THE TRADE IMPACT OF DIPLOMATIC RELATIONS IN DEVELOPING COUNTRIES:

THE CHOICE BETWEEN CHINA OR TAIWAN.

by

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DISSERTATION ABSTRACT

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China is using the policy of diplomacy to increase its global influence, especially among developing countries. From 1995 to 2019, twenty-two developing countries from various parts of the world switched diplomatic allegiances from Taiwan to China. This dissertation evaluates how this diplomatic policy change affected various trade outcomes of the countries that switched allegiances. In summary, it finds that trade with Taiwan decreased, especially imports from there. For trade with China, the value of imports increased but that of exports decreased. This decrease in the value of exports spared the sectors for which the switching countries enjoyed comparative advantages.

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activities where I won multiple intramural championships or just hang out, I could always rely on the companionship of Robert, Garrett, Tanner, Shan, Colleen, Shihab, Pramod, Kevin, James, and Ethan.

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To S. Kamanga, O.J. Kamanga, A.W. Chisale, and N. Tinoza.

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1 Introduction

China's massive economic growth over the past four decades has inevitably been accompanied with its increased influence on global affairs. Within developing countries, a lot of China's influence is economic through loans, infrastructure development, and trade. This dissertation contains three essays that study the ways in which China is having an influence on trade outcomes in developing countries.

China has a history of limiting its interactions with countries with which it does not hold formal diplomatic relations. For this reason, the establishment of such relations is a crucial means through which China exerts direct influence—including economically—on other countries. In the hope of reaping some economic benefits of association with China, a number of developing countries have established new relations with the Asian giant over the past three decades. A majority of these countries were only able to establish diplomatic ties with China after they severed the diplomatic relations they had with Taiwan. The reason why the abolition of formal ties with Taiwan is a necessary step for establishing relations with China is that due to its strict adherence to the One China principle, which states that Taiwan is one of its provinces and, thus, must not be treated as a sovereign state, China refuses to hold diplomatic relations with any country that holds similar ties with Taiwan. From the perspective of the developing countries, this switch in diplomatic allegiances from Taiwan to China is largely motivated by economic considerations. On the other hand, China readily welcomes these switches as they help the Asian giant in its goal of wielding 'soft power' as it moves up the global geopolitical power hierarchy. The three essays in this thesis study how the dynamics of these diplomatic switches have affected trade outcomes within the 22 developing countries that made the diplomatic policy change during the period ranging from 1995 to 2019.

The first essay is a case study for Malawi, which severed the diplomatic ties it held with Taiwan in December 2007 and quickly established relations with China at the start of 2008. The abrupt nature with which Malawi cut the 41-year cordial association it had with Taiwan came as a shock, especially domestically. Nonetheless, the government of Malawi assured its citizens that the change would bring tremendous benefits including in areas like international trade. The link between diplomacy and trade comes through economic diplomacy, which is when governments use embassies, consulates, and other foreign mission posts to promote trade and investment. Essentially, the

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Malawi government asserted that its economic diplomacy would bear more fruit with China than it did with Taiwan. This essay evaluates the validity of this claim in two steps. First, it tests whether the values of bilateral trade flows between Malawi and China improved after 2007. Considering that improvements in bilateral trade flows could come simply as a result of trade diversion from other countries, the essay then tests whether Malawi's overall trade flows improved. Using a difference-in-differences estimation of the gravity model in its multiplicative Poisson pseudo-maximum likelihood (PPML) form, this study finds that switching diplomatic allegiances led to increases of 357% and 127% in Malawi's exports to and imports from China, respectively. However, further analysis shows that these improvements mainly came at the expense of Malawi's trade flows with Taiwan, as well its traditional trade partners like South Africa, Zimbabwe, Great Britain and the U.S.A. This trade diversion was stronger for exports such that the diplomatic policy change did not improve the country's overall exports.

The second essay examines whether the results for Malawi are generalizable and assesses the trade-impact of switching diplomatic allegiances from Taiwan to China for a set of 22 countries that made the change between 1995 and 2019. All but one country that switched during this period are developing, and span locations in Sub-Saharan Africa (SSA), Central America, the Caribbean, and Oceania. In this vein, this essay offers a broader picture of the impact the newly established diplomatic relations with China have on trade outcomes across developing regions of the world. Again, the extent of the impact these relations have mainly depends on the capacity of diplomats to perform economic-diplomacy duties. In the event that those duties are done well by both parties involved, switching diplomatic allegiances from Taiwan to China should lead to an increase in bilateral trade flows with China, and possibly hurt trade with Taiwan. The empirical results show that imports from China indeed went up (25%), and imports from Taiwan went down (39%), on average. However, exports to Taiwan remained unchanged while exports to China actually decreased by 56%. The fact that exports to China decreased signifies the inability of developing countries to maximize the trade benefits that should come with the newly established relations with China.

The third essay takes a closer look at how the diplomatic switch in allegiances from Taiwan to China affects the micro-structure of exports. In particular, it uses the Exporter Dynamics Database to analyze how firms in the switching countries for which sufficient data are available responded to the switch in diplomatic allegiances from Taiwan to China. The chapter focuses on several aspects

of exporter dynamics including the numbers of firms exporting to Taiwan and China, the average values of exports per exporting firm, as well as product entry, exit, and survival within the two export markets. The theory on economic diplomacy suggests that entry and survival should rise while exits should fall in the case of exports to China. However, developing countries tend to be characterized by the presence of allocative inefficiencies such as distortions in labor markets, access to finance, and high taxation that hinder the most productive firms from being the ones that always thrive in export markets. In such environments, the micro-structure of exports is unlikely to respond much when countries switch diplomatic allegiances from Taiwan to China. Indeed, the results show that neither the numbers of exporters nor the dynamics of firm and product entries as well as their exits into and out of China or Taiwan responded significantly to the policy change. However, average values of exports to China decreased. Even so, the sectors for which the switching countries in the sample possessed comparative advantages did not experience decreases in average values of exports.

Together, these three essays paint a full picture of the impact that establishing diplomatic relations with China has on trade outcomes in developing countries. On the one hand, the first essay shows that closer relations with China can help a country grow its bilateral trade with China, even though this growth may come at the expense of the country's trade with its other trade partners. On the other hand, the second essay demonstrates that improvements in trade broadly favor imports from China but hurt exports to China. The third essay reveals that the decreases in exports to China are not driven by the sectors for which the developing countries that switch diplomatic allegiances from Taiwan to China have comparative advantages. These findings may be of importance to other developing countries that may consider making the same diplomatic policy change in the future. As long as they care about how the diplomatic policy change would impact their trade outcomes, countries that choose to switch diplomatic allegiances from Taiwan to China in the near future must focus on maximizing the gains they would enjoy in the sectors for which they have comparative advantages.

2 Pivoting towards China: The Impact of Severing Diplomatic Ties with Taiwan on Malawi's Trade Flows.

Ever since China opened up its economy to the international community, the country has experienced astronomical economic growth. This growth has coincided with the country's increased economic influence worldwide, including among developing countries (Qui & Zhan, 2016). Across the world, leaders of developing countries are admiring and emulating the China Model of economic growth (Callick, 2007). In December of 2007, Malawi, a small sub-Saharan African (SSA) country that mainly exports unprocessed agricultural commodities, became the latest country to ingratiate itself with China through the formulation of official diplomatic relations. In order to do so, Malawi had to sever the 41 year-long cordial diplomatic ties it had enjoyed with Taiwan.[1] The decision by the government of Malawi to switch its diplomatic allegiances from Taiwan to China caught its own citizens as well as the government of Taiwan by surprise (Hsu, 2008). In fact, just three months prior to the switch, at the inaugural Taiwan-Africa Summit, the then Malawi's President, Bingu wa Mutharika, reiterated his country's support for Taiwan's bid to join multinational organizations like the United Nations. Concurrently, Taiwan was funding several important infrastructure projects in Malawi, such as the construction of the Mzuzu Central Hospital, the Parliament Building in Lilongwe, and the Karonga-Chitipa Road in the northern part of the country.

Nonetheless, the government of Malawi went ahead with its decision to establish relations with China touting trade, aid, and foreign direct investment (FDI) benefits that the country would enjoy as a result of the newly established ties. Malawi and Mainland China put a stamp of approval on their new found friendship in May of 2008 when the two countries signed a memorandum of understanding (MoU) with an aim of enhancing trade and investment ties. In the MoU, China committed to help increase the productive capacity of Malawi in tobacco, cotton, mining, forestry, fertilizer production, and processing hides and skins (Ngozo, 2011 and Mzale, 2015). In so doing, China was not only committing to help Malawi expand the production of tobacco, the country's primary foreign exchange earner, but also it was pledging to assist the country diversify its export base. Establishing diplomatic ties with China also had the potential of giving Malawi access to one

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[1]Under the One-China Policy, countries must choose to either hold formal diplomatic ties with Mainland China or with Taiwan, but not both

of the largest trade markets globally, especially considering the reliance that Malawi has on exports of primary commodities and China's seemingly insatiable demand of the same. All this does not imply that the benefits of these new ties were only meant to accrue to Malawi. In all its endeavors, China emphasizes win-win co-operations. As such, as China was making its pledges, Malawi was opening its doors to massive Chinese imports, including products that directly competed with locally produced items (Helema, 2013). For a developing country like Malawi, an influx of cheap imports can be detrimental to its nascent industries and ultimately its long-run growth.

This study assesses the impact that this switch in diplomatic allegiances from Taiwan to China had on Malawi's trade outcomes, both exports and imports. It starts by exploring the impact that the switch had on Malawi's bilateral trade with China as well as with Taiwan. The changes in these bilateral flows are then broken down into their extensive and intensive margins. Thereafter, the study investigates how trade of different broad economic categories of commodities changed subsequent to the policy change. Here, focus is on the categories that are important to Malawi's exports like agricultural and textile commodities, as well as import categories that could either compete with exports or may enhance the productivity of local sectors. Considering that prior to 2008 when Malawi and China officially became diplomatic allies neither China nor Taiwan were important trade partners for Malawi, this study also analyzes how Malawi's trade with its traditional partners evolved following this big diplomatic policy change.[2] After evaluating these bilateral effects with respect to trade with China as well as Taiwan, the study then assesses whether those bilateral trade changes were large enough to impact Malawi's overall trade. In other words, the study analyzes whether the switch in allegiances led to trade creation or if it simply resulted in trade diversion from other trade partners. Altogether, these exercises assess if indeed Malawi experienced the trade benefits that its government claimed it would enjoy when it switched diplomatic allegiances from Taiwan to China.

This study makes three contributions to the literature. First, it adds new evidence of the economic influence that the involvement with China is having in countries across the globe, particularly within developing countries. Jenkins and Edwards (2006), Kummer-Noormamode (2014), Autor,

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[2]Traditional partners are defined by the sizes of the aggregate values of trade flows with Malawi. South Africa, Zimbabwe, Great Britain, and the USA are identified to be Malawi's four main traditional trade partners. Section 2.3.4 has more details.

Dorn, and Hanson (2013), Bloom and van Reenen (2016), and others have all demonstrated the various ways in which China is impacting other economies. In the African context, this study's emphasis on China's influence on trade outcomes is a slight departure from common discussions on China's impact in the region, which dwell on the extractive nature of China's involvement in Africa or on infrastructure development. Even when trade is mentioned, much attention is on whether engagement with China benefits or hurts African exports. On the benefits of trade involving China, He (2013) compares imports of SSA countries from China to imports coming from Western countries and finds that Chinese imports have a stronger positive effect on the exports of all SSA manufacturing sectors. While Chinese imports may be good for Africa's exports, on the negative side, Chinese competition in secondary markets is bad for SSA's exports, as a study by Giovannetti and Sanfilippo (2009) shows. An increase in the share of Chinese exports in the United States and the European Union is associated with a decrease in African exports. One aspect that distinguishes this study from the two aforementioned studies is its deep dive into the experiences of a single country rather than on the experiences of the region as a whole. In doing so, it is similar to Edwards and Jenkins (2015) which demonstrates that South Africa's exports in all major export markets have been negatively affected by Chinese exports.

The second major contribution this study makes is it introduces a new way of assessing the link between diplomacy and trade by focusing on the timing of the establishment of diplomatic ties. In other studies linking diplomacy to trade, Rose (2007), van Bergeijk, Yakop, and de Groot (2011), and Visser (2018) use representation, captured by the existence of embassies or consulates, as a measure of diplomacy. A different measure that van Bergeijk (1992) uses is creating indices of cooperativeness and hostility. All these papers demonstrate that, for a large variety of countries, trade responds to changes in diplomatic relations. By adding a time component to the presence of diplomatic relations, this study paints a clearer picture of the impact that diplomatic relations can have on trade. The third contribution of this study is that it is informative about the trade patterns of a small developing country in SSA. Very little is known about trade patterns in Africa. Of the literature that is available, the tendency is to take a broad approach in studying African trade, as exemplified by Eisenman (2012).

Using a panel data set and a Poisson pseudo maximum likelihood (PPML) estimator, this study finds that the decision to switch diplomatic allegiances from Taiwan to China was very successful in

increasing the bilateral trade between Malawi and China. This is true for both exports and imports. In particular, the switch led to a 357% increase in exports to China in the 6 years following the policy change relative to the 6 years preceding the change. Prior to the switch in allegiances, Malawi's exports to China averaged $2.36 million per year. Thus, establishing diplomatic relation with China led to an average change of $8.43 million more exports to China each year. A further breakdown of these outcomes shows the changes were mainly driven by the intensive margin of trade in that measures of average values of exports increased faster compared to measures of varieties of commodities traded. For imports, switching resulted in a 127% increase in values of trade, which relative to the initial average of $27.42 million per year before the switch, represents about an average jump in imports of about $35 million in the years post-2007. As it was the case for exports, these changes were mainly spearheaded by a deepening in the values of trade; the intensive margin increased more than the extensive margin.

Much as switching diplomatic allegiances from Taiwan to China did boost trade between Malawi and China, the impact it had on the trade of specific commodity categories was mixed. On the one hand, Malawi's exports of intermediate agricultural and intermediate textile commodities to China, as well as its imports of capital agricultural commodities from China rose. On the other hand, exports of textile commodities meant for consumption to China and imports of agricultural commodities meant for consumption from China both decreased. There is also strong evidence indicating that this switch in diplomatic allegiances led to a lot of trade diversion from Malawi's other partners towards China. For starters, imports from Taiwan decreased by 68%. In addition to that, Malawi's trade with its traditional partners in South Africa, Zimbabwe, Great Britain, and USA all decreased as trade with China rose. The increase in Malawi's imports from China more than made up for the loss in imports from traditional trade partners like these; Malawi's overall imports across all its trade partners increased subsequent to the switch in diplomatic allegiances. For exports, however, overall trade all partners did not respond to the policy change. These findings suggest that the switch failed to boost Malawi's overall exports, which was one of the rationales the Malawian government put forth to justify severing the diplomatic ties it had with Taiwan.

The rest of study is organized as follows. Section 2.1 provides a contextual background behind this study centering on Malawi's relations with Taiwan and China as well as providing a brief description of the country's trade composition. Section 2.2 then expounds on the estimation strategy used to

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analyze the impact of switching diplomatic relations and also gives a description of the data used. Section 2.3 discusses the results of the analysis before Section 2.4 concludes.

2.1 Contextual background

2.1.1 Malawi and the One-China Principle

Malawi's initial choice to form diplomatic ties with either Taiwan or China dates back to 1964 when the country obtained independence from Great Britain. To celebrate the occasion, the country invited representatives from both Taiwan and China. The latter turned down the invitation fearing accepting it would be giving a tacit approval to a "two China" situation (Taylor, 2009). The refusal by China to attend the celebrations gave Taiwan the opportunity to increase its engagement with Malawi such that by July of 1966, the two had established formal diplomatic relations. Those relations went on without interruption for the next thirty-four years until in the year 2000 when Malawi accepted invitation to attend the inaugural Forum on China-Africa Cooperation (FOCAC) as an observer country. Despite attending the forum, Malawi resisted the temptation to sever its ties with Taiwan. In fact, the loyalty between the two territories thrived for the next 7 years until December 28, 2007 when Malawi abruptly switched diplomatic allegiances from Taiwan towards China. In January of 2008, the government officially announced its decision. Four months later, Malawi and China officially signed a memorandum of understanding with the aim of enhancing trade and investment ties. The optimism that the government of Malawi expressed following the switch can best be expressed by the words of the country's then President, Bingu wa Mutharika, who stated that the change would help turn his country from poverty to riches (Ndzendze, 2019).

While Malawi was not the first country to switch allegiances from Taiwan to China, there does not appear to be a broad systematic pattern in the occurrences of these diplomatic switches. For example, in 2007, Malawi and Eswatini were the only two countries in the Southern African Development Community (SADC) region, a grouping of sixteen countries in southern Africa, that still maintained diplomatic ties with Taiwan. While Malawi made the switch in 2007, Eswatini still maintains formal diplomatic relations with Taiwan to date.

2.1.2 Malawi's trade

Malawi is a perennial net importer. On top of that, its export base is narrow, relying mostly on the production of cash crops. Of these, tobacco predominates all other commodities. According to Banik and Chasukwa (2017), tobacco has accounted for as much as 60 percent of of the country's export earnings. Sugar and tea are its other important export commodities. Unlike exports, Malawi's imports are more diverse. Petroleum is usually the largest import commodity by value, but it accounts for less than 20% of the value of all imports. Although Malawi mainly exports agricultural commodities, it does not have a well established fertilizer manufacturing industry. So unsurprisingly, fertilizers are another significant import commodity.
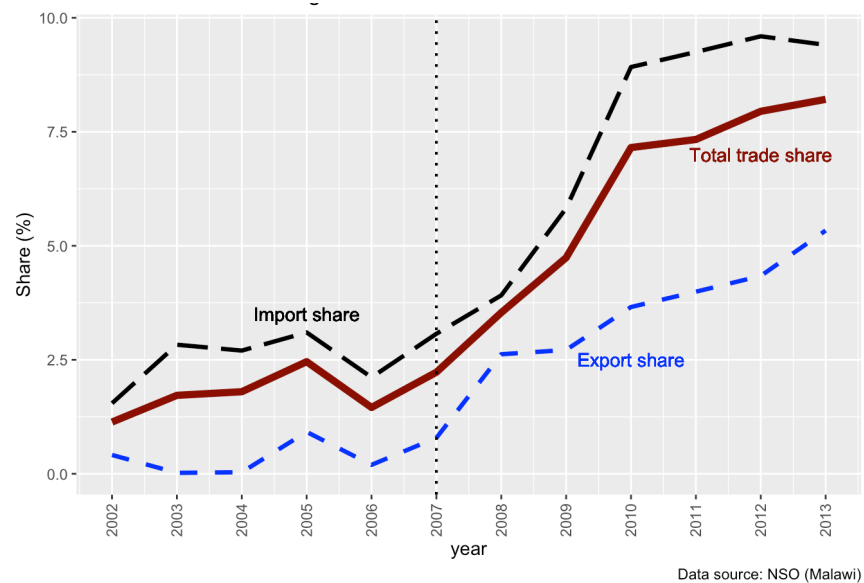
Figure 1: Share of Malawi's Trade with China to Total (2002-2013)

In terms of trade partners, historically, Malawi's main trading partners have been countries in Europe or those in the SADC region. Within SADC, South African is Malawi's main trade partner. Recently, though, the Far East - where China and Taiwan are located - has also become an important trade partner, according to data from the Reserve Bank of Malawi, the country's central bank. As an illustration, in 2007, 3.7% of Malawi's total trade was with the Far East. By the second half of

2012, that number had increased to 21.6%. The increased importance of the Far East as Malawi's burgeoning trade partner is best illustrated by the increase in the trade between Malawi and China after 2007. Figure 1 above shows the shares of trade with China in Malawi's aggregate trade flows in logs.[3] There is a clear upward trajectory of the shares following Malawi's establishment of diplomatic relations with China.

2.2 Methodology

2.2.1 Estimation strategy

Much as the trend in Figure 1 suggests that the policy switch may have had some impact on trade flows, its true impact can best be assessed statistically using econometric methods. As is common in the trade literature, the starting point for this assessment is the gravity model. In its basic form, the model states that trade between any two countries is increasing in the economic sizes of the pair and is decreasing in the distance between them. Ever since Anderson and van Wincoop (2004) highlighted the importance of multilateral resistance terms in the gravity equation, research has accounted for them by incorporating the usage of fixed effects in estimating the model. This study also follows S. J. Silva and Tenreyro (2006) by utilizing the PPML estimator. This estimator does not require strong parametric assumptions on expectations of agents. Thus, it can accommodate macroeconomic and policy shocks (Artuc, 2013). Using the PPML technique is equivalent to running a type of nonlinear least squares on the gravity equation. Despite having Poisson in the name, it is not necessary that the data be distributed Poisson. The advantages of using the PPML estimator are threefold. First, it delivers estimates of parameters that are robust in the presence of heteroskedasticity. Second, it works well even when the data set has a large proportion of zeros. This is an attractive attribute considering that not all countries trade all products with all partners. On top of that, the third quality of this estimator is that interpretation of the coefficient is straightforward, providing a percentage change of the impact that a particular explanatory variable has on the dependent variable of interest.

Switching diplomatic allegiances from Taiwan to China is the only major trade-related policy change

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[3]Additional figures portraying a break down of the data into exports and imports, are reported in appendix A.

that occurred in Malawi between 2002 and 2013. There are no indicators to suggest this move was expected. In fact, Hsu (2008) shows that Taiwanese officials and the Malawian media were both caught off guard by the decision. This implies that changes to Malawi's trade outcomes post-2007, particularly as far as trade with Taiwan and China is concerned, can be attributed to the switch. The two estimation equations below capture how Malawi's trade outcomes evolved post-2007, with Equation 1 focusing on bilateral changes with respect to China and Taiwan while Equation 2 captures the impact on Malawi's overall trade.

$$Trade_{j,t} = exp\bigg(\gamma_t + \gamma_j + \beta_1 \times China\text{-}post_t + \beta_2 \times Taiwan\text{-}post_t + \beta_3 \times LogGDP_{j,t} +$$

$$\beta_4 \times LogForex_{j,t} + \beta_5 \times LogTrend_{j,t} + \beta_6 \times NR\_PTA_{j,t}\bigg) + \varepsilon_{j,t} \quad (1)$$

$$Trade_{j,t} = exp\bigg(\gamma_j + \beta_1 \times Post_t + \beta_2 \times LogGDP_t + \beta_3 LogGDP_{j,t} + \beta_4 \times LogForex_{j,t} +$$

$$\beta_5 \times LogTrend_{j,t} + \beta_6 \times NR\_PTA_{j,t}\bigg) + \varepsilon_{j,t} \quad (2)$$

In both equations, $Trade_{j,t}$ captures measures of Malawi's trade with each one of its individual trading partners ($j \in J$) in year t.[4] These measures include total values of bilateral trade flows, counts of 8-digit Harmonized System commodities traded, data for which come from the Malawi National Statistical Office (NSO).[5] All outcomes are split between exports or imports. For this study, the period of interest ranges from 2002 to 2013. The choice of this time frame is deliberate. China joined the World Trade Organization (WTO) in December of 2001. Excluding data from the period before China's entrance into the WTO helps minimize contamination from other external policy changes like China's entrance into the WTO. Considering that Malawi switched diplomatic allegiances from Taiwan to China in 2007, there are six years prior to treatment. Then, for symmetry, the years 2008 through 2013 act as the treated period.

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[4]The variable $Trade_t$ is a condensed version of $Trade_{MWIj,t}$. The version used in Equations 1 and 2 is preferred because it is less cumbersome.

[5]The data can be made available upon request.

In order to evaluate the impact that the switch in diplomatic allegiances from Taiwan to China had on Malawi's trade with the two territories as well as on Malawi's overall trade, this study devises two dummy variables, $Post_t$ and $China\text{-}post_t$. The variable $Post_t$, which is the main variable of interest in Equation 2, captures changes to overall trade flows post-2007 and is defined as follows: $Post_t \equiv D_{post-2007}$ where $D_{post-2007}$ is a dummy that takes the value of one when the trade took place after 2007. Essentially, $Post_t$ measures the possibility of trade creation resulting from the switch. A statistically significant positive coefficient of this variable will demonstrate that Malawi's trade grew as a consequence of cutting diplomatic relations with Taiwan and establishing relations with China. Such an outcome would validate the decision by the government of Malawi to establish relations with China in search of trade-gains.

The impacts that switching diplomatic allegiances from Taiwan to China had on Malawi's trade with China as well as on the trade with Taiwan are captured by the variables $China\text{-}post_t$ and $Taiwan\text{-}post_t$, respectively. $China\text{-}post_t \equiv D_{China} \times D_{post-2007}$ where $D_{post-2007}$ is as defined for the variable $Post$ and D_{China} is a dummy that takes the value of one when the trade is between Malawi and China. $Taiwan\text{-}post_t$ is defined similarly for trade with Taiwan. The coefficients β_1 and β_2 capture the impact that switching allegiances had on Malawi's trade outcomes with respect to China and Taiwan, respectively, after 2007. The expected sign of β_1 is positive while that of β_2 is negative. The justifications of these expected signs are as follows. The establishment of diplomatic relations between Malawi and China and the commitments the two countries made to each another as outlined in the memorandum of understanding they signed in 2008 were conducive for their expanded bilateral trade flows. The fact that the ties between Malawi and China came at the expense of fractured relations between Malawi and Taiwan, as well as the fact that Malawi is economically small and has a limited export base meant that its trade with Taiwan would likely suffer if the country diverted some of its trade from Taiwan to China.

In addition to the main variables of interest, Equation 1 and 2 control for the log of the GDP of trading partners ($LogGDP_{j,t}$), the log of foreign exchange rate movements between the Malawian currency and the currencies of individual trading partners ($LogForex_t$), and the existence of non-reciprocal bilateral trade-improvement arrangements (NR_PTA_t). Bilateral exchange rate movements are calculated using data from IMF. The IMF also provides data for GDP. Data on the existence of non-reciprocal trade arrangements between pairs of countries come from the NSF-

Kellogg Institute Data Base. These arrangements exist when one country, usually a rich country, lowers trade barriers against another country but the country that benefits is not required to return the favor. Malawi has been a recipient of these favors from countries like the United States, countries in the E.U., as well from China. The variable $LogTrend_{j,t}$ controls for the trade-trend of Malawi's trading partners. $Trend_{j,t}$ is defined as the total value of country j's trade flow in year t less its trade flow with Malawi. As an example, when analyzing Malawi's exports, *Trend* is the difference between each partner's aggregate value of imports and its imports from Malawi (which are Malawi's exports). The reason for including this variable is to isolate changes in trade outcomes that are due to the policy switch from regular patterns in the trade flows of partner countries.

Both equations also contain partner fixed effects (γ_j), which control for time-invariant variables like distance, contiguity, and language. Equation 1 also includes year fixed effects (γ_t) to control for domestic time-varying variables like GDP. Time fixed effects are excluded in Equation 2 as they would be collinear with the variable of interest, *Post*. In order to compensate for the missing time fixed effects, the equation incorporates changes in Malawi's GDP over time, ($LogGDP_t$). Data on GDP come from the World Economic Outlook (WEO) of the International Monetary Fund (IMF).[6] $\varepsilon_{j,t}$ denotes measurement errors.

2.3 Results

If the decision by the Malawian government to sever diplomatic relations with Taiwan and instead establish relations with China had any impact on the country's trade outcomes, that impact would first appear in its bilateral trade with China as well as with Taiwan. Those changes would be driven either by changes in the number of products traded, the extensive margin, or changes in the average values of those commodities, the intensive margin, or both. Considering that the government of Malawi touted that switching allegiances would lead to more trade, it is also imperative to evaluate the impact that the switch had on overall trade outcomes. In addition, this section conducts two additional exercises; it looks at the issue of trade diversion by assessing how the switch affected Malawi's trade with its major trade partners, and also it analyzes the impact it had on different commodity categories that are crucial to Malawi's trade.

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[6]https://www.imf.org/en/Publications/WEO/weo-database/2020/October

Table 1: Descriptive statistics - before and after 2007

	Pre-2008			Post-2007		
	China	Taiwan	Overall	China	Taiwan	Overall
Exports	2.36	0.35	5.37	43.66	1.15	9.96
	(2.57)	(0.39)	(15.07)	(15.55)	(0.66)	(23.91)
Observations	6	6	626	6	6	629
Imports	27.42	13.75	9.34	188.85	9.31	18.87
	(11.29)	(1.35)	(37.03)	(73.71)	(2.43)	(66.38)
Observations	6	6	669	6	6	748

This table represents mean (standard deviation) values of Malawi's trade with China, Taiwan, and all its trading partners before and after the country switched diplomatic allegiances from Taiwan to China.

Table 1 provides descriptive statistics comparing average values of Malawi's trade values before and after the country switched diplomatic allegiances from Taiwan to China. Except for Malawi's imports from Taiwan, the table shows that the average values of the country's trade flows post-2007 were all higher than those before. This is an indicator that switching may have hindered Malawi's imports from Taiwan and may suggest the presence of trade diversion in imports. While Malawi's trade generally expanded post-2007, what stands out from the table is that the magnitude of the country's trade with China far surpassed the changes in trade with its other partners. For reference, the average value of exports to China increased from U.S.$ 2.36 million prior to 2008 to U.S.$ 43.66 million post-2007, an 18-fold increase. Imports increased by a factor of close to 7. By contrast, the rises in average trade flows between Malawi and all other countries was by a factor of about 2.

2.3.1 Trade with China and Taiwan

Table 2: Impact on bilateral trade flows with China and with Taiwan

	Exports	Imports
$China\text{-}post_t$	1.52***	0.82***
	(0.40)	(0.24)
$Taiwan\text{-}post_t$	0.56	-1.13***
	(0.47)	(0.18)
$LogGDP_{j,t}$	1.62**	-0.31
	(0.73)	(0.55)
$LogForex_t$	-0.05	0.06***
	(0.04)	(0.02)
$LogTrend_{j,t}$	-0.22	0.22
	(0.34)	(0.21)
NR_PTA_t	0.23	0.64***
	(0.14)	(0.19)
Year fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
R^2	0.80	0.92
Observations	1,044	1,350

PPML estimates of the impact switching diplomatic relations from Taiwan to China had on Malawi's trade with the two territories. Standard errors are clustered by partner-year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

PPML estimations of Equation 1, whose results are displayed in Table 2, show that, all else being equal, trade with China, both exports and imports, increased significantly following the diplomatic policy change. These positive outcomes as far as trade with China is concerned are as expected and demonstrate that pivoting towards China succeeded in improving bilateral trade flows between the two countries. In terms of the magnitudes of the changes, exports increased by about 357% and imports increased by 127%.[7] These changes correspond to averages of around $8 million and around $35 million more exports and imports, respectively, every year.[8] As for trade with Taiwan, switching led to a 68% decrease in imports - corresponding to an average loss of about $9 million in trade every year. While Malawi's imports from Taiwan were heavily hampered by the switch,

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[7]The formula for calculating this percentage change is $100 \times (e^{coefficient} - 1)$.

[8]For exports, the calculation is $2.36 \times (e^{1.52} - 1)$ while for imports it is $27.42 \times (e^{0.82} - 1)$.

exports to the same remained statistically unchanged. This shows that the souring of diplomatic ties between the Malawi and Taiwan actually did not automatically lead to a deterioration of all trade flows between the two states.

2.3.2 Extensive and intensive margins

The changes depicted in Table 2 can be broken down into their extensive and extensive margins. The extensive margin is defined as the number of unique commodity codes transacted between Malawi and its respective trading partners each year. The intensive margin is the average values of those commodities. Ideally, Malawi would have hoped that establishment of diplomatic relations with China would have led to a boost in both margins for exports as this would have meant more products transacted at higher average values. Table 3 below shows an abbreviated output of the results of estimating the impact that switching had on the margins.

Table 3: Impact on the extensive and intensive margins of trade

	Extensive margin		Intensive margin	
	Exports	Imports	Exports	Imports
$China\text{-}post_t$	0.40	0.15	1.20**	0.96***
	(0.26)	(0.09)	(0.50)	(0.34)
$Taiwan\text{-}post_t$	-0.55*	-0.29**	1.30***	-1.10***
	(0.31)	(0.12)	(0.46)	(0.29)

PPML estimates of the impact switching diplomatic relations from Taiwan to China had on extensive and intensive margins of Malawi's trade with the two territories. Standard errors are clustered by partner-year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. All regressions control for all the variables and fixed effects expressed in Equation 1. The control variables have been suppressed for brevity.

The table shows that the improvements in trade between Malawi and China were driven by the intensive margins. For exports, switching led to a 232% increase in the average values of commodities traded to China while for imports, the average values of commodities increased by 161%. The coefficients for the measures of the extensive margin of trade with China are also positive for both exports and imports. However, these changes are not statistically significant. The fact that there are no statistically significant changes in the numbers of products exported to China is not entirely

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surprising. As discussed in Section 2.1.2, Malawi has a narrow export base. That being said, this outcome also demonstrates that the establishment of diplomatic relations with China failed to diversify Malawi's export base - a commitment that the two countries made when they signed their MoU upon officially establishing their bilateral relations.

The impact that the switch in diplomatic relations from Taiwan to China had on the extensive margins of trade was stronger for trade with Taiwan. The number of commodities exported to Taiwan decreased by 42% whereas the number of unique commodities imported decreased by 25%. These changes are statistically significant at the 10% and at the 5% levels, respectively. While the number of unique product codes exported to Taiwan decreased, the average value of the commodities that remained in this market actually increased by 267%, suggesting that it was products at the lower end of the value chain that were quick to exit the market. Much as the average values of exports to Taiwan went up, in contrast, the average values of imports from there decreased by 67%. The decreases in both the extensive margin and the intensive margin of trade with Taiwan for imports further clarifies how damaging the severing of ties with that state hurt its trade with Malawi.

2.3.3 Broad economic categories of commodities

Besides understanding how the extensive and the intensive margins of trade are affected, another interesting aspect of the impact is how different broad economic categories of commodities responded to Malawi's act of switching diplomatic allegiances from Taiwan to China. The categories on which this study focuses are those that are primarily crucial to the country's economy in accordance to the System of National Accounts (SNA). In the SNA, commodities can be classified either based on usage or based on the sector of the economy they belong. There are three broad categories of commodities according to usage: consumption goods, intermediate goods and capital goods. Some products have multiple usages and are thus classified to reflect this fact. For instance, a good can be used for consumption and also be an intermediate good. In this case, its classification becomes consumption/intermediate. This study ignores these multiple-usage products. There are also eight categories of commodities based on sectors.

Table 4: Impact on broad economic categories of commodities

	Exports	Imports
Consumption-Agricultural_China	-0.49	-1.70***
	(0.94)	(0.44)
Consumption-Textile_China	-5.06***	0.64***
	(0.68)	(0.19)
Intermediate-Agricultural_China	2.08***	1.04**
	(0.59)	(0.41)
Intermediate-Textile_China	3.17***	
	(0.73)	
Capital-Agricultural_China		1.26***
		(0.46)
Consumption-Agricultural_Taiwan	-1.14*	0.33
	(0.66)	(0.57)
Consumption-Textile_Taiwan	-4.23***	0.46
	(0.42)	(0.56)
Intermediate-Agricultural_Taiwan	0.72	-1.41**
	(0.48)	(0.67)
Intermediate-Textile_Taiwan	1.02***	
	(0.49)	
Capital-Agricultural_Taiwan		0.45
		(0.62)

PPML estimates of the impact switching diplomatic relations from Taiwan to China had on Malawi's broad economic categories of commodities. Standard errors are clustered by partner-year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. All regressions control for all the variables and fixed effects expressed in Equation 1. The control variables have been suppressed for brevity.

Malawi can be described as an agrarian economy that exports products that are meant for consumption or those that act as intermediate goods. This makes the NSA sector known as agriculture, forestry, fishing, food, beverages, and tobacco a crucial sector for which to analyze the impact of the switch in diplomatic allegiances. In this study, the aforementioned category is simply referred to as agricultural. Another category of interest is textile, apparel, shoes, which is abbreviated to textile. These two sector categories are analyzed for combinations of consumption and intermediate commodities for exports and imports. On top of that, assesses the impact on imports of capital goods,

which may be used to facilitate production in the agricultural sector. All in all, this makes for 5 categories of interest: Consumption-Agricultural, Consumption-Textile, Intermediate-Agricultural, Intermediate-Textile, and Capital-Agricultural. Table 4 shows the outcomes of estimating how switching affects these categories of commodities.

The table shows that switching diplomatic allegiances from Taiwan to China had a negative effect on exports of agricultural and textile commodities that are meant for consumption. This is true for both exports to China and exports to Taiwan. However, exports of intermediate goods in both agricultural and textile products increase, particularly exports to China. This outcome makes sense considering that much of what Malawi exports is cash crops that are used in the production of other (final) products. For imports, switching hurt agricultural commodities meant for consumption that came from China and also intermediate agricultural commodities originating from Taiwan. At the same time, switching led to an increase in imports from China of textile products meant for consumption, intermediate agricultural products, and agricultural capital goods.

2.3.4   Malawi's trade with its traditional partners

All the analysis done thus far shows that by switching diplomatic allegiances from Taiwan to China, Malawi's trade with the latter generally thrived while that with the former faltered. As informative as this is, historically, neither Taiwan nor China was a top trade partner for Malawi by trade value. This section focuses on those countries with which Malawi traded more historically. Such countries are referred to as the nation's traditional trade partners. These traditional partners are identified based on ranking the total values of Malawi's bilateral trade flows with all its partners in 2007. South Africa, Zimbabwe, Great Britain, and the U.S.A. are the four countries that were ranked in the top 10 in both exports and imports. Table 5 portrays how the values of Malawi's exports and imports with respect to these four countries changed post-2007 in light of the country's improved trade with China.

The results in the Table 5 below show that the increased trade between Malawi and China partly came at the expense of trade with the country's traditional partners. Exports to South Africa, Zimbabwe, Great Britain, and the USA all decreased significantly after Malawi established diplomatic relations with China. That said, the two SADC countries in South Africa and Zimbabwe

saw the biggest percentage decreases in export flows. While export flows to all the four traditional partner decreased statistically significantly, for imports, it was only trade flows with South Africa and Great Britain that did. Thus, taking into account the outcomes of both exports and imports, South Africa is the traditional trade partner that was hurt the most by Malawi's decision to switch allegiances to China. This result is interesting. Edwards and Jenkins (2015) show that Chinese exports hurt South Africa's exports in all major exports destination markets such as the U.S.A and the E.U. This study demonstrates that, on top of that, China's exports were also bad for the country's exports to smaller regional markets like Malawi.

Table 5: Impact on Malawi's trade with its traditional partners

	Exports	Imports
$China\text{-}post_t$	1.28***	0.80***
	(0.40)	(0.24)
$SouthAfrica\text{-}post_t$	-0.97***	-0.33***
	(0.14)	(0.12)
$Zimbabwe\text{-}post_t$	-5.53***	0.23
	(0.66)	(0.55)
$Britain\text{-}post_t$	-0.66***	-0.44***
	(0.21)	(0.16)
$USA\text{-}post_t$	-0.78***	-0.08
	(0.23)	(0.17)

PPML estimates of the impact switching diplomatic relations from Taiwan to China had on Malawi's trade with its traditional trade partners. Standard errors are clustered by partner-year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. Both regressions control for the variables and fixed effects expressed in Equation 1, which have been suppressed for brevity.

Altogether, the table is another indicator that Malawi's decision to pivot its diplomatic allegiances towards China resulted in a trade diversion from several countries to the Asian giant. With trade with some countries decreasing while trade with China increased, the question then becomes was the optimism that the Malawian government had that establishing diplomatic relations with China would be good for the country's overall trade met? The next section evaluates this question.

2.3.5 Malawi's overall trade flows

Table 6: Impact on Malawi's overall trade

	Exports	Imports
$Post_t$	0.02	0.28**
	(0.22)	(0.13)
$LogGDP_{j,t}$	1.93**	0.16
	(0.56)	(0.48)
$LogGDP_{MWI,t}$	1.36**	0.70*
	(0.63)	(0.48)
$LogForex_{MWIj,t}$	-0.07*	0.04**
	(0.04)	(0.02)
$LogTrend_{j,t}$	-0.22	0.28
	(0.24)	(0.20)
NR_PTA_t	0.28*	0.63**
	(0.16)	(0.18)
Country fixed effects	Yes	Yes
R^2	0.79	0.92
Observations	1,044	1,350

PPML estimates of the impact switching diplomatic relations from Taiwan to China had on Malawi's overall trade. Standard errors are clustered by partner-year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

The results of estimating Equation 2 are portrayed in Table 6. The dependent variables are annual bilateral trade values, exports and imports, between Malawi and each one of its trade partners. Switching diplomatic allegiances from Taiwan to China led to improvements in Malawi's overall imports by 32%, but it did not improve the country's exports. This finding corresponds to the results in Table 5, which shows that there was stronger trade diversion for exports than there was for imports among Malawi's traditional trade partners. The improvement in imports from China more than made up for the imports that were lost from other countries like Great Britain and South Africa. However, for exports, switching only led to trade diversion. In the context of the reasons the Malawian government provided for switching its diplomatic allegiances, this outcome is revealing. Establishing diplomatic relations with China was supposed to be boost the country's exports. As a matter of fact, China committed to help Malawi improve its efficiency in the production of its existing export commodities as well as help the country diversify its export base, which should have

led to higher exports. However, the data show that neither of these objectives on exports were achieved in the first 6 years following the switch.

2.3.6 Placebo Test

All the findings presented so far provide strong evidence showing that the decision by the Malawian government to sever its diplomatic ties with Taiwan and establish relations with China had profound effects on the country's trade with both China and Taiwan, as well as on trade with its traditional trade partners. However, considering that China is a major player in international trade worldwide and its influence on global trade has risen over the years, questions may be raised as to whether the findings presented above really are due to the policy switch or they simply capture China's domination in global trade. To address such concerns, this study conducts a placebo test using data from 2002 through 2007, the period before Malawi switched diplomatic allegiances from Taiwan to China. For this period, this study creates a counterfactual switch year of 2004, thereby splitting the the period into three faux pre-switch years (2002-2004) and three faux post-switch years (2005-2007). Then, using the true data from 2002 through 2007, the study estimates the impact that a counterfactual switch occurring in 2004 would have had on Malawi's trade with China. The outcomes of conducting the outlined exercise are presented in Table 7.

Under this faux policy switch year, changes in Malawi's trade flows vis-à-vis China are not outstanding. The magnitudes of the changes under this pretentious policy-switch date are smaller relative to the actual switch date as displayed in Table 2. More importantly, the coefficients for $China\text{-}post_t$ are not statistically significant for both exports and imports while they are highly statistically significant for the true switch date. These results lend credence to the notion that it is indeed the decision by the government of Malawi to sever diplomatic relations with Taiwan and establish ties with China that contributed massively to the increases in Malawi's trade with China.

Table 7: Faux-switch 2004

	Exports	Imports
$China\text{-}post04_t$	1.27	-0.23
	(0.99)	(0.24)
$LogGDP_{j,t}$	0.47	1.90
	(1.40)	(1.27)
$LogForex_t$	-0.33**	-0.05
	(0.06)	(0.05)
$LogTrend_{j,t}$	0.92*	0.09
	(0.52)	(0.55)
NR_PTA_t	-0.67	0.01
	(0.73)	(1.08)
Year fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
R^2	0.83	0.92
Observations	502	650

A placebo test showing that Malawi's trade with China only improved after the two countries established diplomatic relations. Standard errors are clustered by partner-year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

2.4 Conclusion

The most significant trade-related policy change of the recent past for Malawi occurred in December of 2007 when the country abruptly cut its longstanding diplomatic relations with Taiwan and formed new ties with China. This study evaluates the impact that this switch had on the country's trade flows. Much as there exists the literature that links diplomacy and trade exist, no paper has taken advantage of a country switching diplomatic relations from one country to another to evaluate the impact that such a policy has on trade.

Using a PPML estimator and incorporating control variables as well as fixed effects to account for multilateral resistance terms, this study finds that switching diplomatic relations from Taiwan to China was beneficial for Malawi's bilateral trade with China. Exports grew by 357% while imports increased by 127%, representing additional trades of $8 million and $35 million, respectively, each

year subsequent to the switch. These improvements were driven by the intensive margins of trade, but the extensive margins remained unchanged. As impressive as the improvements in trade between Malawi and China sound, they mainly came at the expense of Malawi's trade with other partners like Taiwan as well as the nation's traditional trade partners like South Africa, Zimbabwe, Great Britain, and the USA. The country overall exports remained unchanged. This defeats the optimism that the Malawian government expressed at the time of switching allegiances, claiming that the policy change would be good for the country's overall exports.

The additional trade that was created in imports may have come in the form of cheap products from China. Table 4 depicts that switching led to more imports of consumption, intermediate, and capital goods. For consumers, cheap imports can be welfare improving as they implicitly put money back in the pockets of residents who can then spend it in ways it pleases them. For producers as well, imports of cheap inputs in production in terms intermediate and capital goods can help improve productivity. However, at the same time, imports of cheap finished products may displace local production. A news article from 2013 by one of Malawi's leading media claims that indeed some local businesses in Malawi were being crowded out by the influx of Chinese imports (Helema, 2013). This leaves unanswered the question of whether the additional trade that was a consequence of Malawi establishing diplomatic relations with China actually led to improved overall welfare in Malawi.

3   Diplomatic Relations and Trade: The Effect of Switching Ties from Taiwan to China.

The current literature on diplomacy and trade has studied how different forms of existing diplomatic representations between countries affect their bilateral trade flows. Diplomatic representation can take different forms, ranging from export promoting agencies to embassies or consulates to formal visits by high ranking government officials.[9] This study takes a different approach by focusing on how the actual establishment and the actual disbandment of official diplomatic relations affect trade. To do so, the study uses a previously-unstudied bilateral diplomatic event in which countries switch diplomatic allegiances from the Republic of China (hereinafter Taiwan) to the People's Republic of China (hereinafter China). Note that diplomatic relations are mainly political relations among countries. Thus, assessing the effects of both the disbandment of existing ties and the creation of new ones helps bring into sharp focus the extent to which these political alliances affect trade outcomes.

Evidence from the literature demonstrates that countries that hold existing diplomatic relations trade more with one another. Therefore, when countries disband relations with Taiwan in favor of new ones with China, one might expect that trade with China grows while trade with Taiwan deteriorates. This study seeks to determine if that is actually the case. In doing so, it compares the impact that export flows experience from the ones that import flows do. For both trade flows, the study breaks down the impact that this diplomatic switch has into the intensive margin of trade and the extensive margin of trade.[10] On top of that, it conducts a comparison of the impact across geographical regions and assesses the spillover effects to other countries.

This study joins an intriguing strand of literature that empirically examines the trade-promoting function of various forms of diplomatic representation. Early work in this area was cross-sectional in nature. For example, Rose (2007); van Bergeijk (1992); van Bergeijk and Yakop (2011); and van

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[9]Carballo and Martincus (2011); Hayakawa, Lee, and Park (2014); Rose (2007); van Bergeijk et al. (2011); Afman and Maurel (2010); and Lin, Yan, and Wang (2017) provide examples of how these different arrangements affect trade.

[10]These margins are informative about the significance of a country's trade in its partners' trade in particular sets of goods as well as in overall trade.

Bergeijk et al. (2011) all conduct cross-sectional analyses of the export-promotion ability of foreign representation in gravity models. Their findings indicate that diplomatic representation increases exports by a range of between 6% to 150%.

As informative as that early work is, Baier and Bergstrand (2007) proclaim that such cross-sectional analyses fail to properly adjust for the simultaneity issue in the gravity model. Instead, a panel approach using combinations of country and time fixed effects does better. Specifically, Cheng and Wall (2004) argues that a panel data analysis overcomes the problem of biased estimates due to omitted or misspecified variables. As a result of this revelation, more recent work in the field has taken a panel approach in their analyses (see Hayakawa et al. (2014); Lin et al. (2017); and Visser (2019)).[11] In this strand of the literature, Visser (2019) uses a sample of 100 developed and developing countries and finds that diplomatic representation has a positive effect on both trade flows: exports increase by about 29% whereas imports increase by about 17%. While the aforementioned study uses a worldwide sample, Hayakawa et al. (2014) and Lin et al. (2017) focus on specific countries and regions, respectively. Precisely, Hayakawa et al. (2014) examines the role of export promoting agencies in Japan and South Korea in promoting exports and finds a positive and statistically significant positive impact of about 41% to 61%. Lin et al. (2017) concentrates on diplomacy and trade involving China and Africa. It documents that state visits of African leaders to China are more favorable for Chinese exports to Africa in capital intensive manufacturing goods, especially by state owned enterprises. However, imports from Africa to China do not increase significantly.

This particular study uses two techniques to evaluate how the switch in diplomatic allegiances from Taiwan to China affects trade outcomes: a gravity framework and event study plots. The gravity model approach is estimated using a Poisson pseudo maximum likelihood (PPML) estimator. Its results show some surprising outcomes. For instance, for trade with China, the switch led to a 56% decrease in the value of exports to China, but to a 25% increase in imports from China. These changes translate into a decrease in exports of about $13 million and an increase in imports of about $34 million per switching country per year, respectively. Furthermore, the impact on the intensive margin was negative whereas the impact on the extensive margin was positive for both exports and imports. For trade with Taiwan, the impact that the switch had on the values of

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[11]Note that using fixed effects does not necessarily eliminate the possibility of simultaneity bias.

exports to Taiwan was small and not statistically significantly different from zero. However, values of imports from Taiwan decreased by 39%, which translates into a decrease of about $9 million per switching country per year. In addition, the impact that the disbandment of ties had on both the intensive margin and the extensive margin of trade with Taiwan was negative for both exports and imports. Looking across geographical regions, there was clear heterogeneity in the impact of switching diplomatic allegiances from Taiwan to China. As an illustration, decreases in the values of exports to China and imports from Taiwan, as well as the increase in the values of imports from China did not apply to the Sub-Saharan African (SSA) countries. Rather, those changes were driven by the impact experienced by the non-SSA contingent of the switching countries.

The results of the event study plots verify the qualitative outcome of the effect the switch in diplomatic allegiances had on the values of trade with Taiwan and China; exports to Taiwan remained statistically unchanged, imports from China increased, whereas exports to China and imports from Taiwan both decreased. Notably, it took some time before the changes in trade became statistically significant. For trade with China, it took at least three years before statistically significant changes in trade materialized while for trade with Taiwan, it took at least two years.

In finding that exports to China decrease while imports from China increase, the results of this study are qualitatively similar to those in Lin et al. (2017). What distinguishes the two is that this particular study focuses on the establishment of formal diplomatic relations rather than just mere visits of officials. Visits are highly likely to rise and fall with trade, which makes it difficult to tell whether it is visits that drive changes in trade or the other way round. In addition, the establishment of formal ties, especially through the opening of embassies, provides a stable and better measure of the strength of relationships between countries than mere visits of government officials. The other difference is that this study provides a broader scope of the impact of diplomatic relations by including in the analysis countries beyond just those from Africa and by analyzing trade with both China and Taiwan.

Besides the above, this study makes four major contributions to the literature on the link between diplomacy and trade. It is the first one in this strand of literature to study the impact of the actual start and the actual end of diplomatic relations. In doing so, the study also becomes the first one to analyzes how diplomatic relations affect trade through both the establishment and the disbandment

of relations. Focusing on both aspects better underscores the influence that diplomacy has on trade. Second, the study reveals that the same types of diplomatic relations can have different effects on trade in different geographical regions. This suggests that the ability of relations to affect trade is affected by existing domestic conditions in the countries involved. The third contribution the study makes is that it helps in the understanding of the growing influence that China is having in the developing world. Understandably, trade is just one of the ways in which China is exerting its global influence. That said, studying this angle is still a worthy endeavor given that, through dynamic gains, trade is crucial for the growth and development of a country. Fourth, the study sheds some light on the trade patterns among developing countries. Considering that trade brings dynamic benefits that can help nations grow, an understanding of how these countries trade can be informative about the trade policies countries need to implement in order to help themselves in their own growth.

The rest of the study proceeds in the following manner. Section 3.1 provides an overview of the policy background. Then, Section 3.2 takes a closer look at the channels through which switching can affect trade. This is followed by Section 3.3, which discusses the methodology, including the estimation strategy used, sample selection, as well as addressing concerns about the possibility of there being endogeneity bias. Section 3.4 then discusses the results before Section 3.5 concludes.

3.1 Policy background

3.1.1 Switching and the role of the "One-China" principle

The fight between Taiwan and China over winning diplomatic allegiances of countries globally can be traced back to the end of the Chinese Civil War in 1949. The Chinese Communist Party (CCP) took control of China while the Kuomintang (KMT), which had ruled China before that, escaped to Taiwan and began ruling over the island. In the diplomatic realm, the CCP and the KMT both claimed to be the sole representative of the Chinese people to the world. The difference is that the CCP operated under the "One-China" principle, which states that Taiwan is part of mainland China and, thus, must not be treated as a sovereign state. China continues to operate under this policy. In adherence to this policy, China refuses to recognize any diplomatic relations that Taiwan

has. As such, any country that wants to establish diplomatic relations with China must first cut any official ties it has with Taiwan. Essentially, the CCP forces countries to declare their allegiance, be it towards China itself or Taiwan. In the event a country chooses Taiwan, the CCP, and indeed China itself, limit the amount of political and economical engagements it has with that country.

For a while, the difference between the number of countries that held official diplomatic relations with China and those that held relations with Taiwan was not big. Things took a dramatic change when Taiwan got expelled from the United Nations (UN). At its General Assembly held in 1971, the UN passed Resolution 2758 that stated that China had to take the membership seat within the organization that was by then held by Taiwan. With this resolution, Taiwan lost all the privileges that came with it being a member of the international organization, including being one of the five permanent members of the UN Security Council. This change made China a politically more attractive ally than Taiwan and precipitated multiple countries to cut ties with the latter and form new relations with the former; 32 countries made this switch within two years of this resolution.

After the initial wave of switches, other countries followed this trend such that by 1995, all the major world economies held diplomatic relations with China. From then to 2019, 22 developing countries also switched diplomatic allegiances from Taiwan to China. Eleven of these countries are in Sub-Saharan Africa (SSA), seven are in the Caribbean and Central America or generally the Western Hemisphere (WH), and four in Oceania or generally Emerging and Developing Asia (EDA). Switching was staggered across the sample period, with the first country, Niger, doing so in 1996 and the last set of countries doing so in 2019. When countries make the switch, they shut down all official foreign missions with Taiwan, including embassies and consulates, and establish new ones with China. In addition, the countries agree to cease all official diplomatic visits with Taiwan.

Table 8 below lists the 22 countries that switched diplomatic allegiances from Taiwan to China between 1995 and 2019.[12] For the rest of this study, these countries will be simply referred to as 'switchers'. The analysis that follows is based on the experiences of these particular countries. The reason why 1995 is chosen as the starting period for this study is that this is the year when

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[12]Appendix 6.B.1 depicts a world map displaying the countries that held official diplomatic relations with Taiwan in 1995 versus in 2019.

China implemented reforms that introduced market-oriented principles and emphasized linkages between foreign aid, trade, and investment in its endeavors abroad (Brautigam, 2009). President Jiang Zemin (in office 1993–2003) proposed this 'going out' strategy in an attempt to tap the vast pool of overseas resources and markets (Yu, 2015). This strategy had clear economic emphasis, particularly as far as trade is concerned. The sample period ends in 2019 to prevent the analysis from being muddled by the disruption to global trade that was caused by the Covid-19 pandemic in 2020.

Table 8: Countries that switched diplomatic allegiances from Taiwan to China (1995 to 2019)

Country	Allegiance to Taiwan	Country	Allegiance to Taiwan
Niger	1995 to 1996	Guinea-Bissau	1995 to 1998
Bahamas	1995 to 1997	Costa Rica	1995 to 2007
Central Afr. Rep.	1995 to 1998	Malawi	1995 to 2007
Chad	1997 to 2006	Tonga	1995 to 1998
South Africa	1995 to 1998	Grenada	1995 to 2005
Gambia*	1995 to 2013	Panama	1995 to 2017
Burkina Faso	1995 to 2018	El Salvador	1995 to 2018
Liberia	1997 to 2003	Kiribati	2003 to 2019
Dominica	1995 to 2004	Solomon Islands	1995 to 2019
São Tomé and Príncipe	1997 to 2016	Dominican Rep.	1995 to 2018
Senegal	1996 to 2005	North Macedonia	1999 to 2001

This table shows the 22 countries that have switched diplomatic allegiances from Taiwan to China since 1995. Severing ties with Taiwan was generally soon followed by the establishment of diplomatic relations with China, except for Gambia which had to wait for about three years to officially establish relations with China.

3.1.2 The trade relevance of switching

According to Yu (2015), the main motivation for switching among this group of countries can be summarized as follows. From the perspective of switchers, China's economic as well as political rise on the global stage makes it an attractive ally. The switching countries believe that aligning

with China can be a boon to their own economic growth prospects. From the perspective of China, its aim is to move up the global power hierarchy. The higher the number of countries that hold diplomatic relations with China, the greater the scope for China to wield 'soft power' globally. Therefore, China is willing to meet some of the needs of these countries in exchange for getting their support in international organizations such as the UN, for instance. This makes economic diplomacy a conduit through which both sides can achieve their desired goals. Economic diplomacy is defined as the use of government relations and government influence to promote economic growth by increasing trade and promoting investments. If China can meet the trade and investment needs of these countries, then they can side with it geo-politically.

Increasingly, economic diplomacy is seen as a crucial task of diplomats, embassies, and consulates (Afman & Maurel, 2010; van Bergeijk et al., 2011; Visser, 2019). In this task, one of the main roles diplomats play in trade promotion is softening informal barriers to trade, such as cultural and institutional differences. Cultural customs and business etiquette vary widely across the world (Hofstede, 1994). Studies show that these differences create intangible barriers that can amount to trade frictions similar to factors like distance and tariffs (Moons & van Bergeijk, 2017). Another channel through which diplomats enhance trade is by performing search and match activities and providing information to businesses regarding the foreign environment and specific market conditions (van Bergeijk et al., 2011). With all this mind, the disbanding of ties that were once in existence could negatively affect trade, especially over the medium and long terms. Therefore, in theory, switching should lead to a boost in trade with China but potentially hurt trade with Taiwan.

3.2 Channels through which diplomacy affects trade

3.2.1 Impact on the values of trade with China

While, in theory, trade with China should go up once a country switches diplomatic allegiances, this hinges on the ability of the country to actively take advantage of the opportunities that can be harnessed through economic diplomacy. Primarily, it is embassies and the diplomats who work there that are responsible for undertaking economic-diplomacy duties. All the countries in Table 8 opened embassies in Beijing after they switched allegiances to China. So, switching should lead to

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an increase in exports to China when a country adequately funds and staffs its embassy in Beijing to achieve economic diplomacy. Along those lines, switching should also lead to an increase in imports coming the opposite direction. This is because China also opened embassies in each one of those countries. This is a country that has a clear goal of prioritizing its global trade and has set up special departments and policy banks that are tasked with achieving this endeavor. The second avenue through which establishing relations with China can be good for bilateral trade is the country's "win-win" foreign policy approach, which has a clear economic basis. Inherent in this policy is the idea that China values mutually beneficial economic interactions of which international trade is the epitome. Lastly but not least, China's position as a global trade titan provides an impetus for switchers to enhance their trade with it upon establishing diplomatic ties. Countries can then use increases in trade with China to validate their decision to switch allegiances. Thus, the first potential implication of switching on trade with China can be summarized as follows.

Possible outcome 1: *For trade with China, the values of both exports and imports increase after a switch in diplomatic allegiances if both sides harness the powers of economic diplomacy.*

Having said all that, when countries do not fully harness the opportunities that economic diplomacy can provide, then the establishment of diplomatic relations may fail to spark improvements in trade. This issue is more likely to plague switchers, many of which are economically much smaller than China. Facing competing challenges, small countries may be forced to prioritize domestic economic issues at the expense of adequately funding their embassies to enhance their trade and investment opportunities abroad. While information on embassy staffing and budgets by countries is hard to come by, anecdotal evidence from the Lowy Institute, a leading international policy think tank, suggests that China may indeed put higher priority on economic diplomacy than the switching countries. The 2019 global ranking by the institute shows that China had the largest number of foreign missions globally at 276. In comparison, the average number of foreign missions by the switching countries in Table 8 was only 15.72. Assuming that the switching countries indeed do not prioritize the trade improvement of economic diplomacy while China does, then the second possible outcome is exports fail to improve but imports do.

Possible outcome 2: *For trade with China, if it is only China that prioritizes economic*

diplomacy, then imports from China increase while exports to China remain unchanged.

The third possible outcome is that switching may actually hurt exports to China but help imports coming the other way. This outcome is possible when the establishment of diplomatic relations with China causes an influx of cheap Chinese imports, which end up disturbing local markets and thereby hurting exports. Studies do show that this problem is very realistic. For example, low-cost textiles imported from China have threatened to displace local production in Africa (Zafar, 2007). Kaplinsky, McCormick, and Morris (2007) asserts that the adverse impact of Chinese imports on production in sub-Saharan Africa extends to all manufacturing, both those that are destined for domestic markets and those meant for export markets. Not only that, Chinese imports have hurt African exports in secondary markets (Giovannetti & Sanfilippo, 2009). Chinese imports have also been shown to hurt manufacturing in Latin America (Jenkins, 2011). All this implies that there is potential for switching to actually lead to a decrease in exports as imports from China increase.

Possible outcome 3: *For trade with China, the value of exports falls but that of imports increases if switching diplomatic allegiances gives rise to crowding out effects.*

3.2.2   Impact on the values of trade with Taiwan

If the establishment of new diplomatic relations can affect bilateral trade through economic diplomacy, then the dissolution of ties that once existed should have a negative effect. One reason why this may happen is when the authorities in either Taiwan or a switching country discourage its residents and businesses from continuing economic engagement as punishment for souring ties. The other way through which the loss of diplomatic representation can hurt trade is that it creates an uncertain business environment. Without the existence of an embassy in a foreign land, potential new local entrants into that market lose a valuable source of information about market conditions. Even for the firms that are already established in the market, embassies can be places where they seek valuable help when navigating certain challenges like lodging complaints through the legal framework in the foreign country when the need arises. The resultant uncertainty may

force some players to quit the market. Thus, for trade with Taiwan, the first potential outcome can be summarized as follows

Possible outcome 4: *For trade with Taiwan, the values of both exports and imports fall after a switch in diplomatic allegiances if the loss of representation hinders trade.*

That being said, China does not preclude countries that switch allegiances from continuing their economic interactions with Taiwan (Henderson, 2001). Considering that a majority of the switching countries held relations with Taiwan for a long time, they may have established a long history of economic engagement with Taiwan. This may have included business and trade relations. As long as these arrangements are indeed not disrupted, then even after embassies are shut down, a country can continue to use its long-established trade relations to maintain its bilateral trade flows with Taiwan.

Possible outcome 5: *For trade with Taiwan, the values of both exports and imports are not affected if switching diplomatic allegiances does not hinder trade.*

A combination of 4 and 5 is also possible. In particular, values of exports may not be affected but values of imports may decrease. This outcome relies on the possibility that switching countries do not put emphasis on economic diplomacy. In this case, their trade outflows are less likely to be tied to the presence of diplomatic representation in Taiwan. The severing of ties should, therefore, have minimal impact on exports. If, in contrast, Taiwan's exports are more tied to diplomatic relations, these would fall subsequent to switching.

Possible outcome 6: *For trade with Taiwan, the values of exports are unaffected but those of imports decrease if there is a stronger link between diplomacy and trade in Taiwan than among the switching countries.*

Apart from these outlined possible outcomes, other permutations are generally unlikely. For example, with the emphasis it puts on trade and economic diplomacy, it is unlikely that the values

of imports from China decrease after switching. At worst, switching should have no effect on the values of imports from China. Similarly, it is inconceivable to imagine that the loss of diplomatic representation can lead to improvement in trade with Taiwan. Keep in mind that these hypotheses solely focus on how switching affects values of bilateral trade. The intensive and the extensive margins, which are defined in Section 3.3.1, may behave differently.

3.3 Methodology

This section describes the estimation strategies, the sample selection criteria, and the data sources used to analyze the impact that switching has on trade. In the process, it also addresses concerns about possible endogeneity bias that may affect the policy variables used in the study.

3.3.1 Estimation strategies

This study uses two estimation strategies to evaluate the effect diplomatic relations have on trade outcomes. One of those strategies is a gravity framework, which remains the workhorse model in the international trade literature. The other strategy is the event study approach. Details of the two approaches are described below.

The gravity framework

As is the current norm in the literature, the estimation of the gravity framework that this study utilizes is the Poisson pseudo maximum likelihood (PPML) estimator. This estimator overcomes bias and inconsistency challenges that OLS runs into when estimating gravity models.[13] The PPML estimator is consistent even in the presence of fixed effects and zeros in the data (see S. J. Silva

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[13]When the nonlinear form of the gravity model with multiplicative error term is transformed using logs, the error term ends up being in logs as well. In this case, the expected value of the error term depends on its higher moments, like variance (Shepherd, 2016) In the presence of heteroskedasticity, which is highly probable in practice, the expected value of the error term then depends on one or more of the explanatory variables. This violates one of the fundamental assumptions of OLS and, thus, renders the estimator biased and inconsistent. The PPML estimator overcomes this challenge and provides consistent estimates of the multiplicative gravity model as long as the model contains the correct set of explanatory variables (S. J. Silva & Tenreyro, 2006).

and Tenreyro (2006) and J. S. Silva and Tenreyro (2011)). This is important for estimating the gravity model for the following reasons. The most theory-consistent gravity models require the inclusion of fixed effects to control for individual and time specific heterogeneity (Shepherd, 2016). The advantage of being consistent in the presence of zeros in the data is that not all countries, particularly developing countries, trade with every other country in the globe every year nor do they trade in every good. This implies the existence of zeros in the data, which poses a huge issue for OLS given the log transformation of the dependent variable. The implementation of the PPML estimator is fairly straightforward because, despite the name, data do not need to be distributed as Poisson for them to be estimated using this estimator. The PPML estimation equation used in this study is of the following form.

$$ F_{ij,t} = exp\bigg(\beta_1 chn\_post_{ij,t} + \beta_2 twn\_post_{ij,t} + \beta Z_{ij,t} + \gamma_{ij} + \gamma_{i,t} + \gamma_{j,t} \bigg) + \varepsilon_{ij,t} \qquad (3) $$

In Equation 3, $F_{ij,t}$ represents annual measures of bilateral trade flows, be it exports or imports, between countries i and j in year t. In this study, these measures include aggregate trade values of bilateral exports and imports, their intensive margin, and their extensive margin. Trade values are measured in millions of U.S. dollars. In defining the intensive and the extensive margins, this studies follows the examples set by Visser (2019), Dutt, Mihov, and Zandt (2013), and Hummels and Klenow (2005). The intensive margin is defined as the ratio of the value of the goods country i trades with country j to the aggregate values of those particular goods that country j trades with the world.[14] These goods are measured at the four-digit level of SITC commodity classifications. The intensive margin is informative about the importance of the goods country i trades with country j in j's total trade in those same goods. So, for instance, if β_1 is positive, then it would imply that, for the goods switching countries trade with China, China starts trading a larger share of those goods with the switching countries than with non-switching countries. The next equation summarizes the measure of the intensive margin for exports. G^{ij} represents the set of goods country i exports to country j in year t. The index W represents the sum of all origin countries exporting good g to

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[14]When calculating the intensive and the extensive margins for imports, the world only includes the set of developing countries, both switchers and non-switchers, that are in the sample used in this study. This ensures that the impact of switching is assessed relative to the trade of a comparable group of countries. The rule for choosing the countries in the sample is described in Section 3.3.3.

country j in year t.

$$\text{Intensive margin (IM)}_{ij,t} = \frac{\sum_{g \in G^{ij}} X^g_{ij,t}}{\sum_{g \in G^{ij}} X^g_{Wj,t}}$$

Again using exports as an illustration, the extensive margin can be summarized using the next equation below. This margin measures the importance of the goods country i trades with country j in j's overall trade. It amounts to a weighted count of the number of the varieties of commodities traded in total trade, with the weights being the values of those commodities.

$$\text{Extensive margin (EM)}_{ij,t} = \frac{\sum_{g \in G^{ij}} X^g_{Wj,t}}{\sum_{g \in G^{Wj}} X^g_{Wj,t}}$$

Turning to the explanatory variables of Equation 3, the policy variables of interest are $chn\_post_{ij,t}$ and $twn\_post_{ij,t}$. Both are interactions of two other indicator variables defined as follows.

$$chn\_post_{ij,t} = chn_{ij} \times post_t$$

$$twn\_post_{ij,t} = twn_{ij} \times post_t$$

The variables chn_{ij} and twn_{ij} are equal to 1 whenever country j in the i-j pair is either China or Taiwan, respectively. The variable $post_t$ is 1 for all the years in which a country does not hold formal diplomatic ties with Taiwan. Think of this as the period after it switches diplomatic allegiances away from Taiwan. Thus, coefficients of $chn\_post_{ij,t}$ and $twn\_post_{ij,t}$ are informative about how bilateral trade flows with respect to these two territories respond subsequently to the switch. A positive β_1 would indicate that switching diplomatic allegiances improves trade with China, while a negative sign would indicate the opposite. Likewise, a negative β_2 would indicate that the loss of diplomatic relations hurts trade flows with Taiwan.

$Z_{ij,t}$ captures a set of control variables, which in this case are exchange rate movements ($forex$) as well as reciprocal trade agreements ($RTAs$) and non-reciprocal preferential trade arrangements (nr_PTAs) that exist between countries i and j. The exchange rate between a pair of trading countries is constructed from each country's exchange rate to the U.S. dollar, data for which come from the IMF. $RTAs$ exist when both countries agree to lower barriers to trade against each other. They include both bilateral and multilateral free trade agreements. In contrast, nr_PTAs

occur when one country agrees to lower trade barriers against another, but does not require the benefiting country to do the same. These are usually provided by more advanced countries to allow poor countries that meet certain criteria to export goods to them duty-free. Starting in 2011, China started providing nr_PTAs to some countries, especially in SSA. In the data used in this study, $RTAs$ and nr_PTAs are indicator variables that take the value of 1 for each year t in which there exists either a reciprocal trade agreement or a non-reciprocal preferential trade arrangement between countries i and j, respectively. Information about the existence of $RTAs$ between countries comes from CEPII, the leading French center for research and expertise on the world economy. Data on the existence of nr_PTAs between pairs of countries come from the NSF-Kellogg Institute Data Base.

Equation 3 also incorporates combinations of country and time fixed effects as a way of accounting for multilateral resistance terms. Country-pair fixed effects (γ_{ij}) account for time-invariant variables between countries, such as distance, area, common language and sharing a border (Visser, 2019; Baier & Bergstrand, 2007; Hayakawa et al., 2014; Yang & Martinez-Zarzoso, 2014). Country-time fixed effects, $\gamma_{i,t}$ and $\gamma_{j,t}$, capture the effects of variables that vary by country and by year like GDP, population, and multilateral resistance terms (Anderson & van Wincoop, 2004). In this study, country-year fixed effects are especially crucial to account for the impact that China's astronomical economic growth over the past few decades has had on trade. That is, even without switching allegiances from Taiwan to China, a country could have experienced changes in its trade flows with China due to the sheer growth that the Chinese economy has experienced over time. The inclusion of country-pair fixed effects and country-year fixed effects means that identification arises from changes in diplomatic allegiances.

The event study approach

The gravity framework described above provides coefficients that summarize the effects of diplomatic relations on trade. Apart from such a summary, it may also be informative to observe the effects of switching over time. Difference-in-difference (DiD) event study plots are useful in displaying the effects of treatment by comparing trade outcomes over time. The recent literature on DiD designs has shown that when there are multiple units and more than two time periods, coefficient estimates in DiD designs can be biased (see Goodman-Bacon (2021) and Callaway and Santa'Anna (2021)).

Furthermore, when constructing event study plots, a staggered adoption of treatment - as is the case in this study since different countries switch allegiances at different times - also poses other challenges. In such settings, a coefficient on a given lead and lag in regular event study plots can be contaminated by effects from other periods. Sun and Abraham (2021) proposes an estimator that overcomes such cross-contamination. All event study plots in this study are based on this proposed estimator.

3.3.2   Concerns about endogeneity bias

When evaluating the impact diplomatic relations have on trade, concerns about the possible existence of endogeneity bias are legitimate. It is plausible that diplomatic relations can change as a response to changes in trade. That being said, in this study, there are three reasons to allay such concerns. The first comes from the fact that the fight between Taiwan and China over diplomatic allies is mainly political (Henderson (2001), Ponniah (2017), and Shattuck (2020)); neither Taiwan nor China is motivated by trade. Considering how economically small the countries that switched allegiances in this study are and how they are not generally heavily endowed with natural resources that China or Taiwan could be trying to exploit, it is indeed unlikely that trade drives switching.[15]

That being said, it still be possible that there may be unobservable factors that simultaneously affect both trade and diplomatic allegiances. To allay this particular fear, this study relies on the three pairs of fixed effects that are in Equation 3, which are powerful enough to account for all the unobservable factors that could be sources of this endogenity. Upon takng care of this concern, the results obtained provide the most plausible estimates of the effect of policy variables on trade (see Baier and Bergstrand (2007), Yang and Martinez-Zarzoso (2014), and Visser (2019)).

Another source of bias could be if there is reverse causality. To get ahead of the possibility of this problem, this study regresses current measures of trade flows on lagged measures of diplomatic relations. This recognizes the fact that it may take time for diplomats to gather valuable trade information, relay it back to their home countries, before traders in their respective home countries begin to put it to use. With this in mind, diplomatic relations from years before can influence

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[15]Based on the figures from 2021, the combined GDP of switchers is under 1% of global GDP and their combined population is 2.6 of global population.

current trade flows. However, trade flows in year t should not influence the diplomatic relations that existed in the years prior. Baier and Bergstrand (2007), Hayakawa et al. (2014), and Visser (2019) all use this approach in their studies. Following their example, this study also estimates Equation 4 below.

$$F_{ij,t} = exp\bigg(\beta_1 chn\_post_{ij,t-k} + \beta_2 twn\_post_{ij,t-k} + \beta Z_{ij,t} + \gamma_{ij} + \gamma_{i,t} + \gamma_{j,t}\bigg) + \varepsilon_{ij,t} \qquad k \in \{1,4\}$$

(4)

3.3.3   Sample selection and trade data sources

The sample for the analysis this study conducts focuses on the 22 countries that are in Table 8 and 70 other countries that act as a control group. All the countries that switched diplomatic relations from Taiwan to China after 1995 are developing economies. The 70 countries in the control group are also developing economies and they are drawn from the same regions that the switchers are located. These regions are SSA, WH, and EDA, the three regions where the majority of the switchers are also located. The sample period ranges from 1995, to coincide with China's going out strategy, to 2019, to avoid the disruption to global trade that was caused by the Covid-19 pandemic in 2020.

Trade data come from the United Nations International Trade Statistics Database (Comtrade). These data are aggregate bilateral trade values aggregated at the 4-digit level standard international trade classification, revision 1 (SITC1). Data are spotty for some countries. Among the switchers, South Africa, Tonga, Guinea-Bissau, Chad, and Liberia are excluded from the sample because of data insufficiency.[16] Also excluded from the sample are Kiribati and the Solomon Islands because, having made the switch in 2019, they would not have post-switch data given the sample period chosen for this study.

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[16]Appendix 6 shows the results of estimating the impact that switching diplomatic allegiances has on trade values using data from the IMF's Direction of Trade Statistic database. This database has a wider coverage of countries. These data are aggregate values of bilateral trade flows of all merchandise exports and imports between a country and all its trading partners. As such, the can only be used to only evaluate the impact that switching has on trade values, but not on the intensive margin nor the extensive margin. The results obtained are very similar to the ones obtained using Comtrade data.

Table 9 provides summary statistics of how the bilateral trade values (Trade val.), the intensive margin (Int. margin), and the extensive margin (Ext. margin) of the switching countries with respect to China and Taiwan before and after switching. Trade values are in millions of U.S. dollars whereas the two margins are in ratios as defined in Section 3.3.1. What stands out from the table is that measures of trade with China increase while those of trade with Taiwan generally go down. This implies that, once switching happens, countries start trading more with China and less with Taiwan thereby raising the rank of China as an important trading partner while lowering the rank of Taiwan. The next section evaluates the statistical significance of these changes.

Table 9: Summary statistics: trade values with China and Taiwan for switchers

	Pre-switch				Post-switch			
	n	Trade val.	Int. margin	Ext. margin	n	Trade val.	Int margin	Ext margin
Export to China	257	20.45	0.00	0.06	136	49.56	0.00	0.12
		(78.73)	(0.01)	(0.08)		(98.49)	(0.01)	(0.12)
Import from China	291	179.56	0.05	0.05	151	315.16	0.09	0.72
		(463.31)	(0.05)	(0.09)		(546.82)	(0.08)	(0.25)
Exports to Taiwan	158	5.45	0.02	0.05	96	10.22	0.01	0.08
		(14.58)	(0.08)	(0.09)		(26.16)	(0.01)	(0.12)
import from Taiwan	215	37.30	0.03	0.29	140	14.70	0.01	0.33
		(39.67)	(0.07)	(0.25)		(33.07)	(0.03)	(0.25)

Trade values are in millions of U.S. dollars. The intensive and the extensive values represent ratios. All the numbers are variable means with standard deviations in parentheses.

3.4 Results

In evaluating the impact that switching diplomatic relations from Taiwan to China has on trade, this study presents four types of results. First, it discusses the contemporaneous results in which the dependent variables and the policy variables of interest are measured concurrently. These results are estimations of Equation 3 for both exports and imports. The estimations are for the impact on trade values, intensive margins, and extensive margins. Following that, the study presents the outcome of estimating Equation 4, which uses lagged measures of diplomatic ties as a way of breaking any potential reverse causality between trade and diplomacy. The next set of results after that compares the impact that switching has on countries in Sub-Saharan Africa (SSA) to its

impact on countries in the sample from other regions of the world. The reasons for focusing on SSA countries are twofold. First, half of the group of switchers are located in this region. Second, studies like Seck (2017) demonstrate that despite a significant trade expansion that has been above world average in recent years, the region still remains relatively marginalized in the world trading system. Therefore, splitting the sample into SSA and non-SSA countries is meant to check whether this marginalization leads to differences in the impact that switching has on trade flows. The last set of results evaluates whether switching leads to trade diversion vis-à-vis other countries in East Asia.

3.4.1 The contemporaneous impact of switching

Table 10 presents the contemporaneous outcomes of the impact that switching has on values of trade, the intensive margin, and the extensive margin.

Table 10: The contemporaneous impact of switching on bilateral trade flows

	Trade values		Intensive margin		Extensive margin	
	Exports	Imports	Exports	Imports	Exports	Imports
$Chn\_post_{ij,t}$	-0.81**	0.22***	-0.31	-0.25**	0.34***	0.13***
	(0.36)	(0.06)	(0.25)	(0.11)	(0.13)	(0.03)
$Twn\_post_{ij,t}$	0.03	-0.49***	-0.48	-0.43*	-0.01	-0.15**
	(0.31)	(0.09)	(0.67)	(0.23)	(0.15)	(0.05)
$RTA_{ij,t}$	0.01	0.10***	0.14***	0.18***	-0.05***	-0.03***
	(0.03)	(0.02)	(0.04)	(0.03)	(0.01)	(0.01)
$nr\_PTA_{ij,t}$	0.08***	-0.08***	0.09**	-0.03	-0.00	0.04***
	(0.02)	(0.02)	(0.04)	(0.03)	(0.01)	(0.01)
$Forex_{ij,t}$	0.00**	-0.00***	-0.00***	-0.00***	0.00**	-0.00***
	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	131,555	177,131	131,111	177,131	131,112	177,131
R-squared	0.99	0.99	0.65	0.72	90	0.91
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Reporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Partner-year FE	Yes	Yes	Yes	Yes	Yes	Yes

Coefficient estimates; standard errors clustered by reporter-year in parentheses.

$*p < 0.1; **p < 0.05; ***p < 0.01$

For trade values with Taiwan, Table 10 reveals that switching did not have a statistically significant

effect on exports. However, imports decreased by 39%, which is equivalent to a value of about \$9 million per switching country per year.[17] These changes correspond to Outcome 6 among the possible trade outcomes of the switch that are listed in Section 3.2. The decline in imports is despite the fact that China does not hinder the continuation of economic engagements with Taiwan when countries switch allegiances, as well as the likely presence of previously established trade relationships when the countries held ties with Taiwan. The decrease in imports from Taiwan also indirectly demonstrates the power of diplomatic relations in facilitating trade.

Among the six possible outcomes outlined in Section 3.2, the table also shows that Outcome 3 applies for the impact that switch in diplomatic allegiances had on trade values with China. Imports increased by 25% while exports decreased by 56%. Both these outcomes are statistically significant. In dollar terms, these changes imply the following. Imports from China increased by about \$34 million per switching country per year while exports to China decreased by about \$13 million per switching country per year.[18] These changes suggest that the switch produced some crowding out effects whereby the increase in imports from China led to a decrease in values of exports going to China.

Figure 2 compares the trends in exports to China, in logs, between the switching and the non-switching countries. For the switchers, the period illustrated in the figure is 5 periods (years) either side of the switching year. For the non-switchers, the period chosen ranges from 2002 to 2012. This period overlaps with when the majority of the countries in Table 8 made the switch. It is clear from the figure below that switchers see their exports to China decrease following a switch in diplomatic allegiances from Taiwan to China.

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[17]The formula for converting the coefficients into percentages is as follows: $\%\Delta = 100 \times (e^\beta - 1)$. From Table 9, imports from Taiwan decrease by about \$23 million on average. Of this change, 39% or \$9 million is due to switching.

[18]The growth in the average values of imports from China before and after switching, according to Table 9, is \$135 million. Then 25% of that amount, which is about \$34 million, is attributed to the establishment of diplomatic ties. The average values of exports to China before and after switching increase by about \$29 million. Considering that the results from Table 10 show that switching decreases exports to China by 56%, this amount of change is 44% lower than it should have been. Thus, exports to China were \$13 million lower than they would have been in the absence of switching.
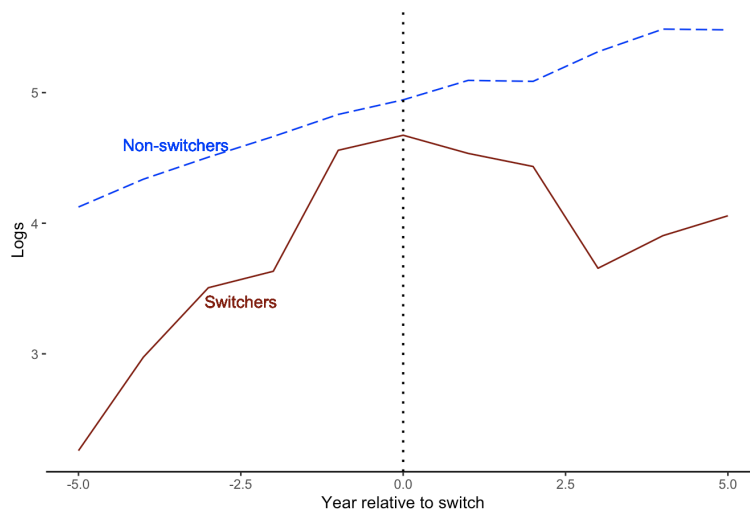
Figure 2: Trends in exports to China.

The fact that China successfully utilized economic diplomacy to raise its exports to the switching countries once it established diplomatic relations with them while exports of these countries to China fell may indicate that some the imports from China end up negatively impacting the exports of the switching countries. Figure 3 below verifies this outcome. The figure displays average values of trade with China before and after switching in each of the eleven broad categories of products as classified according to the standard international trade classification (SITC). Observe how imports show massive improvements relative to exports in products codes 0 (Food and Live Animals), 5 (Chemicals), 6 (Manufactured Goods Classified Chiefly by material), and 7 (Machinery and Transport Equipment). Thus, it is indeed plausible that Chinese imports hurt exports from switchers to China.

(a) Before switching   (b) After switching
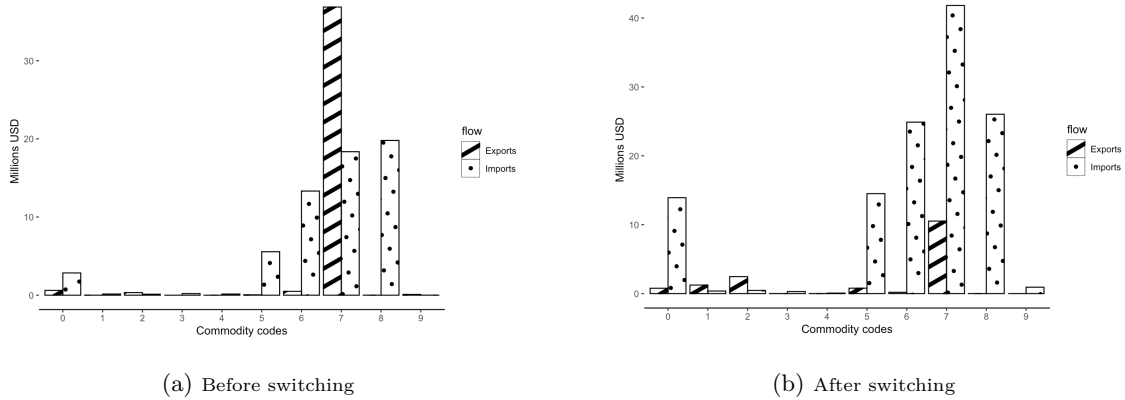
Figure 3: Trade with China by SITC categories.

Turning to the margins, Table 10 shows that switching only had a negative impact on the intensive margin. This outcome was, however, only statistically significant for imports. Imports from China in this margin decreased by 22% while imports from Taiwan decreased by 35%. The intuition for these changes is as follows. The importance of the goods the switching countries imported from both China and Taiwan decreased relative the switchers' world imports of those same types of goods. In other words, origins of imports became more diversified subsequent to switching.

The extensive margin measures the importance of the type of goods traded between a pair of countries relative to their respective overall trade. The impact that the switch had on this margin was positive for trade with China but negative for trade with Taiwan. For trade with China, it led to a 40% increase in the margin for exports and a 14% increase for imports. For trade with Taiwan, only the change in imports is statistically significant — a 14% decrease in this margin.

Viewed together, the outcomes of the estimations of the impact switching has on trade values, on the intensive margin, and on the extensive margin paint an interesting picture. This is particularly true for exports to China. Although the aggregate value of the goods switchers exported to China (trade values) and, for each four-digit SITC commodity exported, the proportion of the values of the commodities switchers exported to China relative to the total values of those particular commodities that all the countries in the sample exported to China (intensive margin) both decreased, the proportion of the totals of those four-digit commodities relative to the total values of all goods

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exported to China across all the countries in the sample — switchers and non-switchers — actually decreased. In other words, while China imported less from switchers, its imports of the goods switchers exported actually increased. So, the decrease in the values of exports of switchers to China subsequent to the switch was not a sign that the commodities the switchers export became less desirable to China. Rather, it reflects the inability of the switching countries to leverage their newly found close political ties to China to take advantage of the opportunities that existed to boost their exports to the destination. With strong policy intervention, perhaps improvements could be made in that area. For instance, switchers may need to look into how well they are implementing economic-diplomacy duties to facilitate a growth in the values of their own exports.

3.4.2 Effects of lagged measures of diplomatic relations

As described in Section 3.3.2, one of the steps this study takes to minimize concerns about the possible presence of simultaneity bias, is to follow the example of Baier and Bergstrand (2007), Hayakawa et al. (2014), and Visser (2019) by regressing current trade flows on lagged explanatory variables. The figure 4 below displays the coefficient estimates and 95% confidence intervals of estimating Equation 4 for up to 4 year lags. These lags are estimated separately, but are presented in the same figure for brevity. Panel 4a represents the results for trade with China while Panel 4b represents the results for trade with Taiwan.
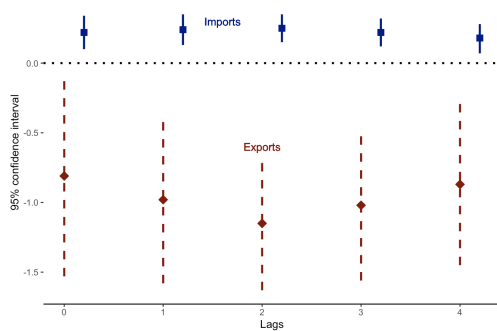
(a) Impact of switching on bilateral trade values with China
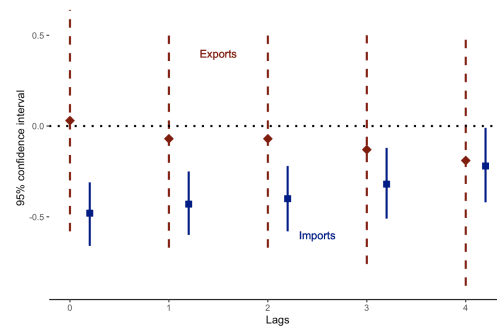
(b) Impact of switching on bilateral trade values with Taiwan

Figure 4: Effects of lagged measures of diplomatic relations on current trade values.

The figure shows that the impact of switching presented in Table 10 are persistent even four years after switching. Exports to China decreased, imports from China increased, imports from Taiwan decreased, but exports to Taiwan remained statistically unchanged.

3.4.3 Event study plots

An alternative approach to displaying the effects of switching diplomatic allegiances on trade over time is to use event study plots. Instead of plotting them using leads and lags, this study uses the approach proposed by Sun and Abraham (2021), which overcomes the cross-contamination issue inherent in event study plots that use leads and lags.

(a) Trade values with China

(b) Trade values with Taiwan
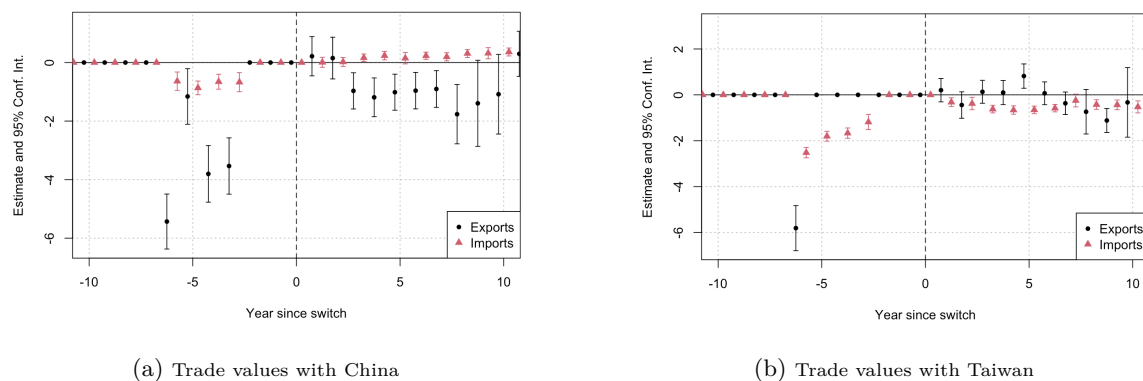
Figure 5: Event study plots

The figures plot coefficient estimates and their 95% confidence intervals. The horizontal axis displays years since switching, with zero representing the year in which switching occurs.

The plots above reaffirm the results from the gravity framework approach in the previous subsections. Panel 5a shows that, subsequent to the switch, imports from China increased while exports to China decreased; Panel 5b shows that imports from Taiwan decreased whereas exports to Taiwan were largely not different from zero. Notice how it took some time before statistically significant effects of switching appeared. For trade with China, it took at least three years and for trade with Taiwan, it took at least two years. For trade with China, this reflects the fact that once diplomatic relations are established, it takes some time for diplomats to gather valuable information through their economic-diplomacy duties, relay it back to China, before it can be utilized by businesses.

For trade with Taiwan, it shows that the information that was previously gathered remains useful before the void created by the lack of representation begins to bite.

3.4.4 Regional comparisons of the impact: sub-Saharan Africa versus other regions

The results obtained so far reveal that switching boosted imports coming from China, but hindered exports to China as well as imports from Taiwan. Considering that half of the switching countries in the sample are countries in sub-Saharan Africa (SSA), a region that the literature indicates displays different trade patterns, this section compares how the switch affected the trade of the countries from this region relative to those from the other parts of the world (non-SSA). Table 11 below summarizes the results of these exercises.

Table 11: Comparison of the impact: SSA vs. non-SSA countries

		SSA		Non-SSA	
		Exports	Imports	Exports	Imports
Trade value	$Chn\_post_{ij,t}$	0.40	-0.05	-1.03***	0.27***
		(0.30)	(0.10)	(0.38)	(0.08)
	$Twn\_post_{ij,t}$	0.64	-1.22***	0.03	-0.37***
		(0.41)	(0.16)	(0.33)	(0.09)
Intensive margin	$Chn\_post_{ij,t}$	-0.13	-0.27*	0.08	-0.02
		(0.38)	(0.15)	(0.35)	(0.12)
	$Twn\_post_{ij,t}$	0.02	-0.41	0.63*	-0.39***
		(0.71)	(0.31)	(0.35)	(0.12)
Extensive margin	$Chn\_post_{ij,t}$	0.26	0.15***	0.18	0.08**
		(0.22)	(0.05)	(0.13)	(0.03)
	$Twn\_post_{ij,t}$	-0.08	-0.18*	-0.01	-0.17***
		(0.38)	(0.10)	(0.16)	(0.04)

Coefficient estimates; standard errors in parentheses.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Impacts on SSA and non-SSA countries are estimated separately for each measure of dependent variable. All estimations control for multilateral resistance terms, RTAs, nr_PTAs, and exchange rate movements. The coefficients for the covariates are suppressed for brevity.

Juxtaposing this table to Table 10 reveals some intriguing similarities and differences that arise between the two regional sub-samples. In particular, the impact that the switch had on trade values of the overall sample were mainly driven by the non-SSA countries. While trade with China did not go through statistically significant changes for the SSA contingent, the non-SSA switchers saw their exports decrease and imports increase. Nevertheless, for trade with Taiwan, both regions show that exports were not significantly impacted by the switch while imports decreased, as it was the case in Table 10. For the intensive and the extensive margins, the switch did not result in major systematic differences between the two regional sub-samples.

3.4.5 How much trade diversion is there?

The fact that imports from China consistently shows increases while imports from Taiwan show decreases indicates that the switch led to some trade diversion between the two territories. The question is, did this diversion extend to other countries as well? To answer this question, this study looks at whether trade with Japan or South Korea was also impacted by the switch. The reasons for choosing the two nations are that they are relatively similar economies as far as the types of goods traded is concerned and they are located in the same region as Taiwan and China. Table 12 displays the results of this exercise.

Table 12: The extent of trade diversion

	Trade values		Intensive margin		Extensive margin	
	Exports	Imports	Exports	Imports	Exports	Imports
$Chn\_post_{ij,t}$	-0.81**	0.22***	-0.31	-0.24**	0.35***	0.12***
	(0.37)	(0.06)	(0.25)	(0.11)	(0.13)	(0.03)
$Twn\_post_{ij,t}$	0.03	-0.49***	-0.49	-0.42*	0.00	-0.15**
	(0.31)	(0.09)	(0.67)	(0.23)	(0.15)	(0.05)
$Jpn\_post_{ij,t}$	-0.19	0.04	0.47	-0.04	0.21**	-0.08**
	(0.17)	(0.09)	(0.60)	(0.11)	(0.10)	(0.03)
$Kor\_post_{ij,t}$	-0.07	-0.16*	0.29	-0.07	0.56***	-0.00
	(0.30)	(0.09)	(0.48)	(0.13)	(0.16)	(0.04)

Coefficient estimates; standard errors in parentheses.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

All estimations control for multilateral resistance terms, RTAs, nr_PTAs, and exchange rate movements. The coefficients for the covariates are suppressed for brevity.

There generally was not much trade diversion affecting other countries. For trade with Japan, neither the values exports nor the values of imports were significantly different from zero once countries switched diplomatic allegiances from Taiwan to China. For trade with South Korea, it was only imports that were significantly impacted, but at a 10% level. Precisely, exports to South Korea decreased by 15%. This change was much smaller than the decrease in imports from Taiwan. The switch also did not have a significant impact on the intensive margin of trade with both Japan and South Korea. This shows that there was no significant change in the importance of the kinds of goods that were traded between these two Asian countries and the switching countries. The extensive margin shows that the switch had a significant impact as far as trade with both Japan and South Korea was concerned. However, this simply reflects the fact that types of goods traded between these countries and the switchers were an important component of Japan's and South Korea's overall trade.

3.5 Conclusion and policy implications

Both the creation and the disbandment of diplomatic relations between countries affect bilateral trade flows. Using trade data for a sample of 90 developing countries, this study shows that the countries that switch diplomatic allegiances from Taiwan to China between 1995 and 2019 saw the values of their imports from the former decrease while those from the latter increase. The contrast in these outcomes for the two territories demonstrates the crucial role that diplomatic representation plays in promoting trade, even when trade is not the main reason for the creation or disbandment of relations. This study also reveals that the trade-promotion ability of diplomatic relations can be limited. As values of imports from China increased with switching, exports from switchers to China decreased. This outcome was partly due to the fact that the influx of Chinese imports out-competed some locally produced products that ended up exiting the market.

The findings of the impact that the switch had on the values of trade flows for the full sample are robust even when accounting for the fact that it would have takes time for the change in diplomatic allegiances to actually affect trade outcomes. When the full sample is split into subgroups, variations in the impact that switching had on the countries in SSA and the countries not in SSA appear. Mainly, the impact that the switch had on trade values of the full sample were driven by changes

experienced by the non-SSA countries. Nonetheless, both subgroups experienced trade diversion from Taiwan to China, especially in imports. The strong trade diversion from Taiwan to China that the switchers experienced did not spillover much to other Asian countries.

Apart from analyzing how the switch affected trade values, this study also assessed the impact it has on the intensive margin and the extensive margin of trade. Although exports to China decreased, the extensive margin demonstrates that China actually imported more of the goods switchers exported. This indicates an inability of switchers to use economic diplomacy to boost their exports. For switchers that care about exports growth, here are some policy recommendations. First, they need to make economic diplomacy a priority by adequately funding and staffing their foreign missions, for instance. This needs to be combined with domestic policies that facilitate production and trade. These recommendations apply to both the countries that have already switched and those that may consider switching in the near future. For the group that is yet to switch, another step it can take is to negotiate the inclusion of deliberate measures that can help its exports grow in the agreement to establish diplomatic relations with China.

4 Diplomatic Relations and the Micro-structure of Exports in Developing Countries: Evidence from the Exporter Dynamics Database.

Empirical evidence has demonstrated the link between firm characteristics and a country's exports. Firms that engage in international trade tend to be larger and more productive than firms that produce to only service domestic markets. Motivated by this fact, theoretical research has shown how participation in international trade leads to within-industry reallocation of resources, which raises average industry productivity as low-productivity firms exit while high-productivity firms expand and thrive in export markets (see Melitz, 2003 and Melitz & Redding, 2014). Thus, trade liberalization - or participation in more trade - will always enhance a country's exports. Trade enhancement between a pair of countries can also come about when they establish official diplomatic relations between them (see Rose, 2007; van Bergeijk et al., 2011; and Moons & van Bergeijk, 2017 for examples). The presence of government support abroad through diplomatic representation centers like embassies, trade missions, and export promotion agencies can stimulate firms to enter export markets (Cruesen & Lejour, 2013). In theory, this entry should lead to an increase in exports by both parties involved in the diplomatic relations such that their respective bilateral trade flows with each other should grow.

However, Kamanga (2023) uses data from the UN Comtrade database and finds that, for the developing countries that switched diplomatic allegiances from Taiwan to China over the past three decades, the values of their exports to the Asian giant fell following the this policy change.[19] In order to better understand this puzzling outcome, this study utilizes the World Bank's Exporter Dynamics Database (EDD) to examine how this switch in diplomatic allegiances affected the micro-structure of export sectors in the countries that switched.[20] Specifically, it concentrates on how the diplomatic policy change influenced the number of exporters, the average values of exports, as well as the measures of firm and product dynamics in those countries. The idea is that the macro

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[19]By switching diplomatic allegiances from Taiwan to China, a country that that makes the change agrees with China's position that Taiwan is part of China, and not a stand-alone sovereign state.

[20]The micro-structure of the export sector includes such attributes as the number of firms, the average values of exports, as well as entry and exit rates into markets.

changes observed in the previous literature reflect changes at the micro level. As such, the decrease in the values of exports to China after countries establish diplomatic relations with it result from decreases in some or all of the following: the number of firms exporting to the destination, the average values products exported, or the number of products traded.

Exporter level data like those in the EDD are essential for understanding the foundations of a country's export dynamics. There is a growing literature that is using such micro-level data to better understand export growth at a country level. Some of that literature has highlighted specific aspects unique to developing countries, a grouping to which all the countries that switched diplomatic allegiances from Taiwan to China in the past three decades belong. For instance, Fernandes, Freund, and Pierola (2016) investigates how country size and stage of development affect exporter behavior across countries. In part, its findings show that entry and exit rates are higher and entrant survival rate is lower in developing countries. This volatility of export activity is particularly pronounced for Africa.[21] The countries in the region display the highest rates of entry, exit, and turnover of exporting firms, products exported, and export destinations (Afonso & Vergara, 2022). According to Nieminen (2020), the high turnover rate of exporters in developing countries can in part be attributed to a lack of financial development. Access to domestic financial services eases credit constraints that exporters may face, which then positively contributes to export diversification by increasing the number of small exporters. With inadequate financial development, exporters find it hard to access financing, which then forces some of them to shut down and exit the exporting sector entirely. This study highlights how the micro-structure of exports responds when developing countries establish diplomatic relations with China, in light of the volatility in entry and exit as well as liquidity and other constraints that affect exporting in developing countries.

The existing empirical literature on the micro-structure of exports goes hand in hand with the theory of heterogeneous firms and, in cases where developing countries are involved, models with allocative inefficiencies. In the theory of heterogeneous firms à la Melitz (2003), firm size is directly proportional to productivity; it is the more productive firms that participate in exports. With more trade, within-industry reallocation of resources only helps such firms to become more productive and consolidate their grip on the export markets (Pavcnik, 2002). In the context of this theory, one

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[21]Eleven of the twenty-two countries that switched diplomatic allegiances from Taiwan to China from 1995 to 2019 are African.

would expect that the exporter data in the EDD should belong to the larger, more productive firms. Furthermore, bearing in mind the theory on the trade-enhancement effect of diplomatic relations, it should be these relatively larger firms that should drive the trade-responses following the switch in diplomatic allegiances from Taiwan to China. However, given that the countries being studied are developing, a grouping that is characterized by a lot of volatility in the dynamics of its export sector, one must also take into account distortions like labor market regulations, access to finance, and taxation that could disrupt the predictions of the Melitz model. Such distortions are marks of the allocative inefficiencies that are prevalent in developing countries, and they play an important role in determining firm size. In the context of this study, the aforementioned distortions could imply that the trade-promotion forces of diplomatic relations may not provoke improvements in within-industry reallocation of resources thereby stunting the growth of some more productive firms. At the same time, some inefficient firms may be shielded from the pressures of competition, which would prevent their exit from the market. For these reasons, the switch in diplomatic allegiances from Taiwan to China may end up having an ambiguous impact on the micro-structure of exports.

The crux of this study is to grasp the ways in which the micro-structure of exports react to diplomatic relations. The study does this by focusing on the impact that the switch in diplomatic allegiances from Taiwan to China had on the numbers of firms that exported to, entered into, and exited out of the two Asian markets. In addition, it investigates the impact that the switch had on the average values of exports of firms, as well as on the measures of firm and product dynamics. All the aforementioned attributes are evaluated at the country-year-destination level and at the country-year-sector-destination level. The results show that, at the country-year-destination level, the switch in diplomatic allegiances had a largely muted impact on the number of exporters and on the dynamics of firm and product entries as well as exits. As much as entry and exits of firms and products largely remained statistically unchanged, similar to Chapter 3, this study finds that the values of exports for all exporters to China decreased while the values of exports for all exporters to Taiwan remained unperturbed. This outcome notwithstanding, the analysis of the impact that the switch had at the country-year-sector-destination level reveals that, in the sectors for which the switching countries in the sample shared comparative advantages, the values of exports for all exporters to China mainly increased while the values of exports for all exporters to Taiwan largely decreased. In other words, much as the value of exports to China decreased subsequent to countries

establishing diplomatic relations with China, this decrease largely spared the sectors for which the switchers have comparative advantages.

This finding complements the result in Chapter 3 by providing some context to the puzzle of how the switch in diplomatic allegiances from Taiwan to China led to a decrease in the values of exports to China. It is the comparative disadvantageous sectors like Plastic, Glass, Metals, and Transportation that spearheaded the decline in the values of exports to China. With this information, policymakers in the switching countries can identify the sectors that suffered decreases in export values and come up with targeted interventions if they want to help particular sectors.

The rest of the study is organized as follows. Section 4.1 expounds the theory of economic diplomacy and the role it can play in the micro-structure of the export sector in developing countries. This is followed by Section 4.2, which describes the data and econometric specifications used. Section 4.3 presents the results before Section 4.4 concludes.

4.1   Diplomatic relations and the micro-structure of the export sector

A typical trade liberalization lowers or removes explicit barriers to international trade like tariffs. The removal of barriers fosters competition, which favors the more productive firms that end up expanding while the least productive firms exit or shut down (see Bernard & Jensen, 2004 and Aw, Chung, & Roberts, 2000). When countries establish diplomatic relations, trade-improvement operates through economic diplomacy. Put simply, this is the use of government recourses to promote the growth of a country's economy by increasing trade, for instance. In this case, trade-facilitation comes through the softening of informal barriers to trade like cultural and institutional differences, and also through diplomats performing search and match activities and relaying information about specific market conditions abroad back to businesses in their home country (van Bergeijk et al., 2011 and Moons & van Bergeijk, 2017). Thus, in theory, the switch in diplomatic allegiances from Taiwan to China should have an impact on the micro-structure of the export sector in areas like the number of firms that operate in the two markets, the average values of their products, and the entry as well as the exit of products.

Table 13 summarizes the possible theoretical outcomes of how switching diplomatic allegiances from

Taiwan to China should affects the number of exporters as well as firm and product dynamics in the two markets.

Table 13: Diplomatic allegiances and the micro-structure of exports to China and Taiwan

	Basic characteristics		
	Number of entrants	Number of exiters	Number of exporters
China	↑	↓	↑
Taiwan	↓	↑	↓
	Firm dynamics		
	Entry rate	Exit rate	First year survival rate
China	↑	↓	↑
Taiwan	↓	↑	↓
	Product dynamics		
	Entry rate	Exit rate	First year survival rate
China	↑	↓	↑
Taiwan	↓	↑	↓

The theoretical impact -assuming there is allocative efficiency - of switching diplomatic allegiances from Taiwan to China on the number of firms, firm dynamics, and product dynamics.

Information gathered through economic diplomacy should facilitate entry of firms from the countries that switch diplomatic allegiances into the Chinese market. Once firms enter, they can also rely on the support of diplomats from their own countries to navigate some of the challenges they may encounter in the foreign market. With potentially more clarity on what to expect once entry into the Chinese market is gained, firm exits should go down. Buoyed by an increase in entry and a decrease in exit, the overall number of exporters to China should increase. When firms produce heterogeneous products, the changes in the numbers of firms in a given market should imply corresponding changes in firm and product dynamics. With a higher number of entrants and a lower number of exiters, firm and product entry rates in the Chinese market should rise while their exit rates should go down. At the same time, information about what to expect upon entry,

the first year survival rates of firms and products should also go up.

By implication, the disbandment of diplomatic relations with Taiwan and resultant loss of representation removes the avenues of trade facilitation vis-à-vis Taiwan. As a result, entry should go down, exit should rise, which should lead to a decrease in the overall number of firms that export to Taiwan. With these changes, entry and first year survival rates of firms and products should decrease while market exit rates should go up. These predicted changes should hold even in the presence of hysteresis caused by some firms having long-term entrenched business relationships within Taiwan. While that may prevent some exit, it should not apply to a lot of firms because governments in developing countries have a big influence on firms within their boarders (see Tybout, 2000). As such, the likelihood of firm exits should be high. At the same time, the number of new entrants should decrease. These changes should drive down the total number of exporters to Taiwan. On top of that, the absence of government support in the foreign market should make it difficult for first year firms and products to survive in the market.

The prospective changes described thus far assume there is allocative efficiency, whereby larger and more efficient firms account for a significant proportion of exports. This is not always the case in developing countries. Inefficient firms can be propped up simply because they have government connections or they have easier access to financing. In that case, entry and exit would be more erratic such that the impact of the switch in diplomatic allegiances from Taiwan to China may deviate from the summary provided in Table 13. For example, rather than there being a clear trend in entry and exit, firms that have connections to the government may simply replace the ones that do not have such connections in the Chinese market, leaving the number of exporters and the number of products exported generally unchanged. The high volatility of entry and exit of exporters in developing countries revealed by Fernandes et al. (2016) and Afonso and Vergara (2022) are telltale signs of the presence of allocative inefficiency. Thus, it is possible that some of the predictions made may fail to hold.

Even though the presence of allocative inefficiency may hider the switch in diplomatic allegiances from Taiwan to China from having a clear impact on the number of exporters as well as on firm and product dynamics on the whole, it may still have more pronounced effects at the sectoral level. Only a small proportion of firms in a given country export and among those that export, a majority

of all exports are accounted for by the top 10 percent of exporters (Bernard, Jensen, Redding, & Schott, 2007 and Freund & Pierola, 2015). Thus, the decision of a single exporting firm to enter or leave a market can have a bigger influence within a specific sector than the one it can have on the overall micro-structure of exports. Ideally, the impact of the switch in diplomatic allegiances from Taiwan to China is such that the sectors for which the switching countries have comparative advantages benefit. This would imply that there is room for the countries that switch to maximize the trade-gains they may experience from this policy change.

4.2 Data and econometric specifications

4.2.1 Data

The Exporter Dynamics Database (EDD) provided by the World Bank offers a comprehensive picture of exporter dynamics of a select number of countries. It includes exporter characteristics like the numbers of new entrants, exiters, and total exporters in a given market as well as measures of exporter and product growth based on firm-level information obtained directly from customs agencies within countries. This allows for comparability of attributes across countries. Data are available from the 1990s up to 2014. Of the 22 countries that switched diplomatic allegiances from Taiwan to China between 1995 to 2019, Costa Rica, Malawi, and Senegal have sufficient information to conduct a pre- versus post-switch analysis of the effect of the diplomatic policy change.[22] In addition, data are available for eleven other Central American and African countries that did not switch diplomatic allegiances during the sample period and are used as a control group. These are the Dominican Republic, El Salvador, Burkina Faso, Ivory Coast, Cameroon, Gabon, Guinea, Guatemala, Mali, Nicaragua, and Zambia.

For Costa Rica, Malawi, and Senegal, the data show that there was some overall response in the export sector to the diplomatic policy change. Figure 6 depicts the ratios of the numbers of firms that exported to China and Taiwan over time to the total numbers of exporting firms in each of

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[22]Having switched allegiances in 2007, Costa Rica has 5 years of post-switch data (2008 through 2012), and 10 years of pre-switch data. Malawi, which also switched in 2007, has three years of post-switch data and 2 years of pre-switch data (2006 and 2007). Senegal has 7 years of post-switch (2006 through 2012), and 6 years of pre-switch data.

the three countries. The most discernible changes were experienced by Malawi which saw the ratio of the number of firms exporting to China increase while that of the firms exporting to Taiwan decrease. Senegal also displayed a clear upward trend in the ratio of firms exporting to China. However, the ratio of the number of firms exporting to Taiwan did not depict a clear downward trend as it was the case for Malawi. The changes in the ratios of exporters in the two markets should implicitly also reflect fluctuations in entry and exit of firms as well as products. With these changes to entry and exit, the average values of products exported at the country-year level must have also adjusted.

(a) Costa Rica (b) Malawi (c) Senegal
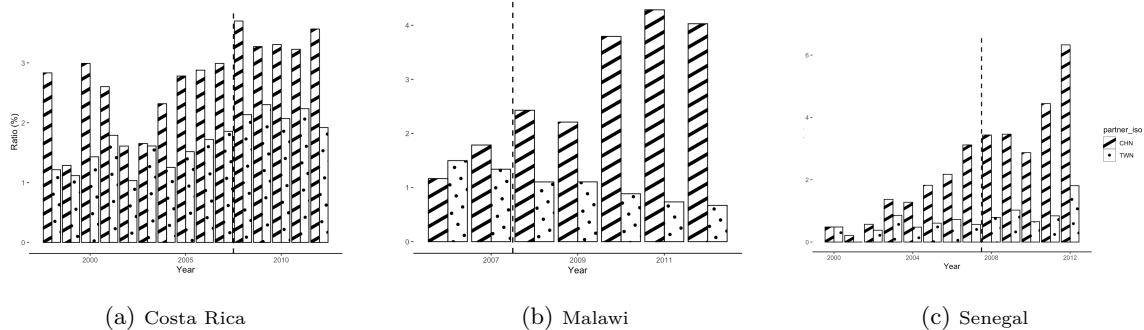
Figure 6: Proportions of numbers of firms exporting to China or Taiwan

The bars represent proportions of the numbers of firms that exported to China (CHN) or to Taiwan (TWN) relative to the total numbers of exporting firms in Costa Rica, Malawi, and Senegal. The dashed vertical lines represent the years in which each one of the three made the diplomatic policy switch.

A profound lesson in international trade is that the world is better off when countries specialize and trade based on comparative advantages. With this in mind, besides examining how the switch in diplomatic allegiances affected the micro-structure of the export sector at the country-year-destination level, this study also assesses the impact it had in the sectors the countries exported. The idea is to isolate the overall effects from the impact that the switch had in specific sectors, be it the ones for which the switching countries have comparative advantages or not.

The World Bank provides measures of revealed comparative advantage (RCA) that have been used to help assess a country's export potential in different sectors. The RCA index of country i in sector k is measured by the sector's share in the country's exports in relation to its share in world trade:

$$RCA_{ik} = \frac{(x_{ik}/X_{it})}{(x_{wk}/X_{wt})} \tag{5}$$

where x_{ik} and x_{wk} are the values of country i's exports of products in sector k and world exports of products in sector k, respectively where X_{it} and X_{wt} refer to the country's total exports, and respectively world total exports. A value greater than unity implies that the country has a revealed comparative advantage in the product. Similarly, if the index is less than unity, the country is said to have a revealed comparative disadvantage in the product.

This study uses the two-digit Harmonized System (HS-2) codes to define sectors of exports. The RCA indexes for Costa Rica, Malawi, and Senegal disclose the following facts. First, the three countries share comparative advantages in two sectors: Vegetables and Food Products. Secondly, there are two sectors in which two of the three countries share comparative advantages: Costa Rica and Senegal both have comparative advantage in Animals while Costa Rica and Malawi both have comparative advantage in Textiles. On top of that, Costa Rica also has comparative advantages in Machinery and Hides whereas Senegal has additional comparative advantages in Chemicals, Fuels, and Minerals. Of the sectors outlined, it is only in Textiles and Machinery where China also has a comparative advantage.[23]

4.2.2 Econometric specification

To evaluate the impact that the switch in diplomatic allegiances from Taiwan to China had at the country-year-destination level, this study estimates the following panel regression model using the Poisson pseudo-maximum likelihood (PPML) estimator:[24]

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[23]The other sectors in which China has comparative advantages are Footwear and Glass.

[24]The equation for estimating the impact of the switch at the country-year-sector-destination level simply adds variables of interactions between *chn_post* or *twn_post* and sector dummies to Equation 6. The equation also includes sector-destination fixed effects to account for variations along those two avenues.

$$\text{Micro-structureMeasure}_{ij,t} = exp\left(\gamma_{ij} + \gamma_{i,t} + \gamma_{j,t} + \beta_1 chn\_post_{ij,t} + \beta_2 twn\_post_{ij,t}\right.$$
$$\left. + \beta_3 forex_{ij,t} + \beta_4 rta_{ij,t} + \beta_5 nr\_pta_{ij,t}\right) + \varepsilon_{ij,t} \quad (6)$$

Micro-structureMeasure$_{ij,t}$ represents outcomes like the numbers of exporters, entrants, and exiters or measures of average values of exports as well as rates of entry, exit, and first year survival of firms and products. These measures are done both at the country-year-destination level and at the country-year-sector-destination level. The effect of the switch in diplomatic relations from Taiwan to China are respectively captured by the variables $chn\_post_{ij,t}$ and $twn\_post_{ij,t}$. These are dummy variables that take the value of one for measures of the micro-structure in Costa Rica, Malawi, and Senegal that occur in the years after the three countries individually switched diplomatic allegiances. Otherwise, the variable takes the value of zero. To control for multilateral resistance terms, the model uses pairs of country-destination (γ_{ij}), country-year ($\gamma_{i,t}$), and destination-year ($\gamma_{j,t}$) fixed effects. When estimating the effects at the country-year-sector-destination level, the study also includes destination-sector fixed effects ($\gamma_{j,k}$). In addition to the fixed effects, Equation 6 also controls for bilateral exchange rate movements ($forex_{ij,t}$), reciprocal trade agreements ($rta_{ij,t}$), and non-reciprocal preferential trade arrangements ($nr\_pta_{ij,t}$). $\varepsilon_{ij,t}$ represents the error term.

4.3   Results

4.3.1   Country-year-destination outcomes

Section 4.1 described how, under allocative inefficiency, the presence of diplomatic relations between countries may not have as much impact on the micro-structure of exports of developing countries. Indeed Table 14 below shows that the switch in diplomatic allegiances from Taiwan to China did not have a statistically significant impact on the number of exporters, be it entrants, exiters, or the overall number of exporters that operated in the two markets.[25]

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[25]Appendix 6.3.2 displays results of a table that assesses the spillover effects of the policy change to other destinations beyond Taiwan and China. In brief, France, Great Britain, and the USA respond to countries establishing diplomatic relations with China by increasing trade activity with them, perhaps to avoid ceding all economic influence

Table 14: Number of exporters and average values of exports

	Number of exporters			Average values of exports		
	Entrants	Exiters	Exporters	Entrants	Exiters	Exporters
$Chn\_post_{ij,t}$	-0.10	-0.29	-0.12	-0.67	0.55	-0.91*
	(0.17)	(0.18)	(0.12)	(0.65)	(0.71)	(0.49)
$Twn\_post_{ij,t}$	-0.05	-0.01	0.04	0.45	-1.70**	-0.07
	(0.22)	(0.25)	(0.15)	(0.75)	(0.86)	(0.46)
$Forex_{ij,t}$	0.00***	0.00	0.00***	0.00***	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$RTA_{ij,t}$	0.01	-0.04	0.01	-0.02	0.28	-0.24
	(0.05)	(0.04)	(0.03)	(0.30)	(0.30)	(0.16)
$nr\_PTA_{ij,t}$	0.03	0.03	0.07**	-0.11	-0.13	-0.18*
	(0.06)	(0.06)	(0.03)	(0.28)	(0.21)	(0.10)
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Reporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Partner-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,287	10,846	14,346	8,652	8,406	10,295
R-squared	0.91	0.91	0.96	0.91	0.90	0.94

PPML estimates of the impact the switch in diplomatic allegiances from Taiwan to China had on numbers of exporters and average values of exports for new entrants, firms that exited, and all exporters that continued to operate in the markets. The table shows coefficient estimates with standard errors clustered by reporter-year in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

The table also shows that the switch largely did not have a statistically strong impact on the values of exports. Interestingly, though, the average value of exports of entrants in the Chinese market decreased while that of entrants in the Taiwanese market increased. At the same time, the average value of exports of the exporters that exited the Chinese market increased while it decreased for the exporters that exited the Taiwanese market, with the latter change being statistically significant at the 5% level. Assuming that firms exported differentiated products and considering that the numbers of firms that operated in the two markets did not change significantly, the changes in the average values of exports of new entrants and of exiters would indicate that firms with less expensive products exited the Taiwanese market to possibly enter the Chinese market. As a consequence of these changes, the average values of exports for all exporters to China decreased, with this outcome being statistically significant at the 10%. The coefficient for the average values of exports to Taiwan

among the switchers to the Asian giant.

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for all exporters is small and not statistically significantly. This outcome of the switch in diplomatic relations from Taiwan to China having a negative and statistically significant effect on values of exports to China but not on values of exports to Taiwan is qualitatively similar to the result in Chapter 3, which uses a larger sample of switchers and control countries.

Given that switching does not have much of an impact on the numbers of exporters that operate in the Chinese or the Taiwanese markets, it is not surprising that the change in diplomatic allegiances also largely did not statistically significantly impact firm or product dynamics in the two markets as far as entry or exit rates are concerned. Table 16 in the Appendix shows this outcome. At the same time, the table shows that the absence of representation mattered more for the survival of new entrants than did the presence of representation. Precisely, the survival rate of first year exporters to Taiwan decreased statistically significantly at the 5% level, signifying that the absence of government representation following the disbanding of diplomatic relations made it harder for firms that newly entered the market to thrive. However, the presence of government representation in China had a small and statistically insignificant impact on the survival rate of first year firms in that market.

4.3.2 Country-year-sector-destination outcomes

Section 4.2.1 outlined that Costa Rica, Malawi, and Senegal individually had comparative advantages in at least one of the following HS-2 sectors: Animals, Chemicals, Food Products, Hides, Machinery, Minerals, Textiles, and Vegetables. Figure 7 below summarizes the outcomes of estimating the impact that the switch in diplomatic allegiances from Taiwan to China had on the numbers of new entrants, exiters, and overall exporters in these and other sectors for a group comprising the three aforementioned countries. Indeed, the switch had a statistically stronger impact on individual sectors compared to the one it had on the overall average treatment effect presented in the previous subsection. Much of the statistically significant impact on exports to China, however, was negative and mainly in the sectors for which Costa Rica, Malawi, and Senegal had comparative disadvantages.[26]

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[26]See Table **??** in the Appendix 6.3.3 for information on the statistical significance of the estimations. The statistical significance of sector estimates are relative to products in the Miscellaneous category.
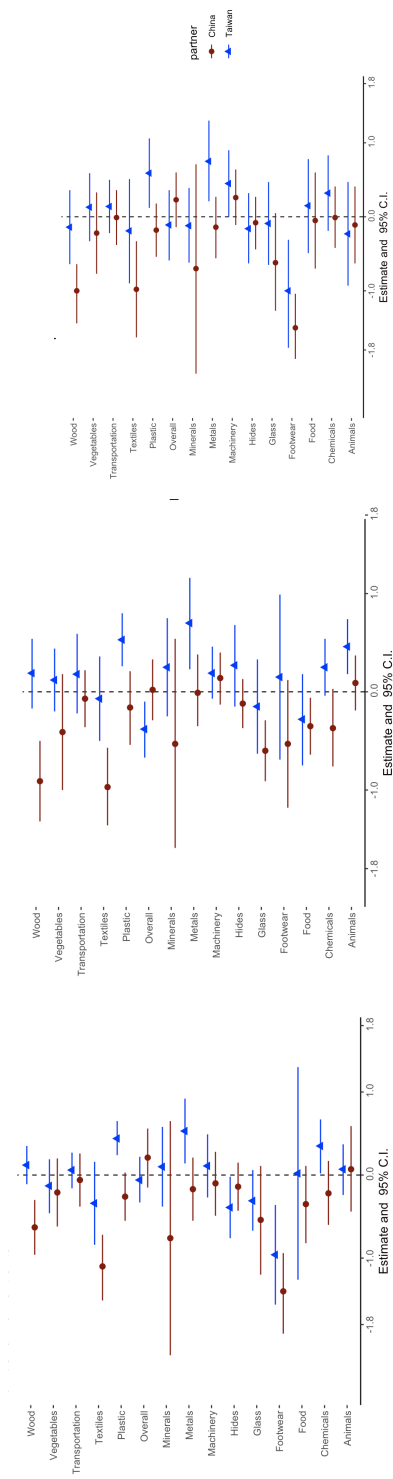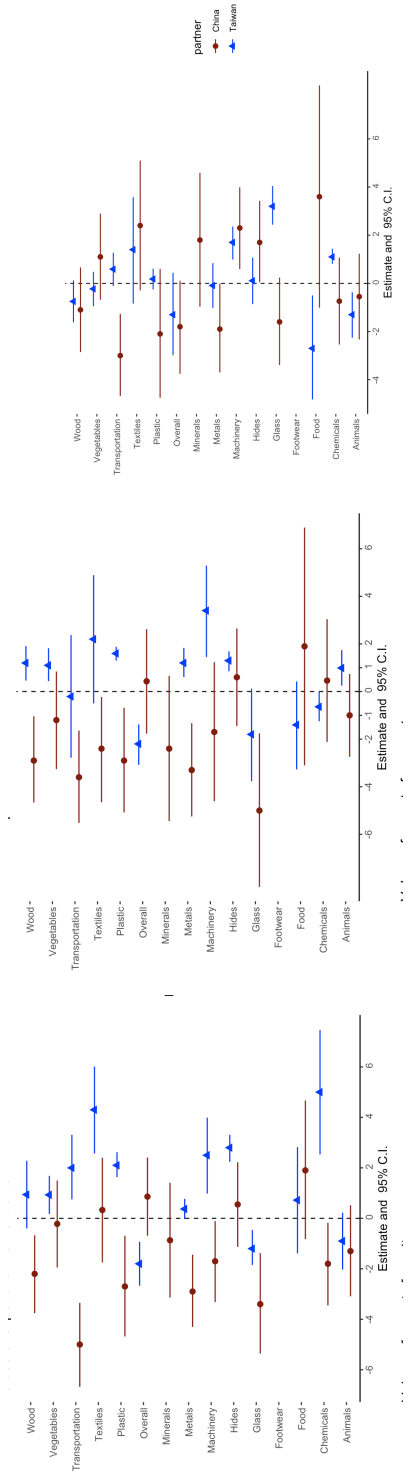
(a) New entrants

(b) Exiters

(c) All exporters

Figure 7: Impact of the switch on numbers of exporters: new entrants, exiters, and all exporters

The figure represents coefficient estimates and their 95% confidence intervals of the impact the switch in diplomatic allegiances from Taiwan to China has on numbers of exporters at HS-2 sector levels.

For new entrants, the number of exporters to China decreased significantly in Footwear, Glass, Textiles, and Wood sectors. With less entry, the number of exiters also decreased. Comparing the forces of the two changes, the impact of the decrease in the numbers of new entrants was stronger such that the overall number of exporters to China in these four sectors also decreased statistically significantly. For numbers of exporters to Taiwan, the switch in diplomatic allegiances also mainly had a statistically significant impact in the sectors for which the switching countries did not enjoy comparative advantages. However, unlike the case for trade with China, some of these impacts were positive. Precisely, the number of overall exporters in Machinery, Metals, and Plastic to Taiwan all increased significantly. At the same time, as it were the case for trade with China, the overall number of exporters in the Footwear sector decreased.

The effect the switch in diplomatic allegiances from Taiwan to China had on the values of exports in individual sectors was statistically stronger. Figure 8 summarizes this outcome. For exports to China, the switch had a positive and statistically significant impact on the values of exports for all exporters in five of the eight sectors for which Costa Rica, Malawi, and Senegal had comparative advantages. These are Food, Hides, Machinery, Textiles—despite the decrease in the number of exporters—, and Vegetables. At the same time, there was a decrease in the values of exports to China in Metals, Transportation, Glass, and Wood. The changes in the latter two were possibly driven by decreases in the total numbers of exporters. Values of exports to Taiwan for all exporting firms increased significantly in Chemical, Hides, Machinery, Textiles—the comparative advantageous sectors—as well as in Glass and Plastic. These improvements were mainly driven by increases in the values of exports of new entrants. While there were improvements in the values of exports to Taiwan of some sectors, concurrently, the values of exports of Animals and Food—two of the comparative advantageous sectors—to the destination decreased.

In summary, as far as exporting to China is concerned, the switch in diplomatic allegiances had two overarching effects at the country-year-sector-destination level. In terms of the numbers of exporters, it mainly led to a shrinkage in the numbers of firms that operated in certain sectors for which the switching had comparative disadvantages. At the same time, the average values of exports in the majority of the comparative advantageous sectors increased. For exports to Taiwan, there was an increase in the number of exporters in some comparative disadvantageous sectors, but also a decrease in the average values of exports in a couple of comparative advantageous sectors.

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(a) New entrants

(b) Exiters

(c) All exporters

Figure 8: Impact of the switch on values of exports for new entrants, exiters, and all exporters

The figure represents coefficient estimates and their 95% confidence intervals of the impact the switch in diplomatic allegiances from Taiwan to China has on values of exports at HS-2 sector levels.

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4.4 Conclusion

The theory on economic diplomacy concludes that the establishment of diplomatic relations between a pair of countries should lead to entry of exporters in each other's respective markets such that the bilateral trade between the pair should go up. However, the presence of allocative inefficiencies—which are prevalent within developing countries—can hinder trade from responding to the creation of diplomatic relations in ways that align with this theory. This study focuses on the impact that the decision by Costa Rica, Malawi, and Senegal to switch diplomatic allegiances from Taiwan to China had on the micro-structure of exports in the three countries vis-à-vis Taiwan and China. The results show that, at the country-year-destination level, the switch did not have a statistically significant impact on the numbers of firms that operated in the two Asian export markets. However, the values of exports for all exporters to China decreased while the values of all exporters to Taiwan remained statistically stationary. Zooming in on the impact at the country-year-sector-destination level, the results show that the decreases in values of exports to China were not driven by changes in those advantageous sectors. Rather, there was a shrinkage in a number of comparative disadvantageous sectors. Otherwise, the values of exports to China in the majority of the comparative advantageous sectors actually increased. Therefore, switching countries can better maximize their trade potential following their establishment of diplomatic relations with China by prioritizing the sectors for which they have comparative advantages.

5 Dissertation Conclusion

Diplomatic relations can impact the level of trade that goes on between a pair of countries. This dissertation has demonstrated how a switch in diplomatic allegiances from Taiwan to China by a set of developing countries that made the policy change during the period ranging from 1995 to 2019 affected various trade outcomes of the switchers. In general, trade with Taiwan declined. Trade with China, on the other hand, showed mixed results. For one of the countries — Malawi — both the values of exports to and the values of imports from China increased. However, for the full sample of the switchers during the period of focus, the values of imports from China increased while the values of exports to China decreased, though the sectors for which the switching countries enjoyed comparative advantages did not see any decrease. This suggests that potential export gains from this diplomatic arrangement with China may lie in those particular sectors.

These findings can be beneficial to both the countries that have already switched diplomatic allegiances from Taiwan to China and those that may consider making a similar decision in the near future. Since 2019, Honduras has also switched allegiances, and it may just be a matter of time before another one of the remaining twelve countries that still maintain official relations with Taiwan follows suit. Such countries need to be aware of the trade impact that they may experience, and they should strategize the ways in which they can make the most from this policy change.

All this does not imply that trade is the only benefit countries consider when deciding whether to maintain relations with Taiwan or to switch allegiances towards China. China is also a leading source of foreign direct investment and, as far as developing countries are concerned, the largest bilateral lender of public sector loans and a crucial source of infrastructure investment. Further research should investigate how diplomatic relations involving China is affecting these other economic outcomes.

6 Appendix

6.A Chapter 2: Appendix

6.A.1 Malawi's trade flows with China
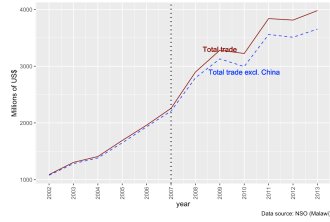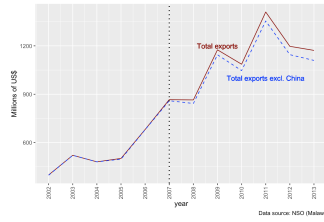
(a) Total trade   (b) Exports   (c) Imports
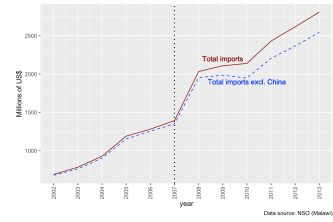
Figure 9: Values of Malawi's trade flows with China

6.B   Chapter 3: Appendix

6.B.1   World map depicting the countries that held official diplomatic relations with Taiwan: 1995 versus 2019.

(a) 1995

(b) 2019

Figure 10: Map of the world depicting the countries that held official diplomatic relations with Taiwan in 1995 compared to in 2019

6.B.2 The contemporaneous impact of switching: IMF data vs Comtrade data

Table 15: The contemporaneous impact of switching on bilateral trade flows

	IMF Data		Comtrade data	
	Exports	Imports	Exports	Imports
$Chn\_post_{ij,t}$	-0.92***	0.19**	-0.81**	0.22***
	(0.29)	(0.09)	(0.36)	(0.06)
$Twn\_post_{ij,t}$	-0.33	-0.36***	0.03	-0.49***
	(0.23)	(0.12)	(0.31)	(0.09)
$RTA_{ij,t}$	-0.04	0.11***	0.01	0.10***
	(0.02)	(0.02)	(0.01)	(0.02)
$nr\_PTA_{ij,t}$	0.07***	-0.05**	0.08***	-0.08***
	(0.02)	(0.02)	(0.02)	(0.02)
$Currency_{ij,t}$	0.00**	-0.00***	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	169,813	196,045	131,555	177,131
R-squared	0.99	0.99	0.99	0.99
Country-pair FE	Yes	Yes	Yes	Yes
Reporter-year FE	Yes	Yes	Yes	Yes
Partner-year FE	Yes	Yes	Yes	Yes

Coefficient estimates; standard errors clustered by reporter-year in parentheses.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

IMF data has more coverage than Comtrade data. It includes data for countries like Guinea-Bissau, Chad, and Liberia that are excluded from the estimations using Comtrade data because of missing data. This explains the differences in the number of observations in the estimations of the two data sets. Despite these differences, the results of the estimations are very comparable.

6.B.3 Event study plots: the effect of switching ties from Taiwan to China
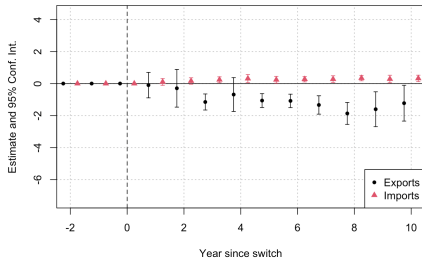
(a) Impact of switching on bilateral trade with China
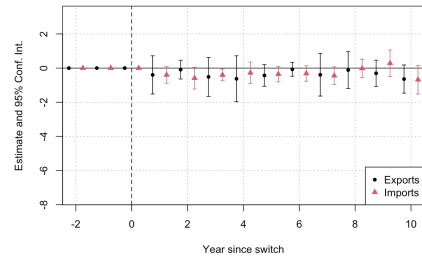
(b) Impact of switching on bilateral trade with Taiwan

Figure 11: Event study plots of the impact that the switch in diplomatic allegiances has on trade with China versus trade with Taiwan

This panel shows the contrasting effects switching allegiances from Taiwan to China had on trade flows with the two territories. These event study plots are created using the approach proposed by (Sun & Abraham, 2021). The advantage that this plotting technique has over regular event study plots with leads and lags is that it overcomes the cross-contamination of the effects across periods. Panel 11a depicts the outcome for trade with China. Exports experience a negative effect while imports experience a positive effect. Panel 11b shows that trade with Taiwan generally suffer subsequent to switching.

6.3 Chapter 4: Appendix

6.3.1 The impact of switching on firm and product dynamics

Table 16: Firm and product dynamics

	Firm dynamics			Product dynamics		
	Entry rate	Exit rate	1st surv. rate	Entry rate	Exit rate	1st surv. rate
$Chn\_post_{ij,t}$	0.02	-0.06	0.06	0.06	0.42	0.50
	(0.12)	(0.13)	(0.27)	(0.28)	(0.33)	(0.45)
$Twn\_post_{ij,t}$	-0.15	-0.21	-0.89**	0.21	0.38	0.07
	(0.16)	(0.16)	(0.45)	(0.36)	(0.42)	(0.58)
$Forex_{ij,t}$	0.00	-0.00	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$RTA_{ij,t}$	0.13**	0.04	0.03	-0.01	-0.05	-0.05
	(0.06)	(0.05)	(0.11)	(0.09)	(0.09)	(0.16)
$nr\_PTA_{ij,t}$	0.04	-0.03	0.18	-0.04	-0.05	0.04
	(0.04)	(0.05)	(0.13)	(0.12)	(0.10)	(0.16)
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Reporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Partner-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,125	10,846	7,001	7,054	7,094	3,740
R-squared	0.05	0.06	0.09	0.13	0.12	0.10

PPML estimates of the impact the switch in diplomatic allegiances from Taiwan to China had on firm and product dynamics. The table shows coefficient estimates with standard errors clustered by reporter-year in parentheses. 1st surv. rate stands for entrant first year survival rate. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

This table focuses on the impact that the switch in diplomatic allegiances has on the rates of entry, exit, and first year survival of firms and products in the Chinese and Taiwanese export markets. The outcome shows that the main effect is that, without government representation abroad, the survival rate of first year firms exporting to Taiwan decreases.

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6.3.2 Country-year-destination outcomes beyond Taiwan and China

Table 17: Number of exporters and average values of exports

	Number of exporters			Average values of exports		
	Entrants	Exiters	Exporters	Entrants	Exiters	Exporters
$Chn\_post_{ij,t}$	-0.06	-0.28	-0.11	-0.68	0.61	-0.90*
	(0.16)	(0.18)	(0.12)	(0.65)	(0.71)	(0.49)
$Twn\_post_{ij,t}$	-0.01	-0.01	0.06	0.45	-1.60*	-0.05
	(0.22)	(0.25)	(0.15)	(0.74)	(0.86)	(0.46)
$Gbr\_post_{ij,t}$	0.29*	0.25*	0.19**	-0.34	-0.66	0.49
	(0.15)	(0.14)	(0.08)	(0.70)	(0.66)	(0.52)
$Fra\_post_{ij,t}$	-0.14	-0.28**	-0.14*	0.93	1.60***	0.60**
	(0.13)	(0.13)	(0.08)	(0.80)	(0.55)	(0.23)
$Usa\_post_{ij,t}$	0.25***	0.05	0.08*	-0.97	0.12	-0.18
	(0.10)	(0.11)	(0.04)	(0.71)	(0.48)	(0.17)
$Forex_{ij,t}$	0.00***	0.00	0.00***	0.00***	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$RTA_{ij,t}$	0.00	-0.04	0.01	-0.01	0.28	-0.24
	(0.05)	(0.04)	(0.03)	(0.30)	(0.30)	(0.16)
$nr\_PTA_{ij,t}$	0.05	0.03	0.07**	-0.12	-0.17	-0.20*
	(0.06)	(0.06)	(0.03)	(0.28)	(0.21)	(0.10)
Country-pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Reporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Partner-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,287	10,846	14,346	8,652	8,406	10,295
R-squared	0.91	0.91	0.96	0.91	0.90	0.94

PPML estimates of the impact the switch in diplomatic allegiances from Taiwan to China had on numbers of exporters and average values of exports for new entrants, firms that exited, and all exporters that continued to operate in the markets. The table shows coefficient estimates with standard errors clustered by reporter-year in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Beyond Taiwan and China, this table assesses how the switch in diplomatic allegiances from Taiwan to China affected some measures of the micro-structure of exports to Great Britain (Gbr), France (Fra) and the United States of America (Usa). Great Britain and France are the former colonial masters of Malawi and Senegal, respectively, and continue to have strong ties to the two whereas the USA is very influential in Central America where Costa Rica is located. The table shows that switching leads to an increase in trade between the switchers and these first world countries. Great Britain and the USA respond to countries establishing diplomatic relations with China by increasing

the overall number of firms that export from the switching countries to them. This change is driven by the entry of new exporters. Much as the number of exporters increases, however, the average values of exports to the Western countries remain unchanged. For exports to Senegal, it is the average value of exports for the firms that remain in the market that increases even though the number of overall exporters to the destination decreases.

6.3.3   Country-year-sector-destination outcomes

Table 18: Number of exporters and average values of exports for sectors with comparative advantages

	Number of exporters			Average values of exports		
	Entrants	Exiters	Exporters	Entrants	Exiters	Exporters
$Chn\_post_{ij,t}$	0.21	0.02	0.23**	0.86	0.43	-1.80***
	(0.16)	(0.15)	(0.11)	(0.80)	(0.68)	(0.55)
$Chn\_post\_Animals_{ij,t}$	0.07	0.09	-0.11	-1.30*	-1.00*	-0.55
	(0.41)	(0.19)	(0.38)	(0.70)	(0.60)	(0.49)
$Chn\_post\_Chemicals_{ij,t}$	-0.22	-0.37	-0.01	-1.80**	0.46	-0.74
	(0.26)	(0.25)	(0.18)	(0.84)	(1.20)	(0.55)
$Chn\_post\_FoodProducts_{ij,t}$	-0.35	-0.35	-0.05	1.90	1.90	3.60*
	(0.26)	(0.23)	(0.21)	(1.50)	(2.30)	(1.90)
$Chn\_post\_Footwear_{ij,t}$	-1.40***	-0.53	-1.50***			
	(0.36)	(0.44)	(0.25)			
$Chn\_post\_Glass_{ij,t}$	-0.54**	-0.60**	-0.62**	-3.4***	-5.00**	-1.60**
	(0.26)	(0.29)	(0.29)	(0.99)	(1.40)	(0.64)
$Chn\_post\_Hides_{ij,t}$	-0.14	-0.12	-0.08	0.55	0.69	1.70***
	(0.25)	(0.25)	(0.19)	(1.00)	(0.83)	(0.58)
$Chn\_post\_Machinery_{ij,t}$	-0.10	0.14	0.26	-1.70*	-1.70	2.30***
	(0.21)	(0.17)	(0.18)	(0.93)	(1.30)	(0.81)
$Chn\_post\_Metals_{ij,t}$	-0.17	0.01	-0.14	-2.90***	-3.30***	-1.90**
	(0.19)	(0.15)	(0.16)	(0.82)	(0.77)	(0.50)
$Chn\_post\_Minerals_{ij,t}$	-0.76*	-0.53	-0.70	0.87	-2.40*	1.80
	(0.46)	(0.42)	(0.44)	(1.10)	(1.40)	(1.10)
$Chn\_post\_Plastic_{ij,t}$	-0.26	-0.16	-0.18	2.70***	-2.90***	-2.10
	(0.25)	(0.19)	(0.20)	(0.93)	(0.92)	(0.58)
$Chn\_post\_Textiles_{ij,t}$	-1.10***	-0.97***	-0.98***	0.33	-2.40*	2.40**
	(0.29)	(0.22)	(0.25)	(1.20)	(1.30)	(1.20)
$Chn\_post\_Transportation_{ij,t}$	-0.06	-0.07	-0.01	-5.00***	3.60***	-3.0***
	(0.23)	(0.22)	(0.22)	(1.40)	(1.20)	(0.92)
$Chn\_post\_Vegetables_{ij,t}$	-0.21	-0.41*	-0.22	0.22	-1.20	1.10*
	(0.25)	(0.23)	(0.22)	(0.85)	(0.98)	(0.63)

Table 18: Number of exporters and average values of exports for sectors with comparative advantages

	Number of exporters			Average values of exports		
	Entrants	Exiters	Exporters	Entrants	Exiters	Exporters
$Chn\_post\_Wood_{ij,t}$	-0.63***	-0.91***	-1.00***	-2.20***	-2.90***	-1.10**
	(0.23)	(0.26)	(0.21)	(0.76)	(0.62)	(0.44)
$Twn\_post_{ij,t}$	-0.06	-0.38**	-0.11	-1.80***	-2.20**	-1.30**
	(0.22)	(0.19)	(0.20)	(0.69)	(1.00)	(0.53)
$Twn\_post\_Animals_{ij,t}$	0.07	0.46	-0.23	-0.90	0.99	-1.30**
	(0.51)	(0.38)	(0.29)	(0.95)	(0.91)	(0.64)
$Twn\_post\_Chemicals_{ij,t}$	0.35	0.25	0.32	5.00***	-0.64	1.10**
	(0.40)	(0.20)	(0.33)	(0.81)	(1.60)	(0.62)
$Twn\_post\_FoodProducts_{ij,t}$	0.02	-0.28	0.15	0.72	-1.40	-2.70***
	(0.47)	(0.35)	(0.24)	(1.20)	(1.00)	(0.89)
$Twn\_post\_Footwear_{ij,t}$	-0.96**	0.15	-1.00**			
	(0.47)	(0.48)	(0.48)			
$Twn\_post\_Glass_{ij,t}$	-0.31	-0.15	-0.09	-1.20	-1.80*	3.20***
	(0.20)	(0.24)	(0.15)	(1.30)	(0.97)	(1.10)
$Twn\_post\_Hides_{ij,t}$	-0.39	0.27	-0.16	2.80***	1.30	0.11
	(0.28)	(0.27)	(0.20)	(0.96)	(1.30)	(0.60)
$Twn\_post\_Machinery_{ij,t}$	0.11	0.19	0.45***	2.50*	3.40***	1.70***
	(0.21)	(0.21)	(0.17)	(1.30)	(1.20)	(0.51)
$Twn\_post\_Metals_{ij,t}$	0.53***	0.70***	0.75***	0.37	1.20	-0.09
	(0.20)	(0.15)	(0.16)	(0.60)	(0.91)	(0.52)
$Twn\_post\_Minerals_{ij,t}$	-0.10	0.25	-0.12			
	(1.10)	(0.31)	(0.65)			
$Twn\_post\_Plastic_{ij,t}$	0.44	0.53**	0.59**	2.10***	1.60	0.18
	(0.28)	(0.25)	(0.26)	(0.82)	(1.50)	(0.72)
$Twn\_post\_Textiles_{ij,t}$	-0.34	-0.07	-0.19	4.30***	2.20	1.40
	(0.32)	(0.22)	(0.24)	(1.10)	(1.50)	(1.10)
$Twn\_post\_Vegetables_{ij,t}$	-0.13	0.12	0.13	0.93	1.10	-0.23
	(0.24)	(0.32)	(0.22)	(0.91)	(0.90)	(0.68)
$Twn\_post\_Wood_{ij,t}$	0.12	0.19	-0.14	0.94	1.20	-0.75
	(0.34)	(0.19)	(0.23)	(0.67)	(0.80)	(0.48)

PPML estimates of the impact the switch in diplomatic allegiances from Taiwan to China had at sectoral levels. The table shows coefficient estimates for numbers of exporters and average values of exports for new entrants, firms that exited, and all exporters that continued to operate in the markets, with standard errors clustered by reporter-year in parentheses. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. All models include all the control variables and fixed effects terms in Equation 6 as well as destination-sector fixed effects. These have been suppressed for brevity.

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