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

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Abstract

This paper analyses the emergence of current account imbalances as a result of the co-existence of trade flows and financial flows. The literature has tended to view these factors in isolation: Many post-Kaleckian models, as well as Net-saving approaches assume that financial flows will adjust to trade flows. Models focusing on financial crises feature a strong role for financial flows but ignore drivers of trade flows. Similarly, empirical analyses either ignore drivers of financial flows or insufficiently capture determinants of trade flows. The paper, first, proposes a simple macroeconomic framework of the current account which gives equal emphasis to trade flows, determined by price competitiveness, and financial flows, determined by asset prices. Second, we test a reduced form of the model for 28 OECD countries for the period 1971-2014. Our results indicate that cost competitiveness as well as asset prices play a role in the determination of current accounts, but asset prices have dominated in the last two decades

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1. Introduction

Current account imbalances have been growing in recent decades, in particular since the mid-1990s. These imbalances contributed to macroeconomic instability which has exacerbated the impact of the Great Recession (Kumhof *et al.*, 2012). However, the determinants of current account imbalances are still subject to debate and the literature is characterised by a dichotomy. On the one hand, the trade-dominated approach perceives the current account as determined by the demand for goods and services while capital flows adjust to accommodate trade flows. We argue that a large part of the mainstream literature based on intertemporal utility maximisation falls into this group, as well as post-Kaleckian and Balance of Payments-constrained growth models (Belke and Dreger, 2013; Bernanke, 2005; Cheung *et al.*, 2010; Onaran, *et al.* 2011; Thirlwall and Hussain, 1982). On the other hand, within the financial flow-dominated approach international capital flows drive the current account, with no active role for trade flows. This approach emphasises speculative behaviour on financial markets and asset price bubbles. Literature focusing on financial crises and sudden capital flow reversals falls into this category (Claessens and Kose, 2013; Reinhart and Reinhart, 2009). The Mundell-Fleming model features a separate equation for capital flows, but they are usually determined by interest rates or even uncovered interest rate parity, thereby omitting other important drivers. Portfolio balance models provide a middle ground, where financial flows are determined by portfolio adjustment based on the return of different assets, while also allowing for trade flows to have an impact on the current account (Branson and Henderson, 1985; Kouri, 1983). However, this view has not established itself in the empirical literature, where the dichotomy between trade and financial flow-dominated approaches persist. Empirical analyses, with very few exceptions (Unger, 2017), either ignore variables determining capital flows or, on the contrary, insufficiently capture drivers of trade flows (Belke and Dreger, 2013; Fratzscher *et al.*, 2010; Behringer and van Treeck, 2015).

This paper provides a bridge between the two groups of literature. Our contribution is twofold. First, we propose a simple framework of the current account which gives equal considerations to trade flows (mainly determined by competitiveness) and financial flows (mainly determined by asset prices). Second, we estimate a reduced form of this model for 28 OECD countries from 1971 to 2014. Our results indicate that both factors, competitiveness and asset prices, played a comparable role in the determination of the current account. However, the recent acceleration of current account imbalances since the mid-1990s is mainly explained by movements in property prices. This suggests that financial variables in general, and property prices in particular, deserve larger attention in the current account literature. Consequently, capital account management should play a stronger role in policy suggestions aiming at reducing current account imbalances.

The paper is organised as follows: Section 2 describes the dichotomy between trade- and financial flow-dominated approaches in the literature. Section 3 provides a synthetic model that gives equal consideration to both channels. Section 4 provides an econometric analysis of the determinants of the current account, with special focus on the key variables emphasised by both approaches, and Section 5 concludes.

2. Determinants of the current account: trade-dominated and financial flow-dominated views

The balance of payments (BoP) provides a useful starting point for the discussion of distinct approaches to the current account. It consists of two individual accounts – the current account on the one hand, and the financial account on the other hand, which by definition have to be balanced, if we ignore changes in the central bank position.[1]

$$BoP = X - M + F = 0 \qquad (1)$$

where X stands for exports, M for imports and F are net capital inflows. In most macroeconomic textbooks, the current account is introduced solely from the perspective of exports and imports, thereby focusing on the first two elements in equation (1) (e.g. Krugman *et al.*, 2012). Demand for domestic and foreign goods are modelled as functions of domestic and foreign income and the real exchange rate. This is sometimes called elasticities approach due to the fact that the exchange rate elasticities of imports and exports will determine the adjustment of the balance of payments towards equilibrium. Consequently, financial flows in this model are assumed to adjust to the international demand and supply for goods and services.

The workhorse of most economic textbooks, and the simplest model that considers all three components of equation (1), remains some version of the Mundell-Fleming model (MFM). The MFM is usually used for the discussion of the effects of monetary and fiscal policy under different exchange rate regimes. However, we abstract from policy changes, since we are interested in private sector dynamics. Instead we focus on the determinants of the BoP under the flexible exchange rate regime in the MFM:

$$BoP = X(Y^F, p, p^f, e) - M(Y^D, p, p^f, e) + F(i) = 0 \quad (2)$$

where exports (X) are a function of foreign income (Y^F), the foreign and domestic price level (p and p^f, which are assumed to be constant in the short run), and the nominal exchange rate (e). Imports (M) are a function of domestic income (Y^D, which is a function of the interest rate), the foreign and domestic price level (p, p^f) and the nominal exchange rate (e). Additionally, the MFM includes a function for capital flows as determined by the interest rate (i), which are usually assumed to adjust to satisfy uncovered interest rate parity (UIP). UIP implies that an unexpected appreciation of the domestic currency, *ceteris paribus*, increases in the return on foreign currency denominated in domestic currency, and thereby leads to financial outflows that will immediately push down the exchange rate (Krugman *et al.*, 2012). This negative effect of an appreciation on capital inflows is equivalent to the assumption that financial traders whose expected exchange rate is based on some fundamental value dominate the financial asset market. It rules out alternative behavioural rules for traders, such as chartists who follow exchange rate movements, assuming that the previous trend will continue (De Grauwe and Kaltwaser, 2012). It also ignores determinants of financial flows other than the interest rate and the (expected) exchange rate. Therefore, while the MFM is a valuable starting point since it integrates the financial as well as the real side of the BoP, capital flows follow a simplistic rule in the standard model which proves to be limited in its ability to capture the nature of asset markets.

Interestingly, many open economy models describe the current account as only determined by trade in goods and services, thereby ignoring financial flows. Within the heterodox literature this applies to the wage-led versus profit-led growth models, inspired by Kalecki, and developed by Blecker (1989, 1999) among others. These models focus on the relation between economic growth and functional income distribution, assessing the effect of a change in income distribution on consumption, investment and net exports. The impact of an increase in real unit labour costs (ULC), if induced by an increase in nominal wages, has an unambiguous negative impact on exports through loss of competitiveness, while, under certain parameters, there might also be an increase in imports through increased consumption or higher investment. Some newer studies have explicitly included 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. However, asset price booms are not linked to capital inflows or the financial account. Most importantly, the current account is driven by trade flows in this literature and the corresponding financial flows are implicitly assumed to adjust.

Another strand of literature based on Thirlwall (1979) and going back to Harrod (1933), focuses on the Balance of Payments-constrained growth rate, i.e. the growth rate that is consistent with a balanced trade position. While in the original model by Thirlwall (1979) balanced growth is determined by the growth rate of exports and the income elasticity of imports without consideration of capital flows, the extension of the model (Thirlwall and Hussain, 1982) allows for capital flows. If net capital inflows are positive, the current account does not have to be balanced. However, financial flows are not modelled explicitly but captured by an exogenous parameter, and no further effect of capital flows on domestic demand or the exchange rate is considered.

An influential discussion from the mainstream literature sees the current account as determined by inter-temporal maximisation decisions of rational agents in the long-run (Obstfeld and Rogoff, 1995). According to the open economy goods-market equilibrium, factors influencing net-saving will alter the current account. The life-cycle hypothesis developed by Modigliani (1966) predicts that an increase in the share of the out-of-working-age population would decrease net saving and the current account. The catching-up argument sees current account imbalances as consumption smoothing during a catching-up process between countries in line with the Solow growth model (1956). Lastly, the twin deficit hypothesis states that if private saving is constant, an increase in the government deficit implies a current account deficit. We categorise this literature as the Net-saving approach, as its focus lies on saving-investment imbalances which are accommodated by changes in the current account. As financial flows do not play an independent role, we consider this approach to be part of the trade-dominated literature.

In portfolio balance models capital flows are modelled as wealth reallocation between different international assets based on their relative rates of return (Branson and Henderson, 1985). The current account and financial account are modelled separately and are determined by different factors. Furthermore, this approach considers different asset types, while also allowing for shocks to the demand for a specific asset (Kouri, 1983). Post-Keynesian economists, particularly those working in the tradition of stock-flow consistent modelling,[2] have integrated this basic structure into newer models (Lavoie and Daigle, 2011). However, similar to the Mundell-Fleming model, the main focus of these studies has been the analysis of macroeconomic policies or the stabilising properties of the exchange rate, so that they have not been employed to investigate the drivers of current account imbalances.[3]

A branch of literature which has prominently focused on financial flows describes the causes and consequences of financial crises and especially sudden capital flow reversals. The usual process is initiated by a capital inflow (capital bonanza), which triggers an appreciation of the exchange rate, the growing of a current account deficit and asset price inflation (Reinhart and Reinhart, 2009). Reasons for that can be the announcement of disinflation policies or capital account liberalisation, as well as low returns on financial investment elsewhere (Calvo *et al.*, 1996). At some point capital flows reverse, triggering a currency devaluation and large drops in output. Mainstream analysis attributes the reasons for the sudden stop to exogenous and often ad-hoc factors, be it foreign interest rate hikes, wrong domestic policies or collective irrationality (Calvo *et al.*, 1996; Claessens and Kose, 2013; Radelet and Sachs, 1998). The saving-glut hypothesis, famously proposed by Bernanke (2005), suggests that the experience of such crises in the 1990s led to precautionary hording of foreign assets from countries with high quality (financial) institutions by emerging economies. This financed the current account deficit of the USA and other high-income countries. Interestingly, the financial crisis literature suggests a bi-directional causality between asset prices and the current account. On the one hand, during the period before the bust which is associated with high growth and a current account deficit, financial inflows precede asset price rises (Reinhart and Reinhart, 2009). On the other hand, a sudden decline in asset prices will trigger capital flows reversals which then impact elements of aggregate demand and re-balance the current account (Claessens and Kose, 2013).

Post-Keynesian scholars take a different approach by describing how crises endogenously and periodically emerge from the normal functioning of capitalism. The Asian Crisis has led to an adaptation of Minsky's (1978) closed-economy model to the open economy. Dymski (1999) and Arestis and Glickman (2002) describe how financial liberalisation and subsequent cross-border financial flows in a growing economy can lead to unsustainable asset price bubbles and debt accumulation, and that the fragility of this configuration is exacerbated if debt is denominated in foreign currency. While there are important differences between the mainstream and heterodox approaches all of these models feature a strong role for financial flows and asset prices, whereas trade flows are implicitly assumed to adjust.

The dichotomy characterising theoretical approaches to the current account is largely reflected in the empirical literature. We distinguish two approaches based on the theoretical analysis above: The first focuses on trade flows, employing different measures of ULC as key explanatory variables. The financial flow-dominated approach emphasises financial flows as the main driver of the current account and uses returns on different types of assets as explanatory variables. Table 1 summarises representative empirical studies. We identify only one paper that employs variables from both streams of the literature (Unger, 2017).

<Table 1>

Many studies within the trade-dominated approach focus on the European Union. While earlier articles emphasise catching-up mechanisms, papers that were published after the Great Recession have a stronger focus either on differences in competitiveness or on divergences in domestic demand, stimulated by different effects of the common monetary policy. Stockhammer and Sotiropoulos (2014) estimate a current account equation with ULC and the gross domestic product (GDP) as explanatory variables for the Euro area between 1990-2011. They find a negative ULC elasticity of the current account between 0.1 and 0.25. Belke and Dreger (2013) investigate whether current account imbalances in the euro area can be traced back to a catching-up mechanism or to differences in competitiveness – measured by GDP relative to the euro area average and ULC respectively. They find that ULC have a strong impact on current account imbalances especially for deficit countries. The catching-up mechanism seems also relevant for the period 1982-2010 but becomes insignificant for the shorter period 1991-2010 for the whole country group. Unger (2017) investigates current account imbalances in the euro area by the application of panel error-correction models and finds a strong negative impact of ULC and domestic credit provision (referred to as credit pull factors measured by different types of bank loans). However, this analysis bears the question of the main drivers of the increased credit demand. While he considers property prices in a robustness test, the expansionary effect of the common monetary policy in Southern Europe is his preferred candidate. Notably, the coefficient for domestic credit provision is smallest when house prices are included, indicating asset prices bubbles as potential drivers of the increase in credit demand.

The Net-saving approach has generated a large number of studies. Blanchard and Giavazzi (2002), who find a robust impact of relative GDP (the country's GDP in comparison to the sample average) and the government balance, attribute current account divergences to a catching-up mechanism between OECD countries in general and euro area countries in particular. This approach was extended by other studies that explicitly include differences in the quality of (financial) institutions in line with the saving-glut hypothesis. However, while these proxies may capture important *conditions* for capital movements, the authors fail to account for asset price rises, the main explanatory factor for current account deficits in Global North countries according to Bernanke (2005), the founding father of this approach. Cheung *et al.* (2010), using a panel of 109 countries, conclude that structural factors such as differences in demographics, fiscal deficits, and the quality of (financial) institutions execute the main impact. Interestingly, different measures of stock market capitalisation exercise a negative effect, but are not reported and only considered as proxies for financial development rather than the return on assets. Furthermore, variables accounting for the Net-saving approach such as relative GDP and the dependency ratio are not robust to the inclusion of country dummies. Other studies have included variables from the Net-saving approach as well as measures of competitiveness and income inequality. Kumhof, *et al.* (2012) find that demand and supply for credit, driven by increasing inequality and financial liberalisation determine the current account. Results by the International Institute for Labour Studies (2011), and Behringer and van Treeck (2015) suggests that a change in functional distribution (a fall in the wage share) lead to current account surpluses via its positive effect on competitiveness or its negative effect on consumption, assuming that a fall in the wage share has a negative effect on domestic demand. Conversely, personal inequality (measured by the Gini-coefficient or increasing top income shares) leads to current account deficits via an increase in credit demand and consumption.

Fratzscher and Straub (2009) are closer to the financial flow-dominated approach to the current account. They find a negative impact of asset prices, which operates through an increase in investment and consumption, as well as an appreciation of the real effective exchange rate. The authors offer two explanations for the appearance of asset price bubbles. While the first relates asset price rises to changes in the (expected) value of fundamentals, the second highlights that it may be rational to buy overvalued assets if the increase in asset prices will be persistent. While the authors do not account for house prices specifically, a similar article by Fratzscher *et al.* (2010), finds that housing price shocks together with equity market shocks are the main drivers of movement of the US trade balance, while the real effective exchange rate[4] had much smaller effects. Laibson and Mollerstrom (2010) present a model where exogenous asset price booms generate increases in consumption and calibrate it to US data. They show that increased consumption due to asset price hikes explains the US current account deficit better than the saving-glut hypothesis. Furthermore, they provide evidence of a strong correlation between house price indices and the current account by weighted OLS regressions of residential real estate prices on current account imbalances. However, they do not control for other explanatory factors.

Chinn *et al.* (2014) is an empirically driven study which tests different theorems derived from the Net-saving and the financial flow-dominated approach without clarifying their theoretical position. They find that current account imbalances prior to the Great Recession cannot be explained by standard variables accounting for saving-investment-imbalances or institutional quality as emphasised by the Net-saving approach and are driven by returns on financial investment measured by property prices (PP) and stock prices (SP). They deem a wealth effect as the most likely mechanism.

Out of the reviewed studies only Unger (2017) includes variables capturing competitiveness as well as asset prices. He focuses on credit demand in the euro area, but also controls for ULC and house prices in one specification. However, the channel through which house prices can impact the current account is not discussed in detail, and asset price booms are not mentioned in his analysis. Therefore, he does not distinguish theoretically between the trade and financial flow-dominated approach, and the fact that house prices are not included in the calculation of economic effects makes an assessment of the relative importance of both types of variables difficult.

A related stream of literature directly investigates the direction of causality between the financial account and the current account. Results suggests that the financial account determines the current account for emerging economies while for developed economies the direction of causality is not clear (Yan and Yang, 2012). According to Oeking and Zwick (2015) the causality runs from the current account to the financial account during economics upturns, while the causality is reversed during downturns for OECD countries. Our analysis is similar to these contributions in terms of the research question. However, while the authors do not analyse the underlying economic mechanisms (Oeking and Zwick, 2015, p.8), we seek to identify them in the next section and assess their relative importance in our empirical analysis.

3. A simple model encompassing trade and capital flow explanations of the current account

The simple theoretical framework presented in this section has a twofold objective: first, it provides a bridge between the different streams of the literature; second, it serves to motivate the econometric analysis.[5] We integrate the consideration of the trade-dominated approach by specifying a net exports function that responds to changes in competitiveness and demand and we integrate capital flows by allowing asset prices to impact on financial flows. National income and the exchange rate serve as the adjusting variables. Our time-horizon is the short- to medium-run, therefore theorems from the Net-saving approach, which focuses on long-run factors, are omitted in our Keynesian framework.

The current account is reduced to net exports that are determined in a standard textbook manner by income and the real exchange rate, here split into a domestic cost component and the nominal exchange rate:

$$CA = n_0 - n_1.Y - n_2.ULC - n_5.e; \qquad n_1,\, n_2,\, n_5 > 0 \tag{3}$$

where CA stands for net exports, n_0 represents a positive net export shock, Y is total income and ULC are real unit labour costs,[6] taken as the main determinant of the domestic price level. e stands for the inverse of the nominal exchange rate, so that an increase in e denotes an appreciation of the domestic currency. Therefore, we split up the real exchange rate in a component determined by ULC on the one hand, and the nominal exchange rate on the other hand. All values except for net exports are taken in logarithms.

Net financial inflows are a function of income, asset prices, the interest rate and the nominal exchange rate

$$F = f_0 + f_1.Y + f_3.A + f_4.i + f_5.e; \qquad f_1, f_3, f_4 > 0\ , f_5 < 0 \tag{4}$$

where F are net financial inflows, f_0 is a net inflow shock, A are asset prices, and i is the interest rate.[7] Equation (4) allows us to incorporate different assumptions about financial traders for the asset and foreign exchange market. We assume that higher asset prices will lead to net inflows (f_3>0), driven by traders who speculate on further asset price increases in the hope to acquire capital gains. An increase in A describes an asset price bubble which is not related to fundamental factors such as an increase in productivity that would be reflected in Y. This is consistent with the behaviour of chartist traders in De Grauwe and Kaltwaser (2012), but while they focus on the foreign exchange market we apply this concept to the asset market. Consequently, the opposite sign of f_3 would reflect the assumption of financial traders investing merely on the basis of fundamentals. Turning to the foreign exchange market, our assumption of a negative impact of the interest rate, which reflects the return of holding domestic currency, is standard, while the sign of the parameter f_5 is assumed to be negative.[8] This corresponds to a foreign exchange market that is 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 value of f_5 would imply that a reduction in e (keeping expectations constant) induces financial outflows. This is at odds with the interest rate parity condition, and suggests a high proportion of chartist traders in the foreign exchange market, who act on the assumption that a weakened exchange rate will depreciate further.

The financial crisis literature has emphasised that asset prices can be pushed up by speculative financial inflows. Accounting for this mechanism we impose a feedback effect between asset prices and financial inflows

$$A = a_0 + a_6.F \tag{5}$$

where a_0 is a shift parameter reflecting exogenous changes in asset prices, and can be seen as equivalent to animal spirits on the asset market.

Consequently, financial flows and trade flows are functions of different variables whose interdependence will determine the current account. Abstracting from changes in foreign reserves which we set to zero, BoP equilibrium requires that net financial outflows equal net exports ($CA = -F$).[9] Substituting equation (2) to (5) and defining ($m = f_3 a_6$) we can solve for the exchange rate that is consistent with the BoP equilibrium e^{BP}. We impose the following assumption to limit the number of different regimes that can be derived within the framework:

$$\vartheta^M = f_1 - n_1(1 - m) > 0 \tag{6}$$

This assumption (equation 6) states that financial flows respond more strongly to changes in income than trade flows multiplied by one minus the acceleration effect between asset prices and financial flows. The assumption is likely to hold for OECD countries with a high degree of capital mobility, or if the acceleration effect (m) is particularly strong.

The open economy goods market equilibrium condition consists of a domestic demand part (Z) and the current account.

$$Y = Z + CA \tag{7}$$

$$Z = z_0 + z_1.Y + z_2.ULC + z_3.a_0 - z_4.i \tag{8}$$

Domestic demand is modelled by a shift parameter (z_0), a multiplier effect ($z_1.Y$), a positive impact of consumption due to an increase in ULC ($z_2.ULC$),[10] a wealth effect induced by higher asset prices as emphasised in the financial flow-dominated approach ($z_3.a_0$),[11] and a negative effect of the interest rate (i). Substituting equation (8) and (1) into equation (7) and rearranging terms gives the open economy goods market equilibrium that we denote by Y^{ISCA}.

We can now solve for total equilibrium income (Y^*) and the equilibrium exchange rate (e^*) by substituting the exchange rate consistent with the BoP (e^{BP}) and income consistent with the goods market equilibrium (Y^{ISCA}). These equilibrium values can be plugged into our equation (1) to obtain the equilibrium current account:

$$CA^* = n_0 - n_1.Y^*(ULC, a_0, i) - n_2.ULC - n_5.e^*(ULC, a_0, i) \tag{9.1}$$

$$CA^* = f(ULC, a_0, i) \tag{9.2}$$

Equations (9.1) and (9.2) are similar to those of the Mundell-Fleming model (equation (2)) and indeed our framework can be seen as an extension of this model with a more active role for financial traders and an exogenous interest rate. We do not assume UIP but model the exchange rate as a function of a wider set of variables, including the interest rate. Nevertheless, if financial flows are very sensitive with respect to changes in the interest rate (f_4 is large), while they are less sensitive with respect to total income (f_1), an interest rate rise would appreciate the equilibrium nominal exchange rate. As becomes evident the exchange rate and income are endogenous in our model, adjusting to ensure the BoP and the goods market equilibrium hold. Our main interest concerns the effects of a change in ULC and asset prices on the current account:

$$\frac{\partial CA^*}{\partial a_0} = -n_1 \frac{\partial Y^*}{\partial a_0} - n_5 \frac{\partial e^*}{\partial a_0} < 0 \tag{10.1}$$

$$\frac{\partial CA^*}{\partial ULC} = -n_1 \frac{\partial Y^*}{\partial ULC} - n_5 \frac{\partial e^*}{\partial ULC} - n_2 < 0 \tag{10.2}$$

Our model can account for the main processes emphasised in the literature: an increase in asset prices or ULC will increase consumption demand and appreciate the exchange rate, both leading to a deterioration of the equilibrium current account.[12] Furthermore, it serves to illustrate the importance of considering both approaches to the current account – competitiveness as well as financial returns. For example, setting parameters f_1 to f_5 to zero would result in a model that is limited to the trade-dominated approach. The opposite holds if we set parameter n_1 to n_5 to zero, thereby implementing a model where the equilibrium current account is mainly dominated by financial flows. The latter would reduce the effect of asset prices, while the former would reduce the effect of ULC, but it would not set the impact of these variables on the current account to zero, due to the fact that ULC and asset prices have an impact on GDP via a distribution and a wealth effect independently of the BoP. Therefore, the importance of their joint consideration, especially in empirical analysis that runs the danger of omitted variable bias, cannot be overstated.

4. Empirical analysis

The theoretical framework discussed in the previous section has two implications for our analysis: First, the exchange rate and total income are determined by the exogenous variables in our model, therefore they are not included in the empirical specification. Second, we have to control for potential bias due to reverse causality between asset prices and the current account.

The current account is estimated for an unbalanced panel of 28 OECD countries[13] for a maximum time period of 1971- 2014 based on equation (8.2).[14] Our baseline specification takes the following form:

$$CA_{j,t} = \beta_{PP}.\ln(\widetilde{property\,prices}_{j,t}) + \beta_{SP}.\ln\left(\widetilde{share\,prices}_{j,t-1}\right) + \beta_{i}.\ln\left(\widetilde{interest\,rate}_{j,t}\right) + \beta_{ULC}.\ln(\widetilde{real\,ULC}_{j,t}) + \beta_{NFA}.(NFA_{j,t-1}) + \varepsilon_{j,t} \quad (11)$$

where *CA* is the current account of country *j* in year *t*, *property prices* and *share prices* stand for a property and share price index, respectively, and *real ULC* are real unit labour costs. All variables are expected to have a negative impact on the current account according to equations (10.1) and (10.2). *interest rate* is the short-term nominal interest rate. Depending on whether the negative effect on the financial account outweighs the contractionary effect on income, we expect a negative or a positive sign. *NFA* are net foreign assets, a standard control variable in the literature, included with a lag, to account for interest or profit payments which are not modelled explicitly in our framework. An alternative interpretation of *NFA* as a measure of institutional characteristics that are conducive to capital inflows is proposed by Blanchard and Giavazzi (2002). We expect a positive impact according to the former and a negative impact according to the latter interpretation. Data sources are reported in Table 1a in the appendix. The composite error term $\varepsilon_{j,t}$ in equation (11) consists of country and time specific components, in addition to a random disturbance term. According to the model in section 3 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, most explanatory variables are transformed into their GDP weighted deviations from the sample mean (Behringer and van Treeck, 2015; Cheung *et al.*, Furceri and Rusticelli, 2010; Chinn *et al.*, 2014; Fratzscher and Straub, 2009; Kumhof *et al.*, 2012). More formally, the following adjustment was applied:

$$\tilde{X}_{j,t} = \ln(X_{j,t}) - \frac{\sum_{j=1}^{n}(\ln(X_{j,t}) * GDP_{j,t})}{\sum_{j=1}^{n} GDP_{j,t}} \quad (12)$$

Where X is the respective explanatory variable, $\tilde{X}$ is the adjusted variable, j indexes countries and t indexes years. The rationale behind this procedure is that the current account is a relative variable: An increase of domestic demand in the home country will, *ceteris paribus*, always increase the demand for imports but it will only have an adverse effect on the current account if domestic demand of the trading partners increases by less than the domestic demand in the home country. Exceptions are NFA, as well as foreign GDP and relative GDP in robustness tests, which are measured relative to the other countries by definition and therefore do not require transformation. Similarly, we do not transform our measure of GDP per capita (p.c.), 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.

We first test for stationarity of our data by applying a set of unit root tests including the Im-Pasaran-Shin and Fisher type tests with and without trend (Choi, 2001; Im *et al.*, 2003; see Table 2a in the appendix). According to the results many of our variables are integrated of order 1. For this reason, we prefer the first difference over the within-group transformation of our series, as both eliminate unobservable time constants while the former also renders our data stationary. 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 11) we start from a relatively large, unrestricted Auto-regressive Distributed Lag (ARDL) model in first differences and successively exclude lags of explanatory variables based on the lowest T-statistic until only one measure per variable is left. 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 below:

<Table 2>

We confirm the relevance of both competitiveness and asset prices in the baseline specification. Property prices, share prices and real ULC are statistically significant at the 1 percent level with a negative coefficient. A deviation of property prices from the sample mean by one percent induces a decline of the current account of 9.3 percent. The effect of share prices is smaller. A deviation of share prices from the sample mean by one percent will lead to a deterioration of the current account by 1.6 percent. Real ULC also have a sizeable impact, as a one percent deviation from the sample mean induces a 17.7 percent decline in the current account.[15] NFA have a positive impact, albeit statistically significant at the 10 percent level only. The interest rate also has a positive sign indicating that the contractionary effect on GDP outweighs the positive effect on financial inflows.

We make our baseline subject to a variety of robustness tests. Specification (2) of Table 2 reports the simple within-estimator, which we consider unreliable due to the non-stationarity of our data. Nevertheless, property prices and real ULC are still statistically significant. Specification (3) applies the mean-group estimator proposed by Pesaran and Smith (1995) using first-differenced series. It estimates time-series equations for each country and averages the coefficients. Furthermore, it includes a constant in each estimation, thereby controlling for country-specific trends. Consequently, similar results between the first-difference and the mean-group estimator confirms the validity of the pooling assumption. We find a significant effect of property prices at the five percent level and the coefficient increases considerably in comparison to the baseline specification. However, stock prices, real ULC, the interest rate and net foreign assets turn insignificant, pointing toward a potential overstatement of these effects in our baseline.

As suggested by our model in Section 3, we have to be concerned about the exogeneity of asset prices. Given the lack of external instruments for the asset price variables our main alternative is to use internal instruments, i.e. lagged values of the variable itself. Our preferred choice is to employ the widely used Arellano-Bond difference-General Method of Moments (GMM) estimator (Arellano and Bond, 1991).[16] However, this estimator is designed for large N, small T panels and faces problems in the case of non-stationarity. We report an estimation where property prices and stock prices are treated as predetermined, while the other variables are treated as exogenous, in specification (4). The value of the Hansen test, as well as tests for autocorrelation in the residuals of second order, suggest that we are not able to reject the null-hypothesis of validity of our instruments. However, the failure to reject autocorrelation of first order in the residuals points towards a problem of non-stationarity and confirms the choice of the first-difference estimator in our baseline. The coefficient for property prices is statistically significant with the expected sign, suggesting that potential bias due to endogeneity is negligible.

Given that several variables are integrated of order one we test for a possible cointegration relationships which would suggest the use of error-correction models (ECM). We apply the cointegration tests developed by Pedroni (1999) which allow for common (pooled across countries) as well as country-specific parameters for the cointegration test. The results, reported in Table 3a in the appendix, suggest no or only very weak cointegration. Nevertheless, for robustness we report an error-correction model in specification (5). In order to capture the error correction mechanism, we require a sufficiently long time dimension. Hence, we base this specification on a panel excluding countries with less than ten years.[17] The long-run results of this specification are very similar to those of the within-estimator, confirming the significant impact of property prices and real ULC on the current account. However, share prices appear to have a short-run but no long-run effect.

Specification (6) estimates our baseline for the years after 1995, thereby focusing on a period that is characterised by an acceleration in the divergence of current accounts. 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 (6) shows increased coefficients of all main explanatory variables, while the signs remain the same. However, the coefficient for asset prices increases relatively more than the coefficient for real ULC: A one percent deviation of property prices from the sample mean leads to an 11.6 percent decline of the current account, while a change in real ULC decreases the current account by 20.6 percent. This suggests an increasing significance of the financial flow-dominated approach in recent years, in line with the findings of Chinn, *et al.* (2014).

Our last set of robustness tests, reported in Table 3, accounts for alternative specifications of the model as well as the inclusion of variables that are emphasised by the Net-saving approach.

<Table 3>

Specification (1) includes an interaction effect of the interest rate with a dummy for South-European members of the euro area (Greece, Italy, Portugal, Spain) and Ireland (*interest rate*S-EURO*). It turns out to be statistically insignificant, while the remaining variables have coefficient very similar to our baseline estimation. This casts doubt on the hypothesis that current account imbalances in the euro area were mainly driven by different effects of the common European monetary union (Unger, 2017). Diverging current account positions in the euro area appear to follow a general global trend rather than a mechanism specific to the currency union.

Next, we estimate our baseline model with asset price variables taken in first differences and the inclusion of a lagged value of the nominal effective exchange rate (*nominal_EER*) (specification (2) of Table 3). Thereby, we pay tribute to several authors who have argued that financial inflows should be a function of changes in asset prices and changes in the exchange rate rather than their level (e.g. Kouri, 1983). This does not alter the significance of our main variables; asset prices and the lagged value of the exchange rate are significant, and asset prices have the expected negative sign. Specification (3) adds real GDP p.c. and the lag of the nominal effective exchange rate to our baseline specification. These two variables are endogenous in our model which implies that there should be no need to include them in the estimation. However, due to the simplicity of the model they might still exercise an independent effect on the current account. Indeed, both variables are significant with the expected signs, while our core variables also remain significant. The significance of ULC for a given GDP and exchange rate is not surprising (see equation (10.1)). Notably, the fact that property and share prices are significant suggests that there are channels other than the ones considered in our model, via which asset prices can impact the current account. Furthermore, it confirms that property prices in the previous estimation are not simply picking up the effect of GDP growth. Specification (4) includes nominal instead of real unit labour costs, which controls for our assumption that nominal and real ULC move together. Interestingly, while asset prices stay significant, nominal ULC are insignificant. This suggests that real unit labour costs are a better competitiveness measure than nominal unit labour costs.

We proceed in specifications (5-9) by including several additional variables that are emphasised in the literature. 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 theorem[18]; the domestic credit to GDP ratio (*credit*) as indicator for financial market development; the dependency ratio (the out-of-working-age population as a ratio to the working-age population) as emphasised by the lifetime-income hypothesis; and the government balance in line with the twin-deficit hypothesis. Specification (10) includes all explanatory variables simultaneously. These robustness tests strongly confirm our baseline results – property prices and real ULC are statistically significant in every estimation. Turning to the control variables, *credit*, foreign GDP and the dependency ratio have a statistically significant impact on the current account, although the dependency ratio is significant at the 10 percent level only. The other variables remain, whether included individually or simultaneously, insignificant. Notably, *credit* also has an alternative interpretation. As discussed in Section 3, asset price rises can impact the current account via changes in the nominal exchange rate and GDP. However, while the former mechanism presupposes capital inflows, the latter could also work via domestic credit creation without capital flowing into the country. The fact that property prices remain significant in specification (9), albeit with a reduced coefficient, suggests that both channels are relevant, and provides evidence for our hypothesis that asset prices are partly driven by financial inflows.

Finally, in Table 4, we calculate standardised coefficients for two specifications – our baseline estimation for the full sample (specification (1), Table 2) and the estimation for the more recent period between 1996 and 2014 (specification (6), Table 2). The standardised coefficient is defined as the effect of a one standard deviation change of the explanatory variables on the current account, and thereby accounts for the fact that some variables are more volatile than others.

<Table 4>

According to specification (1), the coefficient for property prices and real ULC have the same order of magnitude. However, considering the effect of both asset prices and stock prices, the financial channel seems to dominate the competitiveness channel. Calculating standardised coefficients based on specification (6), i.e. considering a more balanced panel for the period 1996-2014, the effect of property and share prices increases, while the coefficient of real ULC declines. This confirms the increasing relevance of financial variables as determinants of the current account.

Summing up, we estimated a model of the current account controlling for variables driving trade and financial flows, as well as other determinants that are emphasised in the literature. We assume that trade flows are mainly captured by ULC, while financial flows are driven by asset prices. We find evidence for a negative impact of both, ULC and asset prices on the current account, and this finding is robust to different estimation techniques and including control variables. This supports our theoretical approach, which emphasises both channels, trade flows as well as financial flows as determinants of the current account. Calculating standardised coefficients that allow to compare the impact of different variables directly suggests that current account divergence in the last two decades was mainly driven by asset price developments.

5. Conclusion

This article provides an analytical clarification and empirical evaluation of the determinants of current accounts. We have argued that there is a dichotomy in the literature: Some contributions focus on trade flows as the main determinant of the current account and ignore financial flows, while other articles emphasise financial flows without considering trade flows (Behringer and van Treeck, 2015; Belke and Dreger, 2013; Fratzscher and Straub, 2009). This might be appropriate under some circumstances, but empirical research on the determinants of current account imbalances runs the danger of omitted variable bias by ignoring one of the factors. However, most empirical articles do not, or only insufficiently, capture determinants of either financial flows or trade flows.

We provide a simple theoretical framework that allows the current account to be influenced by both trade as well as financial flows. Subsequently, we estimate a reduced form of this model for 28 OECD countries between 1971 and 2014. We capture trade flows by cost competitiveness measured by unit labour costs and financial flows by property and stock prices, while also controlling for other variables that are emphasised in the literature on current account imbalances. Our results suggest that both, competitiveness and asset prices are important, with comparable effects for the whole sample period. However, property prices gained significance in recent years and are the single most important explanatory variable for the period 1996- 2014, which has witnessed an acceleration in the divergence of current account positions.

This has important consequences for research as well as for economic policy formulation. Theoretical as well as empirical macroeconomic models featuring a strong role for current account positions should not ignore variables that determine financial flows. Some previous policy recommendations focus strongly on measures of competitiveness to rebalance current accounts, mainly through reducing unit labour costs in deficit countries (Belke and Dreger, 2013) or increasing unit labour costs in surplus countries (Flassbeck and Lapavitsas, 2013). This continues to be a major focus in the Macroeconomic Imbalance procedure of the European Commission. However, our findings show that measures focusing on competitiveness alone are futile, if there is no regulation of financial flows and asset markets. The IMF's approach to the multilateral management of capital flows appears to go in the right direction (Ostry *et al.*, 2012). However, the role of capital flows in regulating current account positions does not feature prominently in this analysis so far.

Endnotes

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[1] We abstract from the 'income receipt and payments' item in the current account recording net profits and interest payments, as well as the capital account, recording a small set of international transfers and mainly debt cancelation. Additionally, we abstract from net unilateral transfer and set official reserve transactions to zero.

[2] Stock-flow consistent modelling is a methodological approach most popular within post-Keynesian economics which ensures a coherent accounting framework and where agents' behaviour is based on stock and flow norms.

[3] The portfolio balance approach was disregarded by newer mainstream models because the asset demand functions were not derived from micro-economic optimisation behaviour. However, some newer contributions from the mainstream, DSGE model dominated literature stand in their tradition by considering portfolio choice as a driver of capital flows (Tille and van Wincoop, 2010). Nevertheless, the DSGE set-up with an equilibrium expected return on assets and optimal portfolio shares determined by utility maximising agents is very different from the old Keynesian approach which builds on behavioural functions for international financial investors. Other papers stay closer to the original spirit of portfolio balance models, but focus on research questions different from ours (Blanchard *et al.*, 2005; 2015).

[4] Fratzscher and Straub (2009) and Fratzscher, *et al.* (2010) use the real effective exchange rate as a measure of competitiveness. However, this measure does not allow to differentiate whether competitiveness declined because of changes in ULC or changes in the nominal exchange rate.

[5] We only report the main equations in the text. Remaining derivations can be found in the appendix.

[6] The simplifying assumption here is that nominal and real ULC move together. Real ULC are equivalent to the wage share with GDP taken at market prices (instead of factor prices). In an open economy cost-pricing framework, the wage share is determined by the mark-up, the foreign price level relative to the domestic price level, the nominal exchange rate and the share of imported raw materials in value added (Hein, 2014, pp.286–288). Given that we include the nominal exchange rate in the model, and assuming that unit raw materials, the foreign price level and the mark-up are constant, the wage share will be mainly determined by the price level, i.e. changes in nominal ULC.

[7] There is a difference between the accounting financial account as reported in the national account and the financial account as considered here. Many financial transactions, e.g. a loan provided by a foreign to a domestic bank, would not lead to a change in the net accounting financial account (Lavoie, 2014, p.459). Therefore, the financial account as used here denotes 'notional' financial flows, i.e. financial flows that are desired, but not immediately matched by a buyer or seller of the financial asset abroad. Additionally, we assume that exchange rate expectations and the foreign price level are constant.

[8] We model the financial account as a function of the level of the exchange rate, in line with Bhaduri (2003), Gandolfo (2002, pp.237–240), Blanchard, *et al.* (2015), and Stiglitz, *et al.* (2006, p.101). However, this can be considered a simplification, as some authors have argued that it should be changes in asset prices and the exchange rate rather than their level that determine the current account (Kouri, 1983).

[9] Note that the BoP is not used as an identity in this case but as a market clearing condition. More precisely, the assumption is that there are market forces that establish an equilibrium between notional financial flows and

trade flows. The adjusting variables are the exchange rate and GDP. Some economists have argued that changes in reserves should be the accommodating variable in open economy macroeconomic models (Taylor, 2004, pp.307–338), while others favour the exchange rate (Bhaduri, 2003; Gandolfo, 2002, pp.133–154). We follow the latter line of literature.

[10] The positive impact of real ULC is based on the assumption of a wage-led domestic economy, as empirically indicated for most of our countries of interest (Onaran and Galanis, 2014).

[11] Note that for simplicity we only consider the effect of an exogenous price inflation (a_0) on domestic demand. However, this does not alter our results.

[12] See the appendix for the detailed derivation.

[13] 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. Unfortunately, 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.

[14] Our sample consists of diverse countries, including East-European countries that underwent deep transitional changes during the 1990s. However, 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.

[15] Estimations with the wage share instead of real ULC show very similar results. This highlights the dual significance of this variable with respect to, on the one hand, competitiveness, and, on the other hand, functional income distribution.

[16] We refrain from using the Blundell-Bond (1998) System GMM estimator since our variables exhibit a unit root and estimations based on their level exacerbate the danger of spurious results.

[17] This results in the exclusion of The Czech Republic, Hungary, Luxembourg, Latvia, Poland, Slovakia, Slovenia and Iceland from our sample.

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

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Tables

Table 1: Empirical literature on the current account

Trade-dominated approach

Author	Sample	Estimation Method	Dependent Variable	Covariates
Behringer & Van Treeck 2015	1972-2007 25 OECD countries, ZAF, CHN	OLS, FE, 4-year, 2SLS	CA	**WS(-),** 1-5% IncShare(-), GINI(-), NFA(+), RELGDP(0), GB(+), Growth(0), DEM(-), Popu(-), CREDIT(0), ToT*OP(+)
Belke & Dreger 2011	1982-2008 Euro area	ECM	CA	**ULC(-),** RELGDP(+/0)
Blanchard & Giavazzi 2002	1975-2001 22 OECD countries	OLS	CA	RELGDP(+), DEM(0),GB(+), NFA(+), M3/GDP(-)
Cheung *et al.* 2010	1994-2008 30 OECD & 64 GSC	OLS, 5-year, GMM	CA, S, I	NFA(+), GB(+), RELGDP$^{(2)}$(+/-), LEGAL(-), CREDIT(-), oil_dummy(+), DEM(-)
IILS 2011	1980-2008 59 countries	GLS, FE	CA	**WS(-),** RELGDP(-), GDP(0), NFA(+), FINREF(-), FOX(+), CBRES(+), GB(-), DEM(-),GINI(-), 1-5% IncShare(-)
Kumhof *et al.* 2012	1958-2006 18 OECD countries	GMM, ECM	CA	GB(0), NFA(+), RELGDP(0), DEM(-), Growth(0), OPEN(+), CREDIT(0), 1-5% IncShare(-)
Stockhammer & Sotiropoulos 2012	1990-2011 Euro Area	FE & FD	CA (ULC, U)	**ULC(-),** GDP(-)
Unger 2017	1999-2013 11 Euro Area countries	ECM	CA	**ULC(-), PP(-),** CREDIT(-), BANKCLAIMS(0), RELGDP(0), GB(+), DEM(-), Popu, NFA(-),ri(+)

Table 1: Empirical literature on the current account, continued

Financial flow-dominated approach

Author	Sample	Estimation Method	Dependent Variable	Covariates
Fratzscher & Straub 2009	1974-2007 G7 (+28 EE)	Bayesian VAR	CA	**r(-),** REER(-), C(-), i(-), INFL(-)
Fratzscher *et al.* 2010	1974-2008 (quarterly) US	Bayesian VAR	CA	**SP(-), PP(-),** C(-), INFL(-), i (-), REER(-)
Laibson & Mollerstrom 2011	1996-2007 (quarterly) 18 OECD, CHN	Weighted OLS	CA	**PP(-)**
Chinn *et al.* 2013	1970-2008 23 GNC, 86 GSC	OLS	CA, S, I	**PP(-), SP(-),** GB(+/-), FINDEV(-), LEGAL(-), FOX(0), NFA(+), RELGDP$^{(2)}$(+), DEM(-), ToTVol(0), Growth(0), OPEN(0), oil_dummy(+), HHD(-), HH-mortgage(0), BP(-), G(0), ri(-)

Notes: 1-5% IncShare= income share of the top 1-5% percent; 2SLS = two-stage least squares estimation; 4,5-year: estimations using 4 or 5-year averages of the data or deviations from the 4 or 5-year averages mean; BP= bond prices; BANKCLAIMS= claims of domestic banks on debtors in euro-area countries other than home country; C= consumption; CBRES= Central Bank reserves; CHN= China; CREDIT= credit (% GDP, mostly used as a proxy for financial development); ECM= Error correction model; EE= Emerging economies; FD= first-difference estimator; FE= within-estimator; FINDEV= Development of financial institutions; FINREF= Financial reform index; FOX= Financial openness index by Chinn & Ito 2008; GB= Government budget; GINI= GINI coefficient; GLS=Generalised least squares; GNC, GSC= Global North, Global South countries; Growth= GDP growth; HHD= Household debt; LEGAL= Measure of institutional quality (law & order, corruptness, bureaucratic quality); M3= The M3 measure of the monetary supply; oil_dummy= Dummy variable for oil-producing countries; OLS= ordinary least-squares; OPEN= Exports plus imports (%GDP); Popu= Population growth; r= return on financial investment; RELGDP= relative GDP; ri= Real interest rate; ToT*OP = terms of trade multiplied with exports plus imports as a ratio to GDP; VAR = Vector-auto-regressive model.

(-), (+), (0) stands for statistically significant and negative, statistically significant and positive, and statistically insignificant, respectively.

Table 2: Baseline and robustness test

	(1)	(2)	(3)	(4)	(5)	(6)
estimation method	*FD*	*FE*	*MG*	*GMM*	*ECM*	*FD*
property prices	-9.333***	-3.840**	-18.556**	-5.284**	-4.333**	-11.554***
	(2.111)	(1.486)	(8.389)	(2.574)	(2.075)	(3.464)
share prices_(t-1)	-1.574***	-0.674	-1.464	-0.250	0.031	-1.990***
	(0.471)	(1.279)	(0.950)	(1.803)	(1.527)	(0.611)
interest rate	1.111*	1.183*	-0.505	-0.190	1.474	1.246**
	(0.574)	(0.612)	(0.498)	(0.719)	(1.016)	(0.626)
real ULC	-17.680***	-26.179***	-12.729	-12.351	-23.558***	-20.591**
	(5.995)	(6.281)	(8.931)	(11.385)	(7.854)	(8.305)
NFA_(t-1)	3.142*	2.950*	-3.692	2.361	-2.607	3.358**
	(1.762)	(1.658)	(3.034)	(3.615)	(3.893)	(1.686)
constant		-0.546	0.129		0.096	
		(0.373)	(0.143)		(0.097)	
adjustment speed					-0.165***	
					(0.026)	
short-run						
Δproperty prices					-4.950***	
					(1.113)	
Δshare prices_(t-1)					-1.610***	
					(0.452)	
Δinterest rate					-0.875***	
					(0.265)	
Δreal ULC					-10.935***	
					(2.794)	
ΔNFA_(t-1)					-0.590	
					(1.566)	
year dummies	Yes	No	No	No	No	Yes
countries	28	28	25	28	19	28
observations	634	674	626	634	578	372
F-test PE	0.000					0.305
Hansen-test				0.217		
AR1				0.771		
AR2				0.623		
period	1973-2014	1973-2014	1973-2014	1973-2014	1973-2014	1996-2014

Notes: The dependent variable is the current account as percentage of GDP, standard errors in parenthesis. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively. 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, ECM stands for error-correction model. 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: Alternative specifications of the model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
property prices	-9.231***	-3.317***	-3.121**	-10.224***	-9.034***	-10.031***	-9.604***	-11.149***	-7.343***	-9.908***
	(2.050)	(1.273)	(1.282)	(2.164)	(2.132)	(2.526)	(2.137)	(3.150)	(1.710)	(3.053)
share prices_(t-1)	-1.580***	-1.193**	-1.222**	-1.501***	-1.499***	-1.662***	-1.564***	-1.673***	-1.422***	-1.579***
	(0.472)	(0.472)	(0.611)	(0.511)	(0.474)	(0.486)	(0.475)	(0.557)	(0.462)	(0.584)
interest rate	1.167*	-0.525	-0.048	1.135*	1.196**	1.032*	1.105*	1.173*	0.546	0.540
	(0.616)	(0.329)	(0.320)	(0.587)	(0.579)	(0.549)	(0.569)	(0.603)	(0.414)	(0.466)
interest rate*S-EURO	-0.415									
	(0.689)									
Real ULC	-17.588***	-27.083***	-26.381***		-18.088***	-18.860***	-17.430***	-20.283***	-14.068**	-17.722***
	(6.037)	(6.277)	(6.267)		(6.025)	(5.896)	(6.021)	(7.106)	(5.996)	(6.742)
NFA_(t-1)	3.147*	-1.763	-0.528	2.953*	3.137*	3.174*	3.193*	2.978*	3.360*	3.314**
	(1.759)	(2.009)	(1.979)	(1.749)	(1.765)	(1.779)	(1.738)	(1.576)	(1.790)	(1.573)
nominal EER_(t-1)		-0.028***	-0.020**							
		(0.010)	(0.010)							
GDP p.c			-18.863***							
			(4.839)							
nominal ULC				0.581						
				(1.325)						
foreign GDP					61.988***					65.418***
					(21.349)					(21.955)
relative GDP p.c.						5.906				8.638
						(6.173)				(7.615)
dependency ratio							-11.018*			-18.359*
							(6.204)			(9.646)
government balance								0.075		0.084
								(0.063)		(0.062)
credit									-1.770**	-2.084**
									(0.749)	(0.897)
Countries	28	19	19	28	28	28	28	28	28	28
Observations	634	553	570	634	634	634	634	462	620	448
F-test Period effects	0.000	0.000	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	1973-2014	1973-2014

Notes: The dependent variable is the current account as percentage of GDP. Estimation method is the first-difference estimator. Explanatory variables in the first column, NFA stands for net foreign assets. Standard errors in parenthesis. 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.

Table 4: Standardised coefficients of key variables

	standardised coefficients 1973-2014	standardised coefficients 1996-2014
	Specification1 (Table 2)	*Specification 6 (Table 2)*
property prices	-0.253	-0.296
share prices	-0.126	-0.146
interest rate	0.130	0.168
net foreign assets	0.138	0.194
real ULC	-0.226	-0.188

Note: Standardised coefficients are calculated by multiplying the coefficient of each explanatory variable with its standard deviation and dividing by the standard deviation of the dependent variable. This is equivalent to transforming the variables to a mean of zero and a standard deviation of one prior to the estimation.

Appendix

A1: Derivation of the theoretical framework

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

$$-F = \frac{1}{1-m}.(-f_0 - f_1.Y - f_3.a_0 - f_4.i - f_5.e) \qquad , \ m = f_3.a_6 \tag{1a}$$

Substituting equation (2) to (5) we solve for the exchange rate that is consistent with the BoP identity e^{BP}:

$$e^{BP} = \frac{1}{\delta^F}.[(1-m).(n_0 - n_2.ULC) + f_0 + f_3.a_0 + f_4.i + \vartheta^M.Y] \tag{2a}$$

Where we impose the following assumption that is discussed in the text:

$$\vartheta^M = f_1 - n_1(1-m) > 0 \tag{3a}$$

Furthermore, note that

$$\delta^F = n_5.(1-m) - f_5 > 0 \tag{4a}$$

will automatically hold if $f_5 < 0$ and $0 < m < 1$. The former reflects our assumption of a foreign exchange market dominated by fundamentalist traders, while the latter is an assumption about reasonable values for the elasticities f_3 and a_6.

To derive the equation for the open economy goods market equilibrium we substitute equation (8) and (1) into equation (7) which gives Y^{ISCA}.

$$Y^{ISCA} = \frac{1}{\delta^Y}.[z_0 + (z_2 - n_2).ULC + z_3.a_0 - z_4.i + n_0 - n_5.e] \tag{5a}$$

Where the aggregate demand multiplier is denoted by δ^Y.

$$\delta^Y = 1 - z_1 + n_1 \tag{6a}$$

We can now solve for equilibrium income (Y^*) and the equilibrium exchange rate (e^*) by substituting the exchange rate consistent with the BoP (e^{BP}) and income consistent with the open economy goods market equilibrium (Y^{ISCA}).[1]

$$Y^* = \frac{1}{\delta^Y \delta^F + n_5.\vartheta^M} . \begin{Bmatrix} [\delta^F.(z_2 - n_2) + n_2.n_5(1-m)].ULC + (\delta^F z_3 - n_5 f_3).a_0 - \\ (\delta^F z_4 + n_5 f_4).i - n_5.f_0 + k.n_0 + j.z_0 \end{Bmatrix} \tag{7a}$$

$$e^* = \frac{1}{\delta^Y \delta^F + n_5.\vartheta^M} . \begin{Bmatrix} [\vartheta^M(z_2 - n_2) - \delta^Y.n_2(1-m)].ULC + (\delta^Y f_3 + \vartheta^M z_3).a_0 + \\ (\delta^Y f_4 - \vartheta^M z_4).i + \delta^Y.f_0 + l.n_0 + q.z_0 \end{Bmatrix} \tag{8a}$$

Equation (6a) 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 insensitive with respect to total income (f_1 is small). We are mainly interested in the signs of the first derivatives with respect to those explanatory variables that are put forward as the main determinants of the current account: ULC for the trade-dominated approach and returns on assets, approximated by asset prices, for the financial flow-dominated approach. Besides ULC which has also an independent effect on the current account, these variables will exercise their effect through Y* and e* (see equation (10.1) and (10.2)).

$$\frac{\partial Y^*}{\partial a0} = Y^*_a = \frac{z_3.n_5(1-m) - f_5 z_3 - n_5 f_3}{\delta^Y \delta^F + n_5.\vartheta^M} > 0 \quad \text{, if } f_3 < \left(z_3.(1-m) - \frac{f_5 z_3}{n_5}\right) \tag{9.1a}$$

$$\frac{\partial Y^*}{\partial ULC} = Y^*_U = \frac{z_2.n_5(1-m) - f_5(z_2 - n_2)}{\delta^Y \delta^F + n_5.\vartheta^M} > 0 \text{ , if } z_2 - n_2 > 0 \tag{9.2a}$$

$$\frac{\partial e^*}{\partial a0} = e^*_a = \frac{\delta^Y.f_3 + \vartheta^M.z_3}{\delta^Y \delta^F + n_5.\vartheta^M} > 0 \tag{9.3a}$$

$$\frac{\partial e^*}{\partial ULC} = e^*_U = \frac{\vartheta^M.(z_2 - n_2) - n_2 \delta^Y(1-m)}{\delta^Y \delta^F + n_5.\vartheta^M} = \frac{\vartheta^M.z_2 - n_2[f_1 + (1-z_1)(1-m)]}{\delta^Y \delta^F + n_5.\vartheta^M} < 0 \tag{9.4a}$$

The common denominator of our derivatives of interest is unambiguously positive given our assumptions (3a) and (4a). For (9.1a) the condition $f_3 < \left(z_3.(1-m) - \frac{f_5 z_3}{n_5}\right)$ is most likely to hold given that f5 is negative if we assume that fundamentalist traders dominate the foreign exchange market. Equation (9.2a) can be assumed to be positive because f_5 is negative and $z_2 - n_2 > 0$ is most likely to hold. Note that z_2 is an increase in *domestic* demand due to an increase in real ULC, while n_2 is the change in the current account due to an increase in real ULC. See Onaran and Galanis (2012) for indicative values of these parameters. Equation (9.3a) is unambiguously positive because of our assumption (3a) and (4a). The sign of equation (9.4) is probably the most controversial. It is, however, negative if $\left(\frac{z_2}{n_2} < \frac{\delta^Y(1-m)}{\vartheta^M} + 1\right)$, which, given that ϑ^M is small, is most likely to hold. Consequently, an increase in ULC will lead to a nominal depreciation. The reason for that is that our model implies a positive effect of an exchange rate appreciation on the financial account through the assumption of fundamentalist traders in the foreign exchange market. Therefore, an increase in ULC, while triggering a current account deficit, will at the same time exercise downward pressure on the nominal exchange rate (e) to bring the financial and the current account into equilibrium. This could be seen as an indication of a weaker effect of ULC in comparison to asset price variables, since the increase in consumption due to an increase in ULC, and the subsequent increase in imports, would be partly counteracted by a depreciation of the exchange rate. However, the opposite case where $e^*_{ULC} > 0$ would also be possible if the effect of a change in ULC on domestic demand is exceptionally strong, without further implications for our general model.

The effect of our main variables on the current account is described by equation (10.1a) and (10.2a).

$$\frac{\partial CA^*}{\partial a_0} = -n_1 \frac{z_3.n_5(1-m) - f_5 z_3 - n_5 f_3}{\delta^Y \delta^F + n_5.\vartheta^M} - n_5 \frac{\delta^Y.f_3 + \vartheta^M.z_3}{\delta^Y \delta^F + n_5.\vartheta^M} < 0 \qquad (10.1a)$$

$$\frac{\partial CA^*}{\partial ULC} = -n_1 \frac{z_2.n_5(1-m) - f_5(z_2 - n_2)}{\delta^Y \delta^F + n_5.\vartheta^M} - n_5 \frac{\vartheta^M.(z_2 - n_2) - n_2 \delta^Y(1-m)}{\delta^Y \delta^F + n_5.\vartheta^M} - n_2 < 0 \qquad (10.2a)$$

The sign of equation (10.1a) is unambiguously negative given (9.1a) and (9.3a). Equation (10.2a) will also be negative: the first summand is negative given equation (9.2a). The second and third summand taken together, which capture the effect of ULC on the current account via the exchange rate and the direct effect of ULC, will also be negative given that $n_5(1 - m) < \delta^F$, irrespective of the sign of equation (9.4a).

Table 1a: Data definition and sources

Variable	Description	Source
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
SP	Index for Stock prices (Base year = 2010)	OECD
i	Short term nominal interest rates	Ameco
RULC	Real unit labour costs	Ameco
FGDP	GDP (in Purchasing Power Standards) of countries in the sample excluding the respective country	Ameco
Relative GDP	GDP per capita as a ratio to GDP per capita of the USA	World Bank
GDP p.c.	Real GDP per capita	Ameco
Dependency ratio	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
GB	Net lending (or net borrowing) of General Government	Ameco
NEER	Nominal effective exchange rates (annualised from monthly data). An increase indicates appreciation.	BIS
Credit	Domestic credit to private sector (% of GDP)	World Bank

Table 2a: Unit root tests

Variable	Im-Pasaran-Shin test	Im-Pasaran-Shin with Trend	Fisher-type test with trend
ca_ameco	0.02	0.00	0.01
property prices	0.12	0.36	0.00
share prices	0.02	0.00	0.16
interest rate	0.00	0.00	0.00
NFA	0.68	0.88	1.00
Nominal ULC	0.00	0.01	0.15
Real ULC	0.02	0.22	0.59
Foreign GDP	0.00	1.00	1.00
Relative GDP	0.00	0.12	0.71
Dependency Ratio	0.00	0.07	0.00
Government Balance	0.00	0.00	0.00
Credit	0.88	1.00	1.00
Δca_ameco	0.00	0.00	0.00
Δproperty prices	0.00	0.00	0.00
Δshare prices	0.00	0.00	0.00
Δinterest rate	0.00	0.00	0.00
ΔNFA	0.00	0.00	0.00
ΔReal ULC	0.00	0.00	0.00
ΔForeign GDP	0.00	0.00	0.00
ΔRelative GDP	0.00	0.00	0.00
ΔDependency Ratio	0.02	0.24	0.67
ΔGovernment Balance	0.00	0.00	0.00
ΔCredit	0.00	0.00	0.00

Notes: The table reports p-values of unit root tests performed for a reduced country sample of 19 countries with the longest available data series (Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and the United States). Tests are very robust to inclusion of the remaining countries in the sample, but the results of the reduced sample are more reliable due to the longer time series dimension.

Table 3a: Cointegration tests

Test	(1) Common unit-root	(2) Individual unit-root
Non-parametric variance ratio statistic	-0.769	
Phillips and Perron rho-statistic	1.497	2.943
Phillips and Perron t-statistic	-0. 819	-1.689
Augmented Dickey-Fuller t-statistic	2.257	0.151

Notes: The table reports T-values for cointegration tests for a reduced country sample of 19 countries with the longest time dimension. Column (1) reports tests based on a common (pooled across countries) autoregressive parameter for the unit-root test on the residuals. Column (2) performs the cointegration test for each country and averages the results. All test statistics are normally distributed with variance equal to one and mean equal to zero (N(0,1)), under a null-hypothesis of no cointegration.

[1] k, j, l, q are parameters which are of no further interest to us.