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ABSTRACT

Merchanting and Current Account Balances*

Merchanting is goods trade that does not cross the border of the firm's country of residence. Merchanting grew strongly in the last decade in several European economies and has become an important determinant of these countries' current account. Because merchanting firms reinvest their earnings abroad to expand their international activities, this practice raises national savings in the home country without increasing domestic investment. This results in a larger current account surplus. To show the empirical links between merchanting and the current account balance, two exercises are performed in this paper using a sample of 53 countries during 1980-2011. The first exercise estimates the savings impact of merchanting countries in empirical models of the medium-term current account. The second exercise shows that merchanting's impact on the country's current account is sensitive to firm mobility.

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1 Introduction

Merchant trade is an offshore business in services for homogenous goods such as commodities, microprocessors, and pharmaceuticals. A merchanting firm purchases goods from a supplier abroad and sells these to a buyer abroad without the goods entering or leaving the firm's country of residence. These goods do not undergo any transformation in processing between purchase and resale. Thus a merchanting firm acts as an intermediary between companies located abroad that produce a good and companies that demand the good by providing storage and transportation services. The difference between revenues from the sale of the merchanter's goods and the purchase of the goods together with the incurred expenses to finance, insure, store, and transport them is recorded as (net) merchanting. The asymmetrical accounting of merchanting is special in that the service is recorded as a positive entry in the Balance of Payments (BoP).[1]

Merchanting has recently become an important export in several European countries. Figure 1 plots merchanting as a share of GDP since 1990 for the four largest merchanting countries: Finland, Ireland, Sweden, and Switzerland. The dynamics for Ireland are particularly striking: the merchanting-to-GDP ratio grew rapidly from 1.7% in 2004 to 4.7% in 2010. Similarly, Switzerland's merchanting-to-GDP ratio of 3.8% in 2011 is not trivial. The same figure also shows that merchanting grew steadily after 2000 and continued to expand even during the financial crisis. Part of this expansion is explained by the observation that many merchanting firms continued to relocate to merchanting countries during the global economic downturn. In the Swiss case, Beusch and Döbeli (2013) show that half of the merchanting firms moved to Switzerland after the financial crisis. At a time when the Swiss franc appreciated strongly, firm relocation cushioned adjustments in the current account. Such a development makes it difficult to identify

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[1]The users of merchanting services record their transactions either as an imported or exported good. Other components of the BoP are symmetric in that positive and negative entries are possible. Negative entries for merchanting in the BoP do arise, however they are in general small and non persistent (i.e., a duration of negative profits for aggregated merchanting services is unlikely.).

merchanting's effects for current account adjustment even in the face of large global shocks. Further, we know very little about the global scale of merchanting and its potential impact on a country's external balances.

This paper's objective is to show that merchanting is coincident with movements in the current account and that the relocation of merchanting firms can either mitigate or magnify current account adjustment. Because merchanting firms reinvest their earnings abroad to expand their international activities in logistic services, the firms' activities raise national savings in the home country without increasing domestic investment. This increase in the savings-investment gap impacts the current account.[2]

To show the empirical linkages between merchanting and the current account, two exercises are performed in this paper. The first exercise estimates the savings impact of merchanting countries in empirical models of the medium-term current account. In regression models that control for a range of fundamental variables, merchanting is shown to impact positively the current account-to-GDP and the savings-to-GDP ratio but not the investment-to-GDP ratio. The second exercise shows that merchanting's impact on the country's current account is sensitive to firm mobility. Simulations for a small and large country are presented.

These new empirical results for merchanting contribute to the open economy literature on external adjustment in two ways. A first contribution is to expand the list of determinants that explain medium-term current account behavior. The empirical model used in this study is closely related to empirical models in Chinn and Prasad (2003), Gruber and Kamin (2007, 2009), Chinn and Ito (2006, 2007, 2008), Lee et al. (2008), and Gagnon (2011). Using pooled regressions with cluster-corrected standard errors for

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[2]The merchanting channel for the current account is different from the behavior of intertemporal consumption smoothing in commodity exporting countries, see Van der Ploeg and Venables (2012). In commodity exporting countries, a Sovereign Wealth Fund is often created on precautionary savings grounds to insure future generations and current investment decisions from price swings in commodities. Instead, as noted in Pirrong (2014), merchanting in commodities trading is sensitive to swings in volumes and less so in prices.

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a sample of 53 countries from 1980 to 2011, we show that merchanting as a share of GDP increases the medium-term current account balance-to-GDP ratio on average by 3 percentage points.

A second contribution is to show that the relocation of merchanting firms to other countries has large effects on a country's current account balance. Merchanting is a highly concentrated industry. Therefore, the relocation of individual firms can unleash significant effects in small economies. Irrespective of size, merchanting firms are highly mobile. They employ a flexible and highly skilled staff and do not undertake large fixed investments in the domicile country. Our empirical results on firm relocation add to the growing literature on the interconnection between firm activities in a globalized world and international macroeconomics.[3]

The paper is organized as follows. Section 2 defines merchanting. The same section provides statistical evidence that shows merchanting's high level of persistence even during the financial crisis. Section 3 describes the empirical methodology and the data used in the panel regressions. Sections 4 presents the empirical results. Section 5 concludes.

2 Merchant trade: definitions and data

This descriptive section has three subsections. The first subsection addresses definitional issues. The second subsection presents information of the main characteristics for merchanting firms. Summary statistics used to motivate the empirical analysis in section 4 are presented in the third subsection.

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[3]This field is rapidly growing. One strand of the literature emphasizes the importance of firm size as a propagation of idiosyncratic shocks, see Gabaix (2011) and Kleinert et al. (2012). Another strand highlights the importance of capturing the microstructure of trade relationships to better replicate international business cycles, see Bems and Johnson (2012), Johnson and Noguera (2012), and Johnson (2012).

2.1 Definitions

The IMF defines merchanting as the purchase of goods by a resident of the compiling economy from a nonresident combined with the subsequent resale of the same goods to another nonresident without the goods being present in the compiling economy, see the IMF Balance of Payments Manual, fifth edition (1993, page 68).[4] The amount recorded under merchanting is the amount received by the domestic resident from the foreign customer less the amount paid by the domestic resident to the foreign goods provider. The net profit resulting from these two transactions is recorded as a positive export value of business services, while any net loss is recorded as a negative export value of business services. Hereafter, we refer to net merchanting simply as merchanting.

Merchanting can arise from different sources and for any homogeneous tradeable good.[5] A traditional form of merchanting is commodity trading where the merchanting firm buys and sells the goods from third parties and trades at world prices. A different case is multinational coordination activity, where merchanting is the result of the international fragmentation of production processes within a firm and reflects the organizational plans of a global multinational that locates merchanting services in one country, while the underlying production and ultimate distribution is elsewhere. In this case, the income from merchanting ultimately accrues to the foreign multinational and transfer pricing strategies might generate a measured current account surplus.[6]

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[4]In this paper, the analysis for merchanting uses the IMF BPM5 classification, which treats merchanting as a component of trade in services.

[5]This includes, for example, hard commodities like crude oil, metals, or minerals; soft commodities like hazelnut, or grain; as well as computer chips, books, or chemical raw materials.

[6]The same may hold for commodity traders that have vertically integrated production and distribution. The locational choice for merchanting services is often driven by tax optimization strategies. See Swiss National Bank (2012) for more information on merchanting.

2.2 Characteristics of merchanting firms

Merchanting's growth benefited strongly from the expansion of the global supply chain. The fragmentation and relocation of production processes have played a crucial part in merchanting's development. Although we are unaware of any empirical study that examines the microstructural features of merchanting firms, several observations can be offered.

A first feature is firm mobility. Beusch and Döbeli (2013), for example, show that almost half of the 90 merchanting firms operating in Switzerland in 2011 had relocated from abroad after the financial crisis.[7] The arrival of new merchant firms to Switzerland is the main reason why Swiss merchant trade continued to expand even during the financial crisis. In the face of global contraction, the continuous arrival of new merchant firms can partly be explained by the favorable domestic infrastructure (i.e., tax environment, liberal regulation, high concentration of merchant firms and support services to merchant firms such as law firms). Figure 2 shows that the income of merchant firms already domiciled in Switzerland before 2008 (marked in dark blue) decreased by 15.9% between 2008 and 2009, which is equivalent to 1.3% of GDP. This reduction in income shows that established merchanting firms were strongly affected by the financial crisis.

The active recruitment of merchanting firms by several countries underscores their mobility. Singapore, for example, created the Global Trading Programme in 2001. The intention is to attract mobile commodity trading houses with low taxes and light regulation.[8] Malaysia has a similar relocation program designed to attract 20 commodity trading firms by 2017. Firm relocation also explains why merchanting activities are concentrated in several cities: Dublin, Geneva, Hong Kong, Houston, London, and Sin-

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[7]Beusch and Döbeli (2013) also show that in the period from 1990 to 2011 most of the merchanting firms are clustered in Geneva and Zug, five merchanting firms in Switzerland had been liquidated, four merchanting firms mergered, and no merchanting firm resettled abroad.

[8]See for example the information under `http://www.rikvin.com/taxation/singapore-corporate-tax-rates/` as well as "Singapore's low taxes lure Trafigura," Financial Times, 22.5.2012.

gapore.[9] This agglomeration can partially be explained by the tax environment of the merchanting countries. The average corporate tax rate is lower in countries where merchanting is prevalent compared to countries where merchanting is absent.[10]

A further feature of merchanting firms is the importance of international communication networks between buyers and sellers. This point is illustrated by Swiss merchanting. A large share of Swiss merchanting activity is in commodities. The possibility that a seafaring activity is conducted in a landlocked country stems from the fact that factors beyond transport costs matter: well established communication networks, the proximity of financial services, a non restrictive regulatory environment, and a flexible labor market are all equally important for Swiss merchanting.

Another feature of merchanting is that it is not concentrated in a specific sector across the globe. For example, in Switzerland, merchanting is concentrated in commodities, chemicals, and pharmaceuticals. In Finland, electronics and computers are the main merchanting activities, whereas in Ireland, publishing and chemical processing are important.[11] This heterogeneity across sectors makes it difficult to create a merchanting index that captures their activities across time.[12]

2.3 Properties of the data

The number of economies reporting merchanting has increased in recent years. Nevertheless, only 67 economies reported merchanting data to the IMF for 2010.[13] Some of the largest economies (including China, the United Kingdom, and the United States)

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[9]Furthermore, merchanting is often highly concentrated among large firms. In the Irish case, the top ten companies account for approximately 70% to 80% of overall merchant trade in 2010 (Private correspondence with the Irish Central Bank.) Similar to Ireland, the eight largest merchanting firms are responsible for 70% of Switzerland's merchanting activity (see Beusch and Döbeli (2012)).

[10]See Table A2 in the Appendix.

[11]This information is based on email exchanges with national authorities.

[12]The problem is further compounded by the fact that often national statistical agencies do not record merchanting's export destination or the activity's sector.

[13]Close to 200 countries reported balance of payments data to the IMF for that year. Among the 67 countries with merchanting data in 2010, 15 entries registered no merchanting activity.

and some likely important merchanting economies (including Hong Kong and Singapore) did not report merchanting data to the IMF.[14]

Following the existing literature on the determinants of the medium-term current account, such as Lee et al. (2008), we choose our sample consisting of 53 countries that covers about 90% of the world GDP. The countries in our sample are listed in the Appendix. Within our sample, merchanting data is available only for 27 countries from the IMF BOPS in 2010.[15] Therefore we extend and expand the available data on merchanting by using data provided by central banks and/or national statistical offices. Thus our dataset has merchanting data for 35 countries in 2010, and overall there is merchanting data for 38 countries. Still, merchanting data for some important countries are missing in our sample.[16]

Figure 3 plots the merchanting-to-GDP ratio on the horizontal axis and the current account-to-GDP ratio in 2010 for 35 countries with available merchanting data. The figure shows that merchanting is relatively small for most countries. However, in most countries with a sizeable level of merchanting activity, i.e., greater than 0.5% of GDP, merchanting contributes positively to the current account. We observe that the positive merchanting positions are large and concentrated among many small open economies with current account surpluses. By contrast, the negative merchanting positions tend to be small and are dispersed across many countries without a clear relationship with the current account. Based on the BoP accounting definition and the observations from

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[14]Some countries provided data in the past but no longer do. The the Netherlands is a case in point. The problem of missing observations for the non reporting countries is compounded by an underreporting bias for those countries that do report. First, there is the problem of lagged reporting when new firms are identified to be engaged in merchanting activities. Second, not all merchanting firms are identified in the country BoP surveys. We do not attempt to correct for these problems, but note that these biases understate results presented in section 4.

[15]However, merchanting is equal to zero for two countries.

[16]Hong Kong's Census and Statistics Department publishes data on the "gross margin involved in merchanting" as part of Hong Kong's offshore trade statistics. We choose, however, not to include this data because of the high value (11% of GDP in 2011) and Hong Kong's trade links with China suggest that merchanting in Hong Kong is not comparable with the IMF definition in the Balance of Payments Manual. Our sample captures a merchanting activity of US 97 billion in 2011: a fivefold increase from 2000.

Figure 3, our empirical analysis focuses on countries with a positive value in merchanting.

Table 1 provides statistical information for the 13 countries that we call merchanting countries in the empirical section 4. These countries have a merchanting-to-GDP ratio of 0.5% or higher for at least one year in our sample from 1980 to 2011. All measures in Table 1 are expressed as a share of GDP. The country rank for merchanting, shown in the first column, is based on the average merchanting value from 2008 to 2011. Next, the table presents mean, standard deviation, minimum, and maximum values for merchanting based on annual data from 2000 to 2011. Four countries have an average merchanting income greater than 1% of GDP. These are Finland, Ireland, Sweden, and Switzerland. The standard deviations are small and do not show large discrepancies. The minimum values show that merchanting countries, except for Malaysia, register positive merchanting from 2000 to 2011.[17]

The last four columns of Table 1 show data on merchanting/GDP, the trade in goods balance/GDP, the trade in services balance (excluding merchanting)/GDP, and the current account/GDP for these countries. All figures are net balances for the year 2011. For Belgium and Finland, merchanting is larger than the goods and the service balance (excluding merchanting). The last column shows that almost all merchanting countries have positive current account/GDP ratios.

To motivate the empirical analysis in section 4, Figure 4 offers a descriptive observation as to whether merchanting mitigates adjustments in the trade balance in merchanting countries.[18] It is generally believed that the trade imbalance can be corrected through external demand or exchange rate adjustments. To determine whether merchanting behaves similarly to other trade components, Figure 4 plots merchanting, trade in goods,

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[17]The IMF Balance of Payments Statistics includes values for Ireland for 2000 and 2001 (-1.1% and 0). Based on discussion with the Central Statistics Office of Ireland, they only started to collect merchanting data in 2004. We thus ignore the earlier IMF values. It should also be noted that the Belgian time series includes breaks due to methodological changes from 2006 to 2007 and 2009 to 2010.

[18]The three observations for Luxembourg are not displayed but follow similar patterns as described further in the text.

and trade in services (excluding merchanting) for the last decade. Each series is expressed in terms of net balances and as a share of GDP. For each country, merchanting is less volatile than the other two series. A striking feature of the three time series is that merchanting was hardly affected by the financial crisis (post 2007) or by the great trade collapse (2008-2009), whereas the other two series reveal temporary or even structural shifts. Figure 4 also shows that merchanting has been increasing or stable over time for all merchanting countries. Furthermore, it also shows a slow compositional shift from trade in goods towards merchanting in countries like Switzerland and Sweden.

The analysis on positive trade balances in merchanting is also motivated by the linkages between export volatility and external savings.[19] For example, it is argued that volatile oil exports lead to an increase in precautionary savings, which results in a positive external balance.[20] By contrast, a visual inspection of Figure 4 suggests that merchanting firms' revenues exhibit a high level of persistence on the aggregate country level. Merchanting firms invest their earnings abroad to expand their logistic activities in storage and transportation, see Pirrong (2014). This structural feature of merchanting firms increases the savings-investment gap and thereby increases the current account surplus.[21]

A simple regression analysis supports the view that merchanting is highly persistent. Table 2 presents panel AR(1) regressions for those 38 countries for which we

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[19]There is a large literature that examines the links between export income volatility and external savings. Recent examples include Cherif and Hasanov (2012) and Bems and de Carvalho Filho (2011).

[20]As a consequence, volatile export revenues of oil producing countries are often filtered out of empirical models of the medium-term current account. See in particular Lee et al. (2008), Chinn and Prasad (2003), Gruber and Kamin (2007, 2009), Chinn and Ito (2006, 2007, 2008), and Gagnon (2011).

[21]A further consideration for external adjustment, not pursued in this paper, is a firm's sensitivity to exchange rate movements. Bosworth and Collins (2010), Crane et al. (2007), and Wren-Lewis and Driver (1998) highlight the observation that external adjustment through trade in services is slower than through trade in goods. The common view is that an exchange rate appreciation facilitates external adjustment to correct a trade surplus. Because a large share of merchanting activity brings together buyers and sellers of standardized products (i.e., commodities, microchips, etc.) traded outside of the national borders, the volume of this service is heavily dependent on global demand and less on domestic currency movements. This means that merchanting should be less sensitive to exchange rate movements than say trade in goods.

have merchanting data. The coefficient for the lagged variable is considerably higher for merchanting (i.e., 0.82) than for trade in goods (0.72) and trade in services excluding merchanting (0.79). It is also important to note that the crises dummies for the years 2008 and 2009 are not significant for merchanting. This says that merchanting was not heavily influenced by the financial crisis. This is not true for the other trade components.

To highlight the smoothness of merchanting over the financial crisis, variances of the residuals from the AR(1) regression in Table 2 are presented in Table 3. In the samples considered, the variance of the residuals for merchanting is negligible compared to that of trade in services and that of trade in goods. In particular, during the post-crisis sample the variance of the residuals for trade in services and trade in goods increased, while merchanting's variance for the post crisis period is similar to the pre-crisis sample.

The properties of increasing size and high persistence mean that merchanting does not behave like other components in the trade balance. These properties also imply that the current account balance of merchanting countries becomes more sticky. In other words, larger adjustments in either the exchange rate or external demand are needed to correct imbalances in the merchanting countries. These issues are analyzed more formally in the next sections.

3 Empirical methodology

The empirical framework used to estimate the medium-term determinants, i.e., four-year averages, on current account balances follows Lee et al. (2008).[22] In this model, the pooled regression is specified as follows:

$$CA_{it} = \alpha + \beta X_{it} + \gamma D_{it} + \epsilon_{it}, \tag{1}$$

[22]The model by Lee et al. (2008) has been updated by Phillips et al. (2013) and expanded by Sastre and Viani (2014). These models focus on the cyclical nature of the current account and consider the normative contribution of policy variables. Because we are interested in the structural nature of merchanting, the strategy developed by Lee et al. (2008) is used.

where CA_{it} is the current account balance of country i expressed as a share of GDP for period t (i.e., four-year average). Similarly, X_{it} is a vector of macroeconomic and demographic variables, D_{it} captures institutional or structural features through dummy variables, and ϵ_{it}, the error term, is assumed to be independent of the explanatory variables and normally distributed. In our setup, equation (1) is extended to include merchanting:

$$CA_{it} = \alpha + \beta X_{it} + \gamma D_{it} + \rho M_{it}^D + \epsilon_{it}, \tag{2}$$

where M_{it}^D is a dummy and captures the merchanting, M_{it}, of country i. The merchanting dummy, M_{it}^D, is $+1$ if $M_{it}/GDP_{it} > 0.5\%$ in any year for a particular period; otherwise 0. A threshold of 0.5% is used to capture merchanting effects of a certain volume. Merchanting's impact is expected to act positively on a county's current account. The sample of 13 merchanting countries is given in Table 1.

The use of the merchanting dummy is motivated by the poor quality of the merchanting data. We suspect that merchanting is underreported (or enters elsewhere as an export in the BoP). Also, to test the robustness of merchanting, the dummy variable can be expanded for those countries that are believed to be active in merchanting but do not report it. As an alternative to the merchanting dummy, we also report OLS and IV regressions using the actual data. Apart from measurement issues, the IV regressions are also motivated by the fact that merchanting enters endogenously (i.e., relocation due to tax changes, networking effects, etc.) in equation 2.

The selection of the remaining variables follows Lee et al. (2008) and covers 53 countries for the sample from 1980 to 2011.[23] The panel is unbalanced, meaning that for some variables the length of the series varies by country due to missing data. The Appendix lists the data sources and offers brief comments.

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[23]See Appendix for a list of the countries.

The macroeconomic and demographic variables, X_{it}, in equation (2) are standard in the literature and are briefly discussed next.[24] These variables include the fiscal balance, demographic determinants, net foreign assets (NFA), and economic growth. For the fiscal balance, it is assumed that a higher government budget balance raises national saving. This, in turn, increases the current account balance.[25] The fiscal balance in equation (2) is defined as the ratio of the general government budget balance to GDP in deviation from the average budget balance of trading partners: if the government budget balance improves in all countries, there would be a world-wide macroeconomic effect but little expected effect on the current account balance of each country.

The demographic determinants assume that a higher share of the economically inactive dependent population reduces national saving and decreases the current account balance. To proxy for this, Lee et al. (2008) include an old-age dependency ratio as well as population growth. The intention of the latter variable is to capture the share of economically dependent young people. Both demographic variables are measured in deviation from trading-partner averages and are expected to decrease the current account balance.

NFA enters as a determinant in equation (2). The assumption is that economies with a high NFA benefit from higher net foreign income flows, which tend to create a positive association between NFA and current account balances. The initial NFA position is used in equation (2) to avoid capturing a reverse link from the current account balance to NFA.

Economic growth is included for two reasons. If economies in the early stages of development have a greater need for investment, this is often financed through external borrowing. As developing economies grow and approach the income levels of advanced economies, their current account balances should improve. Alternatively, if countries are

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[24]See also Appendix 2.1 in Lee et al. (2008) for further discussion of the dataset.

[25] Only in the case of Ricardian equivalence, where private saving fully offsets changes in public saving, is the link broken between government budget balances and current account balances.

at a similar stage of development, the stronger economic growth relative to its trading partners should lower the current account balance.

Equation (2) includes two measures of growth. The first variable is the ratio of GDP per capita in purchasing power parity terms to the U.S. level, which Lee et al. (2008) define as relative income. This variable is assumed to measure the relative stage of economic development. The second growth variable is the deviation of the real per capita GDP growth rate from its trading partner average. This variable is used to capture relative economic growth. In equation (2), the current account balance is expected to increase with relative income but to decrease with relative growth.

Equation (2) also includes countries' oil balance. Higher oil prices increase the current account balance of oil-exporting countries and decrease the balance of oil-importing countries. In equation (2), Norway is treated as a separate oil country because of its high level of intergenerational savings.

Several dummy variables, D_{it}, are included in equation (2) to capture country or industry specific features.[26] A dummy that controls for small open economies with large financial centers is included among others. The evidence in Lee et al. (2008) shows that financial centers tend to run substantial current account surpluses. This effect is captured with a dummy for the following countries: Belgium, Hong Kong, Luxembourg, the Netherlands, Singapore, and Switzerland.

Empirical evidence shows that crisis dummies have an impact even after controlling for a range of macroeconomic factors. Chinn and Ito (2006), Gagnon (2011), and Lee et al. (2008) show that economic crises tend to unleash strong current account adjustments as a by-product of macroeconomic contraction because of the reduced availability of international financing. Two sets of crises dummies are considered. The first dummy controls for the Asian crisis. Aizenman (2008) and others argue that Asian countries increased their precautionary savings after the Asian crisis to insure themselves against

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[26]In the four-year averages, the dummy is set to +1 if it takes value +1 in one of the four years.

future crisis. This dummy acts as a levels shift. The second dummy captures episodes of banking crises. We use the Laeven and Valencia (2010) measure of international banking crises. The motivation is to capture temporary output losses that are linked to banking crises.

A last set of dummy variables control for aging societies and the introduction of the euro. These dummies have not been used extensively in the literature but do enter the Lee et al. (2008) setup. The aging dummy is +1 for Germany, Italy, Japan, and Switzerland and 0 for the rest. This dummy treats the four aging societies as outliers. Further, we introduce a first euro dummy that takes value +1 for Germany starting in 1999 and 0 for all other countries, and a second euro dummy that takes value +1 for Greece, Portugal, and Spain, and 0 for all other countries. The intention here is to capture potential extreme countries within the currency union. In the specification where we replicate Lee et al. (2008), there is only one euro dummy with value +1 for Germany, -1 for Greece, Portugal, and Spain, and 0 for the rest.

4 The empirical impact of merchanting in medium-term CA models

This section presents the empirical results. All regressions are with clustered standard errors. The first set of results presented in subsection 4.1 shows that merchanting is a robust determinant of the current account. Merchanting's impact of 3% in the baseline specification of equation (2) is sizable. Further robustness checks are presented in subsection 4.2. The regressions show that the results from 4.1 are not sensitive to different specifications of the merchanting dummy. Subsection 4.3 presents IV regressions to account for endogeneity and measurement errors. The last set of results in subsection 4.4 highlight the importance of firm relocation. The empirical results show that the relo-

cation of merchanting firms to a single economy does not weaken merchanting's impact found for the baseline estimates.

4.1 Merchanting countries in medium-term current account models

Our baseline regressions of equation (2) are presented in Table 4. Column 1 shows regression estimates for the medium-term model as specified by Lee et al. (2008) without dummy variables. All the estimated coefficients are correctly signed, however the demographic and growth variables are statistically insignificant. Column 2 shows the same regression but now adds the merchanting dummy. This variable has a coefficient of 0.03 and is statistically significant at the 1% level. This result says that the current account is increased by 3% for those countries that have merchanting exports greater than 0.5% of GDP. In other words, merchanting is coincident with an over-proportional increase in the current account. Because the unweighted average size of the merchanting-to-GDP ratio when the merchanting dummy is +1 is 0.96%, this implies that the estimate of merchanting's impact is greater than the benchmark of unity (i.e., one dollar of merchanting raises the current account by one dollar).

One interpretation of the large coefficient is that the dummy variable is capturing related activities to merchanting. For commodities, for example, merchanting entails storage and transportation but our dummy is also possibly capturing an additional transformation of processing. An alternative interpretation is a compositional effect: merchanting is underreported, but the missing activity is incorrectly attributed to another component in the BoP. In this case, merchanting is understated but the current account is not. In subsection 4.3, we present IV regressions based on actual merchanting to overcome the potential problem of measurement errors as an alternative to the dummy variable estimates.

Next, the Asian crisis dummy is added to the specification. The regressions with and without the merchanting dummy are shown in columns 3 and 4. The regression estimates

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in column 4 show that merchanting unleashes almost the same level of external savings as the Asian crisis (i.e., 5% for the Asian crisis versus 4% for the merchanting dummy). Both dummies are highly statistically significant.

A further step to determine the robustness of our estimate is to examine whether merchanting holds up with other dummies that have been argued to be important. The regressions in columns 5 and 6 include the small financial centers dummy, the banking crisis dummy, the euro dummy, and the aging dummy. The estimated coefficient for the merchanting dummy remains stable at 3%. The regression in column 6 shows that the strength of these dummy variables is weakened once merchanting is introduced. For example, the dummy for small financial centers is no longer significant in column 6. The significance of the euro dummy is only significant at the 10% level when merchanting is introduced. Similarly, the banking and the aging dummies never figure prominently with or without merchanting.

Another simple check is to compare the results in Table 4 with the estimates from Lee et al. (2008). For this exercise, we shorten our sample from 1980 to 2007 and consider the alternative specification in Lee et al. (2008) based on the lagged current account.[27] These results are given in Table 5. Columns 2 and 5 show that the coefficient on the merchanting dummy remains stable at 3% and is significant in the shortened sample for the NFA. The same is true for the lagged capital account specification, however the estimated coefficient is lower. Our estimates for the NFA specification in column 1 are close to the estimates of Lee et al. (2008) shown in column 3 under the IMF heading. The main difference in the coefficients is for population growth. In Lee et al. (2008), this coefficient is about six times smaller. Instead for the lagged current account specification shown in columns 4 to 6, there is the additional difference for the coefficient on the fiscal balance. Our estimates show that this coefficient is five times smaller and statistically

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[27]The Lee et al. (2008) sample is from 1973 to 2004. Hence, we are unable to fully replicate their results.

insignificant compared to the estimates by Lee et al. (2008), which are reproduced in column 6.

Next we show that merchanting's impact on the current account operates through an increase in the savings-investment gap. To do this, Table 6 presents regressions for the current account-to-GDP, investment-savings-to-GDP, investment-to-GDP, and the savings-to-GDP ratio. The specification follows the baseline model (i.e., column 6 in Table 4). Table 6 presents the coefficient estimates for the merchanting dummy. The results show that the coefficient for merchanting dummy is positive and statistically significant with the investment-savings gap and savings, but not with investment.

4.2 Merchanting countries: robustness checks

In this subsection, alternative definitions of merchanting countries are shown to be robust in equation (2). The previous regressions were based on a single definition for the merchanting dummy, i.e., whether merchanting in a year for period t is greater than 0.5% with respect to GDP. The regression results with alternative definitions of merchanting countries are presented in Table 7.

The regressions show that the volume of merchanting activity is important for its impact on the current account. The regressions in the first three columns define a dummy variable equal to one if a country reports positive or negative merchanting values at least once during the four-year average. In each of these regressions, merchanting is not statistically significant. The regression in column 4 uses the definition from Table 4 with a threshold of 0.5%. It is reproduced for completeness. Next, in the regression shown in column 5, the threshold for the merchanting-to-GDP ratio is increased from 0.5% to 1.0%. This change in the threshold has no impact on the regression estimates. There is no difference in the regression estimates shown in columns 4 and 5. Similarly, the regression in column 6 augments the threshold to 2.0% with no change in the coefficient and in statistical significance. These results show that the definition used in Tables 4

and 5 is robust to higher threshold levels.

A reasonable suspicion based on these results is that the size of the merchanting dummy is driven by the few observations with high merchanting-to-GDP ratios. Column 7 shows that this is not the case. The main result remains unchanged if two separate merchanting dummy variables are used. The first dummy takes the value one for observations with merchanting-to-GDP ratios between 0.5% and 2%, and the second dummy for those above 2% (identical to the dummy in column 6).[28] The coefficients of the two dummies are 0.03 and 0.04 and are both highly significant. From this evidence, we conclude that the merchanting result is not driven by the largest merchanting countries.

The robustness of the merchanting countries is further examined in two ways: expanding the number of merchanting countries in which no reported information is available and by reducing the country sample from 53 to 38. The first exercise expands the merchanting dummy for the United States, Hong Kong, and Singapore for the last two four-year averages. The second exercise reduces the sample to 38 countries for which we have merchanting data. Table 8 presents the regressions for these two exercises. The first column shows that the merchanting dummy remains significant even if we consider additional countries for which we have no data. The second column again shows that the merchanting dummy remains statistically significant even when the country sample is reduced. As expected in the reduced cross country sample the coefficient estimates differ sharply from the full country sample.

To demonstrate that our merchanting variable is a special activity missing in standard medium-term models of the current account and not merely a random subcomponent of the current account, a counterfactual exercise is performed with financial services.[29]

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[28]In an alternative specification, three dummies were included: the first dummy is +1 if M_{it}/GDP_{it} for observations between 0.5% and 1%, otherwise 0; a second dummy is +1 if M_{it}/GDP_{it} for observations between 1% and 2%, otherwise 0; and a third dummy is +1 if M_{it}/GDP_{it} for observations above 2%, otherwise 0. All merchanting dummy variables were again statistically significant and has similar coefficients as the merchanting dummy in the baseline regression.

[29]Obviously, this does not exhaust the list of suspects, however financial services does figure prominently with the importance of financial centers in current account regressions. Note also there are no obvious

Financial services may be defined as an upstream industry that is also important for merchanting. The objective is to show that a financial services dummy defined in a similar manner as the merchanting dummy with a threshold of 0.5% does not have the same coefficient of 0.03 or even better is not statistically significant.

Table 9 presents OLS regressions with financial services. The results show that financial services has a negative coefficient and its statistical significance is not robust. Column 1 shows the baseline regression of column 5 Table 6 without merchanting and without financial services. It serves as a reference for the regressions presented in columns 2 to 5. The OLS regression in column 2 is the baseline regression with merchanting with a coefficient of 0.03. Column 3 presents the same regression with financial services. In this regression, the coefficient on financial services is -0.02 and is statistically significant at the 5% level. In other words, a positive trade balance in financial services is associated with a lower current account. This odd result is partially explained by the offsetting increase in the financial center dummy. This financial center dummy has a stronger effect with the introduction of financial services. To determine the strength of financial services on its own, we next drop the financial center dummy. This regression, presented in column 4, shows that the coefficient for financial services is -0.01 and is statistically insignificant if the financial center dummy is dropped. Next, the regression in column 5 presents the estimates from the full model with merchanting and financial services. The robustness of merchanting's coefficient estimate of 0.03 and its statistical significance holds, while financial services' coefficient is negative and is not statistically significant. From this evidence, we conclude that merchanting is a special activity that has not been captured in medium-term current account models.

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candidates in which the BoP entry is strictly positive as in the case of merchanting.

4.3 Interpreting merchanting's impact with IV estimates

This section offers IV regression estimates of merchanting's impact on the current account based on the actual merchanting-to-GDP ratio. Our intention is to interpret the previous estimates by using an alternative estimation strategy that corrects for endogeneity and potential measurement errors. The IV strategy instruments for the merchanting-to-GDP ratio with the merchanting(rest of the world)-to-GDP(rest of the world) ratio.[30] For this exercise, the merchanting variable is defined as $M_{it}^*/GDP_{it} = M_{it}^D * M_{it}/GDP_{it}$, where M_{it}/GDP_{it} are the four-year averages for the merchanting-to-GDP ratio. The rest of the world instrument, $M_{it}^{RoW}/GDP_{it}^{RoW}$ first defines the set of j merchanting countries, when $M_{jt}/GDP_{jt} > 0.5\%$ for a particular year in period t. Next, if i is in the set of the j merchanting countries, the nominator of $M_{it}^{RoW}/GDP_{it}^{RoW}$ sums merchanting in the j countries except for country i, otherwise 0. For the denominator of $M_{it}^{RoW}/GDP_{it}^{RoW}$, it is the sum of GDP_j except for GDP_i.

The motivation for our instrument is based on information and communications technology used in merchanting. As noted in section 2, merchanting in a country tends to be sector specific. Thus merchanting from the rest of the world should not be correlated with the current account of country i. However, what is common about merchanting across countries is that it is a logistic and network service for homogeneous goods. Logistic and network services have expanded because of recent advances in information and communications technology. This technology enables intermediary parties to operate in a country that is independent from the final buyer and original seller.[31]

Tables 10 and 11 present estimates from the two-stage IV regressions. The evidence is consistent with the view that our instrumentation strategy is valid and that the

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[30] Another strategy uses the dynamic methods of Arellano and Bond (1991). Experimentation with this method revealed mixed results largely because the medium-term framework of Lee et al. (2008) has many variables and is not suitable for dynamic instrumentation.

[31] The clustering of a particular merchanting service for a particular country arises because important specialized activities in finance, legal services, and insurance, which support merchanting, are developed at the local level.

estimated impact of merchanting remains above unity when controlling for endogeneity and measurement problems. Further, the differences in the coefficient estimates between the OLS and IV regressions is small.

Table 10 presents only the coefficient and the standard errors of the instrument, $M_{it}^{RoW}/GDP_{it}^{RoW}$, from the first-stage regression. The coefficient of the instrument is positive and highly significant for different threshold levels: 0.5%, and 1.0%.[32] In each specification, the instrument passes tests of weak identification. The Kleibergen and Paap (2006) statistic as well as the F-statistic from the first-stage regressions reveal that the criticism of weak instruments is not an issue. A further test of our instrument shows that the instrumentation strategy does not work for financial services. The coefficient for financial services (rest of the world), shown in column 4, is insignificant.

The second-stage IV regressions are presented in Table 11.[33] As a means for comparison, the OLS regression is presented in column 1. Here, merchanting has a coefficient of 1.6 in the OLS regression. This says if the merchanting-to-GDP ratio is greater than 0.5%, then on average the CA-to-GDP ratio will increase by an amount 1.6 as large as the merchanting-to-GDP ratio. The second column shows the second-stage IV regression with the merchanting variable with a threshold of 0.5%. Merchanting has a significant coefficient of 2. The coefficient differences in the OLS and IV models are small. Column 3 performs the same regression as in column 2 but with the threshold set to 1.0% instead of 0.5%. In this IV regression, the coefficient for merchanting decreases slightly from 2 to 1.7. As a counterfactual exercise, column 4 shows that the instrumentation strategy for merchaning does not work for financial services.

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[32]At the 2.0% threshold there are too few observations.

[33]The banking crisis dummy was dropped in the regression presented in Table 11. This was done because the banking crisis dummy was always insignificant in the previous regressions and was correlated with our instrument.

4.4 The relocation of merchanting firms

Merchanting is subject to firm relocation.[34] In section 2.2, the evidence showed that the relocation of foreign merchanting firms to Switzerland was not trival and it was noted that several Asian countries seek to attract merchanting firms as a national objective. In this section, we consider the impact of firm relocation for a small and large country. Our motivation is to show that firm relocation can result in large swings in the current account.

The relocation exercise assumes that global merchanting activity relocates either to Singapore, a small country, or the United States, a large country, in 2004. For this exercise, we subtract the nominal values of merchanting from all countries' current account starting from 2004 onwards, as well as, from their GDP. We add these values to the data either for Singapore or the United States. Next, we calculate new four-year averages for merchanting-to-GDP ratios for all countries for 2004-2007 and 2008-2011. All other variables that enter the regression normalized by GDP are also adjusted accordingly. With these hypothetical data, we run the same regression as in section 4.1 with our merchant dummy and consider the impact of merchanting on the current account.

The relocation results show that merchanting impacts the current account for both countries. More importantly, firm relocation to Singapore can increase the country's already large current account surplus. Alternatively, in the U.S. case, it can improve the country's trade balance and contribute to the narrowing of global imbalances.

Table 12 presents the regression results of firm relocation. The regressions show that if merchanting were to be concentrated in a single country starting from 2004 onwards, merchanting would still affect the current account of both countries. We begin with the baseline regressions of no relocation shown in columns 1 and 2. They are reproduced

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[34]Other factors that are also important for merchanting and the current account but are not considered in this paper are valuation effects stemming from international price changes or currency effects stemming from the invoicing of international vehicle currencies.

from Table 4. Again, they show that merchanting activity beyond a certain volume raises external savings by 3% on average. Next, the regressions in columns 3 and 4 show the impact of global merchanting relocating to the United States. The results show that the U.S. current account would improve by 2% if relocation occurred but the impact is statistically insignificant. Similarly, the regressions in columns 5 and 6 perform the same exercise for Singapore. The panel estimates in column 6 show that average external savings would increase by 7%.[35]

5 Conclusions

This paper presents evidence for the macroeconomic relationship between merchanting and the current account. Merchanting is an export service (i.e., logistic and storage services) of goods that do not undergo any form of processing and are bought and sold without crossing the national border's of the residing merchanting firm. In countries with high levels of merchanting activity, the current account increases. This mechanism is explained by the fact that merchanting increases the savings-investment gap. Unlike many other exporting firms with domestic production, merchanting firms invest their earnings abroad to expand their logistic and storage facilities. The empirical results show that merchanting is associated with an over-proportional increase in the current account. This result is robust to different model specifications and different variable definitions for merchanting. The estimated impact greater than unity is explained by the fact that merchanting tends to be underreported and that the timing of merchanting (i.e., logistic and storage services) is closely linked to other exports (i.e., processing).

The importance of merchanting in the medium-term current account models also has implications for the adjustment debate on global imbalances. The size and persistence

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[35]The choice of the relocation date 2004 was at a critical juncture of global merchanting. If the relocation date is set to 2008 instead of 2004, the impact is in the order of 5% for Singapore and 3% for the United States. Both estimates are statistically significant at the 5% level.

of merchanting, which is in part also attributed to firm relocation, has changed the dynamics of a country's current account. Because merchanting is difficult to predict (i.e., poor data quality and firm relocation), this introduces a further source of uncertainty in studies by Cline and Williamson (2011), Lee et al. (2008), and others that make exchange rate assessments based on medium-term current account models.

The empirical evidence for merchanting supports several directions for future research. One avenue would be to develop a theoretical model that shows why merchanting improves the current account balance. A starting point would be to assume that large merchanting activity reflects temporary monopoly power in an intertemporal smoothing model. Another avenue that merits greater analysis is estimating merchanting's sensitivity to exchange rate movements. Our conjecture is that merchanting is less sensitive to real exchange rate movements, than say, is trade in goods. While several studies highlight differences in exchange rate elasticities between goods and services, elasticities for merchanting across sectors have not been estimated.

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Appendix

Data description

Sample:

Algeria, Argentina, Australia, Austria, Belgium, Brazil, Canada*, Chile*, China*, Columbia, Croatia*, Czech Republic, Denmark, Egypt*, Finland, France, Germany, Greece, Hong Kong*, Hungary, Indonesia*, India, Ireland, Israel*, Italy, Japan, Korea, Luxembourg, Malaysia, Mexico, Morocco, New Zealand, Netherlands, Norway*, Pakistan, Peru*, Philippines, Poland, Portugal, Russia, Singapore*, Slovakia, Slovenia, South Africa*, Sweden, Switzerland, Spain, Thailand*, Tunisia, Turkey, Venezuela*, United Kingdom, United States*.

Countries denoted with a * have no available merchanting data for the sample 1980-2011.

Merchanting Dummy:

Austria (**7**), Belgium (**3**), Denmark (**2**), Finland (**3**), France (**1**), Germany (**1**), Hungary (**2**), Ireland (**2**), Luxembourg (1), Malaysia (1), Netherlands (1), Sweden (**4**), Switzerland (**3**).

Note: The number of observations where the dummy is +1, i.e., when Merchanting/GDP > 0.5% is given in the parentheses. Numbers in bold denote a sequence of +1 dummy values that terminate with the final observation. For example, *Denmark (2)* denotes a dummy of +1 for the observation 2004-2007 and 2008-2011, otherwise the dummy is zero.

Table A1: Data and their sources

Variable	Source	Comment
Current account	IMF BOPS	Measured as ratio to GDP
GDP	WDI	Real GPD in 2000 USD.
Fiscal balance	WEO	General government net lending†
Old-age dependency ratio	UN	Old-age dependency ratio (population between 30 and 64 as ratio to population > 65).†
Population growth	UN	Population growth†
GDP growth	WDI	GDP growth (per capita, real LCU) †
Initial net foreign assets (NFA)	IFS, LM	When NFA is missing in the Lane and Milesi-Feretti data, it is substituted with IFS data.
Oil balance, Norway	WDI	
Oil balance, others	WDI	
Relative income	CGER	Relative income (ratio of per capita PPP GDP to US level, 2000 USD).
Merchanting	BOPS, other	Missing BOPS data is replaced by central bank and statistical offices' data whenever possible.
Trade data:		
Non-oil and oil trade	DOTS, WDI	Total exports/imports from DOTS, fuel exports/imports from WDI.
Goods and services trade	UN	
Weights for global consistency calculation	DOTS	Own calculation
Weights for deviation from trading partner	UN	Own calculation
Dummy variables:		
Banking crisis	LV	Laeven and Valencia (2010) class. Borderline crises are not taken into account.
Asian crisis	Lee et al. (2008)	Asian crisis 1997-2011 1=emerging Asia countries as classified by IMF; 0=all other. See Lee et al. (2008).
Financial center	Lee et al. (2008)	1=Switzerland, Luxembourg, Hong Kong, Netherlands, Singapore, Belgium; 0=all other. See Lee et al. (2008).
Euro introduction	Lee et al. (2008)	1=Germany, -1=Portugal, Spain, Greece; 0=all other.
—— : Germany	own	1=Germany; 0=all other.
—— : Periphery	own	1=Portugal, Spain, Greece; 0=all other.
Aging population	Lee et al. (2008)	1=Germany, Switzerland, Japan, Italy; 0=all other.

† Measured in deviation from the trading partner's average.

Tax rates in merchanting countries

Average corporate tax rates have been lower in countries where merchanting has been prevalent compared to countries where merchanting has been absent. Between 2000 and 2010, the average corporate tax rate in the 13 merchanting countries in our sample was 27%, whereas for the non merchanting countries it was 30%. Table A2 below lists average and latest tax rates for merchanting versus no-merchanting countries. The (unweighted) average measure based on World Bank corporate tax rates understates the true difference between merchanting and non merchanting countries. Several countries, such as Hong Kong, Singapore, and the United States, which we define as non-merchanting country in the empirical analysis, also have low corporate taxes. Further, for some countries, taxes for merchanting activity is considerably lower than the national corporate tax rates.

Table A2: Tax rates for merchanting countries

	Average 2000-2010		Latest year[†]	
	merchanting	no merchanting	merchanting	no merchanting
Profit tax[a]	-	-	13.42%	17.32%
Income, profit & capital gains tax[b]	27.04%	30.04%	26.06%	29.60%
Total tax rate[c]	44.22%	49.07%	42.02%	46.56%

Data is from the World Bank. Merchanting countries are 13, no merchanting countries are 40 countries.

[†] 2010 values for income tax. 2011 for profit tax and total tax rate

[a] Profit tax in % of commercial profit.

[b] Taxes on income, profits and capital gains (measured as % of revenue) are levied on the actual or presumptive income of individuals, on the profits of corporations and enterprises, and on capital gains, whether realized or not, on land, securities, and other assets. Intra-governmental payments are eliminated in consolidation.

[c] Total tax rate (as % of profit) is the total amount of taxes payable by businesses (except for labor taxes) after accounting for deductions and exemptions as a percentage of profit.

Figure 1: Merchanting/GDP
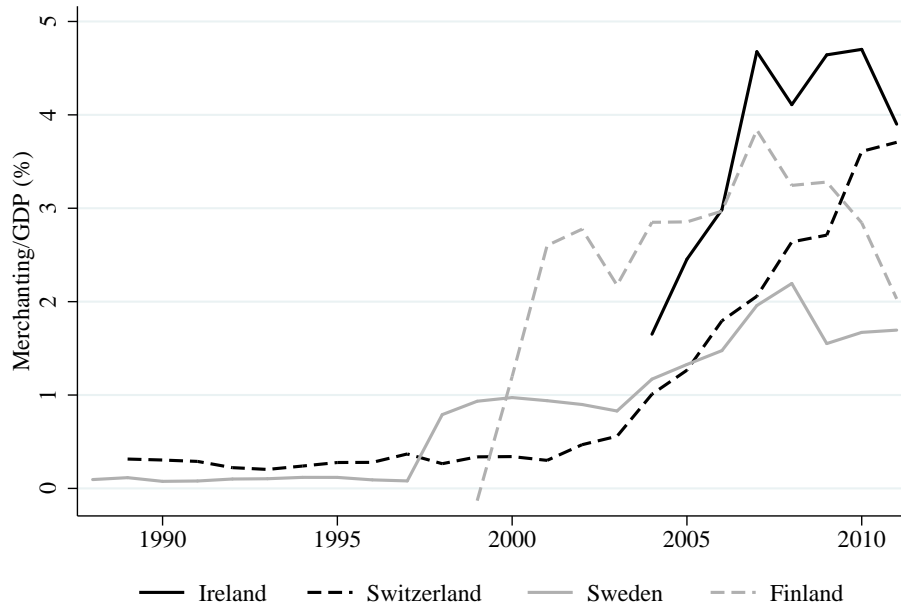
Source: IMF BOPS, national institutions, WDI

Figure 2: Income of merchant trade of domiciled and new entrants to Switzerland, 2001-2011 in CHF billion
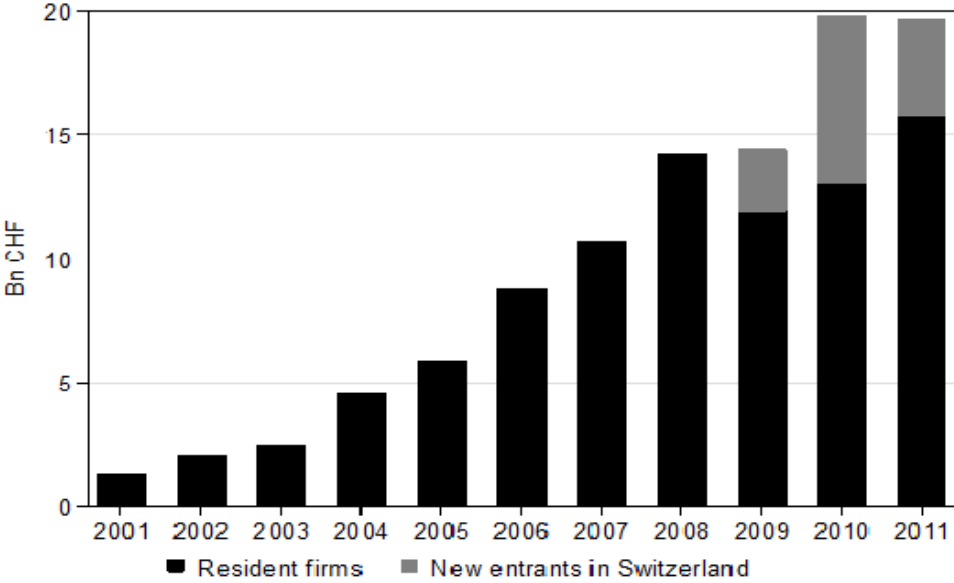
Notes: A new entrant to Switzerland is defined as a merchanting firm that provides data to the Swiss National Bank for the first time in 2009 or later and entered the register of companies 2-3 years earlier. Before 2009 there were also new merchanting entrants to Switzerland but for the purpose of this illustration of relocation during the financial crisis only merchanting firms from 2009 and thereafter are considered.

Figure 3: Merchanting/GDP and CA/GDP balances in 2010
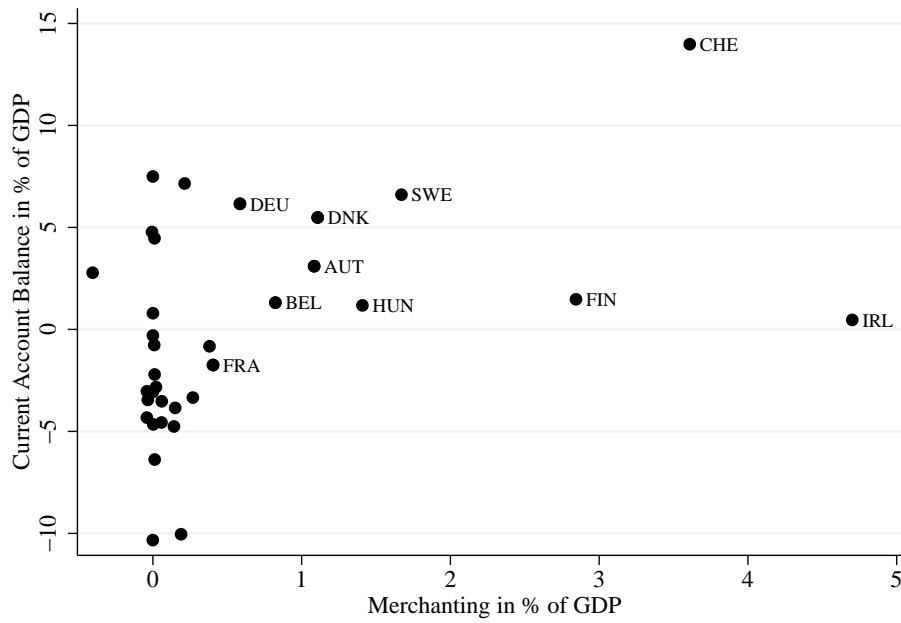
Source: IMF BOPS, national institutions, WDI

Figure 4: Components of the current account in merchanting countries (% of GDP)

Ireland Switzerland Finland Sweden Hungary Austria Belgium Denmark Germany Netherlands Malaysia France

——— Merchanting

– – – Trade in services (excl. merchanting)

–··–·· Trade in goods
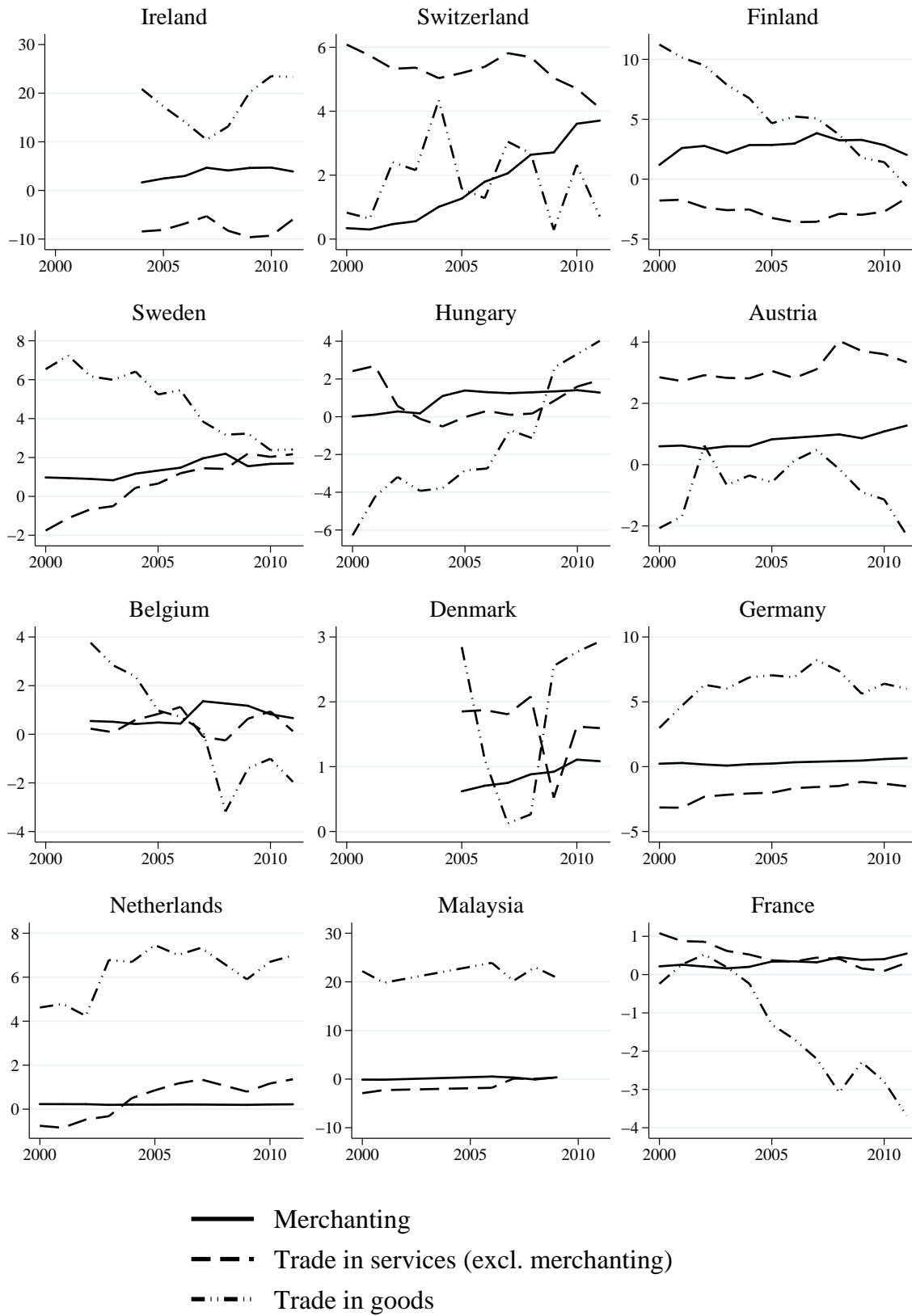
Source: IMF BOPS, national institutions, WDI

Table 1: Statistics for merchanting/GDP in countries with at least one observation crossing the threshold of 0.5%

| Rank[†] | Country | Merchanting during 2000-2011 | | | | Merchanting | Goods | Services[‡] | CA balance |
		Mean	Std. Dev.	Min	Max	As share of GDP (in %) in 2011			in 2011
1	**Ireland**	3.64	1.15	1.65	4.70	3.90	23.33	-5.95	0.07
2	**Switzerland**	1.71	1.24	0.30	3.71	3.71	0.71	4.10	11.65
3	**Finland**	2.72	0.68	1.20	3.84	2.03	-0.57	-1.57	-0.70
4	**Sweden**	1.39	0.44	0.83	2.19	1.70	2.41	2.17	7.11
5	**Hungary**	0.91	0.58	0.01	1.41	1.28	4.02	1.94	1.47
6	**Austria**	0.82	0.23	0.51	1.28	1.28	-2.31	3.34	1.91
7	**Denmark**	0.87	0.19	0.62	1.11	1.09	2.93	1.60	6.67
8	**Belgium**	0.77	0.36	0.42	1.36	0.66	-1.96	0.13	-0.73
9	**Germany**	0.34	0.17	0.08	0.66	0.66	6.01	-1.51	5.72
10	**France**	0.32	0.12	0.16	0.55	0.55	-3.69	0.31	-2.17
11	**Netherlands**	0.21	0.01	0.20	0.23	0.22	6.99	1.36	9.13
12	**Malaysia**[a]	0.16	0.28	-0.12	0.52	0.37	20.87	0.30	16.48
-	**Luxembourg**[b]	0.87	0.78	0.00	1.53	0.00	-10.42	38.18	11.99

Source: IMF BOPS, national institutions, WDI
[†] Rank for average Merchanting/GDP (2008-2011).
[‡] Services excluding merchanting.
[a] Data for Malaysia available only for 2000, 2001, 2006-2009.
[b] Data for Luxembourg available only for 2002-2004.

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Table 2: AR(1) regression

Dependent variables*:	Merchanting†	Services‡	Goods
Own lag	0.83***	0.79***	0.72***
	[0.02]	[0.03]	[0.03]
Dummy for 2008	-0.00	-0.00*	-0.01*
	[0.00]	[0.00]	[0.00]
Dummy for 2009	-0.00	-0.00**	0.01***
	[0.00]	[0.00]	[0.00]
Time variable	0.00***	0.00**	0.00
	[0.00]	[0.00]	[0.00]
Constant	-0.00	-0.00	-0.00
	[0.00]	[0.00]	[0.00]
Observations	585	585	585
Countries	38	38	38
R^2	0.768	0.632	0.525
R^2 overall	0.924	0.968	0.925
R^2 between	0.966	0.998	0.994

Standard errors in brackets, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
* Variables all as ratio to GDP (WDI), annual data (1980-2011).
† The backbone of the underlying data is from the IMF BOPS. Data for merchanting is included/extended from national sources for Australia, Brazil, Denmark, Finland, Japan, Korea, Netherlands, New Zealand, Slovenia, Sweden, and Switzerland.
‡ Services excluding merchanting.

Table 3: Variance of residuals from AR(1) regressions

Variance of residuals	2000-2007	2008-2011	2000-2011
Merchanting	0.0000	0.0000	0.0000
Trade in services[†]	0.0001	0.0006	0.0001
Trade in goods	0.0004	0.0028	0.0005

[†] Services excluding merchanting.
Residuals are from the regressions shown in Table 2.

Table 4: Baseline CA Regressions (1980-2011)

VARIABLES	1	2	3	4	5	6
Fiscal balance	0.27***	0.26***	0.26***	0.24***	0.22***	0.21**
	[0.09]	[0.09]	[0.09]	[0.09]	[0.08]	[0.08]
Old age dependency ratio	-0.10	-0.10	-0.05	-0.05	0.02	0.01
	[0.07]	[0.07]	[0.07]	[0.06]	[0.07]	[0.06]
Population growth	0.07	0.14	0.17	0.25	0.49	0.55
	[0.75]	[0.79]	[0.72]	[0.75]	[0.72]	[0.76]
Initial NFA	0.06***	0.06***	0.05***	0.05***	0.03**	0.03***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Oil balance, Norway	0.18**	0.24***	0.17**	0.24***	0.27***	0.32***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Oil balance, rest	0.21***	0.21***	0.27***	0.27***	0.30***	0.30***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Output growth	0.09	0.10	0.11	0.13	0.13	0.14
	[0.17]	[0.16]	[0.15]	[0.15]	[0.15]	[0.15]
Relative income	0.02	0.01	0.03**	0.02	0.02	0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Banking crisis dummy					-0.00	-0.01
					[0.01]	[0.00]
Asian crisis dummy			0.05***	0.05***	0.05***	0.05***
			[0.01]	[0.01]	[0.01]	[0.01]
Financial center dummy					0.03**	0.03
					[0.01]	[0.02]
Euro introduction: Germany					0.02*	0.01
					[0.01]	[0.01]
Euro introduction: Periphery					-0.04***	-0.04***
					[0.01]	[0.01]
Aging society dummy					0.01	0.02
					[0.01]	[0.01]
Merchanting/GDP>0.5% dummy		**0.03***		**0.04***		**0.03***
		[0.01]		**[0.01]**		**[0.01]**
Constant	-0.00	0.00	-0.01	-0.01	-0.01	-0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Observations	287	287	287	287	287	287
R^2	0.566	0.599	0.624	0.658	0.668	0.696

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.

Note: Sample includes 1980-2011; four year averages; dependent variable is the CA/GDP ratio. See Appendix for variable definitions.

Table 5: Comparative CA regressions (1980-2007)

VARIABLES	initial NFA (1 to 3) own estimates		Lee*	lagged CA (4 to 6) own estimates		Lee*
	1	2	3	4	5	6
Fiscal balance	0.21**	0.21**	0.20***	0.04	0.04	0.19***
	[0.08]	[0.08]		[0.07]	[0.08]	
Old age dependency ratio	-0.05	-0.06	-0.14**	0.01	0.01	-0.12**
	[0.07]	[0.07]		[0.05]	[0.05]	
Population growth	-0.26	-0.18	-1.21***	-0.09	-0.05	-1.03
	[0.71]	[0.75]		[0.62]	[0.65]	
Initial NFA	0.04***	0.04***	0.02***			
	[0.01]	[0.01]				
Lagged CA				0.67***	0.64***	0.37***
				[0.06]	[0.06]	
Oil balance, Norway	0.28***	0.33***		0.25***	0.28***	
	[0.08]	[0.08]		[0.06]	[0.06]	
Oil balance, rest	0.33***	0.33***	0.23***	0.19***	0.20***	0.17***
	[0.05]	[0.04]		[0.04]	[0.04]	
Output growth	0.07	0.09	-0.21**	-0.11	-0.08	-0.16*
	[0.14]	[0.14]		[0.13]	[0.12]	
Relative income	0.01	0.00	0.02*	-0.00	-0.00	0.02*
	[0.01]	[0.01]		[0.01]	[0.01]	
Banking crisis dummy	-0.01*	-0.01	0.01*	-0.01*	-0.01	0.01
	[0.01]	[0.01]		[0.00]	[0.00]	
Asian crisis dummy	0.04***	0.04***	0.06***	0.03***	0.03***	0.04***
	[0.01]	[0.01]		[0.01]	[0.01]	
Financial center dummy	0.03**	0.03*	0.03***	0.04***	0.04***	0.03***
	[0.01]	[0.02]		[0.01]	[0.01]	
Euro introduction dummy	0.01*	0.01		0.02**	0.01**	
	[0.01]	[0.01]		[0.01]	[0.01]	
Aging society dummy	0.01	0.02		0.01	0.01	
	[0.01]	[0.01]		[0.01]	[0.01]	
Merchanting/GDP>0.5% dummy		**0.03****			**0.01****	
		[0.01]			**[0.01]**	
Constant	-0.01	-0.01		-0.00	-0.00	
	[0.01]	[0.01]		[0.01]	[0.01]	
Observations	234	234	NA	220	220	NA
R^2	0.649	0.677	0.52	0.737	0.742	0.56

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.

Note: Sample includes years 1980-2011; four year averages; dependent variable is the CA/GDP ratio. Lee* denotes Lee et. al (2008).

Table 6: Merchanting and the Savings-Investment Gap

VARIABLES	CA/GDP	S-I/GDP	I/GDP3	S/GDP
Merchanting/GDP (if > 0.5%)	3.01***	3.73***	-1.23	2.51**
dummy	[1.05]	[1.54]	[0.94]	[1.22]
Observations	296	306	306	306
R^2	0.682	0.589	0.392	0.656

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.
Note: Sample includes years 1980-2011; four year averages;
dependent variable is the merchanting-to-GDP ratio with the
corresponding threshold level.

Table 7: Robustness of merchanting countries

VARIABLES	1	2	3	4	5	6	7
Fiscal balance	0.22***	0.23***	0.23***	0.21**	0.22***	0.22***	0.21**
	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Old age dep. ratio	0.02	0.02	0.02	0.01	0.02	0.02	0.01
	[0.07]	[0.07]	[0.07]	[0.06]	[0.06]	[0.07]	[0.06]
Population growth	0.49	0.53	0.53	0.55	0.54	0.43	0.53
	[0.73]	[0.72]	[0.72]	[0.76]	[0.74]	[0.74]	[0.76]
Initial NFA	0.03**	0.03**	0.03**	0.03***	0.03**	0.03**	0.03***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Oil balance, Norway	0.27***	0.27***	0.27***	0.32***	0.30***	0.29***	0.32***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Oil balance, rest	0.30***	0.30***	0.30***	0.30***	0.30***	0.30***	0.30***
	[0.05]	[0.04]	[0.05]	[0.04]	[0.04]	[0.04]	[0.04]
Output growth	0.13	0.13	0.13	0.14	0.13	0.13	0.14
	[0.15]	[0.15]	[0.15]	[0.15]	[0.15]	[0.16]	[0.15]
Relative income	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Banking crisis dummy	-0.00	-0.00	-0.00	-0.01	-0.01	-0.00	-0.01
	[0.01]	[0.01]	[0.01]	[0.00]	[0.01]	[0.01]	[0.00]
Asian crisis dummy	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Fin. center dummy	0.03**	0.03**	0.03**	0.03	0.03*	0.03**	0.03
	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]	[0.01]	[0.02]
Euro intro. Germany	0.02*	0.02*	0.02*	0.01	0.02*	0.02**	0.02
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
——— periphery	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Aging society dummy	0.01	0.02	0.01	0.02	0.02	0.01	0.02
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Merchanting>0 dummy	0.00		0.00				
	[0.01]		[0.01]				
Merchanting<0 dummy		0.00	0.00				
		[0.01]	[0.01]				
Merchanting>0.5% dummy				**0.03*****			
				[0.01]			
Merchanting>1% dummy					**0.03*****		
					[0.01]		
0.5%<Merchanting<2% dummy							**0.03****
							[0.01]
Merchanting>2% dummy						**0.04****	**0.04****
						[0.01]	**[0.02]**
Constant	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Observations	287	287	287	287	287	287	287
R^2	0.669	0.669	0.669	0.696	0.686	0.681	0.697

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.
Note: Sample includes 1980-2011; four year averages; dependent variable is the CA/GDP ratio. Merchanting always as ratio to GDP.

Table 8: Expanding the num. of Merchanting countries and reducing the country sample

VARIABLES	with US, Sing, HK as merchanters	reduced country sample from 53 to 38
Fiscal balance	0.20**	0.08
	[0.08]	[0.07]
Old age dependency ratio	-0.06	-0.14
	[0.07]	[0.08]
Population growth	-0.09	-1.54***
	[0.70]	[0.56]
Initial NFA	0.03**	0.03**
	[0.01]	[0.01]
Oil balance, Norway	0.35***	0.00
	[0.07]	[0.01]
Oil balance, rest	0.31***	0.36***
	[0.04]	[0.05]
Output growth	0.10	-0.24
	[0.15]	[0.17]
Relative income	0.01	0.02
	[0.01]	[0.02]
Banking crisis dummy	-0.01	-0.00
	[0.01]	[0.00]
Asian crisis dummy	0.05***	0.05***
	[0.01]	[0.02]
Financial center dummy	0.03*	0.03
	[0.02]	[0.02]
Euro introduction dummy: Germany	0.01*	0.02*
	[0.01]	[0.01]
Euro introduction dummy: Periphery	0.01	0.02*
	[0.01]	[0.01]
Aging society dummy	0.02*	0.01
	[0.01]	[0.01]
Merchanting/GDP > 0.5% dummy	**0.03*** **	**0.03*** **
	[0.01]	**[0.01]**
Constant	-0.01	-0.01
	[0.01]	[0.01]
Observations	296	218
R^2	0.649	0.647

Robust standard errors in brackets.

*** p<0.01, ** p<0.05, * p<0.1.

Note: Sample includes 1980-2011; four year averages; dependent variable is the CA/GDP ratio.

Table 9: Financial services

VARIABLES	1	2	3	4	5
Fiscal balance	0.22***	0.21**	0.23***	0.25***	0.22**
	[0.08]	[0.08]	[0.08]	[0.09]	[0.08]
Old age dependency ratio	0.02	0.01	0.01	-0.02	0.00
	[0.07]	[0.06]	[0.07]	[0.07]	[0.06]
Population growth	0.49	0.55	0.58	0.65	0.64
	[0.72]	[0.76]	[0.72]	[0.74]	[0.75]
Initial NFA	0.03**	0.03***	0.03**	0.04***	0.03***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Oil balance, Norway	0.27***	0.32***	0.24***	0.17*	0.29***
	[0.08]	[0.08]	[0.08]	[0.09]	[0.08]
Oil balance, rest	0.30***	0.30***	0.29***	0.27***	0.29***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Output growth	0.13	0.14	0.13	0.11	0.14
	[0.15]	[0.15]	[0.15]	[0.15]	[0.14]
Relative income	0.02	0.01	0.02	0.03*	0.01
	[0.01]	[0.01]	[0.01]	[0.02]	[0.01]
Banking crisis dummy	-0.00	-0.01	-0.00	-0.00	-0.00
	[0.01]	[0.00]	[0.01]	[0.01]	[0.01]
Asian crisis dummy	0.05***	0.05***	0.05***	0.05***	0.05***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Financial center dummy	0.03**	0.03	0.04***		0.03*
	[0.01]	[0.02]	[0.01]		[0.02]
Euro introduction dummy: Germany	0.02*	0.01	0.02*	0.01	0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Euro introduction dummy: Periphery	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Aging society dummy	0.01	0.02	0.02	0.02*	0.02
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Merchanting/GDP>0.5% dummy		**0.03***			**0.03***
		[0.01]			**[0.01]**
Financial services/GDP>0.5% dummy			**-0.02**	**-0.01**	**-0.02**
			[0.01]	**[0.01]**	**[0.01]**
Constant	-0.01	-0.01	-0.01	-0.01	-0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Observations	287	287	287	287	287
R^2	0.668	0.696	0.672	0.657	0.700

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.

Note: Sample includes years 1980-2011; four year averages; dependent variable is the CA/GDP ratio.

Table 10: Robustness check: IV estimations, first stage

VARIABLES	OLS 1	IV regression 2	3	4
Rest of world				
merchanting/GDP (if > 0.5%)		1.20*** [0.25]		
merchanting/GDP (if >1%)			0.96*** [0.20]	
fin. services/GDP (if > 0.5%)				0.71 [0.46]
Observations		287	287	287
R^2		0.577	0.674	0.420
F Stat		620.3	577.2	0.730
Kleiberger-Paap F stat		22.31	23.93	2.313

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.
Stock-Yogo weak ID test critical values (10% maximal IV size): 16.38
Note: Sample includes years 1980-2011; four year averages;
        dependent variable is the merchanting-to-GDP ratio with the
        corresponding threshold level.

Table 11: Robustness check: IV estimations, second stage

VARIABLES	OLS	IV regression		
	1	2	3	4
Fiscal balance	0.25***	0.22***	0.22***	0.20**
	[0.08]	[0.08]	[0.08]	[0.09]
Old age dependency ratio	0.06	0.02	0.02	-0.05
	[0.06]	[0.06]	[0.06]	[0.14]
Population growth	0.55	0.50	0.50	0.62
	[0.74]	[0.72]	[0.72]	[0.70]
Initial NFA	0.03***	0.03***	0.03***	0.03***
	[0.01]	[0.01]	[0.01]	[0.01]
Oil balance, Norway	0.31***	0.32***	0.31***	0.20
	[0.08]	[0.08]	[0.08]	[0.13]
Oil balance, rest	0.29***	0.30***	0.30***	0.29***
	[0.04]	[0.04]	[0.04]	[0.04]
Output growth	0.12	0.13	0.13	0.19
	[0.14]	[0.15]	[0.15]	[0.20]
Relative income	-0.00	0.01	0.01	0.04
	[0.01]	[0.01]	[0.01]	[0.05]
Asian crisis dummy	0.05***	0.05***	0.05***	0.05***
	[0.01]	[0.01]	[0.01]	[0.01]
Financial center dummy	0.03**	0.03**	0.03**	0.03***
	[0.02]	[0.02]	[0.01]	[0.01]
Euro introduction dummy: Germany	0.02*	0.02*	0.02*	0.02**
	[0.01]	[0.01]	[0.01]	[0.01]
Euro introduction dummy: Periphery	-0.04***	-0.04***	-0.04***	-0.04***
	[0.01]	[0.01]	[0.01]	[0.01]
Aging society dummy	0.01	0.02	0.02	0.01
	[0.01]	[0.01]	[0.01]	[0.01]
Merchanting/GDP (if > 0.5%)	**1.55****	**2.02*****		
	[0.60]	**[0.78]**		
Merchanting/GDP (if > 1%)			**1.73*****	
			[0.64]	
Fin. services/GDP (if > 0.5%)				**-0.33**
				[0.55]
Observations	287	287	287	287
R^2	0.687	0.680	0.682	0.629
F Stat		2925	2848	2236

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.

Note: Sample includes years 1980-2011; four year averages; dependent variable is the CA/GDP ratio.

Table 12: Relocation of merchanting activity in 2004

| | Benchmark | | Relocation | | | |
| | | | to the USA | | to Singapore | |
VARIABLES	1	2	3	4	5	6
Fiscal balance	0.22***	0.21**	0.23***	0.23***	0.23***	0.21***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.07]	[0.07]
Old age dependency ratio	0.02	0.01	0.02	0.02	0.01	0.00
	[0.07]	[0.06]	[0.07]	[0.06]	[0.07]	[0.07]
Population growth	0.49	0.55	0.48	0.53	1.68	1.49
	[0.72]	[0.76]	[0.73]	[0.73]	[1.37]	[1.18]
Initial NFA	0.03**	0.03***	0.03**	0.03**	0.03*	0.03**
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Oil balance, Norway	0.27***	0.32***	0.28***	0.30***	0.18	0.25**
	[0.08]	[0.08]	[0.08]	[0.08]	[0.12]	[0.10]
Oil balance, rest	0.30***	0.30***	0.30***	0.30***	0.30***	0.30***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.05]	[0.05]
Output growth	0.13	0.14	0.13	0.13	0.45	0.39*
	[0.15]	[0.15]	[0.15]	[0.15]	[0.28]	[0.22]
Relative income	0.02	0.01	0.01	0.01	0.05	0.03
	[0.01]	[0.01]	[0.01]	[0.01]	[0.03]	[0.02]
Banking crisis dummy	-0.00	-0.01	-0.01	-0.01	-0.00	-0.00
	[0.01]	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]
Asian crisis dummy	0.05***	0.05***	0.05***	0.05***	0.06***	0.06***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]	[0.01]
Financial centre dummy	0.03**	0.03	0.03**	0.03**	0.03	0.02
	[0.01]	[0.02]	[0.01]	[0.02]	[0.02]	[0.02]
Euro introduction dummy: Germany	0.02*	0.01	0.02*	0.02*	0.02	0.02
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Euro introduction dummy: Periphery	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Aging society dummy	0.01	0.02	0.01	0.02	0.01	0.02
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Merchanting/GDP>0.5% dummy		**0.03*****		**0.02**		**0.07***
		[0.01]		**[0.01]**		**[0.03]**
Constant	-0.01	-0.01	-0.01	-0.01	-0.03	-0.03*
	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]
Observations	287	287	287	287	287	287
R^2	0.668	0.696	0.676	0.683	0.647	0.685

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1.