Merchanting and Current Account Balances[*]

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Abstract

Merchanting is goods trade that does not cross the border of the firm's resident country. Merchanting grew strongly in the last decade in select small open economies and has become an important driver 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 significantly large current account surplus. To show the empirical links 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 and shows that merchanting indeed increases the current account. The second exercise shows that merchanting's impact on the country's current account is sensitive to firm mobility.

JEL codes: F10, F20, F32

1 Introduction

Merchanting is goods trade that does not cross the border of the firm's resident country. The difference between receipts from goods sold abroad and expenses from goods purchased abroad is merchanting. Figure 1 plots merchanting as a share of GDP for the four largest merchanting countries. It shows that merchanting grew steadily after 2000 and continued to expand even during the financial crisis in some countries. The dynamics for Ireland are particularly striking: merchanting as a share of GDP grew rapidly from -1.1% in 2000 to 4.7% in 2010.

Merchanting's growth has generated large shifts in a country's trade balance. For some countries, merchanting has also contributed to an already sizable current account surplus.[1] Because merchanting resisted the financial crisis well (see Figure 1), it also brings new challenges as to how current account adjustment is achieved.

The paper's objective is to show empirically that merchanting is an important driver of the current account and that firm dynamics can bring about rapid current account adjustment. 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 significantly large current account surplus. To show the empirical links 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 and shows that merchanting indeed increases the current account. The second exercise shows that merchanting's impact on the country's current account is sensitive to firm mobility.

The new empirical results for merchanting contribute to the international literature on external adjustment in two ways. A first contribution is to expand the list of de-

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[1]In terms of Figure 1, Sweden's and Switzerland's current account with respect to GDP were 7.12% and 11.65% in 2011. For the other countries, the same numbers are Finland -0.70% and Ireland 0.07%.

terminants 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). We show that merchanting impacts the current account balance on average by 3% with respect to GDP. A second contribution is to show that the relocation of merchanting firms to other countries has large effects on a county's current account balance. The empirical results on firm mobility add to the growing literature on the interconnection between fragmentation and international macroeconomics.[2]

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 regression models. Sections 4 presents the empirical results. Section 5 concludes.

2 Merchant trade: definitions and data

This section has two subsections. The first subsection discusses definitional issues and notes the fact that merchanting is diverse across countries and sectors. The second subsection presents summary statistics that motivate the empirical analysis in section 4.

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

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[2]This field is rapidly growing. Recent studies by Bems and Johnson (2012), Johnson and Noguera (2012), and Johnson (2012), for example, highlight the importance of capturing the microstructure of trade relationships to better replicate international business cycles.

IMF Balance of Payments Manual, fifth edition (1993) page 68.[3] 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.

The analysis focuses on countries with a positive export balance in merchanting. We do this because 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. Figure 2 plots the merchanting-to-GDP ratio on the horizontal axis and the current account-to-GDP ratio for 2011. 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 to a current account surplus.

The analysis on positive merchanting positions is also motivated by the linkages between export volatility and external savings.[4] For example, it is argued that volatile oil exports lead to an increase in precautionary savings, which results in a positive external balance.[5] By contrast, merchanting firms's revenues exhibit a high level of persistence in the aggregate. While a smooth revenue stream may lower the need for precautionary savings, merchanting firms invest their earnings abroad to expand their activities. This

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[3]In this paper, the analysis for merchanting uses the IMF BPM5 classification, which treats merchanting as a component of trade in services. See IMF (2008) for a discussion how changes in the Balance of Payments Manual from BPM5 to BPM6 will influence merchanting is to be reported in national statistics.

[4]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 Fihlo (2011).

[5]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).

structural feature of merchanting firms increases the savings-investment gap and thereby increases the current account surplus.[6]

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. Merchanting firms are actively targeted by several countries. Singapore, for example, created the Global Trading Programme in 2001.[7] The intention is to attract mobile commodity trading houses with low taxes and light regulation. Malaysia has a similar relocation program designed to attract 20 commodity trading firms by 2017.[8] Firm relocation also explains why merchanting's activities are concentrated in select cities: Dublin, Geneva, Hong Kong, Houston, London, and Singapore.[9] This agglomeration is partially explained by the tax environment of the merchanting countries. The average corporate tax rate in merchanting countries between 2000 and 2010 was 25%, whereas for the non merchanting countries it was 30%.[10]

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[6]A further consideration for external adjustment, not pursued in this paper, is a firm's sensitivity to exchange rate movements. Bosworth and Collins 2012, Meredith 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.

[7]See for example the information under www.rikvin.com.singaporetaxation.

[8]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 SNB (2012).

[9]See "Singapore's low taxes lure Trafigura," Financial Times, 22.5.2012.

[10]See Table A2 in the Appendix. The 12 merchanting countries are defined in the Appendix. The 41 non merchanting countries are the remaining countries defined in our empirical sample. The (unweighted) average measure based on World Bank corporate tax rates understates the true difference between merchanting and non merchanting. Several countries (i.e., Hong Kong, Singapore, and the United States), which we define as non merchant in the empirical analysis because of a lack of data, also have low corporate taxes. Further, for some countries, taxes for merchanting activity is considerably

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.

Another feature of merchanting is that it is not concentrated in a specific sector. 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]

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

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lower than the national corporate tax rates.

[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] The number falls to 52 when the zero entries are ignored. With the sample of Lee et al. (2008) there are 27 (25 if the zero entries are ignored).

[14] Some countries provided data in the past but no longer do. Japan and the Netherlands are 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.

Table 1 provides statistical information for the 12 largest merchanting countries in terms of merchanting as a share of GDP that we focus on in the empirical section. All measures are expressed as a share of GDP. The country rank for merchanting, shown in the first column, is based on the average between 2008 to 2011. Next, the table presents mean, standard deviation, minimum, and maximum values 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, Switzerland.[15] The standard deviations are small and do not show large discrepancies. The minimum values show that apart from one observation for Ireland, all the merchanting countries register positive export income.

The last four columns show the relationship between merchanting/GDP, goods balance/GDP, service (excluding merchanting)/GDP, and the current account/GDP. All figures are net balances for the year 2011. For Belgium and Finland, merchanting income is larger than the goods and the service balance. The last column shows that almost all merchanting countries have positive current account/GDP ratios.

To motivate the empirical analysis in section 4, Figure 3 offers a descriptive observation as to whether merchanting mitigates adjustments in the trade balance. 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 3 plots merchanting, trade in goods, and trade in services (excluding merchanting) for the last decade. Each series is expressed in terms of net balances and as a ratio 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 3 also reconfirms the

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[15]The total value of merchanting in 2010 was USD 75.5 billion. The five largest countries represent about two-thirds (62%) of the total.

information from Table 1. It shows large compositional shifts have taken place within a merchanting country's trade balance.

Regression analysis supports the view that merchanting is highly persistent. Table 2 presents panel AR(1) regressions for 40 merchanting countries. The coefficient for the lagged variable is considerably higher for merchanting (i.e., 0.85) than for trade in goods (0.71) and trade in services excluding merchanting (0.78). 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 moved in proportion to GDP. 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. The variance of the residuals for merchanting is about 18 times smaller than that of trade in services and 30 times smaller than that of trade in goods for the full sample. This result also holds for the post-crisis period.

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 averaging, on current account balances follows Lee et al. (2008). In this model, the

panel regression is specified as follows:

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

where CA_{it} is the current account balance of country i expressed as a share of GDP for year t. Similarly, X_{it} is a vector of macroeconomic and demographic variables, D_{it} captures institutional or structural features through dummy variables, and ϵ_{it} denotes the residual. In our setup, equation (1) is extended to include merchanting:

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

where M_{it} captures the merchanting activities of country i. Merchanting, M_{it} is a dummy: $+1$ if merchanting with respect to GDP $> 0.5\%$ in a particular year; otherwise 0. A threshold of 0.5% is used to capture merchanting effects of a certain volume. The impact effect is expected to be positive. The sample of 12 merchanting countries is given in Table 1.

The sample covers 53 countries for the period 1980-2011. 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.

The macroeconomic and demographic variables, X_{it}, in equation (2) are standard in the literature and are briefly discussed next.[16] 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.[17] 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

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

[17]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.

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 at a similar stage of development, the stronger economic growth relative to its trading partners should the 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

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increase with relative income but to decrease with relative growth.

Several dummy variables, D_{it}, are included in equation (2) to capture country or industry specific features. The first dummy captures large oil producing countries. Higher oil prices increase the current account balance of oil-exporting countries and decrease the balance of oil-importing countries. The specification by Lee et al. (2008) considers the impact of several oil-exporting countries. In equation (2), Norway is treated as a separate oil country because of its high level of intergenerational savings.

Equation (2) also includes a dummy that controls for small open economies with large financial centers. 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 future crisis. This dummy acts as a levels shift. The second dummy captures episodes of banking crises. We use the Leaven 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 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, the euro dummy is +1 for Germany, -1 for Greece, Portugal, and Spain, and 0 for the rest. The intention here is to capture potential extreme countries within the currency union.

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

This section presents the empirical results. The first set of results presented in 4.1 show that merchanting is a robust determinant of the current account. Merchanting's impact effect of 3% in the baseline specification is sizable. Further robustness checks are presented in 4.2. The regressions show that the results from 4.1 are not sensitive to different specifications of the merchanting dummy. The last set of results in 4.3 highlight the dynamics of firm relocation. The empirical findings show that the relocation of merchanting firms to a single economy does not weaken the empirical effect 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 0.04 and is statistically significant at the 1% level. This result says that the current account is increased by 4% for those countries that have merchanting income greater than 0.5% of GDP. In other words, merchanting increases the current account balance.

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 in column 4 show that merchanting unleashes almost the same level of external savings as the Asian crisis. Both dummies are highly statistically significant.

A further check is to determine 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 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 10% level when merchanting is introduced. Similarly, the banking and the aging dummies never figure prominently with or without merchanting.

Another 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.[18] These results are given in Table 5. Columns 2 and 5 show that the merchanting dummy remains significant in the shortened samples for the NFA and the lagged capital account specification. 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 five 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 four times smaller and statistically insignificant compared to the estimates by Lee et al. (2008), which are reproduced in column 6.

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

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 merchanting countries, i.e., whether merchanting in a year is greater than 0.5% with respect to GDP. The regression results with alternative definitions of merchanting countries are presented in Table 6.

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 merchanting country to be either negative or positive in aggregate volume for a particular year. 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 is increased from 0.5% to 1.0%. Here, there is no difference in the estimates between the regressions 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.

4.3 The relocation of merchanting firms

Merchanting is subject to firm relocation. In section 2.2, it was noted that several Asian countries seek to attract merchanting firms. In this section, we consider whether our previous estimates are robust to firm relocation and whether small and large countries are equally affected. The exercise assumes that global merchanting activity relocates either to Singapore, a small country, or the United States, a large country, in 2004. The relocation results show that merchanting affects the current account of both countries. More importantly, firm relocation to Singapore can increase the country's already large

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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 7 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 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. 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%.[19]

5 Conclusion

Merchanting has become an important component in the current account for several countries. This activity grew steadily in the last decade because of the fragmentation of production processes. Merchanting proved to be crisis resistant, thus increasing a country's current account balance even at a time when global imbalances were temporarily shrinking. Panel regressions show that merchanting increases a country's current account by 3% with respect to GDP, about the size of precautionary savings stemming from the Asian crisis. Because many countries do not report merchanting activities, the estimated impact of merchanting on the current account balance is certainly larger.

The size and persistence of merchanting has changed the dynamics of a country's current account. Merchanting mitigates external adjustment in that it raises national

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[19]The choice of the relation date 2004 was at a critical juncture of global merchanting. If the relocation date is set in 2008 instead of 2004, the impact is in the order of 3% for both countries.

savings without increasing domestic investment. 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.

An issue 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 the differences in exchange rate elasticities between goods and services, elasticities for merchanting across sectors have not been estimated. We leave this issue for future research.

References

Aizenman, J. 2008. Large hoarding of international reserves and the emerging global economic architecture, Manchester School 76(5), 487-503.

Bems, R., de Carvalho Fihlo, I., 2011. The current account and precautionary savings for exporters of exhaustible resources, Journal of International Economics 84(1), 48-64.

Bems, R., Johnson, R. C., 2012. Value-added exchange rates: measuring competitiveness with vertical specialization in trade, mimeo.

Bosworth, B., Collins, S. M., 2010. Rebalancing the US economy in a postcrisis world, ADBI Working Paper Series No. 236.

Cherif, R., Hasanov, F., 2012. Oil exporter's dilemma: how much to save and how much to invest, IMF Working Paper WP/12/4.

Chinn, M., Ito, H., 2008. Global current account imbalances: American fiscal policy versus East Asian savings, Review of International Economics 16(3), 479-498.

Chinn, M., Ito, H., 2007. Current account balances, financial development and institutions: assaying the world savings glut, Journal of International Money and Finance 26(4), 546-569.

Chinn, M., Ito, H., 2006. What matters for financial development? capital controls, institutions and interactions, Journal of Development Economics 81, 163-192.

Chinn, M., Prasad, E., 2003. Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration, Journal of International Economics 59, 47-76.

Cline, W. R., Williamson, J. H., 2011. Estimates of fundamental equilibrium exchange rates, May 2011, Policy Briefs PB11-5, Peterson Institute for Internal Economics.

Crane, L., Crowley, M. A., Quayum, S., 2007. Understanding the evolution of trade deficits: Trade elasticities of industrialized countries, Federal Reserve Bank of Chicago, Economic Perspectives, 2-17.

Gagnon, J., 2011. Current accounts imbalances coming back, PIIE Working Paper No. 11-1.

Gruber, J., Kamin, S., 2009. Do differences in financial development explain the global pattern of current account imbalances?, Review of International Economics 17(4), 667-688.

Gruber, J., Kamin, S., 2007. Explaining the global pattern of current account imbalances, Journal of International Money and Finance 26(4), 500-522.

IMF, 2008. Impact on BOP data of changes in international standards for processing and merchanting, Twenty-First Meeting of the IMF Committee on Balance of Payments Statistics Washington, D.C., November 4-7, 2008. BOPCOM-08/11.

Lee, J., Milesi-Ferretti, G. M., Ostry, J. D., Prati, A., Ricci, L., 2008. Exchange rate assessments: CGER Methodologies, International Monetary Fund Occasional Paper No. 261, Washington D.C.

Johnson, R. C., Noguera, G., 2012. Fragmentation and trade in vale added over four decades. NBER Working Paper Series No. 18186.

SNB, 2012. Merchanting in Switzerland, Swiss Balance of Payments 2011, Swiss National Bank, 34-41.

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, 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.

Merchanting dummy
Austria (**7**), Belgium (**3**), Denmark (**2**), Finland (**3**), 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 averaged years 2004 to 2007 and 2008 to 20011, otherwise the dummy is zero.

Table A1: Data and their sources

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

[†] Measured in deviation of trading partner average.

Table A2: Tax rates for merchanting countries

	Average 2000-2010		Latest year[†]	
	merchanting	no merchanting	merchanting	no merchanting
Profit tax[a]	-	-	13.81%	16.89%
Income, profit & capital gains tax[b]	25%	30.21%	23.52%	29.76%
Total tax rate[c]	45.11%	48.46%	43.52%	46.17%

Data is from the World Bank. Merchanting countries are defined in the appendix. No merchanting countries are 44 countries, i.e., the rest of the sample.

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

[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.
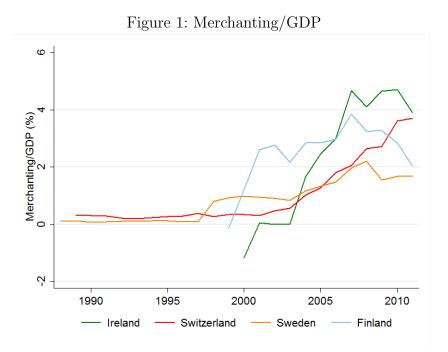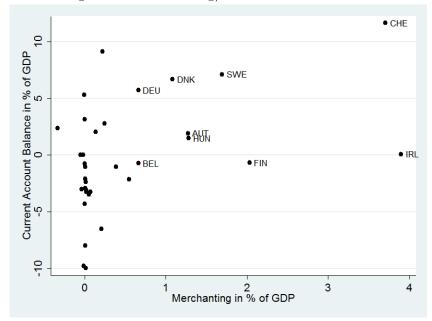
Figure 1: Merchanting/GDP

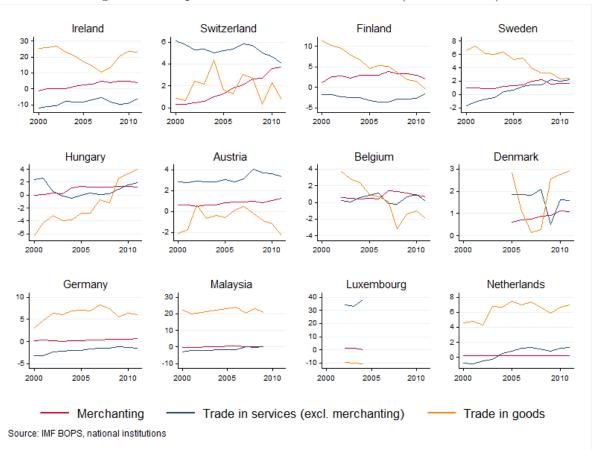Figure 2: Merchanting/GDP and CA balances

Figure 3: Components of the current account (in % of GDP)

Source: IMF BOPS, national institutions

Table 1: Statistics for merchanting/GDP

| Rank[†] | Country | Merchanting | | | | Merchanting | Goods | Services[‡] | CA balance |
| | | Mean | Std. Dev. | Min | Max | | | | |
						As share of GDP (in %) in 2011			
1	**Ireland**	2.33	2.16	-1.17	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	2.20	1.69	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	1.08	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	**Netherlands**	0.21	0.01	0.20	0.23	0.22	6.99	1.36	9.13
11	**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 (BPM5), 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

Table 2: AR(1) regression

VARIABLES*	Merchanting[†]	Services[‡]	Goods
Own lag	0.85***	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]
Constant	0.00***	0.00***	0.00
	[0.00]	[0.00]	[0.00]
Observations	554	554	554
R^2	0.789	0.623	0.529
R^2 overall	0.899	0.969	0.933
R^2 between	0.945	0.997	0.995

Standard errors in brackets

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

* Variables all as ratio to GDP, annual data (1980-2011)

[†] All data from IMF BOPS (BPM5) for 40 merchanting reporting countries. Exceptions regarding merchanting data: China, and USA (BOPS, BPM6), additions or full data from national sources for Australia (BPM6), Denmark, Finland, Netherlands, New Zealand, Sweden, and Switzerland (all BPM5).

[‡] Services excluding merchanting.

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

Variance of residuals	2000-2007	2008-2011	2000-2011
Merchanting	0.0000	0.0001	0.0000
Trade in services[†]	0.0001	0.0018	0.0001
Trade in goods	0.0002	0.0030	0.0004

[†] 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***	0.25***	0.22***	0.22***
	[0.09]	[0.09]	[0.09]	[0.09]	[0.08]	[0.08]
Old age dependency ratio	-0.10	-0.10	-0.05	-0.05	-0.01	-0.03
	[0.07]	[0.07]	[0.07]	[0.06]	[0.07]	[0.07]
Population growth	0.05	0.14	0.16	0.25	0.27	0.37
	[0.74]	[0.78]	[0.71]	[0.74]	[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**	0.23***	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***	0.29***	0.30***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Output growth	0.08	0.10	0.11	0.13	0.12	0.14
	[0.17]	[0.16]	[0.15]	[0.15]	[0.16]	[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	-0.00
					[0.01]	[0.01]
Asian crisis dummy			0.05***	0.05***	0.05***	0.05***
			[0.01]	[0.01]	[0.01]	[0.01]
Financial centre dummy					0.03**	0.03
					[0.01]	[0.02]
Euro introduction dummy					0.01**	0.01
					[0.01]	[0.01]
Aging society dummy					0.02	0.02
					[0.01]	[0.01]
Merchanting/GDP>0.5%		**0.04*** **		**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	0.568	0.602	0.625	0.661	0.652	0.684

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.
See Appendix for variable definitions.

Table 5: Comparative CA regressions (1980-2007)

VARIABLES	initial NFA (1 to 3) own estimates		IMF	lagged CA (4 to 6) own estimates		IMF
	1	2	3	4	5	6
Fiscal balance	0.21**	0.21**	0.20***	0.03	0.04	0.19***
	[0.08]	[0.08]		[0.08]	[0.08]	
Old age dependency ratio	-0.06	-0.06	-0.14**	0.00	-0.00	-0.12**
	[0.07]	[0.07]		[0.05]	[0.06]	
Population growth	-0.27	-0.19	-1.21***	-0.11	-0.07	-1.03
	[0.71]	[0.74]		[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***		0.26***	0.28***	
	[0.08]	[0.08]		[0.06]	[0.06]	
Oil balance, rest	0.33***	0.34***	0.23***	0.20***	0.20***	0.17***
	[0.05]	[0.04]		[0.04]	[0.04]	
Output growth	0.07	0.10	-0.21**	-0.10	-0.07	-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 centre 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		0.01**	0.01*	
	[0.01]	[0.01]		[0.00]	[0.00]	
Aging society dummy	0.01	0.02		0.01	0.01	
	[0.01]	[0.01]		[0.01]	[0.01]	
Merchanting/GDP>0.5%		**0.03***			**0.02**	
		[0.01]			**[0.01]**	
Constant	-0.01	-0.01		-0.00	-0.00	
	[0.01]	[0.01]		[0.01]	[0.01]	
Observations	234	234		220	220	
R^2	0.649	0.678	0.52	0.735	0.741	0.56

Robust standard errors in brackets

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

Note: Sample includes years 1980-2007; four year averages; dependent variable is the CA/GDP ratio.

VARIABLES	1	2	3	4	5	6
Fiscal balance	0.23***	0.22***	0.23***	0.22***	0.22***	0.21***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Old age dependency ratio	-0.02	-0.01	-0.02	-0.03	-0.02	-0.01
	[0.07]	[0.07]	[0.07]	[0.07]	[0.07]	[0.07]
Population growth	0.26	0.28	0.26	0.37	0.33	0.21
	[0.74]	[0.73]	[0.75]	[0.76]	[0.75]	[0.74]
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	0.28***	0.27***	0.28***	0.32***	0.30***	0.29***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]
Oil balance, rest	0.30***	0.29***	0.30***	0.30***	0.30***	0.30***
	[0.05]	[0.04]	[0.05]	[0.04]	[0.04]	[0.04]
Output growth	0.12	0.12	0.12	0.14	0.13	0.12
	[0.16]	[0.16]	[0.16]	[0.15]	[0.15]	[0.16]
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]
Banking crisis dummy	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Asian crisis dummy	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Financial centre dummy	0.03**	0.03**	0.03**	0.03	0.03	0.03**
	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]	[0.01]
Euro introduction dummy	0.01**	0.01**	0.01**	0.01	0.01**	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
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Merchanting/GDP>0	0.00		0.00			
	[0.01]		[0.01]			
Merchanting/GDP<0		0.00	0.00			
		[0.01]	[0.01]			
Merchanting/GDP>0.5%				**0.03***		
				[0.01]		
Merchanting/GDP>1%					0.03***	
					[0.01]	
Merchanting/GDP>2%						0.04**
						[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]
Observations	287	287	287	287	287	287
R^2	0.653	0.652	0.653	0.684	0.670	0.666

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 7: Relocation of merchanting activity in 2004

| VARIABLES | Benchmark | | Relocation | | | |
| | | | to the USA | | to Singapore | |
	1	2	3	4	5	6
Fiscal balance	0.22***	0.23***	0.23***	0.24***	0.23***	0.22***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.07]	[0.07]
Old age dependency ratio	-0.01	-0.03	-0.01	-0.01	-0.03	-0.04
	[0.07]	[0.07]	[0.07]	[0.07]	[0.08]	[0.07]
Population growth	0.27	0.38	0.28	0.34	1.53	1.38
	[0.72]	[0.76]	[0.73]	[0.74]	[1.37]	[1.21]
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***	0.17	0.24**
	[0.08]	[0.08]	[0.08]	[0.08]	[0.13]	[0.10]
Oil balance, rest	0.29***	0.30***	0.30***	0.29***	0.31***	0.31***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.05]	[0.05]
Output growth	0.12	0.15	0.12	0.12	0.49*	0.43*
	[0.16]	[0.15]	[0.16]	[0.15]	[0.29]	[0.24]
Relative income	0.02	0.01	0.01	0.01	0.06*	0.04
	[0.01]	[0.01]	[0.01]	[0.01]	[0.03]	[0.03]
Banking crisis dummy	-0.00	-0.00	-0.00	-0.00	-0.00	0.00
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Asian crisis dummy	0.05***	0.05***	0.05***	0.05***	0.07***	0.06***
	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]
Financial centre dummy	0.03**	0.03	0.03**	0.03*	0.02	0.02
	[0.01]	[0.02]	[0.01]	[0.02]	[0.02]	[0.02]
Euro introduction dummy	0.01**	0.01	0.01**	0.01**	0.01	0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Aging society dummy	0.02	0.02	0.02	0.02	0.02	0.02
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Merchanting/GDP>0.5%		**0.03***		**0.02***		**0.07***
		[0.01]		**[0.01]**		**[0.03]**
Constant	-0.01	-0.01	-0.01	-0.01	-0.04*	-0.03*
	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]
Observations	287	287	287	287	287	287
R^2	0.652	0.683	0.660	0.668	0.635	0.673

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