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*Alicia Garcia-Herrero and Xia Le*

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# RMB Bilateral Swap Agreements: How China Chooses its Partners?

***By*** **ALICIA GARCIA-HERRERO** [*] **and XIA LE**[**]

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**Abstract**

As part of the measures taken to foster the internationalization of the RMB, China has signed RMB Bilateral Swap agreements (BSAs) with a number of countries. Although the Chinese government has stressed the importance of trade as the key driver of signing RMB BSAs, its validity hasn't been tested yet. This paper analyzes empirically the key determinants for China to choose its RMB BSA partners. We find that the gravity factors are predominant (closeness to China and a bigger size increase a country's likelihood of signing an RMB BSA). In addition, closer trade links also have a positive impact on China's choice of BSA partners, as claimed by the authorities. Institutional strength is not relevant although China does seem to have a preference for countries with a sovereign default history and financial closedness.

Keywords: RMB Internationalization, Bilateral Swap Agreements

[*] Research Department, Banco Bilbao Vizcaya Argentaria
[**]Research Fellow of IMI; Chief Economist for Asia, Research Department, Banco Bilbao Vizcaya Argentaria

## 1. Introduction

Having experienced the 2007-2008 global financial crisis, China's authorities embarked on a bold project to internationalize their currency (the RMB) in 2009. Interestingly, the internationalization of the RMB looks quite different from that of the US dollar or the Japanese yen in two aspects: first, the Chinese capital account is not yet fully opened or convertible ; second, the internationalization has so far been more of a government-led process than a market-led one (Frankel, 2012).

In an effort to make the RMB fully convertible, the Chinese government has sign Bilateral Swap Agreements (BSAs) with a number of foreign central banks. Between December 2008 and March 2013, the People's Bank of China (PBoC) signed or renewed RMB denominated BSAs with 19 central banks, with a total value of over USD 300 billion. The PBoC revealed that the main objective of these BSAs is to promote the use of the RMB in trade and investment (PBoC, 2012), which is different from the traditional use of BSAs as a precautionary measure to increase liquidity in case of financial crisis. For instance, ten ASEAN countries signed BSAs with the three largest East Asian economies (Japan, South Korea and China) under the Chiang Mai Initiative (CMI) to prevent the recurrence of the 1997-1998 Asian Financial Crisis. During the 2008-09 Global Financial Crisis (GFC), the US Federal Reserve also signed a number of temporary BSAs with foreign central banks to secure these countries' access to US dollar liquidity amidst the financial market turmoil. (Aizenman and Pasricha, 2010)

This paper investigates how China chooses its partner countries in RMB BSAs. By adopting logistics models, we test whether the official objective of trade promotion dominates its choices and look into other factors. The empirical results show that both gravity (in terms of country size and distance from China) and trade (in terms of bilateral trade volume and, to a lesser extent, the existence of a Free Trade Area (FTA) with China) significantly influence the Chinese choice of BSA partners. On the other hand, institutional strength doesn't seem to be relevant, contradicting our hypothesis that China may favor countries with weaker institutional environment and/or prevalent corruption. We also find that China seems to have a preference for countries with a default history, which necessitates cautious interpretations.

The rest of the paper is organized as follows. In the next section, we briefly introduce the characteristics of RMB BSAs, especially against the backdrop of the RMB internationalization. Section 3 explains the empirical specification and related data issues. The results are described in Section 4 as well as the robustness check. We conclude in section 5.

## 2. Background and literature review

### *The RMB internationalization and the BSAs signed by China*

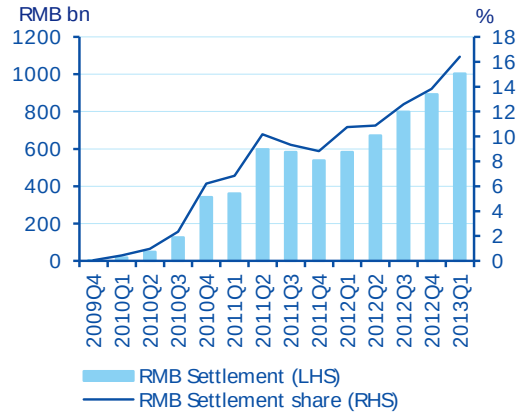
The internationalization of the RMB began in 20091 after Chinese authorities

1 One of our referees argued that Chinese authorities applied other steps for promoting RMB internalization even before the implementation of the Pilot Program, such as allowing RMB deposits in Hong Kong in 2004. However, we treat these early steps as part of special arrangements between China and Hong Kong.

launched a Pilot Program of RMB Settlement of Cross-Border Trade Transactions (henceforth referred to as Pilot Program), which enabled some designated companies in China and abroad to settle their trades in the RMB. The Pilot Program was expanded in June 2010 and in August 2011 to make all enterprises—whether inside or outside of China—eligible for cross-border RMB settlements. The proportion of RMB-settled trade in the total trade of China increased from nearly 0% to 16.3% in Q1 2013 after the implementation of the Pilot Program (Chart 1).

Chart 1

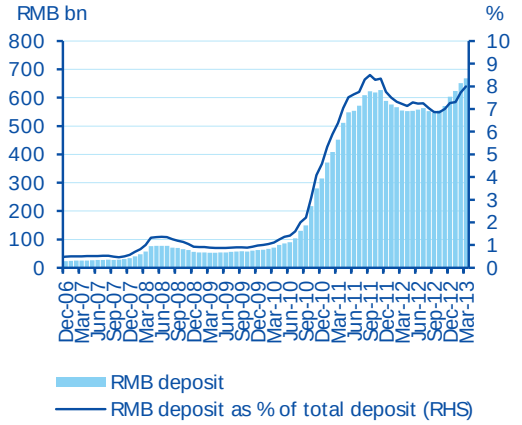
RMB trade settlement grew rapidly




Source: CEIC and BBVA Research

Chart 2

RMB deposit in Hong Kong has increased fast




Source: CEIC and BBVA Research

Along with this program, Chinese authorities implemented other complementary measures to increase the availability of RMB funds in offshore markets as well as to enhance the RMB acceptance of foreigners. One important step was to establish offshore RMB centers outside of China. In this regard, Hong Kong was initially chosen as the "premier" offshore RMB center because of its special relationship with China and its long-standing position as an international financial center (Garcia-Herrero et al., 2012a). As of late February 2013, the offshore RMB deposits in Hong Kong amounted to RMB 652 billion or 7.7% of the total deposits (Chart 2). Moreover, the rapid growth of offshore RMB businesses lured other financial centers, such as Singapore, Taipei, London and Paris, into establishing new offshore RMB centers (Garcia-Herrero et al., 2012 b).

Chinese authorities also aimed to create an institutional foundation for the RMB internationalization by establishing RMB BSAs with foreign central banks. BSA is not a new concept in China. The origin of the BSAs of China with other countries could be traced back to the Chiang Mai Initiative (CMI), under which China signed BSAs with South Korea, Japan, and four ASEAN countries (Table 1). However, the primary objective of these agreements was to boost the defenses of Asian countries against potential financial shocks, thus averting the recurrence of the 1997–1998 Asian Financial Crisis (Yu and Gao, 2011). In terms of denominated currency, three of these six CMI BSAs were denominated in the US dollar, and the remaining BSAs

were denominated in the RMB. However, the sizes of these RMB-denominated BSAs were measured in the US dollar too because the objective of such agreements was to provide US dollar liquidity during a crisis. In other words, the US dollar—rather than the RMB—played the central role in these CMI BSAs signed by China.

Table 1: CMI Bilateral Swap Agreements: China and other ASEAN+3 countries (as of Jan 2010)

| **Bilateral Swap Agreements (CMI)** | **One / Two Way** | **Currencies** | **Size (USD bn)** | **Status** |
|---|---|---|---|---|
| China – Thailand | One | USD/Baht | 2.0 | Concluded: Dec 2001<br>Expired: Dec 2004 |
| China - Japan | Two | RMB/Yen<br>Yen/RMB | 6.0 | Concluded: Mar 2002 |
| China - Korea | Two | RMB/Won<br>Won/RMB | 8.0 | Concluded: Jun 2002 |
| China - Malaysia | One | USD/Ringgit | 1.5 | Concluded: Oct 2002 |
| China - Philippines | One | RMB/Peso | 2.0 | Concluded: Aug 2003<br>Amended: Apr 2007 |
| China - Indonesia | One | USD/Rupiah | 4.0 | Concluded: Dec 2003<br>Amended: Oct 2006 |

Source: Yu and Gao (2011) and Bank of Japan

By December 2008, China began to sign RMB-denominated BSAs with other foreign central banks. The first RMB-denominated BSA, amounting to RMB 200 billion and with a maturity of three years, was signed with South Korea. Prior to its expiration in 2011, China and South Korea renewed the BSA and doubled its size to RMB 400 billion. After that, 19 more countries/regions signed RMB-denominated BSAs with China between December 2008 and late March 2013 (Table 2).

The working mechanisms of these RMB BSAs should not differ from those of previous BSAs under the CMI framework or those of BSAs used by the US Federal Reserve, the latter of which provided liquidity to several countries during the 2008-2009 global financial crisis (Rose and Spiegel, 2012). A country with a BSA could provide funds (in denominated currencies as specified in the agreement) to its counterparty, thus enabling the latter to inject liquidity to its domestic financial institutions during a market stress. For example, the Hong Kong Monetary Authority (HKMA) announced the use of its RMB BSA in late 2011 when the strong demand for offshore RMB sharply decreased the market liquidity.

However, the objectives of RMB BSAs seemed to differ from those of previous

CMI BSAs and the ones signed by the US Federal Reserve. In their 2012 annual report, the PBoC clearly stated that these RMB BSAs were signed to promote the usage of the RMB in cross-border trade and investment transactions. The partners of these RMB BSAs also expressed a similar view. For example, after singing an RMB BSA with China, Mr. Yaseen Anwar (2011), the governor of the State Bank of Pakistan, said that "…it (the BSA) is to enhance the role of the Chinese Yuan in international trade and investment."

In terms of geographical distribution, the majority of RMB BSA partners are located in the Asia-Pacific region, and few are located in Europe (Iceland, Belarus, and Turkey) and South America (Brazil and Argentina). RMB BSAs generally have a three-year maturity. Hence, by the end of March 2013, the BSAs with South Korea, Hong Kong, and Malaysia were renewed and expanded prior to their expiration. However, the BSAs with Belarus, Indonesia, and Argentina expired in 2012 without an announcement of renewal.

Table 2: China's RMB BSAs with other countries (as of March 2013)

| RMB BSAs | Size | Effective Date | Expiration Date |
|---|---|---|---|
| China-South Korea | 180 bn RMB/38 Tr Won | Dec-08 | Dec-11 |
| Renewed | 360 bn RMB/64 Tr Won | Oct-11 | Oct-14 |
| China-Hong Kong | 200 bn RMB/227 bn HKD | Jan-09 | Jan-12 |
| Renewed | 400 bn RMB/490 bn HKD | Nov-11 | Nov-14 |
| China-Malaysia | 80 bn RMB/40 bn MYR | Feb-09 | Feb-12 |
| Renewed | 180 bn RMB/90 bn MYR | Feb-12 | Feb-15 |
| China-Belarus | 20 bn RMB/8 tr BYB | Mar-09 | Mar-12 |
| China-Indonesia | 100 bn RMB/ 175 tr Rupiah | Mar-09 | Mar-12 |
| China-Argentina | 70 bn RMB/ Equal Amount Peso | Mar-09 | Mar-12 |
| China-Iceland | 3.5 bn RMB/66 bn ISK | Jun-10 | Jun-13 |
| China-Singapore | 150 bn RMB/30 bn SGD | Jul-10 | Jul-13 |
| China-New Zealand | 25 bn RMB | Apr-11 | Apr-14 |
| China-Uzbekistan | 0.7 bn RMB | Apr-11 | Apr-14 |
| China-Mongolia | 5 bn RMB | May-11 | May-14 |
| Expanded | 10 bn RMB | Mar-12 | May-14 |
| China-Kazakhstan | 7 bn RMB | Jun-11 | Jun-14 |
| China-Thailand | 70 bn RMB/ 320 bn THB | Dec-11 | Dec-14 |
| China-Pakistan | 10 bn RMB/140 bn PKR | Dec-11 | Dec-14 |
| China-UAE | 35 bn RMB/20 bn AED | Jan-12 | Jan-15 |
| China-Turkey | 10 bn RMB/3 bn TRY | Feb-12 | Feb-15 |
| China-Australia | 200 bn RMB/30 bn AUD | Mar-12 | Mar-15 |
| China-Ukraine | 15 bn RMB/19 bn UAH | Jun-12 | Jun-15 |
| China-Brazil | 190 bn RMB/60 bn BRL | March-13 | March-16 |

Source: the PBoC and BBVA Research

***Other forms of RMB-related bilateral financial arrangements***

Aside from RMB BSAs, China has also engaged in other forms of RMB-related

bilateral financial arrangements with other countries to facilitate cross-border RMB settlements. For example, the PBoC established bilateral RMB clearing systems with the respective central banks of Hong Kong, Macao, Taiwan, and Singapore during our investigated period between December 2008 and March 2013. Under the RMB clearing system, the PBoC designated an overseas branch/subsidiary of a Chinese commercial bank as the clearing bank in the counterparty country (Garcia Herrero et al., 2012a). On behalf of the PBoC, the subsidiary provides RMB-related clearing services to financial institutions in the counterparty country and helps maintain liquidity adequacy in offshore RMB markets. Bilateral RMB clearing systems appear to complement RMB BSAs. The RMB clearing system in Hong Kong was established almost in tandem with the signing of the RMB BSA. Singapore established its own RMB clearing system two years after signing its RMB BSA. Beijing and Taipei were reported to continue their RMB BSA negotiations after establishing an RMB clearing system (The China Post, November 12, 2013). However, Macao seemed to be an exception, considering that the RMB clearing system of the region was not accompanied with a BSA, which could be attributed to its small economy.

Another type of RMB-related bilateral financial arrangement is the direct trading of the RMB with other currencies. Trading the RMB with another currency in foreign exchange markets previously required the usage of the US dollar as an intermediary. RMB was first traded against the Russian Ruble (RUB) in December 2010 and against the Japanese Yen (JPY) in 2012. Under the direct trading mechanism, the RMB market makers in the country can come back to the onshore forex market of China to settle their RMB net positions, which does not require the usage of the USD as an intermediary.

Given their similarities to RMB BSAs in terms of facilitating cross-border RMB settlements, we treat cross-border RMB clearing systems and the nationwide RMB direct-trading mechanism (against RUB and JPY by March 2013) as similar to RMB BSAs in our empirical tests. These tests yield results that are consistent with those of tests that only focus on RMB BSAs.

***Previous studies on BSA country selection***

Although RMB BSAs are widely cited as an important step in the RMB internationalization, the question of how China chooses its BSA partners has by far attracted limited research attention.

The important empirical analysis of Aizenman and Pasricha (2010) explored how the US Federal Reserve selected emerging markets as their BSA partners at the height of the 2008–2009 global financial crisis. The authors found that the US tended to provide BSAs to emerging countries to whom it has close financial and trade ties, have a high degree of financial openness, and a relatively favorable sovereign credit history. Although the methodology proposed by Aizenman and Pasricha (2010) proved useful, the applicability of their conclusions to RMB BSAs remained doubtful.

Aizenman et al. (2011) further analyzed the role of BSAs as alternatives to foreign reserves and found that the RMB BSAs of China complemented the international reserves of their partners, whereas the BSAs with the US Federal Reserve and the

ECB served as alternatives to the foreign reserve accumulation of emerging markets. However, the authors only included three RMB BSAs with Argentina, Indonesia, and Malaysia in their sample, which limits the applicability of their main conclusions.

## 3. Empirical specification

We use a simple logistic regression model to identify the determinants of RMB BSAs. Our country sample includes 139 countries with relevant data recorded on various databases that we used (Appendix 1). Due to the lack of data, Uzbekistan is not included in the sample even though the country has signed an RMB BSA with China in April 2011. Eighteen of the 139 countries in the sample signed RMB BSAs between December 2008 and March 2013. The countries not included in our sample were either small or irrelevant to China.

We run two sets of logistic regressions with different dependent variables. In the first set, the dependent dummy variable equals 1 if the country signed an RMB BSA with China during the period between December 2008 and March 2013; and 0 otherwise. In the second set, the dependent dummy variable equals 1 if the country has either an RMB BSA or a similar RMB-related bilateral financial arrangement (i.e., a bilateral RMB clearing system or a direct trading mechanism against RMB) with China; and 0 otherwise. Therefore, dependent variables of four countries (Macao, Taiwan, Russia and Japan) are changed to 1 in the second set of regressions. Macao and Taiwan have bilateral RMB clearing systems with China, whereas Russia and Japan have direct trading mechanisms against the RMB.

We consider five groups of factors that can explain China's selection of its BSA partners. The definitions and sources of these factors are given in Appendix 1. These factors remain valid whether China selects the country to form BSAs with or the counterpart country decides by itself to form BSAs with China.

First, we examine the gravity factors of distance and size. We include these factors because they can help explain bilateral trade flows (Feenstra et al., 2001). Distance is proxied by the geographical distance between Beijing and the capital of the counterparty (DISTANCE), whereas economic size is proxied by the average nominal GDP of a country between 2004 and 2008, as expressed in the US dollar.2 If distance can significantly increase the likelihood that countries would sign RMB BSAs, this may suggest that China follows a regional-to-global route when promoting RMB BSAs or when increasing the international influence of the RMB, which is in line with the arguments proposed by some scholars (Takatoshi, 2011; Yu and Gao, 2011).

The second group of factors is related to trade, which is the primary objective of RMB BSAs, as claimed by Chinese authorities. We use two variables, namely, TRADE and FTA, in this regard. TRADE is the log value of the average bilateral trade volume between China and other countries from 2004 to 2008. We also use other proxies, such as the average bilateral trade volume from 2004 to 2008 or the

2 As suggested by our editor, we use the five-year average (from 2004 to 2008) of our regression variables for the sake of consistency. We also run regressions using the five-year average values of these variables prior to the signing of RMB BSAs, and obtain consistent results.

period five years prior to the signing of the BSAs, and obtain consistent results. We include FTA, which equals 1 if a country is in a free trade area (FTA) with China and 0 otherwise. This is done to determine whether a closer trading relationship can contribute to the signing of an RMB BSA.

The third group comprises financial factors, namely, FDI and CAOP. FDI represents the percentage of FDI that a country receives from China, while CAOP refers to the openness of the capital account (Aizenman and Pasricha, 2010). BSAs aim to facilitate bilateral investments; thus, we expect FDI to increase the likelihood of establishing an RMB BSA between two countries. Therefore, a country has a higher tendency to sign an RMB BSA with China if the FDI from China is very important to it. Aizenman and Pasricha (2010) reported that the US favored those countries with a higher level of CAOP when selecting countries to sign swap agreements with during the 2008–2009 Global Financial Crisis. Hence, we test whether this also applies in the case of China.

The fourth group of factors focus on macroeconomic strength, including, namely, INF, DEFAULT, and ADVANCED. Although inflation (INF) can be used as a measure of macroeconomic instability, a high inflation rate is also associated with a higher share of trade, which is invoiced in foreign currencies. Therefore, we do not have a clear a priori on the sign of the inflation coefficient, which requires further testing. Another measure of macroeconomic strength is the riskiness of a country for its creditors, which is proxied by a dummy variable equals 1 if the country has defaulted between 1983 and 2010 (DEFAULT) and 0 otherwise. ADVANCED reflects the general development level of a country, which equals 1 if a country is classified by the IMF as an advanced country and 0 otherwise.

The fifth group comprises institutional factors. Previous studies on the outward FDI of China have reported that Chinese overseas investment strategies serve to its purpose of influencing certain countries that are institutionally riskier and more corrupted (Kolstad and Wiig, 2012). We therefore test whether these RMB BSAs bear any resemblance to the outward FDI of China using four variables. The first two variables are the Government Effectiveness (GOV) and Corruption (CORRUP) indices of the World Bank, which aim to capture the governance quality and degree of corruption in a country, respectively. A higher GOV indicates better government quality, while a higher CORRUP indicates a lower degree of corruption. If RMB BSAs resemble the outward FDI of China, we expect to obtain a significantly negative coefficient of GOV and CORRUP. We also examine whether the differences in GOV (DIF_GOV) and CORRUP (DIF_CORRUP) between a country and China can affect the tendency for them to sign an RMB BSA.

## 4. Regression results

Tables 3 and 4 present the simple logistic regression results. Table 3 lists seven different specifications, in which only a country that has signed an RMB BSA with China is given a dependent variable equaling to 1. The regressions shown in Table 4 treat both the bilateral RMB clearing systems and the direct trading mechanism against RMB as similar to RMB BSAs. Not all variables can be included in the same

regression because of the high correlations between certain pairs of variables, (Appendix 2).

The first regressions of Tables 3 and 4 show that the coefficients of GDP size and distance are statistically significant and obtain the expected signs, thereby indicating that geographical proximity to China and a larger economic size increase the likelihood that a country would sign an RMB BSA with China. The importance of distance is also emphasized in the remaining regressions of Tables 3 and 4 after adding the bilateral trade variable to the regressors. The relevance of gravity factors is confirmed by the regression results, especially when other forms of RMB arrangements are included. The models in Table 4 have a relatively higher goodness-of-fit in terms of their pseudo R2 values. As described in the previous section, other RMB-related bilateral financial arrangements (such as the direct trading mechanism against the RMB and the bilateral RMB clearing system) can serve as alternatives to RMB BSAs in terms of facilitating cross-border RMB settlements. Therefore, when promoting the influence of the RMB on its neighboring countries, China may choose to establish an RMB clearing system or a direct trading mechanism of bilateral currencies if signing an RMB BSA proves difficult or unnecessary. For example, an RMB clearing bank can sufficiently meet the demands in the Macao market; therefore, no RMB BSA is signed between China and Macao. Political issues may also complicate the RMB BSA signing process between China and Taiwan. Therefore, the establishment of an RMB clearing system seems practical for the development of RMB businesses in Taiwan.

Trade factors are also highly relevant in explaining how China chooses its partners of RMB BSA, which is consistent with the claims of Chinese authorities. The coefficients of bilateral trade volume are statistically significant in the regressions of Table 3 and 4; thus, it is considered crucial in determining the tendency for countries to sign an RMB BSA or to accept other RMB-related financial arrangements. Some regressions also show that the signing of an FTA with China can significantly affect the signing of an RMB BSA even though the coefficients of FTA become marginally significant in the remaining regressions. This result indicates that China and its important trade partners have a greater incentive to sign RMB BSAs to facilitate their bilateral trade.

The results of the financial factors are highly mixed compared with those of the trade factors. On the one hand, FDI is not significant in increasing the likelihood for a country to sign an RMB BSA; on the other hand, financial openness is significant in the second regression of Table 3, but obtains a sign that is inconsistent with our expectations and with the findings of Aizenman and Pasricha (2010) on US BSAs. Financial openness also yields negative coefficients in the three other regressions even though they are not statistically significant, which may reflect the determinants from the “demand” side (i.e., countries with relatively closed capital accounts are more likely to sign an RMB BSA with China as a supplement to their financial reserves).

Similar to financial factors, macroeconomic factors also yields mixed results. Neither inflation nor the overall development level of a country significantly affects

the signing of an RMB BSA or the acceptance of other RMB-related financial arrangements. However, as reflected in the significantly positive coefficients of DEFAULT, China seems to be attracted to countries with a history of defaults, which contradicts the findings of Aizenman and Pasricha (2010). One plausible explanation for this finding is that some of our sample countries with a history of defaults, such as Argentina, Russia, Pakistan, Turkey and Ukraine, are keen on establishing various financial arrangements to improve their defenses against external shocks. However, when choosing BSA partners, China is not concerned about a country's history of defaults.

In terms of institutional factors, our results do not support the hypothesis that China is more likely to sign an RMB BSA with a country that has low-quality institutions (i.e., ineffective governments or highly prevalent corruption). Countries with clean and effective governments have a higher tendency to sign a BSA with China. The regressions that include the differences between China and other countries in terms of government effectiveness and corruption prevalence yield similar results. Although political considerations may play a significant role in the signing of BSAs, we fail to support their significance using our standard proxies.

Table 3: Simple Logistic Regressions

(Dependent variable equals to 1 if the country signed a RMB BSA with China, or equals to 0 otherwise)

| | | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** |
|---|---|---|---|---|---|---|---|---|
| Gravity Factors | DISTANCE | -1.382** | -0.975* | -0.898* | -0.941* | -0.978* | -1.035* | -1.017* |
| | | (-2.48) | (-1.65) | (-1.74) | (-1.75) | (-1.81) | (-1.85) | (-1.83) |
| | GDP | 0.376** | | | | | | |
| | | (2.11) | | | | | | |
| Trade Factors | TRADE | | 0.510*** | 0.504** | 0.437** | 0.406** | 0.386** | 0.394** |
| | | | (2.67) | (2.50) | (2.17) | (2.92) | (2.10) | (2.15) |
| | FTA | 1.606*** | 1.606** | 0.967 | 1.078 | 1.092 | 1.101 | 1.099 |
| | | (2.61) | (2.00) | (1.32) | (1.51) | (1.52) | (1.54) | (1.54) |
| Financial Factors | FDI | -0.002 | 0.000 | 0.003 | 0.003 | 0.003 | 0.004 | 0.003 |
| | | (-0.11) | (0.03) | (0.23) | (0.23) | (0.19) | (0.24) | (0.23) |
| | CAOP | -0.319 | -0.420* | | | | | |
| | | (-1.35) | (-1.68) | | | | | |
| Macro-economic Factors | INF | -0.001 | -0.001 | -0.000 | 0.000 | -0.000 | | |
| | | (-0.10) | (-0.13) | (-0.10) | (-0.13) | (-0.10) | | |
| | DEFAULT | 1.698* | 1.623* | 1.850** | 2.063** | 2.136** | 2.252** | 2.220** |
| | | (1.84) | (1.76) | (2.13) | (2.25) | (2.46) | (2.44) | (2.41) |
| | ADVANCED | | | -0.539 | | | | |
| | | | | (-0.64) | | | | |
| Institutional Factors | GOV | | | | 0.040 | | | |
| | | | | | (0.10) | | | |
| | DIF_GOV | | | | | 0.258 | | |
| | | | | | | (0.45) | | |
| | CORRUP | | | | | | 0.203 | |
| | | | | | | | (0.59) | |
| | DIF_CORRUP | | | | | | | 0.202 |
| | | | | | | | | (0.51) |
| | _cons | 8.353* | -4.574 | -5.327 | -3.398 | -2.890 | -1.813 | -2.296 |
| | | (1.65) | (-0.60) | (-0.76) | (-0.47) | (-0.42) | (-0.25) | (-0.32) |
| | Pseudo $R^2$ | 0.327 | 0.360 | 0.291 | 0.288 | 0.289 | 0.291 | 0.290 |
| | No. of Obs. | 135 | 133 | 139 | 139 | 139 | 139 | 139 |

t statistics in parentheses.
* p < 0.1, ** p < 0.05, *** p < 0.01.

Source: BBVA Research

Table 4: Simple Logistic Regressions
(Dependent variable equals to 1 if the country signed a RMB BSA or other RMB-related bilateral financial arrangements with China, or equals to 0 otherwise)

| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|---|
| Gravity Factors | DISTANCE | -2.017*** | -1.568** | -1.969*** | -2.121*** | -2.149*** | -2.301*** | -2.250*** |
| | | (-3.09) | (-2.39) | (-2.93) | (-3.03) | (-3.08) | (-3.07) | (-3.10) |
| | GDP | 0.526*** | | | | | | |
| | | (2.82) | | | | | | |
| Trade Factors | TRADE | | 0.666*** | 0.626*** | 0.551** | 0.569*** | 0.532*** | 0.525*** |
| | | | (3.22) | (2.82) | (2.66) | (2.80) | (2.58) | (2.65) |
| | FTA | 1.653** | 1.056 | 1.042 | 1.070 | 1.102 | 1.136 | 1.146 |
| | | (1.99) | (1.22) | (1.26) | (1.32) | (1.36) | (1.40) | (1.42) |
| Financial Factors | FDI | -0.003 | -0.001 | 0.000 | 0.001 | -0.001 | 0.000 | 0.001 |
| | | (-0.18) | (-0.04) | (0.01) | (0.03) | (-0.04) | (0.02) | (0.04) |
| | CAOP | -0.261 | -0.358 | | | | | |
| | | (-1.08) | (-1.41) | | | | | |
| Macro-economic Factors | INF | -0.001 | | | | | | |
| | | (-0.07) | | | | | | |
| | DEFAULT | 2.628*** | 2.621** | 3.050*** | 3.412*** | 3.375*** | 3.647*** | 3.618*** |
| | | (2.58) | (2.54) | (2.85) | (2.98) | (3.15) | (3.12) | (3.07) |
| | ADVANCED | | | -0.090 | | | | |
| | | | | (-0.10) | | | | |
| Institutional Factors | GOV | | | | 0.276 | | | |
| | | | | | (0.864) | | | |
| | DIF_GOV | | | | | 0.528 | | |
| | | | | | | (0.86) | | |
| | CORRUP | | | | | | -0.406 | |
| | | | | | | | (-1.09) | |
| | DIF_CORRUP | | | | | | | 0.431 |
| | | | | | | | | (1.01) |
| | _cons | 13.282** | -2.732 | 1.326 | 4.095 | 3.601 | 6.046 | 4.980 |
| | | (2.34) | (-0.36) | (0.17) | (0.52) | (0.49) | (0.75) | (0.65) |
| | Pseudo $R^2$ | 0.408 | 0.444 | 0.457 | 0.461 | 0.464 | 0.467 | 0.466 |
| | No. of Obs. | 135 | 133 | 139 | 139 | 139 | 139 | 139 |

t statistics in parentheses.
* p < 0.1, ** p < 0.05, *** p < 0.01.
Source: BBVA Research

## 5. Conclusions

China's authorities have signed a set of RMB-denominated BSAs with other countries to promote the RMB internationalization. In this study, we use a logistic model to empirically explore how China selects the countries as its RMB BSA partners. Consistent with our expectations, the gravity factors affect the selection because the economic size and proximity of a country to China can increase the

likelihood that they would sign a BSA with China. Trade factors (i.e., exports to China and existence of FTA) also contribute to the selection of countries for BSAs. This finding supports the view of Chinese authorities, which state that the signing of BSAs and the RMB internationalization must be driven by trade relationships. Neither the FDI relations with China nor the macroeconomic strength of a country play significant roles in the selection of BSA partners.

Our empirical analysis does not support the view that China has been using RMB internationalization—particularly BSAs—to engage with institutionally riskier or highly corrupted countries. Although political considerations may play a significant role in the signing of BSAs, we cannot determine their significance using our proxies. However, we find that China prefers those countries with a history of sovereign defaults and financial closedness when selecting partners for RMB BSAs.

These results must be considered as preliminary, because China continues to sign new BSAs at a rapid pace. Such phenomenon may be attributed to the demand side of these agreements, because countries with closed capital accounts and history of defaults are keen to sign RMB BSAs or accept other forms of RMB-related bilateral financial arrangements to boost their defenses against external financial shocks.

Trade is the key driving force behind the signing of BSAs—a finding that is in accordance with the intentions of Chinese authorities. Thus, future studies must investigate the actual effects of signing such agreements. Specifically, these studies must determine whether the objective of Chinese authorities (i.e., promoting RMB-denominated trade and investment) has been achieved by the signing of such agreements. At the same time, future research can also analyze the other characteristics of such agreements, such as their size and significance. Given the limited number of signed RMB BSAs, the rigorousness of relevant empirical studies remains an issue. Fortunately, we may not need to wait long to obtain a large sample of RMB BSAs to empirically investigate the characteristics of these agreements, because Chinese authorities have been actively promoting RMB BSAs to other countries at a rapid pace.

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# Appendix 1. Definitions of Variables

| Variable | Definition | Source |
|---|---|---|
| GDP | Log value of a country's GDP in USD. ( Five-year average of 2004-2008) | The World Bank |
| DISTANCE | Distance between China and the host country (capital-to-capital) | Kristian Skrede Gleditsch, accessible at http://privatewww.essex.ac.uk/~ksg/data-5.html |
| TRADE | Log value of bilateral trade. (Five-year average of 2004-2008) | UN Comtrade Database |
| FTA | A dummy variable, equals 1 if China and the counterpart share a Free Trade Agreement and equals 0 otherwise | Ministry of Commerce of China |
| FDI | A country's FDI from China as a percentage of its total inward FDI (Five-year average of 2004-2008) | CEIC |
| CAOP | The Chinn-Ito Index for capital account openness. A higher index number means more capital account openness (Five-year average of 2004-2008) | The Chinn_Ito Index for capital account openness, accessible at http://web.pdx.edu/~ito/Chinn-Ito_website.htm |
| DEFAULT | A dummy variable, equals 1 if a sovereign default occurred between 1983-2010 and equals 0 otherwise. | The Moody's "Special Comment: Sovereign Default and Recovery Rates, 1983-2010" |
| INF | A country's average inflation rate during the period of 2004-2008. | IMF |
| ADVANCED | A dummy variable equals to 1 if the country is classified as an advanced country by IMF. | IMF: Classifications of Countries Based on Their Level of Development |
| GOV | The rule_of_law index by the World Bank, a higher value means a better rule of law.( Five-year average of 2004-2008) | The World Bank Governance Indicators ,accessible at http://data.worldbank.org/data-catalog/worldwide-governance-indicators |
| DIF_GOV | The absolute value of the difference between China's rule_of_law index and that of the other countryThe rule_of_law index by the World Bank, a higher value means a better rule of law. (Five-year average of 2004-2008) | The World Bank Governance Indicators accessible at http://data.worldbank.org/data-catalog/worldwide-governance-indicato |
| CORRUP | The Corruption index, a higher value means a higher level of corruption. The absolute value of the difference between China's rule_of_law index and that of the other country ( Five-year average of 2004-2008) | The World Bank Governance Indicators accessible at http://data.worldbank.org/data-catalog/worldwide-governance-indicato |
| DIF_CORRUP | The absolute value of the difference between China's Corruption index and that of the other country( Five-year average of 2004-2008) | The World Bank Governance Indicators accessible at http://data.worldbank.org/data-catalog/worldwide-governance-indicato |

## Appendix 2. Correlations of Independent Variables

| | DISTANCE | GDP | TRADE | FTA | FDI | CAOP | INF | DEFAULT | ADVANCED | GOV | DIF_GOV | CORRUP | DIF_CORRUP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DISTANCE** | 1 | | | | | | | | | | | | |
| **GDP** | -0.199 | 1 | | | | | | | | | | | |
| **TRADE** | -0.330 | 0.932 | 1 | | | | | | | | | | |
| **FTA** | -0.244 | 0.133 | 0.288 | 1 | | | | | | | | | |
| **FDI** | -0.161 | -0.149 | -0.119 | -0.026 | 1 | | | | | | | | |
| **CAOP** | -0.017 | 0.353 | 0.366 | 0.051 | -0.100 | 1 | | | | | | | |
| **INF** | 0.049 | -0.090 | -0.073 | -0.029 | 0.004 | -0.148 | 1 | | | | | | |
| **DEFAULT** | 0.212 | 0.050 | 0.024 | 0.062 | -0.057 | -0.047 | -0.027 | 1 | | | | | |
| **ADVANCED** | -0.180 | 0.534 | 0.497 | -0.008 | -0.088 | 0.500 | -0.053 | -0.185 | 1 | | | | |
| **GOV** | -0.169 | 0.569 | 0.531 | 0.110 | -0.133 | 0.581 | -0.134 | -0.185 | 0.805 | 1 | | | |
| **DIF_GOV** | -0.070 | 0.294 | 0.300 | 0.044 | -0.001 | 0.243 | 0.084 | -0.144 | 0.685 | 0.475 | 1 | | |
| **CORRUP** | -0.066 | 0.477 | 0.424 | 0.066 | -0.150 | 0.536 | -0.126 | -0.179 | 0.784 | 0.950 | 0.543 | 1 | |
| **DIF_CORRUP** | -0.097 | 0.473 | 0.438 | 0.081 | -0.091 | 0.478 | -0.015 | -0.200 | 0.803 | 0.878 | 0.716 | 0.930 | 1 |

Source: BBVA Research