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THORBECKE, Willem
RIETI

CHEN, Chen
Fuzhou University of International Studies and Trade

SALIKE, Nimesh
Xi'an Jiaotong-Liverpool University

Research Institute of Economy, Trade & Industry, IAA

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Do Traditional Models or the Dominant Currency Paradigm Explain China's Export Behavior?※

Willem Thorbecke
Research Institute of Economy, Trade and Industry, Tokyo, Japan

Chen Chen
International Business School, Fuzhou University of International Studies and Trade, Fuzhou, China

Nimesh Salike
International Business School Suzhou, Xi'an Jiaotong-Liverpool University, Suzhou, China

Abstract

Traditional models indicate that appreciations of the exporting country's currency relative to the importing country's currency decrease exports. The dominant currency paradigm (DCP) holds that, since so much trade is invoiced in U.S. dollars (USD), a change in the importing country's currency relative to the USD rather than relative to the exporting country's currency influences trade. We seek to choose between these hypotheses for China, the world's largest exporter. The results indicate that both the traditional model and the DCP framework help to explain China's exports over the 1995-2018 period. When we focus on the period before renminbi internationalization policies increased renminbi invoicing, we find that the DCP framework no longer has explanatory power, but the bilateral RMB exchange rate does. We find that one reason for this puzzling finding is that exchange rates in countries that provide parts and components to China are correlated with the bilateral RMB rate and influence China's exports.

Keywords: China, Exports, Dominant Currency Paradigm, Trade Elasticities
JEL classification: F12, F41

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1. Introduction

In 2024, China's exchange rate against the U.S. dollar (USD) is close to its weakest level since 2008. At the same time, rising exports from China are generating protectionist pressures in the U.S., the European Union, and other trading partners. Does a weak renminbi stimulate China's exports?

Traditional models indicate that a depreciation of the exporting country's currency against the importing country's currency can lower import prices in the importing country's currency. This can in turn increase imports flowing into the country. This is an implication of the Mundell-Fleming model. This model assumes producer currency pricing (PCP), where exchange rate changes are passed through to prices in the importing country's currency. If firms instead practice local currency pricing (LCP), exchange rate changes will not impact prices in the importing country's currency. In this case exchange rate changes will not impact export volumes.

Recently Gopinath (2015), IMF (2019), Gopinath et al. (2020), and others have challenged both the PCP and the LCP frameworks. They noted that USD invoicing plays a dominant role in trade, even when countries are trading with each other and not with the U.S. For trade invoiced in USD between two countries other than the U.S., a depreciation of the exporting country's currency relative to the importing country's currency will not increase the importing country's purchasing power in USD and not enable it to import more. An appreciation of the importing country's currency relative to the USD, on the other hand, will enable it to purchase more imports. This approach is called the dominant currency pricing (DCP) framework.

China's exports were largely invoiced in USD, especially before 2012. The IMF (2019) reported that, on average over the 2001-2015 period, more than 90% of China's exports were invoiced in USD. Sato and Shimizu (2016) noted that, in the second quarter of 2010, only one percent of China's trade was invoiced in renminbi. Georgiadis et al. (2021) found that, as countries established swap lines with the People's Bank of China (PBoC), they invoiced more of their imports in renminbi. Steil et al. (2024) reported that, while the PBoC had swap lines with only 8 countries in 2010, swap lines increased to 19 by 2012, 31 by 2015, and 34 by 2016. Georgiadis et al. found that, by 2020, more than 30% of imports in countries having swap lines with the PBoC were invoiced in renminbi. Thus the share of China's exports invoiced in RMB has increased during the 2010s, starting from a base of close to zero.

Previous research indicates that, even during the period before 2012 when USD invoicing predominated, renminbi appreciations were associated with decreases in China's exports. Cheung et al. (2012) investigated how the IMF's consumer price index (CPI)-deflated trade-weighted RMB exchange rate affected China's exports to the world over the 1994-2010 period. Using dynamic ordinary least squares (DOLS) estimation and quarterly data, they found that a 10% renminbi appreciation was associated with a drop in total exports of between 9% and 16%, a drop in ordinary exports of between 13% and 19%, and a drop in processed exports of between 9% and 12%.

Thorbecke and Zhang (2009) investigated how bilateral real exchange rates between China and 30 countries affected China's labor-intensive exports over the 1997-2006 period. Using panel DOLS and annual data, they found that a 10% renminbi appreciation was associated with a drop in labor-intensive exports of between 16% and 18%. The effect was especially strong for knitwear and furniture exports.

Ahmed (2009) examined how the Federal Reserve's CPI-deflated real effective exchange rate affected China's exports over the 1996-2009 period. Using a first difference specification, ordinary least squares estimation and quarterly data, he found that a 1.0 percentage point increase in the annual rate of appreciation would decrease export growth by between 1.1 and 1.8 percentage points.

It is possible that the significance of the renminbi in explaining China's exports reflects the fact that the renminbi was pegged to the USD until 2005. A renminbi appreciation against an importing country's currency may be linked to an appreciation of the USD against the importing country's currency. In the DCP framework, such a USD appreciation would reduce imports into these countries from China.

Several researchers have presented evidence supporting the DCP framework. Boz et al. (2022) estimated exchange rate pass-through (ERPT) coefficients for 2,791 dyads over the 1990-2019 period. When only including the bilateral nominal exchange rate between the exporting and importing countries and control variables, they reported an ERPT coefficient of 0.7. When the importing country's nominal exchange rate relative to the USD is also included in the regression, the ERPT coefficient for the bilateral nominal exchange rate falls to 0.2 or 0.3 and the coefficient on the USD/importing country bilateral exchange rate equals 0.6 or 0.8. They also found that an increase in the dollar invoicing share in a country significantly reduces ERPT from the bilateral exchange rate and increases the USD ERPT.

Boz et al. (2022) also examined the impact of exchange rates on trade volumes for 2,847 dyads over the 1990-2019 period. When only including the bilateral nominal exchange rate between the exporting and importing countries and control variables, they reported that a 1% depreciation increases exports by 0.1%. When the importing country's nominal exchange rate relative to the USD is also included in the regression, the coefficient for the bilateral exchange rate falls to 0.04% in one specification and ceases to be statistically significant in another. A 1%

appreciation of the importer's currency relative to the USD, on the other hand, now increases imports by between 0.2% to 0.5%.

Ma et al. (2022) estimated exchange rate pass-through coefficients for over 2,100 dyads over the 1990-2015 period. They used U.S. housing activity as an instrument for the USD when explaining the pass-through of exchange rates to trade prices in countries other than the U.S. Working with products disaggregated at the 6-digit Harmonized System level, they reported that a 10% dollar appreciation would result in an 11.7% increase in import prices for products that are 100% invoiced in USD. These findings provide support for the DCP framework.

This paper investigates whether traditional models or the DCP framework provides a better explanation for China's export volume. Much of the previous work investigating DCP models has not included China because the Chinese government does not provide invoice data for trade. Figure 1 shows that China since 2007 has been the world's leading exporter. Its exports in 2021 and 2022 equaled exports from the next two leading exporters, the U.S. and Germany, combined. Investigating whether the DCP paradigm provides a good explanation for China's exports is important.

The results indicate that, over the 1995-2018 period, both the bilateral RMB real exchange rate between China and the importing countries and the USD exchange rate relative to the importing country are important for explaining China's exports. However, when the sample is restricted to the 1995-2011 period when USD invoicing of exports predominated, the bilateral exchange rate retains explanatory power but the USD exchange rate relative to the importing country no longer matters. These findings are contrary to the predictions of the DCP model.

To investigate these results further, we examine how exchange rates impact China's computer exports. Computers and office equipment is the largest category of China's electronics exports, with a value of USD 300 billion in 2021.[1] Much of the value added for these products come from inputs imported from upstream East Asian countries. We construct a weighted exchange rates of the upstream countries providing electronic parts and components (EPC) to China. This weighted exchange rate varies closely with the bilateral renminbi exchange rate relative to importing countries. For computer exports, it is this weighted exchange rate and not the bilateral renminbi exchange rate that has explanatory power. We also investigate two labor-intensive categories, footwear and sweaters, where much of the value-added comes from China. We find that the bilateral RMB exchange rate relative to the importing country and not the USD exchange rate relative to the importing country has explanatory power for both labor-intensive categories.

The next section presents the data and methodology. Section 3 presents the results. Section 4 investigates why the DCP paradigm does not explain China's exports over the 1995-2011 period. Section 5 concludes.

2. Data and Methodology

Gravity models can be used to explain exports from country *i* to country *j* of product *p* at time *t* (X_{ijpt}). Exports are often explained by several fixed effects:

$$lnX_{ijpt} = \lambda_{ipt} + \mu_{jpt} + \nu_{ij} + \epsilon_{ijpt} \qquad (1)$$

where λ_{ipt} represents exporter, product, and time fixed effects, μ_{jpt} represents importer, product, and time fixed effects, and ν_{ij} represents exporter and importer fixed effects. Bénassy-Quéré et

[1] These data come from the CEPII-CHELEM database.

al. (2021) added the bilateral real exchange rate between countries i and j ($lnBRER_{ijt}$) to equation (1):

$$lnX_{ijpt} = \beta lnBRER_{ijt} + \lambda_{ipt} + \mu_{jpt} + \nu_{ij} + \epsilon_{ijpt} \quad (2)$$

When investigating exports from a single country such as China, the exporter fixed effect terms (λ_{ipt} and ν_{ij}) must be dropped since there is only one exporter. Following Bénassy-Quéré et al. we add real GDP in China (lnY_{it}) and real GDP in the importing countries (lnY_{jt}) in some specifications. We also seek to add a time fixed effect (μ_t). Real GDP in China is collinear with the time fixed effect, so when including lnY_{it} we must drop μ_t. We also add in some specifications the real exchange rate of the importing country relative to the U.S. dollar ($lnRER_{US,jt}$). This is also collinear with the time fixed effect, so when we include $lnRER_{US,jt}$we cannot include μ_t.

We obtain data on China's bilateral real exports over the 1995-2018 period for 1,242 export categories to 190 countries from the UN Comtrade database. However, there are some missing observations so the panel is unbalanced.

We treat the estimated equations as semi-reduced form models. As Chinn (2004) discussed, exchange rates are volatile and often have a life of their own. Obstfeld and Rogoff (2000) also discussed this. Because of this, the estimated model may be useful for answering the question of how exchange rate changes impact export volumes. We thus follow Chinn, Bénassy-Quéré et al. (2021), and others in giving a structural interpretation to the exchange rate coefficients.

We obtain real GDP data from the CEPII-CHELEM database. We also obtain data on bilateral CPI-deflated real exchange rates between China and the importing country and between the importing country and the USD from the CEPII-CHELEM database.[2] The bilateral exchange rate between China and the importing country is defined so that an increase represents an appreciation of the renminbi. The bilateral exchange rate between the importing country and the U.S. dollar is defined so that an increase represents an appreciation of the importing country's currency relative to the U.S. dollar. Traditional models imply that, under PCP, the coefficient on the bilateral exchange rate between China and the importing country should be negative. The DCP hypothesis implies that the coefficient on the importing country's currency relative to the U.S. dollar should be positive.

3. Results

Table 1 presents the results from estimating the model with several specifications. Column (2) presents results with country-product and time fixed effects and with only the bilateral real exchange rate between China and the importing country as the exchange rate variable. In this case the coefficient on the bilateral real exchange rate between China and the importing country is correctly signed and statistically significant. The coefficient indicates that a 10% renminbi appreciation reduces China's exports by 7.8%. Column (3) presents results with country-product fixed effects, Chinese and importing country GDPs, and with only the USD real exchange rate relative to the importing country's currency as the exchange rate variable. In this case the coefficient on the exchange rate is again correctly signed and statistically significant. The results indicate that a 10% appreciation of the importing country's exchange rate relative to the U.S. dollar increases imports from China by 12.4%.

[2] These data are available here: http://www.cepii.fr/cepii/en/bdd_modele/bdd.asp .

Column (4) presents results with country-product fixed effects, Chinese and importing country GDPs, and with only the bilateral real exchange rate between China and the importing country included as the exchange rate variable. The results indicate that a 10% appreciation of the bilateral real exchange rate decreases exports from China by 11%. Column (5) presents results with country-product fixed effects, Chinese and importing country GDPs, and with both the bilateral real exchange rate between China and the importing country and the real USD exchange rate with the importing country's currency. The coefficients on both exchange rates are correctly signed and statistically significant. They indicate that a 10% appreciation of the renminbi relative to the importing country's currency would decrease exports by 12% and that a 10% appreciation of the importing country's exchange rate relative to the U.S. dollar would increase exports by 15%.

Column (6) provides results with separate country and product fixed effects, Chinese and importing country GDPs, and both exchange rate variables. The coefficients on both exchange rates are again correctly signed and statistically significant. They indicate that a 10% appreciation of the renminbi relative to the importing country's currency would decrease exports by 10% and that a 10% appreciation of the importing country's exchange rate relative to the U.S. dollar would increase exports by 16%. The results in Table 1 are thus consistent with both the standard model and with the DCP model. They indicate that exchange rates exert important effects on China's exports.

Table 2 estimates the same models with the sample truncated in 2011. This was before China's renminbi internationalization policies led to an increase in RMB invoicing of trade. We would expect the USD exchange rate relative to the importing country's currency to play an especially important role over this period.

Column (2) presents results with country-product and time fixed effects and with only the bilateral real exchange rate between China and the importing country as the exchange rate variable. In this case the coefficient on the bilateral real exchange rate between China and the importing country is correctly signed and statistically significant. The coefficient indicates that a 10% renminbi appreciation reduces China's exports by 8.7%. Column (3) presents results with country-product fixed effects, Chinese and importing country GDPs, and with only the USD real exchange rate relative to the importing country's currency as the exchange rate variable. In this case the coefficient on the exchange rate is not correctly signed.[3]

Column (4) presents results with country-product fixed effects, Chinese and importing country GDPs, and with only the bilateral real exchange rate between China and the importing country included as the exchange rate variable. The results indicate that a 10% appreciation of the bilateral real exchange rate decreases exports from China by 10%. Column (5) presents results with country-product fixed effects, Chinese and importing country GDPs, and with both the bilateral real exchange rate between China and the importing country and the real USD exchange rate with the importing country's currency. The coefficient on the bilateral exchange rate is correctly signed and statistically significant. It indicates again that a 10% appreciation of the renminbi relative to the importing country's currency would decrease exports by 10%. The coefficient on the USD exchange rate relative to the importing country's currency is again not correctly signed.

Column (6) provides results with separate country and product fixed effects, Chinese and importing country GDPs, and both exchange rate variables. The coefficient on the bilateral

[3] There may be collinearity between the two exchange rate variables in Table 2. This cannot, however, explain the puzzling results that the coefficient on the USD exchange rate relative to the importing country's currency takes on the wrong sign. In column (3) where the other exchange rate is not included, the coefficient on the USD exchange rate still takes on the wrong sign.

exchange rate is correctly signed and statistically significant. It indicates that a 10% appreciation of the renminbi relative to the importing country's currency would decrease exports by 9%. The coefficient on the USD exchange rate relative to the importing country's currency is not statistically significant. The findings in Table 2 are inconsistent with the DCP framework.

4. Investigating Why the Bilateral Renminbi Exchange Rate Matters So Much

The results in Table 2 are puzzling. They indicate that, over the 1995-2011 period when Chinese exports were invoiced in USD, the bilateral RMB exchange rate relative to the importing country is correctly signed and large and that the USD exchange rate relative to the importing country does not explain China's exports.

During this sample period, foreign multinational corporations (MNCs) played a special role in China's exports. They combined their technology and imported parts and components with China's cheap labor to produce goods. Feenstra and Wei (2010) discussed how China's exports during this period were divided into processed exports that relied on imported inputs and ordinary exports that did not. Their data show that machinery and electrical was the largest category of processed exports. Within this grouping, exports of computers and office equipment was and still remains the largest sub-category of exports. Feenstra and Wei noted that China's computer exports combined imported inputs with low-cost Chinese labor. Figure 2 plots China's computer exports.

Yoshitomi (2006) discussed how, after Taiwan lifted restrictions on foreign direct investment to China in 2001, Taiwanese Original Design Manufacturers (ODMs) relocated notebook personal computer manufacturing from Taiwan to China. The ODMs produced for Hewlett-Packard, Apple, Toshiba, and other leading brands.

Dedrick et al. (2010) investigated inputs into the Hewlett-Packard nc6230 Notebook PC and the Lenovo ThinkPad T43 Notebook PC that were produced in China. They reported that almost all of the returns flowed to corporations in the U.S., Japan, South Korea, and other countries. They reported that Chinese workers could earn as little as USD 0.01 a minute.

Their results suggest that exchange rates in upstream countries providing inputs to China may matter for the price competitiveness of China's computer exports. This should be especially true during the 1995-2011 period when MNCs contributed an outsized share to the value-added of electronics exports.

We thus investigate how exchange rates in upstream supply chain countries impacted China's computer exports. We assume, following the IMF (2005), that parts and components at this time flowed elastically into China to meet the demand for final goods in the rest of the world.

We construct a weighted exchange rate between the nine leading providers of EPC to China and the countries importing computers from China.[4] The weighted exchange rate ($wrer_{j,t}$) for importing country j is calculated as:

$$wrer_{j,t} = wrer_{j,t-1} \prod_{k=1}^{9} \left(\frac{brer_{k,j,t}}{brer_{k,j,t-1}} \right)^{w_{k,t}} \qquad (3),$$

where the subscript k runs over the nine leading suppliers of EPC to China, $brer_{k,j,t}$ is the bilateral real exchange rate between country k providing EPC to China and country j importing computers from China, and $w_{k,t}$ is the share of EPC flowing from country k to China in year t relative to the EPC flowing from the nine leading suppliers of EPC to China in year t. The nine leading suppliers of EPC to China are Germany, Japan, Malaysia, the Philippines, Singapore, South

[4] Previous research has indicated that exchange rates in countries providing parts and components to China impact China's exports. See, e.g., Ahmed (2009) and Thorbecke (2013).

Korea, Thailand, Taiwan, and the U.S. Data for EPC exports to China come from the CEPII-CHELEM database.

We estimate the model for real computer exports (Harmonized System Category 8471) over the 1995-2011 period to investigate the puzzling results in Table 2. Results over the 1995-2018 period are similar and available on request.

Table 3 presents the findings. The exchange rate elasticities in columns (2) and (3) of Table 3 follow the same pattern as the exchange rate elasticities in columns (2) and (3) of Table 2. The coefficient on the RMB exchange rate relative to the importing country is correctly signed and statistically significant and the coefficient on the USD exchange rate relative to the importing country is of the wrong sign and statistically significant.

Columns (5), (6), and (7) of Table 3 present elasticities for the weighted exchange rate in supply chain countries relative to the importing countries. In all three columns *wrer* takes on the expected sign. In column (7) including all three exchange rates, the coefficients on the RMB exchange rate relative to importing countries and the USD exchange rate relative to the importing country both take on the wrong signs. The coefficient on *wrer*, on the other hand, is correctly signed and statistically significant. The coefficient indicates that a 10% appreciation of the weighted exchange rate in supply chain countries relative to importing countries would reduce China's computer exports by 17%.

Most of the countries supplying EPC to China are in East Asia. Exchange rates in East Asia including China often move together. Regressing the RMB exchange rate relative to importing countries on the weighted exchange rate in supply chain countries relative to importing countries yields a coefficient of 0.85 and a t-statistic of 15. The adjusted R-squared from this regression equals 0.97. Thus one reason why the bilateral RMB exchange rate relative to importing countries has explanatory power for computer exports in Table 3 is because it is closely related to *wrer*. It seems likely that part of the reason why the bilateral exchange rate has so much explanatory power in Table 2 is because it is also capturing the impact of exchange rates in upstream Asian countries on China's exports.

While much of the value-added of China's electronics exports over the 1995-2011 period came from imported parts and components, much of the value-added of labor-intensive exports such as footwear and sweaters came from China. Feenstra and Wei (2010) reported that footwear and especially textile products such as sweater were predominantly ordinary exports that do not depend on foreign inputs.[5] We investigate whether footwear and sweater exports are better explained by the bilateral exchange rate between China and the importing country or by the importing country's exchange rate relative to the USD. Footwear come from Harmonized System categories 6401, 6402, 6403, 6404, 6405, and 6406. Sweaters come from the Harmonized System category 6110

The results for footwear are presented in Table 4. The coefficients on the bilateral exchange rate between China and the importing countries are correctly signed and statistically significant. They indicate that a 10% RMB depreciation is associated with an increase in footwear exports of between 11% and 15%. The coefficients on the USD exchange rate relative to the importing countries are incorrectly signed.

The coefficients on GDP in the importing countries vary from 1.349 to 1.926. For computer exports in Table 3 these GDP coefficients vary from 2.664 to 3.075. These findings indicate that footwear exports are much less sensitive than computer exports to importing

[5] Feenstra and Wei (2010) reported that 57% of footwear exports and 74% of textiles exports in 2006 were ordinary exports.

country GDP. Footwear is less sophisticated than computers, and more accessible to lower-income consumers.

The results for sweaters are presented in Table 5. The coefficients on the bilateral exchange rate between China and the importing countries are correctly signed and statistically significant. They indicate that a 10% RMB depreciation is associated with an increase in footwear exports of between 15% and 17%. The coefficients on the USD exchange rate relative to the importing countries are incorrectly signed.

The coefficients on GDP in the importing countries vary from 1.411 to 1.944. As with the results for footwear in Table 4, these findings indicate that sweater exports are much less sensitive than computer exports to importing country GDP. Sweaters like footwear are less sophisticated than computers, and more accessible to lower-income consumers.

The important implication of the results in Tables 4 and 5 is that the bilateral RMB exchange rate with the importing country rather than the USD exchange rate relative to the importing country explains exports in these important labor-intensive categories. This presents a puzzle for proponents of the DCP framework.

5. Conclusion

Traditional models such as the Mundell-Fleming model imply that a bilateral appreciation of the exporting country's currency against the importing country's currency will reduce exports. The DCP model indicates that, since USD invoicing is common even in trade between countries other than the U.S., an appreciation of the exporting country's currency relative to the import country's currency will not increase the importing country's purchasing power in USD and not increase its imports. Rather, an appreciation of the importing country's currency relative to the USD will raise imports.

We investigate whether China's exports can be better explained by the traditional framework or the DCP framework. Examining China's exports to 190 countries over the 1995-2018 period, we find that both the bilateral renminbi exchange rate relative to importing countries and the importing countries' exchange rates relative to the USD explain China's exports. We then truncate the sample at 2011 to focus on the period before renminbi internationalization policies sparked an increase in exports invoiced in renminbi. During the earlier period we find, contrary to the DCP model, that the bilateral renminbi exchange rate retains explanatory power but the USD exchange rate relative to importing countries does not.

During this earlier period, much of the value-added of China's electronics exports came from upstream countries. When we include exchange rates in upstream countries, we find that these explain China's computer exports and that neither the bilateral renminbi exchange rate not the USD exchange rate relative to importing countries has explanatory power.

Nevertheless exchange rate in upstream countries are not a sufficient reason to explain why the bilateral RMB exchange rate is correlated with China's exports while the USD exchange rate relative to importing countries is not. For footwear and sweaters, labor-intensive sectors where much of the value-added comes from China, the bilateral RMB exchange rate explains exports well and the USD exchange rate relative to importing countries does not.

These findings appear inconsistent with the DCP framework. Boz et al. (2022) found that, when including both the bilateral exchange rate between exporting and importing countries and the importing countries' exchange rates relative to the USD, the former had little or no explanatory power and the latter mattered. The results here indicate that, for China over the

1995-2018 period, both exchange rates matter. When the sample is truncated at 2011 to focus on the period when USD invoicing was paramount, the bilateral exchange rate retains explanatory power and the USD exchange rate relative to the importing country does not.

How can we understand these results? During the 1995-2011 period, Chinese exporters faced severe credit constraints (see, e.g., Manova and Yu, 2017). An increase in RMB revenues would ease these constraints. When the RMB depreciates against the importing country, importing firms would be able to pay more renminbi without losing revenues in their own currencies. Did cash-strapped Chinese exporters change the dollar value of exports often enough to exploit these gains from trade?

Also, unlike for other countries, we do not have government data on the share of Chinese exports invoiced in different currencies. Could it be that the share of exports invoiced in dollars was less than other sources suggest?

Another possibility is that the findings reflect the pervasive influence of MNCs in China's exports during the earlier sample period. As Ito et al. (2018) discussed, many MNCs managed currency risk at their global headquarters. This gave them flexibility to choose different invoicing currencies at different times and with different countries. Did the invoicing patterns of MNCs allow bilateral exchange rate to matter over the earlier sample period? Future research should consider whether credit constraints, the role of MNCs, or other factors can help explain why bilateral exchange rates rather than USD exchange rates relative to importing countries' currencies mattered so much for China's exports.

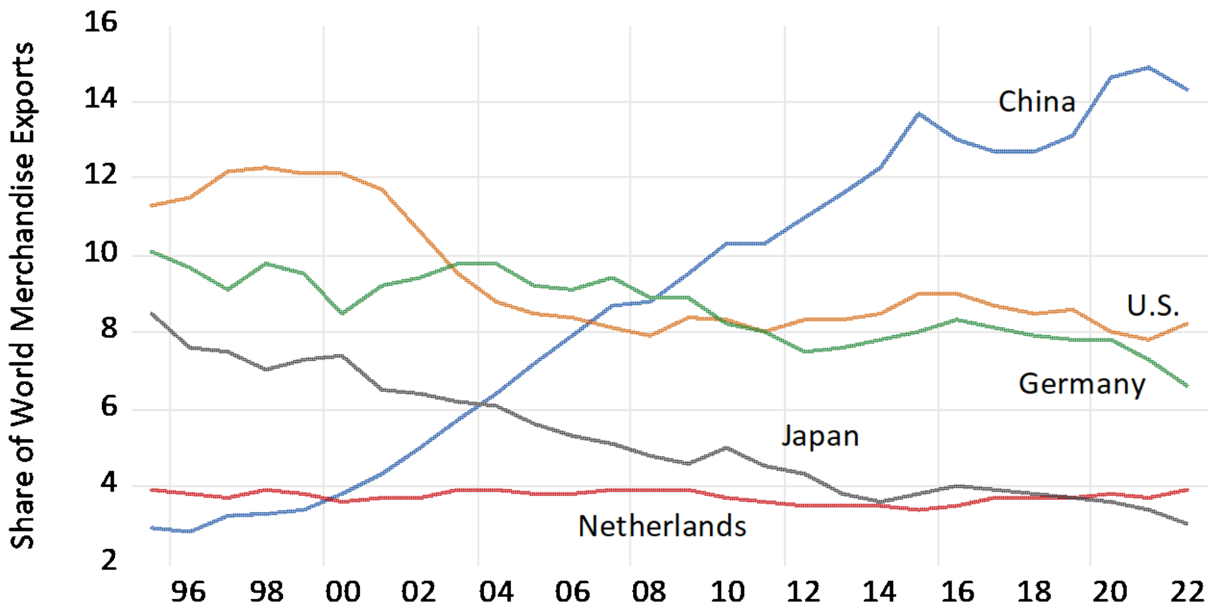

Figure 1. Share of World Exports Among Leading Exporters.
Source: World Development Indicators, World Bank.

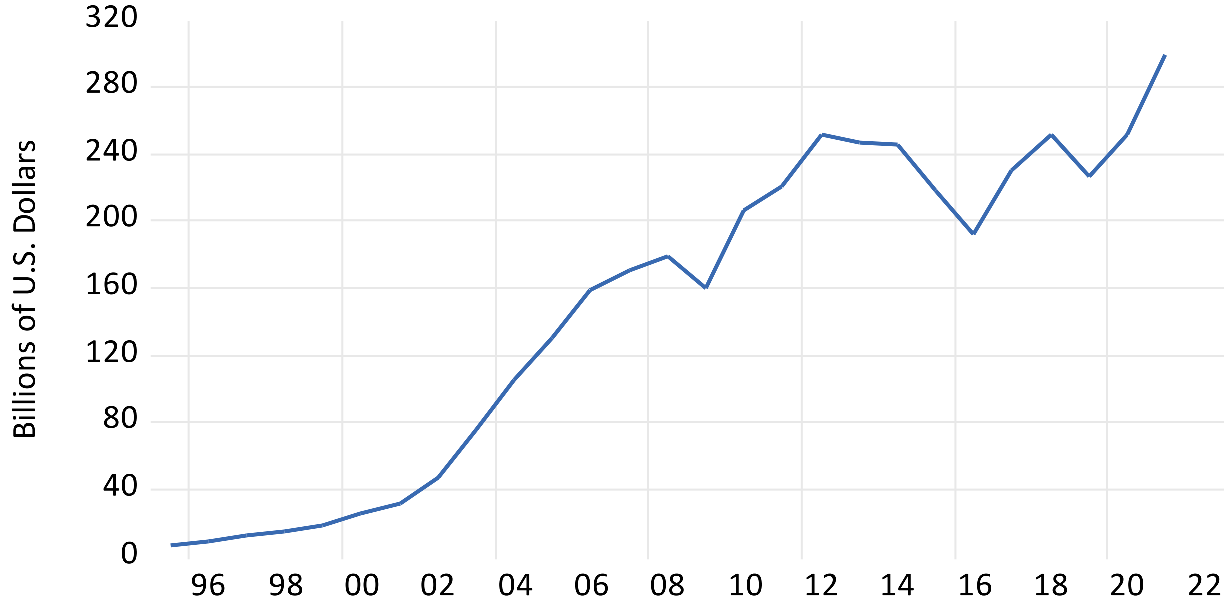

Figure 2. China's Exports of Computers and Office Machinery.
Source: CEPII-CHELEM Database.
Note: The data are from International Standard Industrial Classification code 3000.

Table 1. Trade Elasticities for China's Exports of 1,242 Products to 190 Countries over the 1995-2018 Period.

(1)	(2)	(3)	(4)	(5)	(6)
Independent Variable	Model with Country-Product and Time Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects	Model with Separate Country and Product Fixed Effects
RMB Real Exchange Rate Relative to Importing Country	-0.775*** (0.158)		-1.092*** (0.115)	-1.171*** (0.115)	-1.030*** (0.102)
USD Real Exchange Rate Relative to Importing Country		1.236*** (0.219)		1.451*** (0.211)	1.572*** (0.203)
Chinese Real GDP		0.317*** (0.115)	1.062*** (0.083)	0.559** (0.121)	0.262** (0.115)
Importing Country Real GDP	0.615*** (0.154)	0.878*** (0.160)	0.552*** (0.160)	0.560*** (0.160)	0.596*** (0.140)
No. of Observations	1,569,282	1,571,912	1,569,282	1,569,282	1,590,097
Adjusted R-squared	0.645	0.628	0.630	0.631	0.508

Notes: The table presents estimates from a model of China's real exports of 1,242 products disaggregated at the Harmonized System four-digit level to 190 countries over the 1995-2018 period. The independent variables are the CPI-deflated RMB real exchange rate relative to the importing countries, the U.S. dollar CPI-deflated real exchange rate relative to the importing country, Chinese real GDP, importing country real GDP, and a variety of fixed effect terms. The expected sign is negative on the RMB real exchange rate and positive on the U.S. dollar real exchange rate. Standard errors (in parentheses) are clustered at the importing country-product level.
*** (**) indicates significance at the 1% (5%) level.

Table 2. Trade Elasticities for China's Exports of 1,242 Products to 190 Countries over the 1995-2011 Period

(1)	(2)	(3)	(4)	(5)	(6)
Independent Variable	Model with Country-Product and Time Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects	Model with Separate Country and Product Fixed Effects
RMB Real Exchange Rate Relative to Importing Country	-0.868*** (0.190)		-1.040*** (0.167)	-1.025*** (0.167)	-0.846*** (0.135)
USD Real Exchange Rate Relative to Importing Country		-0.490** (0.229)		-0.368 (0.231)	0.134 (0.264)
Chinese Real GDP		1.538*** (0.138)	1.590*** (0.098)	1.711*** (0.125)	1.231*** (0.116)
Importing Country Real GDP	0.550*** (0.212)	0.935*** (0.244)	0.586*** (0.208)	0.578*** (0.209)	0.661*** (0.176)
No. of Observations	1,107,040	1,108,425	1,107,040	1,107,040	1,126,466
Adjusted R-squared	0.714	0.711	0.713	0.713	0.565

Notes: The table presents estimates from a model of China's real exports of 1,242 products disaggregated at the Harmonized System four-digit level to 190 countries over the 1995-2011 period. The independent variables are the CPI-deflated RMB real exchange rate relative to the importing countries, the U.S. dollar CPI-deflated real exchange rate relative to the importing country, Chinese real GDP, importing country real GDP, and a variety of fixed effect terms. The expected sign is negative on the RMB real exchange rate and positive on the U.S. dollar real exchange rate. Standard errors (in parentheses) are clustered at the importing country-product level

*** (**) indicates significance at the 1% (5%) level.

Table 3. Trade Elasticities for China's Computer Exports 190 Countries over the 1995-2011 Period

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Independent Variable	Model with Country and Time Fixed Effects	Model with Country Fixed Effects	Model with Country Fixed Effects	Model with Country and Time Fixed Effects	Model with Country Fixed Effects	Model with Country Fixed Effects
RMB Real Exchange Rate Relative to Importing Country	-1.017** (0.424)		-0.728* (0.403)			0.935 (0.819)
USD Real Exchange Rate Relative to Importing Country		-3.468** (0.652)				-3.986*** (0.745)
Weighted Exchange Rate between Supply Chain Countries and Importing Countries				-1.013** (0.427)	-0.690* (0.415)	-1.695** (0.835)
Chinese Real GDP		3.321*** (0.403)	2.289*** (0.358)		1.801*** (0.378)	2.747*** (0.462)
Importing Country Real GDP	2.664*** (0.650)	2.897*** (0.650)	2.686*** (0.658)	3.022*** (0.658)	3.075*** (0.656)	2.963*** (0.658)
No. of Observations	2,488	2,496	2,488	2,434	2,434	2,426
Adjusted R-squared	0.729	0.724	0.721	0.726	0.723	0.723

Notes: The table presents estimates from a model of China's real exports of computers (Harmonized System category 8471) to 190 countries over the 1995-2011 period. The independent variables are the CPI-deflated RMB real exchange rate relative to the importing countries, the U.S. dollar CPI-deflated real exchange rate relative to the importing country, a weighted exchange rate between supply chain countries and importing countries, Chinese real GDP, importing country real GDP, and a variety of fixed effect terms. The weighted exchange rate is a geometric average of CPI-deflated real exchange rates between the nine leading providers of electronic parts and components to China and countries importing computers from China. The expected sign is negative on the RMB real exchange rate, positive on the U.S. dollar real exchange rate, and negative on the weighted exchange rate. Standard errors (in parentheses) are clustered at the importing country level.

*** (**)[***] indicates significance at the 1% (5%)[10%] level.

Table 4. Trade Elasticities for China's Footwear Exports to 190 Countries over the 1995-2011 Period

(1)	(2)	(3)	(4)	(5)
Independent Variable	Model with Country-Product and Time Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects
RMB Real Exchange Rate Relative to Importing Country	-1.123** (0.460)		-1.534*** (0.423)	-1.381*** (0.420)
USD Real Exchange Rate Relative to Importing Country		-4.219** (0.693)		-4.040*** (0.685)
Chinese Real GDP		0.755** (0.341)	-0.340 (0.336)	0.928*** (0.334)
Importing Country Real GDP	1.349* (0.699)	1.926*** (0.716)	1.564** (0.697)	1.490** (0.697)
No. of Observations	15,139	15,213	15,139	15,139
Adjusted R-squared	0.532	0.489	0.483	0.489

Notes: The table presents estimates from a model of China's real exports of footwear (Harmonized System categories 6401, 6402, 6403, 6404, 6405, and 6406) to 190 countries over the 1995-2011 period. The independent variables are the CPI-deflated RMB real exchange rate relative to the importing countries, the U.S. dollar CPI-deflated real exchange rate relative to the importing country, Chinese real GDP, importing country real GDP, and a variety of fixed effect terms. The expected sign is negative on the RMB real exchange rate and positive on the U.S. dollar real exchange rate. Standard errors (in parentheses) are clustered at the importing country level.
*** (**) indicates significance at the 1% (5%) level.

Table 5. Trade Elasticities for China's Sweater Exports to 190 Countries over the 1995-2011 Period

(1)	(2)	(3)	(4)	(5)
Independent Variable	Model with Country-Product and Time Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects	Model with Country-Product Fixed Effects
RMB Real Exchange Rate Relative to Importing Country	-1.714*** (0.634)		-1.662**** (0.593)	-1.473*** (0.604)
USD Real Exchange Rate Relative to Importing Country		-4.950*** (1.081)		-4.754*** (1.082)
Chinese Real GDP		2.438*** (0.473)	1.166*** (0.426)	2.661*** (0.458)
Importing Country Real GDP	1.535* (0.840)	1.944** (0.852)	1.422* (0.839)	1.411* (0.832)
No. of Observations	2,448	2,451	2,448	2,448
Adjusted R-squared	0.525	0.516	0.507	0.515

Notes: The table presents estimates from a model of China's real exports of sweaters (Harmonized System category 6110) to 190 countries over the 1995-2011 period. The independent variables are the CPI-deflated RMB real exchange rate relative to the importing countries, the U.S. dollar CPI-deflated real exchange rate relative to the importing country, Chinese real GDP, importing country real GDP, and a variety of fixed effect terms. The expected sign is negative on the RMB real exchange rate and positive on the U.S. dollar real exchange rate. Standard errors (in parentheses) are clustered at the importing country level.
*** (**) indicates significance at the 1% (5%) level.

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