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Literature survey on the theoretical explanations and empirical determinants of current account balances

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Contents

1	Introduction—1
2	Theoretical approaches to analysing external balances—2 $\!-\!2$
3	Empirical determinants of current account balances— 13
4	Conclusions—31

References-33

1 Introduction

Analysing large current account imbalances is important because, even when warranted by fundamentals, it can still signal macroeconomic and financial risks (Obstfeld, 2012). The objective of this paper is to survey the literature that identifies these fundamentals and in general, to review the factors that explain current account balances (CAB). These include the theoretical literature related to CAB analysis and the empirical literature on CAB determinants (i.e. which factors explain the CAB levels and the differences within countries). In itself, the literature on current account balances is very large, but we focus on papers explaining current account surpluses and in particular, those that analyse the case of the Netherlands.

We start the theoretical overview with the seminal paper by Obstfeld and Rogoff (1995), who present a theoretical framework based on the inter-temporal approach to the current account. This framework provides a strong analytical basis to understand external balances and is complemented by analyses that focus on international asset markets, demographic issues (i.e. ageing societies), the impact of non-optimal policy decisions on the CAB, how external imbalances are generated within a monetary union

and the effect of trade-specific elements can also influence the external balances. We end the theoretical section by focusing on the literature that distinguishes between the temporary (cyclical) and persistent (structural) factors that determine the long-term dynamics of the current account.

In the empirical section we focus primarily on the papers that analyse the determinants of the current account balances. Most of the papers analyse the effect that a (usually) long list of variables has on the components of the current account: savings and investment, in addition to financial and trade factors. This empirical literature finds that some determinates that are highlighted by the theoretical models do indeed have the expected impact on the CAB. These include downhill capital flows to capital-scarce (low- and medium-income level) countries, demographic variables (total dependency ratio and ageing indicators), the impact on Eurozone membership and the effects of commodity exports from natural resource abundant countries. However, this branch of the literature also identifies other variables that significantly affect the current account: productivity and expected GDP growth rates, the institutional an political environment, terms of trade volatility, real interest rates, structural rigidities, net foreign assets, relative output gap, fiscal balance, social security levels, financial development and liberalization, reserve currency status, global risk aversion, trade openness, real effective exchange rates, and commodity terms of trade.

Given the long list of CAB determinants mentioned in the literature, we then proceed to analyse the relative importance of these determinants. Our analysis is primarily based on the IMF external balance assessment (IMF, 2013), where they distinguish between four different components of the CAB: the cyclical component, the fundamentals, the policy gap component and the unexplained residuals. In the case of the Netherlands, they find a very small cyclical and policy gap components, while around half of the Dutch surplus is explained by fundamentals, but the other half falls into the unexplained residuals. Some explanations for this last finding can be the relatively large pension funds and number of MNEs head-quartered in The Netherlands –which are also common explanations for the current account surplus in Switzerland.

2 Theoretical approaches to analysing external balances

In this section we present different theoretical approaches and tools used in the literature to analyse current account issues. These approaches provide a theory of economic behaviour in order to analyse how the current account balance reacts to economic shocks and policies.

Since the current account measures the difference between national saving and

domestic investments, a proper behavioural modelling of the adjustments to the current account requires an explicit theory of consumption, saving and investment decisions of economic agents. Moreover, since saving and investment are forward-looking decisions, the theoretical framework requires an inter-temporal approach.

2.1 Neoclassical model

The seminal paper in the literature is Obstfeld and Rogoff (1995). Their inter-temporal approach to the current account is characterized by dynamic forward-looking perfect foresight optimization by households (consumption/savings) and firms (investment). Conceptually their model explains the CAB as the difference between a country's current situation and the long run circumstances. This framework allows for inter-temporal consumption smoothing patterns, as well as the requirements of foreign debts being repaid and capital returns equated across countries.

In particular, the model predicts that capital flows from countries with low capital returns to those with high capital returns. In turn, these autarky capital returns are determined by two key factors: relative capital scarcity and the country's growth prospects –which are heavily influenced by productivity growth. Both elements will predict the "downstream" capital flows from rich to poor countries.

From an empirical perspective, however, the theory has yielded mixed results and its key empirical predictions have often been rejected by the data. In general, current account balances tend to be much smaller and less variable than what the theory predicts. In their recent overview of the literature Gourinchas and Rey (2014) point to two particular empirical shortcomings. First, the neoclassical model does not explain the pattern of net long-term capital movements from emerging to developed economies. Second, the model fails to take into account the importance of 'valuation effects' on a country's net foreign asset position.¹

The first point refers mainly to what is known as 'global imbalances': the net capital flows from emerging countries (mainly China) to the global financial centres –US and UK, which is not explained by the neoclassical model. Different models and explanations have been made recently to explain this phenomenon (see Gourinchas and Rey, 2014, for an overview). However, we do not analyse these models since they are

¹ In particular, valuation loses in net foreign assets creates an analytical problem with respect to the inter-temporal optimization problem of households. The empirical evidence shows that these valuation loses can be very significant, specially for countries with net positive foreign asset positions and the Neoclassical model does not account for these valuation loses in the formation of optimal consumption smoothing patterns.

not directly related to the Dutch current account surplus. The second point related to the 'valuation effects' is related to the Dutch 'black hole' and further analysed in Jansen and Rojas-Romagosa (2015).

In general, the neoclassical inter-temporal approach remains the analytical base for studying current account imbalances. However, different stylised approaches are used to explain specific CAB situations. In what follows, we mention the models that are most commonly used to explain current account surpluses.

2.1.1 International asset market approach

A simplified version of the Neoclassical model to explain current account balances is the international asset market approach (Krugman and Obstfeld, 2003). In general, capital (assets) will flow between countries to equalize expected rates of returns, once risk and liquidity issues are factored in. The supply and demand of international assets is then cleared in the foreign exchange market, where expected national interest rates and expected exchange rates define the assets' expected rates of return. This is the interest parity equilibrium condition: the expected returns on deposits of any two currencies are equal when measured in the same currency (Krugman and Obstfeld, 2003). In a regime with flexible exchange rates, both countries have independent monetary policies (which determine national interest rate levels) and the bilateral exchange rate clears the foreign exchange market. With fixed exchange rates, monetary policy is constrained (by the level of foreign currency reserves in the central bank) and the foreign exchange market is cleared by the equalisation of interest rates and/or the movement of foreign currency reserves between countries.²

In this framework, the causality runs from the financial account to the trade balance: the flow of international assets determines the exchange rate (or the change in foreign currency reserves), which in turn determines the trade balance.

This framework yields a nuanced version of the Neoclassical downhill international capital flow insight: capital will flow to countries with relatively lower expected rates of return. Relative capital scarcity (i.e. country income levels) and growth perspectives are factored into the expected rates of return, but do not need to be translated into capital flows from rich to poor countries.

 $^{^2}$ In practice, fixed exchange rates regimes are usually compelled to use capital controls or other forms of capital flow restrictions for the system to work– besides the occasional devaluation when faced with extreme shocks and/or crises.

2.1.2 Demographics

The Neoclassical model can also accommodate for demographic country differences that require different inter-temporal levels of savings and investment decisions. Countries with younger populations will borrow more to invest, middle-aged populations will save more, and older population will consume or bequest their savings. Demographics can have, in general, complex effects on net savings. Population changes affect the marginal returns to capital, but the impact of demographic factors will depend on the age-structure of the working age population and the age-profile income. The initial impact, in turn, is affected by the relative capital scarcity, the level of financial development and financial frictions. This makes the prediction of North-South capital flows very dependent on the particularities of the models. However, in models that analyse developed country (North-North) capital flows demographics can play an important role. Ferrero (2010) analyses the effects of population ageing in a calibrated two-country model (US and G-6) and finds that the ageing process in the G-6 accounts for a significant share of the deterioration of the US current account balance and the decline in global real interest rates.

2.2 Current account balances with non-optimal policy decisions

The Neoclassical inter-temporal approach implicitly relies on a well-functioning financial sector (i.e. where different types of risks and liquidity issues are properly discounted in the system) and a government with sustainable fiscal policies (i.e. that will consume within its inter-temporal budgetary possibilities).³ However, as shown by the recent financial crisis, lax or insufficient regulations in the financial sector, excessive borrowing from households (e.g. mortgages) and governments, can create current account imbalances that are not sustainable.

These non-optimal policies can be domestic or international. Blanchard and Milesi-Ferretti (2011) argue that large CABs may reflect domestic distortions, which would be desirable to correct from a country's own point of view. From the international perspective, financial excesses and the failure of policies to prevent them were at the core of the recent global crisis (IMF, 2013). In particular, these international financial excesses are directly translated into demand booms that have a negative impact on the CAB.

The External Balance Assessment (EBA) from the IMF aims to gauge how far

 $^{^{3}}$ Note that some non-optimal features are sometimes included in specific models within the framework. For instance the literature that analyses the role of financial frictions and lack of save and liquid assets in emerging economies is surveyed in Gourinchas and Rey (2014).

CABs are driven by non-optimal policies, or in their terminology: policy gaps (cf. IMF, 2012, 2013). In this context, this policy determinant of a CAB will be explained by a policy distortion, which will then generate international capital flows and trade balances. The typical example is a government that can borrow in international financial markets and uses these source of income to finance excessive expenditures –i.e. without a sustainable path to paying the debt in the future. These negative government savings are then associated with an increase in imports and a current account deficit.

2.3 Monetary union economics and current account balances

In general, the neoclassical model and the international asset market explanation for current account balances fits with both flexible and fixed exchange rate regimes. However, it is not evident how it fits within the context of a monetary union, such as the euro.⁴ In addition, the adoption of a fixed nominal exchange rates and a common monetary policy directly influence traditional CAB balancing mechanisms within the Eurozone. In this section we analyse the specific case of the Eurozone and how membership to the euro can affect both the CAB levels and how they adjust after shocks.

The adoption of the euro was made possible mainly by historical and political events that intertwined with economic developments in Europe. The EMU was a result of the increased economic integration starting after 1957, the related exchange rate crises between the 1970s and 1990s, and predominantly, the role of the EMU as part of the EU project for increased economic and political integration. However, following several analysis in the literature it seems straightforward to argue that the Eurozone was not an optimum currency area at its creation (see for example Krugman and Obstfeld, 2003; Baldwin and Wyplosz, 2004; Teulings et al., 2011; Eichengreen, 2012). The mains reasons for the non-optimality of the euro as currency area include: relatively low labour mobility, low shares of intra-Eurozone trade with respect to GDP, no political centralisation to enforce conjuncture structural reforms, differentiated fiscal stances and productive structures, and lack of centralised risk sharing and transfer mechanisms. Moreover, despite more than 10 years of the introduction of the euro, only after the crisis have some partial insurance and transfer mechanisms being introduced

⁴ Formally, the adoption of the euro is the third stage of the Economic and Monetary Union (EMU), which started with 12 EU countries in 1999 and has 19 EU countries by 2015: Belgium, Germany, Greece, Estonia, Ireland, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Austria, Portugal, Slovenia, Slovakia and Finland. The first stage of the EMU started officially in 1994 and by 1995 all 15 EU countries where members. Since then, all new member states have also joined. The second stage of the EMU was the Exchange Rate Mechanism (ERM II).

-e.g. the ECB assuming its role of lender of last resort, bailouts to periphery countries and the introduction of a banking union. ⁵ Thus, the euro remains an ongoing project of integration –both at the economic and political levels– which could in time become optimal. As such, the resolution of internal imbalances remains a hot discussion topic that is directly related to the current account balances.

How does the euro affect the CAB of the member countries? First, the introduction of the euro increased the intra-Eurozone current account imbalances (Berger and Nitsch, 2010; Chen et al., 2012). From the financial side, the expected downhill capital flows were a direct consequence of the incentives created by both a common interest rate determined by the ECB and the convergence on the interest rates paid on sovereign debt bonds. These factors reduced the perceived risks of investing within the Eurozone.⁶ From the trade side, a nominal fixed exchange rate and the differentiated productive structures within the Eurozone was also translated into bilateral trade imbalances.⁷ Berger and Nitsch (2010), for instance, find that the trade imbalances within the Eurozone members widened considerable after the introduction of the euro and these intra-Eurozone imbalances have also become more persistent.⁸ Furthermore, the bilateral CAB among Eurozone countries has also became more disperse after the introduction of the euro and it reached a peak in 2008 (European Commission, 2009, 2010).

Second, after the 2009 crisis most of the private financial flows were substantially reduced, but the current account imbalances were not corrected and for some countries (i.e. the Netherlands) these imbalances increased. This outcome can be explained as the consequence of the lack of effective adjustment mechanisms within the euro. In particular, the same issues that make the EMU a non-optimal currency area –i.e.

⁵ However, the relatively slow progress in further economic and political integration also goes against the implications of the endogenous optimum currency area literature (cf. de Grauwe and Mongelli, 2005), that predict that an non-optimal currency area can become one by the political and economic dynamics at play after the monetary union is implemented.

⁶ Chinn and Prasad (2000) find that less terms of trade volatility contributes to higher foreign investments and thus, larger external balances.

⁷ The empirical results by Jaumotte and Sodsriwiboon (2010) suggest that most of the Southern Eurozone members CAB deterioration between the beginning of the 1990s and the mid-2000s is explained by the euro (see Figure 5 below). In addition, Chen et al. (2012) find a large impact of declines in export competitiveness and asymmetric trade developments in debtor country's deficits, which increased within the Eurozone but also with other regions (i.e. China, Central and Eastern Europe, and oil exporters), and these deficits were financed mostly by intra-Eurozone capital inflows –in particular by the purchase of government and financial institutions' securities, and cross-border interbank lending.

⁸ They also find that exchange rate inflexibility explains most of these changes, but they are also empirically linked to fiscal deficits, labour and product market flexibility, growth differentials and relative volatility of business cycles.

limited labour mobility, relatively low trade integration, lack of fiscal transfers and insurance schemes, – implies that the adjustment mechanism inherent to optimum currency areas are also missing.⁹ Chen et al. (2012), for instance, conclude that following the implementation of the EMU, key adjustment mechanisms of the external balance of debtor countries were not operating.

The most obvious case, which is directly related to the current account imbalances, is the nominal fixed exchange rates within the Eurozone.¹⁰ The default adjustment mechanism –which substitutes the traditional devaluation mechanism – has been internal devaluation: the reduction of relative wages and prices in the Eurozone countries that lost competitiveness in the build-up to the crisis. However, the overall low inflation levels in the Eurozone has made this adjustment process very gradual, and thus, the current account re-balancing has also not materialised yet.¹¹ Finally, the future development of the intra-Eurozone current account imbalances are directly related to how effective and time consuming this internal devaluation mechanism –maybe complemented by structural reforms– will take, or if there will be additional reforms to the EMU and/or external shocks.

2.4 Current account surpluses explained by trade-related issues

Besides the financial flows explanation central to the neoclassical model and the international asset approach, the current account balance can also reflect country-specific factors inherent to its trade position. In general, the ability of a country to have an external surplus (i.e. to export capital) is restricted by its capacity to have a trade surplus in goods and services. Both the financial and trade components of the current account are the two sides of an accounting identity and it is not always clear-cut that the causality runs from the financial to the trade side. In other words, the balance of payments identity requires that every financial surplus (a positive net foreign

⁹ The original EMU rules: ceiling on the budget deficit of 3% and on public debt of 60%, where clearly insufficient to prepare nor re-balance the euro-zone before and after the crisis. Notably, the strength and economic significance of these rules was all but pre-emptied by the German and French governments breaching the rules in 2003. More recently, a new set of stricter fiscal rules and financial supervision are currently still under implementation and their effectiveness are under scrutiny.

¹⁰ For instance, Abiad et al. (2010) use data on 28 surplus reversal episodes and find that the main mechanism to reverse current account surpluses is through exchange rate appreciations. Other policies that facilitated the process were macroeconomic policies that stimulated demand, and in some cases, structural reforms.

¹¹ By 2014 the imbalances seem to have started declining, but they are still sizeable. In addition, this internal devaluation mechanism has also been translated into deflation for some periphery countries, and deflation has its own negative consequences for debt deleveraging and growth.

investment in the period) is exactly matched by a current account surplus (defined here as the a positive net trade and income balance).¹² In theory, there are several mechanism that can allow a country to obtain the foreign currency needed to finance a surplus, but in practice, there are basically two main source: natural resources and a strong net export position.

The typical case is of countries that are net exporters of natural resources. A country with a large export-oriented extraction industry –e.g. oil, gas, minerals– generates substantial export revenues that directly translate into sizeable profits –either by private firms or national governments, which are not directly related to the local consumption and saving decisions of domestic agents. This is one of the main reasons why many developing (resource rich) countries have current account surpluses (e.g. oil-producing countries like Saudi Arabia). In the case of the Netherlands, natural gas exports has been a steady –although declining– source of the trade surplus.¹³ In recent years natural gas has contributed to the trade surplus with an extra percentage point of GDP, while natural gas reserves are expected to be depleted in around 30 to 40 years (Vandevyvere, 2012).

The second source: a strong exporting basis, is more characteristic of emerging economies that are export-oriented (e.g. Korea, China) and of developed economies (Germany, Japan, the Netherlands). A strong export sector can be explained by several factors. One of them is the relative importance of multinational enterprises (MNEs): the presence of a relatively large number of MNEs with respect to country size can also explain current account surpluses. From the recent but extensive trade and firm heterogeneity literature it is clear the MNEs are responsible for a very large share of overall trade flows (around 90%) and in addition, the intrinsic nature of MNEs to expand abroad is directly related with outgoing FDI flows. MNEs are found to be more productive, profitable, pay higher wages and be larger than export-only or domestic-only firms (cf. Helpman et al., 2004; Bernard et al., 2007; Mayer and Ottaviano, 2007). Thus, MNEs are associated with net exports and outgoing FDI flows and both elements contribute positively to the current account balance. Thus, the presence of a relatively large share of MNEs in a particular country can explain a large and persistent current account surpluses, from both the trade side and the financial side.

Trade-based CAB effects are also the implicit assumption behind the "competitiveness" argument. When a country gains competitiveness through

 $^{^{12}}$ The income balance entails the primary income from primary factors abroad (remittances, rents, dividends and profits) plus the net secondary income (usually current transfers by governments).

¹³ In fact, natural gas exports were so high and important to the current account –and exchange rate levels— that it derived in the coining of the term 'Dutch disease'.

productivity increases or relative price changes (associated with inflation differentials, relative wage differentials and/or exchange rate fluctuations) it can increase its exports or decrease its import vis-a-vis a trade partner, which will increase the CAB. In particular, these competitiveness effects should be present at the industry-level when there are two-way trade flows for that particular industry (e.g. auto-mobile and other transport equipment, electronics, machinery and equipment, processed food, tourism services).

Finally, in the case of the Netherlands, which has a relatively large share of its total trade flows associated with the Port of Rotterdam (i.e. around 40% of total trade), this is also a factor that can also explain a relatively large and persistent positive trade balance. Rotterdam is the most important port in Europe, and the second largest in the world, and a majority of the goods that go through the port are re-exported to third countries (i.e. Germany and other North-Western European countries) while leaving a percentage of value-added in the Netherlands (associated with services embedded in the port activities and transport/logistics related activities). For instance, the share of re-exports in total Dutch exports was in average above 40% from 2000 to 2006 (Mellens et al., 2007). In principle, the flow of goods through Rotterdam has a very small correlation with consumption and investment decisions in the Netherlands, and as such provides a source of revenue (services exports and re-exports of goods) that is relatively independent of domestic economic conditions. As such, it is a conceptual equivalent of the net export of natural resources.

2.5 Temporary and persistent factors shaping current account balances

There are different views regarding the time-related duration of CABs and their sustainability. In theory, a country's long run capital outflows and inflows should equal zero, as the accumulated international liabilities and assets are re-paid. In practice, however, persistent current account deficits are common in some cases –for instance, deficits in financial centres (USA and UK) and surpluses in export-oriented or resource-rich economies.

2.5.1 Inter-temporal consumption smoothing

According to the inter-temporal consumption smoothing approach, countries can experience current account deficits when there are negative shocks in the economy and surpluses when there are positive shocks but eventually the current account surpluses and deficits should sum up to zero.

Within the neoclassical model framework, consumption smoothing can produce

both temporary and persistent CABs. First, external shocks can create short-term consumption smoothing pressures on the CAB that are mainly cyclical. A temporal current account deficit can be explained as a result of a short term negative shock that affects domestic income and that is counter-balanced by external borrowing to smooth short-term consumption. On the other hand, the neoclassical framework can also accommodate for country-specific characteristics (e.g. relative capital scarcity, low financial development, catch-up growth potential) that are structural and which can be translated into medium- and long-term external balances. For example, relatively poor countries with relatively low current productivity and income, but with higher potential productivity and income growth than elsewhere, may attract foreign capital and smooth consumption inter-temporally by having a persistent current account deficit. Ca'Zorzi et al. (2012), for example, argue that expectations of real income convergence and consumption smoothing can partially explain the pattern of CABs within the Eurozone before the crisis.

2.5.2 Persistent current account balances

Even though the consumption smoothing explanation is theoretically appealing, it goes against the experience of many countries that do not need to borrow against their potential future incomes. Many developed countries have persistence current account deficits (e.g. US and UK) or surpluses (Japan, Netherlands, Switzerland) and these trends cannot be fully explained by inter-temporal consumption smoothing patterns. There are several possible reasons why we observe persistent CABs in developed countries:

- Net foreign assets (NFA) and the Net International Investment Position (NIIP) tend to be quite persistent. If the country has high net foreign assets, its investment income from abroad is usually also high. Investment income increases the CAB each year and if the country has a persistent current account surplus, the NIIP is also increasing over time creating a reinforced growth cycle.
- The introduction of the euro. Schmitz and von Hagen (2011) show that the EMU raised the financial integration within Eurozone members and this has led to higher and persistent imbalances. As discussed above, Berger and Nitsch (2010) also find that the euro has increased the persistence in intra-Eurozone imbalances.
- Choi and Mark (2009) try to explain this discrepancy by assuming different aggregated national household saving behaviours. They use a model with a state-dependent (endogenous) discount factor causing households in some countries to be relatively impatient and in some countries relatively patient. Endogenous inter-temporal discount factors vary between countries based on the level of the

societal consumption. ¹⁴ They point that that this discount factor is quite persistent and thus, can explain sustained external balances.

- Labour and product market structural characteristics. When these markets are relatively rigid, they take more time to absorb shocks and this may be reflected in persistent current imbalances (Blanchard, 2007). Ju and Wei (2007) also argue that labour market rigidities are an important structural factor shaping CABs. However, Kennedy and Sløk (2005) highlight the connection between CAB persistence and market rigidities more generally and they remark that it remains elusive to link specific structural conditions with current account positions –which are independent of idiosyncratic country conditions.
- Other country-specific structural factors: trade openness, financial development and internationalisation. These factors affect the CAB in a specific way, and since they are structural, this influence becomes persistent over time. The most clear example is that of the USA and UK, which are financial centres that attract large amounts of foreign investments that are translated into persistent current account deficits. These structural factors are also pointed out by the literature that looks at the conditions for the long-run inter-temporal budget constraint to hold.¹⁵ For instance, Clower and Ito (2012) look at the dynamics of the current account in large sample of countries and analyse the CAB persistency determinants.¹⁶ After distinguishing the periods when the countries entered non-stationary regimes, Clower and Ito (2012) use their results to analyse the CA persistency determinants. They find that factors increasing probability of persistency are financial development, trade openness and net foreign asset position (for the industrialised countries). In addition, countries facing current account deficits are more likely to enter non-stable regimes than surplus countries.

Summarising this section, there are several structural and/or country-specific elements that make CABs persistent over time. The main implication is that short-term

¹⁴ Societal consumption is a reference consumption level which is considered by the households as a normal "society accepted" consumption level. If the societal level is abnormally high (higher than the steady state level), the households are impatient, consume more and that country tends to have a current account deficit.

¹⁵ Formally this constraint is defined as the state where the discounted foreign assets or debts should go to 0 when $t \to \infty$. A sufficient condition for this to hold is that the current account balance is stationarity. ¹⁶ Clower and Ito (2012) test the stationarity of the CAB in a big sample of countries using Markovswitching stationarity analysis. They find that following the financial crisis many countries in Europe experienced locally non-stationary current account regimes (i.e. they could not reject the random-walk hypothesis locally). However, non-stationarity means unstable CAB only if he CAB becomes non-stationary globally. They find that the Netherlands has a stationary CAB.

policies are usually not deemed sufficient to correct current account imbalances.¹⁷

3 Empirical determinants of current account balances

In this section we review the literature that empirically tests which are the main determinants of current account balances. Since the CAB is mainly the difference between savings and domestic investment,¹⁸ the common way to look at the current account balance determinants in the empirical literature is to look at those factors that have an effect on savings and investments.

There are quite many empirical papers trying to analyse saving, investment and the current account balance determinants. We can separate those studies into general ones looking at the various determinants and specific ones, which try to improve on previous papers by adding some new variables -usually ageing variables or analysing Eurozone membership effects.

This section is structured around the analytical framework from the IMF (2013). This framework shows how the current account balance is determined by the investment and saving decisions and in turn by the factors influencing these savings and investments. Next we discuss the broad groups of the CAB factors: investment, saving, financial and other factors and the findings of the empirical papers on them. When looking at the saving determinants, we look at both the the public (government) and private savings (households, non-financial and financial corporations). Thus, determinants to represent the savings side usually include government budget (i.e. public savings), demographic variables, and relative income.¹⁹ Investment factors usually are variables describing country-specific investment environments.²⁰

¹⁷ For example, Kollmann et al. (2014) suggest that an expansion in German government consumption and investment will only weakly reduce the current account surplus.

¹⁸ Technically, the CAB equals the difference between savings and domestic investment *plus* the net income balance(NI). This last component includes primary income (rents, profits and dividends from foreign investments, remittances from domestic workers abroad) and secondary income (other sources of income transfers, usually official government transfers). The net income balance in turn defines the difference between gross and national production: GNP=GDP+NI. Finally, from national accounts identities the foreign investments equal the trade balance (X-M), so we can also write: CAB = (X-M) + NI. Equivalently, the CAB is equal to the change in foreign assets.

¹⁹ When relative income is low and income convergence is expected, country should be borrowing from abroad to invest and would be experiencing current account deficits, when income is relatively high country should start saving to return the debts.

 $^{^{20}}$ A disadvantage of this empirical methodology is that it does not directly account for interactions between the different current account components. For instance, an economic variable that increases savings can also have a significant effect on domestic investment, and the initial expected effect of higher savings on the CAB can be counteracted by higher domestic savings.

We also review some empirical results on the relative importance of the CAB factors. Special attention is devoted to the IMF external sector assessment methodology and the specific reports for the Netherlands. The last subsection reviews a few papers analysing the multinational companies role in the current account.

3.1 Analytical framework

The IMF external balance assessment methodology (IMF, 2013), summarises the relationship between domestic savings, domestic investments, the current account and the real exchange rate. As noted above, the current account balance is the difference between the domestic saving and domestic investment and this is reflected in the first equation:

$$S(NFA, Y, r, X_S) - I(Y, r, X_I) = CA(Y, REER, Y^{WO}, X_{CA})$$

$$\tag{1}$$

where:

- S =domestic saving;
- I = domestic investment;
- CA = current account;
- Y =domestic output gap;
- NFA =net foreign assets (in the beginning of the period);
- r = real interest rate;
- $Y^{WO} = \text{foreign/world output gap};$
- X_S = saving factors: income per capita, demographics, expected income, social insurance, public balance, financial policies, institutional environment, net exports of exhaustible resources;
- X_I = investment factors: income per capita, expected income/output, governance, financial policies;
- REER = real effective exchange rate;
- X_{CA} = world commodity price-based terms of trade, which includes both export and import factors.

The second equation is based on the balance-of-payments accounting:

$$CA(Y, REER, Y^{WO}, X_{CA}) + CF(r - r^{WO}, REER, X_{CF}) = \Delta R$$
⁽²⁾

where:

- CF = capital account;
- $\Delta R =$ change in foreign exchange reserves;

- r^{WO} = world interest rate;
- X_{CF} = capital account factors: global risk aversion indicators, reserve currency privilege, financial home bias, capital controls;

CA and REER are endogenous variables guaranteeing the equalities from the equations given above hold, and solving for CA one gets:

$$CA = CA(X_S, X_I, X_{CA}, X_{CF}, Z, Z^{WO}, \Delta R)$$
(3)

where Z and Z^{WO} can be either the output gap or the short-term interest rates for domestic and foreign (WO), respectively.

One important distinction of the the IMF methodology is that it analyses individual variables with respect to the equivalent world (WO) variables, since only the relative values are what matters to determine the country-specific current account balances. As such, the country-specific effects are measured as a country's deviation from the relevant world/foreign variable counterpart.

3.2 Current account factors

We divide the potential CAB factors discussed in the literature and included in the empirical estimations into four categories: investment and saving, financial, trade and cyclical factors. For each factor we present the intuition behind their inclusion and the empirical estimation results. Some of these determinants are based on the theoretical analyses presented in Section 2 and some others relate to more *ad hoc* explanations on how they affect the CAB.

3.2.1 Investment and saving factors

All of the papers analysing the CAB factors include some set of variables that are potential domestic investment and/or savings determinants. Factors which have a positive effect on domestic investment are expected to decrease the CAB, while those that increase savings will increase the CAB. Domestic investment can be increased by both internally financed investment or positive inflows for foreign investment. The investment and saving determinants include:

• Relative income levels. Chinn and Prasad (2000) present the "stages of development" hypothesis: while moving from the low to medium development stage, countries should invest more than save and hence, they incur in current account deficits; while they should start saving and have CA surpluses only when they are at an advanced stage of development. To test this hypothesis Chinn and Prasad (2000)

estimate a cross-section regression on current account determinants and indeed find that as expected the relative income term coefficient is positive and the coefficient on the square of the relative income is negative. However, from the scatter plot in Figure 1 one can see a strong positive relation between relative income and the CAB for low-income countries but for medium- and high-income countries the relationship is less clear.²¹





Source: Taken directly from Chinn and Prasad (2000).

- Productivity. Higher productivity attracts foreign investments and worsens the current account. However, free capital movement (capital account openness) is crucial for these investment flows. Thus, the IMF (2013) study includes a productivity and capital account openness interaction term into the current account regressions and find that its coefficient is negative and significant.
- Expected GDP growth. Countries with high expected GDP growth also tend to attract foreign investment. Chinn and Prasad (2000), however, note that GDP growth can also be a disposable income indicator and as such, it can be included

²¹ Barnes et al. (2010), likewise, also include the current level of the GDP per capita in a CAB regression. They expect that a low GDP per capita level should create expectations about future economic convergence and fast income growth and therefore, this should decrease savings and result in external deficits. They find that GDP per capita level has a positive effect on the CAB, but do not test the square of the coefficient. Finally, Gruber and Kamin (2005) and Jaumotte and Sodsriwiboon (2010) include a relative GDP per capita level in their regressions and find that the coefficient is also positive and significant.

into the savings factors. The effect of the GDP growth on saving, therefore, is not clear: if households interpret high GDP growth rates as permanent income growth then they may decrease savings and if the GDP growth is interpreted as temporary income growth then it should increase savings. Nevertheless, IMF (2013) find that expected GDP growth has a significant and negative effect on the CAB.

- Institutional and political environment. A relatively benign (by international comparisons) institutional and political environment should encourage foreign investments and reduce the CAB. To measure the institutional risk, the IMF (2013) study uses the International Country Risk Guide dataset and find that a better institutional environment affects the CAB negatively and significantly. Gruber and Kamin (2005) also include institutional quality as one of their determinants and also find that it has a negative effect on the CAB.
- Structural rigidities. Barnes et al. (2010) note that structural rigidities may discourage investment and increase the CAB. As a measure of the structural rigidities in the labour market they include the non-accelerating inflation rate of unemployment (NAIRU) and find that it has a positive effect on the CAB.
- Demographic factors. Several elements of the age structure of the population, plus the current and projected demographic developments can have different effects on saving and investment. In general, a high total dependency ratio should decrease the CAB (since it encourages more investment), while a higher share of working age population should increase the CAB (as this cohort is saving for their retirement period):
 - A higher share of young people in the total population means that there will be a large labour force in the future and this encourages investment. Higgins (1998) notes that theoretically, a higher child dependency ratio should cause higher investment and lower savings, and thus a higher current account deficit. Chinn and Prasad (2000) find that the child dependency ratio –i.e. the number of people under 15 years with respect to the working population aged 15 to 64–has indeed a significant negative effect on the CAB. This result signals that a high child dependency ratio either decreases savings and/or increases investment.²²
 - A higher old-age dependency ratio –i.e. the number of people above 64 years with respect to the working population aged 15 to 64– should result in lower investment (as older people are depleting their savings) and thus, should have a negative effect on the current account. To test these hypothesis, Higgins

 $^{^{22}}$ However, Barnes et al. (2010) find that the child dependency ratio has a positive effect on the CAB for the long historical sample but a negative effect if only recent data is used.

(1998) uses a panel data estimation and calculated the CAB changes due to the demographic changes in the second half of the 20th century. He finds that a high child dependency ratio has indeed a negative effect on the current account balance.²³ Furthermore, Jaumotte and Sodsriwiboon (2010) and Gruber and Kamin (2005) also find that a relatively large old-age dependency ratio has a negative effect on the CAB.

- Middle age cohort. Higgins (1998) finds that the middle age cohort (people aged 30-34 to 60-64) ratio has a positive effect on the CAB because people in this cohort are most likely to save for retirement. Higgins (1998) also projects what should be the CAB changes by the year 2010 and 2025 due to projected demographic developments. His estimation is that in the developed countries the core of the population will shift towards the older age which will mean decreased savings (although investment is also going to decrease due to the decreasing child dependency ratio).
- Ageing indicators. The IMF (2013) uses an "ageing speed" indicator (the expected change in the old age dependency ratio) and find that ageing has a positive and significant effect on the current account. Overall, they find that an increase in relative ageing speed by one percentage point is associated with a stronger current account by 0.16 percent of GDP. Similarly, Barnes et al. (2010) find that an expected higher old-age dependency ratios in the future has a positive effect on the current CAB –i.e. ageing societies save more.
- Population growth rate. Jaumotte and Sodsriwiboon (2010) and IMF (2013), moreover, find that the population growth rate has a negative effect on the CAB: high fertility rates and/or high immigration are related to a larger labour force in the future and this increases foreign investment and deteriorates the CAB.
- Net foreign assets (NFA) are always included in the empirical analysis of CAB determinants. Theoretically the NFA effect on the CA is ambiguous: due to higher primary income from past investments, a higher NFA level should result in a higher CAB. However, countries with high NFA levels also have the resources to spend more and decrease the CAB (i.e. the wealth effect). In the IMF (2013) study they estimated a CAB regression and the NFA coefficient is positive and significant but

 $^{^{23}}$ Higgins (1998) does not provide calculations for the Netherlands but from the given calculations the largest positive effect on the CAB increase was for Japan (7.1 percentage points in the period from 1950-54 to 1980-84). He also re-estimates the model by allowing different demographic effects for the relatively open and closed economies and shows that the demographic changes only have an effect in the open economies.

quite low. This results is confirmed by other papers (Chinn and Prasad, 2000; Gruber and Kamin, 2005; Barnes et al., 2010; Jaumotte and Sodsriwiboon, 2010) that also find that the initial NFA level has a significant positive effect on the $CAB.^{24}$

- Real interest rate. Barnes et al. (2010) include long-term interest rate as a potential CAB factor: higher interest rates should increase both savings and the opportunity costs for investment, and thus should positively affect the CAB. Their estimation proves that indeed there is positive interest rate effect on the CAB.
- Fiscal balance. The Ricardian equivalence hypothesis states that an increase in government spending should be offset by an equal size increase in the private saving as people expect tax increases in the future. Empirical papers find that the Ricardian equivalence does not hold and an increase in public saving is not fully compensated by an increase in private spending. Therefore, an increase in public saving increases total saving. Several papers find that the public balance has a positive significant effect on the CAB (IMF, 2013; Chinn and Prasad, 2000; Barnes et al., 2010; Jaumotte and Sodsriwiboon, 2010; Gruber and Kamin, 2005; Gossé and Serranito, 2014). In general, this points that countries with sustainable fiscal policies, which tend to have non-negative average net savings , will also have a tendency to have higher public savings (than countries running persistent deficits and negative savings) and thus, higher current account balances.
- Social security. Better social protection should decrease precautionary savings and decreases the CAB. The IMF (2013) study includes ratio of public expenditure on health to GDP in their CAB regression, and find that it has a significant negative effect on the CAB.

3.2.2 Financial factors

• Financial development. Chinn and Prasad (2000) discuss the potential effects of financial deepening on the CAB and conclude that from the theoretical point of view it is difficult to predict this effect. A more sophisticated financial system may increase possibilities to save and/or invest abroad, but it may also increase borrowing (decreasing saving) by lowering the borrowing constraints. In their estimated regression the financial deepening parameter –measured as the M2/GDP ratio– is significant and positive in both the cross-section and panel data

 $^{^{24}}$ Chinn and Prasad (2000) note that the positive relation between the NFA and the CAB may also reflect that some developing countries are running constant current account deficits and accumulating net financial debt as they have better access to the capital markets or are favoured by international investors.

estimations. On the other hand, Gossé and Serranito (2014) use the private credit to GDP ratio as a measure of financial development and argue that countries with well developed financial systems attract foreign investment and can save less. They find that their financial development indicator has a negative effect on the CAB. Moreover, the IMF (2013) study also includes the private credit to GDP ratio in their regressions –although as an indicator for policy failures that indicate financial excesses, which may cause unsustainable demand booms that decrease the CAB. The IMF (2013) finds that an increase in the private credit to GDP ratio by 10 percentage points decreases the CAB by 0.3 percentage points. Hence, financial development seems to have ambiguous effects on the CAB.

- Financial liberalization. This factor estimates the effect of an increase in financial liberalization measures on the CAB. These measures include interest rate and exchange rate flexibility, low levels of capital controls, low entry and competition restrictions, limited state ownership in financial institutions, in conjunction with high quality financial supervision and regulation. These liberalization measures are all expected to have a positive effect on foreign investment, while it also reduces domestic saving as various forms of credit become easier to get. Thus, an increase in the financial liberalization should have a negative effect on the CAB.²⁵ Jaumotte and Sodsriwiboon (2010) include a financial liberalisation index and find indeed that it has a negative effect. They argue that financial liberalization was one of the reasons for the decrease in the CAB in the Southern Eurozone members.
- Foreign exchange intervention and capital controls. Following the IMF (2013), countries with foreign exchange intervention and capital controls are expected to increase foreign reserve accumulation and this is associated with an increase in the CAB. The IMF (2013) includes a foreign exchange intervention indicator interacted with capital controls and find that the coefficient is positive and significant.
- Reserve currency status. The countries with a reserve currency have the benefit of being international "save heavens", which creates incentives for other countries to invest in this currency –either by holding the currency as reserve or by buying government bonds of that country. The ensuing inflow of foreign investments allows these countries to finance their current account deficits.²⁶ The IMF (2013) study measures the reserve currency status as a share of a country's own currency in the

 $^{^{25}}$ On a related point, Gruber and Kamin (2005) argue that financial crises restrain domestic demand and increase the CAB. They find that the more open and liberalized the economy is, the larger is the financial crisis positive effect on the CAB. However, the opposite effect can also be expected depending on country-specific characteristic.

 $^{^{26}}$ It also allows them to use inflation as an instrument to reduce the real value of its foreign liabilities and eases the sustainability of their external deficits.

total stock of world reserves. Their estimated coefficient is negative and significant, as expected. This factor is also related to perceptions of global risk aversion. In non-reserve currency countries an increase in global risk aversion should be associated with a decrease in domestic investment as money flows to "safe heaven" countries. The IMF (2013) estimation results confirm this: an increase in perceived risk aversion causes a CAB increase in non-reserve currency countries and a decrease in the reserve currency countries. It is important to note that countries that hold reserve currency status: the USA and UK, are also the most important financial centres.

Financial centre status in small economies. The IMF (2013) study included a dummy variable for economies that are small and have "financial centre" characteristics. These countries are the Netherlands, Switzerland and Belgium (until 2004). They find that these small countries have about 3.3%-3.5% higher current account surpluses than other countries when holding other variables fixed.²⁷ However, the intuition behind these results is not obvious. In general, financial centres attract foreign savings and as such are expected to have current account deficits (e.g. the USA and UK). Since the dummy included in the IMF study relates to only three countries, this can be picking up other country-specific characteristics other than the financial centre status. In particular, both the Netherlands and Switzerland are also characterised by having a relatively high number of MNEs head-quartered in their countries, as well as relatively large pension funds that invest heavily abroad. In the Appendix we present some of the literature that analyse the external surpluses in Switzerland and Ireland.

3.2.3 Trade-related factors

Here we include those determinants that are trade-related, although some of them do not affect exclusively the trade component of the current account.

• Natural resource trade balance. Natural resources –e.g. oil, natural gas, minerals– are depletable and countries that extract and export these resources can perceive these exports as a temporary income increase. If so, they will save part of this income to smooth consumption over time. As long as part of these increased savings are invested abroad, a positive trade balance associated with natural resource exports is expected to increase the CAB.²⁸ These dynamics are specially strong in

 $^{^{27}}$ Jaumotte and Sodsriwiboon (2010) also include a financial centre dummy in their regression for the CAB and find that the effect is also positive and significant.

²⁸ The obvious counter-example are countries that do not perceive this income as temporary and increase their consumption levels accordingly, usually even running a current account deficit. Historically, this

oil-exporting countries. Morsy (2009) focuses on the CAB determinants in the oil exporting countries and finds that a one percentage point increase in the oil trade balance increases the CAB by about 0.2-0.3 percentage points. Similar results were also found by IMF (2013). So even when a large share of the oil revenue is spent on imports, it still increases the CAB. Moreover, higher oil wealth (i.e. countries with large oil reserves) are expected to experiment a wealth effect on consumption and decrease both savings and the CAB. In particular, Morsy (2009) finds that countries with large oil reserves are associated with lower current account balances.

- Trade openness. A standard measures of trade openness (exports+imports/GDP) is usually included into the empirical studies as a proxy for lower trade barriers and a better investment environment, which is expected to affect the CAB negatively. However, empirical evidence finds a positive effect of trade openness on the CAB (Barnes et al., 2010; Gruber and Kamin, 2005). This empirical finding can reflect that countries that are more integrated into international markets have access to foreign currency that can be used to invest abroad (e.g. China) and/or are also more financially integrated and this provides additional options for foreign investments.
- Real effective exchange rate (REER). Gossé and Serranito (2014) explain the REER effect on the CAB as the positive effect that an improvement on the terms of trade has in a small open economy: it increases real income and as the propensity to consume is usually less than one, this is translated into an saving increase and a positive effect on the CAB. However, they notice that only a temporary improvement on the terms of trade should have an effect on the CAB. Their empirical results support the hypothesis: they find that a decrease in the REER (depreciation of the local currency) has a positive effect on the CAB.
- Eurozone membership. As explained in Section 2.3 the adoption of the euro affected -in several significant ways- the current account balances across the Eurozone. Empirically, Berger and Nitsch (2010) and Chen et al. (2012) find that the introduction of the euro increased the intra-Eurozone current account imbalances, while Barnes et al. (2010) show that Eurozone membership had a impact on current account balances: the euro core-country dummy coefficient is positive but insignificant and the Eurozone periphery-country dummy is negative and significant.²⁹

has been the case in Latin American countries.

²⁹ On the other hand, Jaumotte and Sodsriwiboon (2010) argue that the effects are transmitted depending on the different initial income levels and the accompanying policies that were implemented in the Eurozone core and periphery. Thus, to account for these asymmetries they include dummies for Northern and Southern Eurozone countries and find that adopting the euro had a negative effect for both Southern and Northern countries. They explain this counter-intuitive result by arguing that the may have made

3.2.4 Cyclical and temporary factors

- The relative output gap. The IMF (2013) study notes that the relative output gap regressor reflects the fact that cyclically lower output is typically associated with high savings and lower investments, and both effects are translated into a higher CAB. This is confirmed by their estimated coefficient on the output gap, which is negative and significant: an increase in the relative output gap by one percentage point is associated, other things constant, with a decline of the current account by about 0.4 percent of GDP.
- Terms of trade volatility. Higher terms of trade volatility increases investment risks and this should affect investments negatively. Also it may increase precautionary savings and both effects increase the CAB. As expected, Chinn and Prasad (2000) find that terms of trade volatility has a positive effect on the CAB.
- Commodity terms of trade. The IMF (2013) includes commodity terms of trade interacted with trade openness and find its coefficient to be positive and significant. They use the HP-filtered value of the commodity terms of trade index to capture the cyclical effect of the terms of trade. Thus, they find that countries that are net commodity exporters are expected to save and invest abroad part of their temporary revenue.

To summarise this section, the various CAB factors effects are presented in Table 1.

all Eurozone countries more attractive as investment destination.

CAB factor	Estimated effect
Relative income levels	+
Productivity plus capital account openness	+
Expected GDP growth	-
Institutional and political environment	-
Structural rigidities	+
Demographic factors:	
Child dependency ratio (<15)	-
Middle age ratio ($\geq=30$ and $64=<$)	+
Old-age dependency ratio (>64)	-
Ageing / projected old-age dependency ratio	+
Population growth rate	-
Net foreign assets	+
Real interest rate	+
Fiscal balance	+
Social security level	-
Financial development	+/-
Financial liberalization	-
Foreign exchange intervention and capital controls	+
Reserve currency status	-
Global risk aversion	+ and - *
Financial center status in small economies	+
Oil trade balance	+
Oil wealth	-
Trade openness	+
Real effective exchange rate	-
Eurozone membership	+ and $-$ **
Relative output gap	-
Terms of trade volatility	+
Commodity terms of trade	+

Table 1: Estimated effects of CAB determinants

^{*} Global risk aversion causes an increase in the CABs in the non-reserve currency countries and a decrease in the CABs in the reserve currency countries

 ** The sign of the effect depends if the country is a core (+) or periphery (-) Eurozone member.

3.3 Relative importance of the CAB determinants

Most of the papers analysing the current account factors just aim to find what determinants have a significant effect on the CAB but not the relative importance of these factors. However, the IMF (2013), European Commission (2014), Barnes et al. (2010) and Jaumotte and Sodsriwiboon (2010) explicitly analyse or provide some indication about the relative importance of the particular determinants. We analyse each in turn.

3.3.1 External Balance Assessment by the IMF

First, the most complete CAB assessment is provided by the IMF (2013), which performs an External Balance Assessment (EBA) analysis based on their estimated CAB and REER regressions and also gives some information on the importance of the various factors in the size of the CA surplus or deficit.

Using this methodology the IMF have evaluated the CAB situation in 25 countries in 2013 and divided the actual current account balance in these countries into four main components:

- 1. Cyclical component
- 2. Cyclically adjusted CAB "norm", which is the part of the CAB which can be explained by fundamentals and desirable policy settings
- 3. Contribution of identified policy gaps
- 4. Unexplained residual

We explain each component sequentially. First, the cyclical component is the part of the CAB explained by two cyclical factors included in the CAB regression: the relative output gap and the commodity terms of trade gap (interacted with trade openness). They find that an increase in the output gap by 1 p.p. results in a decline of the CAB by about 0.4 % of GDP. The commodity terms of trade gap is calculated as the difference between calculated commodity terms of trade index and an HP-filtered terms of trade index. An increase in the terms of trade by 1 p. p. is associated with an improvement of the current account of about 0.25% of GDP in a country with average trade openness (i.e. with about 30% of GDP). They IMF also calculated the cyclical component for the Netherlands to be 1.1% of GDP in 2013 (IMF, 2014a). Since the actual surplus is 10.4% of GDP, then the cyclically adjusted surplus is still about 9.3 % of GDP). The cyclically adjusted current account balances for the other countries are given in Figure 2. These results confirm the predictions of the theoretical literature on persistent current accounts, where structural factors have a much important influence than cyclical ones (see Section 2.5).



Figure 2: Actual and cyclically adjusted CAB in 2013, percent of GDP

Source: Taken directly from IMF (2014b).

The second component of the IMF's external balance assessment includes the estimation of the role of fundamentals and desired policy variables using the following regression:

$$CAB = \alpha + C'\delta + X'\beta + P'\gamma + \varepsilon \tag{4}$$

where C and X stand for the cyclical factors and fundamentals and P denotes desired policy variables. The regression can be re-written this way:

$$CAB = \alpha + C'\delta + X'\beta + \hat{P}'\gamma + (P' - \hat{P}')\gamma + \varepsilon$$
(5)

where \hat{P}' are desired policy variable values, and $(P' - \hat{P}')$ is the gap between actual policy variables and desired policy variables –i.e. the policy gap. Using this equation the IMF calculates the so-called cyclically adjusted CA norm –the part of the cyclically adjusted CAB determined by the fundamentals and desired policy variables– as: $\alpha + X'\beta + \hat{P}'\gamma$. This component provides a measure of what CAB fundamentals should be, or in the IMF terminology: the cyclically adjusted current account norm. For the Netherlands in 20013, the calculated cyclically adjusted CA norm for the year 2013 is 5.1%.

The third component of the IMF analysis is the policy gap. This CAB component is given in Equation 5 by the expression: $(P' - \hat{P}')\gamma$. The essential idea of this component is to account for the impact of policy distortions –whether of domestic or foreign origin–

on a country's CAB.³⁰ In Table 2 we show the IMF estimated policy gap contributions for the Netherlands. The total contribution of the identified policy gaps is -0.3%, of which -0.8% is due to domestic policy and hence, 0.5% is explained by foreign policies.

Policy gap element	Total	Gap due to domestic pol-
		icy
Total	-0.3%	-0.8%
Fiscal balance	1.3%	0.6%
Public expenditure on health	-1.8%	-1.7%
Change in the foreign reserves	-0.1%	0.0%
Private credit	0.5%	0.3%
Capital controls	-0.2%	0.0%

Table 2: Estimated policy gap contributions for the Netherlands CAB in 2013

Source: IMF (2014a).

The fourth and final component of the EBA analysis is the unexplained residual. For the Netherlands the residual is 4.3% of GDP in 2013, which is around half the total Dutch surplus. However, the IMF also assess whether the residual –also called the current account gap– in each country case can be explained by some fundamentals not included in the model or if indeed cannot be unexplained. In the Dutch case, the IMF states that the CA gap for the Netherlands is likely to be smaller due to the following country-specific factors: (i) unlike many other advanced economies, the Netherlands has a fully funded pension system which has increased household saving rates; (ii) following a real estate collapse, household deleveraging has also kept saving rates high, and (iii) statistical issues related to the income measurement of large FDI flows. Taking into account these factors, the staff assessment of the current account gap is diminished but still not fully explained (IMF, 2014b).³¹

3.3.2 The European Commission's CAB assessment

European Commission (2014) also assess the CABs in the EU countries. They use a traditional empirical approach by regressing a large set of countries' annual current account data on a large set of potential determinants. In Figure 2 we can see the distinguished determinants of the CAB in the EU countries. According to the European

 $^{^{30}}$ Recall that in the EBA analysis the policy variables –as well as the fundamentals– in the estimation are measured relative to the world counterpart. Thus, deviations of the policy variable from the desired value can arise because of both domestic policy and/or from policies in other countries.

 $^{^{31}}$ More recently, Sastre and Viani (2014) expand on the EBA methodology and provide a better fit on the Dutch estimations, although the unexplained imbalances are still relatively large.

Commission (2014) the Netherlands CAB part explained by the fundamentals is about 5-6 percent of GDP, which is quite similar to the IMF (2013) finding. The European Commission (2014) regression indicates that the following fundamentals as having a positive effect on the Netherlands CAB: global financial conditions ³², income level (relative GDP per worker), demographic factors and NIIP.

The cyclical factor included in the European Commission (2014) analysis (i.e. the relative output gap) has a positive but relatively small effect for the Netherlands. Regarding policy variables, high public social expenditure in the Netherlands is found to have a relatively large negative effect (through reduced private saving). Private credit as a share of GDP and construction investment (both relative to the world average) are included in the CAB regression to represent 'financial excesses' and the associated demand boom arising from the increased credit availability. Both variables are found to have a negative effect on the CAB. However, the unexplained residual for the Netherlands CAB is relatively high at about 5% of GDP, which is close to the IMF (2013) estimations for the Netherlands for 2013. Therefore, both analytical studies do not perform well when explaining the large Dutch surplus, since two-thirds of the surplus cannot be explain by their CAB determinants.

 $^{^{32}}$ European Commission (2014) include a financial centre dummy in their regression for the Netherlands, Switzerland, Luxembourg and Singapore and its estimated coefficient signals the CAB to be 3.4% GDP higher in these countries. However, as mentioned before, this dummy may be picking other countryspecific characteristics common to these countries.



Figure 3: Current account determinants in the EU, 2012

Source: Taken directly from European Commission (2014). Notes: Green and blue bars stand for the fundamental determinants and yellow bars represent policy and other temporary factors.

3.3.3 Other studies

Barnes et al. (2010) estimate the CAB regression using data for 25 OECD countries and they analyse how much of the current account imbalances in each country in the period 2004-2008 can be explained by fundamentals (i.e. CAB determinants). In Figure 4 we observe that after excluding the fundamentals, there is still some unexplained residuals left which are high for Greece, Portugal, Spain, the USA, Germany and the Netherlands. In general, we can see that both current account deficits and current account surpluses are under-estimated especially for the Eurozone countries and the US. In particular, its shows a large positive residual for the Netherlands. The factors which are not included by Barnes et al. (2010) and may be important are the relatively large pension funds which may have caused higher private saving than otherwise, and a relatively large presence of multinationals in the Netherlands, which have an effect through larger net exports and FDI flows (cf. Eggelte et al., 2014; Jansen and Rojas-Romagosa, 2015).

Figure 4: Determinants of the current account balance (contributions to current account balances over the period 2004-2008)



Source: Taken directly from Barnes et al. (2010).

Jaumotte and Sodsriwiboon (2010) also estimate the CAB determinants and calculate their contribution to the CAB change in the Northern and Southern European countries between 1989-1992 and 2005-2008. Their results are shown in Figure 5. The most remarkable result is that –besides time dummies– the European embership is the most important determinant to explain the CAB deterioration in Southern European countries.

Figure 5: Eurozone, contributions to changes in current account balances, 2005-2008 versus 1989-1992



Source: Taken directly from Jaumotte and Sodsriwiboon (2010) .

4 Conclusions

From the theoretical literature, we find that there are several explanations to account for persistent surpluses. The case of the Netherlands fits into some of these theoretical explanations: relative high income levels, developed financial system, ageing population, member of the EMU and presence of natural gas.

The empirical literature on the current account determinants identifies additional factors that can explain a current account surplus: positive net foreign assets (i.e. a positive NIIP), relatively low expected GDP and productivity growth, a higher share of working age population and a higher old-age dependency ratio forecast, sustainable fiscal policies, and financial liberalisation. However, most of the empirical studies also have the limitation of having a large unexplained component for the Dutch CAB.

The main conclusion from this survey, is that the current account balance is the end-result of several economic decisions –saving, foreign and domestic investment, trade and international finance– that are made by several economic agents (firms, households and government) over time. As such, both theoretically and empirically there are a large number of variables that affect the CAB. Moreover, it is not trivial to assign the comparative contribution of these determinants and variables. Therefore, it is hard to explain the CAB using only a few variables, but it is necessary to understand that many determinants (some of them related) are important.

Using the external balance assessment (EBA) developed by the IMF (2013) it is possible to obtain a general view on how the overall explanation of country-specific CAB fairs. In the case of the Netherlands, the EBA analysis finds that both the cyclical and the policy gap components are not very significant in explaining the overall surplus, while fundamentals explain less than half of the surplus. Roughly the same results are found by the European Commission (2014). Thus, both studies do not perform well when analysing the Dutch surplus by using traditional CAB determinants. This leaves open questions regarding the other important factors explaining the Dutch large and persistent surplus. Other factors that are not usually included in the empirical studies seem to be significant: the Dutch pension funds, the role of MNEs head-quartered in the Netherlands and the Eurozone imbalances. These factors are further explored in an accompanying background document (Jansen and Rojas-Romagosa, 2015).

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Appendix: Current account surpluses in Switzerland and Ireland

Some recent papers focusing on Switzerland and Ireland current account balance notice multinationals' and pension funds role in their current account surpluses. Switzerland got attention due to high CAB and there were several papers trying to discern the factors of an increase in the CAB, one of them is (as in the Netherlands) the important role played by pension funds. Ireland's current account surplus was not that large but it got attention due to many multinationals relocating there and economists were trying to evaluate the distortions to their national accounts and BoP statistics.

Switerland

Jarrett and Letremy (2008) analyse the reasons why Switzerland had such a large current account surplus. The possible reasons they mention are:

- Many multinational companies owned by foreigners are based in Switzerland (this increases savings and investments abroad)
- Mandatory second-pillar retirement saving;
- Tax burden is shifted forward in time (contributions to the pensions funds are exempt of taxes and the pension payments are taxable);
- Low interest rates in Switzerland;
- Precautionary savings due to income volatility;
- "carry trade" (borrowing in a low-interest rate currency and lending in a high-interest rate currencies).

The IMF (2007) state that the increase in the Switzerland current account surplus is due to the globalisation and the expansion of the Swiss multinationals. They note several reasons for the high Switzerland current account surplus:

- Large net foreign assets consisting of the pension funds' and Swiss multinational assets.
- Very profitable Swiss multinationals.
- An increase in the merchandise trade balance.
- Foreign holding companies: as residents' their earnings are in the Swiss current account surplus but they are mostly invested abroad.

Ireland

FitzGerald (2013) notes the importance of the multinational companies retained profits effects on the Ireland current account and GNP. He argues that the retained profits of the multinationals which are registered but do not operate in the Ireland should not be accounted in the current account balance and the GNP. He calculates that this would

significantly lower the CAB in Ireland (from 1.4% to the -3.2% in 2011 and from 6.1% to 0.6% in 2012).

Cussen (2014) criticizes the indicators used by the European Commission in the Macroeconomic Imbalance Procedure showing that five of them are distorted for countries with significant multinational companies activities. Five affected indicators are: the current account balance, the net international investment position (NIIP), private sector debt, private sector credit flows, change in total financial sector liabilities. Cussen (2014) gives FitzGerald (2013) calculations as correction needed for the current account. She holds on to the Ireland example and then also shows that a large part of the negative Ireland NIIP is due to the non-financial corporations (NFCs) and big share of them belongs to foreigners.

Next Cussen (2014) analyses the private sector debt and private sector credit growth. She shows that two thirds of the Irish private debt consists of the NFCs debt, so this again shows large potential distortion to the private sector debt and private sector credit growth due to the foreign multinationals. Financial sector liabilities indicator is criticised for several reasons. Firstly, it is distorted by the financial multinational companies' activities. Secondly, the institutions which debt is aggregated as financial sector debt are very different by the funding structure. Lastly, funding-maturity and currency mismatches which are also important for the financial risk are not taken into account.

However, a very special consideration is that, unlike the Netherlands, the Irish official statistics do not distinguish between MNEs that are actually economically active in the country and those that have a domestic address for legal and taxation reasons. In the Netherlands the last group of companies is classified as Special Financial Institutions (SFIs) and are treated separately in the national accounts and BoP statistics. This distinction makes the statistical issues related to MNEs less important in the Netherlands than in Ireland.

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