

## WORKING PAPER 256

Investment incomes vs. the trade balance:  
Is the current account still a meaningful  
concept?

Konstantin M. Wacker

The *Working Paper series of the Oesterreichische Nationalbank* is designed to disseminate and to provide a platform for discussion of either work of the staff of the OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process. The opinions are strictly those of the authors and do in no way commit the OeNB.

The Working Papers are also available on our website (<http://www.oenb.at>) and they are indexed in RePEc (<http://repec.org/>).

**Publisher and editor**      *Oesterreichische Nationalbank*  
*Otto-Wagner-Platz 3, 1090 Vienna, Austria*  
*PO Box 61, 1011 Vienna, Austria*  
*www.oenb.at*  
*oenb.info@oenb.at*  
*Phone (+43-1) 40420-6666*  
*Fax (+43-1) 40420-046698*

**Editor**                      *Martin Summer*

**Cover Design**              *Information Management and Services Division*

**DVR 0031577**

**ISSN 2310-5321 (Print)**  
**ISSN 2310-533X (Online)**

© Oesterreichische Nationalbank, 2024. All rights reserved.

# Investment incomes vs. the trade balance: Is the current account still a meaningful concept?\*

*Konstantin M. Wacker*  
*University of Groningen*  
[k.m.wacker@rug.nl](mailto:k.m.wacker@rug.nl)

## **Abstract**

This paper documents that cross-border investment income flows are important for explaining current account balances in major economies. Those investment incomes reflect returns on cross-border asset holdings and on balance often reach magnitudes around 5% of major economies' gross domestic product. I show that several correlates of this investment income balance differ from other current account components, including the trade balance. Both components essentially exhibit a zero correlation with each other, with considerable cross-country heterogeneity. Moreover, I show that investment incomes are more persistent than other current account components, suggesting that more time is needed for current account imbalances to adjust.

The main findings of the paper call for a more differentiated perspective on the current account in academic analysis and policy. The paper finally discusses implications for macroeconomic monitoring and surveillance, needed improvements in macro-financial data, and highlights scope for further research.

**Keywords:** Global imbalances, current account, international investment position, balance of payments

**JEL Classifications:** F3, F21, F45

---

\* The author would like to thank Dirk Bezemer, Julia Wörz, an anonymous referee, and participants at seminars and conferences in Berlin, Göttingen, Mainz, Salzburg, at the wiiw Vienna, and at the Austrian Central Bank for helpful comments. Eline Koopman and Daniel Schukowski provided excellent research assistance. Parts of this research were kindly supported by a Klaus Liebscher Economic Research Scholarship of the Austrian National Bank (OeNB). The views expressed in this paper are those of the authors and do not necessarily reflect the views of the OeNB.

## **Non-technical summary**

The “current account” is a key concept in international macroeconomics and finance. It measures an economy’s foreign transactions (earnings and spendings abroad) and international current account imbalances are often subject of policy dispute. Such imbalances are also widely believed to give rise to crisis vulnerabilities.

In many academic and policy discussions, the current account is either simplified to the trade balance or treated as an aggregate concept. This paper shows how such a simplification can be misleading: for many economies, investment incomes have grown substantially in the context of financial globalization. As foreign transactions, these investment incomes are included in the current account. However, they exhibit empirical patterns that differ from other current account components. Notably this paper shows for a sample of 34 economies that:

- (i) Key macroeconomic variables exhibit different correlation structures with the investment income balance than with other components of the current account (notably the trade balance).
- (ii) Investment incomes are more persistent than other current account components.

These results suggest that we need to take a more disaggregated perspective at the current account for several academic and policy questions. Particularly, we need to look beyond trade flows to understand current account imbalances and for designing realistic current account adjustment paths.

*“An economist is someone who is good with numbers but does not have the personality to be an accountant.”  
(Charles Wheelan, Naked Economics)*

## 1. Introduction

The current account plays an important role in international macroeconomics (e.g., Obstfeld, 2012; Borio, 2016). It shows the flows of goods, services, and income payments across countries and reflects the investment and saving behavior of open economies. Since current account deficits indicate foreign borrowing, they may give rise to crisis vulnerabilities. Hence, the current account is also an important target for policymakers, as reflected in policy disputes over ‘excessive surplus’ countries (like China or Germany) and in several macroeconomic models (e.g., Schmitt-Grohé and Uribe, 2021). Accordingly, the European Commission’s macroeconomic imbalance scoreboard lists the “current account balance as percent of GDP” as its first of 14 indicators.

Macroeconomics traditionally takes an aggregated perspective towards the current account. Examples include the seminal empirical studies of overall current account balances (e.g., Chinn and Prasad, 2003; Lane and Milesi-Ferretti, 2012; Allen et al., 2023). From the perspective of recording and monitoring external payment flows of a country, this is certainly meaningful and, from this perspective, the current account “is an important grouping of accounts within the balance of payments” (IMF 2009: 2.14). At the same time, the current account balance (CAB) is often simplified to the trade balance in public and policy debates. This may be due to a lack of understanding or the result of simplification, which is also very common in macroeconomic models. Probably the most popular example is the traditional Mundell–Fleming model, where the CAB is often referred to as NX for net exports. Even in his R.T. Ely Lecture on the question “Does the current account still matter?”, Maurice Obstfeld (2012) simplifies the CAB on most occasions to net exports.<sup>1</sup>

In this paper, I show that such a simplification can be misleading in financially integrated economies with multinational production, where cross-border dividend, interest, and profit flows can be substantial. Those investment income flows are part of the current account and Figure 1 depicts that investment income balances (inflows minus outflows) reach magnitudes around 5% of gross domestic product for major economies and deficits of approximately 20% of GDP in European Union countries that are often considered ‘offshore financial centers.’ On average, across the 34 countries covered in this paper, changes in the investment income balance explain about one quarter of the variation in the current account balance over time since 2008.

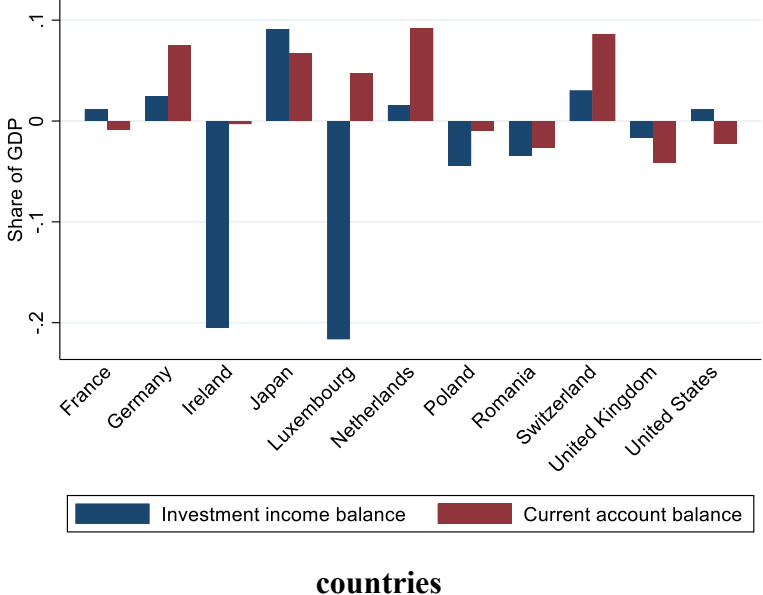
The purpose of this paper is to document the importance of investment incomes, to summarize where they result from, and to highlight that they show quite opposite patterns than other current account components. Particularly, I show that (i) both show opposite partial correlations with typical CAB determinants like those identified by Chinn and Prasad (2003) and Lane and Milesi-Ferretti (2012) for the medium term, (ii) both show essentially a zero correlation with each other, with considerable cross-country heterogeneity, which

---

<sup>1</sup> Schmitt-Grohé et al. (2022) provide a textbook treatment of the current account that highlights deviations between the CAB and trade balance, but essentially emphasize that the two, on average, move together.

substantiates the findings of Alberola et al. (2020) and Colacelli et al. (2021) concerning a negative correlation, and (iii) both show different patterns of persistence, with investment incomes being more persistent over time.

**Figure 1: Investment income and overall current account balances in selected**



Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office. See section 3 for details. Data is averaged for quarters since 2012.

Those findings have important implications for economic analysis and policy since they question the usefulness of the current account as an aggregate concept. If we are interested in the effect of a certain policy, or an exogenous shock, we need to be very explicit whether we consider its effect on the CAB or a certain sub-account like the trade balance. For example, there is a tradition in macroeconomic models to look at the response of the trade balance to changes in the exchange rate (“Marshall-Lerner condition”, “J-curve”).<sup>2</sup> While this is interesting from a trade perspective, it can be completely misleading from an international payment perspective that most macro models are concerned with: the CAB may behave very differently from the trade balance and it is hence advisable to take a more disaggregated approach towards the CAB. In other words: except for cases where we merely care about aggregate external payment flows, the current account can be a misleading aggregate concept. And for questions where we do care about those aggregate external payment flows, it is still advisable to take a more disaggregated perspective because sub-accounts paint a more nuanced picture about the behavior of the current account. I illustrate this by showing that the international investment balance is considerably more persistent than other components of the CAB. Macroeconomic monitoring exercises such as the European Commission’s imbalance scorecard should accordingly take a more nuanced perspective.

This paper mainly adds to previous studies on current account determinants (e.g., Chinn and

<sup>2</sup> For example, Blanchard (2009: ch. 19), Rose and Yellen (1998), Demirden and Pastine (1995).

Prasad, 2003; Lane and Milesi-Ferretti, 2012; Phillips et al., 2013; Allen et al., 2023) and, particularly, to a number of recent contributions that have highlighted the importance of cross-border asset holdings for investment incomes and current account balances (Alberola et al., 2020; Colacelli et al., 2021; Tille and Donato, 2024). The IMF increasingly uses such a perspective to assess external imbalances; e.g., in recent Article IV assessments for Japan and Colombia. Joyce (2021) has further focused on the role of incomes from foreign direct investment for emerging economies (see also Akkermans, 2017; Hansen and Wagner, 2022). In a broader sense, this paper is related to a literature that zooms into specific sub-components or anomalies of the current account (e.g., Hausmann and Sturzenegger, 2007; Gourinchas and Rey, 2007; Sinn and Wollmershäuser, 2012) and to studies that investigate profit shifting behavior of multinationals (e.g., Torsolov et al., 2018; Guvenen et al., 2022).

The findings of this paper are also important for our assessment of the gains from trade and globalization. Arkolakis et al. (2018) have already pointed out that welfare effects of openness can be negative under multinational production due to profit outflows. For example, a country may benefit from export revenues (positive trade balance) but if those exports stem from affiliates of multinational firms, this will create profit outflows (negative investment income balance). Bohn et al. (2021) and Wang (2021) trace the ownership of income in such global value chains. From that perspective, this paper is also related to issues of international wealth inequalities (see also Hausmann and Sturzenegger, 2007; Gourinchas et al., 2012; Novokmet, 2018).

The remainder of this paper is structured as follows. Section 2 reviews essential concepts of the current account and how the latter captures trade and investment income patterns. Section 3 discusses the data used for this paper. Section 4 shows that investment incomes and other current account components behave considerably different: they show opposite correlations with key macroeconomic variables, exhibit a zero correlation with each other and show different patterns of persistence. In this section, I further assess whether this persistence shows problematic patterns for Eurozone countries from an external adjustment perspective. Section 5 discusses policy implications and section 6 concludes.

## 2. A review of the current account and its components

“The current account shows flows of goods, services, primary income, and secondary income between residents and nonresidents” of a country or economy. The balance on these flows is known as the current account balance, which equals the saving-investment gap for the economy (see IMF, 2009: ch. 2). Formally (and neglecting errors and omissions):

$$CAB = \underbrace{NX_G + NX_S}_{TB} + PIB + SIB, \quad (1)$$

where the first two terms on the right-hand side (net exports of goods and services, respectively) are known as the trade balance (TB) and the secondary income balance (SIB) records net current transfers (such as those from/to the EU community budget or remittances).

The main focus of this paper relates to a sub-component of the primary income balance (PIB), which contains cross-border income flows of the primary production factors (capital and labor) and can hence be further disaggregated into cross-border compensation of employees<sup>3</sup> and the investment income balance (IIB), on top of other primary income (rents and production taxes/subsidies).

From an economic perspective, there are two reasons why we record those primary incomes in the current account. First, ‘lending’ our production factors to another country could be interpreted as a service export and should hence be recorded similarly in the balance of payments (BOP). Second, the CAB collects all external balances into a meaningful external payment aggregate, which requires including primary and secondary incomes. See IMF (2009: ch. 11) for technical details on the primary income account.

### 2.1 The investment income balance and its relationship to globalization

The IIB reflects cross-border income payments of the production factor capital, such as interests or corporate profits accruing to foreign investors.<sup>4</sup> In other words, it registers the revenue payments of cross-border asset holdings. For example, if an Austrian firm borrows capital from a US bank, the interest payments on that loan enter both countries’ balance of payments, as a credit (‘surplus’) entry for the US and as a debit (‘deficit’) entry for Austria. Or, if an Austrian firm sets up a production facility in Hungary, the profits arising to that affiliate accrue to the Austrian parent firm and is recorded as a credit (‘surplus’) entry for Austria and as a debit (‘deficit’) entry for Hungary.

Trade is one ultimate source of investment incomes. If a country runs a trade surplus (which is not offset by PIB and SIB), it accumulates claims on the rest of the world (e.g., in the form of foreign currency or trade credits).<sup>5</sup> If those claims are held in (or exchanged to) revenue-paying assets, they generate investment incomes (for an infinite future). This is

---

<sup>3</sup> For example, the wage of a German resident working in a hotel in Austria leads to a positive German PIB and a negative Austrian PIB. From a factor perspective, Germany “exports” labor, improving the CAB.

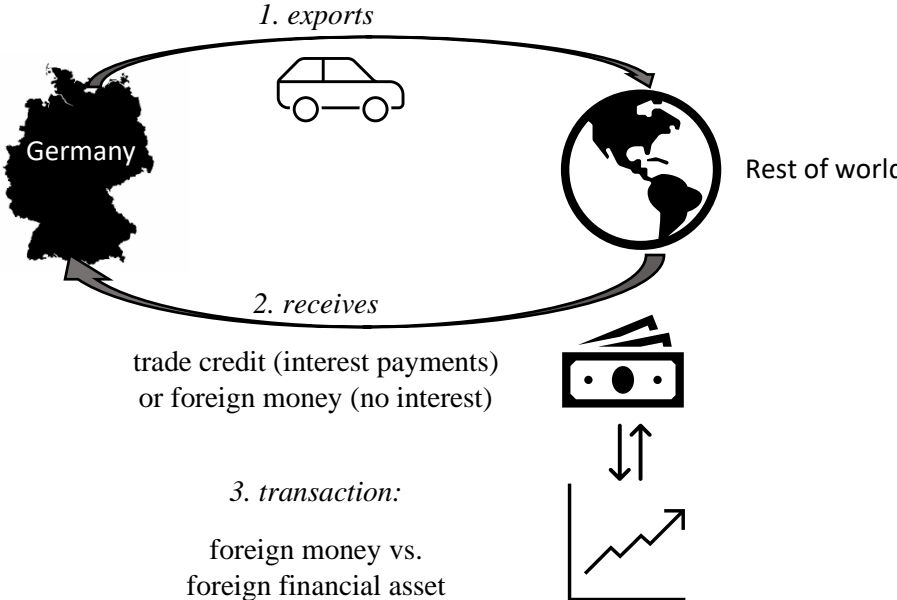
<sup>4</sup> It is worth highlighting that there is a formal accounting difference between foreign portfolio and direct investment (FDI). Earnings on FDI are booked once they accrue, no matter if that earning is re-invested or repatriated. Conversely, earnings on portfolio investment are booked once they are distributed and repatriated. See Fischer et al. (2019) for details and implications for current account adjustments.

<sup>5</sup> This is known as the ‘BOP identity’: the CAB is equal to the balance of the capital and financial account.



exemplified in Figure 2: A country (e.g., Germany) exports goods or services towards the rest of the world (1). In turn, it may accumulate trade credit (which itself already carries interest and thus generates investment incomes) or receive foreign money (2). This foreign money can then eventually be converted into foreign assets (3), at least partially, which pay future dividends or rents, hence generating investment incomes in the balance of payments.

**Figure 2: How trade surpluses translate into investment incomes**

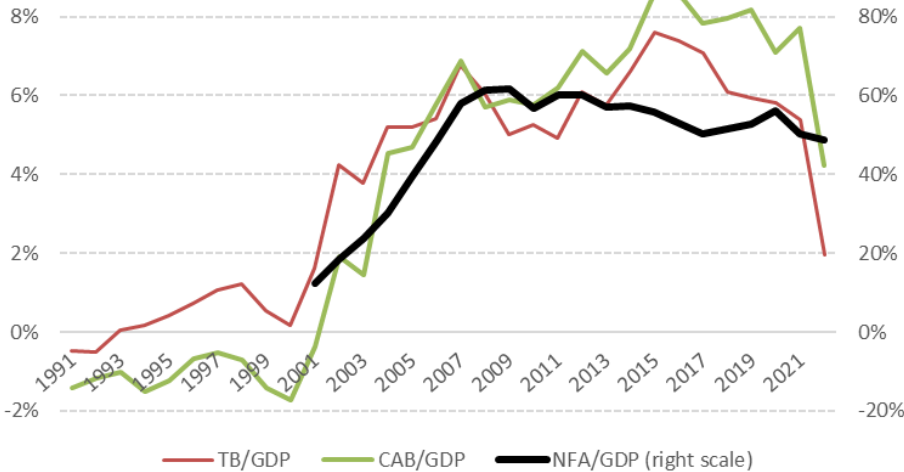


Japan and Germany are examples of how trade surpluses translate into foreign assets and investment incomes. Figure 3 shows that Germany, soon after unification, started running persistent (and growing) trade surpluses. At that time, the current account balance (CAB) was still modestly negative.<sup>6</sup> The booming exports in the 2000s further improved the trade balance (TB), lifting the CAB into surplus from 2002 onwards. This, in turn, resulted in a significant buildup of net foreign assets (NFAs). Since these NFAs give rise to investment income payments that enter the CAB, the gap between TB and CAB increasingly narrows from that year.<sup>7</sup> As NFAs accumulate and investment income payments rise, the CAB starts surpassing the TB from 2006 onwards and the investment income balance eventually accounts for about one third of Germany’s current account surplus (cf. Figure 1).<sup>8</sup> In Japan, this accumulation of trade surpluses already started in the 1980s (up to the global financial crisis) and led to a positive net foreign asset (NFA) position at least in the 1990s.<sup>9</sup> Given the size of NFAs in Japan and roughly balanced trade flows over recent years, Japan’s CAB (approximately 10% of GDP) essentially *is* the investment income balance (see Figures 4

<sup>6</sup> After reunification,  $NX_S$  and SIB remained largely unchanged (in deficit) but PIB and, especially,  $NX_G$  worsened; the latter driven by states of the former German Democratic Republic. See Bundesbank (2020a,b).  
<sup>7</sup> On average p.a., the TB equals the CAB for the decade starting in 2003 while the TB was higher than the CAB by 1.8 percentage points in the prior decade, on average p.a.  
<sup>8</sup> One may note that NFAs stabilizes around 2009 while TB and CAB plateau at high surplus levels. This is consistent with unfavorable revaluations of Germany’s foreign assets (e.g., in the context of the global financial crisis). Such revaluations of stocks (including those due to exchange rate movements) do not enter the current account (which is a flow-based concept).  
<sup>9</sup> Note that measures of Japan’s NFA differ between the IMF IFS and the External Wealth of Nations from Lane and Milesi-Ferretti used in Colacelli et al. (2021).

and 1). Belgium is another example where CAB and IIB are essentially equal in recent years (with an R squared for regressing the former on the latter of around 0.72 since 2008).

**Figure 3: Germany’s trade and current account balance and net foreign asset position**



Source: own calculations based on World Development Indicators

Financial globalization and asset diversification are another source of investment income flows. In this case, one financial asset is traded for another, foreign asset. If those assets pay different returns, the NFA position remains unaffected but an investment income flow may arise. Suppose an Austrian investor uses Euros to purchase a 100-\$ US bond with interest rate  $r$ . The NFA position between Austria and the US remains unaffected (Euros are traded for a bond of equal \$ value), but interest payments of  $\$100 \cdot r$  will arise and be captured in the investment income balance (and hence in the PIB and CAB); as a surplus for Austria and a deficit for the US.<sup>10</sup> This highlights that from the perspective of flow imbalances, gross asset positions matter.<sup>11</sup> An interesting application is provided by Knetsch and Nagengast (2017) who have shown that German foreign assets generate higher return than their liabilities, which implies that Germany would possibly run a considerable current account surplus even if it would balance its NFA position.

<sup>10</sup> Again, the BOP identity is fulfilled at the initial stage where both financial assets (euros for bonds) are exchanged; this time through two offsetting bookings in the financial account. Note that *changes* in financial holdings (e.g., due to valuation or exchange rate effects) are not recorded in the current account but are changes in the international investment position. See Gourinchas and Rey (2012) and Bergant (2021) for studies on that aspect.

<sup>11</sup> This perspective also features, inter alia, in Obstfeld (2012), Avdjiev et al. (2016), and in the ‘exorbitant privilege’ (Gourinchas and Rey, 2007) that the US enjoy from issuing the world currency: the dollars leaving the US are an interest-free liability and allow the acquisition of higher-interest foreign assets. The US hence run a structural investment income surplus that helps them finance persistent trade deficits. Van Hombecck (2020) has documented a similar privilege for the UK in the first age of international financial integration.

**Figure 4: Investment income and overall CA balances for Japan (relative to GDP)**



Source: own calculations based on data from FRED, Japanese MOF and Cabinet Office. See section 3 for details.

## 2.2 How should the trade balance and investment incomes relate?

The remainder of this paper explores the relationship between investment incomes (as a part of PIB) and the CAB in equation (1). We have established that investment incomes are sizable in several countries, raising the question how we expect this sub-account to correlate with the trade balance.

Two channels suggest that the investment income balance and the trade balance should be negatively correlated (see Colacelli et al., 2021). First, from a standard macroeconomic perspective on saving and investment, we would expect that a consumption-smoothing working-age population produces more than it consumes to save for a period when this population gets old. A working-age population may save through exporting; a trade surplus builds NFAs abroad. Once aged, this population consumes partly through imports (trade deficit) that are paid for with revenues from those NFAs (IIB surplus). This mechanism, which is typical for aging societies such as Japan and Germany, largely suggests that the trade and investment income balances are negatively correlated over time and across countries.

A second possibility for a negative relation arises if exports are controlled by multinational corporations. In this case, export revenues, which improve the trade balance, leave the country via repatriated profits, which negatively enter the primary income balance.<sup>12</sup> This can partly explain the sizable investment income deficit for Ireland depicted in Figure 1<sup>13</sup>

<sup>12</sup> From an accounting perspective, this is true for FDI enterprises irrespectively of whether those profits are re-invested in the host country or not. If they are, they are still booked as being re-patriated to the home country of the multinational parent in the current account, with an offsetting booking as “re-invested earnings” in the financial account to ensure the BOP identity.

<sup>13</sup> This highlights the relation of this topic to the literature on tax havens and profit shifting. See, e.g., Torsolov et al (2018) on the “missing profits of nations”, who suggest that the French trade deficit disappears, once

and was investigated for the case of China by Duan et al. (2021). Relatedly, Wang et al. (2021) use investment incomes to attribute parts of the value added of MNE affiliates to respective FDI source countries.

A negative correlation between the IIB and the trade balance have already been found by Alberola et al. (2020) and Colacelli et al. (2021) in comparable samples that mostly consist of OECD economies. Their exercises, however, differ in important nuances from the data and analysis in this paper. First, Colacelli et al. (2021) look at the overall primary income balance (instead of the investment income only) while Alberola et al. (2020) calculate the IIB as the primary income balance minus net compensation of employees, which treats “other primary income” as investment income. Second, substantially add to their findings by showing opposing correlation structures with typical current account determinants, highlighting different dynamic patterns and revealing that the negative correlation is driven by single countries.

### 3. Data

In this paper, I combine quarterly balance of payment data from Eurostat, the US Federal Reserve and Japanese sources with variables from popular other macroeconomic databases.

Although Eurostat provides relatively comprehensive data, coverage varies, with observations dating back into the 1990s for a dozen of countries and relatively comprehensive coverage only since 2008.<sup>14</sup> For most of the analysis I use investment income data as a ratio to GDP.<sup>15</sup> While current account data is not seasonally adjusted, I use seasonally adjusted GDP data in the denominator to not wash out potentially seasonal patterns in investment income flows. To potentially understand such seasonal irregularities, they should stem from the current account, not the GDP data.

To those Eurostat data, I merge the respective series from the United States and Japan. US data are extracted from Federal Reserve Economic Data (FRED) of the St. Louis Fed and follow the same rationale of non-adjusted current account and seasonally adjusted GDP data. The same applies to the data for Japan, which come from the Ministry of Finance (balance of payment) and the Cabinet Office (GDP). This results in a dataset of quarterly observations from approximately 34 countries.<sup>16</sup> The earliest observations in the sample start in 1992 but coverage varies considerably. For example, data for 15 countries is available in 2000, for 23 countries in 2005, and for 31 countries in 2010. The last year covered is 2020. A full list of included countries, with summary statistics of their investment income relative to GDP is provided in appendix Table A.1.

---

official statistics are revised to adjust for profit shifting, and Limbergen (2020), who documents that peculiarities in the investment income balance of EU tax havens cannot be explained by conventional fundamentals such as the external asset stock. Hebous and Johannesen (2021) show how service exports are related to profit shifting inside multinational firms.

<sup>14</sup> 40 quarterly observations for the investment income balance are confidential (24 for Norway, 8 for each Finland and the UK).

<sup>15</sup> Raw investment income data vary considerably with the size of the respective economies and due to negative balances, logarithms cannot be taken. Division by GDP also neutralizes the effects of exchange rates.

<sup>16</sup> Coverage varies over time. For Bosnia and Herzegovina, Iceland, Kosovo, Montenegro, North Macedonia, and Norway, no seasonally adjusted GDP series are available from Eurostat.

To analyze potential drivers of current account and investment income balances, data from other sources is merged, notably from the IMF WEO, the World Bank, and the Penn World Tables. Those variables largely follow seminal studies on current account determinants (Chinn and Prasad, 2003; Lane and Milesi-Ferretti, 2012)<sup>17</sup> and mainly capture aggregate investment and saving trends of the economy, monetary and financial developments, as well as demographic trends. A detailed variable description, including its sources, can be found in appendix table A.2. For the analysis of those correlates, which are available on an annual basis, the quarterly data from the balance of payments is accordingly averaged.

## 4. Empirical analysis

### 4.1 Correlates of the current account

In this subsection I investigate annual correlates of the current account balance. The purpose of this exercise is to check whether key macroeconomic variables that can be motivated to matter for the current account show different correlation structures with the investment income balance and the remaining part of the current account. In other words, I do not aim to identify deep fundamental determinants of the current account or its sub-components.

In a first exercise, I regress the CAB, the IIB, and the difference between the two (all annual and as a share of GDP) on a wide set of common current account correlates as they have been explored by Chinn and Prasad (2003) and Lane and Milesi-Ferretti (2012).<sup>18</sup> Results for all variables are reported in Tables 1 and 2 for pooled OLS and with country fixed effects (FE), respectively, and show the investment income balance correlates differently with key macroeconomic variables than the remaining current account balance.<sup>19</sup> Even though parameter estimates partly reverse signs between OLS and FE or are not always statistically different from 0, this exercise is already indicative that the investment income balance behaves different than remaining current account components (mostly the trade balance).

Since the joint inclusion of all variables and two different economic specifications (fixed effects and pooled OLS) induces a high level of multicollinearity and interpretation problems, I focus the discussion on two reduced specifications and fixed effects estimation that absorbs unobserved heterogeneity across countries.

The first specification is reported in table 1 and focuses on the role of *aging* (measured as the projected change in the old-age dependency ratio 20 years ahead). This is motivated by intertemporal, forward-looking approach to the current account, where an aging society is

---

<sup>17</sup> In contrast to those two studies, I do not include countries' net foreign assets because this position largely determines the investment income balance by identity.

<sup>18</sup> A key difference to Chinn and Prasad (2003) and Lane and Milesi-Ferretti (2012) is that they mostly use averages over various years to smoothen business-cycle fluctuations and limit noise and measurement error in developing countries. Similar to Allen et al. (2023) these studies also refrain from including country fixed effects in baseline specifications because they absorb economic explanation of observed current account balances that the authors aim to study.

<sup>19</sup> This is most obvious when looking at savings as a share of GDP, which correlates negatively with the investment income balance but positively with the remaining current account balance in both, the OLS and fixed effect regression. This result is consistent with an economy that de-saves and finances current consumption (part of which is foreign and enters the TB negatively) with investment incomes from existing NFAs abroad, vice versa. Likewise, parameter estimates for other key macroeconomic variables also show opposite signs for the IIB and remaining parts of the CAB (e.g., M3/GDP, domestic credit/GDP, terms of trade).

expected to save for the future by running current account surpluses.<sup>20</sup> As table 1 highlights, this is indeed the case (column 1) but this correlation seems to be exclusively driven by the non-IIB part of the current account (column 3). Conversely, the investment income part (column 2) is negatively correlated with aging (column 2). This is perfectly consistent with theory, as we would expect this effect to mainly operate through the trade balance, while the effect on the IIB is ambiguous.<sup>21</sup> Despite this theory consistence, the results clearly suggest that we get a more informative picture by breaking down the current account into sub-components: the point estimate for the overall CAB/GDP ratio is 28% lower than for the non-IIB parts of the current account. We also note significant differences for other key current account correlates, notably M3/GDP and the terms of trade.<sup>22</sup>

It ought to be noted that the statistical significance and associated magnitude of the different correlations with aging in this sample are driven by Ireland and Luxembourg, two financial hubs that are sometimes associated with aggressive tax planning of multinationals and corresponding current account peculiarities. Results excluding those two countries are reported in appendix table A.5. In those results, the estimated correlation of aging is still higher for the non-IIB part of the current account than for the IIB part, but the difference is not statistically different between the two. Nevertheless, there are various other variables in this constrained sample that show significant differences in their point estimates between both sub-components of the current account. Notably, the terms of trade difference strengthens and the correlations of the IIB with M3/GDP and the government budget balance is positive (and statistically significantly different from 0) but negative (and insignificant) for the non-IIB components of the CAB.

---

<sup>20</sup> Focusing on aging has the additional advantage that it is a highly persistent variable, so we do not have to worry too much about dynamics.

<sup>21</sup> For an economy that is starting to age, we may expect a negative association because it may have financed upfront investment through CA deficits that led to the buildup of negative NFAs with associated investment income outflows. A more mature aging economy should have built up enough NFAs to run an IIB surplus.

<sup>22</sup> There is a long-standing debate about the relevance of the terms of trade for the savings behavior and trade balance/current account of an economy (see, e.g., Svensson and Razin, 1983; Kent and Kashin, 2003). Results in this paper suggest to clearer differentiate between the trade balance and IIB, especially because an investment and a consumption effect should be at work.

**Table 1: Correlates of the current account and sub-accounts (FE): aging**

VARIABLES	(1) CAB/GDP	(2) IIB/GDP	(3) (CAB-IIB)/GDP
aging	0.00401*** (0.00137)	-0.00156* (0.000794)	0.00557*** (0.00158)
M3/GDP	0.000232** (9.40e-05)	0.000477*** (5.05e-05)	-0.000245* (0.000129)
termsoftrade	0.000655 (0.000418)	-0.000553** (0.000257)	0.00121*** (0.000433)
domcredit	-0.000353 (0.000210)	-0.000220 (0.000141)	-0.000132 (0.000248)
ggbudget	0.00140 (0.00148)	-0.000812 (0.000652)	0.00221 (0.00141)
dum_euro	0.0368*** (0.0116)	-0.00354 (0.00890)	0.0403*** (0.00617)
Constant	-0.123*** (0.0416)	0.0184 (0.0216)	-0.141*** (0.0397)
Observations	411	411	411
R-squared	0.141	0.414	0.219
Number of countries	28	28	28
Note	all countries	all countries	all countries

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.  
Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The second specification is reported in table 2 and focuses on the role of gross domestic *savings* (as % of GDP). This is motivated by a more mechanic interpretation of the current account; either because a current account surplus is a form of saving or because the savings rate enters the IS equation in a Mundell-Fleming model. Savings are indeed positively correlated with the overall CAB (columns 1), consistent with the view that an economy that saves partly does through the current account. But again, we find this positive correlation to be driven exclusively by the non-IIB part of the current account (column 3): the point estimate for the overall CAB/GDP ratio is 36% smaller. Conversely, the investment income part of the current account is negatively correlated with the savings rate (column 2). Again, we also significant differences for other variables such as M3/GDP or domestic credit to the private sector (as % of GDP).

The results that the positive association between savings rate and CAB is driven by the non-IIB part holds up to the exclusion of Ireland and Luxembourg (see appendix table A.6). After excluding those economies, we also reconfirm the previous result that terms of trade are negatively correlated with the IIB but positively (or un-)correlated with the non-IIB parts of the current account.

**Table 2: Correlates of the current account and sub-accounts (FE): savings**

VARIABLES	(1) CAB/GDP	(2) IIB/GDP	(3) (CAB-IIB)/GDP
savings	0.00539*** (0.00182)	-0.00301*** (0.000891)	0.00839*** (0.00158)
M3/GDP	0.000275** (0.000114)	0.000447*** (4.33e-05)	-0.000172 (0.000139)
termsoftrade	-0.000380 (0.000402)	-2.35e-05 (0.000339)	-0.000357 (0.000464)
domcredit	-0.000109 (0.000222)	-0.000333*** (0.000113)	0.000224 (0.000232)
ggbudget	-0.00109 (0.00199)	0.000575 (0.000614)	-0.00167 (0.00166)
dum_euro	0.0290* (0.0147)	0.000742 (0.00757)	0.0282*** (0.00948)
Constant	-0.136** (0.0520)	0.0373 (0.0266)	-0.173*** (0.0572)
Observations	411	411	411
R-squared	0.192	0.492	0.357
Number of countries	28	28	28
Note	all countries	all countries	all countries

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The clear overall result of this exercise is that several key macroeconomic variables show different correlation patterns with different sub-components of the current account: the investment income balance and the non-IIB part. Those variables, their magnitudes, or directions may differ with sample composition, which should not be misread as inconclusive – it rather reflects country heterogeneities that are further explored in the next subsection. Hence the results support the notion of a more disaggregated perspective on the current account. It is also worth noticing in this context that the explained variation in the dependent variable (R-squared) is considerably higher for the sub-components of the current account than for the overall CAB in most cases.



## 4.2 Aggregate correlation structures

In the constructed sample, the investment income balance is negatively correlated with other components of the current account balance: the overall correlation coefficient is -0.42. Furthermore, I regress the non-IIB CAB (as a share of GDP) on the IIB/GDP ratio. The results, reported in Table 3, suggest that this negative correlation is present no matter whether we explore correlations within countries over time (“fixed effects”, FE, column 1), or correlations between countries (“between estimator”, BE, column 2).<sup>23</sup> These results, based on quarterly data, are in line with Alberola et al. (2020) and Colacelli et al. (2021).

The results in column (3) and (4) reveal that this negative correlation is driven by Eurozone economies. Once a Eurozone dummy is added to the regression, and interacted with the IIB/GDP term, the IIB/GDP term itself is no longer statistically significant; what remains significantly negative is its interaction term with the Eurozone dummy. Further investigation reveals that this Eurozone particularity is due to a limited number of countries that are known to be financial hubs and hosts for multinationals with aggressive tax planning. In fact, excluding Ireland and Luxembourg from the sample leads to a correlation between the IIB and the remaining CAB that is statistically indistinguishable from 0 (see Appendix Table A.7).

**Table 3: Correlation between IIB and remaining CA balances**

VARIABLES	(1)	(2)	(3)	(4)
	Non-investment income CAB/GDP			
IIB/GDP	-0.361*** (0.102)	-0.690*** (0.147)	-0.155 (0.163)	0.119 (0.241)
Eurozone dummy			0.0437*** (0.00732)	-0.00702 (0.0144)
IIB/GDP x Eurozone dummy			-0.292* (0.172)	-1.101*** (0.245)
Constant			-0.0109** (0.00411)	0.00566 (0.00890)
Observations	2,571	2,571	2,571	2,571
R-squared	0.029	0.407	0.093	0.620
Number of countries	34	34	34	34
Estimation	FE	BE	FE	BE

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.  
Standard errors in parentheses (and robust for FE); \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Given this susceptibility to sample countries, I additionally run a regression of non-IIB/GDP on IIB/GDP per country. The prefix of this regression by country is summarized in Table 4 and the results suggest enormous heterogeneity across countries. There are nearly as many countries with a significantly negative correlation as there are countries with a significantly positive one. Moreover, it is difficult to come up with a compelling economic motivation for the heterogeneous results. What are the economic factors that lead to opposing correlation structures between Germany and France? Between Slovak Republic and

<sup>23</sup> The between estimator is a cross-sectional regression of country-specific averages over time.

Slovenia? Between Austria and Finland?

The only clear message we get from a thorough analysis of correlation structures between the IIB and non-IIB components of the current account is that there are large idiosyncrasies that are mashed up and masked in the overall current account balance. Since we cannot know a priori for which countries the correlation of the IIB and the remaining CAB is positive, it is advisable to look at the current account from a more disaggregated perspective. Moreover, even for countries with a positive correlation, the IIB may be a substantial part of the CAB and exhibit different dynamics, as the next subsection suggests. Hence, reducing the CAB to the trade balance is also problematic in those cases since it may paint a potentially misleading picture about possible adjustment paths.

**Table 4: Country-by-country regression results**

<b>Positive &amp; p-value &lt;0.1</b>	<b>Positive</b>	<b>Negative</b>	<b>Negative &amp; p-value &lt;0.1</b>
Austria	Belgium	Croatia	Finland
Czech Republic	Bulgaria	Cyprus	France
Denmark		Poland	Hungary
Estonia		Portugal	Ireland
Germany		Romania	Japan
Greece		Switzerland	Luxembourg
Italy			Malta
Latvia			Serbia
Lithuania			Slovenia
Netherlands			Sweden
Slovak Republic			Turkey
Spain			United Kingdom
United States			

Prefix of coefficient from regression of non-IIB/CAB on IIB/CAB. Only countries with >30 observations included. Sample period may vary across countries. P-values for robust standard errors.

### 4.3 Patterns of persistence

What are the time-series properties of investment income balances? To get a first view, appendix Table A.1 reports the results of a regression of IIB/GDP on time. This table provides another rather heterogeneous picture. Some ‘traditional’ current-account-surplus countries show positive and improving investment income balances (e.g., Germany and Sweden), but others don’t: in Austria and Finland, the average investment income balance is negative but improving, for the Netherlands, the trend is not significantly different from 0. For the so-called “PIIGS” countries, which attracted significant attention in the context of the global financial crisis, a common feature is the negative investment income balance, but the balance has been improving in Italy, Greece, and Spain over the respective sample periods. Most countries in central and eastern Europe show investment income deficits and declining trends, although this does not hold for Bulgaria, Estonia, and Slovakia, for example.

Given that several cross-border asset positions are difficult to unwind (especially FDI projects), their income flows may be quite persistent. Trade balances, on the other hand, can adjust more quickly, mostly through adjustments in imports. To investigate such differences

in persistence, I run an autoregression (AR) of IIB/GDP and CAB/GDP on its own lag. More specifically, the underlying regression equation is

$$\left(\frac{Y}{GDP}\right)_{it} = \theta \left(\frac{Y}{GDP}\right)_{i,t-1} + \beta_{\{it\}\epsilon_j} t + \sum_{q=1}^4 q_q + u_{it}, \quad (2)$$

where  $Y$  is either the IIB (columns 1 and 2) or the overall CAB (columns 3 and 4),  $q$  indexes quarterly dummy variable. Heterogeneous linear time trends  $\beta t$  are allowed for deficit vs. surplus countries. Results are reported in Table 5 and include country fixed effects for columns (2) and (4).<sup>24</sup>

Table 5 shows that investment income balances are more persistent than overall current account balances. This can be inferred from the higher AR coefficient for the investment income balances in columns 1 and 2 of Table 1 compared to the overall current account balances in columns 3 and 4. A higher AR coefficient indicates a stronger correlation between current and previous realizations of the respective variable. The relatively high AR coefficients for the investment income balance suggest that it is difficult to deviate from an existing imbalance in investment income flows. In other words, we should look beyond the aggregate current account when designing pathways to external adjustment. Macroeconomic assessments of current account imbalances should differentiate between cases where an imbalance is driven by investment incomes or other current account components. In the former case, more time may be needed for external adjustment.

---

<sup>24</sup> Note that the Nickel (1981) bias for dynamic panel data will be of similar order for the IIB and CAB as (lagged) dependent variables since it is proportional to  $1/T$ . I.e., while the estimates of both AR coefficients may be biased, the bias is unlikely to affect comparison between those estimates. Given the considerable  $T$ -dimension of the panel, the bias is also expected to be small.

**Table 5: AR(1) regressions for investment income and current account**

	Investment income balance/GDP		Current account balance/GDP	
	(1)	(2)	(3)	(4)
AR(1)	0.7630*** (0.0626)	0.3646*** (0.0347)	0.3747*** (0.0974)	0.2081** (0.0874)
trend surplus	0.0000 (0.0000)	0.0000 (0.0000)	0.0004*** (0.0001)	0.0005*** (0.0001)
trend deficit	-0.0001*** (0.0000)	-0.0001* (0.0001)	0.0001 (0.0001)	0.0002* (0.0001)
Seasonal dummies	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	No	Yes
Obs.	2,536	2,536	2,797	2,797
F-stat	143.77	43.31	102.59	48.30

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 4.4 Do we need to be particularly worried about Eurozone investment income imbalances?

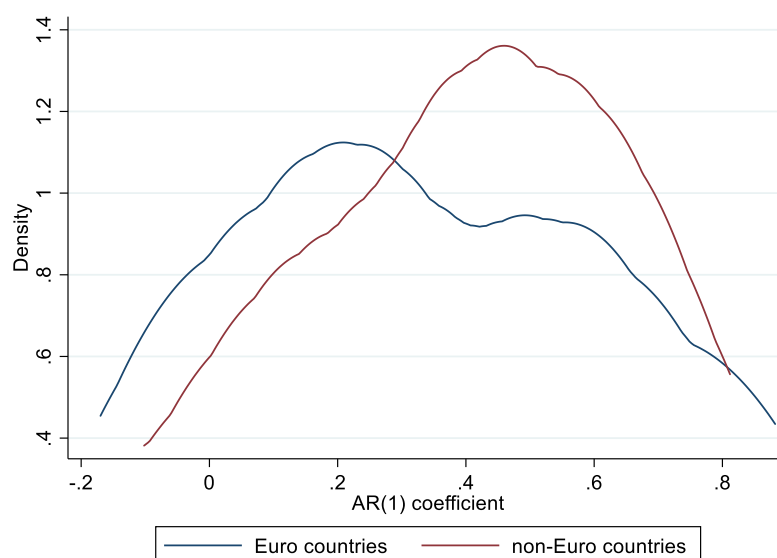
The strong persistence of investment income imbalances may be particularly worrisome for Euro area countries since they lack the exchange rate as an external adjustment mechanism.<sup>25</sup> To investigate whether this makes investment incomes more persistent in the Eurozone, I first perform a country-specific time-series estimation of equation (2) for the late Euro adopters<sup>26</sup> and interact the autoregressive coefficient  $\theta$  with a dummy variable whether the country has adopted the Euro in the respective quarter or not. None of the results (available upon request) suggest any particular pattern of persistence during the periods where those countries were part of the Euro area. While such identification over time could be useful to address unobserved heterogeneity across countries, there is room for concern since countries have effectively fixed their exchange rate to the Euro before formally the common currency.

To compare differences in persistence across countries I additionally estimated country-specific AR(1) models for the IIB/GDP and show the distribution of the AR coefficient across countries in Figure 5, separated by Eurozone and non-Eurozone countries. The distribution of the depicted AR(1) coefficients is overall relatively smooth and suggests that – if anything – non-Eurozone countries experience higher persistence in their investment income balances.

<sup>25</sup> Besides from other factors discussed below, the relevance of exchange rate movements on the IIB will depend on the denomination of foreign assets and liabilities. E.g., a currency depreciation may help servicing obligations that are denominated in domestic currency but a depreciation makes it more difficult to service obligations in foreign currency. See Colacelli et al. (2021) for a discussion of exchange rate effects on the investment income balance.

<sup>26</sup> Latvia, Estonia, Lithuania, Slovakia, Cyprus, Malta, Slovenia, Greece. Those are the only countries where one can meaningfully assess changes in Eurozone membership over time due.

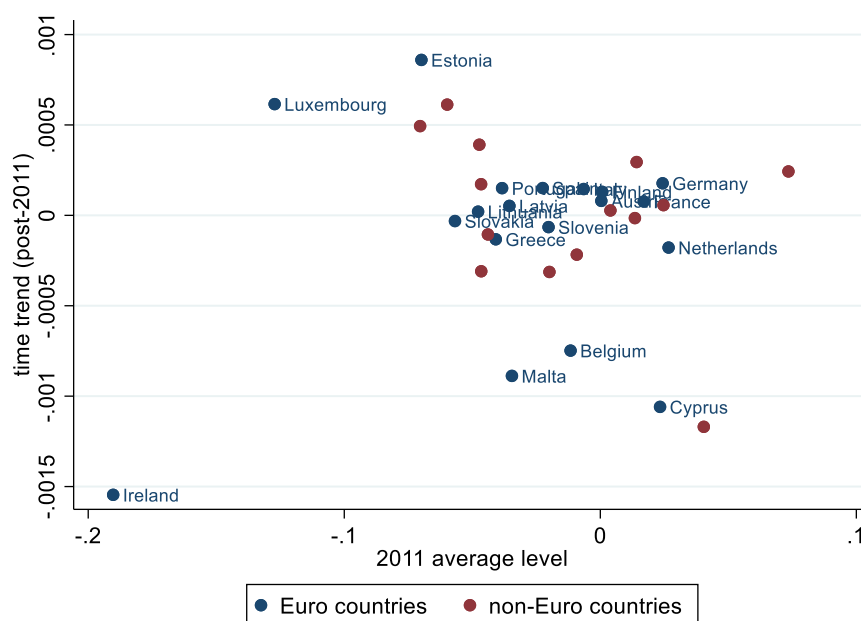
**Figure 5: Distribution of AR(1) coefficients for Euro- and non-Euro countries**



Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Another way to look at adjustments of investment income imbalances is through the lenses of convergence vs. divergence. Figure 6 therefore plots the 2011 investment income balance (relative to GDP) on the horizontal axis against the time trend of the IIB since 2011 on the vertical axis. 2011 is chosen as a reference year because it is the first year providing comprehensive coverage. Eurozone countries are depicted in blue, non-Eurozone countries in red. Neglecting the outlier of Ireland, where investment incomes of multinationals play an excessive and peculiar role, we observe a negative relationship. This indicates that countries with a more negative investment income balance in 2011 (i.e., towards the left of Figure 6) subsequently experienced a more positive trend in their investment income balance, while 2011 IIB surplus countries were more likely to experience negative trends in the IIB after 2011. One must be careful in over-interpreting this period in the aftermath of the global financial crisis, because it has broadly been an episode of macroeconomic re-balancing and adjustment. Yet, it is comforting to see a tendency of investment income balances to converge and for Eurozone countries to observe no significantly different pattern (with the possible exception of Ireland).

**Figure 6: Convergence vs divergence in investment income balances**



Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

## 5. Implications for policy

The above results suggest that different sub-accounts of the current account behave fundamentally different, often show a negative correlation among each other, and opposing relationships with variables that are commonly perceived as current account determinants. At least three implications follow from the above findings for policy:

1. **Macroeconomic monitoring should disaggregate current account balances.** Given the heterogeneity in its sub-accounts, monitoring exercises for aggregate current account balances, such as the European Commission's imbalance scorecard, may be more misleading than revealing. Monitoring the trade balance and the IIB (or, primary income payments) separately may give a better picture of macroeconomic imbalances and adjustment needs. Countries where current account deficits are driven by a large part by investment income deficits should be given more time for adjustment since IIB persistence is higher than for other parts of the current account.<sup>27</sup>

A disaggregate approach would also be consistent with fiscal surveillance practices under the Stability and Convergence Program, which targets primary budget spending, net of interest payments which are the analogue to investment incomes in the current account.

2. **Central Banks and international organizations should increasingly monitor gross stock imbalances and investment income imbalances and the link between them.**

<sup>27</sup> Limbergen (2020) also provides methodological innovations to better understand current account balances and external sustainability, particularly in the presence of aggressive tax planning.

This is important because investment income balances are particularly persistent and because a detailed analysis of foreign liabilities and associated investment income payments may reveal macro-financial vulnerabilities. For example, in a country where large FDI incomes are realized and profits are reinvested, liquidity may build up in the domestic financial system. But if those accumulated profits are suddenly repatriated due to external factors, the financial system may experience a liquidity shock (and possibly a currency crisis). New tools have to be developed for this purpose and can partly build on recent frameworks for studying net financial asset positions and IIBs (e.g., Alberola et al., 2020; Colacelli et al., 2021).

3. **This requires more coordinated data efforts.** Several national agencies already provide detailed breakdowns of their country's investment income and international investment position (by partner country, asset class/investment type, and sector). But except for Eurostat, no centralized data on investment incomes with such a breakdown is available, which would be particularly useful for researchers to better understand investment income dynamics and to develop frameworks to analyze and monitor them. Eurozone countries could take the lead in compiling bilateral investment income data with detailed partner country, investment type, and sector breakdowns.

Linking the investment income account to domestic financial accounts is a particularly promising area to improve national account statistics. For example, such links allow tracing how FDI relates to non-financial corporate lending and borrowing (e.g., Zhang and Zhao, 2019; Infante et al., 2018; Colacelli et al., 2021; Girón, 2020) and assessing external exposure of certain sectors (e.g., Almeida, 2015). Such linkages can hence be revealing for financial vulnerability assessments or from a distributional perspective (what sectors hold which foreign assets?). The latter is also important to better understand welfare implications in international finance (Avdjiev et al., 2016).

## 6. Concluding remarks

Is the current account still a meaningful concept? From the most aggregate external payment flow perspective of countries, it certainly is. But the results presented in this paper suggest that it is more adequate to understand the current account as “an important *grouping* of accounts within the balance of payments” (IMF 2009: 2.14, emphasis added). Accordingly, we need to be clear in our analysis whether it is indeed this aggregate perspective we want to take. Two broad rationales question such an aggregate perspective for most questions of economic relevance, in my view.

First, if we are interested in the response behavior of the current account as an external payment account in the context of macroeconomic models, why not separate the trade balance from the income payment perspective? Given the findings of this paper, we would expect both to behave quite differently, calling for analytical separation of the two. From that rationale, the current account is too broad as a grouping.

Second, if we take an external payment and vulnerability perspective, the current account is a too narrow grouping because it does not include valuation changes on external assets that have become increasingly relevant (see particularly Obstfeld, 2012; Alberola et al., 2020; Bergant, 2021). This information is contained in stock changes (of the international investment position) and no flow. With respect to investment incomes of multinationals, the current account does not distinguish whether those incomes are re-invested domestically or actually leave an economy towards the parent country (see Fischer et al., 2019; Hansen and Wagner, 2022; Priyanka and Griffin, 2023). This information can only be inferred from “re-invested FDI” in the financial account.

Taken together, the current account is meaningful from an accounting perspective. It ensures that financial (“capital”) transactions equate “current” transactions, the so-called balance of payment identity.<sup>28</sup> While those accounting principles may have been derived from economic rationales, it is up to economists to develop the personality to use these concepts wisely.

---

<sup>28</sup> See also Obstfeld (2012: footnote 2) and references therein.



## References

- Akkermans, Dirk H.M. (2017): “Net profit flow per country from 1980 to 2009: The long-term effects of foreign direct investment.” *PLoS ONE* 12(6): e0179244.
- Alberola, Enrique, Ángel Estrada, and Francesca Viani (2020): “Global imbalances from a stock perspective: The asymmetry between creditors and debtors.” *Journal of International Money and Finance* 107(C): 102206
- Allen, Cian, Camila Casas, Giovanni Ganelli, Luciana Juvenal, Daniel Leigh, Pau Rabanal, Cyril Rebillard, Jair Rodriguez, and João Tovar Jalles (2023): 2022 Update of the External Balance Assessment Methodology. IMF Working Paper 23/47.
- Almeida, Luiza Antoun de (2015): A Network Analysis of Sectoral Accounts: Identifying Sectoral Interlinkages in G-4 Economies. IMF Working Paper 15/111.
- Arkolakis, Costas, Natalia Ramondo, Andrés Rodríguez-Clare, and Stephen Yeaple (2018): “Innovation and Production in the Global Economy.” *American Economic Review*, 108 (8): 2128-73.
- Avdjiev, Stefan, Robert N. McCauley, and Hyun Song Shin (2016): “Breaking free of the triple coincidence in international finance.” *Economic Policy* 31(87): 409–451.
- Bergant, Katharina (2021): “The role of stock-flow adjustment during the global financial crisis.” *Journal of International Money and Finance* 110: 102261.
- Blanchard, Olivier J. (2009): *Macroeconomics*. 5<sup>th</sup> edition. Pearson.
- Bohn, Timon, Steven Brakman, and Erik Dietzenbacher (2021): “From exports to value added to income: Accounting for bilateral income transfers.” *Journal of International Economics* 131: 103496.
- Borio, Claudio (2016): “On the centrality of the current account in international economics.” *Journal of International Money and Finance* 68: 266-274.
- Bundesbank (2020a): German net exports from the perspective of the federal states, In: Monthly Report, March 2020; pp. 19-21.
- Bundesbank (2020b): Germany’s Current Account. In: Monthly Report, July 2020; p. 25.
- Chinn, Menzie and Eswar Prasad (2003): “Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration.” *Journal of International Economics* 59(1): 47-76.
- Colacelli, Mariana, Deepali Gautam, and Cyril Rebillard (2021): Japan’s Foreign Assets and Liabilities: Implications for the External Accounts. IMF Working Paper 2021/026.
- Demirden, Tuvana, and Ivan Pastine (1995): “Flexible exchange rates and the J-curve: An alternative approach.” *Economics Letters* 48(3-4): 373-377.
- Duan, Yuwan, Erik Dietzenbacher, Bart Los, Cuihong Yang (2021): “How much did China’s

emergence as ‘the world's factory’ contribute to its national income?” *China Economic Review* 69: 101658.

Fischer, Andreas M., Henrike Groeger, Philip Sauré, and Pinar Yeşin (2019): “Current account adjustment and retained earnings.” *Journal of International Money and Finance* 94: 246-259

Girón, Celestino (2020): “Globalisation and balance of payments.” IFC Bulletin 51: Using financial accounts. Bank for International Settlements.

Gourinchas, Pierre-Olivier and Hélène Rey (2007): From world banker to world venture capitalist: The U.S. external adjustment and the exorbitant privilege. In: R. Clarida (ed.): *G7 Current Account Imbalances: Sustainability and Adjustment*. Chicago: University of Chicago Press, pp. 11-55.

Gourinchas, Pierre-Olivier, Hélène Rey, and Kai Truempler (2012): “The financial crisis and the geography of wealth transfers.” *Journal of International Economics* 88(2): 266–283.

Gourinchas, Pierre-Olivier and Hélène Rey (2013): “External Adjustment, Global Imbalances and Valuation Effects.” In: Gopinath, Helpman and Rogoff (eds.): *Handbook of International Economics*, 585-640.

Gräbner, Claudius, Philipp Heimberger, Jakob Kapeller, Michael Landesmann, and Bernhard Schütz (2021): The evolution of debtor-creditor relationships within a monetary union: trade imbalances, excess reserves and economic policy. IfSO Working Paper No.10, University of Duisburg-Essen.

Güvenen, Fatih, Raymond J. Mataloni Jr., Dylan G. Rassier, and Kim J. Ruhl (2022): “Offshore Profit Shifting and Aggregate Measurement: Balance of Payments, Foreign Investment, Productivity, and the Labor Share.” *American Economic Review* 112(6): 1848–1884.

Hale, Galina and Maurice Obstfeld (2016): “The Euro and the geography of international debt flows.” *Journal of the European Economic Association* 14(1): 115-144

Hansen, Erwin and Rodrigo Wagner (2022): “The reinvestment by multinationals as a capital flow: Crises, imbalances, and the cash-based current account.” *Journal of International Money and Finance* 124: 102615.

Hausmann, Ricardo and Federico Sturzenegger (2007): “The Missing Dark Matter in the Wealth of Nations and its Implications for Global Imbalances.” *Economic Policy* 22(51): 469-518.

Hebous, Shafik and Niels Johannesen (2021): “At your service! The role of tax havens in international trade with services.” *European Economic Review* 135: 103737

IMF (2009): *Balance of payments and international investment position manual*, Sixth Edition (BOPM6), Washington, DC: International Monetary Fund.

IMF (2021): Colombia. Selected Issues. Country Report No. 2021/060, Washington, DC:

International Monetary Fund.

Infante, Luigi, Tatiana Cesaroni, and Riccardo De Bonis (2018): “Firms' financial surpluses in advanced economies: the role of net foreign direct investments.” *Economia Politica: Journal of Analytical and Institutional Economics*, 35(3): 1055-1080.

Kent, Christopher and Paul Cashin (2003): The Response of the Current Account to Terms of Trade Shocks: Persistence Matters. IMF Working Paper 03/143.

Knetsch, Thomas and Arne Nagengast (2017): “Penny Wise and Pound Foolish? On the Income from Germany's Foreign Investments.” *Review of World Economics/Weltwirtschaftliches Archiv* 153(4): 753-778.

Krugman, Paul (1999): “Balance sheets, the transfer problem, and financial crises.” *International Tax and Public Finance* 6: 459-472.

Lane, Philip R. & Milesi-Ferretti, Gian Maria (2012): “External adjustment and the global crisis.” *Journal of International Economics* 88(2): 252-265.

Limbergen, Duncan van (2020): “Revisiting the income balance. What makes EU tax havens different?” *IFC Bulletins chapters*, in: Bank for International Settlements (ed.), Bridging measurement challenges and analytical needs of external statistics: evolution or revolution? Volume 52, Bank for International Settlements.

Nickell, Stephen (1981): “Biases in Dynamic Models with Fixed Effects.” *Econometrica* 49(6): 1417-1426.

Novokmet, Filip (2018): Long-run evolution of inequality in the Czech Lands 1898-2015. WID.world working paper 2018/5.

Phillips, Steven, Luis Catão, Luca Ricci, Rudolfs Bems, Mitali Das, Julian Di Giovanni, Filiz Unsal, Marola Castillo, Jungjin Lee, Jair Rodriguez, and Mauricio Vargas (2013): The External Balance Assessment (EBA) Methodology. IMF Working Paper 13/272.

Priyanka, Kher and Carlos Griffin (2023): Divestment Drivers and FDI Retention. Equitable Growth, Finance and Institutions Insight - Trade, Investment and Competitiveness. Washington, DC: World Bank.

Ramondo, Natalia, and Andrés Rodríguez-Clare (2013): “Trade, Multinational Production, and the Gains from Openness.” *Journal of Political Economy* 121 (2): 273–322

Rose, Andrew K. and Janet L. Yellen (1989): “Is there a J-curve?” *Journal of Monetary Economics* 24(1): 53-68.

Schmitt-Grohé, Stephanie and Martín Uribe (2021): “ Reviving the Salter-Swan small open economy model.” *Journal of International Economics* 130: 103441

Schmitt-Grohé, Stephanie, Martín Uribe, and Michael Woodford (2022): *International Macroeconomics. A Modern Approach*. Princeton University Press.

Sinn, Hans W. and Timo Wollmershäuser (2012): “Target loans, current account balances and capital flows: the ECB’s rescue facility.” *International Tax and Public Finance* 19 (4):

468-508.

Svensson, Lars E.O. and Assaf Razin (1983): “The Terms of Trade and the Current Account: The Harberger-Laursen-Metzler Effect.” *Journal of Political Economy* 91(1): 97-125.

Thirlwall, Anthony P. (2011): Balance of payments constrained growth models: history and overview.” *PSL Quarterly Review* 64(259): 307-351.

Tille, Cedric and Giovanni Donato (2024): International investment income: patterns, drivers, and heterogeneous sensitivities. Paper presented at the IFC/BIS External Statistics Conference, Madrid: February 12, 2024.

Wang, Zhi, Shang-Jin Wei, Xinding Yu, and Kunfu Zhu (2021): Tracing value added in the presence of foreign direct investment. NBER Working Paper 29335.

Zhang, Nan and Xiuzhen Zhao (2019): “Measuring global flow of funds: focus on China, Japan, and the United States.” *Economic Systems Research* 31(4): 520-550.

## Appendix

Table A.1: Summary statistics and trends

	<b>Obs.</b>	<b>Mean</b>	<b>SD</b>	<b>trend</b>	
Austria	103	-0.0055	0.0081	0.00016	***
Belgium	51	0.0016	0.0231	-0.00020	
Bulgaria	55	-0.0486	0.0187	0.00022	
Croatia	83	-0.0380	0.0191	-0.00020	**
Cyprus	51	-0.0197	0.0342	-0.00075	**
Czechia	103	-0.0430	0.0311	-0.00063	***
Denmark	64	0.0244	0.0133	0.00046	***
Estonia	71	-0.0531	0.0180	0.00054	***
Finland	79	-0.0014	0.0207	0.00026	***
France	87	0.0099	0.0069	0.00009	***
Germany	115	0.0101	0.0140	0.00032	***
Greece	51	-0.0213	0.0142	0.00057	***
Hungary	103	-0.0616	0.0136	-0.00013	**
Ireland	51	-0.1915	0.0386	-0.00179	***
Italy	87	-0.0034	0.0062	0.00010	***
Japan	100	0.0646	0.0269	0.00081	***
Latvia	83	-0.0309	0.0230	-0.00031	***
Lithuania	67	-0.0368	0.0189	-0.00012	
Luxembourg	75	-0.1510	0.0986	-0.00270	***
Malta	67	-0.0494	0.0296	-0.00109	***
Netherlands	70	0.0136	0.0156	0.00006	
Norway	11				
Poland	67	-0.0436	0.0081	-0.00002	
Portugal	99	-0.0279	0.0146	-0.00021	***
Romania	87	-0.0292	0.0168	-0.00024	***
Serbia	39	-0.0525	0.0152	-0.00037	
Slovakia	67	-0.0500	0.0233	0.00054	***
Slovenia	103	-0.0177	0.0120	-0.00032	***
Spain	103	-0.0145	0.0087	0.00012	***
Sweden	111	0.0044	0.0207	0.00045	***
Switzerland	51	0.0305	0.0372	-0.00030	
Turkey	43	-0.0106	0.0032	-0.00014	***
United Kingdom	87	-0.0049	0.0134	-0.00035	***
United States	87	0.0080	0.0045	0.00015	***

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office. See section 3 for details. \*\*\*, \*\*, and \* indicate (heteroskedasticity-robust) statistical significance of the time trend at the 1%, 5%, and 10% level, respectively.

**Table A.2: Explanatory variables for current account and investment income balance**

<b>Variable</b>	<b>Variable name</b>	<b>Source</b>	<b>Variable description</b>
General government budget balance (ratio to GDP)	ggbudget	WEO Database (IMF), April 2021	General government revenue minus general government total expenditure, expressed as a percentage of GDP.
Youth dependency ratio (% of working age population)	youthdependency	WDI	The ratio of younger dependents (people younger than 15) to the working-age population (those aged 15-64). Data are shown as the proportion of dependents per 100 working-age population.
Old dependency ratio (% of working age population)	olddependency	WDI	The ratio of older dependents (people older than 64) to the working-age population (those aged 15-64). Data are shown as the proportion of dependents per 100 working-age population.
Net barter terms of trade index	termsoftrade	WDI	The percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000.
Real effective exchange rate index	REER	WDI	The nominal effective exchange rate divided by a price deflator or index of costs (2010 = 100).
M3/GDP	M3/GDP	Global Financial Development Database	The ratio of liquid liabilities (broad money or M3) to GDP. <sup>29</sup>
Domestic credit to private sector (% of GDP)	domcredit	WDI	Domestic credit to the private sector (the financial resources provided to the private sector by financial corporations that establish a claim for repayment) as a percentage of GDP.
Gross domestic savings (% of GDP)	savings	WDI	Gross domestic savings (GDP less final consumption expenditure) as a percentage of GDP.
Aging rate	aging	World Bank population estimates and projections	The expected change in the old-age dependency ratio in the future (constructed as the difference between the old age dependency ratio in year t+20 and the ratio in year t).

<sup>29</sup> Liquid liabilities (broad money or M3) are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.

**Table A.3: Correlates of the current account and sub-accounts (pooled OLS)**

VARIABLES	(1) CAB/GDP	(2) IIB/GDP	(3) (CAB-IIB)/GDP
youthdependency	0.00198** (0.000957)	0.000415 (0.000857)	0.00157** (0.000728)
olddependency	0.00540*** (0.000438)	0.00375*** (0.000395)	0.00166*** (0.000460)
aging	0.00285*** (0.000530)	0.000974** (0.000479)	0.00188*** (0.000458)
M3/GDP	-2.27e-05 (2.16e-05)	-8.02e-05*** (2.97e-05)	5.75e-05*** (1.95e-05)
REER	0.000680*** (0.000215)	0.000386* (0.000219)	0.000294 (0.000245)
termsoftrade	-2.78e-05 (0.000224)	-0.000521** (0.000234)	0.000494** (0.000216)
domcredit	0.000212*** (4.52e-05)	0.000314*** (3.70e-05)	-0.000102** (4.25e-05)
savings	0.00472*** (0.000481)	-0.00170*** (0.000481)	0.00642*** (0.000375)
ggbudget	0.00146** (0.000680)	0.00277*** (0.000601)	-0.00131** (0.000638)
Eurozone dummy	-0.00764** (0.00369)	-0.0117*** (0.00323)	0.00408 (0.00335)
Constant	-0.414*** (0.0509)	-0.0931** (0.0429)	-0.321*** (0.0479)
Observations	411	411	411
R-squared	0.592	0.536	0.731
Note	all countries	all countries	all countries

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A.4: Correlates of the current account and sub-accounts (fixed effects)**

VARIABLES	(1) CAB/GDP	(2) IIB/GDP	(3) (CAB-IIB)/GDP
youthdependency	0.00244 (0.00472)	-0.000341 (0.00132)	0.00278 (0.00421)
olddependency	0.00478** (0.00180)	-7.03e-05 (0.000860)	0.00485** (0.00180)
aging	0.00331** (0.00129)	-0.00114** (0.000536)	0.00445*** (0.00125)
M3/GDP	0.000111 (6.76e-05)	0.000444*** (3.42e-05)	-0.000333*** (6.26e-05)
REER	0.000306 (0.000419)	9.74e-06 (0.000295)	0.000296 (0.000434)
termsoftrade	0.000843 (0.000526)	-0.000142 (0.000324)	0.000985** (0.000432)
domcredit	-0.000185 (0.000206)	-0.000301*** (9.52e-05)	0.000116 (0.000195)
savings	0.00381* (0.00198)	-0.00283*** (0.000930)	0.00664*** (0.00169)
ggbudget	-0.00117 (0.00178)	0.000496 (0.000655)	-0.00167 (0.00135)
Eurozone dummy	0.0126 (0.0179)	0.000364 (0.00855)	0.0122 (0.0138)
Constant	-0.434** (0.193)	0.0652 (0.0747)	-0.499*** (0.180)
Observations	411	411	411
R-squared	0.305	0.506	0.487
Number of countries	28	28	28
Note	all countries	all countries	all countries

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.  
Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table A.5: Reproduction of table 1 (aging, FE) without Ireland and Luxembourg**

VARIABLES	(1) CA/GDP	(2) invinc/GDP	(3) non-invinc CA/GDP
aging	0.00260 (0.00181)	0.000454 (0.000674)	0.00215 (0.00200)
M3/GDP	0.000866* (0.000424)	-9.05e-05 (0.000172)	0.000957** (0.000454)
termsoftrade	0.000825* (0.000461)	-0.000927*** (0.000188)	0.00175*** (0.000438)
domcredit	-0.000481* (0.000271)	-9.81e-05 (0.000106)	-0.000383 (0.000244)
ggbudget	0.00224 (0.00180)	-0.000655 (0.000545)	0.00290* (0.00165)
dum_euro	0.0270 (0.0178)	0.00767 (0.00491)	0.0193 (0.0148)
Constant	-0.154*** (0.0459)	0.0853*** (0.0210)	-0.239*** (0.0446)
Observations	385	385	385
R-squared	0.170	0.164	0.234
Number of geo	26	26	26
Note	w/o IRL/LUX	w/o IRL/LUX	w/o IRL/LUX

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A.6: Reproduction of table 2 (savings, FE) without Ireland and Luxembourg**

VARIABLES	(1) CA/GDP	(2) invinc/GDP	(3) non-invinc CA/GDP
savings	0.00642*** (0.00228)	-0.00111 (0.000789)	0.00752*** (0.00192)
M3/GDP	0.000728** (0.000341)	2.03e-05 (0.000145)	0.000707** (0.000316)
termsoftrade	-0.000492 (0.000398)	-0.000706*** (0.000225)	0.000214 (0.000464)
domcredit	-0.000320 (0.000303)	-0.000126 (0.000103)	-0.000193 (0.000264)
ggbudget	-0.000685 (0.00256)	-0.000138 (0.000739)	-0.000547 (0.00212)
dum_euro	0.0218 (0.0186)	0.00688 (0.00516)	0.0149 (0.0147)
Constant	-0.148** (0.0556)	0.0897*** (0.0185)	-0.238*** (0.0547)
Observations	385	385	385
R-squared	0.246	0.182	0.359
Number of geo	26	26	26
Note	w/o IRL/LUX	w/o IRL/LUX	w/o IRL/LUX

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table A.7: Reproduction of Table 3 without Ireland and Luxembourg**

VARIABLES	(1)	(2)	(3)	(4)
	Non-investment income CAB/GDP			
IIB/GDP	-0.173 (0.149)	0.0691 (0.161)	-0.132 (0.168)	0.00312 (0.190)
Eurozone dummy			0.0505*** (0.00693)	0.00158 (0.0124)
IIB/GDP x Eurozone dummy			-0.0461 (0.205)	0.345 (0.488)
Constant	0.00493** (0.00214)	0.00719 (0.00538)	-0.0167*** (0.00379)	0.00767 (0.00740)
Observations	2,445	2,445	2,445	2,445
R-squared	0.004	0.006	0.076	0.024
Number of countries	32	32	32	32
Estimation	FE	BE	FE	BE

Source: own calculations based on data from Eurostat, FRED, Japanese MOF and Cabinet Office.

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## **Index of Working Papers:**

January 13, 2021	Maximilian Böck, Martin Feldkircher, Burkhard Raunig	233	A View from Outside: Sovereign CDS Volatility as an Indicator of Economic Uncertainty
May 20, 2021	Burkhard Raunig	234	Economic Policy Uncertainty and Stock Market Volatility: A Causality Check
July 8, 2021	Thomas Breuer, Martin Summer, Branko Urošević	235	Bank Solvency Stress Tests with Fire Sales
December 14, 2021	Michael Sigmund, Kevin Zimmermann	236	Determinants of Contingent Convertible Bond Coupon Rates of Banks: An Empirical Analysis
February 14, 2022	Elisabeth Beckmann, Christa Hainz, Sarah Reiter	237	Third-Party Loan Guarantees: Measuring Literacy and its Effect on Financial Decisions
February 16, 2022	Markus Knell, Reinhard Koman	238	Pension Entitlements and Net Wealth in Austria
May 9, 2022	Nicolás Albacete, Pirmin Fessler, Peter Lindner	239	The Wealth Distribution and Redistributive Preferences: Evidence from a Randomized Survey Experiment
June 20, 2022	Erwan Gautier, Cristina Conflitti, Riemer P. Faber, Brian Fabo, Ludmila Fadejeva, Valentin Jouvanceau, Jan-Oliver Menz, Teresa Messner, Pavlos Petroulas, Pau Roldan-Blanco, Fabio Rumler, Sergio Santoro, Elisabeth Wieland, Hélène Zimmer	240	New Facts on Consumer Price Rigidity in the Euro Area
June 29, 2022	Svetlana Abramova, Rainer Böhme, Helmut Elsinger, Helmut Stix	241	What can CBDC designers learn from asking potential users? Results from a survey of Austrian residents

July 1, 2022	Marcel Barmeier	242	The new normal: bank lending and negative interest rates in Austria
July 14, 2022	Pavel Ciaian, Andrej Cupak, Pirmin Fessler, d'Artis Kancs	243	Environmental-Social-Governance Preferences and Investments in Crypto-Assets
October 18, 2022	Burkhard Raunig, Michael Sigmund	244	The ECB Single Supervisory Mechanism: Effects on Bank Performance and Capital Requirements
April 5, 2023	Norbert Ernst, Michael Sigmund	245	Are zombie firms really contagious?
May 8, 2023	Richard Sellner, Nico Pintar, Norbert Ernst	246	Resource Misallocation and TFP Gap Development in Austria
September 5, 2023	Katharina Allinger, Fabio Rumler	247	Inflation Expectations in CESEE: The Role of Sentiment and Experiences
October 16, 2023	Pietro Saggese, Esther Segalla, Michael Sigmund, Burkhard Raunig, Felix Zangerl, Bernhard Haslhofer	248	Assessing the Solvency of Virtual Asset Service Providers: Are Current Standards Sufficient?
October 20, 2023	Pirmin Fessler, Severin Rapp	249	The subjective wealth distribution: How it arises and why it matters to inform policy?
October 27, 2023	Burkhard Raunig, Michael Sigmund	250	Watching over 21,000 Billion Euros: Does the ECB Single Supervisory Mechanism Affect Bank Competition in the Euro Area?
December 5, 2023	Markus Knell	251	Housing and the secular decline in real interest rates
December 14, 2023	Niko Hauzenberger, Florian Huber, Thomas O. Zörner	252	Hawks vs. Doves: ECB's Monetary Policy in Light of the Fed's Policy Stance
February 28, 2024	Lukas Olbrich, Elisabeth Beckmann, Joseph W. Sakshaug	253	Multivariate assessment of interviewer-related errors in a cross-national economic survey

---

March 5, 2024	Nicolas Albacete, Pirmin Fessler, Atanas Pekanov	254	The Role of MPC Heterogeneity for Fiscal and Monetary Policy in the Euro Area
March 11, 2024	Martin Schneider	255	What contributes to consumer price inflation? A novel decomposition framework with an application to Austria
April 9, 2024	Konstantin M. Wacker	256	Investment incomes vs. the trade balance: Is the current account still a meaningful concept?

---