DOI:
10.1093/cje/beaa013

Document Version
Peer reviewed version

Are Current Accounts Driven by Cost Competitiveness or Asset Prices? A synthetic model and an empirical test

-- Author accepted manuscript. Forthcoming in *Cambridge Journal of Economics* --

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Abstract:
While current account imbalances have widened in recent decades, their causes are still debated. Trade-centred approaches highlight the role of cost competitiveness, in particular unit labour costs, and aggregate demand. In contrast, finance-centred approaches focus on gross financial flows, driven by expectations and the return on assets, that impact demand and the exchange rate. This paper, first, builds a simple model of the current account that provides a synthesis between the two approaches. Unit labour costs impact the current account via the real exchange rate and income distribution, while financial inflows drive up asset prices which leads to nominal appreciation and an increase in domestic demand. Second, we estimate a reduced form of this model for 28 OECD countries from 1972 to 2014, controlling for both trade- and finance-centred channels and a wide range of control variables. Our results indicate that finance-centred channels, via equity and residential property prices, drove current account divergence in the OECD, while unit labour costs were less important. They suggest that the effects of gross financial flows deserve more attention in theoretical and empirical models of the current account.

Keywords: current account, financial flows, competitiveness, asset prices

JEL codes: E12, F32, F41

Acknowledgements: Engelbert Stockhammer acknowledges financial support from INET grant Rising inequality as a structural cause of the financial and economic crisis (INO13-00012). We are grateful to Karsten Kohler, Robert Blecker, Glenn Moore, the editors and two anonymous referees for helpful comments. The usual disclaimers apply.

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1. Introduction

Current account imbalances have been growing in recent decades, in particular since the mid-1990s. Although there has been some rebalancing since the Great Recession, overall substantial imbalances persist. This trend was accompanied by an increasing volume of gross financial flows, which in 2014 exceeded the volume of trade flows by a factor of four in advanced economies (Borio and Disyatat, 2015). Those flows, and their effect on asset prices, aggregate demand, and the current account, are increasingly discussed in the context of global financial cycles (Rey, 2015).

However, the determinants of the current account are still open to debate. We identify three broad literature streams. Trade-centred approaches highlight the impact of cost competitiveness, often proxied by unit labour costs (ULC), and aggregate demand. Labour cost increases lead to a real exchange rate appreciation which reduces net exports. Furthermore, wage increases contribute to a more egalitarian income distribution which has repercussions on domestic demand with ensuing changes in the current account. Finance-centred approaches focus on (gross) financial flows driven by the return on domestic assets and financial conditions abroad. A surge in financial inflows leads to a nominal exchange rate appreciation which is translated into a real appreciation. Additionally, financial inflows impact asset prices and balance sheets and thus affect domestic demand, with consequences for the current account. These two approaches are situated within the Keynesian literature. A third, the savings-centred approach, is embraced by the mainstream literature and views current account imbalances as the outcome of saving decisions of optimising agents.

Most of the theoretical (Keynesian) literature adopts the trade-centred approach, thus largely neglecting the effects of speculative financial flows. This applies to neo-Kaleckian distribution and growth models (Onaran et al., 2011; Stockhammer and Wildauer, 2015), balance of payment constrained growth models (Thirlwall, 1979; Thirlwall and Hussain, 1982), as well as most Stock-Flow Consistent (SFC) models (Belabed et al., 2018; Mazier and Tiou-Tagba Aliti, 2012). In contrast, the effects of financial flows feature prominently in models of financial crises (Gallardo et al., 2006; Kohler, 2019; Oreiro, 2005). However, these contributions rarely discuss consequences of changes in cost competitiveness. Despite this theoretical division, there is some empirical support for both approaches. More recent studies confirm the effect of asset prices on the current account (Chinn et al., 2014; Fratzscher et al., 2010; Laibson and Mollerstrom, 2010), while evidence for ULC is mixed (Behringer and van Treeck, 2018; Diaz Sanchez and Varoudakis, 2013; Stockhammer and Sotiropoulos, 2014). Strikingly, none of the empirical studies control for both ULC and asset prices simultaneously. This implies that some of the results might suffer from an omitted variable bias and precludes a comparison of the relative size effects of finance- and trade-centred channels.

Against this backdrop the contribution of this article is twofold. First, it proposes a simple Keynesian model of the current account that synthesises trade-centred and finance-centred approaches. Second, it assesses the empirical explanatory power of the two approaches by estimating a reduced-form current account equation for a panel of 28 OECD countries (1972-2014).

In our theoretical model current account balances are the outcome of trade-related as well as of finance-related forces. Net exports respond to changes in nominal ULC, the nominal exchange rate and aggregate demand. Demand is impacted by ULC via income distribution and by asset prices via wealth and collateral effects. Asset prices respond to financial inflows which transmit global financial cycles to national economies and their current account. Based on a reduced form of this model we estimate the current account with ULC, the key variable capturing trade-centred channels, and asset prices, the key financial variable. We allow for various control variables, including some from the saving-centred approach, and present results for different estimation methods. Our findings indicate that asset prices, and in particular residential property prices, have played a major role in widening current account imbalances in the OECD. In contrast, we find no robust impact of nominal ULC on the current account, suggesting that trade-centred channels were less relevant. This implies that financial flows, and their impact on demand and competitiveness, deserve more attention in debates on current account imbalances, which has important implications for future research and economic policy.

The next section presents the theoretical model, Section 3 discusses the existing literature, while Section 4 provides an econometric analysis of current account determinants, based on a reduced form of our model. Section 5 concludes and discusses implications for research and policy.

2. A synthesis model encompassing trade- and finance-centred channels

This section sketches a simple Keynesian open economy model that provides a synthesis of the trade- and finance-centred approaches.[1] We analytically solve a simplified version of the model to provide a foundation for the empirical analysis in Section 4.

Trade-centred approaches focus on the effect of labour costs and aggregate demand on net exports. Two main channels are highlighted in the literature: First, the *wage-real appreciation channel*: An increase in labour costs will partly be passed through to the real exchange rate, the main measure of international competitiveness. The ensuing appreciation of the real exchange rate will decrease net exports (e.g. Gandolfo, 2016, chap. 7). Second, the *distribution-demand channel*: Post-Keynesian models have highlighted the impact of income distribution on aggregate demand. An increase in labour costs will impact functional income distribution (the wage share) and subsequently domestic demand, with repercussion on the trade balance (Belabed et al., 2018; Blecker, 1989; Stockhammer and Wildauer, 2015). Hence, labour costs impact aggregate demand as well as competitiveness.

Importantly, in trade-centred models, financial flows do not have an independent effect on aggregate demand or the exchange rate. In contrast, the finance-centred approaches emphasise the impact of gross financial flows on the exchange rate, output and current accounts. Gross flows do not have a direct impact on the trade balance but affect it indirectly through two main channels. The *inflow-nominal appreciation channel*: A surge in financial inflows, e.g. due to increased demand for domestic assets, appreciates the nominal exchange rate and subsequently the real exchange rate (Gallardo et al., 2006; Kohler, 2019). This leads to losses in competitiveness and a reduction in the trade balance. Second, the *inflow-asset price channel*: Financial inflows, especially in the form of portfolio flows, tend to increase asset prices or, more broadly speaking, affect the balance sheets of domestic sectors. This will increase consumption if people consume out of their wealth or may increase investment as collateral values rise. The positive demand effect leads to a deterioration of the trade balance (Kohler, 2019; Oreiro, 2005).

Our model goes beyond the existing literature by incorporating all four trade- and finance-centred channels. In line with most theoretical contributions we focus on net exports rather than the current account, that are determined in a standard manner by income and the real exchange rate, here split into a domestic cost component and the nominal exchange rate:

$$NX = n_0 - n_1 Y - n_2 ULC - n_5 e \,, \qquad n_1,\, n_2,\, n_5 > 0 \tag{1}$$

where NX stands for net exports, and n_0 represents a net export shock. We assume that exchange rate expectations, foreign demand and the foreign price level are exogenous and thus will shift n_0. The usual assumption in theoretical models is that a real depreciation increases net exports, i.e. the Marshall-Lerner condition holds. As the real exchange rate is determined by the domestic price level and the nominal exchange rate, a real depreciation can be brought about either by a decrease in the domestic price level, captured by nominal unit labour costs (ULC), or a depreciation of the nominal exchange rate (e).[2] An increase in aggregate demand (Y), in turn, reduces net exports through an increase in the demand for imports. Thus, the *wage-real appreciation channel*, i.e. a reduction of NX due to a decline in cost competitiveness, is captured through a negative effect of ULC in equation (1).

Equation (2) states the open economy goods market equilibrium condition, while equation (3) defines domestic demand.

$$Y = Z + NX \tag{2}$$

$$Z = z_0 + z_1 Y + z_2 ULC + z_3 A - z_4 i\ , \qquad z_1, z_2, z_3, z_4 > 0 \tag{3}$$

Domestic demand (Z) is determined by a shift parameter (z_0), a multiplier effect ($z_1 . Y$), the interest rate (i), ULC and asset prices (A). ULC account for the effect of income distribution on domestic demand, assuming that an increase in nominal ULC translates into an increase in real ULC, which are equivalent to the wage share (*distribution-demand channel*). Thus, we assume incomplete pass-through of nominal wages to prices, so that the price level as well as income distribution change due to nominal wage pressure. For simplicity, we impose a positive impact of the wage share on demand, thereby assuming that the economy is *domestically* ‘wage-led’ (Blecker, 1989). However, the open economy effect of a change in income distribution might be negative due to adverse effects on net exports (see appendix A1). Demand depends positively on asset prices. We are using asset prices as a summary variable for balance sheet effects, i.e. the effects of an increase in wealth or collateral value, or changes in the real-debt burden if it is denominated in foreign currency. This captures the *inflow-asset price channel*. Substituting equation (1) and (3) into equation (2) we can solve for the open economy goods market equilibrium, which we denote by $Y^{ISNX} = Y^{ISNX}(ULC, A, f_0, i, e)$.

We model net (notional) financial inflows (F) as a function of income, asset prices, the interest rate and the nominal exchange rate[3]

$$F = f_0 + f_1 Y + f_3 A + f_4 i - f_5 e\ , \qquad f_1, f_3, f_4, f_5 > 0 \qquad (4)$$

f_0 is a net inflow shock which could result from a monetary policy change in global financial centres. It therefore captures the effect of global financial cycles on domestic financial flows (Rey, 2015). Equation (4) allows us to incorporate different assumptions about the behaviour of financial traders on the asset and foreign exchange markets. An increase in A, given Y and i, describes an asset price bubble which is not related to fundamentals such as changes in productivity (which would be reflected in Y). If international financial markets are dominated by momentum traders who expect further asset price increases, then higher asset prices will lead to net inflows (f_3>0). This is consistent with the behavioural finance literature (De Grauwe and Kaltwaser, 2012).[4] If fundamentalists dominate the market, one would expect mean reversion and thus (f_3<0). Similarly, a negative effect of e ($f_5 > 0$) corresponds to a foreign exchange market dominated by fundamentalist traders, for whom a reduction in e indicates a future appreciation, thereby inducing financial inflows (Stiglitz et al., 2006, p. 101). A positive sign for f_5 would imply that a reduction in e (keeping expectations constant) induces financial outflows, and would suggest a high proportion of momentum traders. Models with momentum traders typically give rise to interesting dynamics which can lead to asset price cycles (e.g. Lavoie and Daigle, 2011, for cycles in the exchange rate). Including these features would require more complicated temporal structures in the behavioural equations (see Kohler, 2019, for a model with cycles in growth, foreign debt and the exchange rate). We use a static framework for simplicity. Our assumption of a positive impact of the interest rate ($f_4 > 0$), which reflects the return of holding domestic currency, is standard.

We assume that asset prices are positively affected by autonomous inflows (f_0) and a shift parameter (a_0) which captures domestic factors:

$$A = a_0 + a_6 f_0 \ , \qquad a_6 > 0 \qquad (5)$$

Equation (5), in conjunction with equation (4), imposes a feedback effect between asset prices and financial inflows.[5] Abstracting from changes in foreign reserves, the balance of payments (BP) equilibrium requires that net financial outflows equal net exports ($NX = -F$). Using this equilibrium condition to substitute equations (1), (4) and (5) we can solve for the exchange rate that is consistent with BP equilibrium $e^{BP} = e^{BP}(Y, ULC, A, f_0, i)$.[6] This illustrates the *inflow-nominal appreciation channel*. A financial inflow shock (via f_0) will increase asset prices (equation 5) and subsequently further increase financial inflows, thereby appreciating the nominal exchange rate e^{BP} (see also equation A.8 in the appendix).

We can now solve for the equilibrium income (Y^*) and the equilibrium exchange rate (e^*) by substituting the exchange rate consistent with the BP (e^{BP}) and income consistent with the goods market equilibrium (Y^{ISNX}). e^* and Y^* define a short-run open economy equilibrium, which is fully consistent with the existence of asset price bubbles. An asset price bubble (rise in A) would lead to adjustment in e^* and Y^*, while the goods market and the BP continue to clear. Next, the equilibrium values (Y^* and e^*) can be substituted into equation (1) to obtain the equilibrium trade balance:

$$NX^* = n_0 - n_1 Y^*(ULC, a_0, i, f_0) - n_2 ULC - n_5 e^*(ULC, a_0, i, f_0) \quad (6.1)$$

$$NX^* = f(ULC, a_0, f_0, i) \quad (6.2)$$

Our main interest concerns the effects of a change in ULC and asset prices on the trade balance:

$$\frac{\partial NX^*}{\partial a_0} = -n_1 \frac{\partial Y^*}{\partial a_0} - n_5 \frac{\partial e^*}{\partial a_0} < 0 \quad (7.1)$$

$$\frac{\partial NX^*}{\partial ULC} = -n_1 \frac{\partial Y^*}{\partial ULC} - n_2 - n_5 \frac{\partial e^*}{\partial ULC} < 0 \quad (7.2)$$

The signs of equations (7.1) and (7.2) are derived in appendix A1 (equations A.11.1 and A.11.3). They imply that a positive asset price shock and an increase in ULC lead to a deterioration of the equilibrium trade balance. Similarly, a financial inflow shock (f_0) and a subsequent increase in asset prices would also reduce NX (equation A.11.2 in appendix A1). Our model thus accounts for all four finance- and trade-centred channels: under plausible parameter restrictions demand increases due to an increase in asset prices (via balance sheet effects) or ULC (via a change in income distribution). The real exchange rate responds to financial inflows and a rise in ULC.[7] Our model also includes a feedback effect between financial flows and asset prices and allows for exogenous shocks to either of those variables, for example as a consequence of global financial cycles.

While this model may appear similar to the Mundell-Fleming model (MFM), in fact, there are several important differences. The MFM excludes asset prices and, even more importantly, it neglects speculative behaviour and in particular speculative financial flows. Indeed, while there is an independent equation for financial flows, they are solely governed by interest rate differentials. Thus, the MFM does not account for any of the finance-centred channels discussed above. In contrast, our model, first, allows for speculative financial behaviour as a financial inflow surge will increase asset prices which will induce further financial inflows. Second, the increase in asset prices (and subsequent balance sheet effects) are an important determinant of aggregate demand. Hence, the inclusion of asset prices in our model is key for the transmission of financial flow effects on the real economy. Additionally, distributional effects on aggregate demand are not included in the MFM, in contrast to our model. In fact, our model encompasses the MFM as a special case: our equilibrium net export function (equation 6.1) is consistent with the MFM, if parameters f_1, f_3, f_5, z_2, and z_3 are set to zero, in other words if there is no speculative behaviour on financial markets, no impact of the exchange rate on financial flows and no effect of asset prices on domestic demand.

In the empirical section of this paper we will estimate a version of equation 6.2, i.e. a reduced-form current account equation. This allows to compare the relative size effects of trade- versus finance-centred channels, by focusing on the effect of ULC and asset prices on the current account, but comes with some simplifications. First, the theoretical model also implies solutions for the exchange rate and output, but in the empirical model we only analyse the current account. A full estimation of our theoretical model would require a systems approach with asset prices, ULC, output, the exchange rate and the current account as variables. Second, by using asset prices as an explanatory variable, our econometric model cannot distinguish between domestic asset price shocks (a_0) and financial inflow shocks (f_0). The theoretical model allows for different behavioural assumptions about market participants and expectation formation depending on the share of momentum versus fundamentalist traders. These relative shares might change over the business cycle, thus potentially leading to changes in parameters. An empirical treatment of a more complicated model might account for such potential parameter instability over time in line with endogenous expectations.

3. Trade-, finance- and saving-centred views of the current account

This section situates our model within the existing Keynesian open economy literature. To be clear, much of this literature is concerned with explaining aggregate demand or effectiveness of different policy instruments, but we are interested in determinants of the current account. We group the literature into either finance- or trade-centred approaches. We also briefly discuss the (mainstream) saving-centred approach, which informs many empirical studies. Like us, the majority of theoretical contributions focus on the trade balance, thereby ignoring other parts of the current account such as income receipts and payments from foreign assets.

3.1 Trade-centred approaches

A prominent stream within the post-Keynesian literature are neo-Kaleckian distribution and growth models. These models typically assess the effect of a change in functional income distribution on consumption, investment and net exports (Blecker, 1989, 1999). The impact of an increase in the wage share, or equivalently real ULC, if induced by an increase in nominal ULC, has an unambiguous negative effect on exports through loss of competitiveness. Additionally, if demand is wage led, an increase in the wage share increases domestic demand, consequently further reducing net exports. Some recent studies include the effect of asset prices on consumption (and thereby imports) through a wealth effect (Onaran et al., 2011). Stockhammer and Wildauer (2015) additionally consider a negative effect of real estate prices on competitiveness, although the exact channel is not discussed. However, asset price booms are not linked to financial inflows. Hence, this literature focuses on the *wage-real appreciation* and the *distribution-demand channel*.

Another strand of literature based on Thirlwall (1979) focuses on the balance of payments-constrained growth rate, i.e. the growth rate that is consistent with a balanced trade position. Exports and imports are functions of domestic and foreign income and the real exchange rate. However, if net financial inflows are positive, the country can sustain negative net exports without being bound by the balanced growth rate (Thirlwall and Hussain, 1982). Yet, financial flows are captured by an exogenous parameter, and no further effect of financial flows on domestic demand or the exchange rate is considered. Hence, while the balance of payments constrained growth literature integrates the *wage-real appreciation channel*, it does not consider any of the other channels.

Another growing literature stream includes open-economy SFC models in the tradition of Godley and Lavoie (2007, chap. 12). SFC models typically include capital income in the consumption function, thereby allowing for a wealth effect (Belabed et al., 2018; Duwicquet and Mazier, 2010). However, the return on government bonds is exogenous, while the return on equities, when included, is usually independent of financial inflows, so that *the inflow-asset price channel* is not captured. In Belabed et al. (2018) and Duwicquet and Mazier (2010) equity prices are exogenous. The latter study also includes dividend payments which determine the demand for equities, but these are driven by profits which are determined on the goods market. The same holds for the *inflow-nominal appreciation channel* as there is no effect of financial inflows on asset prices and successively on the exchange rate. The exchange rate is exogenous in Belabed et al. (2018) and Duwicquet and Mazier (2010). In Mazier and Tiou-Tagba Aliti (2012) the exchange rate is endogenously determined by the trade balance and the interest rate thus neglecting speculative financial flows. An exception is

Lavoie and Daigle (2011), who model a positive feedback effect between financial inflows and the exchange rate, if the proportion of momentum traders on the foreign exchange market is sufficiently high. Most SFC models account for the *wage-real appreciation channel* (Duwicquet and Mazier, 2010; Lavoie and Daigle, 2011; Mazier and Tiou-Tagba Aliti, 2012). Belabed et al. (2018) additionally include consumption effects of changes in income distribution, in line with the *distribution-demand channel*. Thus, with the exception of Lavoie and Daigle (2011), this literature is mainly trade-centred.

3.2 Finance-centred approaches

Literature which has prominently focused on financial flows often describes the causes and consequences of financial crises. In contrast to mainstream approaches that rely on exogenous factors such as excessive fiscal expansion or foreign interest rate hikes, post-Keynesian scholars tend to model crises as the endogenous outcome of the normal functioning of capitalism, in line with Minsky's (1978) Financial Instability Hypothesis.

Several contributions incorporate the effect of financial flows on aggregate demand (*inflow-asset price channel*). Rather than a wealth effect, financial inflows impact aggregate demand through credit expansion or balance sheet effects in most studies. This is probably due to the focus on emerging market economies (EMEs), where wealth levels are generally lower than in advanced economies. While these are distinct channels, they all link financial flows to domestic demand. Minskyan models which do incorporate a wealth effect are cast in a closed economy setting (e.g. Ryoo, 2010, 2013). In Oreiro (2005) net exports are a function of the real exchange rate and aggregate demand, while financial flows are determined by interest rate differentials and exchange rate expectations. An exchange rate shock, e.g. due to liberalisation of the financial account, can induce a bubble in equity prices, based on portfolio reallocation of traders from foreign to domestic assets. This stimulates aggregate demand and appreciates the exchange rate, thereby reducing the current account and depleting the country of foreign reserves until it is faced with a currency crisis.

Gallardo *et al*. (2006) and Kohler (2019) additionally incorporate the *inflow-nominal appreciation channel*. In Gallardo *et al*. (2006) net exports are driven by income and the real exchange rate, while financial flows are driven by asset prices and the interest rate. An appreciation and an increase in asset prices triggers financial inflows, while net financial inflows can also increase the real exchange rate and asset prices. Thus, similar to Lavoie and Daigle (2011), there is a positive feedback effect between financial inflows and the exchange rate. Furthermore, financial inflows lead to domestic credit expansion, thereby contributing to output growth and a further decline in net exports. Kohler (2019) presents a Minskyan open-economy model where firms borrow in foreign currency. An exchange rate appreciation stimulates investment through balance sheet effects, which attracts pro-cyclical capital flows leading to a further appreciation. This is accompanied by a current account deficit which exerts downward pressure on the exchange rate, leading to contractionary balance sheet effects and a recession. The model can give rise to endogenous cycles. To summarise, the Minskyan literature focuses on the finance-centred channels. Even though the inclusion of the real exchange rate implicitly allows for an impact of labour costs on competitiveness, with the exception of Oreiro (2005) labour cost effects are not explicitly modelled.

3.3 The saving-centred approach

In the mainstream literature net exports are determined by imbalances between saving and investment which are the outcome of inter-temporal optimisation decisions of rational agents (Obstfeld and Rogoff 1995) – hence we label this approach saving-centred. As agents' preferences are assumed to be stable, the focus is usually on the long-run. This literature has generated four main hypotheses to explain external imbalances. First, the twin deficit hypothesis postulates that an increase in the government deficit triggers an external deficit. Second, the life-cycle hypothesis predicts that an increase in the share of the out-of-working-age population will lower net saving and hence the trade balance. Third, trade imbalances can be seen as consumption smoothing during a catching-up process between countries in line with the Solow growth model. Fourth, the saving-glut hypothesis suggests that the Asian Crisis induced EMEs to accumulate foreign assets from advanced countries with high quality (financial) institutions, which financed the trade deficits of advanced economies. Saving-centred studies do not usually consider the impact of income distribution or financial flows. An exception is Kumhof et al. (2012) whose DSGE model includes a negative effect of income inequality on the trade balance, mainly due to increased investment and consumption of top income households. In the two-country DSGE model by Fratzscher and Straub (2010) news shocks can impact equity prices with subsequent changes in the trade balance. However, news shocks are anticipated technology shocks and not linked to financial flows.[8]

3.4 Empirical evidence for trade- and finance-centred channels

In contrast to the theoretical contributions, most empirical studies focus on the current account rather than the trade balance. However, econometric analyses typically control for net foreign assets, which account for most items of the current account that are not related to the trade balance. Additionally, variables derived from the saving-centred approach are included in most studies but are not discussed in detail below. This comprises the government budget, the old-age dependency ratio, GDP relative to the USA (or another benchmark) and the quality of (financial) institutions. Table 1 summarises representative empirical studies.

<Table 1>

Evidence for trade-centred approaches is provided by the International Institute for Labour Studies (IILS, 2011), who obtain a negative impact of the wage share on the current account, using a sample of 59 countries. As they control for output the effect is likely due to a reduction in competitiveness in line with the *wage-real appreciation channel*. This is also confirmed by Behringer and van Treeck (2018) in a sample of 20 advanced economies. Similarly, there is some evidence of a negative effect of the minimum wage to mean wage ratio on the current account (Jaumotte and Sodsriwiboon, 2010, for the Southern Euro Area; Ivanova, 2012, for 106 advanced and emerging economies). Several studies aiming to explain imbalances in the Eurozone find a negative impact of ULC (Belke and Dreger, 2013; Stockhammer and Sotiropoulos, 2014). While previously discussed articles use a single equation approach, Diaz Sanchez and Varoudakis (2013) and Gabrisch and Staehr (2014) estimate the current account as part of a vector autoregressive (VAR) model. Conversely, the effect of nominal ULC on current account positions in the Eurozone is negligible according to their findings. Support for the *distribution-demand channel* is presented by several studies in the neo-Kaleckian tradition such as Onaran et al. (2011) for the US and Stockhammer and Wildauer (2015) for 18 OECD countries. The two articles additionally introduce the effect of asset prices into neo-Kaleckian models. The former study finds a positive impact of housing wealth and financial wealth on consumption, although the direct effect of wealth on net exports is not estimated. Stockhammer and Wildauer (2015) obtain positive effects of property prices on consumption, investment and net imports.

Recent contributions find a positive effect of gross financial inflows on asset prices and in particular property prices (e.g. Badarinza and Ramadorai, 2018, for London house prices), thus providing evidence for finance-centred channels. Several studies include asset prices in current account regressions. Gruber and Kamin (2009) find a negative effect of the growth in stock market capitalisation on the current account for 84 countries, while bond market capitalisation has a positive impact.[9] Chinn *et al*. (2014), for a sample of 109 advanced and developing economies, find that current account imbalances prior to the Great Recession are driven by returns on financial investment measured by property price and stock price indices. Fratzscher and Straub (2009) obtain a negative impact of asset prices on the current account, which operates through an increase in investment and consumption, as well as an appreciation of the real effective exchange rate. Fratzscher *et al.* (2010) find that shocks to house and equity prices are the main drivers of the US trade balance. Laibson and Mollerstrom (2010) find a strong correlation between real estate prices and current account balances and show that increased consumption due to asset price hikes explains the US current account deficit better than the saving-glut hypothesis. Unger (2017) obtains a negative impact of the ULC-deflated real exchange rate and domestic credit provision (capturing domestic demand) on the current account in the Euro Area. He highlights the differentiated effects of the common monetary policy as the main driver of domestic demand, although property prices are considered in a robustness test. Notably, the coefficient for domestic credit provision is smallest when property prices are included in the regression (Unger, 2017, p. 442), indicating asset prices as potential drivers of the increase in credit demand.

Summing up, the dichotomy of a trade- and finance-centred focus which characterises theoretical contributions is also reflected in empirical analyses: none of the econometric studies control for ULC as well as asset prices simultaneously. Most studies obtain an effect of either ULC or asset prices on the current account. Unless GDP and the real exchange rate are controlled for, omitting labour costs or asset prices excludes potentially important determinants. Of the 14 reviewed studies, six do not control for the exchange rate, thereby omitting the *wage-real appreciation channel* (Chinn et al., 2014; Gruber and Kamin, 2009) or the *inflow-nominal appreciation channel* (Behringer and van Treeck, 2018; IILS, 2011; Ivanova, 2012; Jaumotte and Sodsriwiboon, 2010). Belke and Dreger (2013) and Unger (2017) only indirectly control for changes in domestic demand via GDP relative to the Euro Area average, which is supposed to capture a catching-up effect. Hence they do not fully account for the *distribution-demand channel* (Unger, 2017) and the *inflow-asset price channel* (Belke and Dreger, 2013). If the excluded variable is correlated with the covariates, these studies suffer from an omitted variable bias. Gabrisch and Staehr (2014) and Laibson and Mollerstrom (2010) only focus on two variables, thereby omitting a variety of channels. Stockhammer and Sotiropoulos (2014), Fratzscher and Straub (2009), Fratzscher *et al*. (2010) and Diaz Sanchez and Varoudakis (2013) control for the real exchange rate as well as GDP, thereby (indirectly) capturing all trade- and finance-centred channels. Yet, none of the studies allows an assessment of the relative size effect of trade- and finance-centred channels, as this requires including ULC and asset prices simultaneously.

4. Empirical analysis: what drives current account imbalances?

In line with previous empirical studies we focus on the current account rather than net exports for our econometric analysis. The two largest items of the current account (CA) are the trade balance and factor income. Factor income is closely linked to the (lagged) net foreign asset position (NFA) and thus can be considered a function thereof.

$$CA_{j,t} = NX_{j,t} + f(NFA_{j,t-1}) \tag{8}$$

where j stands for country and t for year. Based on equation (6.2) we use nominal ULC and asset prices to capture trade and finance-centred channels.[10] Our baseline model takes the following form:

$$CA_{j,t} = \beta_{PP}\left(\widetilde{PP}_{j,t}\right) + \beta_{SP}\left(\widetilde{SP}_{j,t-1}\right) + \beta_i\left(\tilde{\imath}_{j,t}\right) + \beta_{ULC}\left(\widetilde{ULC}_{j,t}\right) + \beta_{NFA}\left(NFA_{j,t-1}\right) + \varepsilon_{j,t} \quad (9)$$

PP and SP stand for property and share price indices, and ULC are nominal unit labour costs, all expected to have a negative impact on the current account. i is the short-term nominal interest rate. Depending on whether the positive effect on financial inflows outweighs the contractionary effect on domestic demand, we expect a negative or a positive sign. The exchange rate and total income are not included in the specification as they constitute adjusting variables according to our model. In robustness tests we also consider variables emphasised by the saving-centred approach such as relative GDP per capita (p.c.), the dependency ratio, the government balance and credit to the private sector. The composite error term $\varepsilon_{j,t}$ consists of country and time specific components, in addition to a random disturbance term. The current account is estimated for an unbalanced panel of 28 OECD countries[11] for a maximum time period of 1972-2014. Data sources and descriptive statistics are reported in Table A.1 and A.2 in the Appendix, while Table A.3 reports pairwise correlations. Variables were taken in logarithms with the exception of the current account, net foreign assets, and the government balance. Also, following standard procedure in the literature, several variables are transformed into their GDP-weighted deviations from the sample mean (Behringer and van Treeck, 2018; Chinn et al., 2014; Fratzscher and Straub, 2009). More formally, the following adjustment was applied to PP, SP, i, ULC and the dependency ratio:

$$\tilde{X}_{j,t} = \ln(X_{j,t}) - \ln\left[\frac{\sum_{j=1}^{n}(X_{j,t} \times GDP_{j,t})}{\sum_{j=1}^{n} GDP_{j,t}}\right] \quad (10)$$

where X refers to PP, SP, i, ULC, and the dependency ratio, respectively.[12] The rationale is that an asset price rise in the home country will only have adverse effects on the current account if prices increase relative to those of trading partners.

We test for stationarity of our data by applying the Fisher unit root tests with trend (Choi, 2001; see Table A.4), which suggests that most of our variables are integrated of order 1. As reported below we fail to find evidence for cointegration. We therefore use the first-difference estimator as the baseline specification but will report other estimators for robustness. Standard errors are robust with respect to serial correlation within countries, as well as heteroscedasticity (Newey and West, 1987). In order to determine the lag-structure of our baseline specification (equation 9) we start from an Auto-regressive Distributed Lag (ARDL) model in first differences with a lagged dependent variable and a contemporaneous and lagged explanatory variable each and successively exclude statistically insignificant lags of explanatory variables based on the lowest t-statistic until only one measure per variable is left.[13] Furthermore, we include period effects in our estimations if they are jointly statistically significant.

Results for the baseline specification are reported in specification 1 of Table 2. Both property prices and share prices are statistically significant at the 1%-level with negative coefficients. The coefficients imply that a growth rate of property prices of 1%-point above the weighted average growth rate reduces the rate of change of the current account to GDP ratio by 0.1%-points. For example, if property prices in Spain grew by 10% between two years, while the average growth rate in the sample was 0%, the current account to GDP ratio in Spain would have declined by 1%-point in the same period, *ceteris paribus*. The effect of share prices is smaller and would imply a reduction of the current account by 0.15%-points. Interestingly, ULC are not statistically significant. This casts doubt on the relevance of the trade-centred channels. NFA have a positive impact, albeit statistically significant at the 10%-level only. The interest rate also has a positive sign indicating that the contractionary effect on GDP outweighs the positive effect on financial inflows.

<Table 2>

We make our baseline subject to various robustness tests. Specification (2) applies the mean-group estimator proposed by Pesaran and Smith (1995) using first-differenced series. It estimates time-series equations for each country separately and averages the coefficients. Furthermore, we include a constant in each estimation, thereby controlling for country-specific trends.[14] Property and share prices are significant at the 5%-level and exhibit a higher coefficient in comparison to the baseline specification. The similar results between our baseline and the mean-group estimator confirm the validity of the pooling assumption. However, the interest rate and NFA turn insignificant, pointing toward a potential overstatement of these effects in our baseline. ULC remains statistically insignificant.

Contributions based on the finance-centred approach have highlighted the potential endogeneity of assets prices. For example, a persistent current account deficit can trigger capital flight and a decline in asset prices (e.g. Gallardo et al., 2006). Given the lack of external instruments our main alternative is to use lagged values of the variables. Hence, we employ the widely used difference-General Method of Moments (GMM) estimator (Arellano and Bond, 1991) in specification (3). Equivalent to our baseline specification, this estimator relies on a first-difference transformation of our variables. Additionally we instrument property prices and stock prices with their lagged level values, thereby treating them as predetermined rather than exogenous. This allows for PP to be a function of the previous period's current account position. The Hansen test, as well as tests for autocorrelation in the residuals, fail to reject the null-hypothesis of validity of our instruments. Furthermore, the failure to reject autocorrelation of first order in the residuals suggests that residuals in our baseline are stationary. The coefficient for property prices is statistically significant with the expected sign, suggesting that potential bias due to endogeneity is negligible. However, share prices become insignificant, casting doubt on the robustness of their effect.

Given that several variables are I(1) we test for cointegration relationships which would suggest the use of autoregressive distributed lag models (ARDL).[15] We apply the cointegration tests developed by Pedroni (1999). Results are somewhat sensitive to the test statistic used, but three of four tests fail to reject the null of no cointegration as reported in Table A.5. This suggests that our variables are not cointegrated. Nevertheless, for robustness we report an ARDL in specification (4) to account for a potential relationship in levels that is not captured in our baseline specification. We use the system-GMM estimator (Blundell and Bond, 1998) to account for the dynamic panel bias.[16] Results, reported in specification (4), suggests that we pass all relevant tests for instrument validity. The coefficient of the lagged dependent variable is close to unity, while coefficients for contemporaneous and lagged asset prices are statistically significant and very similar in absolute value with opposing signs. This confirms our choice of the first-difference estimator for our baseline specification. ULC remains statistically insignificant, while other control variables perform as expected.

Specification (5) estimates our baseline for the years after 1995, thereby focusing on a period that is characterised by an acceleration of current account divergence. Additionally, by reducing the time dimension we obtain a more balanced panel, which ensures that our results are not driven by individual countries with relatively long time series. Comparison of specifications (1) and (5) shows increased coefficients of all main explanatory variables, while the signs remain the same. In particular, the coefficient for property prices increases from 10.2 to 13. The coefficient for share prices increases from 1.5 to 2, while ULC remain statistically insignificant. This suggests an increasing relevance of the finance-centred channels in recent years.

<Table 3>

We include additional control variables in our last set of robustness tests, reported in Table 3. The Eurozone constitutes a special sub-sample for three reasons. First, the effect of financial inflows on the nominal exchange rate (*inflow-nominal appreciation channel*) is blocked in a currency union. Thus, the effect of asset prices on the current account might be weaker for Euro members. Second, the ULC elasticity of the current account might be higher in the Eurozone because the exchange rate is fixed and due to stronger competition between countries. Third, there is an argument that current account imbalances in the Eurozone were driven by differentiated impacts of the common monetary policy (Unger, 2017). We capture this by an interaction of asset prices, ULC, and the interest rate with a dummy variable that takes the value of one beginning with the year in which the country entered the Eurozone (suffix EZ in specification 6). As the interest rate is supposed to have different effects on South and North Europe, it is only interacted with South European countries (Greece, Italy, Portugal, Spain). The results indicate that there is no statistically different effect of asset prices on Euro members, suggesting that the impact of asset prices on the current account works mainly via changes in aggregate demand, in line with the *inflow-asset price channel*. The effect of ULC is negative, albeit statistically insignificant (p-value of 0.100), for Eurozone members. In contrast, the coefficient is positive (p-value of 0.483) for nonmembers. A Wald test on the sum of the coefficients for ULC indicates that the overall effect is insignificant. This provides some, albeit weak, evidence that ULC have an impact on the current account in the Eurozone, even though the effect is relatively small (less than half) in comparison to asset prices. Similarly, the effect of the interest rate is negative (though insignificant) for South European countries and the Wald test indicates that the sum of the coefficients is not statistically different from zero. This suggest that the positive impact of the interest rate on the current account (via a reduction in aggregate demand) was not effective for Southern Europe. It is consistent with the hypothesis of a differentiated impact of the common monetary policy but does not imply that the effect was expansionary.

Specification (7) includes real instead of nominal ULC. Interestingly, while asset prices stay significant, real ULC ($RULC$) are significant as well. Nominal and real ULC need not move together. In our sample (Table A.3) the correlation coefficient is 0.49. Hence, the significance of $RULC$ cannot be considered evidence for the *wage-real appreciation channel*. However, real ULC are equivalent to the wage share with GDP taken at market prices (rather than factor prices). Thus this variable might capture the *distribution-demand channel* more precisely than nominal ULC. Indeed, estimations with the wage share instead of $RULC$ show very similar results.

Specifications (8-13) control for additional variables, including those emphasised by the saving-centred approach. These are foreign GDP, which is calculated as the sum of the GDP of all countries included in the sample excluding the respective country and controls for foreign demand; GDP p.c. relative to the US accounting for the catching-up hypothesis[17]; the dependency ratio (the out-of-working-age population as a ratio to the working-age population) as emphasised by the lifetime-income hypothesis; the government balance in line with the twin-deficit hypothesis; and the domestic credit to GDP ratio as indicator for financial market development. Specification (13) includes all explanatory variables simultaneously. These robustness tests strongly confirm our baseline results – property prices and share prices are statistically significant in every specification. Of the control variables, domestic credit, foreign GDP and the dependency ratio have a statistically significant impact on the current account. The other variables remain statistically insignificant. Notably, domestic credit also has an alternative interpretation. As discussed in Section 2, asset price rises can impact the current account via changes in the nominal exchange rate (*inflow-nominal appreciation channel*) and GDP (*inflow-asset price channel*). However, while the former channel presupposes financial inflows, the latter could also work via domestic credit creation without capital flowing into the country. The fact that property prices remain significant in specifications (12-13), suggests that foreign as well as domestic finance are relevant, and provides evidence that asset prices are (at least partly) driven by financial inflows.

Lastly, we report standardised coefficients for our baseline specification (specification 1, Table 2) in equation (11). Standardised coefficients measure the effect of a one standard deviation change of the explanatory variables on the current account, thereby allowing to compare the relative effect size of variables with different variances and units of measurement.

$$CA_{j,t} = -0.32\, PP_{j,t} - 0.11\, SP_{j,t-1} + 0.14\, i_{j,t} + 0.02\, ULC_{j,t} + 0.15\, NFA_{j,t-1} + \varepsilon_{j,t} \qquad (11)$$

Property prices exert the largest effect on the current account. An increase in the growth rate of property prices by one standard deviation (ca. 7%-points) reduces the rate of change of the current account to GDP ratio by 0.32 standard deviations, i.e. ca 0.7%-points. The other variables with a significant impact are share prices, the interest rate and NFA – a standard deviation increase in the growth rate of these variables changes the rate of change of the current account by about 0.13 standard deviations, i.e. ca 0.3%-points. The effect of ULC is negligible in line with our estimation results.

5. Conclusion

This article sketches a Keynesian model of the current account that incorporates both trade- and finance-related factors. The model combines standard competitiveness effects and the impact of income distribution on the current account with speculative financial flows that affect the nominal exchange rate and domestic output. We estimate a reduced form of this model for 28 OECD countries between 1972 and 2014. We capture trade-centred channels with ULC and finance-centred channels by property and stock prices, while controlling for a variety of variables. Our results suggest that property prices are the single most important explanatory variable for current account positions in the OECD, and this finding is robust to different estimation methods and model specifications. Share prices also have a sizeable impact, although they are less robust to the application of different estimators. The impact of asset prices is particularly strong for the 1995-2014 period, which has witnessed an acceleration in the divergence of current account positions. This is in line with the findings of Chinn, *et al.* (2014). The effect of nominal ULC on the current account is not statistically significant. These results suggest that finance-centred channels have been more relevant than trade-centred channels in determining current account positions in the OECD.

Our findings have important implications for future research and for economic policy. Much of the existing post-Keynesian literature, including the Neo-Kaleckian, the balance of payments constrained growth and most of the SFC models, pay insufficient attention to finance-centred channels (Belabed et al., 2018; Onaran et al., 2011; Thirlwall and Hussain, 1982). Some open economy models analysing financial crises in the Minskyan tradition have a key role for capital flows, but most of this literature has focused on emerging economies (Gallardo et al., 2006; Kohler, 2019; Oreiro, 2005). Our empirical findings suggest that these models also have relevance for advanced economies. Thus, while trade-centred channels might still be important for particular countries and time periods, future theoretical as well as empirical models of the current account should pay more attention to finance-centred channels.

Most policy recommendations for rebalancing current accounts focus on measures of cost competitiveness, mainly through reducing ULC in deficit countries (Belke and Dreger, 2013) or increasing ULC in surplus countries (Flassbeck and Lapavitsas, 2013; Hein, 2013). This continues to be a major focus of the Macroeconomic Imbalance procedure of the European Commission. However, our findings show that policy interventions focusing on ULC will be futile, unless there is regulation of financial flows and asset markets. This could be done via capital controls, especially on portfolio flows, particularly during boom phases. Macroprudential regulation, for example by expanding the Basel III countercyclical capital cushion, is another option to reduce excessive credit growth and limit the risk of asset price bubbles (Rey, 2015). While these policies are increasingly on the agenda to reduce financial fragility, they have not yet been highlighted as a tool to regulate current account imbalances.

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Endnotes

[1] We only report the main equations in the text. Remaining derivations can be found in the appendix. Factors emphasised by the saving-centred approach are omitted for two reasons. First, the saving-centred approach has a long-run focus, while our time-horizon is the short- to medium-run. Second, the neoclassical framework based on optimising agents is fundamentally different from the Keynesian approaches.

[2] e stands for the inverse of the nominal exchange rate, so that an increase in e denotes an appreciation of the domestic currency.

[3] There is a difference between the financial account as reported in national statistics and the equation considered in the model. Most financial transactions, e.g. purchases of financial assets by non-residents, would not lead to a change in the *net* financial account as reported by national statistics. However, what matters for many macroeconomic questions are *gross* financial flows. Therefore, F denotes 'notional' financial flows, which consist of net financial flows that will mirror trade flows as well as those gross financial flows that will have an impact on the exchange rate or domestic demand. This simplification is often adopted in theoretical models that integrate the finance-centred channels (Gallardo et al., 2006; Kohler, 2019). In our case it allows to account for an effect of gross flows on the nominal exchange rate and the feedback between asset prices and financial flows without having to model net and gross financial flows separately. A fully specified version of the model would include a separate equation for gross financial flows and allow for different financial assets.

[4] While De Grauwe and Kaltwaser (2012) focus on the foreign exchange market we apply this concept to the asset market.

[5] The model results are robust to omitting this feedback effect.

[6] More precisely, we assume that adjustment of the exchange rate establishes the equilibrium between notional financial flows (F) and trade flows (NX). Some economists have argued that changes in reserves should be the accommodating variable (Taylor, 2004, pp. 307–38), while others favour the exchange rate (Bhaduri, 2003; Gandolfo, 2016, pp. 133–54). We follow the latter line of literature.

[7] See also equations (A.10.1)–(A.10.4) in the appendix.

[8] The disregard of finance-centred channels in saving-centred models might be due to the focus on macroeconomic saving (Borio and Disyatat, 2015). While macroeconomic saving is equal to the current account by definition, it is gross financial flows (not saving) that impact the exchange rate and aggregate demand and subsequently the current account. This is particularly relevant for the saving-glut hypothesis (Borio and Disyatat, 2015). Fist, a current account surplus in emerging economies and a current account deficit in the US does not imply that the former finances the latter. Second, market interest rates are not determined by global savings but by monetary policy and expectations about future economic conditions. Hence, it is unlikely that excess savings in emerging economies drove down world interest rates.

[9] However, these variables are interpreted as a measure of financial development in line with the saving-glut hypothesis rather than a control variable for the finance-centred channels.

[10] While our econometric model allows to compare the size effects of trade- versus finance-centred approaches, we do not identify the four individual channels. Future empirical research could use a VAR approach to assess the relative impact of financial flows on demand and the nominal exchange rate. A related question is whether the impact of ULC on the real exchange rate or domestic demand plays a more important role for the current account.

[11] Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom and the United States. While this is a diverse set of countries, our results are very robust to estimations with a reduced sample of OECD economies with longer data series, i.e. excluding the Czech Republic, Estonia, Hungary, Iceland, Luxembourg, Latvia, Poland, Slovak Republic, and Slovenia. We had to exclude some countries that would be interesting for the assessment of current account imbalances such as China due to data availability. However, most OECD countries list other OECD countries as their main trading partners.

[12] We do not transform NFA, foreign GDP and relative GDP as these variables are measured relative to the other countries by definition and therefore do not require transformation. Similarly, we do not transform the government budget or the domestic credit ratio since it is the country specific measure that matters for the current account, not its level in comparison to other countries.

[13] This is the reason why SP enters with a lag in our baseline equation. NFA enters always with one lag as it is not derived from a behavioural equation but captures factor income.

[14] Three countries (Czech Republic, Latvia and Poland) are excluded from the mean-group estimation as they have too few observations.

[15] ARDLs are mathematically equivalent to error-correction models (ECM) but preferred in the case of a mix of I(0) and I(1) variables.

[16] The bias in dynamic fixed-effect panel estimations (Nickell-bias) arises due to the correlation between the error term and the lagged dependent variable. The GMM estimator eliminates the bias by instrumenting the lagged dependent variable by its lags.

[17] Given that this variable might simply capture the effect of domestic demand growth, which will lead to a decline in the current account, we include it with a lag.

Tables

Table 1: Empirical literature on the current account

Author	**Sample**	**Estimation Method**	**Covariates**
Behringer & Van Treeck 2018	1972-2007 20 AE & EME	OLS, FE, 4-year, 2SLS	**WS(-),** INEQ(-), NFA(+), growth(-), POPG(-), SC, FINS
Belke & Dreger 2013	1982-2008 11 Eurozone countries	ECM	**REER(-),** i_r(+), SC
Diaz Sanchez & Varoudakis 2013	1975-2011 13 Eurozone countries	VAR	CA, **REER**, i_r, RELGDP, growth
Gabrisch & Staehr 2014	1995-2012 27 EU countries	VAR	CA, **NULC**
IILS 2011	1980-2008 59 AE & EME	GLS, FE	**WS(-),** GDP(0), NFA(+), CBRES(+), INEQ(-), SC, FINS
Ivanova 2012	1975-2009 106 AE & EME	OLS, RE	**MW(-)**, growth(0), OPEN(0), OIL(+), tax(+), FINS, LMI, SC
Jaumotte & Sodsriwiboon 2010	1973-2008 49 AE & EME	4-year	**MW(-),** growth(0), OIL(+), FINS, LMI, SC
Stockhammer & Sotiropoulos 2014	1990-2011 12 Eurozone countries	FD	**NULC(-),** GDP(-)

Table 1: Empirical literature on the current account, continued

Author	**Sample**	**Estimation Method**	**Covariates**
Chinn *et al.* 2013	1970-2008 109 AE & EME	5-year	**PP(-), SP(-), BP(-)**, LEGAL(+), growth(0), OPEN(0), OIL(+), i_r(-), FINS, SC
Gruber & Kamin 2009	1982-2006 84 AE & EME	FE, 5-year	**ΔSP**(-), **BP**(+), GDP(+), growth(0), OIL(+), OPEN(0), FINS, SC
Fratzscher & Straub 2009	1974-2007 G7	Bayesian VAR	CA, **ΔSP,** C, INFL, i_n, REER
Fratzscher *et al.* 2010	1974-2008 US	Bayesian VAR	CA, **SP, PP,** C, INFL, i_n, REER
Laibson & Mollerstrom 2011	1996-2007 (quarterly) 19 AE & EME	OLS	**PP(-)**
Unger 2017	1999-2013 11 Eurozone countries	ECM	**REER(-), PP(-),** BANKCLAIMS(0), POPG(-), NFA(-), i_r(+), SC

Notes: The dependent variable of all analyses is the current account. 2SLS=two-stage least squares; 4,5-year=estimations using 4 or 5-year averages of the data; AE=advanced economies; BP=bond prices; BANKCLAIMS=claims of domestic banks on debtors in other euro-area countries; C=consumption; CA=current account; CBRES=central bank reserves; ECM=Error correction model; EME=Emerging economies; FD=first-difference estimator; FE=within-estimator; FINS=financial institutions (e.g. financial openness index, etc.); GLS=Generalised least squares estimator; growth=GDP growth; i_r/i_n=nominal/real interest rate; INFL=inflation rate; INEQ=measures of personal income inequality (e.g. Gini coefficient); LEGAL=institutional quality; LMI=labour market indicators; MW=minimum wage; NFA=net foreign assets; NULC=nominal unit labour costs; OIL=oil price, oil trade balance or dummy for oil-producing countries; OPEN=exports plus imports/GDP; OLS=ordinary least-squares; PP=property price index; POPG= Population growth; RE=random-effects estimator; REER=real effective exchange rate; RELGDP=GDP relative to EU average; SC=variables emphasised by the saving-centred approach as described in the text; (Δ)SP=(change in) stock market capitalisation; tax=corporate income tax rate; VAR=Vector-auto-regressive model; WS=wage share.
(-), (+), (0) stands for statistically significant and negative, statistically significant and positive, and statistically insignificant, respectively.

Table 2: Baseline results and different estimation methods

	(1)	(2)	(3)	(4)	(5)
estimation method	*FD*	*MG*	*GMM*	*ARDL*	*FD*
PP_t	-10.224***	-20.625**	-3.913**	-7.905***	-13.021***
	(2.164)	(8.340)	(1.787)	(2.630)	(3.567)
PP_{t-1}				7.699***	
				(2.593)	
SP_{t-1}	-1.501***	-2.289**	-0.544	-1.700***	-2.022***
	(0.511)	(1.043)	(2.055)	(0.507)	(0.762)
SP_{t-2}				1.470**	
				(0.587)	
i_t	1.135*	-0.872	0.099	0.025	1.307**
	(0.587)	(0.750)	(0.645)	(0.370)	(0.628)
i_{t-1}				-0.047	
				(0.328)	
ULC_t	0.581	-5.277	-2.469	-1.353	0.865
	(1.325)	(4.567)	(1.887)	(1.334)	(2.319)
ULC_{t-1}				0.543	
				(1.273)	
NFA_{t-1}	2.953*	-6.848	3.256	3.878*	3.041*
	(1.749)	(5.061)	(3.212)	(2.114)	(1.688)
NFA_{t-2}				-3.657*	
				(1.924)	
CA_{t-1}				0.861***	
				(0.096)	
constant		0.471**		-0.002	
		(0.210)		(0.146)	
year dummies	Yes	No	No	No	Yes
countries	28	25	28	28	28
observations	634	626	634	634	372
F-test PE	0.000				0.164
Hansen-test			0.230	0.365	
AR1			0.609	0.001	
AR2			0.560	0.600	
period	1973-2014	1973-2014	1973-2014	1973-2014	1996-2014

Notes: The dependent variable is the current account (%GDP), standard errors in parenthesis. *, **, *** denote statistical significance at the 10%, 5%, and 1% level. FD is the first-difference estimator, FE the within-group estimator, MG is the mean-group estimator, GMM is the General Method of Moments estimator, ARDL stands for autoregressive distributed lag model. PP= property prices, SP=share prices, i=nominal interest rate, ULC=nominal unit labour costs, NFA=net foreign assets, CA=current account. F-test PE denotes the Wald test on the joint significance of all year dummies, Hansen-test denotes the p-value of the Hansen test of overidentifying restrictions, AR1 and AR2 are tests for autocorrelation in the residuals of first and second order.

Table 3: Robustness tests

	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
PP_t	-10.210***	-9.333***	-10.003***	-10.329***	-10.526***	-12.296***	-7.999***	-10.254***
	(2.254)	(2.111)	(2.173)	(2.530)	(2.185)	(3.228)	(1.718)	(2.953)
PP_t_EZ	0.498							
	(2.142)							
SP_{t-1}	-1.464***	-1.574***	-1.438***	-1.514***	-1.490***	-1.688**	-1.356***	-1.483**
	(0.530)	(0.471)	(0.515)	(0.513)	(0.517)	(0.658)	(0.486)	(0.636)
SP_{t-1}_EZ	-0.287							
	(0.996)							
i_t	1.226**	1.111*	1.205**	1.122**	1.128*	1.194**	0.564	0.622
	(0.595)	(0.574)	(0.593)	(0.566)	(0.582)	(0.608)	(0.413)	(0.451)
i_t_SEZ	-1.273							
	(1.002)							
ULC_t	0.961		0.628	0.533	0.573	0.092	0.975	0.413
	(1.369)		(1.326)	(1.259)	(1.310)	(1.767)	(1.447)	(1.743)
ULC_t_EZ	-4.031							
	(2.453)							
NFA_{t-1}	3.062*	3.142*	2.943*	2.961*	3.017*	2.588	3.183*	2.980*
	(1.727)	(1.762)	(1.750)	(1.744)	(1.720)	(1.614)	(1.782)	(1.589)
$RULC_t$		-17.680***						
		(5.995)						
$FGDP_t$			50.941**					60.315***
			(21.458)					(21.783)
$RELGDP_{t-1}$				0.911				3.687
				(5.638)				(6.894)
$DEPR_t$					-12.901**			-21.981**
					(6.329)			(9.673)
GB_t						0.102		0.105

						(0.077)		(0.072)
$CREDIT_t$							-2.265**	-2.773**
							(0.894)	(1.117)
Wald i-rate	0.962							
Wald ULC	0.175							
countries	28	28	28	28	28	28	28	28
observations	634	634	634	634	634	462	620	448
F-test PE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
period	1973-2014	1973-2014	1973-2014	1973-2014	1973-2014	1973-2014	1973-2014	1973-2014

Notes: The dependent variable is the current account (%GDP). Estimation method is the first-difference estimator. PP= property prices, SP=share prices, i=nominal interest rate, ULC=nominal unit labour costs, NFA=net foreign assets, RULC=real unit labour costs, RELGDP=GDP p.c. relative to the USA, DEPR=dependency ratio, GB=government balance, CREDIT=domestic credit/GDP. EZ stands for interaction with Eurozone members and SEZ for interaction with Greece, Italy, Portugal, Spain. Standard errors in parenthesis. Wald i-rate and Wald ULC denote Wald test on the sum of the coefficient for the interest rate and ULC and their interacted value. F-test PE denotes the Wald test on the joint significance of all year dummies. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Appendix

A1: Derivation of the theoretical model (Section 2)

This section solves our model for some (plausible) simplifying assumptions to motivate the empirical analysis. In particular, for lack of space, we leave to future research to fully integrate the analysis of unstable or cyclical dynamics, which some of the finance-centred literature has highlighted.

To derive the equation for the open economy goods market equilibrium we substitute equations (1) to (3):

$$Y^{ISNX} = \frac{1}{\delta^Y}[\, z_0 + \, n_0 + (\, z_2 - n_2)ULC + z_3 a_0 + z_3 a_6 f_0 - z_4 i - n_5 e] \qquad \text{(A.1)}$$

Where the goods market multiplier is denoted by δ^Y.

$$\delta^Y = 1 - z_1 + n_1 > 0 \qquad \text{(A.2)}$$

The function for financial inflows is derived by substituting equation (4) and (5) and setting $m = a_6 . f_3$:

$$F = f_3 a_0 + (1 + m) f_0 + f_1 Y + f_4 i - f_5 e \qquad \text{(A.3)}$$

Substituting equation (1) and (A.3) into the Balance of Payments (BP) identity ($NX = -F$) with changes in reserves set to zero we solve for the exchange rate that is consistent with the BP, e^{BP}:

$$e^{BP} = \frac{1}{\delta^F}[n_0 - n_2 ULC + (1+m)f_0 + f_3 a_0 + f_4 i + \vartheta^M Y] \quad (A.4)$$

$$\vartheta^M = f_1 - n_1 > 0 \quad (A.5)$$

$$\delta^F = n_5 + f_5 > 0 \quad (A.6)$$

Equation (A.5) assumes that financial inflows react more strongly to a change in income (Y) than trade flows.[1] Nevertheless, the difference between f_1 and n_1, and hence ϑ^M, can be expected to be small, because the majority of speculative financial flows are more likely be driven by asset prices and the exchange rate rather than real GDP (Y). Equation (A.6) is assumed to be positive as $f_5 > 0$, which corresponds to a foreign exchange market dominated by fundamentalist traders.

We can now solve for equilibrium income (Y^*) and the equilibrium exchange rate (e^*) by substituting the exchange rate consistent with the BP (e^{BP}) and income consistent with the open economy goods market equilibrium (Y^{NXCA}).

$$Y^* = \frac{1}{\Omega}\left\{\begin{matrix}[\delta^F(z_2 - n_2) + n_2 n_5]ULC + (\delta^F z_3 - n_5 f_3)a_0 - (\delta^F z_4 + f_4 n_5)i \\ +[\delta^F z_3 a_6 - n_5(1+m)]f_0 + \delta^F z_0 + (\delta^F - n_5)n_0\end{matrix}\right\} \quad (A.7)$$

$$e^* = \frac{1}{\Omega}\left\{\begin{matrix}[\vartheta^M(z_2 - n_2) - \delta^Y n_2]ULC + (\delta^Y f_3 + \vartheta^M z_3)a_0 + (\delta^Y f_4 - \vartheta^M z_4)i \\ +[\vartheta^M z_3 a_6 + \delta^Y(1+m)]f_0 + \vartheta^M z_0 + (\delta^Y + \vartheta^M)n_0\end{matrix}\right\} \quad (A.8)$$

$$\Omega = \delta^Y \delta^F + n_5 \vartheta^M = n_5(1 - z_1 + f_1) + f_5 \delta^Y > 0 \quad (A.9)$$

Where Ω is the equilibrium aggregate demand multiplier, which is unambiguously positive given our equations (A.5) and (A.6). We are mainly interested in the signs of the first derivatives with respect to ULC and a_0, capturing the trade-centred and the finance-centred channels. ULC affects the trade balance directly via the domestic price level, and indirectly via Y^* and e^*, while asset prices exercise their effect only indirectly through Y^* and e^* (see equation 7.1 and 7.2 in the main text).

$$\frac{\partial Y^*}{\partial a_0} = {Y^*}_a = \frac{1}{\Omega}(\delta^F z_3 - n_5 f_3) > 0 \text{ , if } \left(1 + \frac{f_5}{n_5}\right) z_3 > f_3 \qquad \text{(A.10.1)}$$

$$\frac{\partial Y^*}{\partial ULC} = {Y^*}_U = \frac{1}{\Omega}[\delta^F (z_2 - n_2) + n_2 n_5] > 0 \text{ , if } \left(1 + \frac{n_5}{f_5}\right) z_2 > n_2 \qquad \text{(A.10.2)}$$

$$\frac{\partial e^*}{\partial a_0} = {e^*}_a = \frac{1}{\Omega}(\delta^Y f_3 + \vartheta^M z_3) > 0 \qquad \text{(A.10.3)}$$

$$\frac{\partial e^*}{\partial ULC} = {e^*}_U = \frac{1}{\Omega}[\vartheta^M (z_2 - n_2) - \delta^Y n_2] < 0 \text{ , if } \left(\frac{z_2}{n_2} < \frac{\delta^Y}{\vartheta^M} + 1\right) \qquad \text{(A.10.4)}$$

For (A.10.1) the condition $\left(1 + \frac{f_5}{n_5}\right) z_3 > f_3$ is likely to hold since $f_5 > n_5$ due to the fact that F captures notional financial flows that should react stronger than trade flows to the exchange rate. However, if $f_3 \gg z_3$, i.e. if the effect of asset prices on financial inflows is much larger than of asset prices on domestic demand, ${Y^*}_a$ could turn negative, without further repercussions for our model. The reason is that a strong effect of asset prices on financial inflows would appreciate the currency and thus reduce net exports, thereby contributing to a decline in equilibrium income. Equation (A.10.2) will be positive if z_2 and n_2 are similar in magnitude and will be always satisfied if $z_2 > n_2$. Note that z_2 is an increase in domestic demand due to an increase in ULC, while n_2 is the change in the trade balance due to an increase in ULC. Thus, the condition $z_2 > n_2$ is equivalent to the condition for a wage-led demand regime in the Neo-Kaleckian literature (see Onaran and Galanis, 2014, for indicative values of these parameters). The case of a profit-led regime, i.e. $z_2 < n_2$, where an increase in ULC reduces equilibrium income is equally possible.

Importantly, this assumption has no repercussion for the negative effect of ULC on equilibrium net exports, as indicated in equation (A.11.2). Equation (A.10.3) is unambiguously positive given the signs of equation (A.5) and (A.6). The sign of equation (A.10.4) is probably the most controversial. It is, however, negative if $\left(\frac{z_2}{n_2} < \frac{\delta^Y}{\vartheta^M} + 1\right)$, which, given that ϑ^M is expected to be small, is most likely to hold. Consequently, an increase in ULC will lead to a nominal depreciation. The reason is that our model features a negative effect of an exchange rate appreciation on financial inflows due to the assumption of fundamentalist traders in the foreign exchange market. Therefore, an increase in ULC, while triggering a trade deficit, will at the same time exercise downward pressure on the nominal exchange rate (e) to bring the financial and the trade account into equilibrium. However, the opposite case where ${e^*}_{ULC} > 0$ would also be possible if the effect of a change in ULC on domestic demand is strong (z_2 is large), without further implications for the signs of equations (A.11.1)-(A.11.3).

The effect of our main variables on the trade balance is described by equations (A.11.1)-(A.11.3).

$$\frac{\partial NX^*}{\partial a_0} = \frac{-n_1(\delta^F z_3 - n_5 f_3) - n_5(\delta^Y f_3 + \vartheta^M z_3)}{\Omega} < 0 \qquad \text{(A.11.1)}$$

$$\frac{\partial NX^*}{\partial f_0} = \frac{-n_1[\delta^F z_3 a_6 - n_5(1+m)] - n_5[\delta^Y(1+m) + \vartheta^M a_6 z_3]}{\Omega} < 0 \qquad \text{(A.11.2)}$$

$$\frac{\partial NX^*}{\partial ULC} = \frac{-n_1[\delta^F(z_2 - n_2) + n_2 n_5] - n_5[\vartheta^M(z_2 - n_2) - \delta^Y n_2] - n_2\Omega}{\Omega} < 0 \qquad \text{(A.11.3)}$$

The sign of equation (A.11.1), which denotes a change in net exports in response to an asset price shock, is negative if $(f_5 n_1 z_3 + f_1 n_5 z_3 + f_3 n_5 > f_3 n_5 z_1)$. This will hold if $0 < z_1 < 1$, which is akin to the Keynesian stability condition in a closed economy (z_1 is the effect of domestic demand on itself). Equivalently, the impact of a financial inflow shock on net exports (equation A.11.2) will be negative if $(-a_6 f_5 n_1 z_3 - a_6 f_1 n_5 z_3 - n_5(1 - z_1) - n_5 m(1 - z_1) < 0)$, which is given if $0 < z_1 < 1$. Net exports decline due to an increase in ULC (equation A.11.3) if $(f_5 n_1 z_2 + f_1 n_5 z_2 + f_5 n_2 > f_5 n_2 z_1)$, which again will hold if $0 < z_1 < 1$. Importantly, this implies that the signs of equations (A.11.1)-(A.11.3) are independent of the signs for equations (A.10.1)-(A.10.4).

Our model also replicates standard macroeconomic effects such as a positive impact of the interest rate on the exchange rate under certain parameter restrictions. Equation (A.8) shows that the equilibrium exchange rate is a function of the interest rate. Indeed, if $\delta^Y f_4 > \vartheta^M z_4$, an increase in the interest rate will lead to a currency appreciation, via its effects on financial inflows and domestic demand. This would be the case if financial flows are very sensitive with respect to changes in the interest rate (f_4 is large), while they are relatively insensitive with respect to total income (f_1 is relatively small).

Endnotes

[1] f_1 and n_1 would be equal if F were only capturing accounting net financial flows which are by definition equal to net exports. Given that F is capturing 'notional financial flows', i.e. net financial flows that are simply the mirror image of trade flows as well as gross flows that have an impact on the exchange rate (as explained in endnote 3), an increase in Y increases F beyond its impact on trade flows.

Table A.1: Data definition and sources

Variable	Description	Source	Transformation
CA	Balance on current transactions with the rest of the world as % of GDP (real)	AMECO	
PP	Index for Property prices (Base year = 2010)	OECD	Log, DSM
SP	Index for Stock prices (Base year = 2010)	OECD	Log, DSM
i	Short term nominal interest rates	AMECO	Log, DSM
ULC	Nominal unit labour cost index	AMECO	Log, DSM
RULC	Real unit labour costs index	AMECO	Log, DSM
NFA	Sum of foreign assets held by monetary authorities and deposit money banks, less their foreign liabilities (% of GDP)	World Bank	
FGDP	GDP (in Purchasing Power Standards) of countries in the sample excluding the respective country	AMECO	Log
RELGDP	GDP per capita as a ratio to GDP per capita of the USA	World Bank	Log
DEPR	Ratio of dependents – people younger than 15 or older than 64 – to the working-age population – those aged 15-64. Calculated as the proportion of dependents per 100 working-age population.	World Bank	Log, DSM
GB	Net lending (or net borrowing) of General Government (% of GDP)	AMECO	
CREDIT	Domestic credit to private sector (% of GDP)	World Bank	Log

Notes: Log stands for natural logarithm. DSM stands for the transformation to deviations from the sample mean as discussed in Section 4.

Table A.2: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
current account	0.246	5.125	-23.299	16.232
property prices	82.760	29.076	25.031	188.915
share prices	92.359	98.968	7.546	1658.693
interest rate	5.611	4.447	0.050	19.880
NFA	0.157	0.712	-0.983	8.014
nominal ULC	81.208	22.705	18.895	174.104
real ULC	103.957	7.761	89.680	138.036
foreign GDP	18998.050	8822.707	1614.130	31579.500
relative GDP p.c.	0.898	0.324	0.242	2.170
dependency ratio	50.437	4.809	38.099	70.733
government balance	-2.552	4.507	-32.304	18.021
domestic credit	95.580	47.658	0.059	312.154

Table A.3: Pairwise correlation coefficients

	CA	PP	SP	i	NFA	ULC	RULC	FGDP	RELGDP	DEPR	GB
CA	1.00										
PP	-0.40	1.00									
SP	-0.17	0.20	1.00								
i	0.12	-0.05	-0.20	1.00							
NFA	-0.14	-0.08	-0.04	-0.01	1.00						
ULC	-0.12	0.21	0.02	-0.01	-0.17	1.00					
RULC	-0.19	0.11	-0.07	0.03	-0.13	0.49	1.00				
FGDP	-0.18	0.04	0.10	-0.09	-0.05	0.03	-0.04	1.00			
RELGDP	-0.14	0.36	-0.05	0.20	0.00	0.22	0.27	-0.02	1.00		
DEPR	0.01	-0.17	-0.03	-0.02	0.04	-0.02	0.03	0.03	-0.18	1.00	
GB	0.02	0.11	0.14	-0.07	-0.08	0.09	-0.17	0.33	-0.10	0.02	1.00
CREDIT	-0.16	0.19	0.03	0.04	-0.03	0.08	0.16	0.02	0.13	-0.05	0.00

Notes: Variables are taken in differences and transformed according to Table A.1. CA=current account, PP= property prices, SP=share prices, i=nominal interest rate, ULC=nominal unit labour costs, NFA=net foreign assets, RULC=real unit labour costs, RELGDP=GDP p.c. relative to the USA, DEPR=dependency ratio, GB=government balance, CREDIT=domestic credit/GDP.

Table A.4: Unit root tests

Variable	P-value
current account	0.11
property prices	0.07
share prices	0.04
interest rate	0.00
NFA	1.00
nominal ULC	0.05
real ULC	0.05
foreign GDP	1.00
relative GDP	0.69
dependency ratio	0.00
government balance	0.00
domestic credit	1.00
Δcurrent account	0.00
Δproperty prices	0.00
Δshare prices	0.00
Δinterest rate	0.00
ΔNFA	0.00
Δnominal ULC	0.00
Δreal ULC	0.00
Δforeign GDP	0.00
Δrelative GDP	0.00
Δdependency ratio	0.90
Δgovernment balance	0.00
Δdomestic credit	0.00

Notes: The table reports p-values of unit root tests developed by Choi (2001) including a trend. The null hypothesis is that all panels contain a unit root.

Table A.5: Cointegration tests

Test	Common unit-root
Non-parametric variance ratio statistic	-0.525
Phillips and Perron rho-statistic	1.300
Phillips and Perron t-statistic	-0.932
Augmented Dickey-Fuller t-statistic	3.172

Notes: The table reports T-values for cointegration tests for a reduced country sample of 19 countries with the longest time dimension. All test statistics are asymptotically normal distributed with a variance of one and mean of zero under a null-hypothesis of no cointegration.