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Exploring Determinants of Firms' Participation in the New Offshore Renminbi Debt Securities Market

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Abstract

Once in a while a major financial innovation creates a new product that changes the landscape for firms that adopt it. For example, junk bonds enabled leveraged buyouts, securitization stimulated off balance sheet growth in banks, and CDS offered pure trading in credit risk. New RMB financial products emerging as China opens its capital account provide a similar change to the landscape for firms and investors engaged with China or those using RMB as a vehicle currency. Uptake of the new products has been rapid, and in this paper we use the data from the Hong Kong Monetary Authority for offshore RMB bonds to explore that process. We are mostly interested in what determines firms' participation decision in this market. We allow for changes in regulation, market depth, parallel market developments and changes in the advantages of participation using interest differentials to explain what influences firms' and investors' choices to enter the market and find that they all have an influence on the decision to participate in this new financial market.

Key words: bond financing, offshore markets, dim sum, Hong Kong, Asian bond markets

JEL: F32, F34, G32, O16

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1. Introduction

Occasionally, a financial innovation creates a new product that has significant implications for the firms that make use of it. Borio (1990) and Remolona (1990) note that the growth of the sub-investment grade 'junk' bond market supported the rise in corporate leveraged buyouts among non-financial firms during the 1980s. Berger and Udell (1993) recognize that the development of securitized products (loan sales, standby letters of credit, and loan commitments) led to an increase in the off balance sheet growth in financial firms. Blanco *et al*. (2005) document that emerging CDS contracts with better liquidity than bonds supported the development of a market specifically for trading credit risk by financial and non-financial firms. The same story could be told for many 'back end' and 'front end' financial innovations (see Frame and White, 1984; Tufano, 1992, 2003; and Lerner, 2006).

As each of these innovations has occurred, firms have had to decide whether to 'pitch in' to the new market or 'hold back' to see how the new financial product will be used by other firms. It has been known for some time that there is a distinction between 'external adopters' that pioneer new products and services (David, 1969) and 'internal adopters' that are persuaded by the rational case for adoption or face competitive pressures that drive them towards adoption at a later stage (Molyneux and Shamroukh, 1996). Participation is driven by a variety of factors including firm characteristics, market conditions and competitive pressures as the costs and benefits are weighed up. In this paper we explore the adoption of offshore corporate debt securities as the market for renminbi (RBM) financial products was liberalized. This is not a minor innovation but a critical step in the opening of the capital account in China, which will have significant implications for financial and non-financial firms that seek to do business with the mainland.

Innovation in RMB financial products from the mainland is likely to significantly reduce the costs of raising finance for onshore activity. To date research on the effects of these changes have been focused on invoicing patterns of Chinese firms, foreign exchange trading of the RMB, and onshore and offshore financing in Asia (Eichengreen, 2013; He and Yu, 2014; Lai and Yu, 2014; Shu *et al*. 2014). We focus on the impact of liberalization on the participation decision of firms in the offshore

RMB bonds market in Hong Kong because the securities market in RMB is potentially very large. The so-called 'dim sum' bonds issued in Hong Kong are likely to substantially alter the cost of RMB finance for firms with activities in China, and will provide diversification benefits for investors seeking exposure to RMB assets. Ultimately, it has allowed the authorities in the mainland to open up the much larger onshore market in RMB debt securities, a process that has just begun this year.

China began the process of internationalizing the RMB in successive steps (see He and McCauley, 2012). The Chinese government made the RMB fully convertible under the current account in 1996. It has operated a managed floating exchange rate since 2005, but the People's Bank of China imposes a daily trade band and makes regular interventions (Shu, He and Cheng, 2014). Investors were first permitted to hold investment assets on Chinese exchanges with the opening of the Qualified Foreign Institutional Investor (QFII) scheme in 2002. The thresholds for qualification were progressively reduced in 2006, 2007 and 2012, and now the People's Bank of China allows QFIIs substantial to access to investment assets including the inter-bank bond market.

Use of RMB offshore has been permitted for a widening range of activities since 2009, but the offshore bond market is separated from the onshore market due the central bank's intervention in the foreign exchange market (She, He and Cheng, 2014). Nevertheless the offshore market has also been progressively deregulated for investors. In 2011 a parallel QFII scheme in RMB was established, known as RQFII. Quotas were raised for RQFIIs from RMB20bn to RMB50bn in April 2012, and to RMB200bn in December 2012, and March and May 2013 saw further relaxation of the criteria for RQFII access.

The 'dim sum' bond market did not exist until 2007 when the China Development Bank issued its first RMB bond; although the first issuers were Hong Kong or mainland banks, the popularity of offshore bonds developed a major market for Hong Kong but the issuance was sparse until 2010. McDonald's was the first foreign company to issue (200mn RMB bond) in August 2010; the total market of 16 issuers was just RMB35.7bn in 2010 but the following year it grew to RMB131bn with many more issuers. Large multinational companies such as Caterpillar of the United States, America Movil of

Mexico and Volkswagon of Germany have all entered the market in recent years. The debt securities issued comprise RMB bonds and CDs, which are typically of a three year maturity.

Focus on the Hong Kong 'dim sum' market has particular advantages. Hong Kong has the largest market for RMB offshore debt securities, with a substantial range of issuers and banks that facilitate the issuance and sale of these financial products to investors. The Hong Kong Monetary Authority (HKMA) Central Moneymarkets Unit (CMU) provides computerised clearing and settlement facilities for a range of Hong Kong debt securities in HKD and RMB. We were given privileged access to firm-level issuance data at a quarterly frequency collected by the Market Research Division of the Research Department of the Hong Kong Monetary Authority to explore the emergence of this market.[1] Lerner (2006) and Frame and White (2004) acknowledge that the paucity of studies on financial innovations is due to scarcity of data, compared with manufacturing innovations, but we are able to obtain reliable data from this primary source. We match the data on issuance with data from Compustat Global to provide balance sheet and profit and loss information for each firm.

Our paper focuses on a micro story that considers how firms' and investors' decisions to engage in the offshore RMB debt securities market are affected by firm and market conditions.[2] There are a number of papers that have explored the development of onshore and offshore bond markets in emerging economies. Mizen and Tsoukas (2012) and Mizen et al (2012) show that firm characteristics, particularly firm size and creditworthiness, influence participation in these bond markets. Gozzi (2010) shows that the majority of firms with access to international markets are large firms. Siegfried (2007), Habib and Joy (2010), Chan et al (2011) and Hale and Speigel (2012) find that depth and liquidity of the market further enhances participation when markets are developing. Graham and Harvey (2001), McBrady and Schill (2007) and Munro and Wooldridge (2010) show that there may be distinct advantages to issuing in an offshore market because short-term interest differentials allow firms to issue cheaply. In choosing to issue in RMB offshore rather than onshore some firms may face a lower cost of issuance. As well as a obtaining a lower cost of issue, firms may access a different investor

[1] Some of this data can be obtained on private sector data platforms such as Bloomberg, Dealogic, HSBC and Reuters but there are patches in the early part of the data sample where the coverage is thin.

[2] Since many of these variables are correlated with each other, we select from a group the individual variables that can be combined together to explain firms' participation in the offshore RMB debt securities market.

base. The desirability of participating in the offshore RMB market for investors may depend on the supporting financial infrastructure such as sufficiently active swap markets, as documented by Gczy et al. (1997) and Mizen *et al.* (2012). In a market that is being deregulated the timing of the relaxation of regulations by the authorities is likely to be of major importance.

Our paper confirms that the depth and liquidity of the market, lower costs of issuance versus onshore or foreign currency alternatives, favourable swap rates and exchange rate appreciation were also influential in the case of the RMB. These changes occurred at much the same time as a relaxation of regulations by the authorities, permitting expansion to occur, and the growth of RMB deposits and greater foreign issuance of RMB debt securities is interpreted as evidence that they did so.

The rest of the paper is organized as follows. Section 2 discusses the literature on the choice of markets in which to issue debt securities, followed by a summary of the special factors influencing the RMB debt securities market in Hong Kong. In Sections 3 and 4 we describe our empirical methodology and our data. Section 5 reports the results and Section 6 concludes the paper.

2. Literature

Frame and White (2004) document five structural conditions that influence innovation, which are i) market power of firms, ii) size of firms, iii) technological opportunities, iv) appropriability and v) demand conditions. For financial innovation we can add a further layer of influences from Campbell (1988) including i) information technologies and market infrastructure, ii) macroeconomic conditions, iii) regulation and legal restrictions and iv) tax. The innovations in financial products are influenced by issuers on the supply-side (influenced mostly by the first list) and investors on the demand-side (influenced mostly by the second list). Investors operate in a global market, and are attracted to new products by the advantages of yield and diversification; they create demand for new products. New financial products offer investors a wider choice set, and if the new product attracts a larger or more diverse set of investors, this can be a positive influence on firms to participate in the market for the new product. The extent to which issuers can take advantage of these conditions depends on their size, competitive advantage technical ability. Issuers' decisions to participate in a new market are also

influenced by capital structure theories that are the drivers of corporate bond issuance more broadly (c.f. Rajan and Zingales, 1995; Booth et al. 2001; and Allayannis et al. 2003). These factors influence the timing of the decision of a firm that may become an internal adopter according to the literature on diffusion of financial innovations (see Molyneux and Shamborough, 1996, 1999).

Some structural changes, such as the development of Asian corporate bond markets following a decision to create the regional Asian Bond Fund (ABF2), and initiatives to promote best practice in these markets through the Asian Bond Market Initiative (ABMI), have deepened financial markets (Chan et al. 2011; Mizen and Tsoukas, 2014). For example, Asian offshore bond markets have been supported by the greater market depth, lower costs and ability to manage risks that these changes have provided (see Mizen et al. 2012). Chinese offshore debt securities markets may experience a similar effect. They are relatively new having only existed since 2007, and until recently have been subject to regulation over participation by issuers (participation was widened considerably in 2010 to mainland private companies and foreign enterprises) and investors (through raised quotas on RQFII from 2011 onwards). But the increase in market depth, lower costs of participation, greater risk management opportunities and attractions to investors may allow the RMB market to grow. Besides all these influences there is the growing economic importance of the mainland to consider. In this review we will discuss the factors known from the literature to influence market participation on the supply side and on the demand-side. We are guided by information gained from Hong Kong banks that we informally interviewed about the dim sum market in 2013.

2.1 Factors that influence issuers

If we consider capital structure theories the question of whether to participate in an offshore bond market involves two steps. First, it is determined by a preference for issuing debt securities in the first place, and secondly it is a question of preferences between onshore and offshore markets if the first decision results in positive issuance. This kind of decision process involves financial theories such as the pecking order theory (Myers and Majluf, 1984), market depth, agency costs, the costs of issuance due to static trade offs, and costs or convenience due to the development of respective markets. Market depth has been highlighted as a significant factor by Allayannis et al. (2003), Chan et al. (2011)

and Mizen et al. (2012). The dim sum bond is small at this stage with about $300bn in bonds outstanding, but the market can be expected to grow significantly in terms of volume of issues and the number of issuers.

Evidence of substitution between alternative sources of funding can provide an indication of the relative cost of obtaining finance from different sources, and growth in the dim sum bond market may be one such indication. In the literature the relative costs of issuance are measured by short-term interest rates between alternative markets (see Graham and Harvey, 2001; McBrady and Schill, 2007; and Munro and Wooldridge, 2010). As noted in Cohen (2005) and Habib (2010) opportunities arise from uncovered interest parity deviations, across major currencies. The scope for uncovered interest cost savings is a significant influence on the choice of issuing currency, as is the fact that a currency has low nominal rates. The benefits for these issuers reflect the static trade off theory.

For many firms in the offshore RMB market, the relevant comparisons are the onshore and the dollar markets versus the offshore market. For many issuers, such as Chinese property developers and public utility companies the costs of issuing in the offshore market may be cheaper than obtaining funds onshore or from the banks. The actual cost of issuance depends on the international rating that the firm can obtain for its bond issue, and where there is a lower rating investors requires a higher yield to compensate for risk.[3] As dim sum bond markets were first emerging, the cost of funds was lower offshore than onshore and the return to investors was still sufficiently high compared to the very low returns in other global markets to attract investors. Therefore for many mainland issuers it was worth entering the market to issue more cheaply and to access a wider investor base.

A large number of issuers in the offshore RMB market are Chinese banks. These issuers find the wholesale funding available through bonds and especially RMB CDs more flexible than retail funding. When the market first opened the average maturity of the CDs was 1 - 3 years, but it has lengthened as the market has matured. CDs are not restricted to short maturities in Hong Kong. These banks finance cross-border trade with the mainland through their Hong Kong branches and make RMB

[3] Corporate issuers from the mainland with good credit ratings find issuance offshore cheaper than onshore, but if the rating is BB or lower the costs of offshore issue are typically higher.

loans. Similarly, foreign financial intermediaries find that funding is more flexible offshore than onshore, and for some foreign banks it is cheaper than issuing offshore in dollars.

For others such as the greater China companies and multinationals, the cost of issuing in US dollars may be cheaper (although for some the all in costs may be lower in RMB), but there may be other benefits from signalling their participating in this market. First, there is the favourable publicity from their early participation in the market. Second, it allows these issuers to test the market by issuing in RMB, and having the arrangements in place to issue further RMB bonds when they choose. The regulatory requirements for bond issuance are minimal, but permission to remit the proceeds onshore is subject to approval. While some issuers will have used the proceeds to finance activities on the mainland, most will have simply swapped the proceeds into dollars taking advantage of any deviations from covered interest parity to issue and then swap the obligations back into the domestic currency.

2.2 Factors that influence investors

Investors operate in global markets, and value new markets like the dim sum bond market for their diversification and yield compared to other markets. The relative accessibility of the offshore market allows investors to be exposed to renminbi compared to onshore markets. Burger and Warnock (2010) show that the extent that markets are open to foreign investment is a critical factor in bond market development.

An important issue for an investor is the depth and liquidity of the secondary market. Chinn and Ito (2006) and Eichengreen et al. (2006), argue that larger markets with greater liquidity reduce the uncertainty for investors. Deeper and more liquid markets have lower bid-ask spreads, higher turnover, and lower entry and exit costs.

Restrictions on foreign investors are often a significant deterrent to investing in local markets for foreign investors, and thus can hinder the depth and liquidity of those markets, and have been emphasized by market participants in Asia, (see Chan et al. 2011). In many Asian countries these restrictions are exemplified by withholding taxes, and where these impede cross-border investment,

they will enhance the offshore market. For China however the main restrictions are determined by the QFII and RQFII regulations on institutional investors that limit participation and the scale of investment in onshore and offshore markets. These factors are relevant to the static trade-off and the risk management theories as well as the market depth hypothesis.

Mizen et al. (2012) found that derivatives markets have a substantial impact on the attraction of offshore markets since their depth can be taken as a proxy for the ease of swapping in and out of the domestic and foreign currencies. To the extent that firms can transform their interest payments on foreign (or domestic) bond issues into synthetic domestic (foreign) payments that can be serviced by domestic (foreign) cash flows, better developed swaps and derivatives markets enhance the attractions of onshore and offshore debt securities markets. The extent to which these derivatives are used has been found by Gczy et al. (1997) to be positively related to the exposure to FX risk and use of foreign currency instruments. Both of these areas have been deregulated by the authorities on the mainland as part of the capital account liberalization process.

Allayannis and Ofek (2001) find that large multinationals are indifferent between use of foreign currency bonds and use of instruments to create synthetic foreign currency positions. Elliot et al (2003) find that US firms use actual debt and derivatives to hedge themselves against currency risk, while Clark and Judge (2008) find forwards and options are used as short term complements to foreign bond issuance, but swaps are used as substitutes. The use of this measure is possibly due to the availability of detailed BIS statistics on the daily average turnover in the Triennial survey by country, currency and reporting counterparty.

While some studies consider the institutional characteristics of the jurisdiction of the bond market to be an influence on issuance in that market (e.g. Eichengreen and Luengnaruemitchai, 2004; Burger and Warnock, 2006; Eichengreen et al., 2006; and Siegfried et al., 2007) we are considering the issuance of firms in the offshore market of Hong Kong where the accounting and legal frameworks are different. Qualitative factors are bound to have some influence but they move slowly over time being picked up mostly by constant terms in empirical studies, and may be weakly correlated with other market characteristics over longer samples. In the sections that follow, we will link these arguments to

the determinants of financial market development and then examine the significance of these variables to establish support for the various theories outlined in this section.

3. Empirical methodology

Entry into a new market, such as a new offshore bond market, may entail considerable fixed costs associated with underwriting, lack of name recognition, and the new entrant premium to be paid to investors. These may act as a disincentive to issue until the benefits that accrue from doing so are sure to outweigh the initial costs. Thereafter these costs may diminish, creating significant longer term gains from entry to the new market. These properties that reduce the likelihood of market participation initially and then result in higher likelihood of participation subsequently suggest that a complementary log-log specification may be preferred over the alternatives such as probit or logit models.

Following Akhavein et al. (2005), we employ duration analysis to estimate the hazard rate at which firms adopt the new financial instrument. In other words, this methodology is concerned with the passage of time before the adoption takes place. The complementary log-log model may be regarded as a discrete-time version of the Cox proportional hazard model. The assumption of the proportional hazard model is that the hazard ratio depends only on the time period that the firm is exposed to participation in the market, $\eta_0(t)$ – this is the baseline hazard that effectively tells us how likely a firm is to participate in the market simply because a longer time has elapsed. Specifically, we make two assumptions in the proportional hazard models: the non-informative censoring assumption and the proportionality assumption. With respect to the former, the design of the underlying study is such that firms are followed throughout the sample period. Hence, this assumption is satisfied. As for the latter assumption, we find that the survival curves have indeed hazard functions that are proportional over time. Specifically, we carried out a test of the proportional hazards assumption based on Schoenfeld residuals. We obtained a p-value of 0.24 indicating that there no evidence to contradict the proportionality assumption. The cloglog model allows us to capture the exact time of adoption, addressing in this way the potential right censoring bias. The influence of a vector of firm characteristics, X, and a vector of market developments, *Z*, (that might alter the attractions of the market for issuers and investors) may independently alter the hazard rate as follows, $exp(\beta_x'X, \beta_z'Z)$. The hazard ratio is then given by:

(1) $\eta(t, X, Z) - \eta_0(t) \exp(\beta_x'X, \beta_z'Z)$

The discrete-time hazard function, *h(j, X, Z)* shows the interval hazard from the previous quarter to the present quarter after the first appearance of the firm. This hazard rate, which is the rate at which firms participate given that they participated in the previous quarter can be written as:

(2) $h(t, X, Z) - 1 - exp(- exp(\beta_x'X + \beta_z'Z + \gamma_j)$

We will recover the estimates of the coefficient in β_x and β_z to determine the influence of firm level and market level developments, respectively, on the hazard rate. The former variables determine the likelihood of adoption of RMB offshore bonds among the 'internal adopters' that tend to have positive reasons to participate in the new market at an early stage due to changing firm characteristics[4]. The firm characteristics determine how quickly they adopt given their size and financial health. The market variables demonstrate the network advantages that build up with market size and growth, the benefits from relative costs and returns from participation that the offshore market offers compared to the onshore market or foreign markets. These factors influence the 'internal adopters' that emerge as the case for participation builds up with market developments. We allow for deregulation to open the possibility of participation, and control for firms of different types recognizing benefits that others do not, for example we test whether banks reap benefits from lower cost finance offshore versus onshore, and whether certain types of non-financial firms such as property developers and public utility companies have incentives to issue offshore rather than onshore.

4. Data

Our data are drawn for the firms that are recorded as bond issuers in the offshore RMB bond market by the Hong Kong Monetary Authority. We have quarterly data from 2008Q4 - 2013Q2, and cover

[4] While we observe only issuing firms in our sample, we note that there is a large degree of variation in issuance among the issuers. In other words, the units in our sample periods are not continuous issuers, they start issuing in several periods within the sample period. Hence, we are able to estimate the probability of issuing.

2158 issues over this period. We match the data on bond issues each quarter with quarterly data on balance sheet and profit and loss items provided at the firm level for all these issuers.

The issuing firms are drawn from 21 countries documented in Table 1. The majority of issuer numbers are found in Hong Kong (553 issues and 25.6% of the sample) and China (419 issuer and 19.4% of the sample), after which Taiwan, Singapore, France, the United Kingdom and the United States comprise between 5-7% of the sample each, which amounts to 693 issues and 32.2% of the sample in total, with the remainder of the data spread thinly over the other countries.

The Compustat Global database offers balance sheet and profit and loss accounts data for firms that we identify as RMB bond issuers in Hong Kong. Our initial sample includes a total of 2,158 quarterly observations on 137 companies. We provide information on financial accounts and ratios for Asian firms operating in all sectors of the economy for the period 2008 Q4 to 2013 Q2. Our chosen variables are determined by the findings in the previous literature on bond financing. To control for size (SIZE) we calculate the logarithm of the firm's total assets consistent with Calomiris et al (1995), Gopalan et al. (2013) and Mizen and Tsoukas (2014). We consider five dimensions of financial health from the balance sheet: leverage (LEVER), profitability (PROF), collateral assets in total assets (COLL), cash in total assets (CASHA) and coverage ratio (COV). Leverage is measured as long-term debt over total assets indicating the firm's overall indebtedness used previously by Cantor (1990), Pagano et al. (1998), Datta et al. (2000), Denis and Mihov (2003) and Bougheas et al. (2006). Profitability ratio is defined as earnings before interest and taxes relative to total assets to measure a firm's ability to generate profits, and used previously by Denis and Mihov (2003). We include a measure of tangible assets which proxies for the firm's ability to pledge collateral for debt finance, measured as tangible assets over total assets, and used previously by Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001) to explain debt composition. We measure liquidity as inventories over sales since liquidity of the firms is likely to have a mixed impact on access to external financing (see Ozkan, 2001). Higher liquidity might encourage firms to have higher debt ratios due to an increased ability to meet short-term obligations, implying a positive relationship between liquidity and external finance. While, firms with higher liquidity might also reduce their debt access, exerting a negative impact on external finance. We also use the ratio of cash over assets to capture firms' rate of cash accumulation,

Campello et al. (2004). The coverage ratio is defined as the sum of interest expenses and operating income after depreciation over interest expenses. We use this ratio to capture firms' creditworthiness. This ratio has been used in earlier studies Dennis and Mihov (2003) and Santos and Winton (2008).

Following normal selection criteria used in the literature, we exclude companies that do not have complete records for all explanatory variables and firm-quarters with negative sales. To control for the potential influence of outliers, we exclude observations in the 1 percent from the upper and lower tails of the distribution of the regression variables. Finally, by allowing for both entry and exit, the panel has an unbalanced structure which helps mitigate potential selection and survivor bias.

The firm characteristics for issuers in the Hong Kong RMB offshore debt securities market are reported in Table 2 (Panel A). These data reveal the number of issuing firms (count), the average value, the standard deviation and the maximum and minimum values of each variable. The total number of issuing firms is 2158 for the full sample. Table 2 (Panel B) provides a correlation matrix for the firm level variables, revealing that they are not strongly correlated with each other, and there are a mixture of weakly positive and negative relationships between them. We do not therefore need to consider the possibility that there may be multicollinearity between these explanatory variables.

We also record data on market characteristics in the dim sum bond market using a range of measures drawn from the Hong Kong Monetary Authority to indicate the size, development and the relative advantages of the offshore market compared to alternatives. First of all we measure the size of the offshore bond using the logarithm of the amount of total offshore debt securities outstanding (LN_OFF) in RMB mn at the quarterly frequency to match the firm-level data. To allow for the growth of the offshore market we also record the quarterly volume of total new issuance in the offshore RMB market in RMBmn (ISSUE_OFF). Our final measure of market depth uses the turnover in the secondary market for these securities using data from the Hong Kong Monetary Authority monthly statistical bulletin. Figure 1 shows the time series pattern for market development variables, showing a rising level of RMB outstanding (in logarithms), similarly there is an upward trend to the new issuance in the offshore RMB market. Turnover data is available from 2010Q4 and takes relatively

low values that are lower than the amount of new issuance, and a declining proportion of the amounts outstanding.

A further indicator of the growing scale of offshore financial activity in RMB is the size of RMB deposits in Hong Kong and their growth rate. We measure RMB deposits in Hong Kong (RMB mn) recorded by the Hong Kong Monetary Authority, and take the logarithm as a measure of scale (LN_DEP). The growth in the deposits (GR_DEP) is calculated as an indication of the expansion of RMB liquid assets in Hong Kong. We are also able to record the share of the offshore RMB debt security outstanding issued by overseas issuers (FOR_ISSUE) as a gauge of the internationalization of the offshore RMB debt securities market. This may offer a greater insight into the expansion of the market internationally than the issuance by firms headquartered on the mainland and Hong Kong. These variables are illustrated in Figure 2. They show rising deposits (in logarithms) and initially high growth that moderates subsequently. The ratio of overseas issuers to the total jumps in 2011Q1 before dropping to a lower level in 2011Q2, but thereafter the ratio rises.

To measure the incentives to issue, we record the offshore-onshore yield differential (OFF_ON_ID), which measures the differences in the yields that issuers must provide to issue in respective markets using the HSBC offshore RMB bond index from Bloomberg versus the CCDC's China Bond New Composite Index reported on the official website. This differential is negative for almost every quarter, with only two exceptions, indicating the lower cost of offshore bond issuance versus onshore issuance.

We then consider the advantages to the investor from holding offshore RMB bonds. Following Graham and Harvey (2001), McBrady and Schill (2007), Habib and Joy (2010) and Munro and Wooldridge (2010), who use the short-interest differential between the annual averages of local and the US nominal rates on bonds of 3-12 month maturity in percentage points, we take the HSBC offshore RMB bond index and subtract the HSBC Asian USD bond index both from Bloomberg (OFF_USD_ID). This gives an offshore-USD yield differential to gauge the relative return to investors from holding RMB debt securities offshore.[5] Finally we measure the 3-month expected maximum appreciation (MAX_APP) as a percentage return, to see if the currency movement is a factor

[5] McBrady and Schill (2007) use a covered interest differential plus the expected exchange rate depreciation.

influencing investors. The methodology used to create this variable is reported in Hui et al. (2008). These variables are illustrated in Figure 3.

Apart from these market developments there have been a number of regulatory changes over the period. In 2011 the entitlement of institutional investors to participate in the RMB offshore market is regulated by the RQFII quota approved and allocated by the China Securities and Regulatory Commission (CSRC) and State Administration of Foreign Exchange (SAFE). Quotas were raised for RQFIIs from RMB20bn to RMB50bn in April 2012 and to RMB200bn in December 2012, and March and May 2013 saw further relaxation of the criteria for RQFII access. To allow for these effects we introduce five dummy variables labelled RQFII_DUM taking values of one in the first quarter after each of the deregulation dates mentioned above.

Table 2 (Panel C) provides the correlation matrix for the market development variables, and shows that most of the market development indicators are strongly positively correlated with each other. The size of the debt securities market (LN_OFF) is positively correlated with all the other explanatory variables except its own growth rate (GR_OFF), secondary market turnover (TNVR) and the yield on new issues (ISSUE_YLD). Other variables have similar characteristics, implying that we need to select representative variables to avoid multicollinearity issues.

5. Results

5.1 The influence of firm characteristics

Before we explore the influence of market variables we report the effects of firm characteristics on the decision to participate in the offshore RMB market. Table 3 column 1 reports initial results using just the firm level information on the log of total assets, leverage, collateral assets, cash ratio and coverage ratio. The results indicate that firm size is important, raising the likelihood that a firm will issue in the current period if it has greater total assets. It is expected that larger firms will issue more readily than smaller ones due to the fixed costs of issuance, which will be less easily absorbed by a small firm (see previous studies of bond issuance decisions by Calomiris et al. 1995; Datta et al. 2000; Mizen and Tsoukas, 2014). Leland and Pyle (1977), Myers and Majluf (1984), Rajan and Zingales

(1995) and Pagano et al. (1998) suggest that the financial health of the firm is also an important determinant of access to external finance and therefore to the probability of bond issuance.

We also find leverage is important, and find a significant negative coefficient on this variable in our results. This tends to support the view that a firm with high leverage is less attractive to investors who view higher leverage as a sign of greater risk especially during recessions (see Cantor (1990) and Bougheas et al. (2006)). While there are others who argue the opposite, because a high rate of leverage can be seen as an indicator of a good credit standing and high borrowing capacity of firms in previous years (see Pagano et al. (1998), Datta et al. (2000) and Dennis and Mihov (2003)), this does not appear to be the case for the RMB offshore market.

Collateral in our model has a coefficient that is negative and significant. It has an adverse effect on issuance in the offshore market, which may at first sight appear counterintuitive. Greater ability to pledge collateral for debt finance has been found to be very important by Demirguc-Kunt and Maksimovic (1999) and Booth et al. (2001), but collateral assets may have greater impact on the cost of funding from banks compared with bond markets. If collateral assets significantly reduce the cost of bank funding they may reduce the probability of a firm issuing a debt security in the offshore RMB market.

We report the impact of the cash to total assets ratio, which has a coefficient that is positive and significant. This is a measure of liquidity, and in this case it appears to have a predominantly positive influence on the decision to participate in the RMB market. Just as high debt can send a signal of poor creditworthiness, deterring creditors from offering finance on the supply side, so low liquidity can have the same effect. Firms with higher liquidity may represent a lower risk for an investor. If this is that case then it overrides the demand side argument put forward by Hale and Santos (2008) and Guariglia et al. (2011) who show firms with more liquidity take longer to enter the public bond market due to the fact that they have substantial internal funds.

Other variables considered in studies of external finance in emerging markets do not appear significant. We allowed for the coverage ratio of interest payments and profitability but neither was

influential over the decision to participate in the RMB market. Ratings data were too scarce to be used in our study.

5.2 Market development and relative returns

In Table 3 column 2 to 5 we control for firm characteristics but we also consider the influence of the RMB market characteristics, beginning with market size and growth. We introduce the variables individually due to the high correlation between them, before selecting a subset of representative variables to measure the influence of market developments on market participation.

The market size and growth variables are log RMB debt securities outstanding (LN_OFF), the new issuance of RMB debt securities (ISSUE_OFF) and secondary market turnover (TNVR). These are introduced one by one due to the high correlation between these measures. All variables except turnover are highly significant. LN_OFF and OFF_ISSUE are influential over issuance because a deep and growing market attracts investors and issuers alike. Greater volume lowers the costs of issue for the former, and according to diffusion theories draws in new internal adopters, the same effect enhances liquidity for the investors. Mizen and Tsoukas (2014) and Mizen et al. (2012) have shown that market depth matters for the development of offshore markets in other emerging economies, and the results reported here confirm that this is the case for the RMB offshore market.

We now consider what financial advantages may be available to the issuer and the investor in RMB offshore markets. In Table 4 we test the impact of the relative yield on RMB offshore bonds versus the onshore yield (OFF_ON_ID), to establish whether there is any cost advantage to using the offshore market rather than the onshore market. When we include this offshore-onshore differential in column 1 we find that the coefficient has a positive and mildly significant effect on the decision to participate in the market. When the issuer obtains RMB at a lower cost than would be possible in the onshore RMB debt securities market this spurs greater market participation by mainland firms in the RMB offshore market in Hong Kong.

This advantage does not only apply to mainland firms that have access to onshore debt markets, it also applies to foreign firms with access to debt issued in USD. The cross currency swap rate for RMB-USD measures the advantage from swapping the proceeds of a RMB debt issue back into USD. The coefficient on this variable is positive and significant therefore there are advantages to using the offshore RMB market. It makes the market very attractive for offshore issuers such as multinationals, and as a result it has a positive influence on market participation decision by firms that require US dollars (see Table 5 column 2).

Having discussed the incentives for issuers to participate in the offshore market, we consider the incentives for investors. We find there are advantages to the investor from holding offshore RMB bonds compared to the return available in other currencies when we compare the US dollar return over a comparable holding period with the offshore return. Using methods introduced by Graham and Harvey (2001), McBrady and Schill (2007), Habib and Joy (2010) and Munro and Wooldridge (2010) to create an offshore-US dollar interest differential (OFF_USD_ID), we find it has a positive and significant coefficient. This implies that the greater yield draws in investors, which creates indirect benefits to the issuer in the market in which there is a positive yield differential, hence participation rises.

Finally we measure the 3-month expected maximum appreciation (MAX_APP) as a percentage return, using the methodology used to by Hui et al. (2008). This measure has been used to gauge the benefits from appreciation in the RMB versus the USD that are factored into their calculation of the yield on holding RMB denominated assets such as offshore RMB debt securities. In column 3 we find that the expected direction of movement in the RMB versus the USD has a negative effect on participation in the market. This is surprising, since there has been an appreciation in the RMB versus the USD since the period of managed floating, but when we examine our own sample we find there is a dominating period when the appreciation was unexpectedly reversed and this had a strong negative effect on investors and caused participation in the market by issuers to decline other things equal.

We hypothesize that banks are the main beneficiaries of lower funding costs and greater investor participation, particularly for the CDs that form a substantial part of the debt securities issued in the

offshore market. Therefore in Table 5 we report interactions of the dummy BANK, which is one if the issuer of debt securities is a bank and zero otherwise, with the cost and return variables. The findings are stark – the coefficient is positive and significant for the BANK interaction with each of the interest differentials, but on each differential the coefficient is insignificant. This demonstrates clearly that the banks take advantage of the lower cost issuance arising from interest differentials offshore versus onshore, and they also benefit as investors gain greater access to the market in search of yield.

5.3 The effects of sector, investor participation and RMB liquidity

In Table 5 we explore whether certain types of firms from particular sectors are more inclined to participate in the RMB offshore market than others. It has been suggested in our interviews with Hong Kong based banks that mainland based real estate and public utility companies tend to be able to issue more cheaply offshore than onshore. When we include a dummy for firms in the mainland real estate and public utilities sectors (MNLD_REPU) we find it has a positive and significant coefficient. They have a positive inclination to participate in the market simply by virtue of being in these sectors. Similarly, multinational firms have a positive inclination to participate. When we include a foreign issuer dummy (FORISSUE_DUM) we find these firms are also positively inclined to participate independently of other reasons arising from characteristics. We can conjecture that they draw an advantage from participation because they signal their involvement in the market, and learn the procedures for issuing and allocating the proceeds. We also find that non-financial firms (NON_FIN_DUM) are positively inclined to participate in the offshore market, possibly because they have use for RMB in the mainland.

To some extent participation may be driven by deregulation of the rules for investors who purchase the debt securities issued. While the offshore RMB debt securities market grew in size there was simultaneous deregulation to liberalize access to financial markets in the mainland and offshore. The authorities relaxed the requirements placed on institutional investors to participate in the RMB offshore market, and raised the RQFII quota limits in successive steps making the market more accessible and more attractive to overseas investors. We find that coefficients on the five deregulation dummies associated with these steps are all positive and highly significant in Table 6 when we

introduce the RQFII dummies one by one. They demonstrate that deregulation had a positive impact on the decision to participate in the RMB offshore market. However, these variables do not remain significant when we add other market development indicators such as RMB bonds outstanding, or issuance in RMB. The developments that have occurred in the market have occurred at the same time as the deregulation of the RQFII investor rules.

In a similar fashion, just prior to deregulation of RQFII rules and the expansion of the RBM offshore bond market, residents of Hong Kong were permitted to hold greater deposit balances in RMB. As firms built up larger asset balances in RMB, there were incentives to issue liabilities in the same currency. The RMB deposits also provided the banks with a surplus of RMB assets that could be used for financing of cross border trade, as controls were relaxed. It is an example of other ways that the capital account was being progressively liberalized as offshore banking and finance were allowed to develop. We use the logarithm of the holdings of RMB deposits residents of Hong Kong (LN_DEP) and growth of deposits (GR_DEP) to measure these effects. In Table 7 column 1 we find that the coefficient associated with LN_DEP is positive and significant, indicating that the liberalization enhanced the attractions of issuing RMB offshore bonds. The coefficient associated with the GR_DEP in column 2 has the opposite sign because growth peaked in 2010, and subsequently declined (see figure 2), therefore the increase in RMB debt securities issued by firms is negatively associated with a falling growth rate in deposit volumes. Finally in column 3 we report the effects of greater international issuance in the offshore RMB market, measured by the proportion of new issues made by foreign firms. As this proportion rises the incentives to participate in the market rise.

5.4 Combining Results

There is a high degree of collinearity between market development variables due to the fact that the market simultaneously expanded as it was deregulated; it is also the case that the cost advantages to issuers represented by interest differentials, swap rates and relative investor returns are also correlated. In Table 8 we combine those variables that are not strongly correlated. This requires that we drop the deregulation dummies, and include only one or two market depth variables, and add interest differentials, swap rates and relative investor returns individually in separate columns. Despite

these restrictions, we see that market size, foreign issuer participation, a positive yield differential with the returns available in the United States or a positive swap rate, increase market participation. We also see that real estate and public utilities companies have strong positive incentives to participate in the market compared to companies in other sectors.

We conclude that there are firm specific determinants, such as size, leverage, collateral assets and cash that determine participation in the RMB offshore market. There are also market depth, cost advantages and risk management factors that influence the decision to engage in the market. These determinants encourage 'internal adopters', using the terminology of Molyneux and Shambroukh (1996), to issue debt securities in this new market. Firms in some sectors, such as real estate, public utilities and banking, and foreign multinationals are more inclined to participate than other sectors, making these types of firms 'external adopters' that are pioneers in the offshore bond market.

6. Conclusions

Financial innovation can create new products that have significant implications for the firms that make use of them. Examples of these products include 'junk' bonds, securitized products, and CDS contracts, where each new product has had a significant impact on the financial arrangements of firms as they have embraced them. In this paper we explore the adoption of offshore corporate debt securities as the market for renminbi (RBM) financial products was liberalized. The opening of a new market for offshore RMB debt securities marked a critical step in capital account liberalization in China and provided a new source of RMB finance for firms engaged with the mainland.

Using bespoke firm-level issuance data from the Hong Kong Monetary Authority (HKMA) at a quarterly frequency matched with balance sheet data from Compustat Global we test several hypotheses concerning the influence of firm characteristics and market developments on participation in the offshore RMB market. Our paper shows that firm size, leverage, collateral assets and cash promote engagement with the offshore market. In addition greater depth and liquidity of the market, lower costs of issuance versus onshore or foreign currency alternatives, favourable swap rates and exchange rate appreciation are also influential. These changes occurred at much the same time as a relaxation of regulations by the authorities, the growth of RMB deposits and greater foreign issuance of RMB debt securities. Together they positively affected firms' and investors' decisions to engage in the offshore RMB debt securities market.

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Figure 1

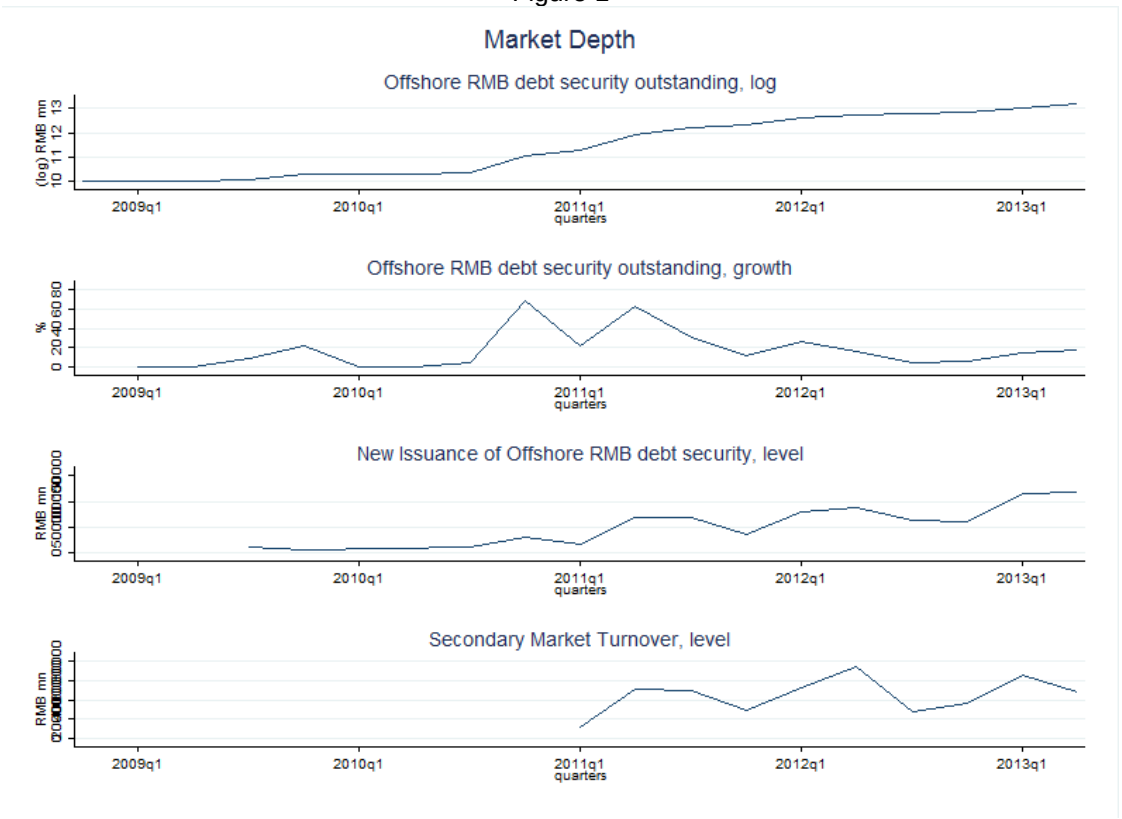

Figure 2

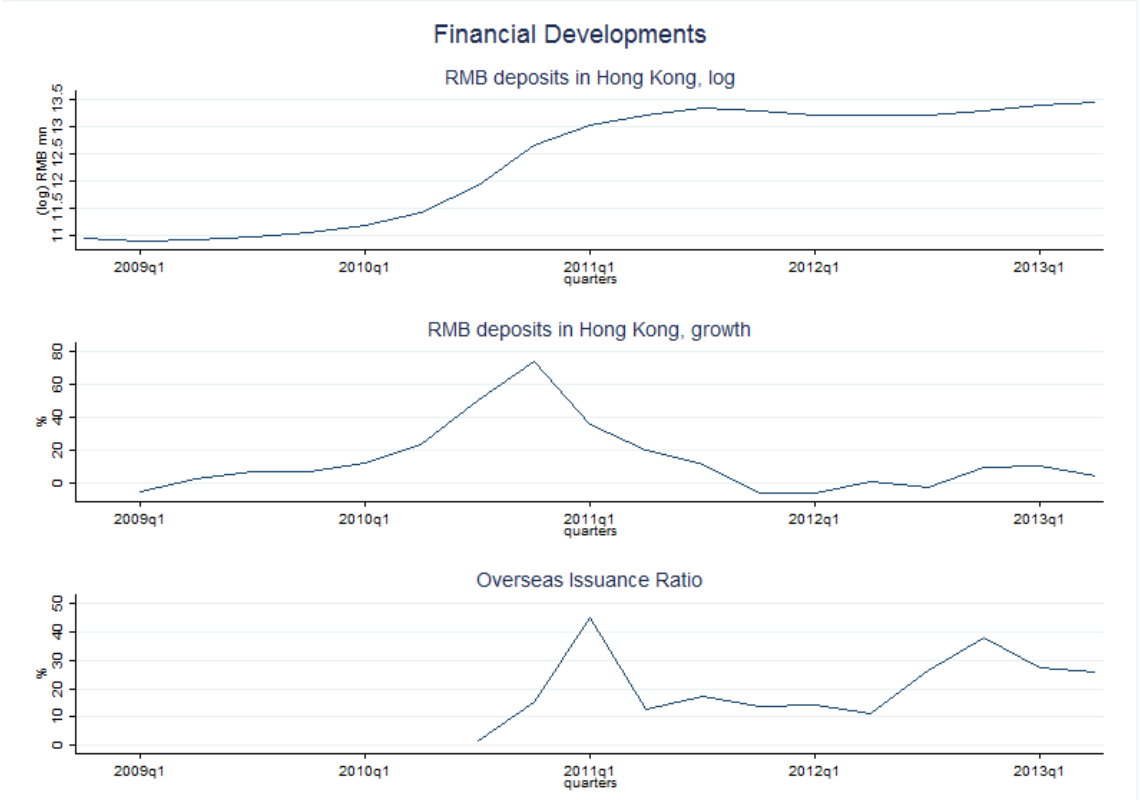

Figure 3

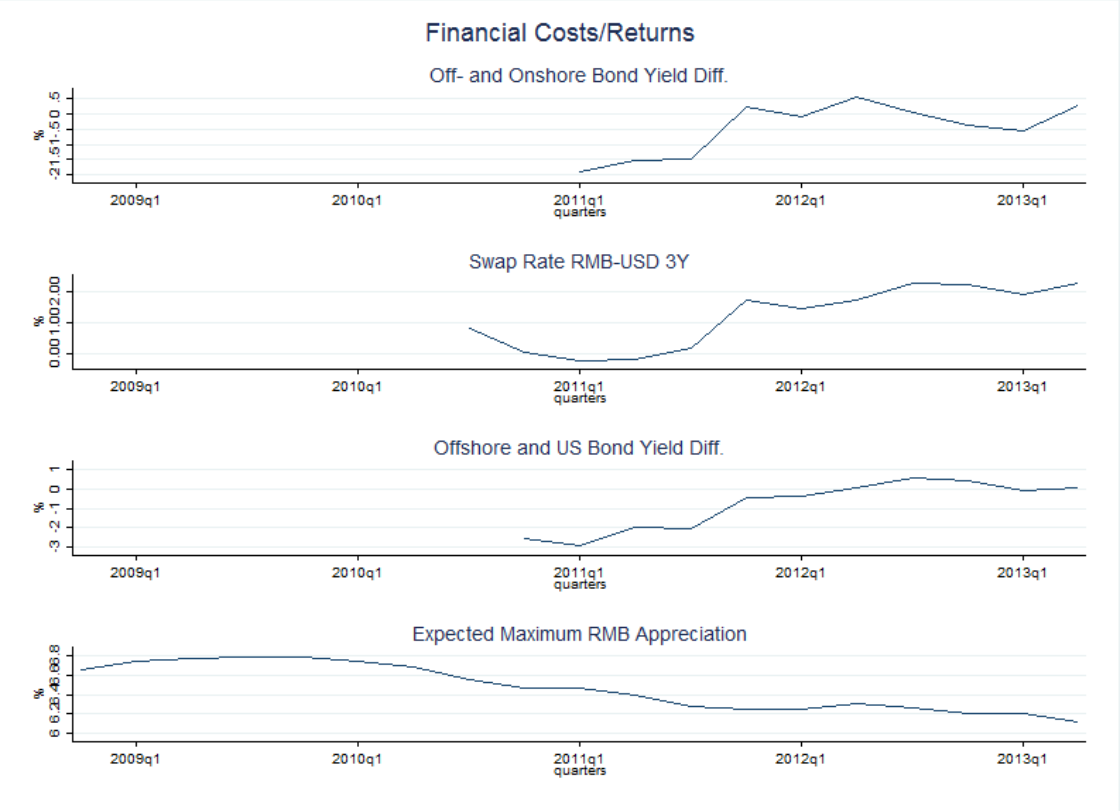
Financial Costs/Returns
Off- and Onshore Bond Yield Diff.
%
-2 -1.5 -1 -.5 0 .5
2009q1
2010q1
2011q1
2012q1
2013q1
quarters
Swap Rate RMB-USD 3Y
%
0.00 1.00 2.00
2009q1
2010q1
2011q1
2012q1
2013q1
quarters
Offshore and US Bond Yield Diff.
%
-3 -2 -1 0 1
2009q1
2010q1
2011q1
2012q1
2013q1
quarters
Expected Maximum RMB Appreciation
%
2009q1
2010q1
2011q1
2012q1
2013q1
quarters

Table 1 Bond issuing firms by country

	Frequency (No)	Percent of sample (%)
AUS	32	1.5
AUT	16	0.7
BRA	71	3.3
CHL	17	0.8
CHN	419	19.4
DEU	76	3.5
FRA	124	5.7
GBR	148	6.9
HKG	553	25.6
IND	28	1.3
JPN	54	2.5
KOR	44	2.0
MEX	18	0.8
NLD	34	1.6
NZL	17	0.8
PHL	17	0.8
RUS	33	1.5
SGP	109	5.1
SWE	36	1.7
TWN	159	7.4
USA	153	7.1
Total	2158	100.0

Table 2 Summary Statistics

Panel A Firm Level Variables

	ISSUE	PROF	LEVER	SIZE	LIQ	COLL	CASHA	COV	RTNG_F	RTNG_M	RTNG_SP
Count	2158	1097	1916	2030	1082	1953	2030	868	35	87	78
Mean	.1302132	.1408807	.1872925	12.02007	.7968455	.1871312	.1490033	.0197562	4.98371	4.64574	4.29666
Sd	.3366158	.1083013	.1300055	2.449877	2.340621	.2149145	.0880997	.0163403	1.78486	2.39218	2.19336
Min	0	0	.0009818	5.873922	0	.0013318	.0081772	-.0168856	1	-2	-2
Max	1	.5426536	.5920483	18.92364	38.26584	.807569	.5725091	.090736	8	9	10

Panel B Correlation Coefficients (All Countries) Firm Characteristics

	ISSUE	PROF	LEVER	SIZE	LIQ	COLL	CASHA	COV
ISSUE	1							
PROF	-0.0101	1						
LEVER	0.0119	-0.249***	1					
LSIZE	-0.0303	-0.142***	0.0891**	1				
LIQ	-0.0125	-0.0988***	-0.0523	-0.0272	1			
COLL	-0.0409	-0.164***	0.311***	0.222***	-0.161***	1		
CASHA	0.0181	0.00241	-0.220***	-0.244***	-0.00864	-0.317***	1	
COV	0.0154	0.209***	0.201***	-0.0519	-0.115***	0.244***	-0.0630	1

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

Panel C Correlation Coefficients (All Countries) Market Development Variables

	LN_OFF	ISSUE_OFF	TNVR	LN_DEP	GR_DEP	FOR_ISSUE	OFF_ON_ID	SWP-USD	OFF_USD_ID	MAX_APP
LN_OFF	1									
ISSUE_OFF	0.785***	1								
TNVR	0.539	0.788***	1							
LN_DEP	0.775***	0.784***	0.537	1						
GR_DEP	-0.705**	-0.359	-0.361	-0.442	1					
FOR-ISSUE	-0.185	-0.292	-0.613*	-0.258	0.597*	1				
OFF_ON_ID	0.788***	0.432	0.353	0.416	-0.865***	-0.356	1			
SWP-USD	0.901***	0.485	0.221	0.542	-0.731**	0.000342	0.879***	1		
OFF_USD_ID	0.914***	0.514	0.332	0.517	-0.779***	-0.138	0.888***	0.972***	1	
MAX_APP	-0.909***	-0.697**	-0.362	-0.881***	0.664**	0.125	-0.680**	-0.822***	-0.769***	1

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

Table 3 RMB Offshore Participation: Firm Level or Market Depth Measures

	(1)	(2)	(3)	(4)
LN_SIZE	0.148***	0.141***	0.141***	0.130***
	(0.031)	(0.031)	(0.032)	(0.033)
LEVER	-1.289*	-1.832**	-1.863**	-2.064***
	(0.680)	(0.725)	(0.724)	(0.762)
COLATERAL	-1.570***	-1.711***	-1.596***	-1.919***
	(0.485)	(0.479)	(0.478)	(0.511)
CASHA	2.576***	1.860**	1.927**	1.746**
	(0.856)	(0.817)	(0.832)	(0.852)
LN_OFF		1.001***		
		(0.086)		
ISSUE_OFF			0.017***	
			(0.002)	
FOR_ISSUE				
TNVR				0.000
				(0.000)
Constant	-3.781***	-15.466***	-4.211***	-2.933***
	(0.495)	(1.166)	(0.514)	(0.535)
No. of Obs	1707	1707	1338	938
Zero outcomes	1468	1468	1099	717
Nonzero outcomes	239	239	239	221
Log-lik.	-636.11	-532.95	-538.20	-456.44
LR Chi2	110.40	316.72	179.45	111.34
	(0.00000)	(0.00000)	(0.00000)	(0.00000)

Models estimated using Complementary-Log-Log model.
* p<0.1, ** p<0.05, *** p<0.01

Table 4 RMB Offshore Participation: Interest Differentials

	(1)	(2)	(3)	(4)
LN_SIZE	0.131***	0.137***	0.131***	0.138***
	(0.033)	(0.031)	(0.031)	(0.032)
LEVER	-2.063***	-1.670**	-1.660**	-1.876**
	(0.763)	(0.718)	(0.728)	(0.729)
COLATERAL	-1.925***	-1.740***	-1.798***	-1.658***
	(0.511)	(0.479)	(0.488)	(0.480)
CASHA	1.743**	1.797**	1.967**	1.874**
	(0.848)	(0.822)	(0.822)	(0.814)
OFF_ON_ID	0.137*			
	(0.083)			
SWP-USD		0.385***		
		(0.076)		
OFF_USD_ID			0.280***	
			(0.059)	
MAX_APP				-5.837***
				(0.508)
Constant	-2.628***	-3.472***	-2.667***	33.720***
	(0.507)	(0.498)	(0.488)	(3.235)
No. of Obs	938	1139	1047	1707
Zero outcomes	717	902	816	1468
Nonzero outcomes	221	237	231	239
Log-lik.	-456.13	-517.16	-490.11	-526.18
LR Chi2	111.97	130.65	124.80	330.26
	(0.00000)	(0.00000)	(0.00000)	(0.00000)

Models estimated using Complementary-Log-Log model.
* p<0.1, ** p<0.05, *** p<0.01

Table 5 RMB Offshore Participation: Interest Differentials and Bank Interactions

	(1)	(2)	(3)
LN_SIZE	0.145***	0.155***	0.054
	(0.033)	(0.032)	(0.036)
LEVER	-2.328***	-2.064***	-0.502
	(0.773)	(0.736)	(0.742)
COLATERAL	-2.196***	-2.212***	-0.374
	(0.526)	(0.502)	(0.519)
CASHA	1.714**	2.003**	2.087**
	(0.847)	(0.825)	(0.841)
OFF_ON_ID	-0.112		
	(0.124)		
BANK*OFF_ON_ID	0.405**		
	(0.160)		
OFF_USD_ID		-0.004	
		(0.081)	
BANK* OFF_USD_ID		0.503***	
		(0.115)	
SWP-USD			-0.134
			(0.115)
BANK* SWP-USD			0.815***
			(0.127)
Constant	-2.757***	-2.905***	-2.742***
	(0.506)	(0.490)	(0.545)
No. of Obs	938	1047	1139
Zero outcomes	717	816	902
Nonzero outcomes	221	231	237
Log-lik.	-453.01	-480.47	-493.98
LR Chi2	118.22	144.08	177.01
	(0.00000)	(0.00000)	(0.00000)

Models estimated using Complementary-Log-Log model.
* p<0.1, ** p<0.05, *** p<0.01

Table 6 RMB Offshore Participation: Deregulation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LN_SIZE	0.133***	0.135***	0.141***	0.152***	0.148***	0.143***	0.149***	0.151***
	(0.033)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
LEVER	-1.007	-1.538**	-1.657**	-1.521**	-1.504**	-1.442**	-1.481**	-1.386**
	(0.690)	(0.697)	(0.711)	(0.708)	(0.700)	(0.701)	(0.695)	(0.686)
COLATERAL	-1.760***	-1.699***	-1.697***	-1.679***	-1.692***	-1.620***	-1.470***	-1.502***
	(0.494)	(0.481)	(0.481)	(0.480)	(0.483)	(0.487)	(0.484)	(0.485)
CASHA	2.180**	1.932**	2.062**	2.199***	2.250***	2.549***	2.624***	2.557***
	(0.890)	(0.836)	(0.821)	(0.834)	(0.837)	(0.839)	(0.850)	(0.856)
MNLD_REPU	0.308*							
	(0.160)							
FORISSUE_DUM		3.868***						
		(0.710)						
NONFIN_DUM			1.491***					
			(0.142)					
RQFII_DUM1				1.324***				
				(0.133)				
RQFII_DUM2					1.289***			
					(0.131)			
RQFII_DUM3						1.423***		
						(0.140)		
RQFII_DUM4							1.320***	
							(0.178)	
RQFII_DUM5								1.058***
								(0.290)
Constant	-3.610***	-6.989***	-4.320***	-4.293***	-4.143***	-3.977***	-3.915***	-3.849***
	(0.508)	(0.851)	(0.491)	(0.496)	(0.491)	(0.494)	(0.503)	(0.501)
No. of Obs	1707	1707	1707	1707	1707	1707	1707	1707
Zero outcomes	1468	1468	1468	1468	1468	1468	1468	1468
Nonzero outcomes	239	239	239	239	239	239	239	239
Log-lik.	-634.31	-565.25	-574.60	-585.84	-589.92	-593.41	-615.23	-631.09
LR Chi2	113.99	252.11	233.42	210.95	202.78	195.81	152.15	120.44
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)

Models estimated using Complementary-Log-Log model.
* p<0.1, ** p<0.05, *** p<0.01

Table 7 RMB Offshore Participation: Other Market Developments

	(1)	(2)	(3)
LN_SIZE	0.131***	0.153***	0.133***
	(0.031)	(0.031)	(0.031)
LEVER	-1.867***	-1.254*	-1.564**
	(0.721)	(0.681)	(0.712)
COLATERAL	-1.729***	-1.603***	-1.765***
	(0.479)	(0.483)	(0.480)
CASHA	1.705**	2.506***	1.758**
	(0.819)	(0.853)	(0.835)
LN_DEP	1.774***		
	(0.204)		
GR_DEP		-1.057***	
		(0.355)	
FOR_ISSUE			0.173***
			(0.051)
Constant	-26.247***	-3.687***	-3.317***
	(2.733)	(0.495)	(0.501)
No. of Obs	1707	1701	1139
Zero outcomes	1468	1462	902
Nonzero outcomes	239	239	237
Log-lik.	-522.90	-629.99	-525.59
LR Chi2	336.82	120.81	113.79
	(0.00000)	(0.00000)	(0.00000)

Models estimated using Complementary-Log-Log model.
* p<0.1, ** p<0.05, *** p<0.01

Table 8 RMB Offshore Participation: Combined Explanations

	(1)	(2)	(3)	(4)	(5)
LN_SIZE	0.135***	0.135***	0.138***	0.114***	0.118***
	(0.032)	(0.032)	(0.032)	(0.033)	(0.033)
LEVER	-1.668**	-1.673**	-1.755**	-1.386*	-1.475**
	(0.735)	(0.735)	(0.728)	(0.734)	(0.728)
COLATERAL	-1.778***	-1.769***	-1.705***	-2.028***	-1.960***
	(0.489)	(0.488)	(0.480)	(0.496)	(0.488)
CASHA	2.011**	2.019**	1.842**	1.307	1.165
	(0.827)	(0.826)	(0.824)	(0.879)	(0.874)
ISSUE_OFF	0.008***	0.008***	0.010***	0.008***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
FOR_ISSUE	0.186**	0.172***	0.182***	0.169***	0.180***
	(0.073)	(0.065)	(0.061)	(0.065)	(0.061)
SWP-USD	-0.151		0.184**		0.192**
	(0.369)		(0.086)		(0.086)
OFF_USD_ID	0.286	0.169**		0.175**	
	(0.296)	(0.069)		(0.069)	
MNLD_REPU				0.487***	0.468***
				(0.164)	(0.163)
Constant	-3.484***	-3.729***	-4.223***	-3.458***	-3.975***
	(0.839)	(0.586)	(0.535)	(0.602)	(0.552)
No. of Obs	1047	1047	1139	1047	1139
Zero outcomes	816	816	902	816	902
Nonzero outcomes	231	231	237	231	237
Log-lik.	-484.09	-484.18	-506.40	-480.00	-502.47
LR Chi2	136.83	136.66	152.16	145.01	160.02
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)

Models estimated using Complementary-Log-Log model.
* p<0.1, ** p<0.05, *** p<0.01