

Our basic decomposition includes four classes of assets and liabilities: housing assets, business assets (and other non-financial assets), financial assets, and liabilities. Housing assets are defined as the sum of the market value of dwellings and land underlying dwellings: in practice, it is generally easier to measure the sum (as in observed real estate transactions) than the two components separately. Business assets (and other non-financial assets) are the difference between total non-financial assets and housing assets.

Note that existing national balance sheets do not always provide separate estimates for the different uses of land. The most recent international system of national accounts (SNA-2008) does not provide a decomposition of land into different components. This is in contrast with the

previous international guidelines (SNA-1993) which did provide a disaggregation of land. The adaptation of the SNA-2008 in Europe by the European Commission (ESA-2010) has, however, retained a basic decomposition of land into four categories: Land underlying buildings and structures (AN.2111), Land under cultivation (AN.2112), Recreational land and associated surface water (AN.2113), Other land and associated surface water (AN.2119). The latter two categories (AN.2113 and AN.2119) are generally very small and sometimes are not even estimated in official balance sheets.

Moreover, the SNA-2008 recommends following the disaggregation of land proposed by the System of Environmental-Economic Accounting (United-Nations, 2014) whenever national statistical offices want to decompose land. This land disaggregation is consistent with that of ESA-2010, but adds a more detailed decomposition of Land underlying buildings and structures (AN.2111) and Land under cultivation (Land under cultivation (AN.2112). The former is decomposed into Land underlying dwellings (AN.21111) and Land underlying other buildings and structures (AN.21112). The latter is decomposed into Agricultural land (AN.21121), Forestry land (AN.21122), and Surface water used for aquaculture (AN.21123). Many national statistical agencies follow this break down.

We aim at using the more detailed decomposition suggested by System of Environmental-Economic Accounting whenever possible. In particular, our objective is to capture housing (including its underlying land) and agricultural land, as these have been the two most important assets owned by households over their path of development (e.g., Piketty and Zucman, 2014).

A special mention on how agricultural land is defined. The Eurostat-OECD manual on land estimation (Eurostat-OECD, 2015) defines agricultural land as "Land primarily used for agricultural purposes. The total of land under temporary or permanent crops, meadows and pastures as well as land with temporary fallow; this category includes tilled and fallow land, and naturally grown permanent meadows and pastures used for grazing, animal feeding or agricultural purpose. Excludes land underlying farm dwellings, farm buildings or other corresponding structures". While statistical offices not always report data on the value of agricultural land, many

compile statistics on agricultural land area, classifying this land into three basic types: arable land, permanent grassland, and permanent crops.[4] These statistics have a long history, both in rich and developing countries. The Food and Agriculture Organization has fostered their collection over more than half a century, within the framework of the decennial World Census of Agriculture (e.g., Deininger and Squire, 1998; Frankema, 2010). As we explain in the data sources and methods section (section 3), in some countries, we will use these statistics to provide our own estimates of agricultural land values.

We split financial assets into three categories: currency, deposits, bonds and loans (the sum of AF1, AF2, AF3 and AF4), equity and investment fund shares (AF5, AF7 and AF8), and life insurance and pension funds (AF6).[5] For all sectors, we report total liabilities, except for corporations, where we distinguish between equity and non-equity liabilities.

Finally, we consider that one aspect of the current SNA's definition of financial assets is problematic: the range of pensions that are included within asset category AF6. While the SNA-1993 only included funded pension assets, the most recent SNA-2008 also includes unfunded employers' pensions. In our view, and that of the DINA project, the SNA-2008 treatment is not satisfactory, since unfunded pensions are promises of future transfers that are not backed by actual wealth. In the United States, Saez and Zucman (2016) remove unfunded pensions from wealth. In other countries, we have been unable to remove this component at the moment, but hope to make progress in the future. For some countries, we already know that unfunded pensions are either not part of official balance sheets (France and the UK) or have a very low value (Germany).

[4] In most countries, arable land and permanent grassland are the most important types of agricultural land, followed by permanent crops (Eurostat-OECD, 2015, pg. 126). Some countries do also include a forth category: kitchen gardens. This type of land is almost irrelevant when compared to other land categories and should be included within land underlying buildings and structures (AN.2111) for national accounts purposes (Eurostat-OECD, 2015, chapter 8). As we explain below, we have made use of statistics on agricultural land area to estimate agricultural land values, and have excluded kitchen garden, when possible.

[5] Note that we include asset categories AF7 (Derivatives) and AF8 (Other Financial Assets) alongside equity and investment funds. AF7 and AF8 are generally small, and we combine them with AF5 to simplify the financial asset decomposition into three basic categories.

2 Methodology and Imputations

As a general rule, we rely on official balance sheet statistics or individual studies to reconstruct sectoral balance sheets — defined as assets minus liabilities for each institutional sector — across countries worldwide. Wealth and its subcomponents are measured at market values. In Section 3, we provide a detailed description of the wealth data published in WID.world, sourced from official records, academic studies, or secondary sources. This dataset covers data dating back to the early 19th century (Piketty and Zucman, 2014; Waldenström, 2017) and expands its coverage across countries and asset classes in more recent decades.

2.1 Full Coverage of Key Variables: 1980-2023

For the period 1980–2023, we provide comprehensive coverage of a broad set of key variables for 216 core world countries. To ensure full coverage when data is missing, we rely on imputations based on a regression model. This approach is similar in spirit to Davies et al. (2017), which provides annual estimates of household wealth—decomposed into financial assets, non-financial assets, and debt—since 2001. Different from their approach, our imputations cover 1980–2023 and extend beyond households to include government, corporate and overall national wealth. Additionally, we further disaggregate non-financial and financial assets into various subcategories (e.g., housing, equity, pensions, etc.). These estimates are integrated with foreign asset and debt data from Nievas and Sodano (2024), available for the 216 core countries since 1970. This allows us to provide a comprehensive view of both domestic and foreign wealth since 1980.

In what follows, we outline our imputation process in detail. We begin by summarizing the variables with full coverage for the period 1980-2023, and how some of these are obtained from imputations while others are the results of aggregating individual imputations into larger asset categories. Next, we introduce the regression model and present its results. While this framework serves as the foundation for most imputations, in some cases, we adopt a more direct estimation approach when reliable secondary sources are available. This applies in particular to private

agricultural land (*pwagr*) and public non-financial assets (*gwnfa*). Next, we address how missing values are handled. For countries with partial raw data, we extrapolate values both forward and backward using trends from predicted values or regional averages. When data is fully imputed, we extend estimates using regional trends. Additionally, we assign regional averages to fill remaining gaps. We illustrate the extent to which each estimation method is applied across asset categories. Finally, we discuss the winsorization strategy employed to mitigate the impact of potential outliers. In subsection 2.9, we investigate the sensitivity of our results to the methodology conducting a broad set of robustness checks.

2.2 Variables Covered and Accounting Identities

We follow a bottom-up approach to construct a comprehensive database covering the period 1980–2023. We estimate fourteen basic asset and debt types, which are then aggregated into broader asset categories based on accounting identities. Specifically, we estimate the following asset and debt classes: private housing (*pwhou*), private agricultural land (*pwagr*), private other domestic capital (*pwodk*), private fixed-income assets (*pwfiw*), private equity (*pweqi*), private pension assets (*pwpen*), private debt (*pwdeb*), government non-financial assets (*gwnfa*), government financial assets (*gwfin*), government debt (*gwdeb*), corporate non-financial assets (*cwnfa*), corporate financial assets (*cwfin*), corporate debt (non-equity liability; *cwdeb*), and market value of corporations (equity liability; *cwdeq*). Together with data on net foreign assets (nwnxa) from Nievas and Sodano (2024), these asset classes are further aggregated using accounting definitions into the following categories: private non-financial assets (*pwnfa*), private financial assets (*pwfin*), private net wealth (*pweal*), government wealth (*gweal*), book-value corporate wealth (*cwboo*), residual corporate wealth (*cwres*), Tobin's Q (*icwtoq*), market-value national wealth (*nweal*), market-value domestic non-financial assets (*nwnfa*), and book-value national wealth (*nwboo*). In Table 2, we list these fourteen variables and illustrate their correspondence with the SNA concepts detailed in section 1.

Furthermore, we estimate corporate housing (*cwhou*) and public housing (*gwhou*) using

a simple approach when these values are missing. Specifically, we multiply private housing (*pwhou*) by the average ratio of corporate housing or public housing to private housing (i.e., $cwhou/pwhou$ or $gwhou/pwhou$) in countries where both are observed. On average, this ratio is 0.17 for corporate-private housing and 0.07 for public housing. Alternatively, one could assume a time-varying trend for the value of corporate and public housing relative to private housing.

This, in turn, allows us to derive two additional sets of variables. First, we estimate corporate business assets (*cwbus*) and public business assets (*gwbus*) by deducting housing (*cwhou* or *gwhou*) from total non-financial assets (*cwnfa* or *gwnfa*). Second, we obtain national housing (*nwhou*) by summing the housing stock of each sector. Finally, we derive market-value national business assets (*nwbus*) by subtracting national housing (*nwhou*) from market-value domestic non-financial assets (*nwnfa*). In effect, we are assuming here that all deviations from unitary Tobin's Q are entirely attributed to corporate business assets. That is, market-value national housing assets are simply defined as the sum of sectoral housing assets (i.e. $nwhou = pwhou + cwhou + gwhou$), while market-value business assets are equal to the sum of sectoral business assets minus residual corporate wealth (i.e. $nwbus = pwbus + gwbus + cwbus - cwres$).

More precisely, we use the following accounting formulas, where bold variables indicate those estimated with the regression model and an asterisk reflects the two variables (*cwhou* and *gwhou*) that are obtained using a simpler rescaling factor:

$$pweal = pwnfa + pwfin - \mathbf{pwdeb}$$
$$pwnfa = \mathbf{pwhou} + \mathbf{pwagr} + \mathbf{pwodk}$$
$$pwbus = \mathbf{pwagr} + \mathbf{pwodk}$$
$$pwfin = \mathbf{pwfiw} + \mathbf{pweqi} + \mathbf{pwpen}$$
$$pweal = hweal - iweal$$
$$gweal = \mathbf{gwnfa} + \mathbf{gwfin} - \mathbf{gwdeb} = gwass - \mathbf{gwdeb}$$
$$gwbus = \mathbf{gwnfa} - gwhou^{*}$$
$$cwboo = \mathbf{cwnfa} + \mathbf{cwfin} - \mathbf{cwdeb}$$

$cwbus = \mathbf{cwnfa} - cwhou^{*}$

$cwres = cwboo - \mathbf{cwdeq}$

$icwtoq = \mathbf{cwdeq}/cwboo$

$nweal = pweal + gweal$

$nwnfa = nweal - nwnxa$

$nwhou = pwhou + cwhou + gwhou$

$nwbus = nwnfa - nwhou = pwbus + gwbus + cwbus - cwres$

$nwboo = nweal + cwres$

Variable	Description	SNA-2008 / ESA-2010 labels
pwhou	Private housing assets	S.14+S.15, AN.111+AN.21111
pwagr	Private agricultural land	S.14+S.15, AN.21121
pwodk	Private other domestic capital	S.14+S.15, AN-AN.111-AN.21111-AN.21121
pwfiw	Private fixed-income assets	S.14+S.15, AF.1+2+3+4.a
pweqi	Private equity & investment fund shares	S.14+S.15, AF.5+7+8.a
pwpen	Private pension assets	S.14+S.15, AF.6.a
pwdeb	Private liabilities	S.14+S.15, AF.z
gwnfa	General government non-financial assets	S.13, AN
gwfin	General government financial assets	S.13, AF.1.a to AF.8.a
gwdeb	General government liabilities	S.13, AF.z
cwnfa	Corporate non-financial assets	S.11+S.12, AN
cwfin	Corporate financial assets	S.11+S.12, AF.a
cwdeb	Corporate debt (non-equity liability)	S.11+S.12, AF.z - AF.5.z
cwdeq	Market value of corporations (equity liability)	S.11+S.12, AF.5.z

N.B.: 'Private' refers to households (S.14) & non-profit institutions serving the households (S.15).

Table 2: Matching SNA Concepts to Wealth Components

Furthermore, we provide estimates of net household wealth (*hweal*) for the entire period from 1980 to 2023 using a similar approach to corporate and public housing. When household wealth

is not directly observed for a country, we estimate it as private wealth multiplied by the average household-to-private wealth ratio in countries where both measures are available in the raw (non-imputed) data. This ratio is approximately 0.95, which means that around 5% of private wealth is owned by non-profit institutions serving households. As a result, we also provide estimates of non-profit wealth (*iweal*), which is the difference between private net wealth (*pweal*) and household net wealth (*hweal*).

2.3 The Regression Model

We use a regression model to estimate missing data. This method relies on a simple OLS regression framework, where a missing dependent variable is predicted based on a set of covariates. Thus, the model requires data on both the dependent and independent variables across countries to generate reliable predictions. In this respect, our approach follows Davies et al. (2011, 2017), who use a similar method to estimate household financial assets, non-financial assets, and debt since 2001. The method is transparent and provides fairly good approximations when the predicted data is compared with the observed data.

As explained earlier, we extend the approach of Davies et al. (2011, 2017) to estimate the following fourteen variables since 1980 covering both the private and the public sectors: private housing, private agricultural land, private other domestic capital, private fixed-income assets, private equities & fund shares, private pension assets, corporate non-financial assets, corporate financial assets, corporate non-equity liabilities, corporate equity liabilities, government non-financial assets, government financial assets, and government debt.

The coverage of these variables in the raw data varies across time and world regions. While data coverage is higher among high-income countries, we also have observations for large developing economies, including China, India, South Africa, Russia, Brazil, and Mexico. On average, we have data for approximately 20% of all country-year pairs, which account for around two-thirds of global national income (because larger and richer countries are better covered). We discuss data availability in more detail below.

The regression model is specified as follows:

$$\begin{aligned}\log(W_{it}) = \beta_0 &+ \beta_1 \log(\text{national income}_{it}) + \beta_2 \log(\text{adult population}_{it}) \\ &+ \beta_3 \log(\text{population density}_{it}) + \beta_4(\text{life expectancy}_{it}) \\ &+ \beta_5(\text{urban population}_{it}) + \beta_6 \log(\text{income from the top-10\%}_{it}) \\ &+ \beta_7 \log(\text{capital income}_{it}) + \beta_8 \log(\text{gross foreign assets}_{it}) \\ &+ \beta_9 \log(\text{foreign debt}_{it}) + \beta_{10} \log(\text{private fixed capital}_{it}) \\ &+ \beta_{11} \log(\text{public fixed capital}_{it}) + T_t + \epsilon_{it}\end{aligned} \tag{1}$$

Where W_{it} represents one of the ten dependent variables. The set of covariates (with coefficients from β_1 to β_{11}) varies across countries and over time. Among the covariates, national income, income from the top-10%, capital income, net foreign assets, net foreign debt, private fixed capital and public fixed capital are expressed in PPP (Purchasing Power Parity) of 2023 US dollars. The ten dependent variables are also expressed in PPP of 2023 US dollars,[6]. T_t represents year fixed effects, and E_{it} is the error term. A description of the data sources used as covariates is provided in subsection 3.4.

For the dependent variable, our benchmark data come from official statistics (either full balance sheets or financial accounts) or country studies. For specific assets or debt categories, we count on additional secondary sources. This is the case of private and national agricultural land obtained from the U.N. Inclusive Wealth Report 2018 (Programme, 2015), OECD private pension assets (OECD, 2024), and government debt from the IMF Global Debt Database. In cases in which we have data from both official statistics/country studies and secondary sources, we use as a benchmark the former, which we extend back and forth with the trend in the secondary source when possible. When only secondary sources are available, we use them directly. We describe both primary and secondary sources in more detail in section 3.

Table 3 displays our regression results. As in Davies et al. (2017), we exclude non-significant

[6]In subsection 2.9 we provide alternative estimates using market exchange rates instead of PPP. The overall trends remain largely similar.

variables from individual regressions.[7] All regressions include year-fixed effects to capture global trends in specific assets, although, for space reasons, we display the coefficients of the annual fixed effect in a separate table in Appendix D. Differently from Davies et al. (2017), we do not include region fixed-effects as for some regions, there is limited data coverage.[8] While a full discussion of the coefficients is beyond the scope of this note, we highlight a few key patterns.

[7]Including non-significant variables makes virtually no difference. In the robustness checks subsection 2.9, we test this and other aspects of the regression model.

[8]Including region fixed-effects, however, does not alter the main results in a meaningful manner (see subsection 2.9).

	(1) *pwhou*	(2) *pwagr*	(3) *pwodk*	(4) *pwfiw*	(5) *pweqi*	(6) *pwpen*	(7) *pwdeb*	(8) *gwnfa*	(9) *gwfin*	(10) *gwdeb*	(11) *cwnfa*	(12) *cwfin*	(13) *cwdeb*	(14) *cwdeq*
Net national income	1.024***	0.536***	1.705***	0.768***	0.259***	1.458***	1.620***		0.957***	1.013***	0.243***		0.433***	
	(0.073)	(0.056)	(0.177)	(0.085)	(0.061)	(0.210)	(0.123)		(0.120)	(0.051)	(0.083)		(0.087)	
Population density	0.030***	-0.178***	0.204***	0.124***	-0.069***	-0.091***		-0.058***	-0.142***	0.015***		0.051***	0.063***	-0.042***
	(0.007)	(0.007)	(0.013)	(0.009)	(0.011)	(0.021)		(0.012)	(0.009)	(0.006)		(0.006)	(0.007)	(0.009)
Life expectancy	0.069***		-0.036***	0.069***	0.022***		0.046***	0.031***	0.064***	0.014***	0.033***	0.031***	0.065***	0.010**
	(0.003)		(0.007)	(0.003)	(0.004)		(0.005)	(0.006)	(0.005)	(0.001)	(0.004)	(0.003)	(0.004)	(0.005)
Urban population	-0.008***	-0.007***		-0.007***	0.007***	0.015***	0.003**	0.006***	-0.004***	0.001**	0.013***	0.005***	0.005***	
	(0.001)	(0.001)		(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	
Capital shares	-0.101**	0.142***	-0.553***	-0.335***		-1.020***	-0.382***	0.215***	0.219***	-0.309***	0.197***	-0.102***	0.021	
	(0.039)	(0.032)	(0.087)	(0.037)		(0.107)	(0.056)	(0.069)	(0.044)	(0.026)	(0.057)	(0.030)	(0.034)	
Gross foreign assets	-0.284***	-0.204***		0.241***	0.133***	0.774***			0.455***	-0.258***	0.054*	0.501***		0.559***
	(0.026)	(0.013)		(0.031)	(0.018)	(0.075)			(0.034)	(0.011)	(0.030)	(0.023)		(0.034)
Foreign liabilities	0.252***	0.062***	-0.340***	-0.117***		-0.613***	0.073***		-0.452***	0.453***	-0.098***	0.111***	0.479***	0.175***
	(0.031)	(0.013)	(0.037)	(0.033)		(0.086)	(0.023)		(0.036)	(0.012)	(0.034)	(0.025)	(0.012)	(0.037)
IMF private capital	0.328***		0.547***	0.250***	0.399***		0.299***	0.186***	-0.252***	-0.050***	0.103***	-0.217***	-0.284***	-0.424***
	(0.028)		(0.059)	(0.036)	(0.047)		(0.053)	(0.049)	(0.040)	(0.013)	(0.033)	(0.024)	(0.028)	(0.033)
IMF public capital	-0.136***	-0.127***	-0.167***	0.142***	0.256***	-0.259***	-0.201***	0.551***	0.430***	0.212***	0.091***	0.195***	0.236***	0.207***
	(0.029)	(0.016)	(0.055)	(0.026)	(0.036)	(0.070)	(0.039)	(0.042)	(0.030)	(0.013)	(0.030)	(0.019)	(0.023)	(0.024)
Adult population		0.394***	-0.193***	0.121***		-0.778***	-0.347***	0.312***	0.286***	0.083***	0.384***	-0.106***		
		(0.016)	(0.064)	(0.036)		(0.083)	(0.050)	(0.058)	(0.041)	(0.014)	(0.049)	(0.027)		
Top 10% income share		0.162***				1.576***		-0.202**	-0.693***	-0.103**		0.656***	0.182***	0.490***
		(0.053)				(0.181)		(0.098)	(0.086)	(0.042)		(0.048)	(0.065)	(0.034)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,070	6,791	870	1,424	1,511	2,030	1,595	923	1,420	6,288	661	1,370	1,370	1,386
R-squared	0.968	0.862	0.898	0.960	0.901	0.770	0.897	0.935	0.941	0.939	0.972	0.977	0.970	0.943

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Regression Outputs

First, national income is consistently positively associated with the value of various assets and debts, reflecting that higher-income countries tend to hold more valuable assets and exhibit higher leverage. Second, life expectancy is always positively correlated with both private and public assets, as well as with private and public debt, possibly indicating that aging societies tend to be more financialized. As expected, IMF private fixed capital is linked to higher private assets, while IMF public fixed capital is associated with larger public assets. The remaining coefficients exhibit less clear patterns.

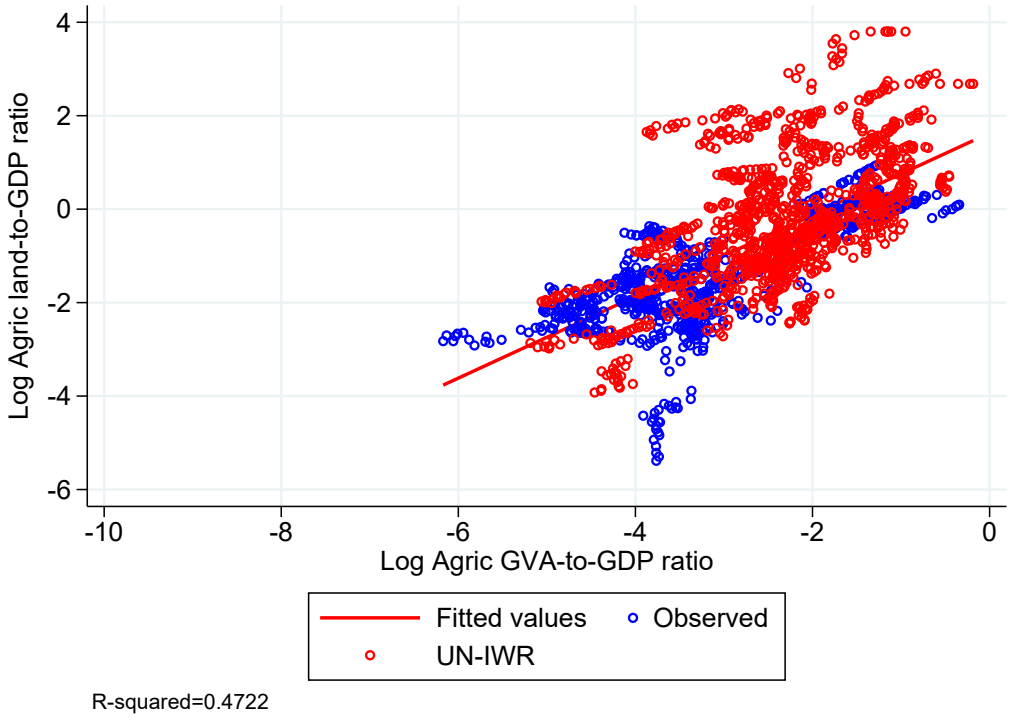
Importantly, the R^2 values are high, averaging around 0.9. We use these regressions to predict the dependent variable when it is missing, provided that data on the covariates is available. Overall, around 20% of observations are observed (based on raw data), an additional 50% are predicted, and the remaining 30% are still missing because of missing data on one or more of the covariates in the regression.

2.4 Two Exceptions to the Regression Model Approach: Government Non-financial Assets and Agricultural Land

In the case of government non-financial assets (*gwnfa*) and private agricultural land (*pwagr*), we opt not to use the regression approach provided above directly and instead use a more straightforward method. We do so because we count with data very closely related to two variables. For government non-financial assets, estimates of public fixed capital (produced non-financial assets) are available from the IMF for a very large sample of world countries since the 1970s. Since total non-financial assets is the sum of fixed (produced) and non-produced assets, we rescale IMF's data using the average ratio of total non-financial assets to fixed assets in countries where both variables are available, which is approximately 1.5.

For agricultural land (*pwagr*), we make use of statistics on Gross Value Added in agriculture to impute agricultural land. FAO's data on GVA in agriculture are available on an annual basis for most countries in the world and go back to the 1970s too. We predict the (log) ratio of agricultural land to GDP using the (log) ratio of GVA in agricultural land to GDP. Figure 1 plots the correlation

between the two variables for all countries and years for which we observe the two. The red dots are observations from UN's Inclusive Wealth Report, while the blue dots are observations from official balance sheets, the Global Land Inequality project Bauluz et al. (2020), or our own estimates using Eurostat/FAO data on area and prices of agricultural land (see subsection 3.3). The correlation between the two is relatively high (R-squared of 0.45). We use it to impute all countries for which we do not have agricultural land values but observe Gross Value Added in agriculture.



Notes: This figures shows the correlation between the the (log) ratio of agricultural land to GDP and the (log) ratio of GVA in agricultural land to GDP. Agricultural land values are either from (i) official balance sheets, WIL authors' estimates, the Global Land Inequality project and our own estimates using Eurostat/FAO data (blue dots) or from (ii) the UN's Inclusive Wealth Report (red dots). Data on Gross Value Added on Agriculture is from FAO's statistics (FAOSTAT). We pool all available years since 1980 for which we observe both agricultural land values and GVA in agriculture.

Figure 1: Correlation Between the (log) Ratio of Agricultural Land-to-GDP Using the (log) Ratio of GVA in Agricultural Land-to-GDP

Finally, around 10 to 20% of observations of public non-financial assets or private agricultural land cannot be estimated through this simpler approach. To fill in the missing values, we rely on the general regression model used for the other twelve variables and whose output is pre-

sented in Table 3. Moreover, we use a simple approach to provide estimates of national agricultural land (*nwagr*) when missing by rescaling private agricultural land (*pwagr*) with the average ratio in countries where both are observed, which is approximately 1.41.

2.5 Former Soviet States

For the fourteen former Soviet States – Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan – we opt for a different strategy for the period 1980-1992. Namely, we assign to these countries for the fourteen basic asset and debt types that we are after – private housing (*pwhou*), private agricultural land (*pwagr*), private other domestic capital (*pwodk*), private fixed-income assets (*pwfiw*), private equity (*pweqi*), private pension assets (*pwpen*), private debt (*pwdeb*), government non-financial assets (*gwnfa*), government financial assets (*gwfin*), government debt (*gwdeb*), corporate non-financial assets (*cwnfa*), corporate financial assets (*cwfin*), corporate non-equity liability (*cwdeb*), and corporate equity liability (*cwdeq*) – our estimates for Russia built upon the work of Novokmet et al. (2018b) and described in 3.1.

2.6 Observations Types: Observed, Predicted, Extended and Missing

As previously explained, across all asset and debt categories, approximately 20% of observations come from raw data, 50% are predicted, and the remaining 30% are missing. The following sections describe how we handle these cases and illustrate the approach across different asset and debt types.

Table 4 categorizes the types of observations in the 1980–2023 dataset. Type 5 refers to observations directly available in the raw data. If a country has data for part of the period but not the entire 1980–2023 span, we extrapolate the missing values using trends estimated through OLS (if available, classified as type 4.1) or the regional average (type 4.2). The nine world regions for which we compute averages are East Asia, Eastern Europe, Latin America, MENA, North America & Oceania, Russia & Central Asia, South & South-East Asia, Sub-Saharan Africa and

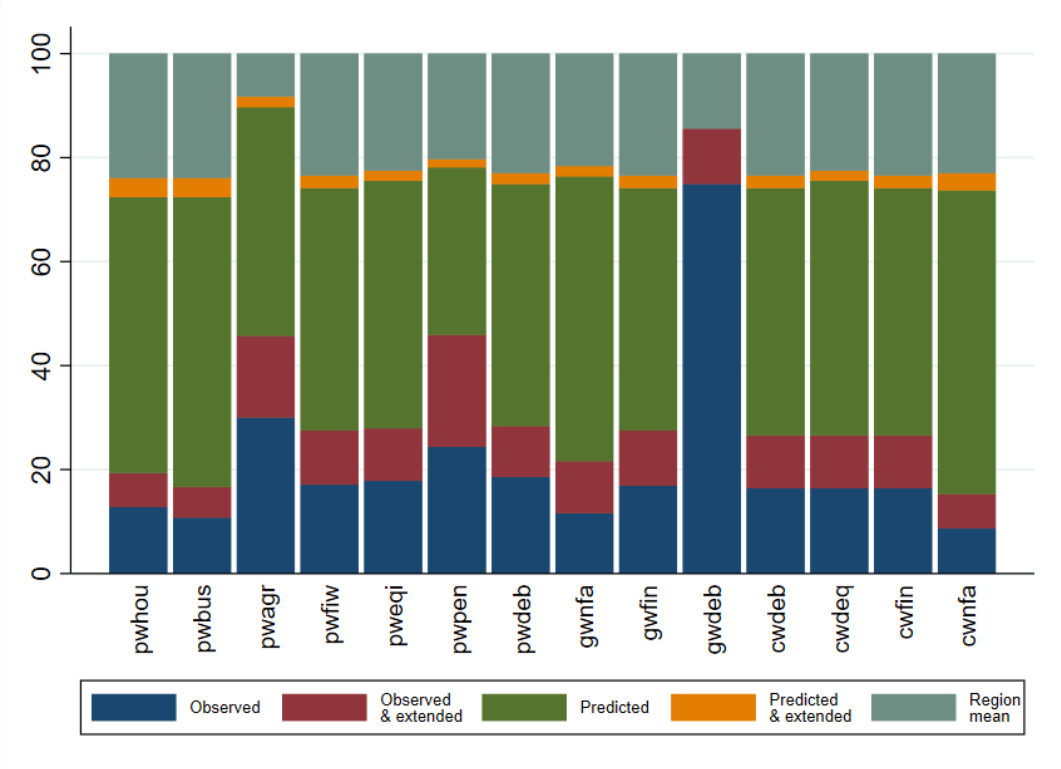
Western Europe.

For countries with no observed data at any point between 1980 and 2023, we rely entirely on predicted values (type 3). If these predicted values cover only part of the period, we extend them forward and backward using the regional trend (type 2). Finally, for countries where neither observed nor predicted data exist for any year in the 1980–2023 period, we impute the regional average directly (type 1).

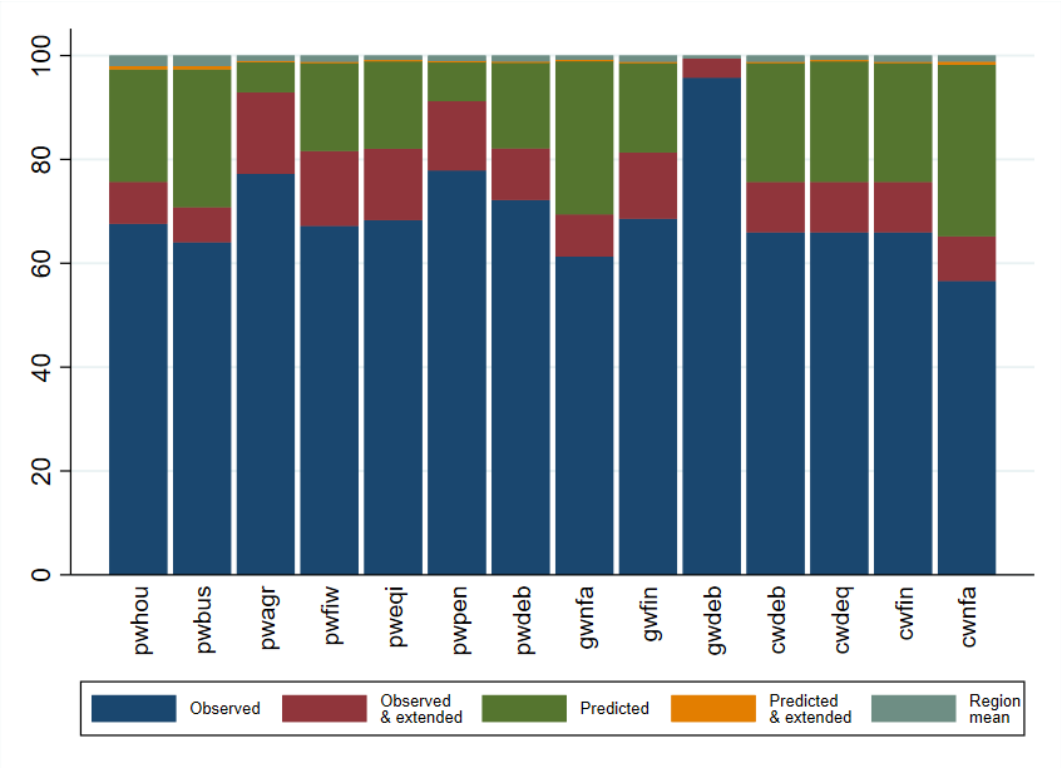
"type"	Description
5	Observed
4.1	Observed and extended with OLS prediction
4.2	Observed and extended with regional trend
3	Predicted
2	Predicted and extended with regional trend
1	Missing: assign region average

Table 4: Types of observations: observed, extended, predicted and region average.

Figure 2 summarizes the types of observations for each of the fourteen variables imputed over the 1980–2023 period. Panel (a) presents the share of observations by type, with each column representing one of the fourteen imputed variables. Panel (b) conveys the same information but weights each observation by the country's share of global national income, measured in 2023 US dollars using purchasing power parity (PPP).



(a) Observation Types Unweighted, 1980-2023



(b) Observation Types: Weighted by PPP National Income, 1980-2023

Figure 2: Observation Types

Two key insights emerge. First, in the unweighted version, most variables exhibit similar proportions of observed, predicted, extended, and region-average values, except for public debt, which has significantly higher coverage in the raw data. Second, countries with observed or predicted data together account for over 95% of global national income. In contrast, those with missing data, which are assigned the regional average, represent only a tiny fraction of the world's income.

Appendix B includes similar figures illustrating the data coverage of individual variables over the period 1980-2023. As expected, the share of observed data is somewhat lower in the early 1980s compared to recent years. Importantly, however, the proportion of observations that are either observed or predicted remains high throughout the 1980–2023 period and always captures a significant share of global output.

2.7 Outliers and Winsorization

The raw data on which we rely, either direct wealth estimates or which serve as the basis for our imputations, are not perfect. Therefore, in a few limited instances, we decide to winsorize some of our data inputs to deal with the presence of outliers. In particular, we winsorize the IMF Global Debt Database (see subsection 3.3.4) and the IMF public capital stock series (see subsection 3.3.3) at the 5%-level on a yearly-basis due to some extreme values. We do the same at the 10%-level for private and national agricultural land estimates derived from capitalizing agricultural gross value added (GVA), due to sudden drops/spikes in agricultural GVA yielding unrealistic land values.

Finally, we winsorize our 14 dependent variables (key wealth subcomponents) at the 5%-level on a yearly basis, whenever the latter is predicted (type 3), predicted and extended with the regional average (type 2) or missing and assigned the regional average (type 1) to address potential outliers. In the robustness checks subsection 2.9, we replicate the main region trends without winsorizing our 14 variables, and the results look quite similar.

2.8 Adjustment of Net Domestic Financial Assets to Equal Net Foreign Assets so Global Foreign Wealth is Zero

Our foreign wealth series, obtained from Nievas and Sodano (2024), guarantees that at the global level, foreign assets and liabilities perfectly cancel out, ensuring that the world has zero net foreign assets. These series are obtained from balance of payments national accounts, where they are called the International Investment Position (IIP). This data source is different from the official balance sheet data, which we primarily use for financial assets and liabilities of domestic sectors (households, corporations, and the government). In what follows, we explain certain discrepancies between domestic and foreign assets and how we deal with them.

In theory, a country's net foreign assets should equal the net domestic assets of resident sectors (just as net foreign saving equals the net saving of resident sectors). In practice, this is usually the case. However, there are some instances where the two do not coincide. We classify these discrepancies into three types. The first case involves inconsistencies within the official balance sheets, which report the net position of both domestic sectors (S.1) and the Rest of the world (S.2). The second case arises when net foreign assets in official balance sheets do not match the IIP in the balance of payments. Conceptually, these should be equal, provided that the asset category "Monetary gold" (AF.11) is removed from financial corporations' financial assets (S.12 AF.1.a) and the Rest of the World sector's liabilities (S.2 AF.1.z) in the balance sheets. This asset type is generally small and is not considered an asset in the IIP, contrary to the balance sheets. To maintain consistency with the IIP, we aim to remove "Monetary gold" (AF.11) from domestic sectors.[9] However, in practice, there are sometimes discrepancies beyond this adjustment, likely because national accountants sometimes produce statistics in a disjointed manner (i.e., without ensuring consistency between balance sheets and balance of payments data).

[9]It is often impossible to separate "Monetary gold" (AF.11) from "Monetary gold and special drawing rights" (AF.1). Therefore, we remove "Monetary gold and special drawing rights" (AF.1) from financial corporations' financial assets to ensure consistency across countries and to align more closely with the definition of the net IIP, which serves as the foundation for our foreign wealth series. Since "Monetary gold and special drawing rights" (AF.1) held by financial corporations is very small—typically around 1% or 2% of national income and not exceeding 5%—this adjustment does not significantly impact our results.

The third case involves discrepancies arising because part or all the components of the net domestic financial assets are obtained from OLS regressions (see subsection 2.3), leading to differences between the predicted net domestic financial assets and the observed IIP.

To address these discrepancies and ensure that global net foreign wealth remains zero, we enforce at the country level that domestic net financial assets equal net foreign assets (*nwnxa*): $pwfin + cwfin + gwfin - pwdeb - cwdeb - cwdeq - gwdeb = nwnxa$.

We apply the following correction: first, we compute the discrepancy between the two: $discrepancy = (pwfin + cwfin + gwfin - pwdeb - cwdeb - cwdeq - gwdeb) - nwnxa$. If the discrepancy is negative, we increase corporate financial assets (*cwfin*) in the absolute value of the discrepancy, hence, raising net domestic financial assets; if the discrepancy is positive, we increase corporate non-equity liabilities (*cwdeb*) in that amount, hence, lowering net domestic financial assets. We then rescale the variables derived from corporate financial assets and corporate non-equity liabilities accordingly: corporate book value (*cwboo*), residual corporate wealth (*cwres*), Tobin's Q (*icwtoq*), and national book-value wealth (*nwboo*). Oour correction also applies to pre-1980 for countries for which we observe wealth subcomponents and for which there is a discrepancy between domestic net financial assets and the IIP. These countries are: Canada, Germany, France, Italy, Japan and the United States. While the discrepancy is small in the first five, it is much larger in the United States as we explain in Appendix A, yielding a more important correction to corporate net financial assets.

Figure 3 shows the discrepancy as a share of national income. Overall, the discrepancy is generally small and around zero, except in the MENA region, where the IIP tends to be higher than domestic financial assets, making the discrepancy negative.

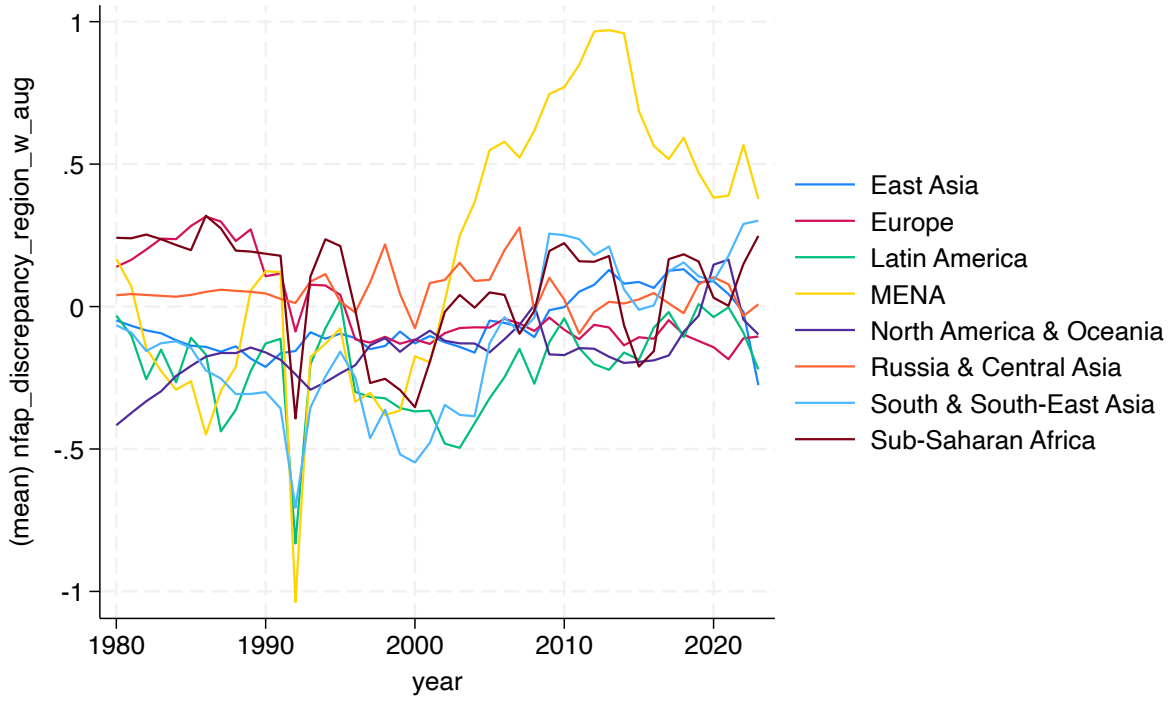


Figure 3: Discrepancy in Domestic Net Financial Assets minus International Investment Position

In Appendix A, we specifically highlight discrepancies for cases 1 and 2 — that is, discrepancies either within official balance sheets or between official balance sheets and the balance of payments — whenever these discrepancies are significant. We define a discrepancy as significant when it exceeds 30 percentage points of national income and persists for at least three out of four consecutive years (since occasional spikes or drops in the IIP from one year to the next may occur, resulting in transitory discrepancies).

Out of the 52 countries for which we have official data on balance sheets and balance of payments, nine countries exhibit a significant discrepancy at some point in time. These countries are pre-2011 Russia and pre-1990s United States for the first type of discrepancy (i.e., a discrepancy within official balance sheets),[10] and Switzerland, Cyprus, Ireland, Iceland, Luxembourg, the Netherlands, and Slovakia for the second type of discrepancy (i.e., a discrepancy between official balance sheets and the balance of payments).

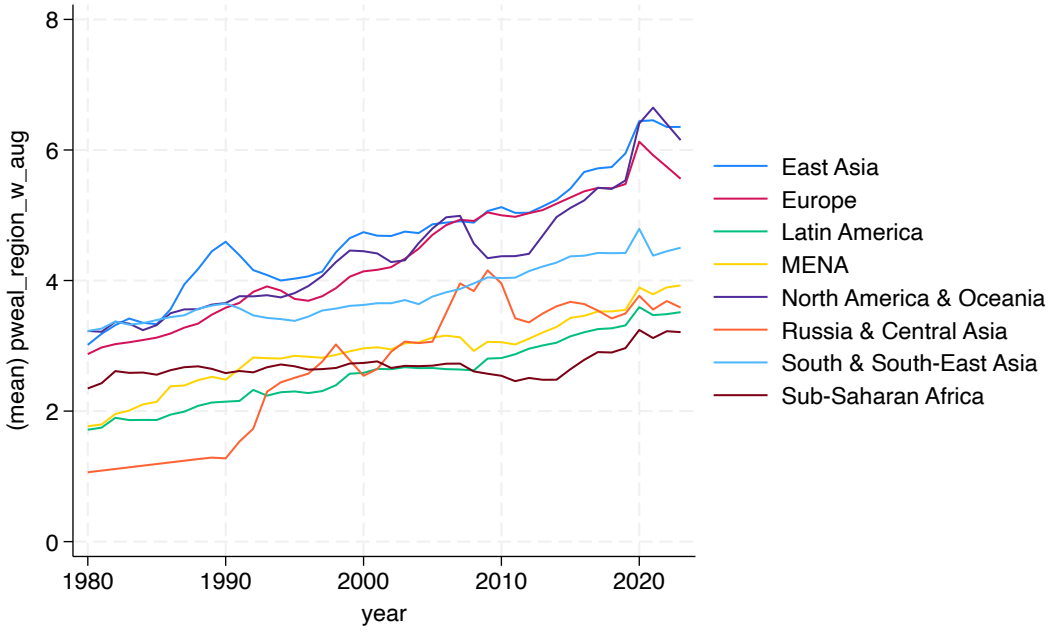
[10]These discrepancies are highlighted respectively by Novokmet et al. (2018a) for Russia and Piketty et al. (2018) for the United States.

2.9 Robustness Checks

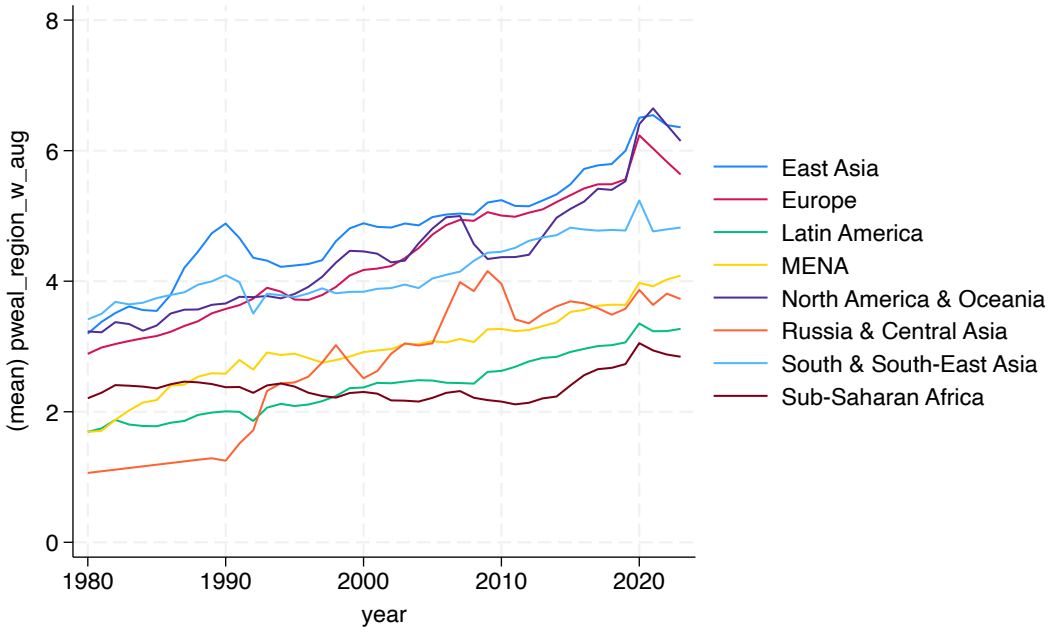
In order to test the validity of our imputation method, we modify five key assumptions in our approach to achieve global coverage. First, we use market exchange rates instead of purchasing power parities (PPPs) to measure the variables in equation 1. Second, we include (rather than exclude) non-significant variables in our main regression model. Third, in line with Davies et al. (2017), we incorporate world region fixed effects to capture regional comovements, which we omit in our benchmark regression model due to limited observations in certain world regions.[11] Fourth, we do not winsorize variables that were either predicted using OLS, assigned a regional average, or extended using trends from OLS predictions and/or regional averages. Fifth, we do not rescale corporate financial assets and non-equity liabilities to enforce that net domestic financial assets equal net foreign wealth.

The figures below present the main trends across world regions for four key wealth variables: private wealth, public wealth, corporations' book value, and market-value national wealth. Additionally, we show results for corporate financial assets and corporate non-equity liabilities—the two variables that absorb discrepancies between net domestic financial assets and net foreign assets, as explained in subsection 2.8. Figures are expressed as a share of national income, with countries within regions weighted by their national income using PPP in the benchmark results and market exchange rates in the alternative results. The upper panels display results based on our benchmark specification and methodology, while the lower panels show trends after implementing the five modifications described above. While some differences may emerge, overall, results remain robust to these alternative data treatments.

[11] The nine world regions are East Asia, Eastern Europe, Latin America, MENA, North America & Oceania, Russia & Central Asia, South & South-East Asia, Sub-Saharan Africa and Western Europe.



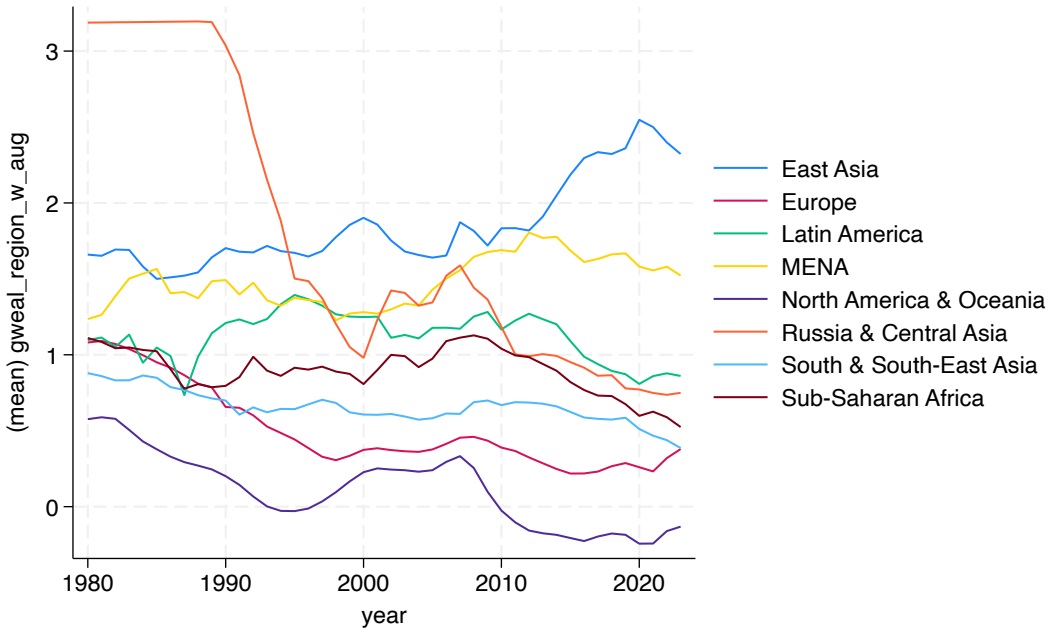
(a) Benchmark *pweal*



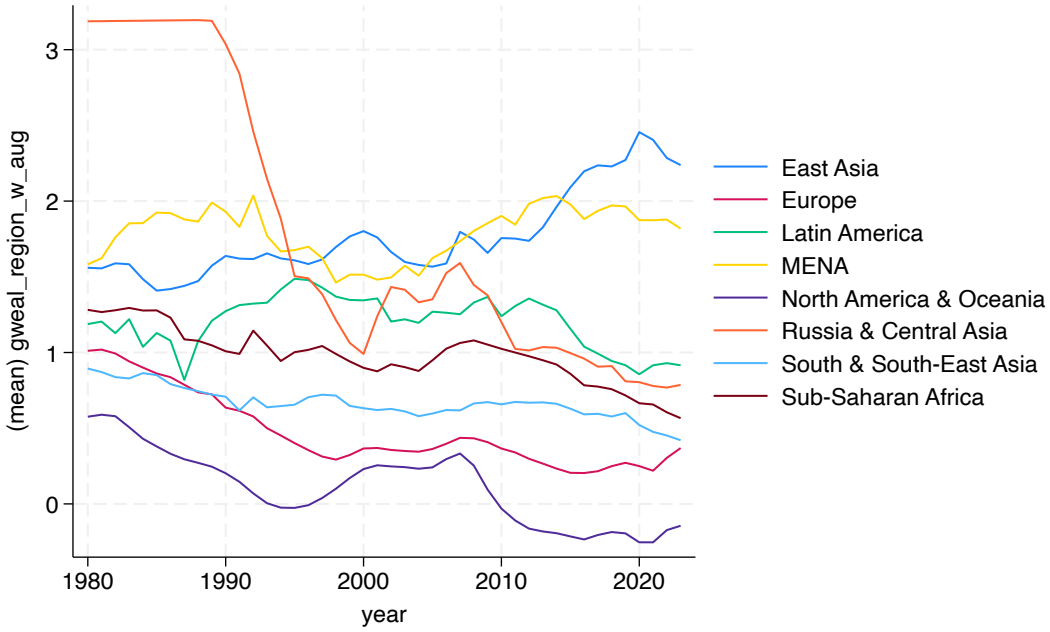
(b) Alternative *pweal*

Notes: The upper panel (a) presents our benchmark private wealth estimates (*pweal*) by world region expressed as a share of national income (weighted regional PPP national income), as described in subsection 2. The lower panel (b) displays an alternative specification that uses market exchange rates instead of PPPs, includes non-significant covariates and region fixed effects, does not apply ex-post winsorization to variables predicted using OLS estimates, and does not rescale corporate financial assets or non-equity liabilities to ensure that net domestic financial assets match net foreign wealth.

Figure 4: Private net wealth (*pweal*)



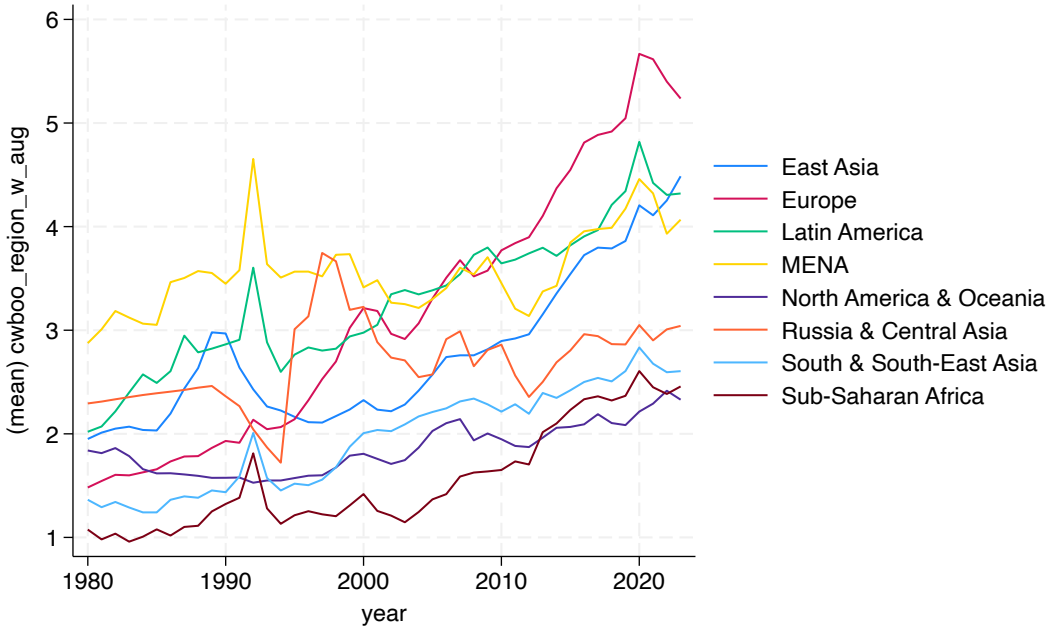
(a) Benchmark *gweal*



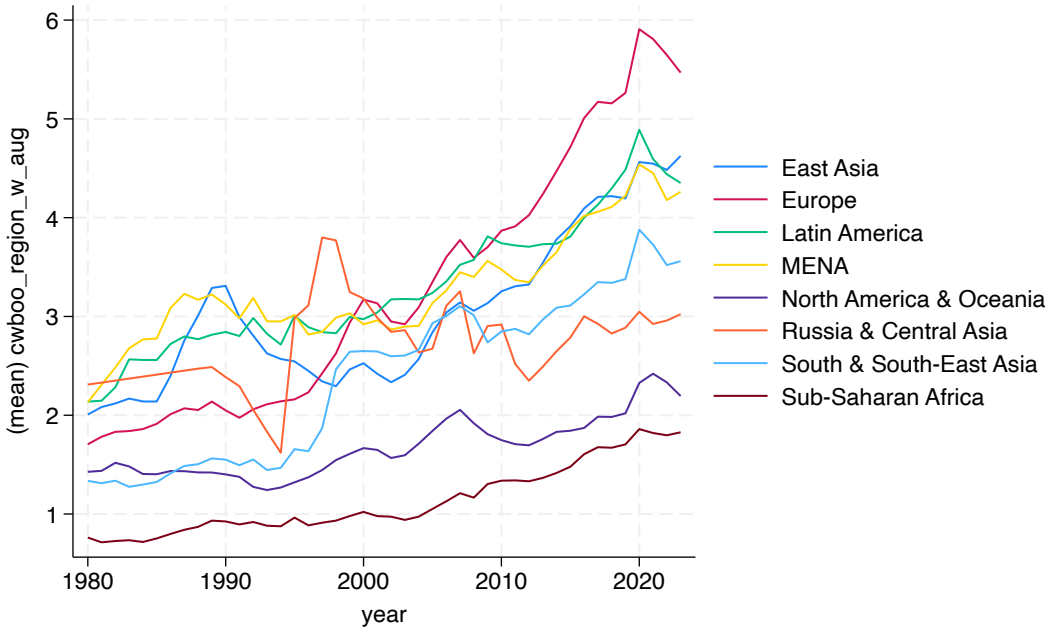
(b) Alternative *gweal*

Notes: The upper panel (a) presents our benchmark government wealth estimates (*gweal*) by world region expressed as a share of national income (weighted regional PPP national income), as described in subsection 2. The lower panel (b) displays an alternative specification that uses market exchange rates instead of PPPs, includes non-significant covariates and region fixed effects, does not apply ex-post winsorization to variables predicted using OLS estimates, and does not rescale corporate financial assets or non-equity liabilities to ensure that net domestic financial assets match net foreign wealth.

Figure 5: Public net wealth (*gweal*)



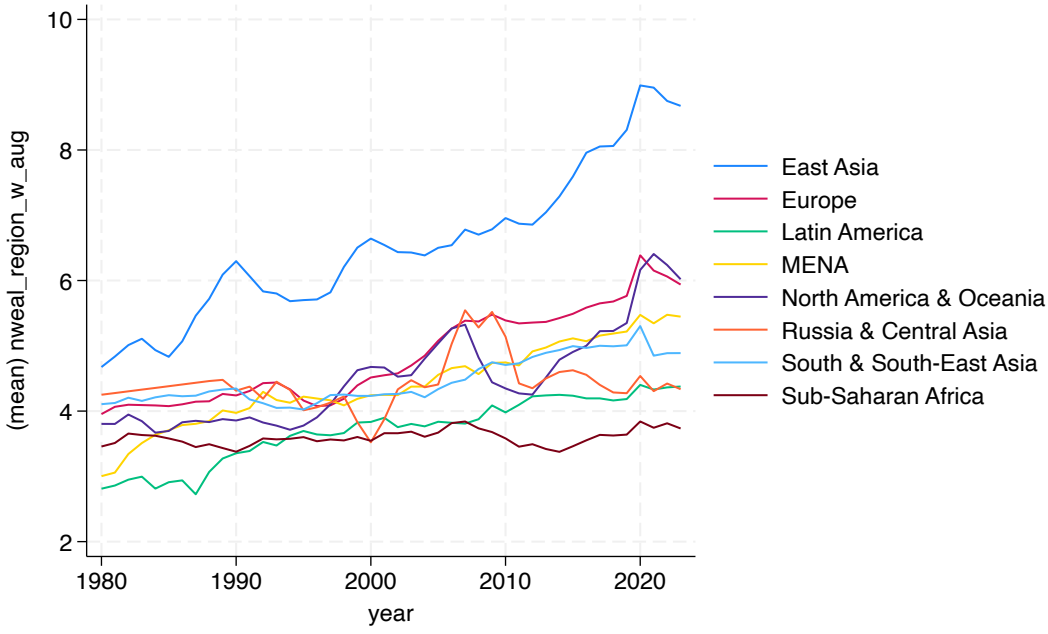
(a) Benchmark *cwboo*



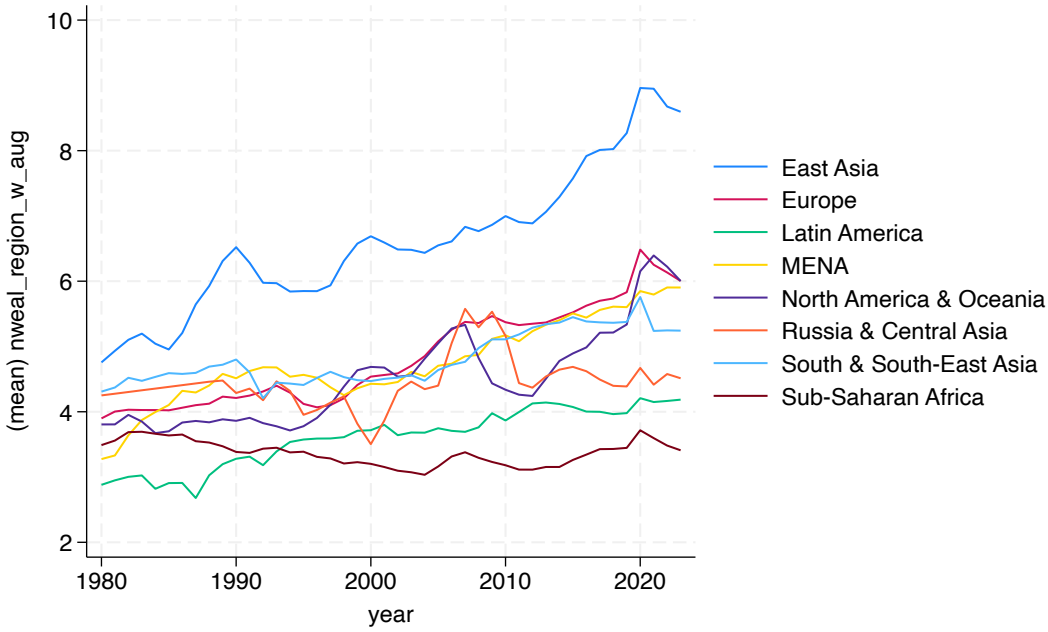
(b) Alternative *cwboo*

Notes: The upper panel (a) presents our benchmark book-value corporate wealth estimates (*cwboo*) by world region expressed as a share of national income (weighted regional PPP national income), as described in subsection 2. The lower panel (b) displays an alternative specification that uses market exchange rates instead of PPPs, includes non-significant covariates and region fixed effects, does not apply ex-post winsorization to variables predicted using OLS estimates, and does not rescale corporate financial assets or non-equity liabilities to ensure that net domestic financial assets match net foreign wealth.

Figure 6: Book-value corporate wealth (*cwboo*)



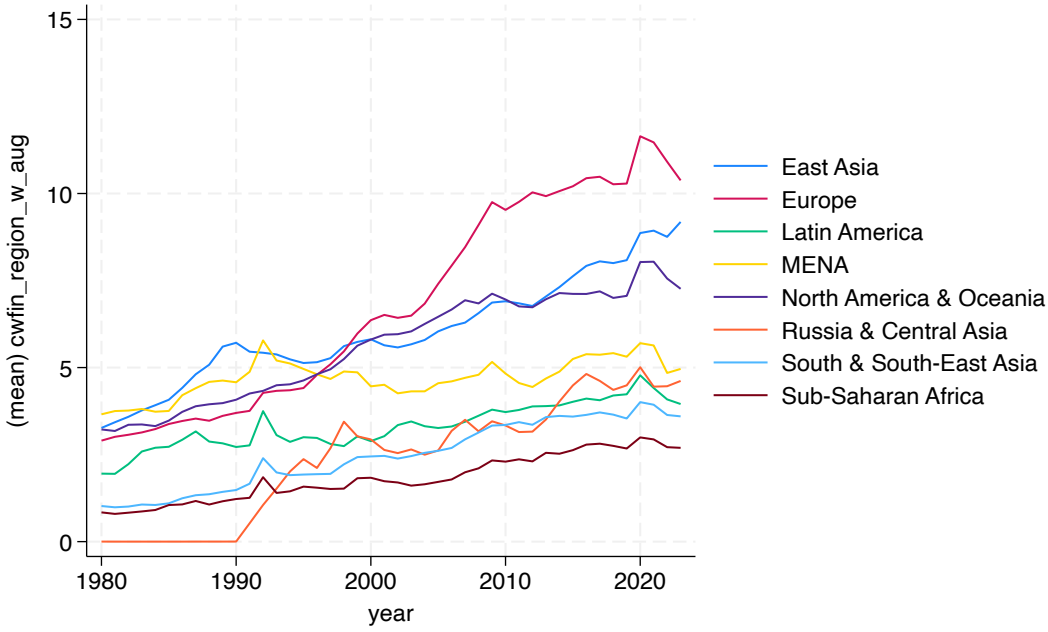
(a) Benchmark *nweal*



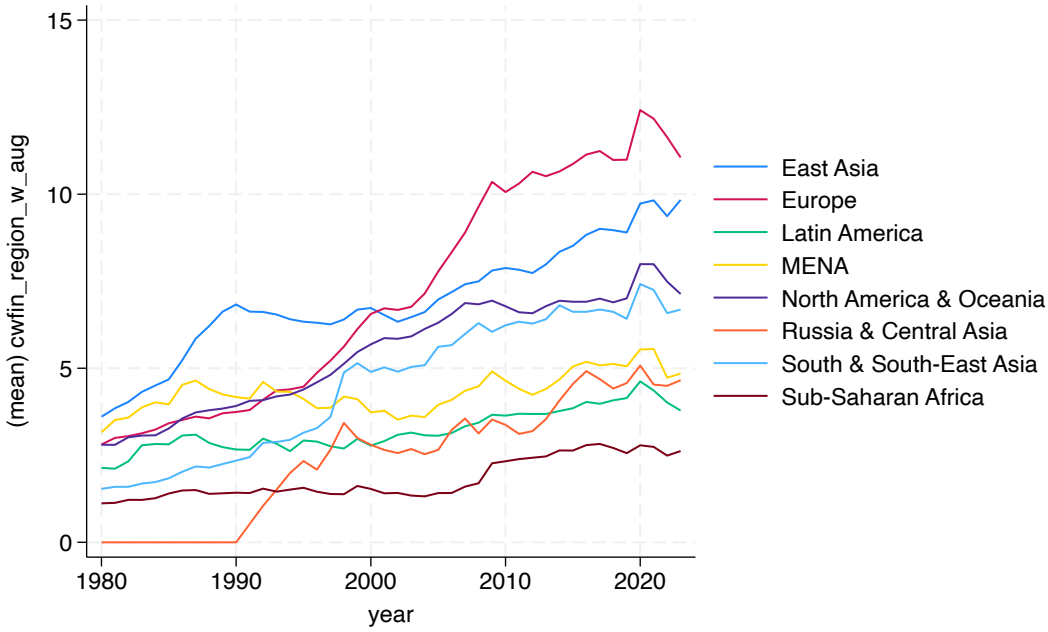
(b) Alternative *nweal*

Notes: The upper panel (a) presents our benchmark market-value national wealth estimates (*nweal*) by world region expressed as a share of national income (weighted regional PPP national income), as described in subsection 2. The lower panel (b) displays an alternative specification that uses market exchange rates instead of PPPs, includes non-significant covariates and region fixed effects, does not apply ex-post winsorization to variables predicted using OLS estimates, and does not rescale corporate financial assets or non-equity liabilities to ensure that net domestic financial assets match net foreign wealth.

Figure 7: Market-value national wealth (*nweal*)



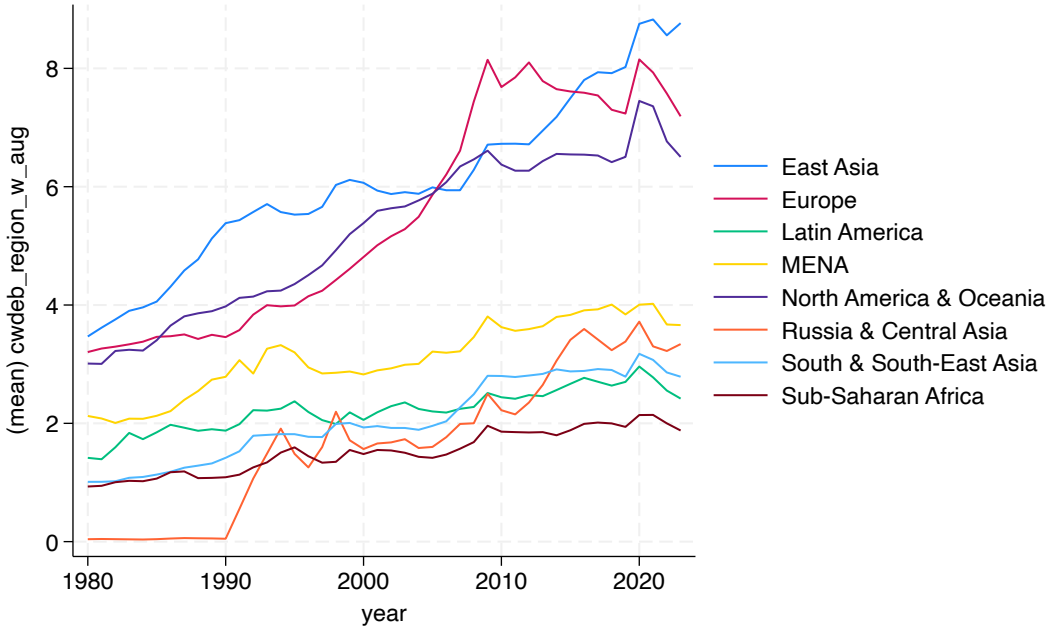
(a) Benchmark *cwfin*



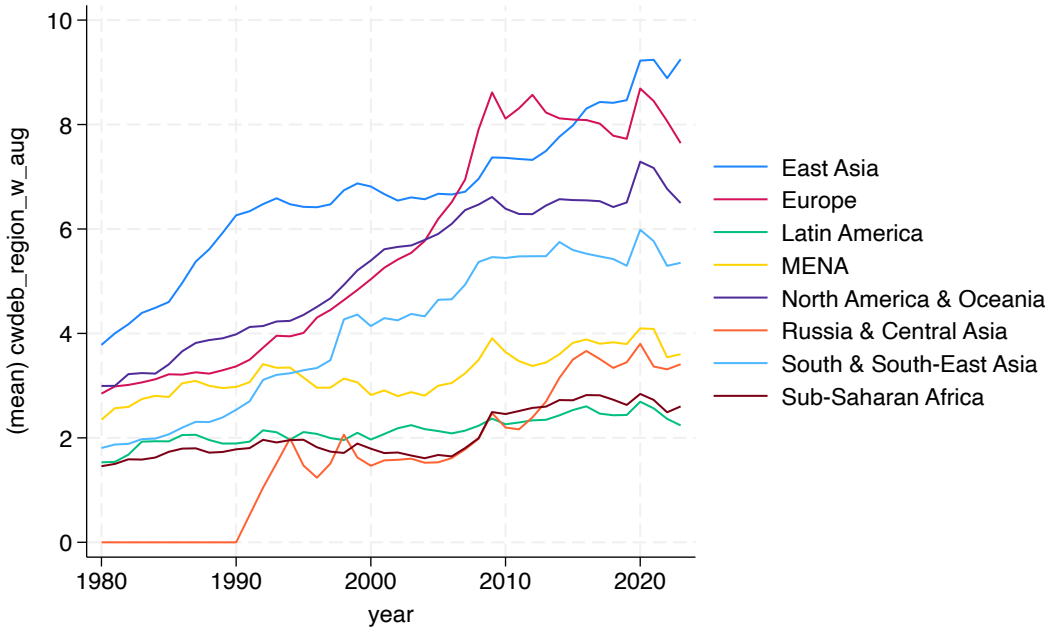
(b) Alternative *cwfin*

Notes: The upper panel (a) presents our benchmark corporate financial assets (*cwfin*) by world region expressed as a share of national income (weighted regional PPP national income), as described in subsection 2. The lower panel (b) displays an alternative specification that uses market exchange rates instead of PPPs, includes non-significant covariates and region fixed effects, does not apply ex-post winsorization to variables predicted using OLS estimates, and does not rescale corporate financial assets or non-equity liabilities to ensure that net domestic financial assets match net foreign wealth.

Figure 8: Corporate financial assets (*cwfin*)



(a) Benchmark *cwdeb*



(b) Alternative *cwdeb*

Notes: The upper panel (a) presents our benchmark corporate financial assets (*cwdeb*) by world region expressed as a share of national income (weighted regional PPP national income), as described in subsection 2. The lower panel (b) displays an alternative specification that uses market exchange rates instead of PPPs, includes non-significant covariates and region fixed effects, does not apply ex-post winsorization to variables predicted using OLS estimates, and does not rescale corporate financial assets or non-equity liabilities to ensure that net domestic financial assets match net foreign wealth.

Figure 9: Corporate non-equity liabilities (*cwdeb*)

3 Data Sources

We rely on several data sources in order to reconstruct sectoral balance sheets, that is assets minus liabilities of each institutional sector, of countries across the globe.

We start from authors' works who assemble full balance sheets in subsection 3.1, mostly built upon official statistics, but also historical sources, which align with the SNA 2008 guidelines (United-Nations, 2010; Alvaredo et al., 2024). It is however often complicated to put together non-financial balance sheets, which is why we also rely on financial balance sheet data made available by National Central Banks and National Statistical Offices or Eurostat, the OECD or the IMF, see subsection 3.2. There are certain wealth components that we infer from additional sources, as explained in subsection 3.3. Finally, we complete our world coverage (for the period 1980-2023) thanks to the imputation method described in subsection 2. Do to so, we exploit a set of variables listed in subsection 3.4.

3.1 Authors' Estimates

There are some countries for which balance sheets were already reconstructed using official balance sheets and/or other official sources. Piketty and Zucman (2014) assemble the balance sheets of Australia (1970-2010), Canada (1970-2010), France (1700-2010), Germany (1870-2010), Japan (1960-2010), Italy (1965-2010), the United Kingdom (1700-2010) and the United States (1770-2010). We update the series up to 2023 using official balance sheets or extrapolating when not available, and follow the previous updates of the series made by Bauluz (2019), Bauluz and Brassac (2020), Bauluz et al. (2021) and Bauluz et al. (2023).

For the United States, we build upon the data sources and methodology from Piketty et al. (2018),[12] to extend their series until 2023. Albers et al. (2022) revise and update the German series from 1895 to 2018. We further update these series up to 2023, following the same assumptions as the authors. Waldenström (2017) and Artola Blanco et al. (2021) respectively reconstruct the

[12]Last updated in February 2022, see: https://gabriel-zucman.eu/usdina/.

balance sheets of Sweden (1810-2014) and Spain (1900-2017) and have updated their series up to 2022.[13] and 2023.[14] We therefore also update Swedish data up to 2023 by making use of official balance sheets. Baselgia and Martínez (2020) build the balance sheet of Switzerland since 1900 and we rely on their series for the time frame and asset categories that are not available through official online data sources. In particular, we use their series of net private wealth (1900-1999), public non-financial assets (1990-2018), public financial assets, public financial liabilities and net public wealth (1990-1998). We update Swiss financial wealth series with official data up to 2023 and extrapolate the non-financial ones. We opt for the same procedure for Ireland (1995-2019) to extend up to 2023 the series produced by Daly and Morgan (2021). For the Netherlands, Toussaint et al. (2022) put together the balance sheets for the Netherlands (1853-2019), that we update up to 2023 using official balance sheets.

Novokmet et al. (2018a), Kumar (2019), Chatterjee et al. (2020), and Mo et al. (2024) respectively reconstruct the balance sheets of Russia (1905-2016), India (1860-2012), South Africa (1975-2018), and China (1979-2020).[15] Except for China, we update these series up to 2023 for Russia, 2020 for India, and 2023 for South Africa using official balance sheets or extrapolating when not available. We also add together official financial balance sheets for Brazil (2005-2021), Chile (2003-2023), and Colombia (1997-2023) with data from Carranza et al. (2023) on private non-financial assets in Brazil (1999-2018; which we extend up to 2021 using the same methodology) and private wealth in Uruguay (2010-2016).

For Russia, we also rely on Novokmet et al. (2018b) to cover the period 1980-1995. More specifically, we use data from Novokmet et al. (2018b) going back to 1980 together with some additional assumptions in order to provide estimates of all fourteen core asset and debt types for which we provide full world coverage since 1980-2023: private housing (*pwhou*), private agricultural land (*pwagr*), private other domestic capital (*pwodk*), private fixed-income assets (*pwfiw*),

[13] See: https://www.dropbox.com/s/pnjgdw67k3r1nq2/SNWD.xlsx?dl=0. Financial sectoral balance sheets are actually updated up to 2023, but not the non-financial ones.

[14] See: https://sites.google.com/view/spainwealthdatabase/.

[15] For China, Mo et al. (2024) revise, improve and extend both backwards and onwards the previous national balance sheet produced by Piketty et al. (2019).

private equity (*pweqi*), private pension assets (*pwpen*), private debt (*pwdeb*), government non-financial assets (*gwnfa*), government financial assets (*gwfin*), government debt (*gwdeb*), corporate non-financial assets (*cwnfa*), corporate financial assets (*cwfin*), corporate non-equity liability (*cwdeb*), and corporate equity liability (*cwdeq*) (see subsection 2.2). Novokmet et al. (2018b) estimate private, public and national (market and book values) wealth since 1980. National wealth is, in turn, broken down between net foreign assets, private offshore wealth and domestic capital: housing, agricultural land and other domestic capital. For private and public wealth, financial assets and debts are also provided.

We make the following additional assumptions to achieve full coverage of our fourteen core variables. For private wealth, we assume that the shares of fixed-income assets (*pwfiw*), equities (*pweqi*), and pension assets (*pwpen*) relative to financial assets (*pwfin*) remain constant before 1995. For the public sector, Novokmet et al. (2018b) assume a similar level of public wealth in 1980 and 1990 at around 300% of national income. We, therefore, assume that the share of each wealth subcomponent remains constant over that period. Between 1990 and 1995, we linearly interpolate as a share of national income public wealth subcomponents. For corporate wealth, we compute residual corporate wealth as national book-value wealth minus national market-value wealth. Before 1995, we assume that corporate financial assets (*cwfin*) are equal to corporate non-equity liabilities (*cwdeb*). We set both corporate financial assets and corporate non-equity liabilities to zero for the period 1980–1990, implying that corporate book value is equal to corporate non-financial assets in those years. Between 1990 and 1995, we linearly interpolate corporate financial assets and corporate non-equity liabilities as a share of national income. In turn, we compute the market value of corporations (*cwdeq*) as the residual from domestic net financial assets minus net foreign assets, i.e.: $cwdeq = pwfin + cwfin + gwfin - pwdeb - cwdeb - cwdeq - gwdeb - nwnxa$.

In addition, we make a decision regarding private offshore wealth (*pwoff*) in Russia, for which data is available from 1992 onwards. Russia is the only country worldwide for which the WID includes offshore wealth estimates. The reason for including offshore assets in Russia (and not in other countries) is that offshore wealth in Russia is exceptionally large from an international

perspective (up to 50% of household financial assets in recent years) and we have an estimate of it (in many countries, we lack this type of data). Excluding offshore assets would significantly bias any analysis of Russia's wealth. However, our benchmark series of foreign assets, which uses data from the IIP (Nievas and Sodano 2024), does not include offshore assets. Since we aim to preserve the integrity of the IIP data—ensuring that, at the global level, foreign assets and debt fully cancel out—we choose to classify Russia's offshore assets within private other domestic capital (*pwodk*). In other words, we classify them as non-financial assets rather than household financial assets. This ensures that domestic financial assets remain equal to foreign assets, which do not include offshore wealth.

For India, in addition to the series of national wealth from Kumar (2019), we provide data for the household sector covering the period 1991-2020. For financial assets and liabilities, we use OECD Financial Accounts for the years 2012-2020. We extend the series back to 1991 using the growth rate for the equivalent categories in the All-India Debt and Investment Survey (AIDIS), which counts two waves before the one of 2012: 1991 and 2002. For non-financial assets, we estimate the value of housing, agricultural land, and other non-financial assets from the AIDIS in 1991, 2002 and 2012. We extend the housing series forward to 2020 using the house price index collected by the BIS ('Residential property prices'), combined with a series of population growth (a proxy for new residential investment). For agricultural land and other non-financial assets post-2012, we assume that they have remained constant as a share of national income. Note that the same procedure is also followed to extend the Russian series of household non-financial assets since 2015, and we use average dwelling price series from BIS.

Finally, there are four countries for which we bring together full sectoral balance sheets by ourselves built upon official statistics: Czech Republic (1993-2023), South Korea (1996-2023), Mexico (2004-2022) and Taiwan (2006-2022). We are also able to compute private net wealth for Hungary (1996-2023), built upon data drawn from the Hungarian Central Statistical Office and Eurostat.

3.2 Financial Assets and Liabilities

To reconstruct financial balance sheets, we rely when possible on official balance sheets, which are usually published by National Central Banks or National Statistical Offices. When official balance sheets are not available, we rely on other official sources. In what follows, we detail the availability of sources and the methods used for countries for which partial or complete data are available.

3.2.1 Official Financial Accounts

We have collected official financial balance sheets by institutional sector and asset type for the following countries: Albania (2014-2022), Austria (1996-2023), Belgium (1996-2023), Bulgaria (1998-2023),[16] Croatia (1996-2023), Cyprus (1996-2023), Czech Republic (1993-2023), Denmark (1995-2023), Estonia (1996-2023), Finland (1996-2023), Greece (1996-2023), Hungary (1990-2023), Iceland (2004-2023), Israel (2011-2021), Latvia (1993-2023), Lithuania (1996-2023), Luxembourg (1996-2023), Malta (1996-2023), Mexico (2004-2022), New Zealand (2008-2022), North Macedonia (2014-2022), Norway (1996-2023), Poland (1996-2023), Portugal (1995-2023), Romania (1996-2023), Singapore (1996-2023), Slovakia (1996-2023), Slovenia (1996-2023), South Korea (2008-2023), Taiwan (2001-2022), and Turkey (2011-2023). The countries for which we rely on authors' estimates do also have official financial accounts for the recent period. It is the case of: Australia (1990-2023), Brazil (2005-2021), Canada (1991-2023), Chile (2003-2023), China (2000-2020), Colombia (1997-2023), France (1996-2023), Germany (1996-2023), Italy (1996-2023), India (2012-2020), Ireland (2002-2023), Japan (1995-2022), the Netherlands (1996-2023), Russia (2012-2023), South Africa (1976-2023), Spain (1971-2022), Sweden (1981-2023), Switzerland (2000-2023), the United Kingdom (1988-2023), and the United States (1947-2023).

3.2.2 International Monetary Fund Statistics (IMF GFS & PSBS)

For countries for which official financial balance sheets are not available, we need to rely on other sources. The International Monetary Fund (IMF) publishes rich financial statistics for a much

[16] Bulgarian official data actually start in 1995/6 but we disregard them as they appear to be unrealistic.

larger set of countries than those available in official financial balance sheets. In particular, we rely on three main data sources: the *Government Finance Statistics*, which include the financial balance sheets of the government sector, the *Global Debt Database*, which provides information for financial liabilities of the general and / or central government, and the *Public Sector Balance Sheet Database*, which also includes the balance sheets of the government sector.

Government Finance Statistics (GFS)

The Government Finance Statistics (GFS) database contains detailed government data on revenues, expenditures, transactions in financial assets and liabilities, and balance sheet data for all reporting countries in the framework of the Government Finance Statistics Manual 2014 (GFSM 2014). The database includes data for the general government sector and its subsectors (i.e., central government (budgetary/extra-budgetary central government and social security funds), local government and state government). GFS data are compiled by country authorities and reported to the IMF Statistics Department annually.

We rely on these statistics for countries for which official data balance sheets are not available. We prefer this database over the *Monetary and Financial Statistics* (MFS) database for the government sector, as it contains information for the full balance sheet by financial instrument.

The countries for which information for the general government is available and we rely on are the following: Belarus (Assets: 2014-2019, Liabilities: 2005-2019), El Salvador (2005-2019), Indonesia (2008-2019), Kazakhstan (Assets: 2013-2019, Liabilities: 2010-2019), Kyrgyzstan (2014-2018), Moldova (Assets: 2005-2019, Liabilities: 2002-2019), Mongolia (2014-2018), Morocco (Liabilities: 2006-2011), Seychelles (2008-2015), Thailand (2012-2019), Uganda (Assets: 2004-2019, Liabilities: 1998-2019), Ukraine (2008-2019), United Arab Emirates (Assets: 2013) and Uruguay (2001-2019).

The countries for which information only for the budgetary central government is available and we rely on are the following: Anguilla (Liabilities: 2005-2014), Armenia (Assets: 2019, Liabilities: 2003-2019), Bahamas (Liabilities: 1990-2000; 2006-2019), Barbados (Asstes: 2005-

2015, Liabilities: 2004-2015), Bolivia (Assets: 2003-2007, Liabilities: 1998-2007), Bosnia and Herzegovina (2011-2019), Burkina Faso (2018-2019), Costa Rica (Assets: 2008-2019, Liabilities: 1998-2001, 2008-2018), Dominican Republic (2006, 2018-2019), Ethiopia (2013-2019), Iraq (2015-2019), Jamaica (Liabilities: 1990-2019), Jordan (Assets: 2008-2019, Liabilities: 1995-2019), Montserrat (Liabilities: 2000-2014), Mozambique (2016-2019), Oman (Assets: 2010-2013, Liabilities: 2003-2013), Republic of Congo (2009-2010) and Serbia (2007-2012).

Finally, the countries for which only information for the state government is available and we rely on are Micronesia (2008-2019) and Peru (Assets: 2006-2019, Liabilities: 2009-2019).

Public Sector Balance Sheet (PSBS)

The Public Sector Balance Sheet (PSBS) Database is an alternative source on public wealth statistics by financial instrument, which was developed in the context of the October 2018 Fiscal Monitor. The dataset is compiled using the conceptual framework of the IMF's Government Finance Statistics Manual 2014 (GFSM 2014), so that it is also fully consistent with SNA. The two government sectors covered are the general and the central government. The set of countries covered is smaller and the time frame shorter, so that we only rely on these statistics when not available in GFS.

The only two countries for which information on public wealth in available in PSBS and we rely on are thus Bhutan (2000-2016) and Georgia (2012-2016).

3.3 Wealth Subcomponents

In the present section, we list the variables and data sources that we make use of directly to retrieve certain wealth components for some countries.

3.3.1 Agricultural Land (*pwagr*, *nwagr*)

Authors' Estimates

For some countries, we rely on country-specific studies that include estimates of agricul-

tural land and that are published in the World Inequality Database: Chile (Carranza et al., 2023), China (Mo et al., 2024), Denmark (Jakobsen et al., 2020), India (Kumar, 2019), Ireland (Daly and Morgan, 2021), Norway (Alstadsæter et al., 2019), Russia (Novokmet et al., 2018a), Spain (Artola Blanco et al., 2021), Sweden (Waldenström, 2017), the UK (Piketty and Zucman, 2014; Bauluz, 2019), Uruguay (Carranza et al., 2023), and the US (Piketty and Zucman, 2014; Bauluz, 2019).

Moreover, we have extended the original series for Denmark and Norway up to 2023 by making use of the same assumptions as the authors. That is, we compute agricultural land as 10 times the value of cultivated biological resources. We follow the same procedure for Finland. In Russia, a country for which data were available until 2015, we assume that agricultural land has remained constant as a share of national income during the period 2016-2023. For India, we estimate agricultural land owned by households in 2012 using the All-India Debt and Investment Survey (AIDIS). This is the same data source used by Kumar (2019) to estimate national wealth in India. As documented by Kumar (2019), close to all agricultural land in India is owned by the household sector. We extend these estimates for the period 2013-2020, assuming that agricultural land has remained constant as a share of national income at its 2012 level.

Global Land Inequality Project

Bauluz et al. (2020) estimate agricultural land and its distribution for a set of developing countries based on combining survey data and agricultural censuses. For the countries covered in their study, we use their agricultural land values estimates. Missing years are extrapolated using the growth rate of Gross Value Added in Agriculture (from FAO Statistics). Note that this project also analyzes China and India. Their estimates are consistent with those from Piketty et al. (2019) and the ones we have produced based on the AIDIS survey for India.

The countries for which we rely on the Global Land Inequality Project are the following: Bangladesh (1990-2019), Ethiopia (1990-2019), Indonesia (1990-2019), Malawi (1990-2019), Nicaragua (1990-2019), Nigeria (1990-2019), Pakistan (1990-2019), Vietnam (1990-2019).

Official Non-financial Accounts

Agricultural land is only reported in official balance sheets for a few countries. In some countries, no distinction is made between Land under cultivation (AN.2112) and its three subcomponents: Agricultural land (AN.21121), Forestry land (AN.21122), and Surface water used for aquaculture (AN.21123). In those cases, we approximate agricultural land using land under cultivation. In other cases, we approximate agricultural land as a residual from total land (AN.211) net of built land (Land underlying buildings and structures (AN.2111).

The countries for which official non-financial accounts are available are the following: Australia (1989-2023) (total land minus land underlying dwellings), Belgium (1996-2023), Canada (1990-2023), Czech Republic (1993-2023),[17] Mexico (2004-2022),[18], the Netherlands (1995-2023) (land under cultivation), France (1978-2023) (land under cultivation) Germany (1999-2023) (total land minus land underlying buildings and structures), Italy (2002-2023) (land under cultivation), Japan (1994-2022) (land under cultivation excluding forests), Slovenia (1996-2023) (land under cultivation), and South Korea (1996-2023). For details on the construction of the series for Canada, France, Germany, Italy, and Japan, see Bauluz (2019), and Bauluz and Brassac (2020).

Eurostat and FAO

In a set of European countries, we are able to estimate the value of agricultural land multiplying agricultural land area (in hectares) by land prices per hectare. We gather the data on hectares and prices from Eurostat and, in few cases, from national statistical offices.

We proceed in two steps. First, we estimate the total value of agricultural land. Second, we decompose this land across institutional sectors.

Regarding the first step. The ideal scenario would be to multiply hectares of arable land,

[17] In Czech Republic, we remove public natural resources (excluding land), as the latter appears to be implausibly high in comparisons with other countries.

[18] In Mexico, in comparison with previously available data, public mineral, energy and water resources experienced dramatic upwards revaluations which are unrealistic. We therefore rely on data from our 2021 update (see Bauluz et al., 2021), which we extrapolate up to 2022. Further work to understand the value of natural capital in Mexico would be desirable.

permanent grassland, and permanent crops (the three types of agricultural land) with prices on each land type. However, prices on permanent crops are not available, reason why we approximate the price of permanent crop land using the average price of arable land and permanent grassland, as recommended by Eurostat-OECD (2015, section 8.19).[19] We follow this procedure in the following countries: Bulgaria (2004-2023), Croatia (2008-2023), Estonia (2004-2023), Greece (1996-2023), Hungary (2001-2023), Lithuania (2004-2023), Luxembourg (1996-2023), Poland (2004-2023), Romania (2004-2023) and Slovakia (2001-2023).

In some cases, we only have price information for total agricultural land area,[20] and we multiply average price of total agricultural land by the sum of arable land, permanent grassland, and permanent crops (e.g. Malta 2004-2023). We follow the same approach when both prices and land area are only available for total agricultural land, without distinguishing the share of agricultural land by types of use (e.g. Latvia 2004-2023).

In a second step, we allocate the share of total agricultural land that is owned by different institutional sectors. For Estonia, Hungary and Lithuania, we use data on the area of agricultural land that is owned by different sectors from countries' statistical departments. For the remaining countries, we rely on FAO's World Agriculture Census (e.g. Deininger and Squire, 1998). FAO censuses report the amount of land *operated* by individual and juridical persons, respectively. Note that this information does not refer to the sector that *owns* the land. We use this information on land operated as a proxy for the sector owning the land, and allocate individually-held land to households and the remaining land to corporations. If better data on the decomposition of agricultural land across sectors become available, we will adjust our estimates accordingly.

UN Inclusive Wealth Report

For countries for which we do not have estimates from official balance sheets, the Global

[19] Note that the area covered by permanent crops tends to be fairly small, as explained by Eurostat-OECD (2015, pg. 126): "in most countries permanent grassland and arable land are by far the most important types of agricultural land; their definitions are mentioned below. Areas devoted to permanent crops are usually less important, in some countries even negligible".

[20] Total agricultural land area is referred to in Eurostat as Utilized Agricultural Land, and is the sum of sum of arable land, permanent grassland, permanent crops, and kitchen gardens.

Land Inequality project, WID's authors, or from us built using Eurostat and FAO's data, we rely on estimates of agricultural land from United Nation's Inclusive Wealth Report (Programme, 2015), whenever available. This report estimates agricultural land in 1990, 1995, 2000, 2005, 2010, and 2014 for a large number of countries. UN's estimates are obtained using Net Present Value, a method recommended by OECD to estimate natural resources.[21] As we show in the next subsection (see below), the correlation between UN's estimates of agricultural land values and Gross Value Added in agriculture from FAO is relatively high (see also Figure 1). To split a country's total land value across institutional sectors, we use census data from FAO, which generally decomposes agricultural land area across sectors. One caveat of this procedure is that this decomposition refers to the sector operating the land and not to the sector owning the land. Nonetheless, FAO also reports the share of total agricultural land that is both owned and operated by the same individual or company. In developing countries, this share is on average above 80%. Hence, we use the sectoral decomposition of land operators as a proxy for landowners.

The countries for which we rely on data from the UN Inclusive Wealth Report are the following: Afghanistan (1990-2019), Austria (1990-2019), Belize (1990-2019), Bolivia (1990-2019), Botswana (1990-2014), Brazil (1990-2014), Burundi (1990-2014), Cambodia (1990-2014), Cameroon (1990-2014), Colombia (1990-2014), Congo (1990-2014), Costa Rica (1990-2014), Cote d'Ivoire (1990-2014), Dominican Republic (1990-2014), Ecuador (1990-2014), Egypt (1990-2014), El Salvador (1990-2014), Fiji (1990-2014), Ghana (1990-2014), Guyana (1990-2014), Honduras (1990-2014), Iceland (1990-2014), Iran (1990-2014), Iraq (1990-2014), Israel (1990-2014), Jamaica (1990-2014), Jordan (1990-2014), Kenya (1990-2014), Laos (1990-2014), Malaysia (1990-2014), Mali (1990-2014), Mongolia (1990-2014), Morocco (1990-2014), Mozambique (1990-2014), Nepal (1990-2014), New Zealand (1990-2014), Niger (1990-2014), Panama (1990-2014), Paraguay (1990-2014), Peru (1990-2014), Philippines (1990-2014), Portugal (1990-2014), Rwanda (1990-2014), Saudi Arabia (1990-2014), Senegal (1990-2014), South Africa (1990-2014), Sri

[21] "Often, market prices do not exist for natural resources and the net present value of future benefits accruing from holding or using the asset constitutes the next best solution towards putting a balance sheet value to the asset" (OECD, 2009, pg. 166).

Lanka (1990-2014), Switzerland (1990-2014), Tanzania (1990-2014), Thailand (1990-2014), Togo (1990-2014), Trinidad and Tobago (1990-2014), Tunisia (1990-2014), Turkey (1990-2014), Venezuela (1990-2014), Yemen (1990-2014), and Zambia (1990-2014).

3.3.2 Pension Assets (OECD; *pwpen*)

In addition to estimates of pension assets available from official balance sheets, we rely on the OECD Global Pension Statistics (see OECD, 2024). The database compiles estimates of pensions for more than 90 countries over the period 2001-2023. The definition, concept, and valuation of pension assets used by OECD follows SNA-2008 standards. The countries for which we use OECD data are the following: Angola (2014-2023), Argentina (2002-2007), Armenia (2014-2023), Bolivia (2002-2010), Botswana (2013, 2017-2023), Costa Rica (2001-2023), Dominican Republic (2005-2023), Egypt (2008, 2013-2023), El Salvador (2002-2021), Georgia (2019-2023), Ghana (2014-2023), Guyana (2008-2023), Hong Kong (2001-2023), Indonesia (2001-2023), Isle of Man (2016-2022), Jamaica (2004, 2006-2023), Kazakhstan (2001-2005, 2018-2023), Kenya (2001-2023), Kosovo (2012-2023), Lesotho (2011-2012, 2022), Liechtenstein (2007-2023), Macao (2019-2023), Malawi (2013-2023), Malaysia (2012-2023), Maldives (2010-2023), Mauritius (2012-2013, 2015-2017, 2019-2022), Morocco (2018, 2021-2023), Mozambique (2015-2023), Namibia (2010-2014, 2016-2023), Nigeria (2007-2023), Pakistan (2007-2022), Panama (2008, 2010-2022), Papua New Guinea (2013, 2017-2018, 2022-2023), Peru (2001-2023), Serbia (2006-2023), Suriname (2002-2006, 2016-2023), Tanzania (2013-2017), Thailand (2001-2021), Trinidad and Tobago (2006-2012, 2019-2020), Uganda (2014-2021), Ukraine (2003, 2008, 2010-2011, 2017-2020), Uruguay (2002-2008, 2017-2023), Zambia (2001-2023), and Zimbabwe (2019-2022).

3.3.3 Government Non-financial Assets (Eurostat & IMF ICSD; *gwnfa*)

The three IMF databases cited here (GFS and PSBS above; GDD below) provide us with data on governments' net financial wealth for many countries across the globe. But whenever data on non-financial assets are not available from these sources or authors' estimates, we extrapolate them

from Eurostat data on fixed assets or the IMF Investment and Capital Stock Dataset (ICSD). In particular, we draw from the latter public capital stock series, built following the Perpetual Inventory Method (PIM; see Amaglobeli et al., 2021; Kamps, 2006; Gupta et al., 2014). We therefore do not take the data as such but rather make use of them as the basis for our estimations; with: *gwnfa* ≈ 1.5 * fixed assets (see subsection 2.4).

Eurostat Fixed Assets

Countries for which government non-financial assets are derived from Eurostat data on fixed assets (General government S.13 "Total fixed assets (net)") are: Austria (1995–2022), Belgium (1995–2023), Bulgaria (2000–2021), Cyprus (2012–2021), Estonia (1995–2021), Greece (2010–2021), Croatia (1995–2021), Hungary (1995–2021), Lithuania (2000–2021), Luxembourg (1995–2021), Latvia (1995–2021), Malta (1995–2022), Poland (2012–2021), Portugal (2000–2021), and Romania (2003–2019).

IMF Investment and Capital Stock Dataset

Countries for which government non-financial assets are computed from the IMF Investment and Capital Stock Dataset (ICSD)[22] are: United Arab Emirates (1970–2019), Afghanistan (1970–2019), Antigua and Barbuda (1970–2019), Albania (1970–2019), Armenia (1990–2019), Angola (1970–2019), Argentina (1960–2019), Austria (1960–1994), Azerbaijan (1990–2019), Bosnia and Herzegovina (1990–2019), Barbados (1960–2019), Bangladesh (1960–2019), Belgium (1960–1994), Burkina Faso (1960–2019), Bulgaria (1970–1999), Bahrain (1970–2019), Burundi (1960–2019), Benin (1960–2019), Brunei Darussalam (1970–2019), Bolivia (1960–2019), Brazil (1960–2019), Bahamas (1970–2019), Bhutan (1970-1999, 2017–2019), Botswana (1960–2019), Belarus (1990–2014), Belize (1970–2019), Canada (1960–1970), Democratic Republic of the Congo (1960–2019), Central African Republic (1960–2019), Republic of the Congo (1960–2019), Switzerland (1960–1990), Ivory Coast (1960–2019), Chile (1960–2019), Cameroon (1960–2019), China (1960–1978), Colom-

[22] See: https://data.imf.org/?sk=1ce8a55f-cfa7-4bc0-bce2-256ee65ac0e4.

bia (1960–2019), Costa Rica (1960–2008), Cape Verde (1960–2019), Cyprus (1960–2011), Czech Republic (1990–1992), Djibouti (1970–2019), Denmark (1960–1994), Dominica (1970–2019), Dominican Republic (1960–2019), Algeria (1960–2019), Ecuador (1960–2019), Estonia (1990–1994), Egypt (1960–2019), Eritrea (1990–2019), Ethiopia (1960–2019), Finland (1960–1994), Fiji (1960–2019), Gabon (1960–2019), Grenada (1970–2019), Georgia (1990–2011, 2017-2019), Ghana (1960–2019), Gambia (1960–2019), Guinea (1960–2019), Equatorial Guinea (1960–2019), Greece (1960–2009), Guatemala (1960–2019), Guinea-Bissau (1960–2019), Guyana (1970–2019), Hong Kong (1960–2019), Honduras (1960–2019), Croatia (1990–1994), Haiti (1960–2019), Hungary (1970–1994), Indonesia (1960–2008), Ireland (1960–1995), Israel (1960–2019), India (1960–2019), Iraq (1970–2019), Iran (1960–2019), Iceland (1960–2019), Jordan (1960–2019), Japan (1960–1969), Kenya (1960–2019), Cambodia (1970–2019), Comoros (1960–2019), Saint Kitts and Nevis (1970–2019), South Korea (1960–1995), Kuwait (1970–2019), Kazakhstan (1990–2018), Laos (1970–2017), Lebanon (1970–2019), Saint Lucia (1970–2019), Sri Lanka (1960–2019), Liberia (1964–2019), Lesotho (1960–2019), Lithuania (1990–1999), Luxembourg (1960–1994), Latvia (1990–1994), Libya (1970–2009), Morocco (1960–2019), Moldova (1990–2004), Montenegro (1990–2019), Madagascar (1960–2019), North Macedonia (1990–2018), Mali (1960–2019), Myanmar (1962–2019), Mongolia (1970–2019), Mauritania (1960–2019), Malta (1960–1994), Mauritius (1960–2019), Maldives (1970–2019), Malawi (1960–2019), Mexico (1960–2003), Malaysia (1960–2019), Mozambique (1960–2019), Namibia (1960–2019), Niger (1960–2019), Nigeria (1960–2019), Nicaragua (1960–2019), Netherlands (1960–1994), Norway (1960–1977), Nepal (1960–2019), New Zealand (1960–2006), Oman (1970–2019), Panama (1960–2019), Peru (1960–2019), Papua New Guinea (1960–1994), Philippines (1960–2019), Pakistan (1960–2019), Poland (1970–2011), Portugal (1960–1999), Paraguay (1960–2019), Romania (1960–2002), Serbia (1990–2019), Rwanda (1960–2019), Saudi Arabia (1970–2019), Seychelles (1960–2019), Sudan (1970–2011), Singapore (1960–2019), Slovenia (1990–1999), Slovakia (1990–1999), Sierra Leone (1961–2019), Senegal (1960–2019), Suriname (1970–2011), Sao Tome and Principe (1970–2019), El Salvador (1960–2003), Syria (1960–2011), Swaziland (1970–2019), Chad (1960–2019), Togo (1960–2019), Thailand (1960–2019), Tajik-

istan (1990–2019), Tunisia (1960–2019), Turkey (1960–2019), Taiwan (1960–2005), Tanzania (1960–2019), Ukraine (1990–2008), Uganda (1960–2019), Uruguay (1960–2001), Uzbekistan (1990–2019), Saint Vincent and the Grenadines (1970–2019), Venezuela (1960–2019), Vietnam (1970–2019), Yemen (1989–2019), South Africa (1960–2019), Zambia (1960–2019), and Zimbabwe (1960–2009).

3.3.4 Government Debt (IMF GDD; *gwdeb*)

The Global Debt Database (GDD) comprises total gross debt of the private and public nonfinancial sector for a large set of advanced, emerging and low-income countries. The GDD is more limited in scope for our purpose than GFS, as it does not contain any information on assets and it only includes partial information for liabilities (i.e., loans and debt securities).[23] Hence, we rely on it for countries for which GFS data is inexistent or incomplete for the government sector only.

The countries for which information on debt of the general government is available and we rely on are the following: Cambodia (1995-2022), Egypt (1960-1962, 1970-2022), Georgia (1995-2022), Honduras (1960-2022), Kosovo (2009-2022), Kyrgyzstan (1994-2022), Mauritius (1970-2022), Nicaragua (1997-2022), Nigeria (1968-2022), Panama (1960-2022), Philippines (1960-2022), Saint Vincent and the Grenadines (1970-2022), Saint Kitts and Nevis (1984-2022), Tajikistan (1998-2022), Tanzania (1970-2022), Thailand (1960-2022), United Arab Emirates (1973-2022), Uzbekistan (1998-2022), Venezuela (1960-2022), Vietnam (1991-2022), Yemen (1990-2022).

The countries for which information on debt of the general government is not available, but instead debt of the central government is available and we rely on are the following: Afghanistan (2002-2020), Algeria (1970-2022), Angola (1995-2022), Antigua and Barbuda (1990-2022), Argentina (1960-2022), Azerbaijan (1994-2022), Bangladesh (1973-2022), Bahrain (1974-2022), Belize (1976-2022), Benin (1970-2022), Botswana (1972-2022), Brunei Darussalam (2001-2022), Burundi (1964-2022), Cabo Verde (1981-2022), Cameroon (1970-2022), Central African Republic

[23] For more details on the methodology and definitions, see Mbaye et al. (2018).

(1970-2022), Chad (1970-2022), Comoros (1984-2022), Cote d'Ivoire (1970-2022), Democratic Republic of Congo (1970-2022), Djibouti (1995-2022), Dominica (1975-2022), Ecuador (1990-2018), Equatorial Guinea (1980-2022), Eritrea (1995-2022), Fiji (1970-2022), Gabon (1970-2022), Gambia (1973-2022), Ghana (1962-2022), Grenada (1970-2022), Guatemala (1960-2022), Guinea-Bissau (1986-2022), Guyana (1963-2022), Haiti (1970-2022), Hong Kong (2001-2021), Iran (1970-2022), Kenya (1963-2022), Kuwait (1987-2022), Laos (1976-2022), Lebanon (1970-2020), Lesotho (1970-2022), Liberia (1973-1983, 2000-2022), Libya (1973-2017), Madagascar (1970-2022), Maldives (1976-2022), Mali (1970-2022), Mauritania (1970-2022), Myanmar (1970-2022), Namibia (1989-2022), Nepal (1970-2022), Niger (1970-2022), Pakistan (1960-2022), Papua New Guinea (1970-2022), Paraguay (1970-2022), Qatar (1990-2022), Rwanda (1970-2022), Samoa (1970-2022), Sao Tomé and Principe (1977-2022), Senegal (1970-2022), Sierra Leone (1970-2022), Solomon Islands (1978-2022), South Sudan (2012-2022), Sri Lanka (1960-2022), Saint Lucia (1981-2022), Sudan (1992-2022), Suriname (1971-2022), Swaziland (1970-2022), Syria (1970-2010), Timor-Leste (2012-2022), Togo (1970-2022), Tonga (1985-2022), Trinidad and Tobago (1963-2022), Tunisia (1970-2022), Vanuatu (1981-2022), Zambia (1970-2021), Zimbabwe (1964-2022).

3.3.5 Foreign Assets and Liabilities (*nwnxa*, *nwgxa*, *nwgxd*)

Our foreign wealth series come from Nievas and Sodano (2024), in turn built upon Lane and Milesi-Ferretti (2018)'s Balance of Payments-based "External Wealth of Nations". We refer interested readers to Appendix "A.1 Data coverage" in Nievas and Sodano (2024) for foreign wealth data availability and Nievas and Piketty (2024) for further methodological details about how the authors reach zero net foreign wealth at the world-level.

3.4 Data Inputs for Imputations

We now turn to the variables that serve as inputs for our imputations described in subsection 2. Key information is summarized in Table 5.

Variable	Description	Source
Population	Total individual population	WID
Net national income	Net income that accrues to residents in a country over a given year	WID
Top 10% income share	Share of pretax national income among equal-split adults for the Top 10%	WID
Life expectancy at birth total (years)	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life	World Bank
Urban population (% of total population)	Urban population refers to people living in urban areas as defined by national statistical offices	World Bank
Population density (people per sq. km of land area)	Population density is midyear population divided by land area in square kilometers	World Bank
Capital shares	Net capital shares, defined as operating surplus of all institutional sectors + 25% of household mixed income + net foreign capital income, of (factor-price) net national income	Bachas et al. (2024)
nwgxa & nwgxd	Foreign assets & liabilities respectively, see section 3.3.5	Nievas and Sodano (2024)
gwcap	IMF public capital stock series, see section 3.3.3	IMF ICSD
pwcap	IMF private capital stock series, similar to what is described in section 3.3.3 except that private refers here to both household and corporate sectors together	IMF ICSD

Table 5: Summary of Data Inputs for Imputations

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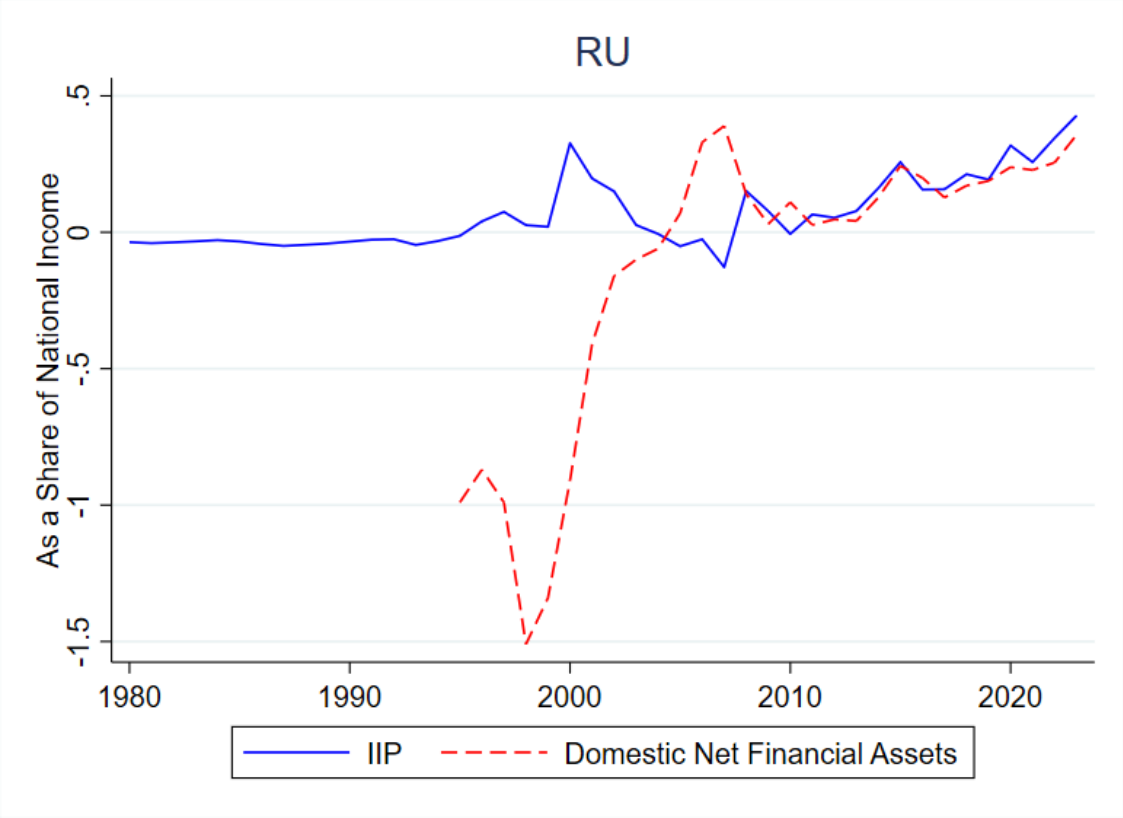
Appendices

A Adjustment of Net Domestic Financial Assets

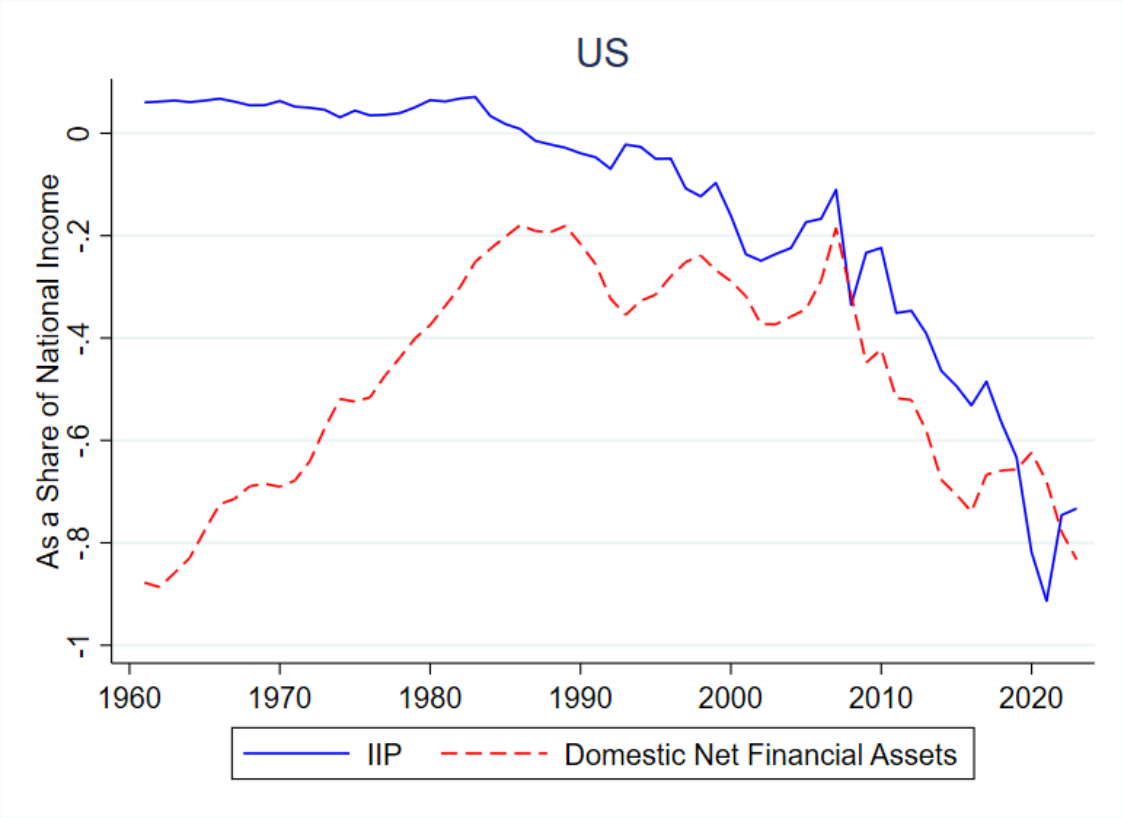
Appendix A shows the 9 out of 52 countries for which we observe data on sectoral financial assets and liabilities and the discrepancy is large between: (i) net financial assets of the national economy (S.1) and the rest of the world (S.2) and (ii) net foreign assets in official financial balance sheets – either looked at from the domestic or foreign sector – and the IIP in the balance of payments. As explained in subsection 2.8, we define the discrepancy as large when it is superior to 30 percentage points of national income and occurs for at least three out of four consecutive years. Under (i) fall pre-2011 Russia and pre-1990s United States and under (ii) Switzerland, Cyprus, Ireland, Iceland, Luxembourg, the Netherlands and Slovakia.

The United States case deserves a specific explanation, as the gap between domestic net financial assets and the IIP grows wider as one goes further back in time and is much wider than what Piketty et al. (2018) showed. The reason is that on the occasion of the 2022:Q4 data release of the Financial Accounts of the United States - Z.1, the Fed revised upwards unidentified miscellaneous liabilities held by nonfinancial corporate businesses (excluding eREITs; series FL103193055) leading to an important deterioration of domestic net financial assets. As the Fed explained in its release highlights: "The unidentified miscellaneous assets and liabilities held by nonfinancial corporate businesses (tables F.103, L.103, B.103, and R.103) have been revised based on new methodology that sets revaluations to zero for these financial instruments. This results in changes to the levels of miscellaneous assets and liabilities. In addition, private pension funds' claims on the corporate sponsor are no longer deducted from the calculation of unidentified miscellaneous liabilities."

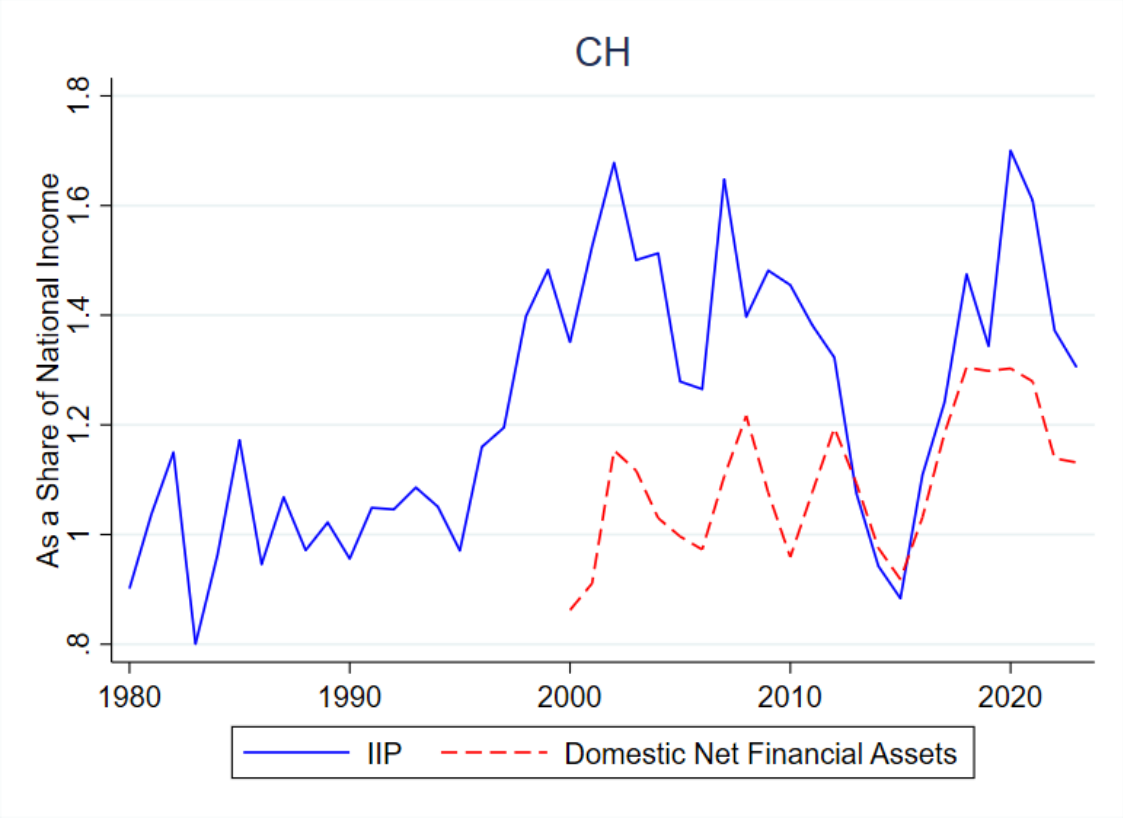
Since we enforce that country-level domestic net financial assets match net foreign assets by adjusting corporate financial assets (*cwfin*) or non-equity liabilities (*cwdeb*), our correction has a more significant impact on corporate net financial assets in these countries cited above.



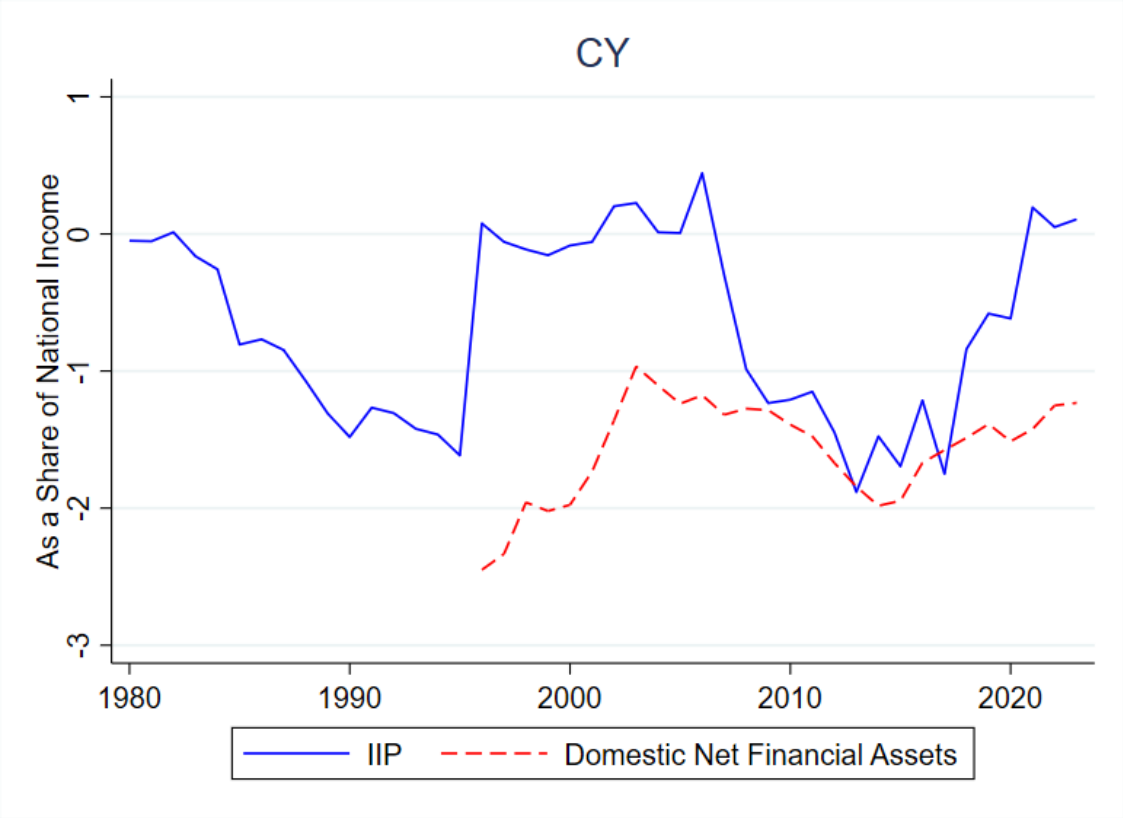
(a) Domestic Net Financial Assets *versus* net International Investment Position in Russia



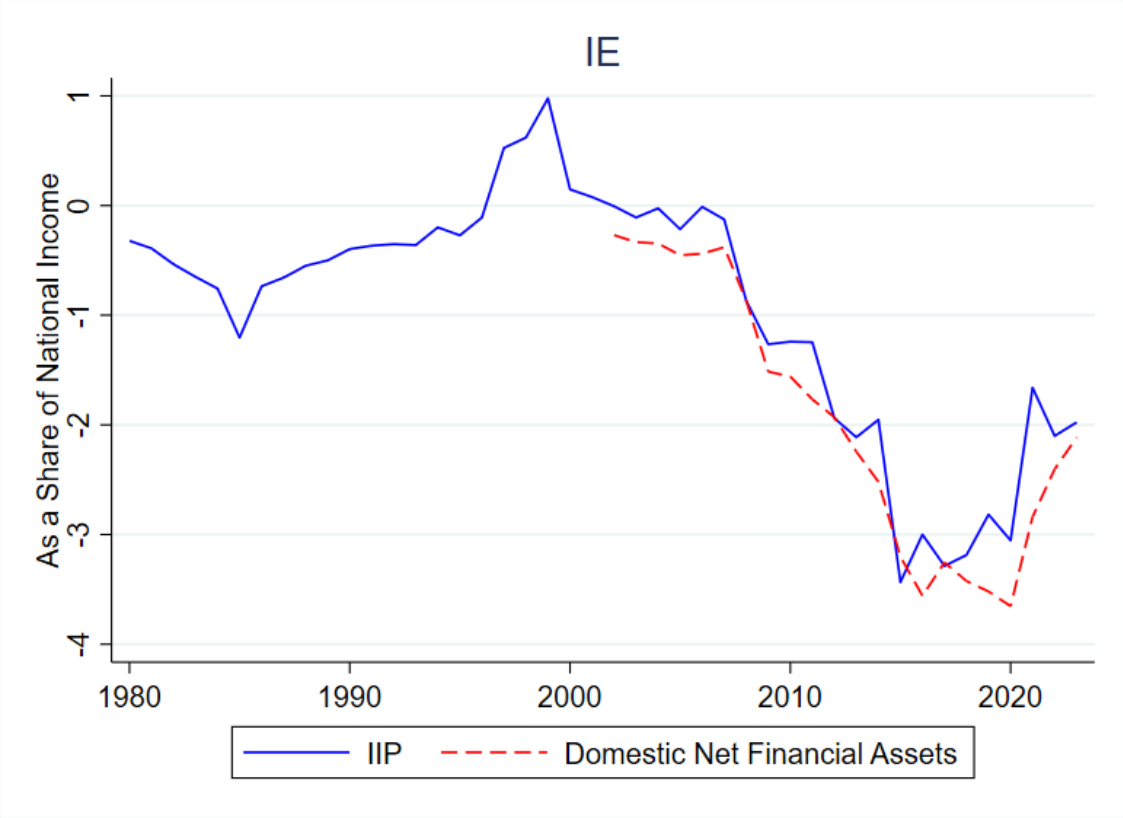
(b) Domestic Net Financial Assets *versus* net International Investment Position in the United States



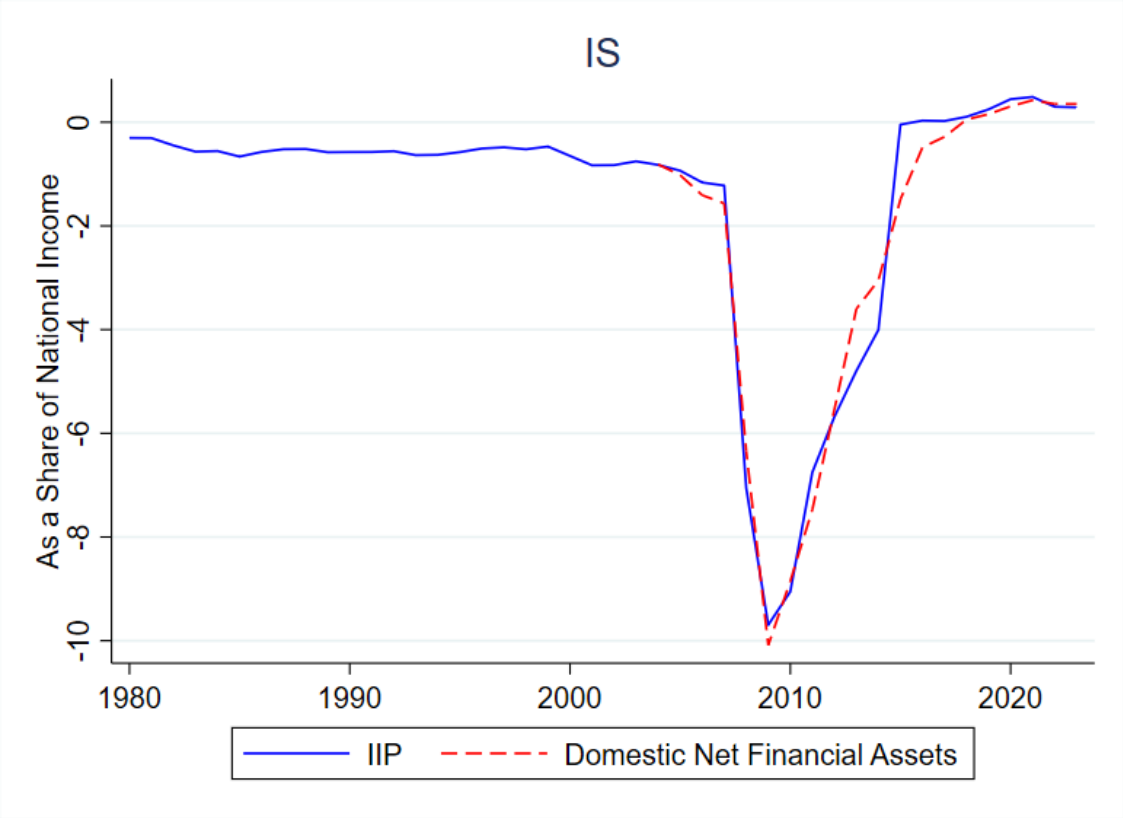
(a) Domestic Net Financial Assets *versus* net International Investment Position in Switzerland



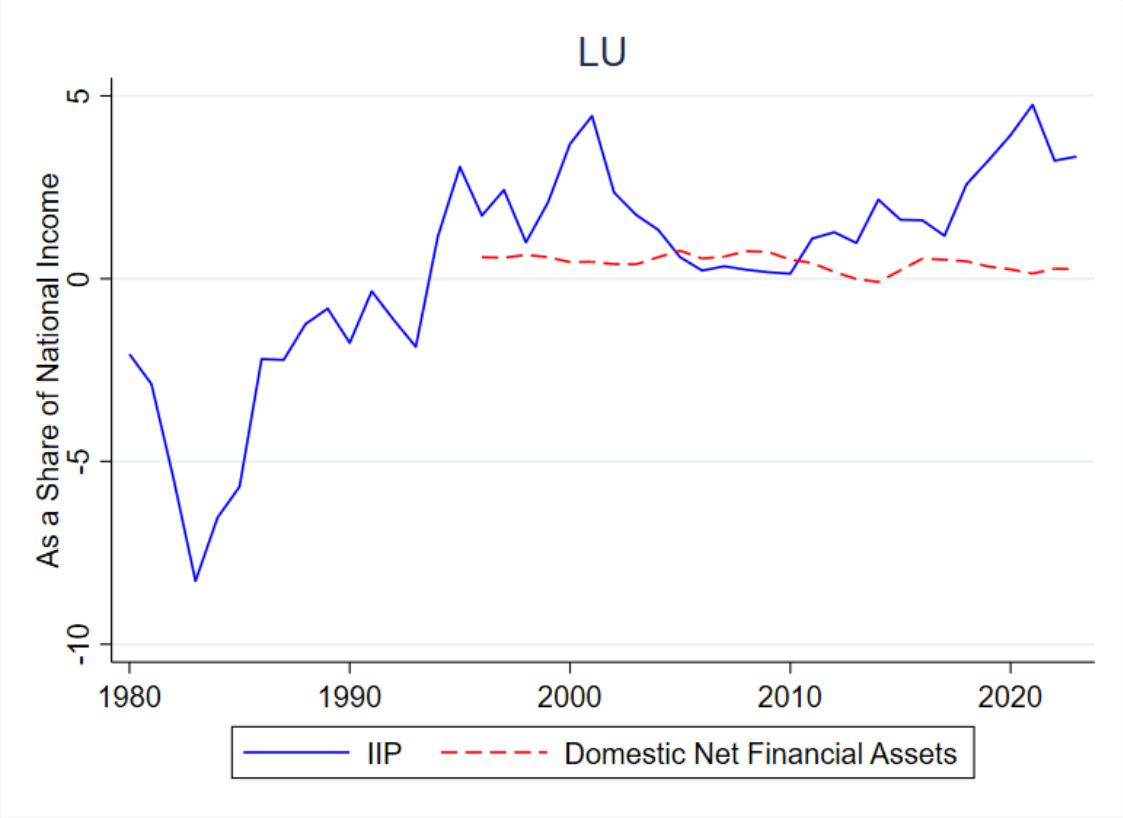
(b) Domestic Net Financial Assets *versus* net International Investment Position in Cyprus



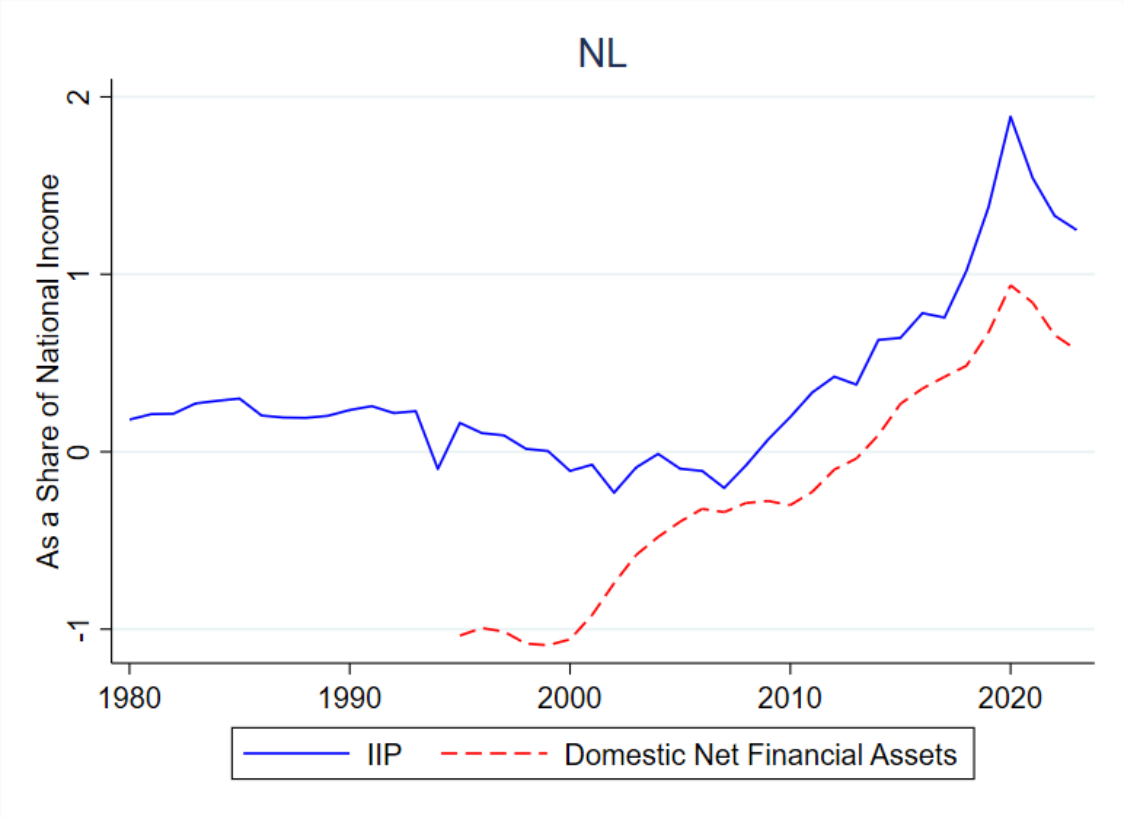
(a) Domestic Net Financial Assets *versus* net International Investment Position in Ireland



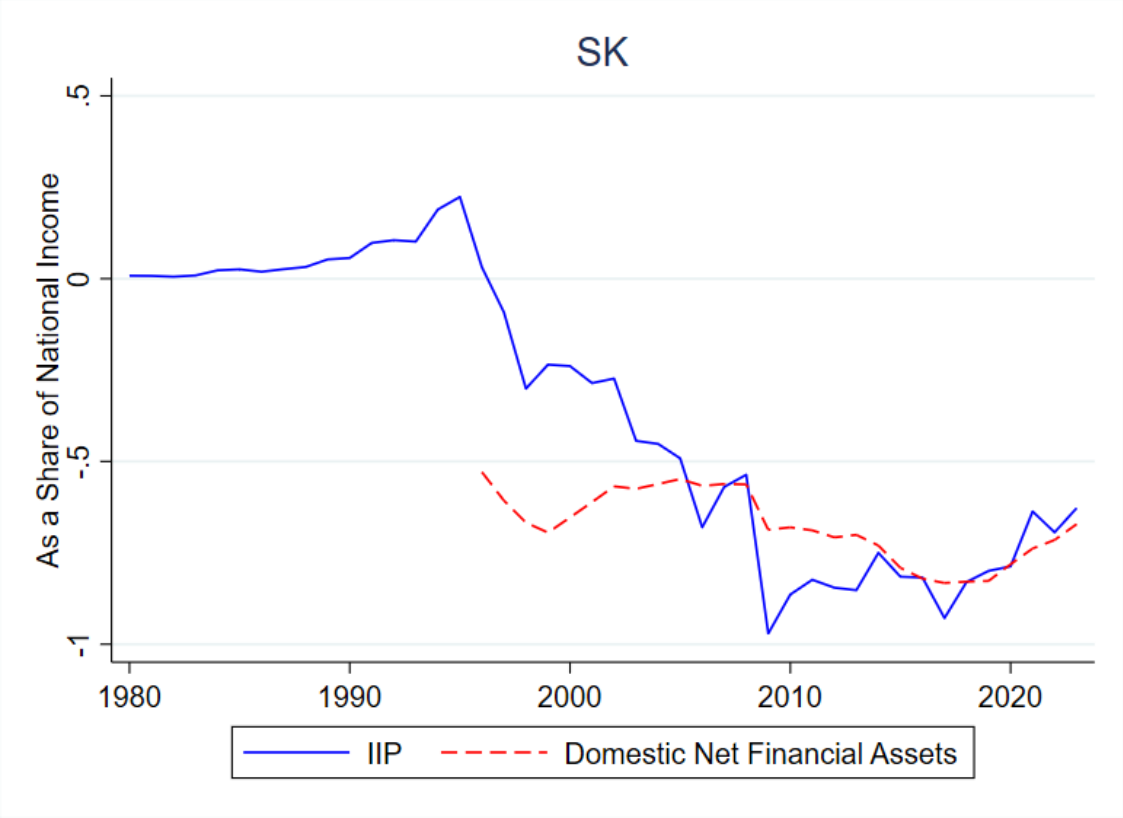
(b) Domestic Net Financial Assets *versus* net International Investment Position in Iceland



(a) Domestic Net Financial Assets *versus* net International Investment Position in Luxembourg



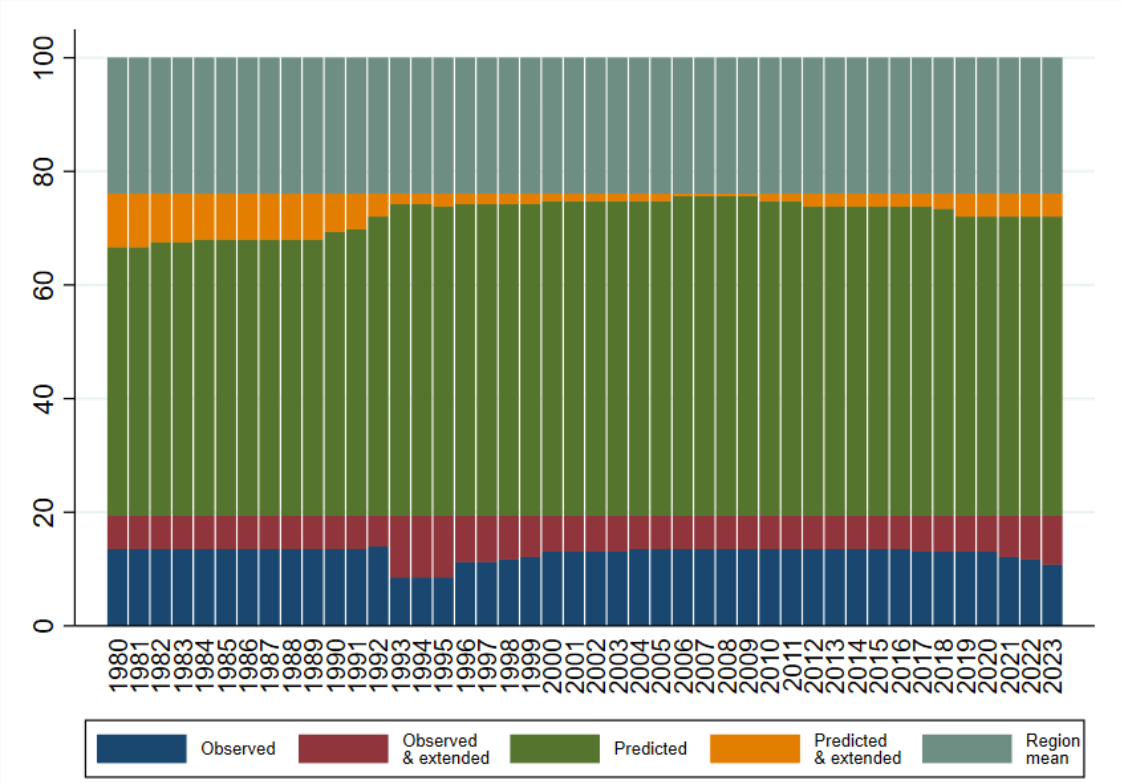
(b) Domestic Net Financial Assets *versus* net International Investment Position in the Netherlands



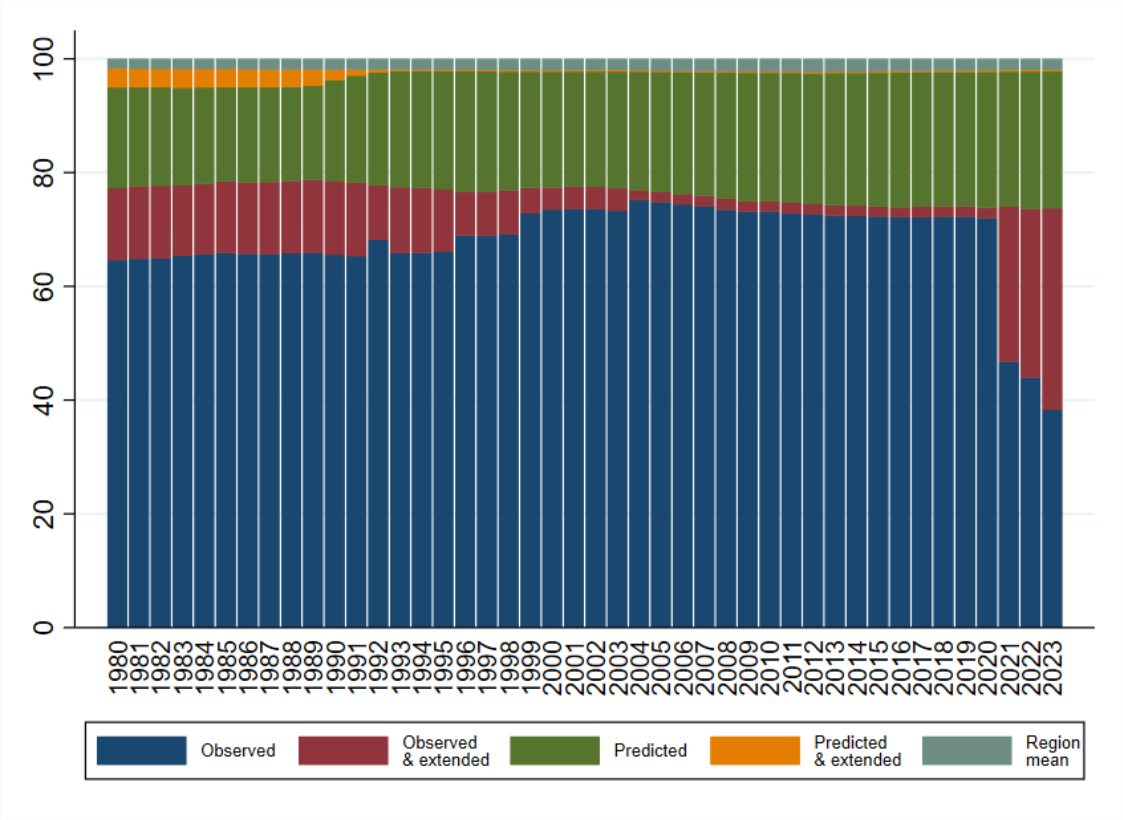
(a) Domestic Net Financial Assets *versus* net International Investment Position in Slovakia

B Additional Observation Type Figures

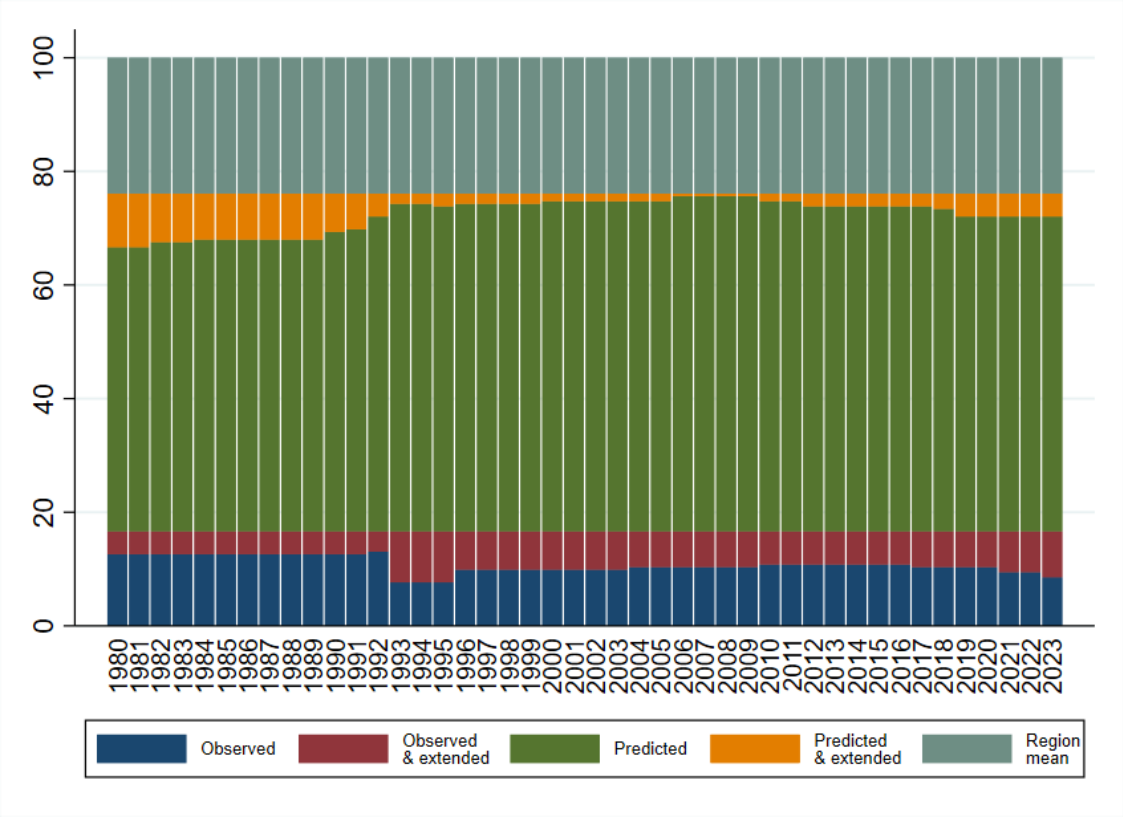
Appendix B displays the share of observed, predicted and extended observations in each year for the whole world since 1980 (unweighted and weighted by PPP net national income).



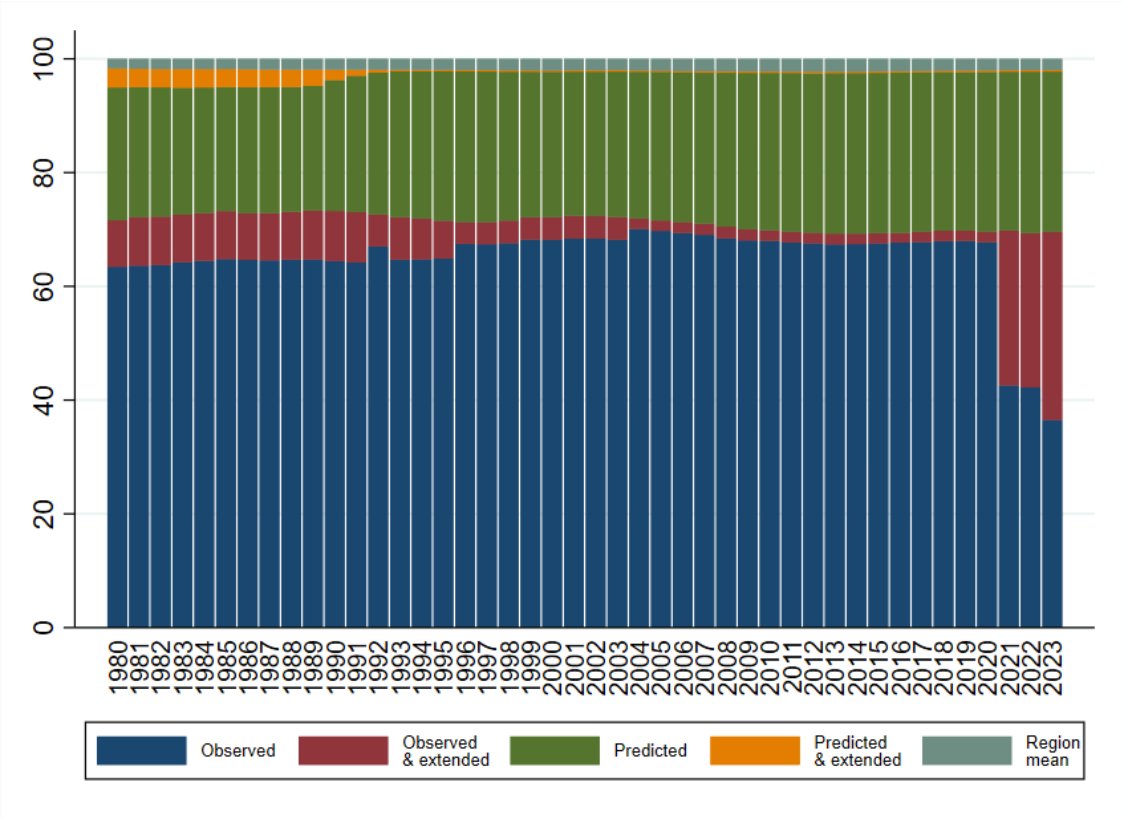
(a) Private Housing Asset (*pwhou*) Observation Types Unweighted



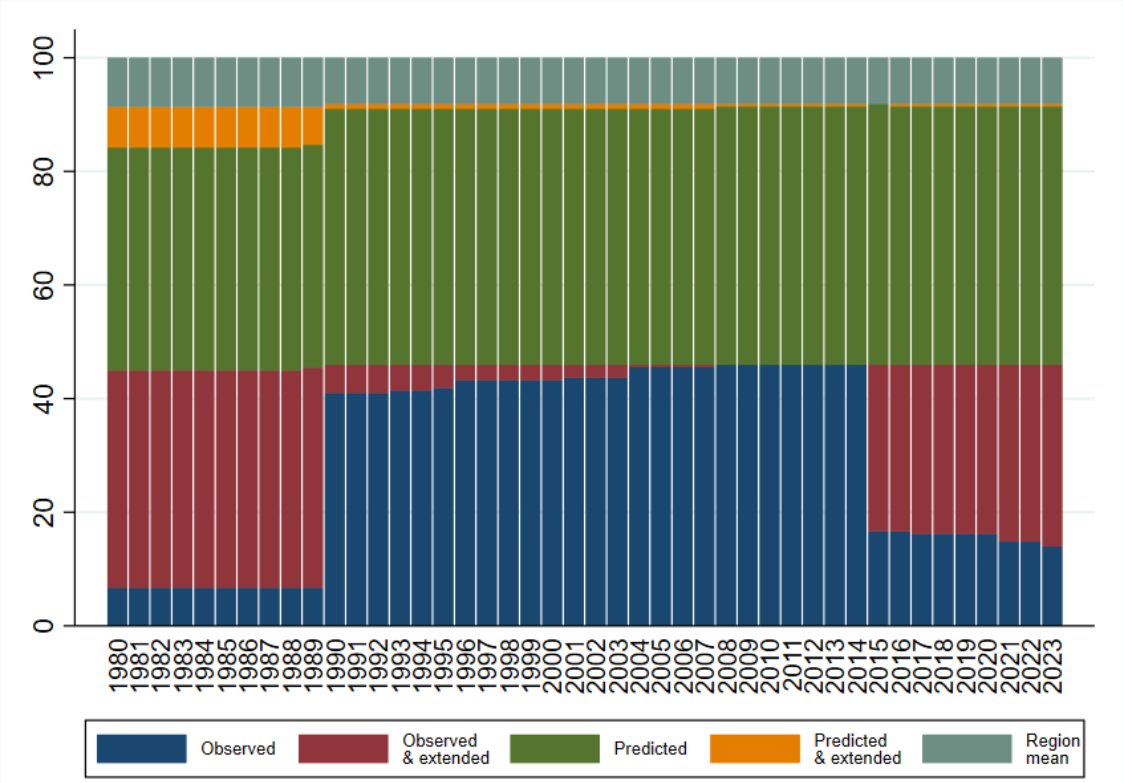
(b) Private Housing Asset (*pwhou*) Observation Types Weighted by PPP National Income



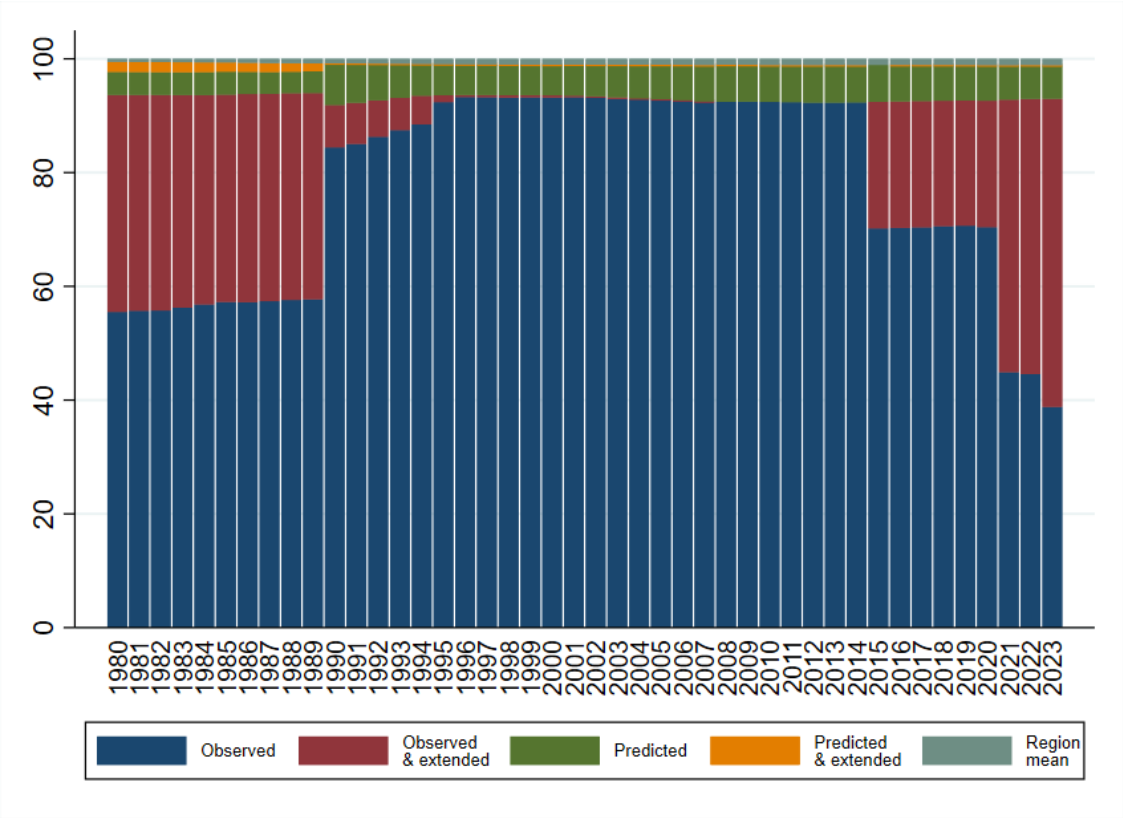
(a) Private Business Asset (*pwbus*) Observation Types Unweighted



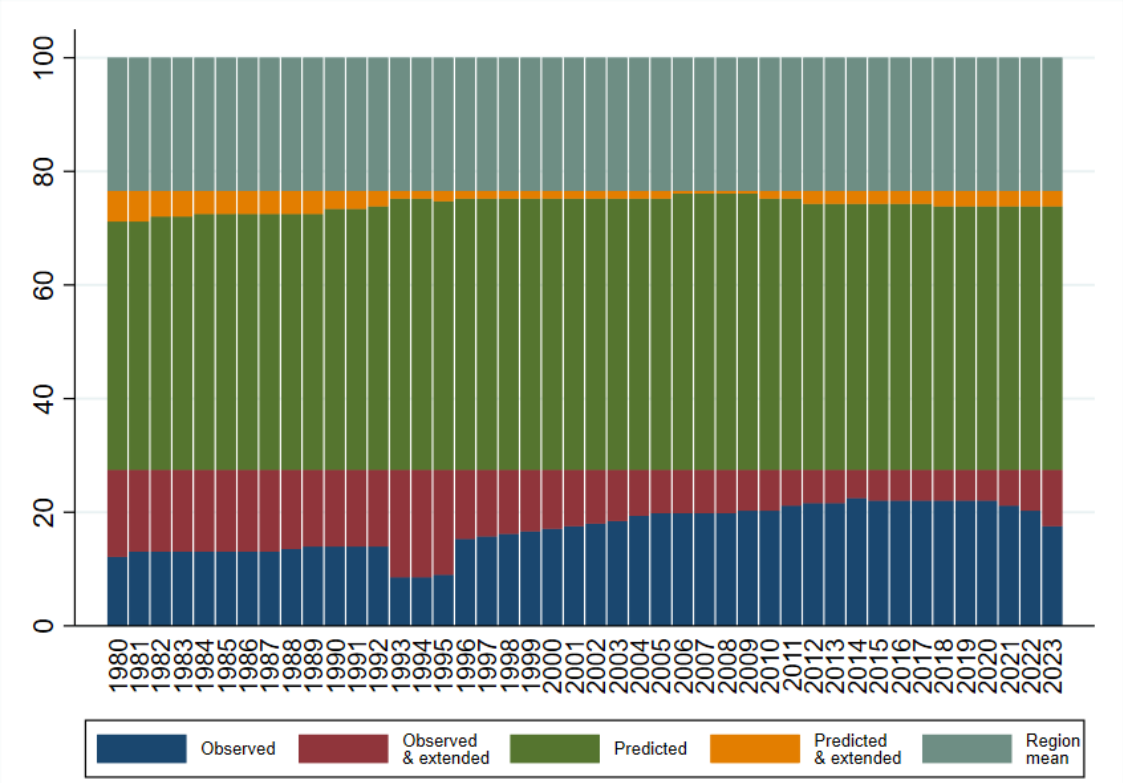
(b) Private Business Asset (*pwbus*) Observation Types Weighted by PPP National Income



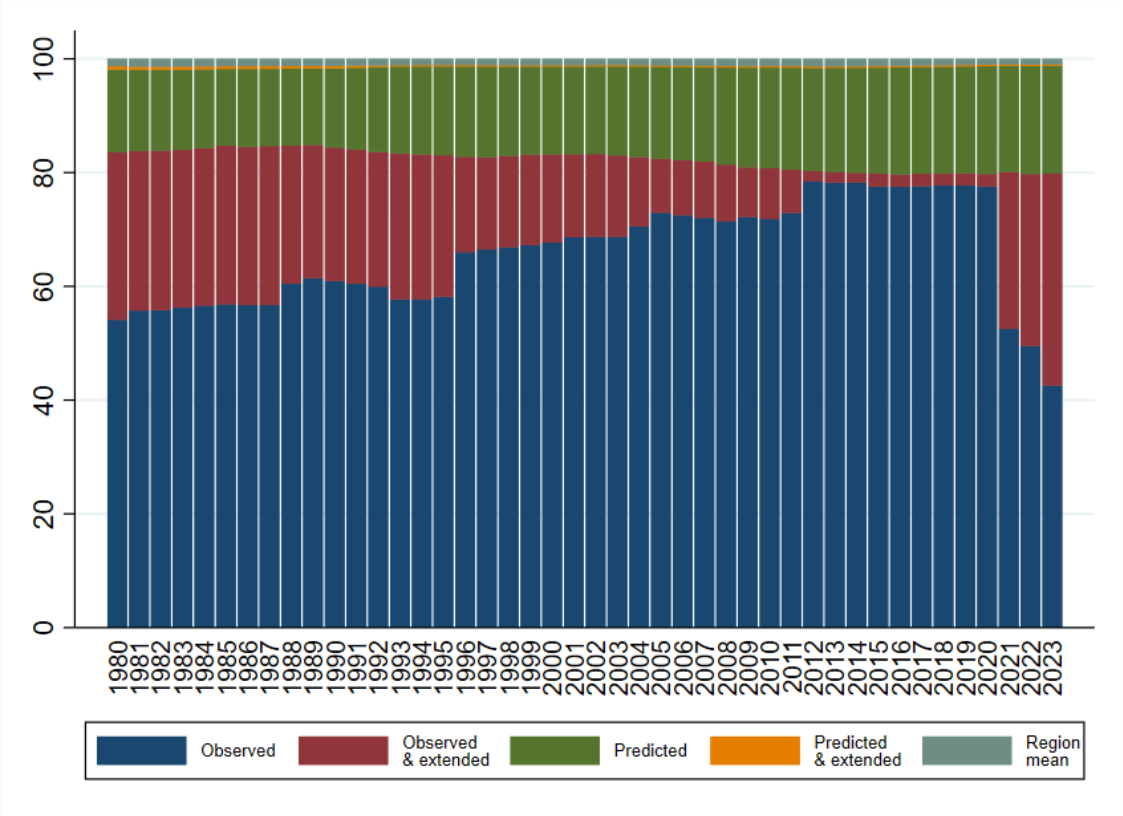
(a) Private Agricultural Land (*pwagr*) Observation Types Unweighted



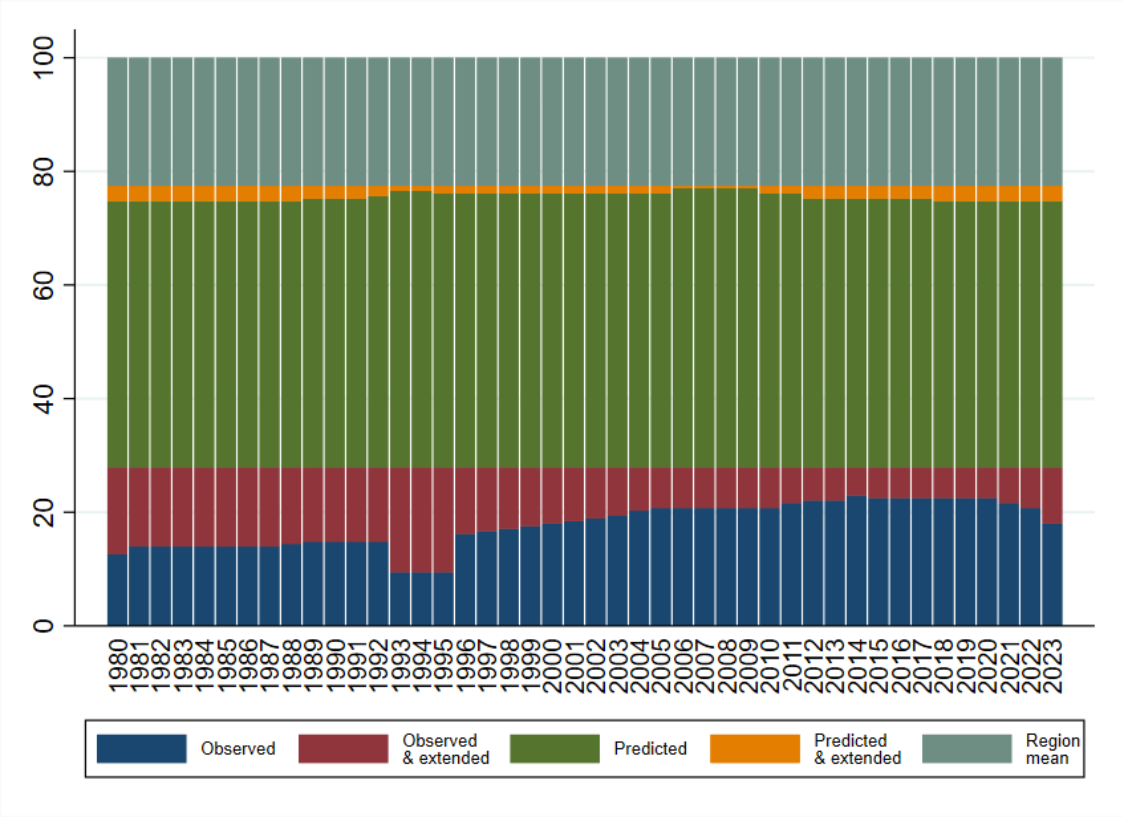
(b) Private Agricultural Land (*pwagr*) Observation Types Weighted by PPP National Income



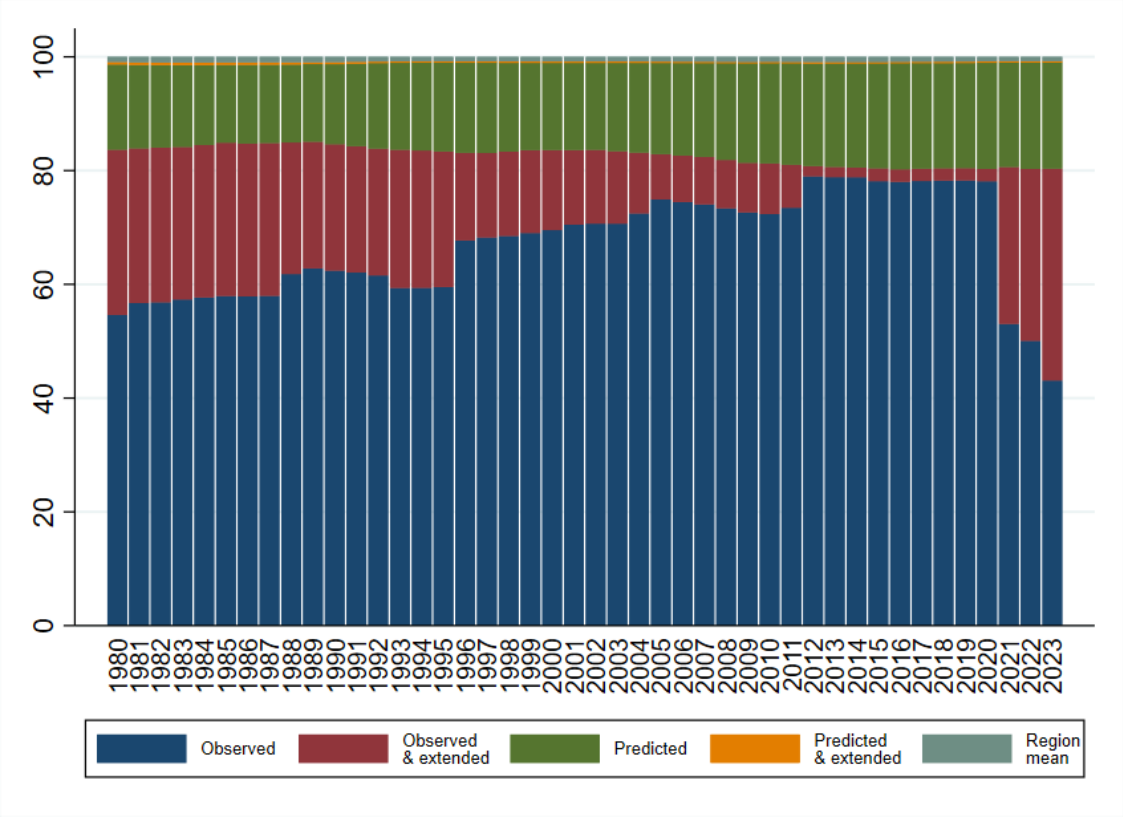
(a) Private Fixed-income Asset (*pwfiw*) Observation Types Unweighted



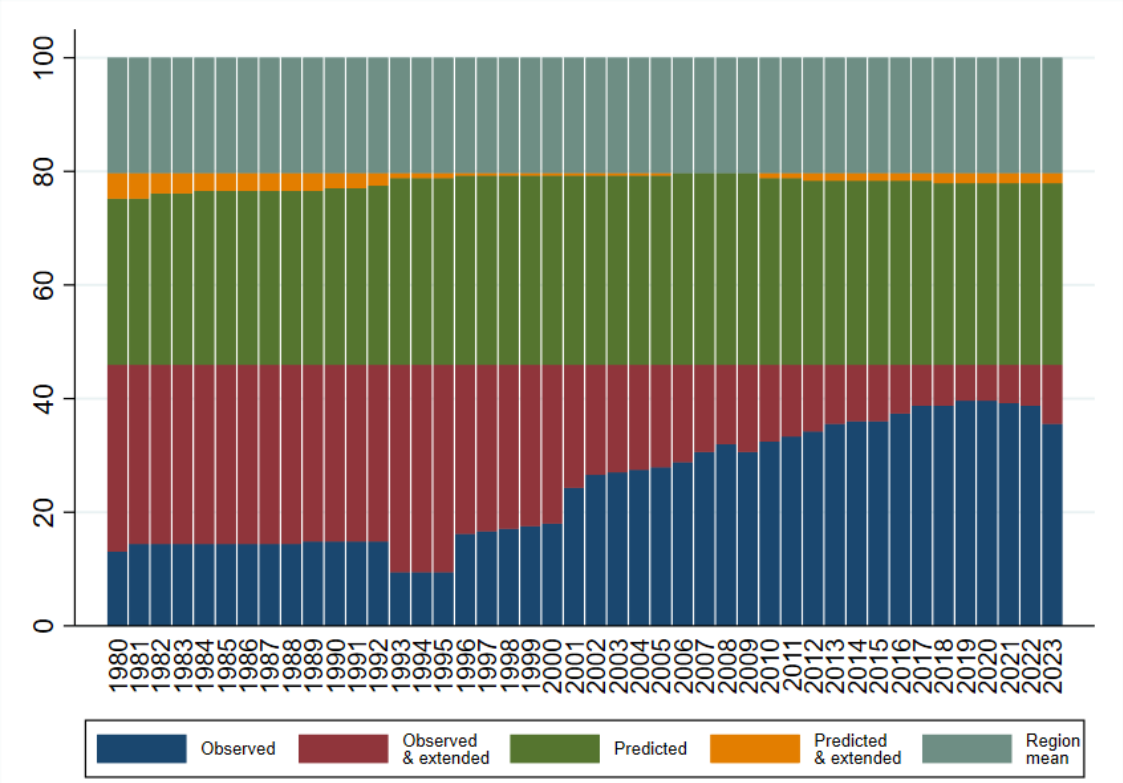
(b) Private Fixed-income Asset (*pwfiw*) Observation Types Weighted by PPP National Income



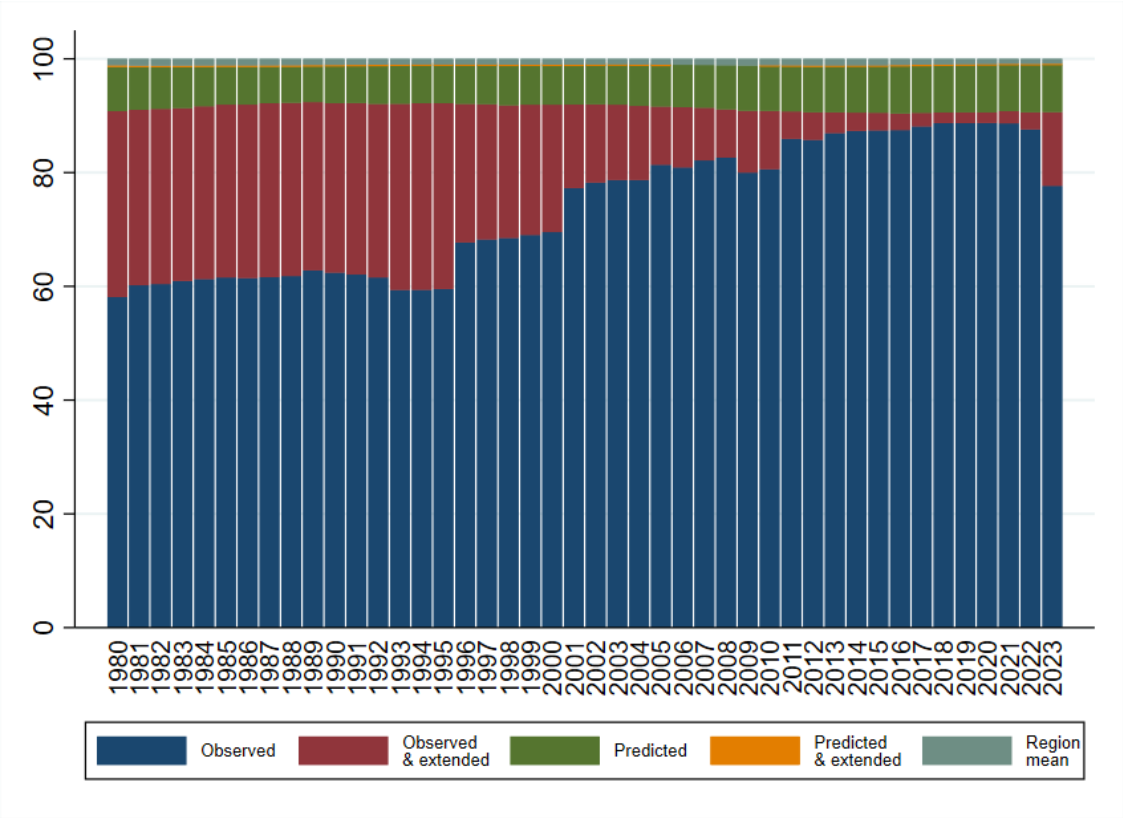
(a) Private Equities & Fund Shares (*pweqi*) Observation Types Unweighted



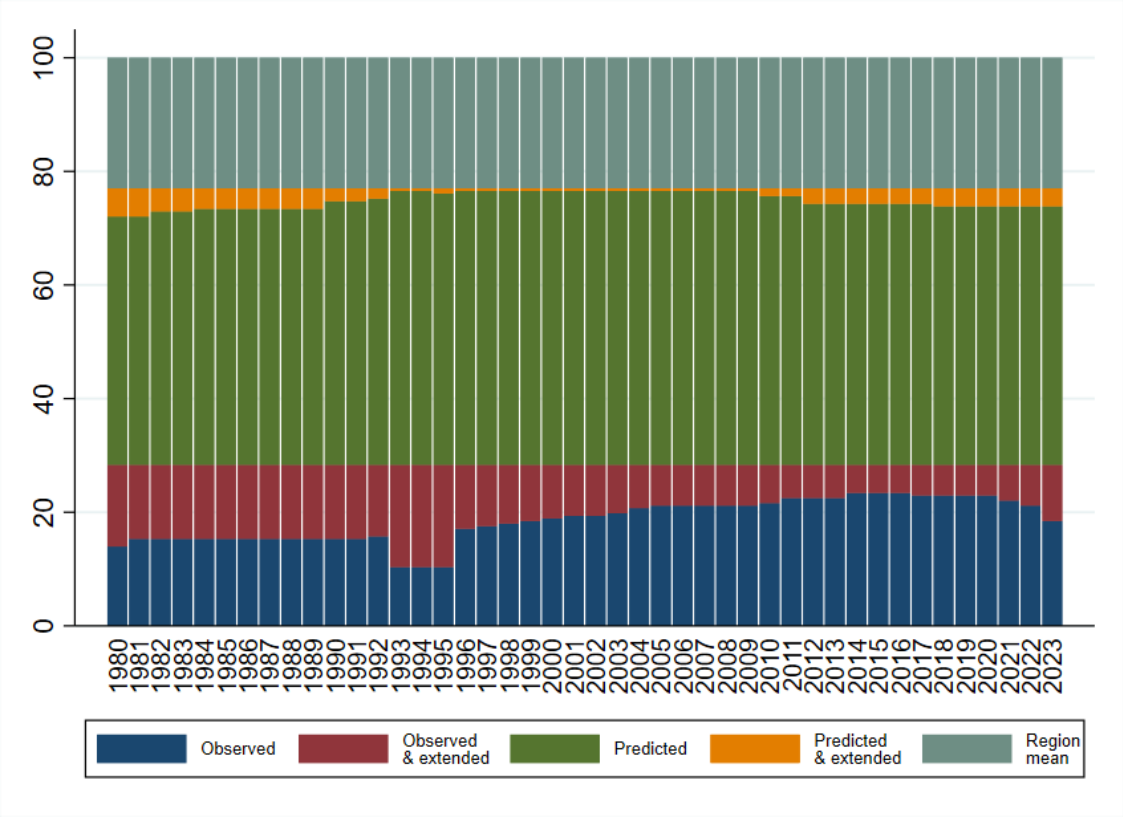
(b) Private Equities & Fund Shares (*pweqi*) Observation Types Weighted by PPP National Income



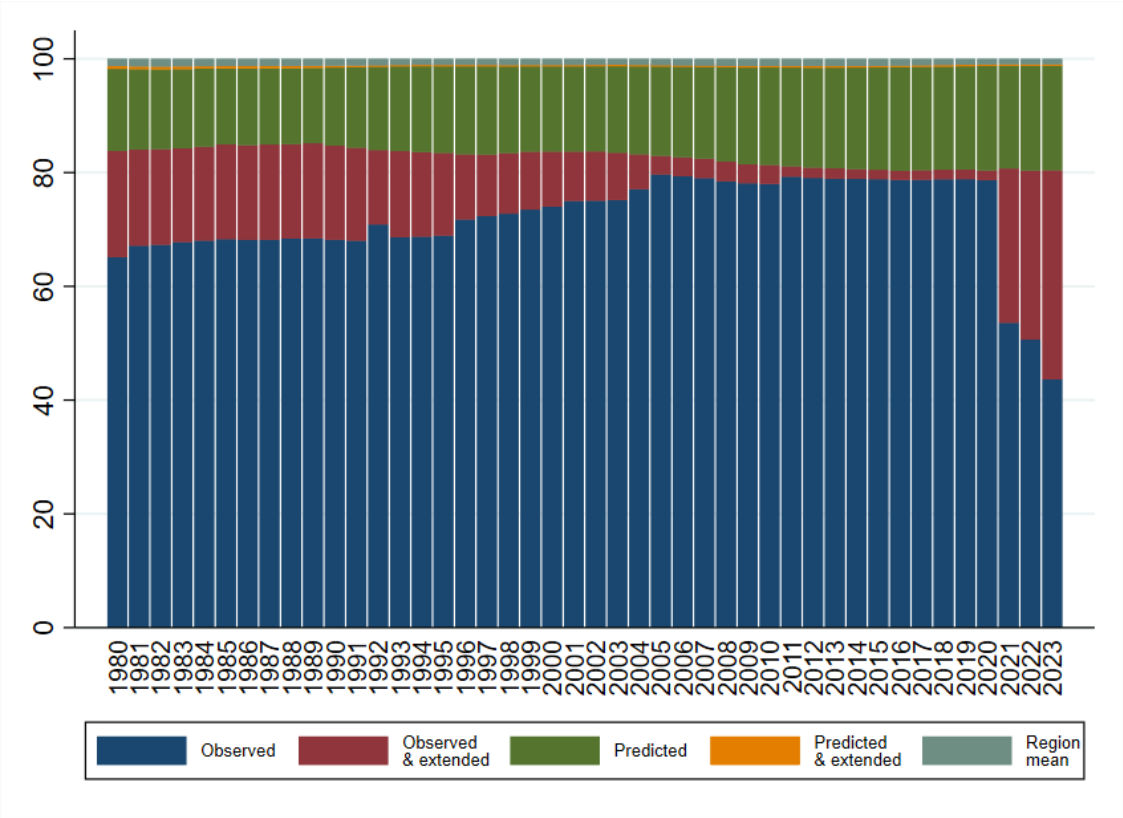
(a) Private Pension Asset (*pwpen*) Observation Types Unweighted



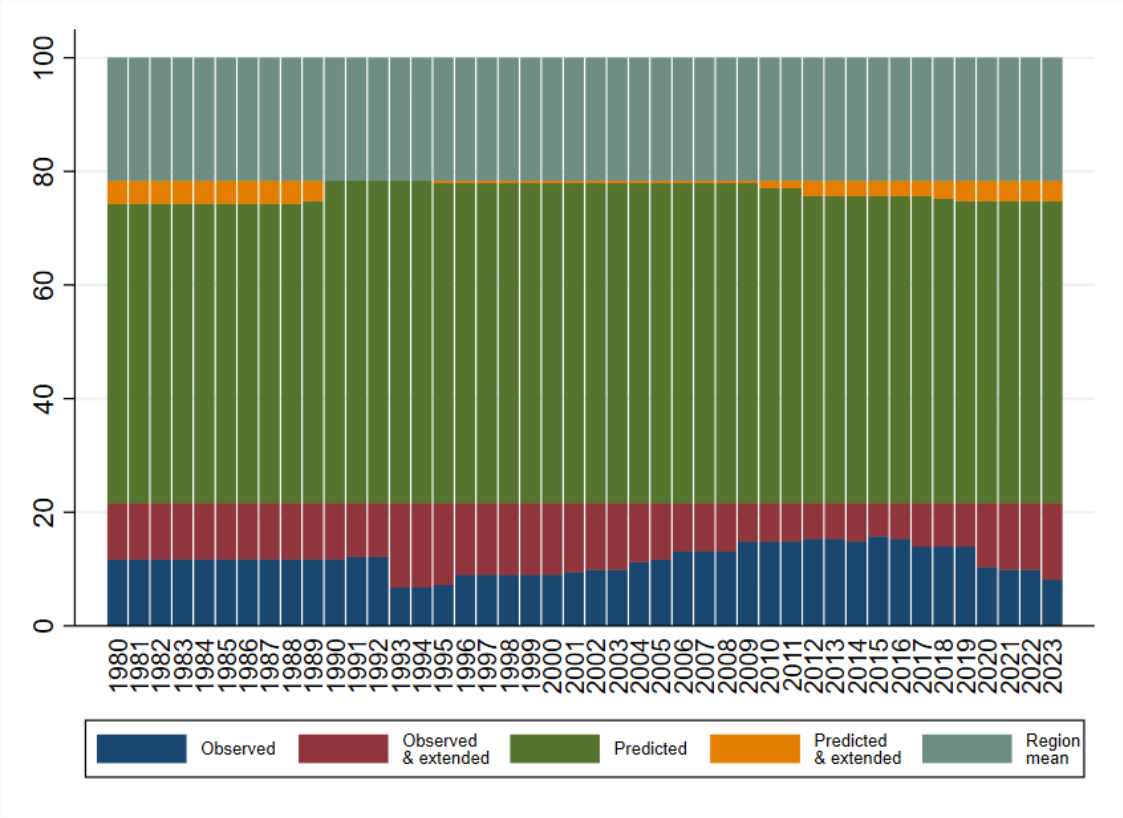
(b) Private Pension Asset (*pwpen*) Observation Types Weighted by PPP National Income



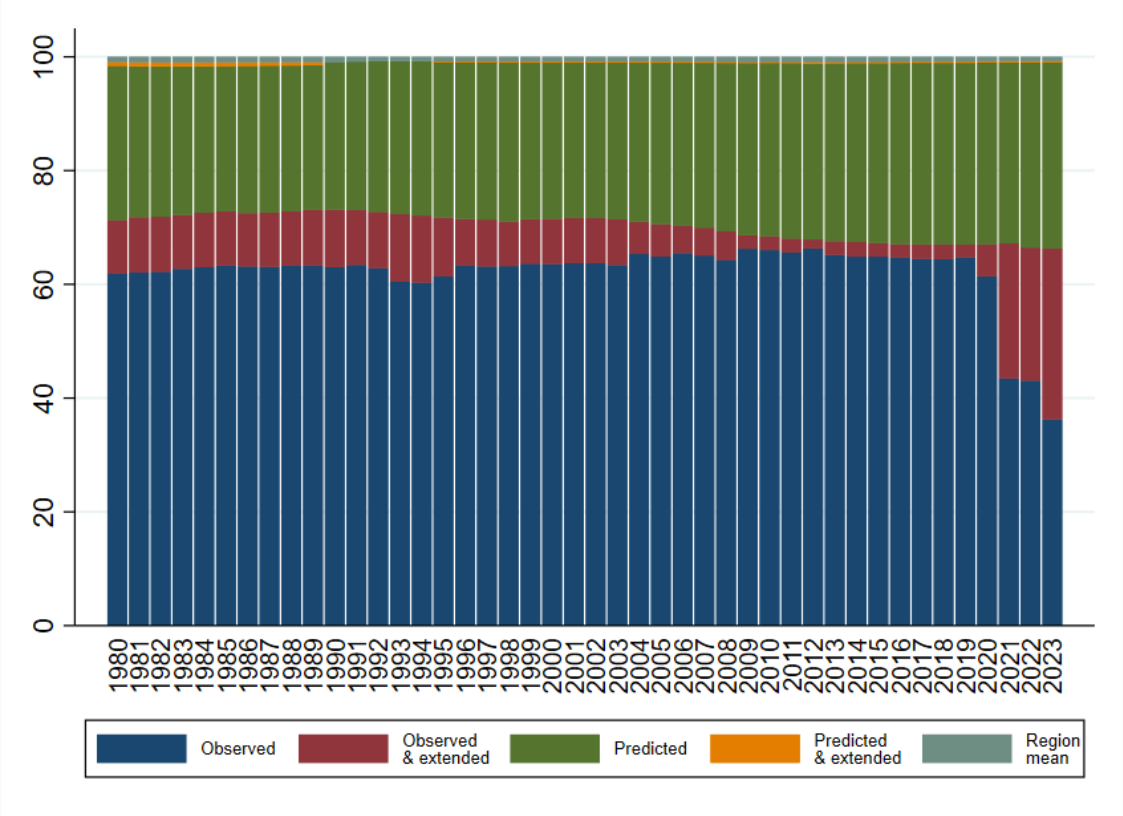
(a) Private Debt (*pwdeb*) Observation Types Unweighted



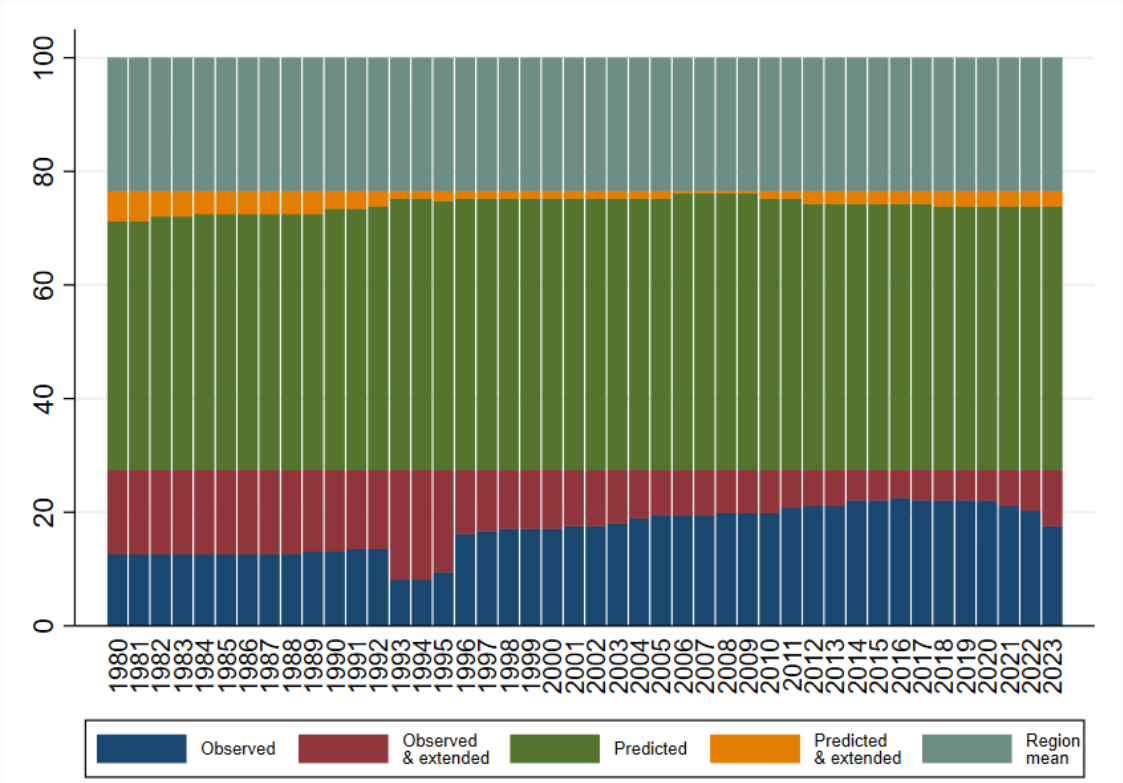
(b) Private Debt (*pwdeb*) Observation Types Weighted by PPP National Income



(a) Government Non-financial Asset (*gwnfa*) Observation Types Unweighted



(b) Government Non-financial Asset (*gwnfa*) Observation Types Weighted by PPP National Income



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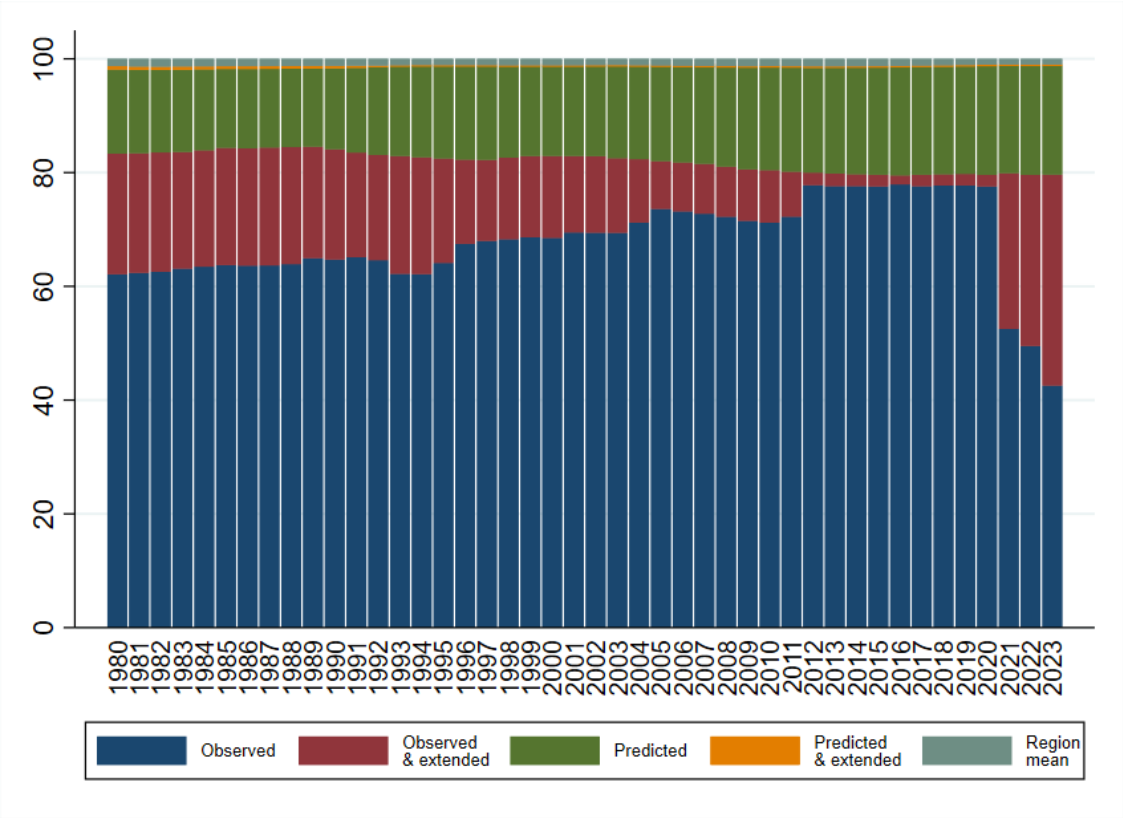
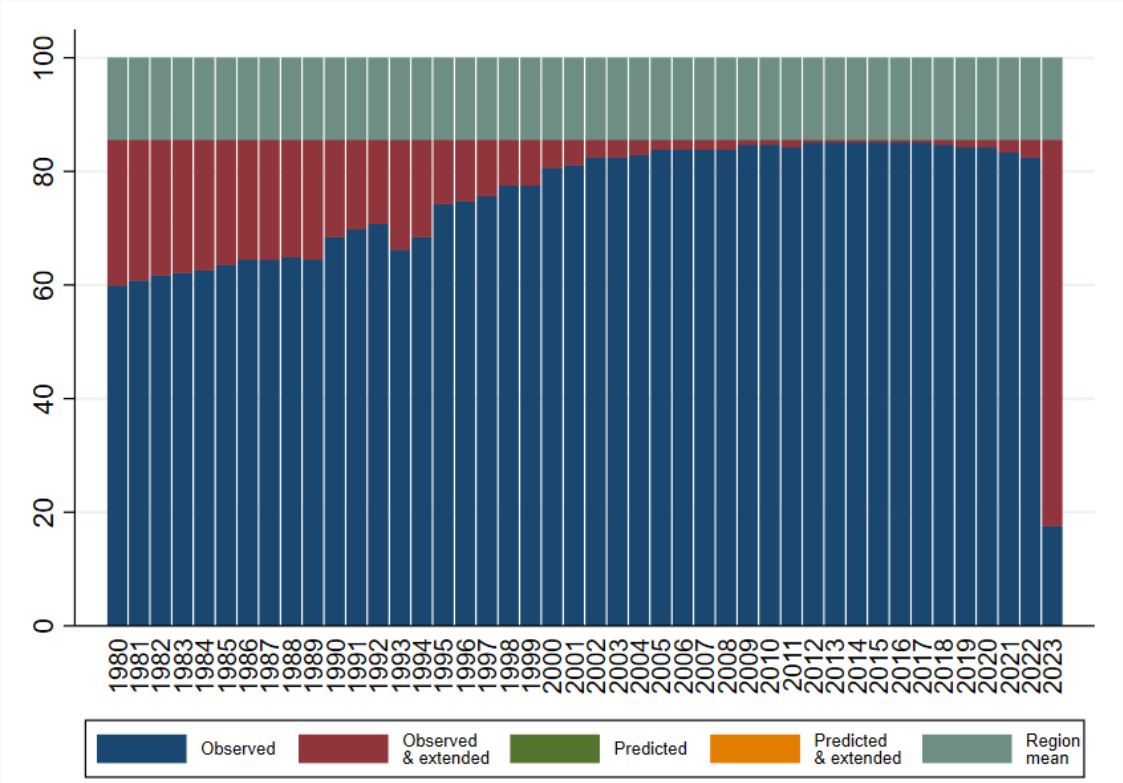
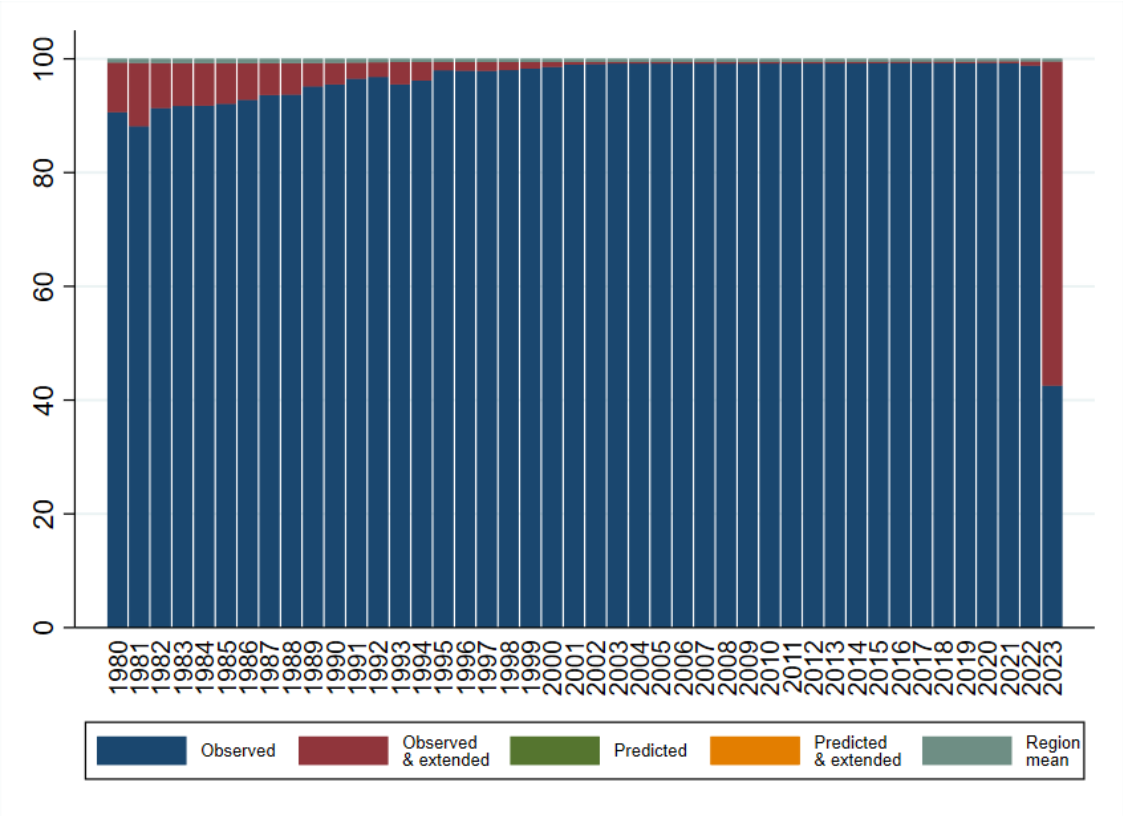


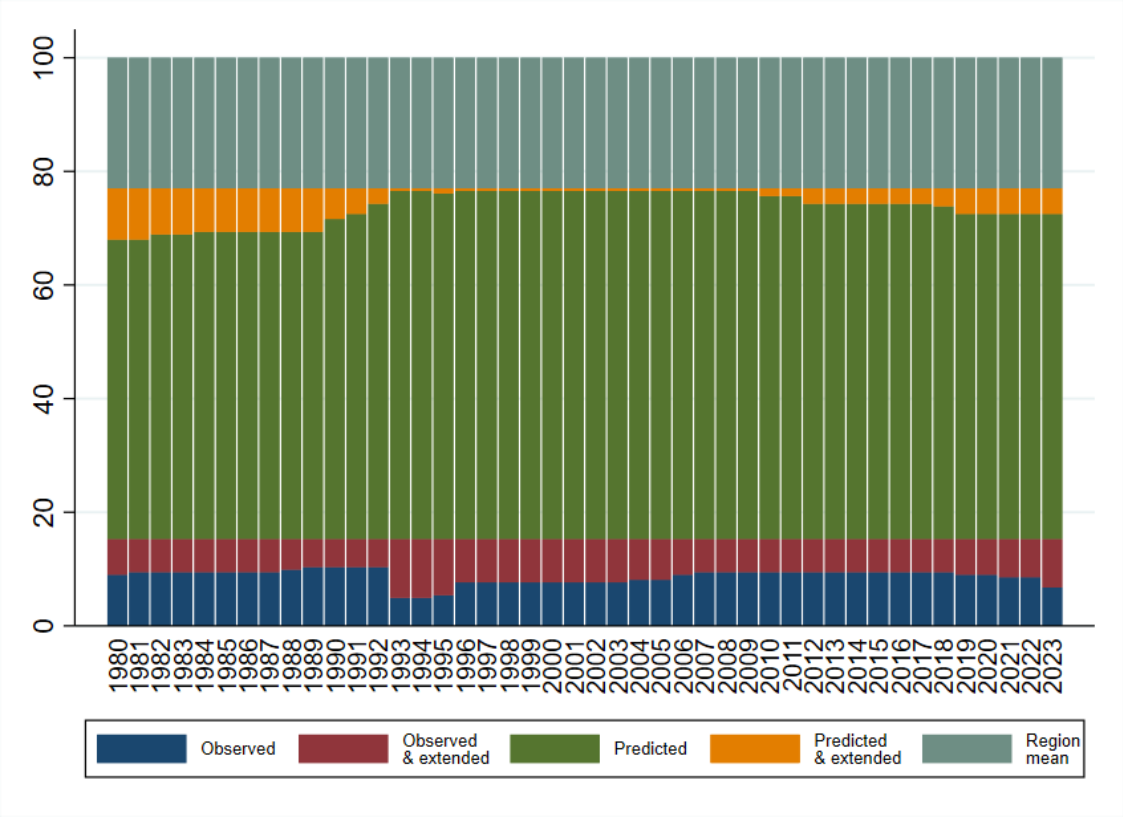
(b) Government Financial Asset (*gwfin*) Observation Types Weighted by PPP National Income



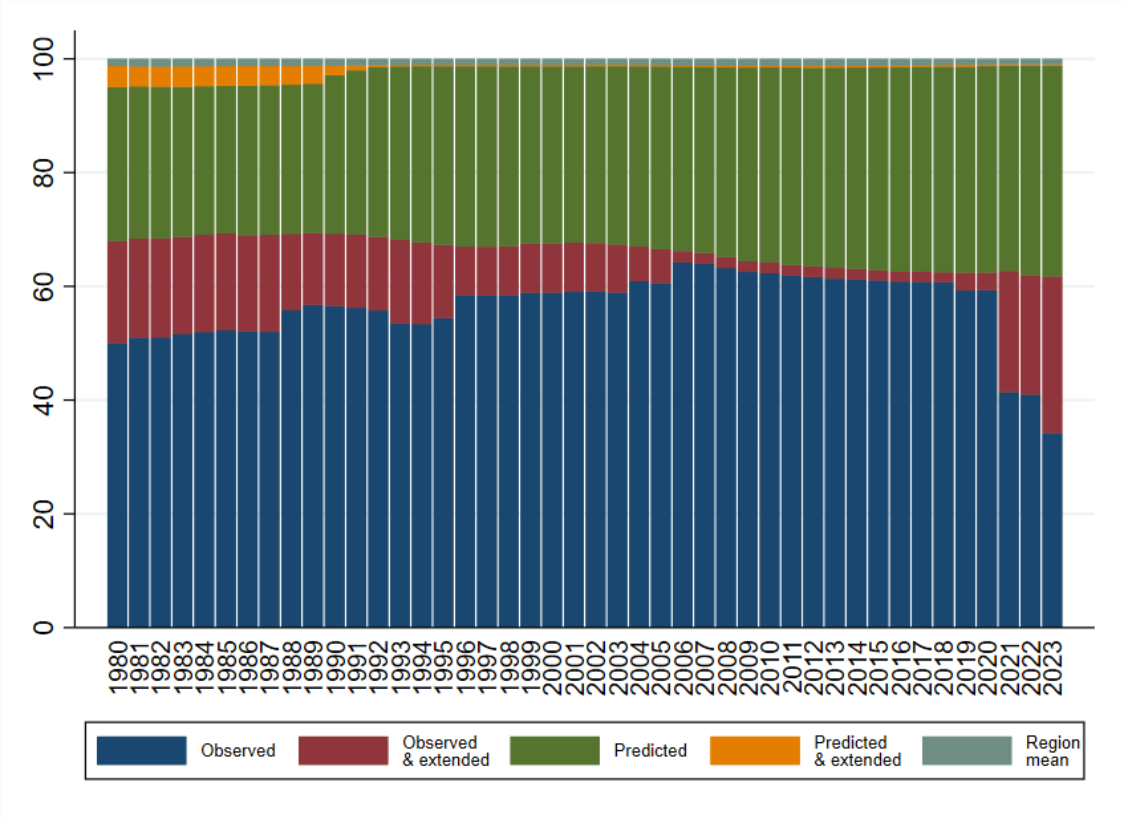
(a) Government Debt (*gwdeb*) Observation Types Unweighted



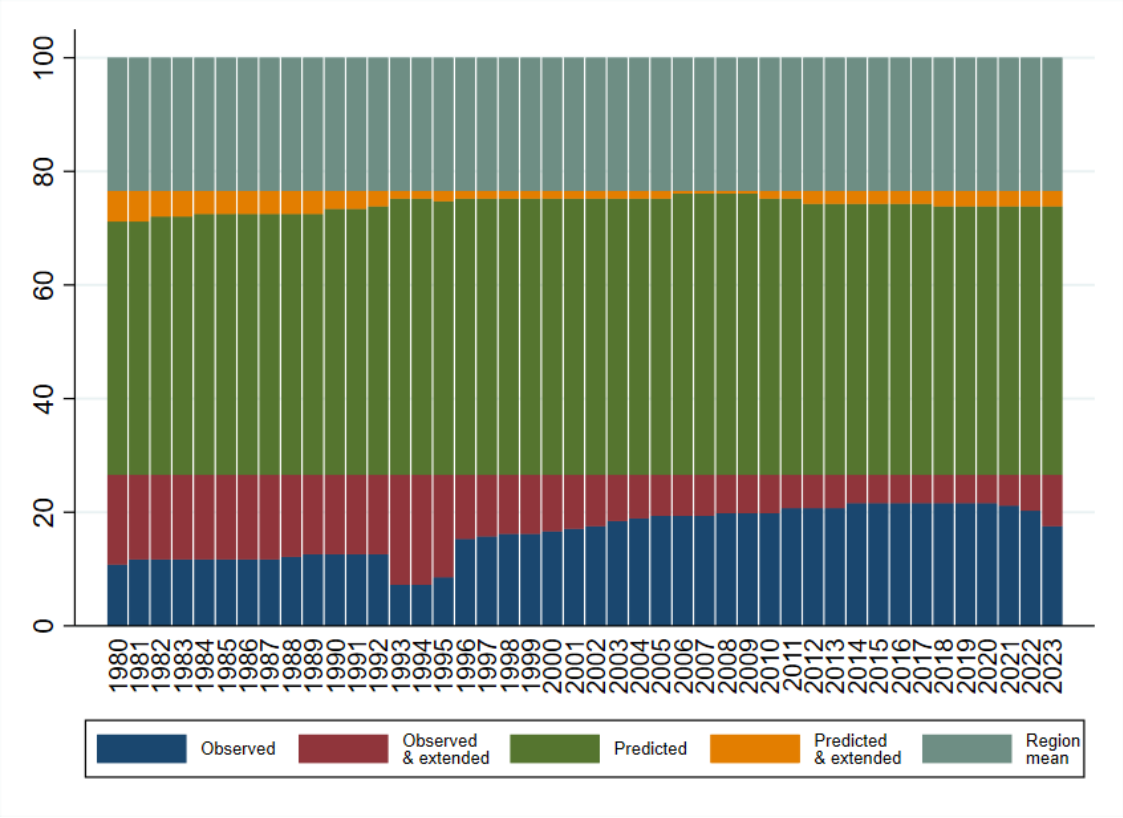
(b) Government Debt (*gwdeb*) Observation Types Weighted by PPP National Income



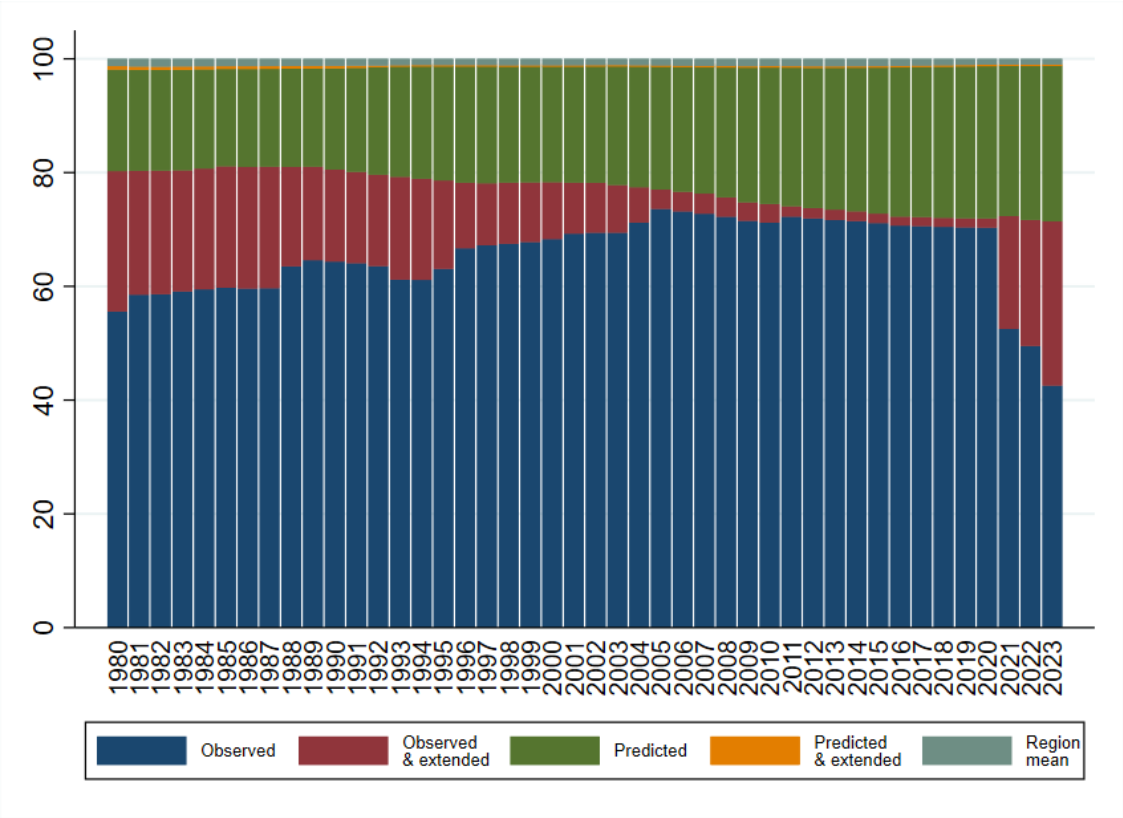
(a) Corporate Non-financial Asset (*cwnfa*) Observation Types Unweighted



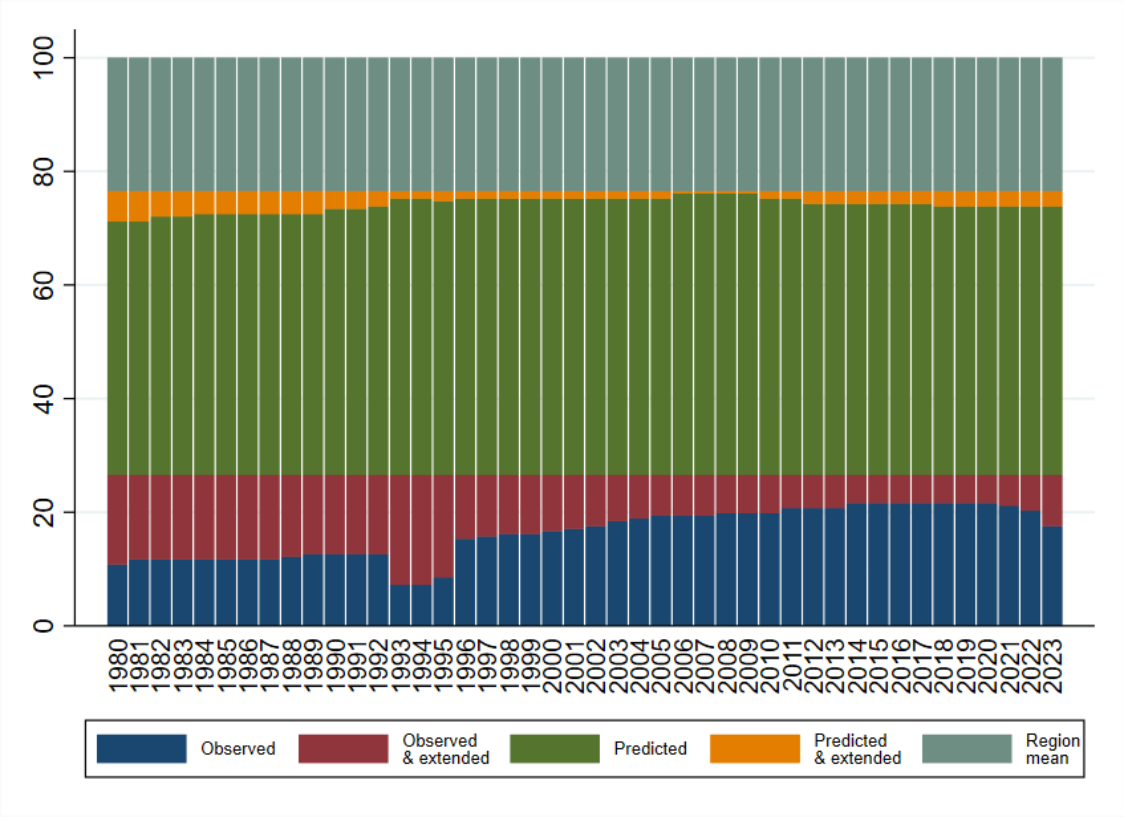
(b) Corporate Non-financial Asset (*cwnfa*) Observation Types Weighted by PPP National Income



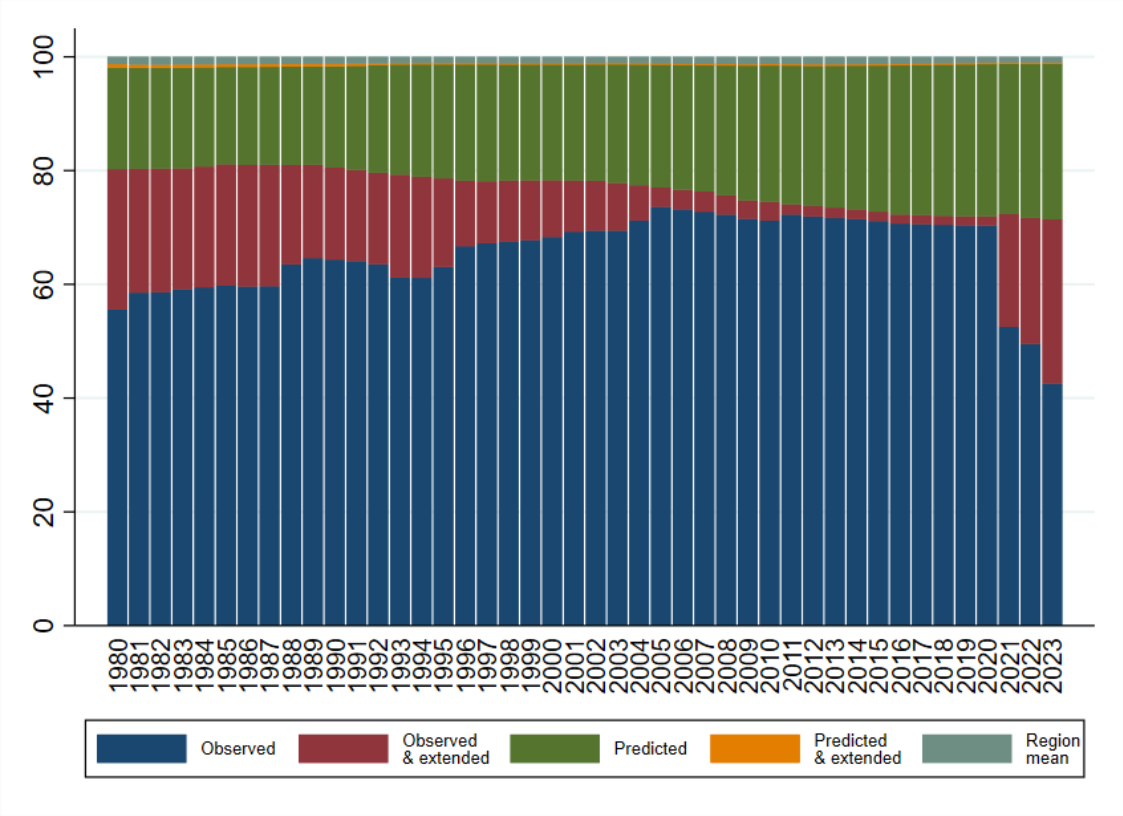
(a) Corporate Financial Asset (*cwfin*) Observation Types Unweighted



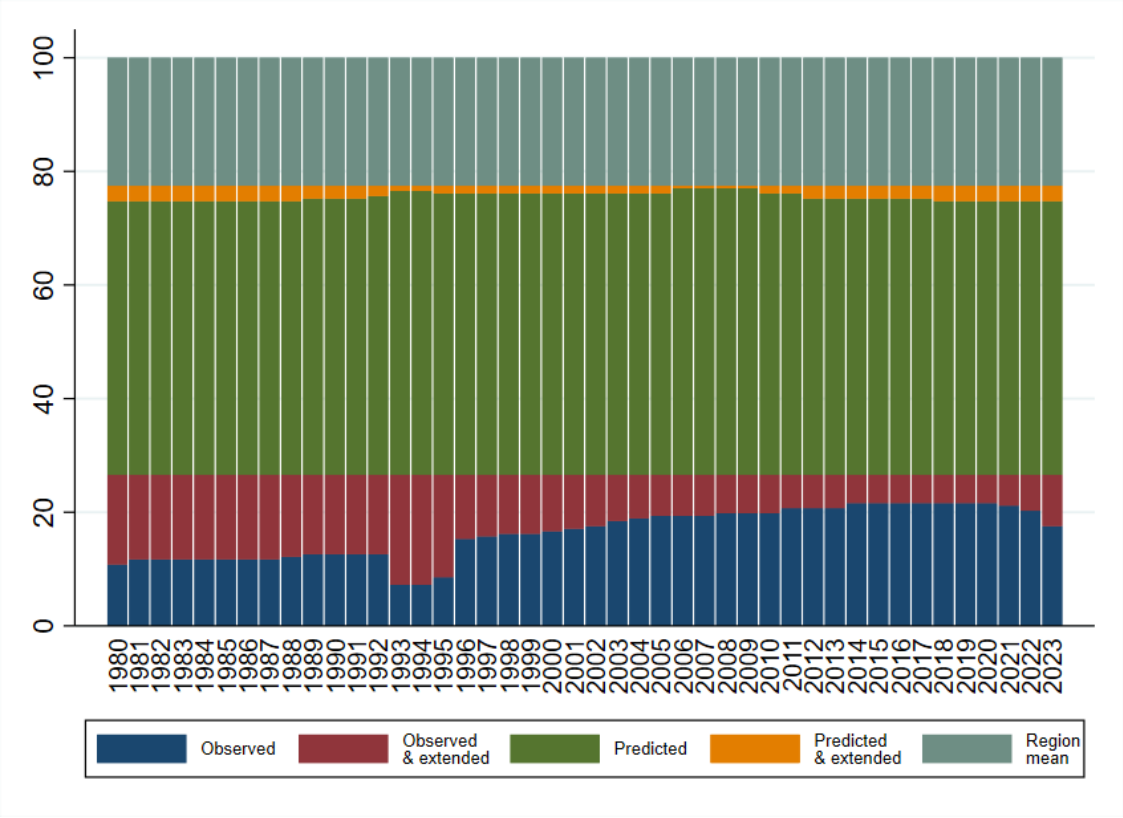
(b) Corporate Financial Asset (*cwfin*) Observation Types Weighted by PPP National Income



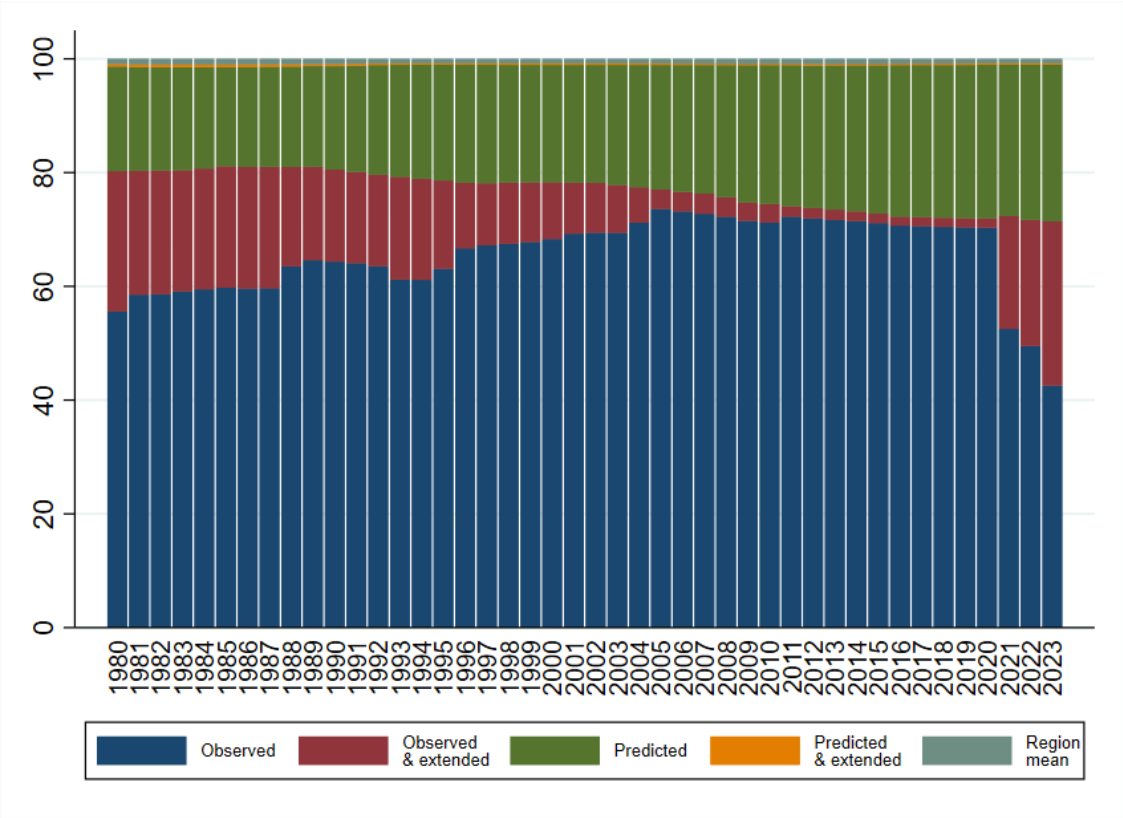
(a) Corporate Non-equity Liability (*cwdeb*) Observation Types Unweighted



(b) Corporate Non-equity Liability (*cwdeb*) Observation Types Weighted by PPP National Income



(a) Corporate Equity Liability (*cwdeq*) Observation Types Unweighted



(b) Corporate Equity Liability (*cwdeq*) Observation Types Weighted by PPP National Income

C Observed Data Summary Table

Appendix C summarizes periods for which data are observed (i.e.: "type" 5) for each country-variable pair. It refers to our whole database (i.e.: not just starting in 1980).

iso	(1) *pwhou*	(2) *pwagr*	(3) *pwodk*	(4) *pwfiw*	(5) *pweqi*	(6) *pwpen*	(7) *pwdeb*	(8) *gwnfa*	(9) *gwfin*	(10) *gwdeb*	(11) *cwnfa*	(12) *cwfin*	(13) *cwdeb*	(14) *cwdeq*
AE										1980-2022				
AF										2002-2020				
AG										1990-2022				
AL				2014-2022	2014-2022	2007-2023	2014-2022		2014-2022	1994-2022		2014-2022	2014-2022	2014-2022
AM	1980-1992	1980-1992		1980-1992	1980-1992	1980-2023	1980-1992	1980-1992	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
AO						2014-2023				1995-2022				
AR			1990-2014			2002-2007				1980-2022				
AT			1990-2014	1981-2023	1981-2023	1981-2023	1981-2023		1996-2023	1980-2023		1996-2023	1996-2023	1996-2023
AU	1980-2023	1980-2023	1980-2023	1989-2023	1989-2023	1989-2023	1980-2023	1980-2023	1989-2023	1980-2023	1989-2023	1989-2023	1989-2023	1989-2023
AZ	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
BA										1998-2022				
BB								2006-2015		1980-2022				
BD			1990-2014							1980-2022				
BE	1996-2023	1996-2023	1996-2023	1981-2023	1981-2023	1981-2023	1981-2023		1996-2023	1980-2023		1996-2023	1996-2023	1996-2023
BF										1980-2022				
BG			1990-2023	1998-2023	1998-2023	1998-2023	1998-2023		1998-2023	1981-2023		1998-2023	1998-2023	1998-2023
BH										1980-2022				
BI			1990-2014							1980-2022				
BJ										1980-2022				
BN										2001-2022				
BO			1990-2014			2002-2010		2004-2007		1980-2022				
BR	1999-2021		1990-2014	2005-2021	2005-2021	2005-2023	2005-2021		2005-2021	1980-2022		2005-2021	2005-2021	2005-2021
BS										1980-2022				
BT								2001-2016		1982-2022				
BW			1990-2014			2013-2023				1980-2022				
BY	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-2019	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
BZ			1990-2014							1980-2022				
CA	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023
CD										1980-2022				
CF										1980-2022				
CG			1990-2014							1980-2022				
CH	2000-2023		1990-2014	2000-2023	2000-2023	2000-2023	2000-2023	1991-2023	1991-2023	1980-2023		2000-2023	2000-2023	2000-2023
CI			1990-2014							1980-2022				
CL			1990-2020	2003-2023	2003-2023	2001-2023	2003-2023		2003-2023	1980-2023		2003-2023	2003-2023	2003-2023
CM			1990-2014							1980-2022				
CN	1980-2020	1980-2020	1980-2020	1980-2020	1980-2020	1980-2023	1980-2020	1980-2020	1980-2020	1980-2022	1980-2020	1980-2020	1980-2020	1980-2020
CO			1990-2014	1997-2023	1997-2023	1997-2023	1997-2023		1997-2023	1980-2023		1997-2023	1997-2023	1997-2023
CR			1990-2014			2001-2023		2009-2019		1980-2022				
CV										1981-2022				
CY				1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1980-2023		1996-2023	1996-2023	1996-2023
CZ	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023	1993-2023
DE	1980-2023	1980-2023	1980-2023	1996-2023	1996-2023	1996-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023
DJ										1995-2022				
DK	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1996-2023	1995-2023	1980-2023	1996-2023	1995-2023	1995-2023	1995-2023
DM										1980-2022				
DO			1990-2014			2005-2023		2006-2006		2000-2022				
DZ										1980-2022				
EC			1990-2014							1990-2018				
EE			2004-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1995-2023		1996-2023	1996-2023	1996-2023
EG			1990-2014			2008-2023				1980-2022				
ER										1995-2022				
ES	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1996-2018	1981-2023	1981-2023	1981-2023
ET								2013-2013		1980-2022				
FI	1996-2023	1996-2023	1990-2023	1996-2023	1996-2023	1996-2023	1996-2023	1996-2023	1980-2023	1980-2023	1996-2023	1980-2023	1980-2023	1980-2023
FJ			1990-2014							1980-2022				
FM								2009-2019		1995-2022				
FR	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023
GA										1980-2022				
GB	1980-2023	1980-2023	1980-2023	1988-2023	1988-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1988-2023	1988-2023	1988-2023	1988-2023
GD										1980-2022				
GE	1980-1992	1980-1992		1980-1992	1980-1992	1980-2023	1980-1992	1980-2016	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
GH			1990-2014			2014-2023				1980-2022				
GI						2011-2014								
GM										1980-2022				
GN										1990-2022				
GQ										1980-2022				
GR			1990-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1980-2023		1996-2023	1996-2023	1996-2023
GT										1980-2022				
GW										1986-2022				
GY			1990-2014			2008-2023				1980-2022				
HK						2001-2023				2001-2021				
HN			1990-2014							1980-2022				
HR			2008-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1995-2023		1996-2023	1996-2023	1996-2023
HT										1980-2022				
HU	1996-2023	1996-2023	1990-2023	1980-2023	1980-2023	1980-2023	1980-2023		1980-2023	1980-2023		1980-2023	1980-2023	1980-2023
ID			1990-2014			2001-2023		2009-2019		1980-2022				
IE	1996-2023	1996-2023	1990-2023	2002-2023	2002-2023	2001-2023	1996-2023	1996-2023	1996-2023	1980-2023	1996-2023	2002-2023	2002-2023	2002-2023
IL			1990-2014	2011-2021	2011-2021	2001-2023	2011-2021		2011-2021	1983-2022		2011-2021	2011-2021	2011-2021
IM						2016-2022								
IN	1992-2020	1992-2020	1990-2020	2012-2020	2012-2020	2011-2022	1992-2020		2012-2020	1980-2022				
IQ			1990-2014						2016-2016	2004-2022				
IR			1990-2014							1980-2022				
IS	1998-2023		1990-2014	2004-2023	2004-2023	2001-2023	2004-2023		2004-2023	1980-2023		2003-2023	2003-2023	2003-2023
IT	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	2006-2023	1980-2023	1980-2023	1980-2023
JM			1990-2014			2004-2023				1980-2022				
JO			1990-2014							1980-2022				
JP	1980-2022	1980-2022	1980-2022	1980-2022	1980-2022	1980-2023	1980-2022	1980-2022	1980-2022	1980-2022	1980-2022	1980-2022	1980-2022	1980-2022
KE			1990-2014			2001-2023				1980-2022				
KG	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-2018	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
KH			1990-2014							1995-2022				
KI										1988-2022				
KM										1984-2022				
KN										1984-2022				
KR	1996-2023	1996-2023	1990-2023	2009-2023	1980-2023	1980-2023	1980-2023	1996-2023	1980-2023	1980-2023	1996-2023	1980-2023	1980-2023	1980-2023
KW										1987-2022				
KZ	1980-1992	1980-1992		1980-1992	1980-1992	1980-2023	1980-1992	1980-2019	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
LA			1990-2014							1980-2022				
LB										1980-2020				
LC										1981-2022				
LI						2007-2023								
LK			1990-2014							1980-2022				
LR										1980-2022				
LS						2011-2022				1980-2022				
LT	1980-1992	1980-1992	2004-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-1992	1980-2023	1980-2023	1980-1992	1980-2023	1980-2023	1980-2023
LU			1996-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1980-2023		1996-2023	1996-2023	1996-2023
LV	1980-1992	1980-1992	2004-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-1992	1980-2023	1980-2023	1980-1992	1980-2023	1980-2023	1980-2023
LY										1980-2017				
MA			1990-2014			2018-2023				1980-2022				
MD	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-2019	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
ME										2002-2022				
MG										1980-2022				
MH										1997-2022				
MK				2014-2022	2014-2022	2007-2023	2014-2022		2014-2022	1994-2022		2014-2022	2014-2022	2014-2022
ML			1990-2014							1980-2022				
MM										1980-2022				
MN			1990-2014							1992-2022				
MO						2019-2023								
MR										1980-2022				
MT			2004-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1980-2023		1996-2023	1996-2023	1996-2023
MU			1990-2014			2012-2022				1980-2022				
MV						2010-2023				1980-2022				
MW			1990-2014			2013-2023				1980-2022				
MX	2004-2022	2004-2022	1990-2022	2004-2022	2004-2022	2001-2023	2004-2022	2004-2022	2004-2022	1980-2022	2004-2022	2004-2022	2004-2022	2004-2022
MY			1990-2014			2012-2023				1980-2022				
MZ			1990-2014			2015-2023				1999-2022				
NA						2010-2023				1989-2022				
NE			1990-2014							1980-2022				
NG			1990-2014			2007-2023				1980-2022				
NI			1990-2014							1997-2022				
NL	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1995-2023	1995-2023	1980-2023	1995-2023	1995-2023	1995-2023	1995-2023
NO	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023		1996-2023	1996-2023	1996-2023
NP			1990-2014							1980-2022				
NR										2009-2022				
NZ			1990-2014	1999-2022	1999-2022	1999-2023	1999-2022	2007-2022	2008-2022	1980-2022	2007-2022	2008-2022	2008-2022	2008-2022
OM										1980-2022				
PA			1990-2014			2008-2022				1980-2022				
PE			1990-2014			2001-2023				1999-2022				
PG						2013-2023				1980-2022				
PH			1990-2014							1980-2022				
PK			1990-2014			2007-2022				1980-2022				
PL			1990-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1986-2023		1996-2023	1996-2023	1996-2023
PS										2000-2022				
PT	1980-2023		1990-2014	1995-2023	1981-2023	1981-2023	1981-2023		1995-2023	1980-2023		1995-2023	1995-2023	1995-2023
PY			1990-2014							1980-2022				
QA										1990-2022				
RO			1990-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1995-2023		1996-2023	1996-2023	1996-2023
RS						2006-2023		2008-2012		2000-2022				
RU	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023
RW			1990-2014							1980-2022				
SA			1990-2014							1989-2022				
SB										1980-2022				
SC										1980-2022				
SD										1992-2022				
SE	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1981-2023	1981-2023	1981-2023	1981-2023
SG	1996-2023				1996-2023	1996-2023	1996-2023			1980-2022				
SI			1996-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1993-2023		1996-2023	1996-2023	1996-2023
SK			2001-2023	1996-2023	1996-2023	1996-2023	1996-2023		1996-2023	1993-2023		1996-2023	1996-2023	1996-2023
SL										1980-2022				
SM										2004-2022				
SN			1990-2014							1980-2022				
SR						2002-2023				1984-2022				
SS										2012-2022				
ST										1980-2022				
SV			1990-2014			2002-2021		2004-2019		1980-2022				
SY										1980-2010				
SZ										1980-2022				
TD										1980-2022				
TG			1990-2014							1980-2022				
TH			1990-2014			2001-2021		2012-2012		1980-2022				
TJ	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
TL										2012-2022				
TM	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
TN			1990-2014							1980-2022				
TO										1985-2022				
TR			1990-2014	2011-2023	2011-2023	2004-2023	2011-2023		2011-2023	1980-2023		2011-2023	2011-2023	2011-2023
TT			1990-2014			2006-2020				1980-2022				
TV										2005-2022				
TW				2001-2022	2001-2022	2001-2022	2001-2022	2006-2022	2001-2022	1987-2022	2006-2022	2001-2022	2001-2022	2001-2022
TZ			1990-2014			2013-2017				1980-2022				
UA	1980-1992	1980-1992		1980-1992	1980-1992	1980-2020	1980-1992	1980-2019	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
UG						2014-2021				1980-2022				
US	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023	1980-2023
UY	2000-2016	2010-2016	1990-2016			2002-2023	2010-2016	2002-2016		1980-2022				
UZ	1980-1992	1980-1992		1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-1992	1980-2022	1980-1992	1980-1992	1980-1992	1980-1992
VC										1980-2022				
VE			1990-2014							1980-2022				
VN			1990-2014							1991-2022				
VU										1981-2022				
WS										1980-2022				
XK						2012-2023				2009-2022				
YE			1990-2014							1990-2022				
ZA	1980-2023		1990-2014	1980-2014	1980-2014	1980-2023	1980-2023			1980-2022				
ZM			1990-2014			2001-2023				1980-2021				
ZW										1980-2022				

D Additional Regression Results

Appendix D shows the coefficients associated with the year fixed effects from Table 3.

	(1) *pwhou*	(2) *pwagr*	(3) *pwodk*	(4) *pwfiw*	(5) *pweqi*	(6) *pwpen*	(7) *pwdeb*	(8) *gwnfa*	(9) *gwfin*	(10) *gwdeb*	(11) *cwnfa*	(12) *cwfin*	(13) *cwdeb*	(14) *cwdeq*
1981	-0.003	-0.008	-0.010	-0.021	-0.021	-0.175	-0.022	-0.001	0.006	0.044	-0.019	-0.025	-0.055	-0.056
	(0.104)	(0.096)	(0.176)	(0.151)	(0.209)	(0.496)	(0.206)	(0.202)	(0.161)	(0.079)	(0.128)	(0.127)	(0.136)	(0.185)
1982	-0.019	-0.019	0.198	-0.029	-0.026	-0.132	-0.022	-0.017	0.022	0.131*	-0.010	-0.046	-0.092	-0.087
	(0.104)	(0.095)	(0.179)	(0.151)	(0.209)	(0.496)	(0.206)	(0.203)	(0.161)	(0.079)	(0.129)	(0.127)	(0.136)	(0.185)
1983	-0.018	-0.014	-0.005	0.009	0.044	-0.159	0.021	-0.029	0.023	0.211***	-0.046	-0.047	-0.128	-0.086
	(0.104)	(0.095)	(0.176)	(0.151)	(0.209)	(0.489)	(0.206)	(0.203)	(0.161)	(0.079)	(0.128)	(0.127)	(0.136)	(0.185)
1984	-0.031	-0.010	0.064	0.024	0.048	-0.059	0.047	-0.046	-0.037	0.242***	-0.091	-0.077	-0.166	-0.123
	(0.104)	(0.095)	(0.176)	(0.151)	(0.209)	(0.489)	(0.206)	(0.203)	(0.161)	(0.078)	(0.129)	(0.127)	(0.136)	(0.185)
1985	-0.039	0.018	0.118	0.040	0.090	0.014	0.078	-0.045	0.006	0.301***	-0.105	-0.115	-0.226*	-0.162
	(0.104)	(0.095)	(0.177)	(0.151)	(0.209)	(0.489)	(0.206)	(0.203)	(0.161)	(0.078)	(0.129)	(0.127)	(0.136)	(0.185)
1986	-0.053	0.041	0.128	0.056	0.216	0.130	0.111	-0.046	0.036	0.313***	-0.099	-0.081	-0.233*	-0.041
	(0.104)	(0.095)	(0.177)	(0.151)	(0.209)	(0.489)	(0.207)	(0.203)	(0.161)	(0.078)	(0.129)	(0.127)	(0.136)	(0.185)
1987	-0.043	0.066	0.166	0.052	0.242	0.164	0.146	-0.041	0.024	0.367***	-0.091	-0.096	-0.255*	-0.042
	(0.104)	(0.095)	(0.177)	(0.151)	(0.209)	(0.489)	(0.207)	(0.203)	(0.161)	(0.079)	(0.129)	(0.127)	(0.136)	(0.185)
1988	-0.008	0.065	0.161	0.042	0.296	0.180	0.186	-0.020	-0.005	0.369***	-0.083	-0.113	-0.241*	-0.044
	(0.104)	(0.095)	(0.177)	(0.148)	(0.206)	(0.489)	(0.206)	(0.203)	(0.161)	(0.079)	(0.126)	(0.125)	(0.134)	(0.182)
1989	0.017	0.065	0.178	0.048	0.413**	0.268	0.226	-0.011	0.012	0.385***	-0.046	-0.139	-0.283**	-0.009
	(0.105)	(0.095)	(0.177)	(0.146)	(0.204)	(0.483)	(0.207)	(0.203)	(0.159)	(0.079)	(0.123)	(0.123)	(0.132)	(0.180)
1990	0.048	0.058	0.278	-0.006	0.397*	0.228	0.237	-0.026	0.095	0.427***	-0.030	-0.113	-0.263**	-0.070
	(0.104)	(0.095)	(0.177)	(0.144)	(0.204)	(0.477)	(0.204)	(0.203)	(0.156)	(0.077)	(0.123)	(0.121)	(0.132)	(0.180)
1991	0.054	0.060	0.285	-0.040	0.338*	0.219	0.098	-0.101	0.083	0.463***	0.006	-0.128	-0.241*	-0.145
	(0.104)	(0.095)	(0.177)	(0.144)	(0.204)	(0.477)	(0.200)	(0.199)	(0.154)	(0.077)	(0.118)	(0.121)	(0.132)	(0.180)
1992	0.098	-0.100	0.013	-0.046	0.738***	0.288	0.033	0.171	0.352**	0.444***	-0.036	0.010	-0.086	0.607***
	(0.096)	(0.093)	(0.162)	(0.136)	(0.185)	(0.477)	(0.192)	(0.183)	(0.144)	(0.076)	(0.113)	(0.114)	(0.119)	(0.161)
1993	0.067	0.039	0.292*	-0.088	0.410**	0.302	0.118	-0.072	0.218	0.470***	-0.059	-0.098	-0.191	-0.019
	(0.101)	(0.092)	(0.170)	(0.141)	(0.199)	(0.472)	(0.199)	(0.192)	(0.150)	(0.076)	(0.118)	(0.118)	(0.129)	(0.175)
1994	0.059	0.040	0.326*	-0.115	0.434**	0.340	0.043	-0.098	0.167	0.486***	-0.091	-0.148	-0.243*	-0.120
	(0.101)	(0.092)	(0.171)	(0.141)	(0.200)	(0.472)	(0.199)	(0.192)	(0.150)	(0.075)	(0.118)	(0.118)	(0.129)	(0.175)
1995	0.050	0.033	0.327*	-0.169	0.489**	0.318	-0.132	-0.102	0.144	0.420***	-0.049	-0.166	-0.266**	-0.052
	(0.101)	(0.092)	(0.171)	(0.140)	(0.200)	(0.472)	(0.199)	(0.190)	(0.146)	(0.074)	(0.117)	(0.115)	(0.125)	(0.170)
1996	0.098	0.029	0.365**	-0.280**	0.572***	-0.381	-0.274	-0.038	0.185	0.415***	-0.107	-0.258**	-0.301***	0.005
	(0.096)	(0.092)	(0.164)	(0.128)	(0.182)	(0.432)	(0.183)	(0.182)	(0.135)	(0.074)	(0.111)	(0.107)	(0.117)	(0.157)
1997	0.109	-0.002	0.401**	-0.307**	0.567***	-0.433	-0.264	-0.047	0.177	0.381***	-0.104	-0.323***	-0.377***	-0.051
	(0.097)	(0.092)	(0.164)	(0.128)	(0.181)	(0.429)	(0.182)	(0.182)	(0.135)	(0.074)	(0.111)	(0.107)	(0.117)	(0.157)
1998	0.121	-0.004	0.464***	-0.343***	0.591***	-0.453	-0.282	-0.049	0.226*	0.400***	-0.106	-0.373***	-0.434***	-0.088
	(0.097)	(0.092)	(0.165)	(0.128)	(0.181)	(0.428)	(0.182)	(0.182)	(0.135)	(0.074)	(0.111)	(0.107)	(0.116)	(0.156)
1999	0.138	-0.000	0.495***	-0.335***	0.748***	-0.354	-0.237	-0.038	0.266*	0.420***	-0.113	-0.370***	-0.454***	-0.019
	(0.097)	(0.092)	(0.166)	(0.128)	(0.180)	(0.426)	(0.182)	(0.182)	(0.136)	(0.074)	(0.112)	(0.107)	(0.117)	(0.157)
2000	0.153	-0.013	0.518***	-0.332***	0.783***	-0.372	-0.194	-0.033	0.260*	0.430***	-0.109	-0.420***	-0.491***	-0.051
	(0.095)	(0.092)	(0.166)	(0.127)	(0.179)	(0.423)	(0.181)	(0.183)	(0.135)	(0.074)	(0.112)	(0.106)	(0.116)	(0.156)
2001	0.170*	-0.003	0.517***	-0.324**	0.714***	-0.247	-0.148	0.017	0.265*	0.443***	-0.105	-0.438***	-0.491***	-0.117
	(0.095)	(0.092)	(0.166)	(0.127)	(0.179)	(0.411)	(0.181)	(0.181)	(0.136)	(0.074)	(0.112)	(0.106)	(0.116)	(0.156)
2002	0.199**	-0.014	0.520***	-0.307**	0.648***	-0.182	-0.086	0.004	0.262*	0.449***	-0.107	-0.485***	-0.518***	-0.229
	(0.096)	(0.092)	(0.166)	(0.127)	(0.179)	(0.408)	(0.182)	(0.180)	(0.136)	(0.074)	(0.112)	(0.106)	(0.116)	(0.155)
2003	0.238**	-0.035	0.555***	-0.302**	0.688***	-0.218	0.021	-0.007	0.247*	0.407***	-0.117	-0.497***	-0.540***	-0.253
	(0.096)	(0.092)	(0.167)	(0.127)	(0.178)	(0.408)	(0.182)	(0.180)	(0.136)	(0.074)	(0.112)	(0.106)	(0.116)	(0.155)
2004	0.249***	-0.051	0.559***	-0.332***	0.681***	-0.131	0.078	-0.126	0.205	0.368***	-0.128	-0.525***	-0.598***	-0.234
	(0.096)	(0.092)	(0.166)	(0.126)	(0.177)	(0.409)	(0.181)	(0.176)	(0.136)	(0.074)	(0.112)	(0.106)	(0.116)	(0.155)
2005	0.271***	-0.077	0.582***	-0.333***	0.723***	-0.144	0.156	-0.112	0.262*	0.302***	-0.107	-0.456***	-0.562***	-0.117
	(0.096)	(0.092)	(0.166)	(0.126)	(0.177)	(0.408)	(0.180)	(0.176)	(0.136)	(0.073)	(0.112)	(0.106)	(0.116)	(0.155)
2006	0.295***	-0.069	0.657***	-0.356***	0.765***	-0.271	0.206	-0.204	0.269**	0.166**	-0.097	-0.504***	-0.612***	-0.148
	(0.097)	(0.092)	(0.168)	(0.127)	(0.177)	(0.408)	(0.181)	(0.174)	(0.137)	(0.073)	(0.112)	(0.106)	(0.117)	(0.155)
2007	0.314***	-0.081	0.698***	-0.362***	0.795***	-0.396	0.249	-0.157	0.293**	0.056	-0.053	-0.518***	-0.618***	-0.163
	(0.098)	(0.092)	(0.169)	(0.127)	(0.177)	(0.407)	(0.181)	(0.174)	(0.137)	(0.073)	(0.112)	(0.106)	(0.117)	(0.156)
2008	0.310***	-0.127	0.660***	-0.362***	0.708***	-0.553	0.282	-0.090	0.334**	0.044	-0.037	-0.383***	-0.479***	-0.100
	(0.096)	(0.092)	(0.168)	(0.126)	(0.177)	(0.404)	(0.181)	(0.174)	(0.136)	(0.073)	(0.111)	(0.106)	(0.117)	(0.155)
2009	0.324***	-0.070	0.726***	-0.326**	0.598***	-0.222	0.362**	-0.109	0.375***	0.104	-0.006	-0.419***	-0.491***	-0.244
	(0.098)	(0.092)	(0.170)	(0.128)	(0.178)	(0.407)	(0.183)	(0.171)	(0.138)	(0.074)	(0.111)	(0.106)	(0.117)	(0.155)
2010	0.280***	-0.072	0.737***	-0.323**	0.611***	-0.236	0.329*	-0.146	0.352**	0.107	-0.053	-0.435***	-0.544***	-0.200
	(0.098)	(0.092)	(0.169)	(0.128)	(0.178)	(0.405)	(0.182)	(0.171)	(0.138)	(0.074)	(0.112)	(0.106)	(0.118)	(0.155)
2011	0.236**	-0.089	0.714***	-0.334***	0.551***	-0.233	0.294	-0.160	0.336**	0.120	-0.073	-0.405***	-0.536***	-0.151
	(0.098)	(0.092)	(0.168)	(0.127)	(0.177)	(0.404)	(0.181)	(0.171)	(0.138)	(0.074)	(0.112)	(0.106)	(0.117)	(0.155)
2012	0.222**	-0.076	0.730***	-0.337***	0.501***	-0.277	0.276	-0.172	0.367***	0.127*	-0.067	-0.461***	-0.583***	-0.218
	(0.098)	(0.092)	(0.169)	(0.127)	(0.176)	(0.405)	(0.182)	(0.171)	(0.138)	(0.074)	(0.112)	(0.106)	(0.117)	(0.155)
2013	0.204**	-0.055	0.725***	-0.346***	0.557***	-0.136	0.261	-0.166	0.376***	0.146**	-0.065	-0.475***	-0.612***	-0.169
	(0.098)	(0.092)	(0.169)	(0.127)	(0.177)	(0.404)	(0.182)	(0.171)	(0.138)	(0.074)	(0.112)	(0.106)	(0.118)	(0.155)
2014	0.193**	-0.059	0.742***	-0.343***	0.641***	-0.128	0.239	-0.109	0.349**	0.198***	-0.075	-0.454***	-0.604***	-0.109
	(0.098)	(0.092)	(0.169)	(0.127)	(0.176)	(0.402)	(0.181)	(0.172)	(0.138)	(0.074)	(0.112)	(0.105)	(0.117)	(0.155)
2015	0.224**	-0.032	0.792***	-0.352***	0.672***	-0.146	0.218	-0.140	0.353**	0.275***	-0.045	-0.485***	-0.621***	-0.122
	(0.098)	(0.093)	(0.170)	(0.127)	(0.176)	(0.403)	(0.181)	(0.172)	(0.137)	(0.074)	(0.112)	(0.105)	(0.117)	(0.155)
2016	0.222**	-0.005	0.799***	-0.364***	0.697***	-0.112	0.185	-0.143	0.290**	0.315***	-0.022	-0.479***	-0.634***	-0.087
	(0.098)	(0.093)	(0.170)	(0.127)	(0.176)	(0.402)	(0.181)	(0.172)	(0.137)	(0.074)	(0.112)	(0.105)	(0.117)	(0.155)
2017	0.226**	-0.016	0.797***	-0.380***	0.718***	-0.142	0.166	-0.179	0.343**	0.323***	-0.017	-0.524***	-0.685***	-0.107
	(0.099)	(0.093)	(0.172)	(0.127)	(0.177)	(0.402)	(0.182)	(0.175)	(0.138)	(0.075)	(0.112)	(0.106)	(0.117)	(0.155)
2018	0.224**	-0.043	0.759***	-0.385***	0.725***	-0.131	0.148	-0.180	0.326**	0.334***	-0.012	-0.488***	-0.662***	-0.049
	(0.098)	(0.093)	(0.171)	(0.126)	(0.176)	(0.401)	(0.181)	(0.176)	(0.137)	(0.075)	(0.112)	(0.106)	(0.117)	(0.155)
2019	0.220**	-0.031	0.779***	-0.448***	0.705***	-0.183	0.099	-0.213	0.316**	0.338***	0.031	-0.572***	-0.724***	-0.132
	(0.099)	(0.093)	(0.171)	(0.127)	(0.178)	(0.401)	(0.182)	(0.175)	(0.138)	(0.075)	(0.113)	(0.106)	(0.118)	(0.156)
2020	0.377***	0.063	0.910***	-0.305**	0.825***	-0.055	0.227	0.009	0.455***	0.502***	0.094	-0.540***	-0.643***	-0.140
	(0.100)	(0.094)	(0.174)	(0.128)	(0.178)	(0.403)	(0.183)	(0.182)	(0.138)	(0.075)	(0.113)	(0.106)	(0.118)	(0.155)
2021	0.374***	0.047	0.811***	-0.312**	0.849***	-0.086	0.131	0.039	0.431***	0.518***	0.070	-0.508***	-0.604***	-0.099
	(0.100)	(0.093)	(0.175)	(0.127)	(0.179)	(0.402)	(0.182)	(0.183)	(0.137)	(0.075)	(0.114)	(0.106)	(0.117)	(0.155)
2022	0.347***	0.015	0.786***	-0.416***	0.806***	-0.227	0.026	0.034	0.310**	0.457***	0.060	-0.557***	-0.686***	-0.134
	(0.100)	(0.093)	(0.174)	(0.128)	(0.180)	(0.402)	(0.183)	(0.184)	(0.138)	(0.075)	(0.114)	(0.107)	(0.118)	(0.156)
2023	0.368***	-0.010	0.816***	-0.455***	0.767***	-0.197	-0.009	0.020	0.288**	0.508***	0.065	-0.567***	-0.676***	-0.159
	(0.102)	(0.093)	(0.177)	(0.129)	(0.182)	(0.403)	(0.185)	(0.189)	(0.140)	(0.113)	(0.116)	(0.108)	(0.119)	(0.158)
Constant	-7.054***	5.074***	-5.170***	-6.629***	-4.731***	-13.733***	-10.883***	-0.911**	-0.526	-2.716***	2.607***	-2.534***	-5.226***	0.684*
	(0.271)	(0.178)	(0.635)	(0.384)	(0.402)	(0.934)	(0.498)	(0.458)	(0.435)	(0.147)	(0.409)	(0.285)	(0.258)	(0.384)
Observations	1,070	6,791	870	1,424	1,511	2,030	1,595	923	1,420	6,288	661	1,370	1,386	1,386
R-squared	0.968	0.862	0.909	0.960	0.901	0.770	0.897	0.935	0.941	0.939	0.972	0.977	0.970	0.943

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1