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**DEMOGRAPHY AND THE CURRENT ACCOUNT:
A CASE-STUDY OF ITALY**

by Domenico Depalo* and Claire Giordano*

Abstract

This paper investigates the role of demography in driving the current account (CA) 'norms' (i.e. the medium-term CA values consistent with economic fundamentals and desired policies) which are estimated by several international institutions. The paper makes two distinct contributions. First, it highlights that the use of population projections sourced from different institutions (namely, the United Nations, Eurostat, and Istat) can significantly alter the size of the positive contribution of demography to CA norms. In particular, for Italy and the other main euro-area economies, CA norm estimates are significantly lower if alternative projections to the more pessimistic UN projections are employed. Second, the paper extends the reference CA model to incorporate labour market indicators, consistently with a life-cycle hypothesis. This improvement results in additional downward revisions to CA norms, especially regarding Italy. Jointly, these findings underscore the importance of exercising great caution when interpreting model-based CA norm estimates for policy evaluation and external imbalance assessments.

JEL Classification: F40, C52.

Keywords: current account norm, demographic projections, misspecification.

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1. Introduction[1]

Currently, together with heightened tensions between geopolitically unaligned blocs, there has been a resurgence in interest in policy circles for global excess balances and their measurement. Several international institutions, including the International Monetary Fund (IMF) and the European Commission (EC), regularly assess the external sector of key countries, with a particular attention to the current account (CA) balance, the real effective exchange rate, and the net international investment position, in order to monitor and flag possible external imbalances. In particular, the IMF annually conducts an External Balance Assessment (EBA) of a set of high and medium-income countries, which then informs both the country-specific *Article IV* statement for these economies and the *External Sector Report*, including an appraisal of external imbalances of all countries and policy recommendations to correct them.

As regards specifically the CA, assessments are based on a reduced-form cross-country regression relating the CA balance to several macroeconomic determinants documented in the literature (the "CA model"), which leads to the estimation of country-specific CA "norms", i.e. CA "equilibrium" values consistent with fundamentals and desirable policies. One of the fundamentals that affects savings according to overlapping generations life-cycle models and indeed contributes significantly to the determination of this equilibrium value for several advanced economies is demography. In the case of the IMF EBA model, the latter is modelled with a series of contemporaneous and forward-looking variables; long-term multi-country population forecasts are sourced from UN to construct the latter. Actual CA balances are then benchmarked against these estimated CA norms to draw final assessments on a given country's external sector.[2]

This paper assesses the sensitivity of the CA norm estimate to the choice of population projections underlying the demographic block of the IMF CA model, the sample of countries under analysis, and the inclusion of some additional fundamentals, namely those related to labour market features, which may interact with demographics in affecting savings. To our knowledge, this is the first attempt in the empirical literature to address these measurement and econometric issues. Moreover, although we take the IMF EBA CA model as the reference model, our conclusions can be applied to any CA model. Throughout the analysis, we use Italy as a case-study and compare results to the other main euro-area economies.

In more detail, this paper first assesses the contribution of alternative demographic projections from various sources, namely United Nations (UN), Eurostat, and Istat, to the CA norm of Italy and other main euro-area economies (France, Germany, Spain); all other things are equal to the IMF model. Next, it estimates two alternative CA models. The first introduces heterogeneous coefficients across countries. The second augments the baseline specification with labour-market indicators (the unemployment rate and the labour participation rate), which complement the demographic variables in defining private savings, and runs statistical tests on these additional variables to investigate a potential omitted variable bias in the original EBA model. It finally computes the CA norms based on both this "augmented" specification for the four main euro-area economies and on alternative demographic projections.

[1] We thank Federico Cingano, Stefano Federico, Alberto Felettigh, Alfonso Rosolia, Luigi Federico Signorini, and Eliana Viviano for useful comments on previous drafts. We only use public data and information available in June 2025. The views expressed herein are those of the Authors and not of the institution represented.

[2] See Fig. A1 and Table A1 in Annex A for the IMF's recent appraisals for the full set of EBA countries.

The results show that by employing less pessimistic population projections than the UN ones, the CA norm estimates for Italy and the other main euro-area economies are lower than the IMF estimates. The inclusion of labour-market characteristics in the EBA model further narrows CA norm estimates, especially for Italy. By taking these aspects into account, external balance assessments for a given country can change materially. Although data constraints limit the practical possibility of both relying on alternative sources to UN population projections and of augmenting the EBA CA model with labour-market variables, this paper argues that greater caution is needed in basing final external sector assessments purely on model-based point CA norm estimates.

The remainder of the paper is structured as follows. Section 2 reviews the structure of the EBA CA model, the resulting IMF's norm estimates for Italy over time and the contribution of demography to these estimates. Section 3 describes the existing sources for long-run demographic projections for Italy (UN, Eurostat, Istat) and their underlying assumptions, and then measures the contribution of demography to the four main euro-area countries' CA norm when employing the alternatively sourced projections. Section 4 re-estimates the EBA CA model in order to document the sensitivity of CA norm estimates both to heterogenous coefficients across countries and to the inclusion of labour-market indicators for the main euro-area economies. Section 5 concludes.

2. Recent estimates of Italy's current account norm according to the EBA methodology

2.1 The EBA methodology

The current EBA methodology is based on three pillars (Allen et al., 2023): (i) a cross-country regression model to benchmark the CA (the "CA model"), (ii) similar regression models to benchmark the real effective exchange rate (REER); and (iii) the external sustainability approach, in cases where risks arising from a large net international debtor position can be relevant. The CA model is the IMF's workhorse for conducting external sector assessments and it is the focus of this paper. It provides an estimated CA gap by comparing an economy's CA balance (stripped of cyclical components) to its CA "norm".

In more detail, the CA model relates the CA balance, in percentage of the country's GDP, to several country-specific macroeconomic determinants. Since the CA balance is a multilateral outcome, determined not only by domestic variables but also by those of the other countries engaging in trade and financial transactions, the macroeconomic drivers are generally expressed relative to the (GDP-weighted) world average.[3] In principle, the inclusion of the determinants in the model is anchored on theoretical considerations.[4] However, since theory is not sufficiently explicit regarding which factors are robustly correlated with the CA balance (Barnes, Lawson and Radziwill, 2010; Ca' Zorzi, Chudik and Dieppe, 2012), the variables are subsequently selected on the basis of whether the estimated coefficients are consistent with the theoretical priors, statistically significant and robustly associated with the CA balance, via Bayesian Model Averaging (BMA) techniques. The EBA model explanatory variables are then grouped into cyclical and temporary factors (the output gap, the commodity terms-of-trade gap and changes in the REER), medium-term macroeconomic and

[3] The world average refers to the GDP-weighted average of the 52 countries in the EBA sample, which represent over 90 per cent of global GDP. The few variables not expressed relative to the world average concern those that are intrinsically multilateral, such as the net foreign asset position. Also, this formulation provides a straightforward interpretation for the policy variables, which can be seen a deviation from a common norm corresponding to world averages.

[4] See, for example, Della Corte and Giordano (2020) for a discussion of the manifold potential determinants of CA balances drawn from the literature.

structural fundamentals (the net foreign asset position, output per worker, expected real GDP growth, demographics, institutional quality and oil and natural gas reserves), and policy variables (fiscal policy, health spending, foreign exchange intervention interacted with capital controls and the credit gap). The IMF uses a single model to fit all countries in order to guarantee multilateral consistency and even-handedness of EBA assessments.

Since 2018 (and therefore since the EBA assessment on 2017), the IMF's CA model's demographic block accounts for the effects of a country's demographic features on its saving decisions according to a life-cycle overlapping generations model (Dao and Jones, 2018). Saving, capital flows and CA balances are indeed affected by differences in life expectancy, as well as by the share of savers *vis-à-vis* dissavers, which in turn depend on fertility and longevity trends.[5] The EBA model therefore includes both static and dynamic dimensions of demography. The static effect captures the impact of the age composition of a country's population on saving: generally, countries with a relatively high share of young or elderly population tend to dissave, while countries with a higher proportion of prime-aged population will tend to save more. This is captured by three variables, all measured relative to the world average: annual growth rate of the population (to proxy for the share of young people), the old-age dependency ratio (OAD; namely the ratio of population aged over 65 divided by population between 30 and 64 years old), and the share of prime-aged savers (aged 45-64) as a share of the total working age population (aged 30-64).[6] The dynamic effect captures the impact of longevity: countries where prime-aged savers expect to live longer (or have longer retirement periods) will need to save more, particularly if future generations cannot provide old-age support. The dynamic effect is captured by the life expectancy of a current prime-aged saver (again relative to the world average) and its interaction with future (i.e. 20 years ahead) OAD in order to capture non-linearities.

The EBA methodology was then further revised in 2022 (and hence applied as of the 2021 EBA; Allen et al, 2023). In addition to updating the dataset, the main refinements to the CA model included the adoption of the afore-mentioned BMA procedure to exclude non-robust variables, an expanded sample of economies, and complementary tools for assessing the relationship between CA balances and pension system features.[7] The modelling of the demographic block remained untouched.

[5] On this topic, see also Papetti (2021).

[6] The operational definition of working age population, based on the "fixed" age group 30-64 years, and thus of the OAD is taken from Dao and Jones (2018). Given its fixed nature, this proxy does not take into account the lengthening of life expectancy, of the working age and the resulting evolution of pension systems. The UN database, from which these indicators are sourced, would allow building OAD measures based on different definitions of the active population, as it contains data and projections on the number of persons for each individual year of age. However, the chosen proxy should still be common to all countries included in the EBA model, as all other explanatory variables in the EBA model, to ensure the even-handedness of the exercise, despite the cross-country heterogeneity in different welfare systems.

[7] The IMF assessed how pension system replacement and coverage rates, which indicate the share of worker's salaries that the system replaces on retirement and the share of the population covered, respectively, relate to the part of CA balances not already explained by the EBA model. A pension system's generosity, its system of financing, whether participation is mandatory or voluntary, and the share of the population that it covers can theoretically affect private savings. In an economy with myopic households or liquidity constraints, moving from a voluntary approach to a mandatory system can result in higher national saving and a rise in the CA balance. More generous pension system parameters should in principle amplify these effects. In addition, mandatory systems with a fully funded (FF) financing scheme, where workers accumulate funds for their retirement in accounts, may raise the CA balance by more than pay-as-you-go (PAYG) schemes, which are based on intergenerational budgetary transfers. The *OECD Pensions at a Glance* biennial reports mandatory (public and private) and voluntary replacement rates for a selection of economies spanning 2005-2021. The IMF's CA model specification includes the replacement and coverage rates as explanatory variables, as well as interactions between them. The results represent a noticeable improvement in fit and confirm the strong relation

Currently, the CA model is estimated for a sample of 52 countries using annual data for the 1986-2019 period and a pooled Generalized Least Squares (GLS) method with a panel-wide AR(1) correction due to the autocorrelation of the CA data (see Table A2 in Annex A for the estimated coefficients).

The CA norms are the benchmark levels consistent with the underlying macroeconomic and structural fundamentals at their actual values and with medium-term policies deemed desirable or appropriate by IMF staff. The cyclical and temporary factors are stripped out to estimate a medium-term cyclically-adjusted CA balance. The EBA CA gap is therefore the difference between the cyclically-adjusted CA balance and the CA norm.[8]

In a final step, IMF staff judgement is applied in order to define the final EBA assessment of a given country. This involves deciding how much weight to give to the outcomes of the different models (the CA model, the REER models and the External Sustainability approach). It may also involve the use of other external sector indicators that complement the models' outputs, as that discussed for example in footnote 7.

2.2 Recent EBA estimates of the CA norm for Italy

The gray bars in the left hand-side panel of Figure 1 depict the IMF's EBA estimates of Italy's CA norms since 2014.[9] In 2014-15 the norm was estimated at around 2 per cent of GDP, after which it gradually increased over time, with few exceptions linked to methodological changes depicted by the vertical dashed lines.[10] By 2020 Italy's CA norm was estimated at 2.8 per cent. After the final methodological update as of 2021 (Allen et al., 2022), Italy's CA norm rose further, reaching 3.8 per cent in 2023.

Based on the most recent editions of the *External Sector Report* in which this information is available, the red bars document the contribution specifically of the demographic block to Italy's CA norm since 2020. The role of the demographic variables considered jointly to Italy's EBA CA norm also increased over time, reaching a maximum of 2.5 per cent of GDP in 2023 and contributing by

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between mandatory replacement rates and CA balances, especially at high levels of coverage rates. The mandatory private replacement rates (which are often FF) have a stronger estimated relation with the CA than do mandatory public replacement rates (which are often PAYG), especially at higher rates of pension coverage. There are, however, considerable uncertainties associated with these estimates, which in part reflect the fact that the replacement rates are estimates of theoretical future rates. For this reason and since the necessary pension data are not available for the full EBA sample of 52 economies during 1986-2019, the IMF does not use these results to quantify formal adjustors to EBA CA benchmarks but to aid the interpretation of EBA CA model residuals and the formulation of policy advice.

[8] Because all borrowing must be matched by lending, the sum of all the world's CA deficits should be equal to the sum of its surpluses, and EBA CA gaps should add up to zero, in that excess deficits must be financed by excess surpluses (multilateral consistency). Although global CA balances should (theoretically) add up to zero, in practice a small adjustment is necessary to satisfy this constraint due to two factors. First, CA balances do not add up to zero across the EBA sample, both because the sample excludes some large net commodity exporters and because of the existence of a statistical discrepancy at the world level. Second, since some variables do not enter the regression in deviations from world averages, their aggregate contribution does not necessarily add up to zero. Therefore, EBA CA gaps need to be adjusted by a uniform amount (in terms of each country's GDP) so that they add up to zero across the EBA sample, and this adjustment is mostly applied to the CA norms.

[9] We do not include the EBA assessments for 2012-13 as the *Pilot External Sector Report* of the time only provided information on the interval of the CA gap and not the details of the other estimates.

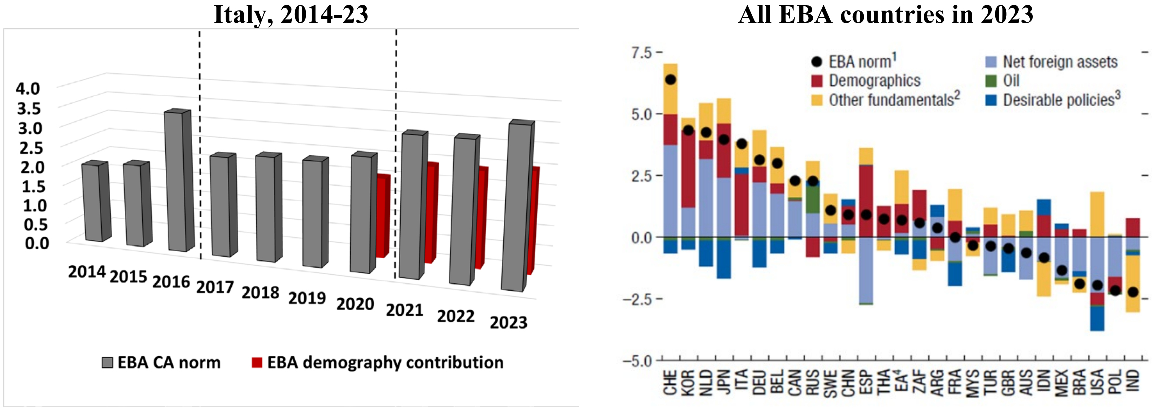
[10] In 2016 Italy's CA norm jumped to 3.5 per cent of GDP, "reflecting the automatic adjustment of retirement age in 2016 and its expected future revisions as legislated", which "for 2016 can outweigh otherwise lower effective retirement age" (IMF, 2017). In 2017 it came back down to around 2.5 per cent, "reflecting methodological refinements to the EBA framework, particularly as it pertains to capturing demographic effects and credit cycles" (IMF, 2018; see also Cubeddu et al., 2019).

nearly two thirds to the total norm. This contribution is high even in an international comparison, as it is similar only to those estimated for Spain, Korea and Japan (Fig. 1, right hand-side panel). Also, it is elevated also in comparison with other international institutions' estimates based on other reduced-form CA models. For example, the EC estimate for Italy's CA norm for 2023 was 1.8 per cent of GDP, with an estimated contribution of demographics of 1.5.[11] Demography thus continues to weigh heavily on Italy's CA norm according to this alternative model, but in absolute terms its contribution is much lower.

Figure 1 – The IMF's EBA CA norm estimates and the contribution of demographics

(percentage shares of GDP)

Italy, 2014-23 **All EBA countries in 2023**



Sources: IMF *External Sector Report*, various years.

Notes: The first vertical line in the left hand-side panel highlights the significant methodological change adopted in EBA assessments as of 2017 (Cubeddu et al., 2018), which makes the estimated CA norm thereafter not comparable to previous years; the second vertical line highlights the more recent, less impactful methodological update (Allen et al., 2022).

In the following section we dig deeper into the data and projections underlying the demography variables included in the EBA model and compare them with alternative data sources for Italy, in comparison also with the other main euro-area economies.

3. Demographic projections for Italy according to alternative data sources and their impact on the CA norm

As documented in the *External Sector Report* (IMF, 2024a), for the most recent years the IMF employed *Population prospects* (UN, 2019) to construct the demographic variables in the EBA CA model.[12] In this section we first summarize the projection methods employed by the UN and compare them to those of two other institutions that produce estimates for Italy, namely Eurostat and Istat. We then compute the demographic variables in the EBA model (discussed in Section 2.1) for Italy across the different sources and assess their impact on the IMF's CA norm estimate.

[11] The EC model is described in Coutinho, Turrini and Zeugner (2022) and is inspired by the former version of the EBA CA model covering the years until 2016 (Phillips et al., 2013). Specifically, the demographic variables included in this model are population growth, the OAD, the ageing speed (measured by the change in the OAD ratio expected over the subsequent twenty years) and ageing speed interacted with relative output per capita. According to Cubeddu et al. (2018), this specification had the shortcoming of confounding different forces (changes in longevity, cumulative fertility changes, and variations in cohort sizes) in one indicator (ageing speed) that, as a consequence, obfuscate the interpretation of associated results.

[12] These projections are currently unavailable as they have been replaced with the more recent 2024 vintage (UN, 2024a). However, we had downloaded the 2019 data before the 2024 edition was released and were therefore able to replicate the 2023 EBA variables.

Throughout the analysis we work with the *External Sector Report* on 2023 (IMF, 2024a), instead of the *External Sector Report* on 2024 (IMF, 2025), because for the latter the underlying data were not available at the time of writing. However, all the following analysis applies also to the latest version of the report.

3.1 The methodology underlying population projections in UN, Eurostat and Istat

As reported in Table 1, the approaches to the population projections of the UN, Eurostat, and Istat differ along various dimensions. The first is the reference population (from 237 countries of the UN to just one for Istat). Other differences are related to the statistical methodology (either deterministic or probabilistic models),[13] the underlying data, whose comparability becomes trickier as the number of countries increases, and the assumptions underlying projected data, with the most complex being those related to international migration patterns (UN, 2024b).

The UN projections refer to 237 countries and cover the period until 2101. They rely on probabilistic methods used to project future fertility and mortality levels and international migration, specifically to derive the trajectories of the total fertility rate, life expectancy at birth, and total net migration rates and counts. In addition, several different deterministic projection scenarios are produced to convey the sensitivity of the projections to changes in the underlying assumptions. The mean trajectory constitutes the medium-fertility scenario, which is that employed by the IMF and herein.[14]

Projections of country-specific fertility levels depend on the specific fertility stages the countries are in (namely, high-fertility, fertility transition, and low-fertility). The projection consists of two steps: the first models the transition from high to low fertility; the second implements a time-series model to further project fertility, assuming that the fertility level would approach and, in the long run, fluctuate around an ultimate country-specific level. This level is determined using the empirical evidence from low-fertility countries with similar characteristics.

Eurostat's most recent projections are from EUROPOP 2023 (Eurostat, 2024a). They are produced for 30 countries (the 27 EU countries, Iceland, Norway and Switzerland), until 2100. The approach used is deterministic, or 'what-if' population projections, based on assumptions of a future course of fertility, mortality, immigration and emigration. The scenario for fertility, mortality and migration developments is one of partial convergence among the 30 countries. This approach is justified under the motivation that socio-economic convergence in the EU will lead to convergence

[13] Probabilistic models incorporate inherent uncertainty in parameters (e.g., fertility, mortality, migration) by employing probability distributions, thereby allowing for the exploration of a range of potential future scenarios. Deterministic models assume fixed relationships and constant parameters, resulting in a single projected trajectory that does not account for stochastic variability.

[14] The alternative scenarios are: high fertility; low fertility; constant fertility; instant replacement, in which fertility is set to the level necessary to ensure a net reproduction rate of 1.0 starting in 2024; instant replacement zero migration, which additionally assumes zero net international migration; momentum, which is different from the previous only because mortality is held constant instead of being based on projections; differentiated fertility below age 18 years; accelerated decline of adolescent birth rate (ABR); accelerated decline of ABR with recovery. To gauge the level of uncertainty surrounding these estimates, the 80 and 95 per cent prediction intervals are also reported.

of additional drivers of demographic developments. The dataset includes the baseline population projections and five sensitivity tests.[15]

Table 1 – A comparison across methodologies underlying UN, Eurostat and Istat demographic projections

	UN	Eurostat	Istat
Geographic coverage	237 countries	30 countries (27 EU, Iceland, Norway, Switzerland)	Italy
Time horizon	Up to 2101	Up to 2100	Up to 2080
Statistical method	Probabilistic models for fertility, mortality and migration, plus deterministic scenarios	Deterministic "what-if" projections based on fertility, mortality and migration assumptions	Semi-probabilistic approach with expert-based scenarios
Fertility	Two-step modelling (transition theory regression + time-series), country-specific level	Assumed partial convergence among 30 countries; fixed assumptions per simulation	Direct expert inputs (average children per woman)
Mortality	Probabilistic projection of life expectancy at birth by sex	Deterministic age- and sex-specific mortality rates	Expert-driven scenarios; stochastic longevity distributions
International migration	Probabilistic net migration rates and counts, with multiple scenario variants	Deterministic flows (EU/non-EU) with high/low/no-migration sensitivity tests	Semi-probabilistic estimates of international and internal migration based on expert panel
Uncertainty quantification	80% and 95% prediction intervals	No statistical intervals; five sensitivity tests	Explicit confidence intervals
Projection scenarios	10 deterministic scenarios (see footnote 14)	Baseline plus 5 sensitivity tests (see footnote 15)	Single expert-based scenario with user-defined confidence levels
Baseline year	Population as of 2019	Population as of January 2022	Population as of January 2023
Data updates	Quinquennial revisions (latest: 2024)	Annual updates (latest: EUROPOP 2023)	Periodic updates (latest series released in 2024)
Expert involvement	None	None	Panel of 121 academics/researchers via CAWI questionnaire

[15] These include, for example, a no migration scenario, a lower net migration scenario (due to 33 per cent decrease applied to the non-EU immigration flows), and a higher net migration scenario (due to 33 per cent increase applied to the non-EU immigration flows).

Finally, Istat's demographic projections (Istat, 2024a), available at the time of writing until 2080, aim to model Italy's future population trends, both in terms of size and age-gender structure, by periodically updating assumptions on fertility, survival, and both international and internal migration. The methodological approach is semi-probabilistic, explicitly accounting for uncertainty through confidence intervals (Istat, 2024b). The process is underpinned by a comprehensive methodology that includes defining the base population, projection techniques, and the forecast period, among other components.

A distinctive feature of Istat's approach is the expert-based scenario. A panel of 121 national experts, mostly academics and public research professionals, voluntarily provides inputs via a Computer Assisted Web Interviewing (CAWI) questionnaire (Billari et al., 2012). An advantage of this approach is the simplicity. The elicited opinions regard only core indicators, such as the average number of children per woman, sex-specific life expectancy, and migration flows. The distribution of the elicited opinions then fosters the stochastic component of the demographic evolution. To maintain parsimony, additional information (e.g., the timing of demographic events) is processed separately. However, the voluntary participation may introduce a systematic sorting into the survey, which could potentially bias the results, e.g. if the most expert demographers prefer not to be interviewed. Similarly, "peer effects" among researchers might bias the forecasts. While the latter drawback is plausibly mitigated by the CAWI questionnaire, the former may be more relevant. Although the available information on interviewed scholars is not enough to draw conclusions on its potential severity, the educated forecasts on the possible evolution of demographic patterns in Italy should more than offset the potential bias from systematic sorting.

3.2 Italy's demographic projections according to alternative sources

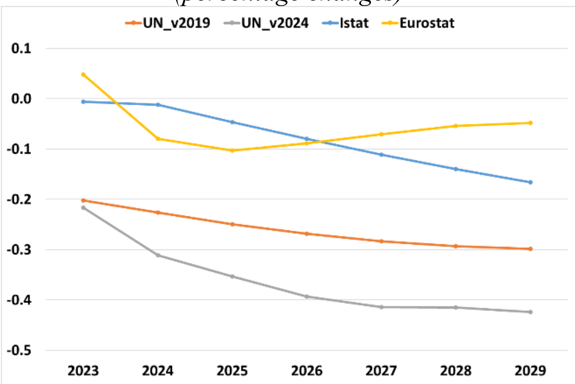
Since notable methodological differences exist between the three institutions' approaches, it is unsurprising that resulting demographic projections differ. Although all forecasts indicate a gradual decline in Italy's population over the next sixty years, the UN medium-variant projections report a significantly more pronounced decline (Fig. A2 in Annex A; left hand-side panel). Similarly, Italy's OAD ratio increase is much larger in the case of UN forecasts, reaching an exceptional 98 per cent by 2080, a share that is 10 percentage points higher than for Istat and Eurostat (Fig. A2; right hand-side panel). UN medium-variant forecasts are indeed more conservative regarding net migration, aligning with the lower bound of Istat's confidence interval, whereas Eurostat's inclusion of a replacement migration component leads to a more optimistic scenario, occasionally exceeding Istat's upper confidence bound.

In Figure 2 we report the five variables (in absolute terms, not relative to world averages) included in the demographic block of the EBA CA model, until 2029, computed for Italy across the two UN vintages (2019 and 2024), Eurostat, and Istat. Whilst the projections from all the sources reach the same qualitative conclusions, quantitative differences are in some cases substantial (see for instance panel *e* on the future OAD ratio), even within the next five years. Given the underlying methodological approaches, Eurostat and Istat projections, based on deterministic models, are always closer together than when compared to UN, based on probabilistic methods. The gap in the predictions across institutions are common to all the main euro-area countries. In Figure A3 in Annex A, we report the same indicators (based on the two UN vintages and on Eurostat data) for Spain, the other euro-area country for which the role of demography is very significant in explaining the CA norm.

Figure 2 – Key demographic variables for Italy according to alternative data sources

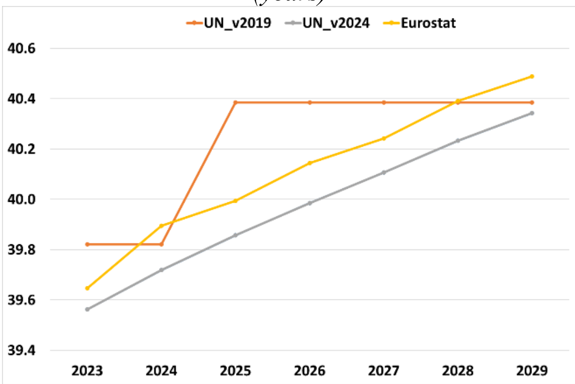
a) Population change

(percentage changes)



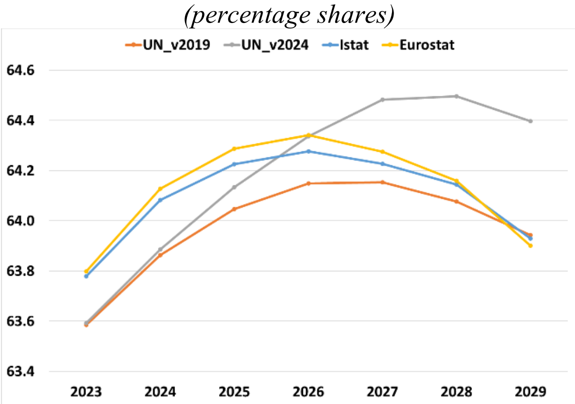
b) Life expectancy at 45

(years)



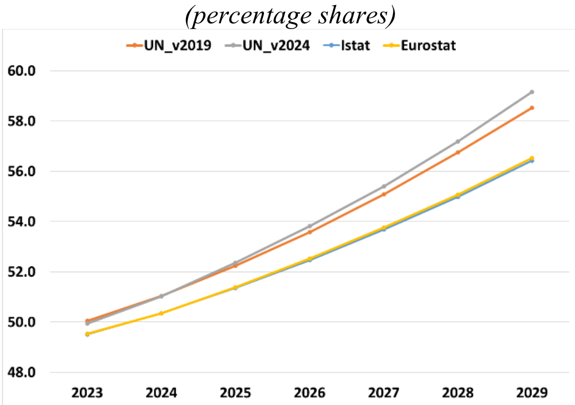
c) Share of prime-savers

(percentage shares)



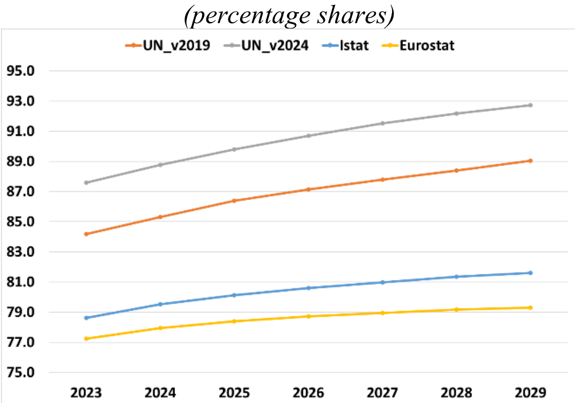
d) Old-age dependency ratio

(percentage shares)



e) Future (20-years forward) old-age dependency ratio

(percentage shares)



Source: authors' calculations on UN, Istat and Eurostat data.
Notes: UN projections refer to the medium-fertility scenario. Istat does not publish projections for life expectancy at 45 and is therefore not reported in panel *b*. The Istat and Eurostat contemporaneous OAD ratios are very similar to the extent that the two series are not easily distinguished in panel *d*.

3.3 Sensitivity of CA norm estimates using alternative demographic data sources

We now assess the impact of the alternative demographic projections on the CA norm both for Italy and the other main euro-area countries. We use the different sources to compute Italy's demographic indicators relative to (data source-consistent) world averages[16] and compute the

[16] When using Istat data, to compute the world average we use Istat for Italy and the 2024 UN vintage for the other EBA countries; for life expectancy at 45 we use the latter source also for Italy. When using Eurostat data, to compute the world average we use Eurostat data for the 30 countries available, and the 2024 UN vintage for the remaining EBA economies.

corresponding contributions to the CA norm by employing the fixed coefficients estimated by Allen et al. (2023) and reported in Table A2 in Annex A. We measure the contribution of the demographic block not only for 2023, but also for the years up to 2029, assuming the EBA coefficients are not re-estimated.[17] Our results based on the 2019 UN vintage for 2023 replicate the EBA demographic contributions in 2023 reported in the 2024 *External Sector Report* (IMF 2024a) very closely[18] and are included in Figure 3 only for that year as a benchmark; as the 2025 *External Sector Report* (IMF, 2025) employs the more updated 2024 UN data vintage, we use the latter as the new IMF benchmark for 2024 onwards.[19]

The contribution of the demographic variables to the CA norm varies considerably in size according to the population projection source. Specifically for Italy, all three sources suggest a small rise in the contribution in 2024 and then a mildly downward trajectory until 2029. However, the contributions are between 0.5 and 0.7 per cent of GDP lower over the whole horizon when employing Istat or Eurostat projections, respectively, relative to those based on 2024 UN forecasts.[20]

We again compare Italy to Spain, using Eurostat projections. The contribution based on Eurostat data is significantly lower than that based on 2024 UN also for Spain, although the differential narrows over time (from 0.9 per cent point of GDP to 0.4 in 2029). Despite demography being less relevant for France and Germany's external imbalances, even for these economies the Eurostat-based estimate is again lower than the UN one, with the exceptions of France in the last two years of the forecast horizon.[21]

As in the EBA, world averages are calculated by weighting each variable with each country's GDP, sourced from IMF (2024).

[17] We focus on a horizon until 2029, given the availability of IMF WEO GDP projections – necessary to build world averages – until that year at the time of writing of this paper.

[18] Any differences with figures reported in IMF (2024a) are under 0.1 percentage points of GDP and presumably reflect rounding effects.

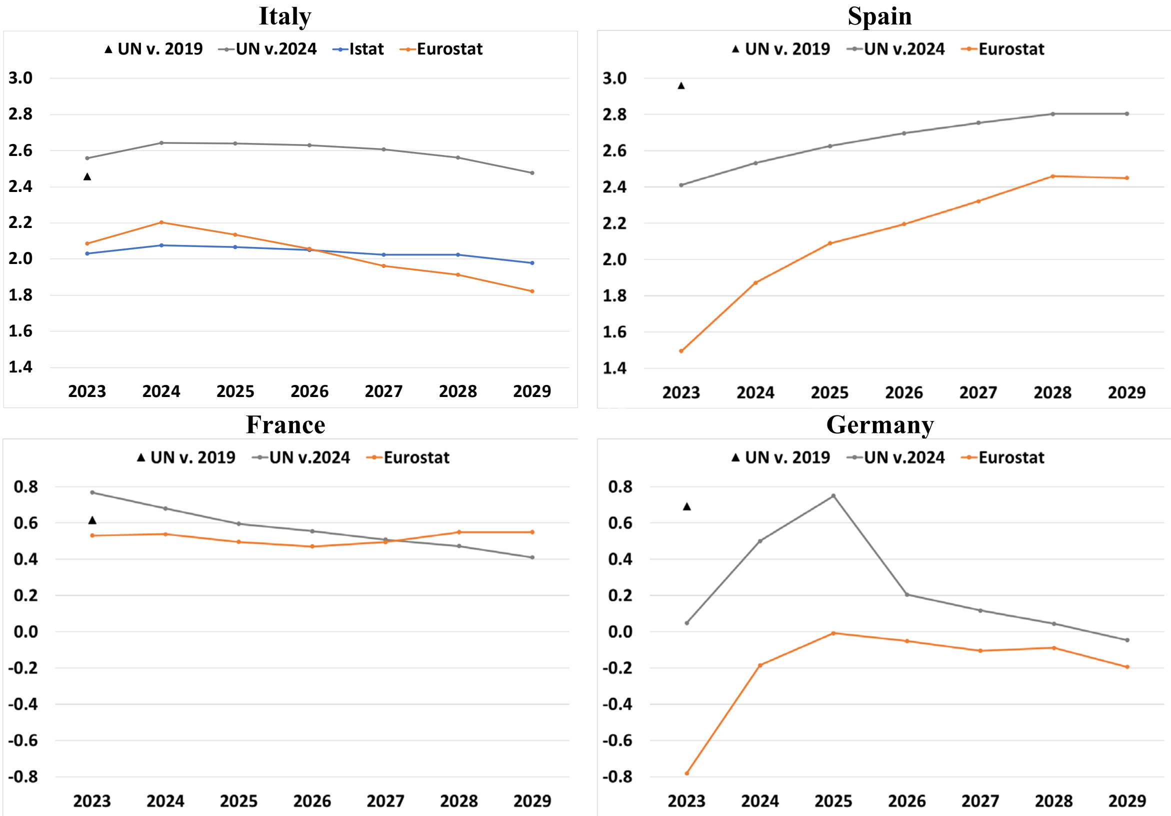
[19] It is interesting to note that for 2023 even simply using a different vintage of UN forecasts (vintage 2024 instead of 2019) leads to significantly different contributions to the CA norm in all four main euro-area economies, especially in Germany and Spain.

[20] All other things equal, for 2023 this would have entailed an EBA CA norm of 3.3 per cent of GDP; with an estimated cyclically-adjusted CA of 0.8 per cent at the time of publication of the 2024 *External Sector Report* (IMF, 2024), this would have implied a CA gap of 2.5 per cent. This gap would have still classified Italy's CA balance as "weaker than fundamentals" (again see Figure A1 in Annex A), but it is still a non-negligible difference.

[21] In Germany the strong rises of the demography contribution in 2024 and in 2025 relative to the previous year is due to the significant drop in population growth.

Figure 3 – The contribution of the EBA demography block to the main euro-area economies CA norms, according to different demography projections

(percentage shares of GDP)



Source: authors' calculations on UN, Istat, Eurostat and IMF EBA data.

The differences across population projections and their resulting impact on the CA norm beg the question of which is the most appropriate estimate to be employed in the context of the EBA. In addition to wide country coverage, under the UN approach one model fits all countries, which is a necessary prerequisite to consistently project the demographic evolution of a high number of economies and which fully complies with the even-handedness underlying the EBA. However, multi-country projections are constrained by varying data availability and quality, and their underlying models thus need to balance the trade-off between flexibility and robustness. For this reason, when focusing on a single country, projections based on a model specification specific for that country are plausibly more accurate. Therefore, when available, these more accurate predictions would be useful for cross-checks in the context of the EBA exercise, at least for those economies in which the contribution of demography to the CA norm is particularly high.

4. Potential econometric issues of the demographic block in the EBA model and their impact on CA norms

We have thus far documented how CA norm estimates can be sensitive to the data employed to construct the CA model explanatory variables. In this section we instead discuss potential model misspecification of the EBA CA model, which could lead to a further bias in the CA norm estimates.

To this aim, we first replicate the EBA CA model estimates (Table 2, col. 1) and then re-estimate the same model on the slightly smaller sample of countries (Table 2, col. 2) for which we could construct the additional explanatory variables we will later discuss. This step assures that all the differences relative to the original EBA model are attributable to the econometric issues that we next analyze, and not to the different country samples.

4.1 Potential econometric issues

In general, there are two potential issues with the EBA modelling approach described in Section 2.1. One is related to the possible heterogeneity of coefficients across countries, and one is related to the model specification.

As regards the first issue, we recall that the EBA CA model is based on a pooled GLS method (see Section 2.1), and CA norms are estimated on the basis of the same, fixed coefficients across all countries. While a single model may be appropriate for statistical efficiency (because the number of parameters to be estimated decreases), there is no guarantee that the relation between the CA balance and each of the explanatory variables of the model is indeed of the same magnitude across countries, especially if no country fixed effects (FE) are included in the model specification as in the case of the EBA model (for a discussion, see Chinn and Prasad, 2003).[22] To prove this point, we re-estimate the model for European (Table 2, col. 3) and advanced economies (col. 4; see Table A3 for the list of countries) only and test the relevance of possible non-linearities of estimated coefficients. As we do not want to constrain the CA to be in equilibrium only within these regions, we use the same variables of Columns 1-2, which are generally expressed relative to world averages (Section 2.1).[23] We focus only on the magnitude and sign of the coefficients, as standard errors increase mechanically, due to the lower number of observations. Coefficients of the demographic block, fiscal policy, and health expenditure are remarkably different, whereas in all other cases they remain broadly similar. This finding suggests that, at least for the former set of determinants, there is substantial non-linearity. For demography this is to be expected, as countries included in the EBA sample are at different stages of their demographic transition. Moreover, these results support the fact that the empirical evidence on older age dissaving is actually ambiguous and can differ across countries, as discussed in the next paragraph. One simple solution to balance the trade-off between efficiency and consistency of the estimator would be the interaction of the abovementioned variables and (a set of) countries, e.g. between demographic variables and the flag for advanced countries. Techniques for variable selection (including the BMA already employed by the IMF) would be helpful to estimate the most appropriate specifications.

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[22] A model with FE would use the same coefficients across countries, while allowing the intercepts to change across units. Therefore, all other things equal, the level is allowed to be different. In this respect a FE model is a middle ground between the "fully restricted", common coefficient model of the EBA, and a "fully flexible" model which allows all the coefficients to vary by country.

[23] To capture country parameter heterogeneity, showing only the European/advanced economies coefficients is without loss of generality. Indeed these coefficients are identical to those from a model $y=(1-\sharp)(X_0 \beta_0)+\sharp(X_1 \beta_1)$, with $\sharp$ an indicator function taking value equal to 1 for European/advanced economies, where in Table 2 we only show the latter set of coefficients. If we do not distinguish between economies, we obtain an average of the underlying coefficients. This property highlights the similarity of our approach to the common correlated effects mean group estimators adopted by other institutions, for example, for REER equilibrium estimation (e.g. Giordano, 2020 and 2021); this method first estimates regressions country-by-country and then averages over the country-specific coefficients.

Table 2 – Regression results

VARIABLES	(1) EBA model	(2) Restricted country sample	(3) Europe	(4) Advanced economies	(5) Unemployment	(6) Labour participation	(7) Final "augmented" model
Output gap #	-0.297***	-0.321***	-0.340***	-0.314***	-0.339***	-0.319***	-0.330***
	(0.035)	(0.038)	(0.091)	(0.082)	(0.040)	(0.037)	(0.040)
Commodity terms-of-trade gap interacted with trade openness	0.291***	0.277***	0.265***	0.281***	0.277***	0.275***	0.275***
	(0.047)	(0.048)	(0.088)	(0.075)	(0.048)	(0.048)	(0.048)
REER annual log-change (lagged)	-0.015***	-0.017***	-0.002	-0.003	-0.018***	-0.017***	-0.018***
	(0.006)	(0.006)	(0.018)	(0.012)	(0.006)	(0.006)	(0.006)
Net foreign asset (NFA) position (lagged)	0.036***	0.036***	0.036***	0.039***	0.035***	0.035***	0.034***
	(0.005)	(0.005)	(0.009)	(0.008)	(0.005)	(0.005)	(0.005)
Output per worker (lagged)	0.034***	0.032**	-0.004	0.005	0.029**	0.029**	0.027**
	(0.013)	(0.013)	(0.026)	(0.023)	(0.013)	(0.013)	(0.013)
Expected real GDP growth 5 years ahead #	-0.296***	-0.286**	-0.319	-0.211	-0.307***	-0.309***	-0.320***
	(0.108)	(0.116)	(0.285)	(0.257)	(0.117)	(0.115)	(0.116)
Old-age dependency ratio (OAD) #	-0.096**	-0.099**	-0.103	0.025	-0.099**	-0.082*	-0.084*
	(0.042)	(0.043)	(0.096)	(0.073)	(0.043)	(0.044)	(0.044)
Population growth #	-0.797**	-0.672*	-0.087	-0.892	-0.721*	-0.587	-0.626
	(0.364)	(0.383)	(0.871)	(0.708)	(0.383)	(0.381)	(0.381)
Share of prime-aged savers #	0.124**	0.168***	0.315***	0.222**	0.165***	0.180***	0.177***
	(0.056)	(0.061)	(0.111)	(0.092)	(0.061)	(0.061)	(0.060)
Life expectancy #	-0.004***	-0.005***	0.009	0.004	-0.005***	-0.005***	-0.006***
	(0.001)	(0.001)	(0.009)	(0.007)	(0.001)	(0.001)	(0.001)
Interaction between life expectancy # and future OAD	0.013***	0.014***	-0.012	-0.006	0.016***	0.015***	0.016***
	(0.004)	(0.004)	(0.016)	(0.013)	(0.004)	(0.004)	(0.004)
Institutional quality #	-0.046**	-0.053**	0.041	0.029	-0.055**	-0.053**	-0.054**
	(0.020)	(0.022)	(0.043)	(0.038)	(0.022)	(0.022)	(0.022)
Exhaustible resources of oil and natural gas	0.304***	0.306***	0.283***	0.298***	0.305***	0.280***	0.282***
	(0.074)	(0.073)	(0.099)	(0.102)	(0.073)	(0.073)	(0.073)
Fiscal policy (instrumented) #	0.307***	0.313***	0.501***	0.464***	0.302***	0.271***	0.269***
	(0.077)	(0.081)	(0.136)	(0.122)	(0.081)	(0.083)	(0.083)
Health spending (lagged) #	-0.298**	-0.299**	0.061	-0.005	-0.241	-0.328**	-0.289*
	(0.143)	(0.149)	(0.278)	(0.252)	(0.153)	(0.149)	(0.153)
Foreign exchange intervention interacted with capital controls (instrumented) #	0.631***	0.474*	-2.401**	-2.275**	0.467*	0.469*	0.465*
	(0.225)	(0.265)	(1.022)	(0.998)	(0.264)	(0.262)	(0.261)
Credit gap #	-0.096***	-0.097***	-0.116***	-0.114***	-0.098***	-0.096***	-0.097***
	(0.014)	(0.014)	(0.023)	(0.022)	(0.014)	(0.014)	(0.014)
Unemployment rate #					-0.001*		-0.000
					(0.000)		(0.000)
Labour force participation rate #						0.001***	0.001**
						(0.000)	(0.000)
Constant	-0.005	-0.004	0.000	-0.013*	-0.003	-0.003	-0.002
	(0.003)	(0.003)	(0.010)	(0.008)	(0.003)	(0.003)	(0.003)
Observations	1,480	1,374	601	766	1,374	1,374	1,374
Number of ifs_code	52	48	20	25	48	48	48
R-squared IV	0.490	0.493	0.592	0.556	0.501	0.499	0.503
R-squared fit	0.525	0.529	0.473	0.443	0.538	0.532	0.536
Root MSE	0.032	0.032	0.061	0.060	0.032	0.032	0.032
Hp: Unemp.=0					3.256*		1.211
Hp: Part.=0						8.257***	6.436**
Hp: Part.=Unemp.=0							9.213***

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
# represents variables expressed relative to the world average.

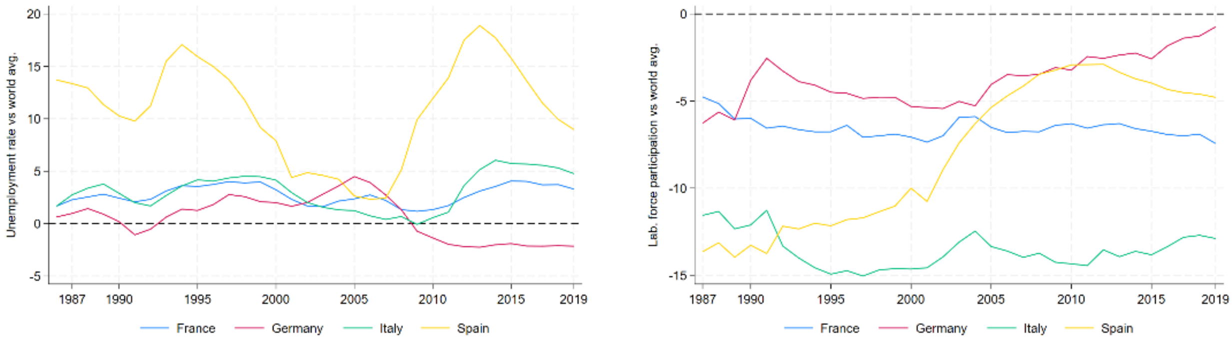
As concerns the second issue on model specification, there is a possible omitted variable bias stemming from the exclusion of other determinants that may interact with demography to affect saving decisions. According to the life-cycle hypothesis (Modigliani and Brumberg, 1954; 1980), individuals set their consumption and saving considering their entire lifetime, namely they finance the consumption during retirement with saving during working years. Accordingly, the existing empirical literature finds that the elasticity of consumption to income is well below one (for the European Union, Carta and Depalo, 2025; for Italy, De Bonis et al., 2023; using micro level data, further evidence is in Battistin et al., 2009, and Ventura e Horioka, 2020). This is consistent with the view that current labour income is not intended to fund current consumption alone. Our intuition is that a reduction in unemployment or an increase in employment and labour market participation place more individuals in the accumulation step. The resulting increase in overall income (as labour market income is one of its main components) is partly allocated to building the stock of wealth needed to sustain consumption during retirement, which results in an increase in private savings.[24]

If the intuition is true and if labour-market features are relevant for the norm (and correlated with other explanatory variables), then the model may suffer from an omitted variable bias. That is, on top of not capturing the direct effect of labour-market conditions on the norm, the chosen model specification would imply that all other estimated coefficients are biased; jointly, these limitations would jeopardize the estimated norm.[25]

We consider the unemployment rate and the labour participation rate as (relatively easily accessible) key indicators of the labour market; when computed at annual frequency and relative to world averages, they may be considered as slow-moving, structural features of the labour market in a given economy. In all main euro-area economies, and Italy in particular, unemployment rates are higher than the world average, whereas the labour force participation rates are lower (Fig. 4). Looking forward, even though the two labour-market characteristics are improving, their gap with the rest of the world is unlikely to narrow, because in emerging economies both indicators improve faster.

Figure 4 – Key labour-market indicators for the four main euro-area economies

Unemployment rate *(percentages of total labour force; difference from world average)*	**Labour participation rate** *(percentages of total population; difference from world average)*



Source: IMF (2024b) and ILO.

When we augment the IMF's CA model specification with the unemployment rate and/or the labour participation rates (cols 5, 6 and 7 in Table 2), the coefficients of the benchmark specification in column 2 generally change only marginally, while those related to the demographic block change markedly.[26] In particular, the magnitude of the OAD ratio and population growth coefficients decreases substantially and so does the associated statistical significance. Furthermore, the unemployment rate and the labour participation rate coefficients are statistically significant at standard confidence levels. The former variable is negatively correlated with the CA balance, whereas the latter positively. This result is consistent with the empirical evidence of an elasticity of consumption to income lower than one. A formal test reported in the lower section of Table 2 strongly

[24] We do not present the results using employment because in some observations there were gaps and needed to be imputed. However, the results are very similar to those reported in Table 2.

[25] This aspect is relevant even if the ultimate scope of the exercise is data fitting rather than causal inference, as in CA model estimation. To see this, consider a simple example with countries A and B, that share the same population structure, but different participation and unemployment rates. Their norms will be identical in the case of omitted variables, i.e. if the labour market determinants are excluded, but different when controlling for the additional indicators.

[26] It is noteworthy that in particular the coefficients of the output gap, the terms of trade and the REER, namely the cyclical variables in the EBA CA model, remain substantially unchanged, confirming the fact that the two labour-market-indicators can be employed as proxies of structural features of the labour market in the context of this model.

rejects the null hypothesis that the additional coefficients are jointly equal to zero. It follows that the simpler model specification adopted from the IMF returns biased coefficients, and therefore the norm estimate is not fully consistent.

Before we move on in the next sub-section to assess the impact of this "augmented" EBA CA model on CA norm estimates, it is useful to note that, similarly to our example on labour-market features, which can be theoretically grounded in the life-cycle hypothesis and is complementary to demographic characteristics, other significant variables justified by theory (and discussed, for instance, in Della Corte and Giordano, 2022) may have been omitted from the IMF specification, subsequently biasing the coefficients.

4.2 "Augmented" CA norm estimates

Figure 5 (left hand-side panel) compares the EBA CA norm estimates for 2023 from the 2024 *External Sector Report* (IMF, 2024a) of the four main euro-area economies based on col. 1 of Table 2 (black bars) to those stemming from the final "augmented" specification reported in col. 7 (orange bars).[27] Accounting for labour-market indicators, the norm estimate drops in all four main euro-area countries, particularly so in the case of Italy. All other things equal, Italy's CA norm would have been 0.5 percentage points lower, standing at 3.3 per cent of GDP. By further including Eurostat demographic projections in lieu of the 2019 UN projections employed in IMF (2024a; green bars), the norm estimates are further narrowed across the board, going down to 2.9 per cent of GDP specifically in the case of Italy.

This smaller norm estimate would not have mechanically changed the assessment for Italy in 2023 (Fig. 5, right hand-side panel), given the estimated cyclically-adjusted CA of 0.8 per cent at the time of publication of the 2024 *External Sector Report* (IMF, 2024a) and the resulting arithmetic CA gap of 2.1 per cent of GDP. However, the appraisal would have been borderline with the more favourable "moderately weaker" assessment.

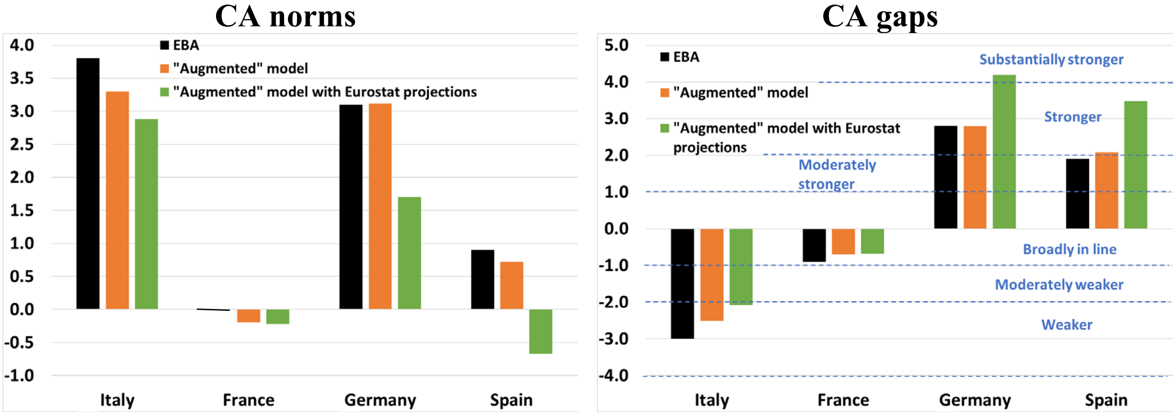
By contrast, Spain's assessment would have mechanically shifted from "moderately stronger" to "stronger", and Germany's from "stronger" to "substantially stronger".[28]

[27] The black bars represent the official EBA estimates and serve as the benchmark for external sector assessments. To ensure comparability with the CA norms based on column 7 of Table 2 – which are estimated on a smaller country sample – the orange bars adjust the official EBA estimates for the difference between the EBA model and the CA norm estimates based on column 2 of Table 2. For example, for Italy in 2023, the norm based on column 2 is 4.1 per cent of GDP, which is 0.3 percentage points higher than the official EBA estimate. The norm from column 7 is 3.6 per cent of GDP, or 0.5 points lower than the column 2 value. Therefore, the orange bar in Figure 5 is constructed by lowering the official EBA estimate by 0.5 percentage points.

[28] According to IMF (2024a) and hence the UN 2019 data, the contribution of the demographic block to Germany's 2023 CA norm was 0.6 per cent of GDP against -0.7 based on Eurostat data; however, as shown in Figure 3, simply by using the more updated 2024 vintage of UN data for 2023, would have led to a 0.0 percentage point contribution of demography, which is slightly closer to the Eurostat-based estimate.

Figure 5 – Estimates of the 2023 EBA CA norm and gaps according to different models and projections

(*percentage shares of GDP*)



Source: IMF (2025a) and authors' calculations on ILO, IMF WEO and IMF EBA data.

5. Conclusions

According to overlapping generations life-cycle models, demographic characteristics of a given country significantly affect saving decisions, and therefore its current account (CA) balance. For several advanced economies including Italy, CA norms – which are estimated by some international institutions as benchmarks against which actual CA balances are appraised – are indeed largely driven by the contribution of demographic variables. In its annual External Balance Assessment (EBA) the IMF measures the latter variables with UN population projections.

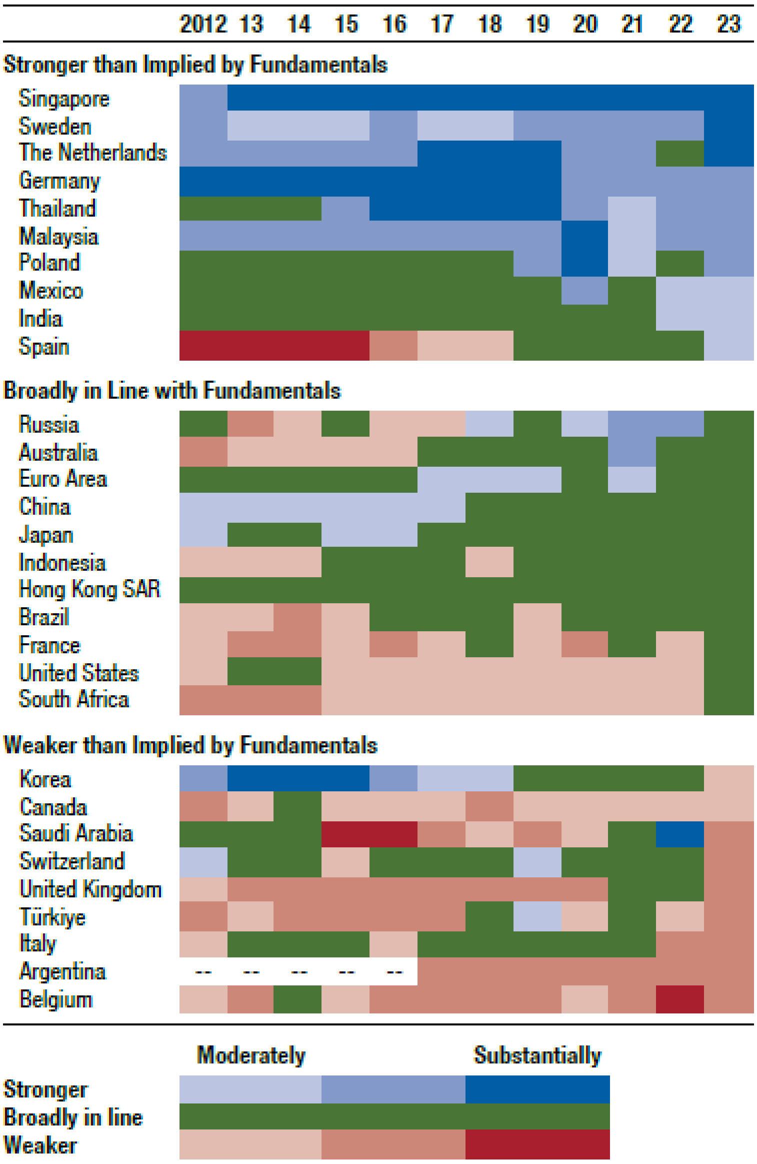
This paper documents how: (i) UN forecasts point to more pessimistic long-term demographic outcomes for Italy than Eurostat and Istat; (ii) by keeping all other things equal in the IMF EBA model, the estimated contributions of the demographic variables to the CA norm differ significantly according to the demographic projections considered, also for the other main euro-area economies for which Eurostat forecasts may be used, with UN-based estimates markedly in the upper range; (iii) the inclusion of the unemployment and the labour participation rates as additional "fundamental" explanatory variables in the EBA model affects only the coefficients of the demographic block, therefore implying a significant interplay between demographics and labour-market characteristics in affecting households' saving behaviour, and further narrows CA norm estimates, especially for Italy.

These results suggest that model-based point estimates of the CA norm should be considered with greater caution in the evaluation of external imbalances. Particularly when focusing on the modelling of the demography-CA balance link, a first important consideration stems from whether, and under which form, long-term forward-looking variables are included in the demographic block. If forward-looking variables are indeed included, these in turn are based on long-term projections, which lead to higher uncertainty around CA norm point estimates. Clearly, UN projections – which are the only ones available for a large set of countries and which are constructed consistently – are the only possible source for the EBA and for any other institution, and picking the medium-fertility scenario is the most appropriate strategy. However, cross-check estimates based on Eurostat projections, which are available for a significant subset of EBA countries, could be produced. Informed and transparent judgement deriving from sensitivity analysis based on alternative demographic scenarios and country-specific knowledge could then be employed, especially for those countries for which the contribution of demographics to the CA norm based on UN projections is exceptionally large.

Moreover, in future revisions of the EBA and similar CA models it could be worth exploring the possibility of augmenting the CA model specification with labour-market variables at least with a complementary analysis, similarly to that conducted in Allen et al. (2023) on pension system features, in order to apply further informed judgement to the model-based point estimates. Meanwhile, greater transparency, as well as greater caution in communicating assessments based on model-based estimates, are warranted.

Annex A – Additional figures and tables

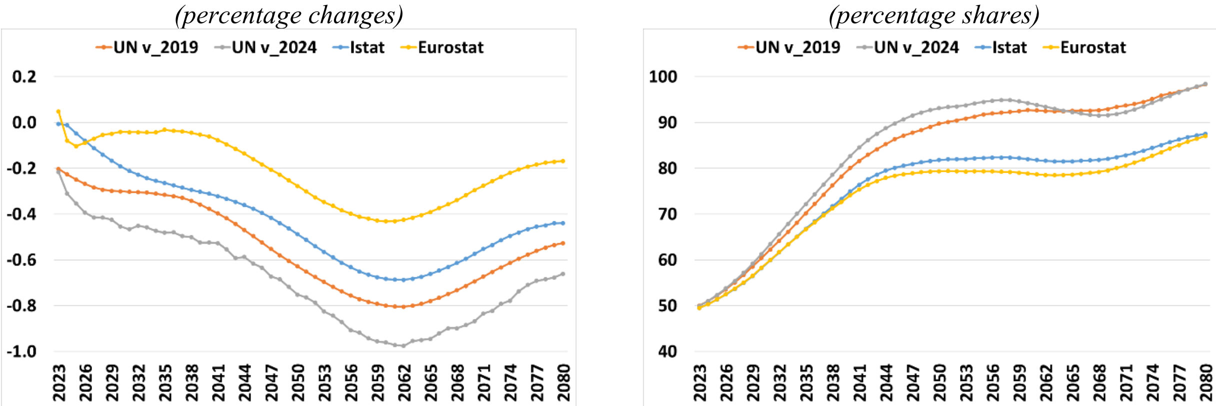
Figure A1 – Evolution of External Sector Assessments



Source: IMF (2024a).

Figure A2 – Key demographic variables for Italy in the long term according to alternative data sources

Population change *(percentage changes)* | **Old-age dependency ratio** *(percentage shares)*

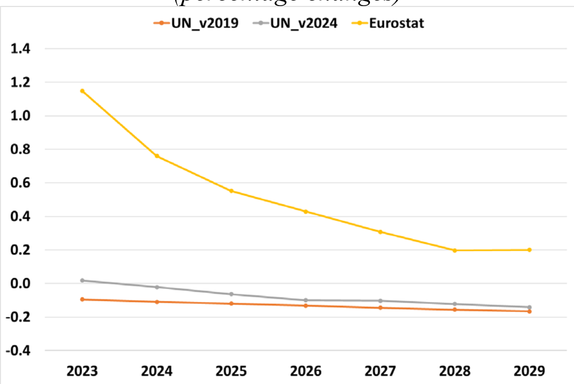


Source: authors' calculations on UN, Istat and Eurostat data.
Notes: UN projections refer to the medium-fertility scenario.

Figure A3 – Key demographic variables for Spain according to alternative data sources

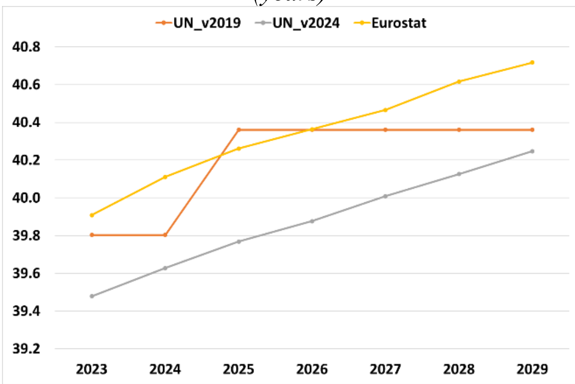
a) Population change

(percentage changes)



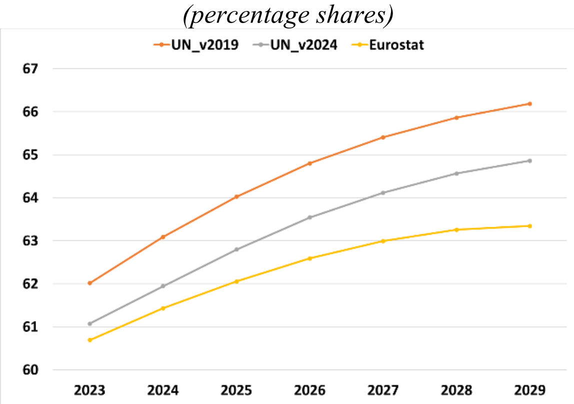
b) Life expectancy at 45

(years)



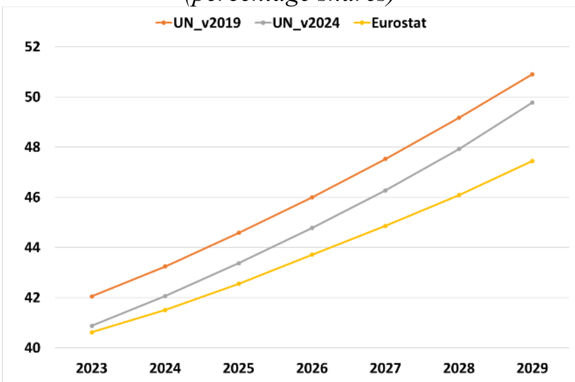
c) Share of prime-savers

(percentage shares)



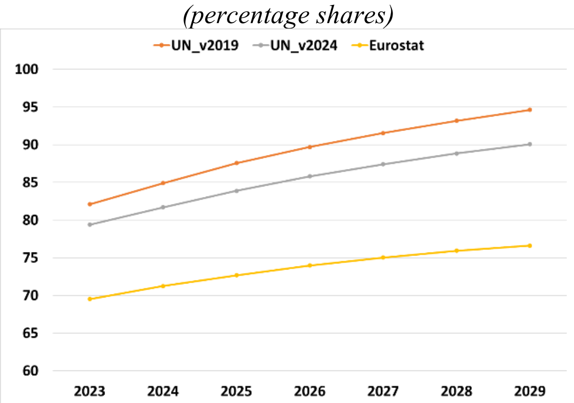
d) Old-age dependency ratio

(percentage shares)



e) Future (20-year forward) old-age dependency ratio

(percentage shares)



Source: authors' calculations on UN, Istat and Eurostat data.
Notes: UN projections refer to the medium-fertility scenario.

Table A1 – Description of the IMF's external sector assessment categories

CA Gap	REER Gap (Using Elasticity of −0.2)	Description in Overall Assessment
> 4%	< −20%	… substantially stronger …
2%, 4%	−20%, −10%	… stronger …
1%, 2%	−10%, −5%	… moderately stronger …
−1%, 1%	−5%, 5%	The external position is broadly in line with fundamentals and desirable policies.
−2%, −1%	5%, 10%	… moderately weaker …
−4%, −2%	10%, 20%	… weaker …
<−4%	> 20%	… substantially weaker …

Source: Allen et al. (2023).

Table A2 – External Balance Assessment Current Account model: Estimation results

	(1) Estimated Coefficient	(2) BMA PIP
Temporary and Cyclical Factors		
Output gap	-0.297***	
	(0.035)	
Commodity terms of trade, interacted with trade openness	0.291***	
	(0.047)	
REER annual log-change (lagged)	-0.015***	
	(0.006)	
Macroeconomic Fundamentals		
Net foreign asset (NFA) position	0.036***	[1.00]
	(0.005)	
Output per worker	0.034***	[1.00]
	(0.013)	
Expected real GDP growth	-0.296***	[0.81]
	(0.108)	
Structural Fundamentals		
Old-age dependency ratio (OAD)	-0.096**	[0.88]
	(0.042)	
Population growth	-0.797**	[0.95]
	(0.364)	
Share of prime-aged savers	0.124**	[0.99]
	(0.056)	
Life expectancy	-0.004***	[1.00]
	(0.001)	
Life expectancy, interacted with OAD	0.013***	[0.99]
	(0.004)	
Institutional quality	-0.046**	[0.81]
	(0.020)	
Oil and natural gas reserves	0.304***	[1.00]
	(0.074)	
Policy Variables		
Fiscal policy	0.307***	[1.00]
	(0.077)	
Health spending	-0.298**	[1.00]
	(0.143)	
FXI, interacted with capital controls	0.631***	[0.92]
	(0.225)	
Credit gap	-0.096***	[1.00]
	(0.014)	
Observations	1,480	
Number of economies	52	
R-squared	0.525	
Root MSE	0.032	

Notes: * significant at 10%; ** significant at 5%; *** significant at 1% based on Driscoll-Kraay standard errors (in parentheses). "BMA" denotes Bayesian model averaging; "PIP" denotes posterior inclusion probability (in brackets).

Source: Allen et al. (2023).

Table A3 – List of ESR countries distinguishing between European and advanced economies

Country	Europe	Advanced
Argentina	-	-
Australia	-	X
Austria	X	X
Bangladesh	-	-
Belgium	X	X
Brazil	-	-
Canada	-	X
Chile	-	-
China	-	-
Colombia	-	-
Costa Rica	-	-
Czech Rep.	X	X
Denmark	X	X
Egypt	-	-
Finland	X	X
France	X	X
Germany	X	X
Greece	X	X
Guatemala	-	-
Hungary	X	X
India	-	-
Indonesia	-	-
Ireland	X	X
Israel	-	-
Italy	X	X
Japan	-	X
Malaysia	-	-
Mexico	-	-
Morocco	-	-
Netherlands	X	X
New Zealand	-	X
Norway	X	X
Pakistan	-	-
Peru	-	-
Philippines	-	-
Poland	X	X
Portugal	X	X
Korea Rep.	-	-
Romania	X	X
Russia	-	-
South Africa	-	-
Spain	X	X
Sri Lanka	-	-
Sweden	X	X

Switzerland	X	X
Thailand	-	-
Tunisia	-	-
Turkey	-	-
United Kingdom	X	X
United States	-	X
Uruguay	-	-
Viet Nam	-	-

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