China is rising as a substantial trading and investing power in world economy. A research on Chinese trade and Foreign Direct Investment (FDI) is attractive and is a hot topic. It is strongly supported theoretically and empirically that productivity is a key determinant on firm’s export and foreign investment. More recently, the credit crisis starting in 2008 and simultaneous collapse in export and FDI suggest the link between financial conditions and firm’s internationalization. Therefore, I base my research on a heterogeneous firm setup and pay more attention to the effect of financial factors on firms’ internationalization. Both the general theory on financial development and firm internationalization and the specific case in China are investigated in my research, which consists of the following four chapters:

1. Capital Endowment, Credit Constraint and FDI

There are emerging literatures on financial constraint and firms’ internationalization. Theory on this topic concludes that both real factor (productivity) and financial factor (bank credit) affect firms’ internationalization strategy. Specifically, the more productive the firm is, the more likely it engages in export or FDI, and the more developed its financial system, the more export or FDI a country does. These predictions are confirmed by empirical evidences using either country level or firm level data. (Manova2007, Muuls2008, Berman and Hericourt2008, Li and Yu2009, Buch et al.2009, Arndt et al.2009). But when we go to Chinese outward FDI data,
what we observe is inconsistent with the above theory predictions. As we know, China has a not well functioning financial system but China’s outward FDI flow increases dramatically from 5 billion in 2002 to 55.9 billion in 2008. 71% of the flow goes to Asian countries. More surprisingly, this increase is dominated by Chinese State-Owned Enterprises (SOEs) while these SOEs are less productive compared to private firms. These inconsistencies motivate my first work.

By comparison of SOEs with private firms in China, I find that these two types of firms differ not only in productivity, but also in initial capital endowment and access to external credit. Under state dominated financial system and partly for the existence of policy loans, Chinese SOEs have a relatively larger size of initial capital endowment and better access to external finance. Based on these facts, I develop a model which introduces initial capital endowment and external credit to explain the particular Chinese case. With this model, I investigate how capital endowment and external credit affect FDI? what explains the location of Chinese investment abroad?

In my model, a firm was born with a certain amount of capital. After its productivity is revealed, the firm distributes the capital in three investment projects, i.e. bond holding, domestic production and FDI. When the firm engages in FDI, it incurs an extra fixed cost compared to domestic production. And in this case, the firm could borrow bank credit with all the safe return from domestic investments as collateral to cover the additional cost.

Under this setup, I solve the threshold productivity and investment scale for each project from the non-arbitrage condition. My findings are as follows: Firstly, firms with more capital endowments face lower threshold to do FDI. Firms with larger capital endowment could provide more collateral when borrowing from banks. Therefore, they could get more external finance to cover the extra cost and guarantee the success of FDI. Secondly, firms with better access to external finance are more likely to do FDI. Against the same amount of collateral, firms facing a larger credit multiplier could get more bank credit to finance FDI. The two results help to interpret the above particular Chinese outward FDI facts. The advantage of SOEs in capital endowment and external credit availability over private firms as a consequence of Chinese financial system offsets their drawbacks in productivity and facilitates their dominant performance in FDI. Moreover, I also get the result that firms with high productivities invest more abroad than low productivity firms, which is realistic and consistent with previous theory predictions. As for the location of Chinese investment abroad, I model the fact that the extra fixed cost varies across host countries. And I
get a pecking order of host country for firms to invest in. Firms usually invest first to
countries with lower cost and then go further to those more costly. Due to geographic
proximity, cultural similarity and regional integration, the fixed cost of FDI in Asian
countries is lower compared to US or Europe, which explains why Chinese
multinational firms prefer Asian countries.

My work contributes to the rare research on financial constraint and FDI topic and
provides firstly a theoretical framework to explain the Chinese outward FDI puzzles.
The following two points distinguish my paper from existing ones: first, I model the
fact that firms can make their own decision on how much collateral they use to apply
for bank credit. When changes in internal or external financial resources availability
take place, firms can adjust their investment portfolio as well as the collateral.
Therefore, the relative dependence on internal versus external finance is variable;
second, the capital endowment plays more roles in my model. My paper is not the
first one to incorporate firms capital endowment. But in previous papers, capital
endowment is assigned to pay for the fixed cost and works as a substitute of external
finance such that firms borrow less from banks when they have more capital
endowment. In comparison, capital endowment in my model is a disposal fund and
firms decide by themselves how to use it. Therefore, the allocation of capital
endowment could affect both investment portfolio and collateral, and further
influences firms’ abilities to do FDI.

Basically, the present model is an investment portfolio model. A more fruitful
direction of extension is to incorporate product market into the current model and
investigate how the financial constraint impacts firm’s pricing strategy and
international activities. Moreover, to better understand the effect of financial factors,
it is important to introduce more financing sources besides bank credit and examine
how different financing sources interact and influence firms’ internationalization
strategy.

2. Multiple Finances, Margins of FDI and Aggregate Industry Productivity

An emerging body of literature documents the impact of financial development on
facilitating firm internationalization. While its function through providing a larger
scale of external finance and relaxing firms’ financial constraints is widely accepted,
it is not clear whether the diversification of financial channels and access to
alternative finance accompanied by financial development play a role. Attention was
drawn to the significance of multiple sources of financing by Chairman Alan
Greenspan after the 1997–98 Asian financial crisis (Greenspan, 2000). He argued that the development of alternative financing channels helped to fill the funding gap and stabilize business financing, which are especially important when either banks or capital markets freeze up in a crisis. Following this argument and motivated by the observation of credit crunch and simultaneous drawdown in FDI in the recent financial crisis, I address the question of whether the availability of alternative financing sources could help reduce the size of the collapse and influence welfare.

Multinational firms have better access to multiple sources of finance than their domestically oriented peers. Firstly, multinational firms are usually large and productive ones (Helpman et al., 2004; Mayer and Ottaviano, 2007). Thus, they have a better chance of accessing market finance other than bank borrowing (Cantillo and Wright, 2000). Moreover, some firms can gain additional financial support from business partners or from the government in the form of trade credit or special policy loans. Secondly, multinational firms have access to finance from different locations. They can obtain finance from their parent country, raise funds from their host country locally or in some cases explore lower-cost finance on a worldwide basis (Antras et al., 2009; Marin and Schnitzer, 2006). Meanwhile, the internal capital market among the parent company and its foreign affiliates plays an important role for multinational firms. The allocation of funds through the internal capital market extensively substitutes for external financing when the latter is costly (Desai et al., 2004). Finally, firms tend to keep a precautionary fund reserve to adapt to potential risks and uncertainty (Bates et al., 2009; Riddick and Whited, 2009), which is particularly the case for multinational firms considering the extra cost and higher risk in foreign operations.

Basing on a heterogeneous firm set-up, I model firms’ access to the internal capital market, bank finance as well as bond finance and investigate how firms’ adjustment among multiple sources of finance affects their performance in foreign direct investment and the aggregate industry productivity. I find that given exogenous contraction in the supply of bank finance, firms with different productivities react differently. Some less productive firms exit from the foreign market due to less access to bank finance and the unaffordable high cost of bond finance as a result of tougher competition in the bond market. In comparison, some relatively more productive firms can resort to bond finance as compensation for decreased bank finance to sustain their multinational status. The increased demand for bond finance as a substitute for bank finance by the surviving multinationals exacerbates the competition in the bond market and bids up the bond return rate, which triggers a
Melitz-type selection effect through the bond market and brings aggregate industry productivity gains. However, the divestment of those failing FDI firms and thus their reduced bond financing demand mitigate this effect.

The contribution of this research is threefold. Firstly, it complements the quickly growing literature on credit constraint and firm internationalization by firstly proposing the impact of alternative financing and differentiating firm responses to the worsening financial condition. Manova (2007) introduces credit constraint into Melitz’s (2003) research and argues that credit constraint restricts firms’ participation and performance in cross-border activity. Arndt et al. (2009), Berman and Hericourt (2008), Buch et al. (2009), Li and Yu (2009) and Muuls (2008) provide supportive evidence for this argument using firm-level data from different countries. I reproduce this result that bad credit conditions impede firms from engaging in FDI. Furthermore, I show that this effect could be mitigated with the existence of alternative financing and could vary across firms with different productivities. Compensation from bond finance and the reallocation of the available funds stabilize firm financing and facilitate FDI. However, only the most productive firms are able to take advantage of multiple sources of finance in smoothing foreign investment.

Secondly, this chapter contributes to the work on financial systems by analyzing the complementary and substitution effects of bank finance and bond finance. Precisely, I find that more productive firms use more alternative finance as substitution to reduce the risk of credit shortage and risk of investment; hence the failure rate of firms’ FDI is endogenized in my model. The less productive firms, on the contrary, being unable to afford more expensive alternative finance, will choose to exit FDI market facing credit crunch; hence I also observe complementary effects. In existing literature, Datta et al. (1999) and Diamond (1991) document the complement of bank finance to bond finance by monitoring. Davis and Mayer (1991) show that the bank and bond markets can be alternatives to each other but they are not perfect substitutes. Saidenberg and Strahan (1999) focus on the role of bank finance in providing a back-up source and liquidity insurance for bond finance against market shocks. The complementary and substitution effects coexist in my model, which vary across firms. Although the substitution of multiple sources of finance could reduce the sensitivity of FDI to adverse shocks, only a fraction of more productive firms benefit from it. The complementary effect of bond finance on bank finance for those less productive firms implies that bond finance cannot fully substitute for bank finance when the banking sector faces a crisis. In my model, it is the higher cost of bond finance over bank finance that hinders less productive firms from employing alternative financing, thus
leading to the limited substitutability between the two sources. My result suggests the importance of reducing the cost of bond finance and developing multi-layers of the financial system to satisfy the financing demand of various firms, especially those lower-quality firms.

Thirdly, I propose FDI-induced aggregate productivity gains for the parent country through the selection effect in the capital market. Although the question of whether FDI benefits its host country in productivity through technology spillover to local firms is widely discussed (Aitken and Harrison, 1999; Bitzer and Görg, 2005; Haskel et al., 2002; Javorcik, 2004; Keller and Yeaple, 2003), the impact of FDI on the parent country is rarely considered. Compared with Pottelsberghel and Lichtenberg (2001), who present evidence that a country gains from outward FDI through technology sourcing, I show that FDI could bring aggregate productivity gains for the parent country through the reallocation of financial resources towards more productive firms. The tougher competition in the bond market induced by the large FDI financing demand selects the least productive firms out of production and enhances the aggregate productivity. However, this effect is dampened due to firms’ adjustment among multiple sources of finance.

3. Financial Structure, Productivity and Risk of FDI

Risk is an important element in the theory of capital structure. Firms have incentives to reduce the costs associated with various risks by adjusting their capital structure (Desai et al. 2008). Meanwhile, risk is a key driving force for the volatility of investments and returns, which is particularly the case for FDI comparing to domestic investment. When comparing the FDI performances in countries with different financial systems, I find that outward FDI flows from countries with the market-based financial system like U.S. and U.K. are more volatile than those from countries with bank-based financial system like Germany and Japan. Hence in this chapter, I investigate the question that facing business risks in foreign direct investment, how multinational firms choose their sources of financing and whether financial structure influences the volatility of foreign direct investment. Answering this question will illuminate the potential link of financial system and volatility of FDI, and further provide policy implications about how to structure the financial system to stabilize FDI and assist firms’ internationalization.

In this chapter, I develop a partial equilibrium model based on information asymmetry. The hidden information is the productivity shock, which happens when firms engage
in FDI. A firm enters the model with a given amount of initial wealth as internal fund and draws its productivity. After knowing its own productivity, the firm makes two decisions, one is on whether investing abroad or not and the other is on the mean of financing if it does invest. There are two types of external finance: borrowing from bank or issuing corporate bonds from a group of bondholders.

The productivity shock in FDI is ex ante unknown to all the parties (either banks, bondholders or firms) but is only freely observable by the firm ex post. However, banks are willing to spend some resources to monitor the risk and convey the information to the borrowing firms after they pay an information acquisition fee (Fiore and Uhlig 2005). The bondholders, in contrast, have no incentive to do so since the risk is shared by each individual holder.

If the firm borrows from a bank, it can acquire the information about the potential shocks before making production decision. If the bank tells that a good shock will happen, the firm will engage in FDI and get positive profit. While if a bad shock is coming such that FDI is not profitable, the firm will abstain from FDI trial. Thus, when firms choose bank financing, they pay an extra fee to protect themselves from the risk of productivity shock. In contrast, if the firm goes to bond financing, it saves the information acquisition fee but expose itself to the risk. When facing a good shock, the firm gets positive net profit from FDI abstracting a fixed repayment to bondholders. However, it could happen that the firm is not able to repay the bondholders when suffering from a bad shock. In this case, the firm defaults and gets nothing whereas the bondholders have to pay a verification cost to completely seize all the generated revenues in the hands of the firm.

The first result the model delivers is firms’ partition in financing in terms of productivity. Those firms trying to carry out FDI but with relatively low productivities use bank finance to reveal the information on productivity shock ex ante and reduce the cost associated with potential risks, which is similar to purchasing insurance. In comparison, those firms with high productivities and thus able to resist against bad productivity shocks prefer to skip the costly middleman and issue bond directly.

Secondly, the variance of productivity shocks (the indicator of risks) also impacts firms’ financing choices. Firms investing in low-risk host countries prefer bond finance since in this case the insurance from banks is not worth. By contrast, firms who engage in FDI in more risky locations are more likely to use bank finance. This
result links the financial structure of FDI sourcing country with the characteristics of its host countries and the volatility of its FDI flows. Higher ratio of bond finance relative to bank finance is associated with safer and less volatile foreign investment.

Thirdly, the relative cost of bank finance and bond finance matters for firms’ financing decision. Intuitively, firms are inclined to use relatively cheaper finance. Moreover, decreasing the cost of either bank financing or bond financing helps reduce the productivity threshold of FDI and product price in foreign market as a result of reduced financial cost.

This chapter contributes to the rare research on the impact of financial development on FDI. What distinguishes it is the investigation on the structure effect of financial development. Besides reproducing the results that reduction of financing cost facilitates FDI as discussed in existing literatures, I set up a link between financial structure and FDI locations and volatilities based on the fact that foreign investment faces significant risks and firms have incentive to reduce such risks by choosing different financing instruments. By doing so, I suggest a new direction of policy on reforming the structure of financial systems to promote firm’s internationalization.

It also contributes to a huge body of capital structure literature in the following two aspects: first, I use productivity as a reference to segment firms in the choice of financing. I argue that productivity, besides leverage, size or cash flow focused in previous literatures, could be a key indication for firm’s profitability and default probability, and affect firm’s financing choices. Second, I incorporate product market into a financial structure model. Instead of calculating return of investment as in prior studies, I derive firms’ pricing and the revenues generated in product market such that the impact of financing on the intensive margin of FDI is discussed. In addition, I introduce the continuous stochastic states to calculate the cutoff productivities and derive the aggregation results for the whole economy.


Compared to enterprises engaging in domestic businesses only, exporters are more dependent on a stable and strong financial support for working capital and risk insurance (Amiti and Weinstein, 2009). In the downturn of international trade during the recent global financial crisis, exporters have been forced to contract exports or even exit from foreign market due to rising cost and limited availability of external
credit, apart from the shrinking market demand (Auboin, 2009; Chor and Manova, 2011). As the incumbent exporters play a dominant role in country-level export performances (Bernard and Jensen, 2004; Eaton et al., 2008; Manova and Zhang, 2009), how to support their survival and operations in foreign market is a topic of vital importance.

An emerging stream of literature focuses on the role of finance in fueling trade performance. While it is well recognized that finance is a key determinant of firms’ export participation and trade volumes (Beck, 2002; Beck, 2003; Muuls, 2008; Berman and Hericourt, 2010; Manova, 2007; Demir and Dahi, 2011), the impact of finance on exporter’s survival is largely neglected. In reality, exporters’ failures in foreign markets can be affected by the development of domestic financial system due to the following intrinsic disadvantages of exporters in financing. Exporting requires more external finance to cover additional fixed cost and variable cost, however due to longer shipment time and higher risks involved in international businesses, exporters generally find it more difficult to obtain sufficient funding. Therefore, they are more financially constrained and more sensitive to financial environment. (Chor and Manova, 2011; Feenstra et al., 2011; Manova et al., 2011). Moreover, compared to pure domestic businesses, cross-border activities have to endure additional negative shocks such as demand downturn in overseas markets or unexpected exchange rate fluctuations, all of which could induce a liquidity problem in the short run for exporters. Therefore, timely liquidity provision as a result of financial development is more favorable for exporters (Beck, 2002; Raddatz, 2006). Since exporters, in contrast to multinational firms, are more reliant on domestic finance, the development of domestic financial system is a crucial determinant of exporters’ survival. With the development of domestic financial system, exporters can have better access to external finance, especially long-term finance, consequently, they are less likely to encounter a financial problem and exit foreign market.

This chapter aims to fill the research gap of linking domestic financial development and export market survival. I use the data for Chinese manufacturing exporters during 1998-2008 to examine how the Chinese financial system, in transition toward a marketized one, shapes the dynamics of Chinese exporters in foreign markets. Although Chinese stock market and bond market have developed rapidly in recent years, bank credit is still a dominant source in firms’ external financing. Therefore, in this chapter I focus on the development of banking system as the proxy indicator of financial development. I label the Chinese financial system as ‘underdeveloped’ from the perspective of fostering businesses. Firstly, China was among the countries that
had the highest financing obstacles and most limited access to bank loans (World Economic Forum, 2010; Huang, 2006), which meant that Chinese firms faced severe credit constraints (Claessens and Tzioumis, 2006). Secondly, the financial system of China has been heavily state-dominated, which has not been always profit-oriented or efficient in lending (Allen et al., 2005; Guariglia and Poncet, 2008; Hasan et al., 2009; Lin and Zhang 2009). State-owned banks (SOBs), as the channel of state-owned enterprises’ budget allocation, accumulated a significant amount of non-performing loans (NPLs) that hindered their operations on a market rule. Although the NPL problem had been virtually dissolved under the direct intervention of Chinese government during the five-year interim period after China’s accession into the World Trade Organization (WTO) in 2001 (Deng et al., 2011), and the five major SOBs (“Big Five”) have become listed public companies, strong state presence still influences the decision mechanism of the whole banking system (Huang, 2009). Thirdly, due to the high level of state intervention in financial resources allocation, financial resources are distributed disproportionately among different types of firms and regions, SOBs have a strong “political pecking order” bias in issuing credit towards SOEs and foreign-invested enterprises over private enterprises, so that the private firms are most credit constrained (Huang, 2003; Linton, 2006; Poncet et al., 2010). Moreover, bank credit policy differentiation as an important means of implementing state support for regional economic development, together with the difference in foreign capital presence and liberalization in bank sectors and financial resources immobility across regions (World Bank, 2005; Guariglia and Poncet, 2008; Boyreau-Debray and Wei, 2005), results in financial development variation across provinces, which will be discussed in the later part of this chapter.

I study whether the financial development as a result of financial system reform unleashes Chinese exporters’ financial constraints and facilitates their survivals in foreign markets as well as whether this effect is homogeneous across industries, regions and different types of firms. In line with my discussion on ‘financial underdevelopment’ and relevant literature, I measure the level of provincial financial development with four indicators, namely size, efficiency, term structure of bank credit and the level of state intervention in funding investment. I find that financial development, either better availability of bank loans or higher efficiency of bank lending, increases exporter survival. These effects are augmented in industries with greater SOE presence, manifesting the prevailing financial distortion against non-state enterprises in these industries. The term structure of bank credit also matters but in a way that is contrary to a generalized case. The increasing ratio of medium and long term credits relative to short term ones expropriates the survival of exporting
manufacturing firms, mainly due to the fact that more and more medium and long term credits have been directed to non-manufacturing investments during the sample period. Finally lower level of state intervention in financial resources allocation is favorable for exporter survival but the effect could be dampened or even offset by high SOE presence. Moreover, financial development impacts different types of firms unevenly. It benefits domestic private firms significantly but has almost no effect on SOEs. For foreign-invested exporters, only the degree of state intervention and bank lending efficiency matter. Finally, in contrast to the negative effect of financial distortion in the eastern and coastal provinces, government participation plays a positive role on export survival through providing funds and public services in the western region.

The main contribution of this chapter is that it complements the quickly growing body of literature on finance and export by firstly exploring the relationship between financial development and exporter survival. The role of finance in fostering international trade has been confirmed by firm-level analyses (e.g. Muuls, 2008; Berman and Hericourt, 2010; Manova et al., 2011). Although the impact of finance on export participation and volumes has drawn due attention, its relationship with firms’ sustainability in foreign market has been untouched. Moreover, few of the existing literature examine the effect of macro-level financial development on exporters’ firm-level performance. This chapter builds a direct link between them and provides evidences of benefit of financial development in supporting exporter survival.

In addition, taking China as the subject for finance-trade nexus study generates more fruitful results. What makes China an interesting case is that China has achieved exceptional performance in export, measured either by volume or growth, with the support of a defective financial system and sizeable foreign capital. Comparing to the well documented function of foreign capital in partly compensating domestic financial market imperfection and fostering trade (Hericourt and Poncet, 2009; Li and Yu, 2009; Egger and Kesina, 2010; Jarreau and Poncet, 2011; Manova et al., 2011), my results illustrate the mixed moderating role of government in the impact of financial development on export. On one hand, due to the absence of high quality legal and financial institutions, the government, acting as an implicit credit guarantor for SOEs, aggravates the financial distortion against non-state firms and worsens their export survival. On the other hand, in regions that are less developed and lack good financial infrastructure, the government plays a positive role in mobilizing financial resources to satisfy enormous financing needs (Rajan and Zingales, 2001), and thus facilitates exporter survival. These evidences extend the line of research on financial
development and trade by proposing the significance of government activity, especially for countries with underdeveloped financial system and low quality of financial and legal institutions.