Chapter 6

Conclusions and Policy Implications

In this thesis, we have examined the drivers of large changes in fund flows (surges and sudden stops) and the dynamic relationship between (changes in) fund flows and equity returns, the exchange rate and the business cycle of the receiving country. A surge refers to exceptionally large capital inflows, while a sudden stop is defined as an abrupt and major reduction in capital inflows. Four research questions have been addressed:

1. How to identify surges of fund flows? How many waves of fund flow surges occurred during the last two decades? Are global (push) factors or domestic (pull) factors driving the occurrence of fund flow surges? Are these factors also the drivers of the magnitude of the surges?

2. How have fund flow sudden stops evolved over time and across countries? Are they mostly determined by global (push) factors or by domestic (pull) factors? What are the determinants of the magnitude of sudden stops?

3. Are international fund flows pro-cyclical or counter-cyclical from the perspective of
the receiving country? Following Kaminsky et al. (2005), we consider capital flows into a country to be procyclical when the correlation between the cyclical components of net capital inflows and output is positive. Likewise, capital flows are countercyclical when the correlation between the cyclical components of net capital inflows and output is negative.

4. What is the dynamic interaction between fund flows, equity returns and exchange rates?

These questions are highly relevant for understanding international fund flows, i.e. short-term cross-border investments by global funds, which deserve more attention due to their increasing volume and volatility.

We answer the first question in Chapter 2. There is hardly research on surges of international fund flows. The paper that comes closest to our research is Puy (2016) who calculates a diffusion index to measure the cyclicality of mutual funds flows. The author defines periods of at least two consecutive month inflows (outflows) as “surge phase” ("retrenchment phase"). Using a diffusion index to measure the share of countries experiencing the same phase each month he concludes that international portfolio flows exhibit strong cyclical behavior at the world level. In contrast, we identify the determinants of the occurrence and magnitude of surges of fund flows.

We identify surges of fund flows as follows: a surge episode occurs when the fund flows scaled by assets under management lies both in the top 30th percentile of a specific country’s distribution of fund flows and in the top 30th percentile of the entire sample’s distribution (Ghosh et al., 2014). Based on monthly data of 55 countries, we identify three surge waves for equity flows during 1996 to 2013 and two waves for bond flows from 2004 to 2013. To investigate the driving factors of occurrence of fund flow surges, we employ panel data probit models. The results suggest that global (push) factors (e.g. US industrial production, US equity returns, TED spread, VIX index and policy uncertainty) and contagion factors are the main drivers of fund flow surges. Only a few domestic (pull) factors are significant. To investigate the drivers of the magnitude of fund flow surges, we employ an OLS model and conclude that the magnitude of surges primarily depends on domestic (pull) factors. Overall, the findings in this chapter provide a better understanding of surges of international funds flows, which have never been studied before.

A few policy implications can also be drawn. Policy makers can influence the magnitude of surges by maintaining price stability, keeping moderate credit growth, and
enlarging their stock market capitalization. In particular, developing countries can opt for a more flexible exchange rate regime to control surges. Our results also suggest that although trade openness is helpful to decrease the likelihood of surges, it tends to make the surges more severe once they are occurred. Furthermore, capital controls are not helpful to control fund flow surges.

The second question is addressed in Chapter 3. Our contribution to the literature is threefold. First, this is the first study investigating sudden stops of fund flows. Sudden stops of fund flows are associated with financial turmoil and economic contraction and therefore deserve close attention. Second, this study shows that both push and pull factors are important in explaining sudden stops, while the magnitude of sudden stops is primarily driven by push factors. Third, our evidence has some interesting policy implications.

Following Calvo et al. (2004) and Forbes and Warnock (2012), we define the start of a sudden stop episode when the year-on-year change of fund flows is one standard deviation below the sample mean and eventually reaches two standard deviations below the sample mean. A sudden stop ends when the annual changes are above one standard deviation below its sample mean. We also employ an alternative identification scheme in the sensitivity analysis. Applying these methods to fund flows in 65 countries for January 2001 to June 2015, we identify four waves of sudden stops: in 2000-2001 (dotcom bust and 9/11 terrorist attacks), 2007-2009 (global financial crisis), 2011-2012 (European sovereign debt crisis) and 2014-2015 (global uncertainty). Among all the countries, high-income OECD countries are most likely to experience sudden stops, while lower-middle-income countries are least likely to witness sudden stops. To investigate the determinants of sudden stops, panel-data probit models and OLS models are employed. We find that global (push) factors, contagion factors, and domestic (pull) factors are all important in determining the likelihood of sudden stops, while the magnitude of sudden stops is dominated by global (push) factors. These findings have important policy implications. A country can decrease the likelihood of a sudden stop by accumulating foreign reserves, maintaining moderate credit growth, and integrating more with international trade markets. Besides, as a high degree of financial openness increases the likelihood of sudden stops, countries should be careful in liberalizing their financial markets.

Summarizing the findings in Chapter 2 and Chapter 3, we also come to a few interesting conclusions. First, the occurrence of fund flow surges is mainly driven by global factors, whereas the occurrence of sudden stops is determined by both global
factors and domestic factors. Regarding the magnitude, the magnitude of surges primarily depends on domestic factors, whereas the magnitude of sudden stops is mainly determined by global factors. Second, fund flow surges have predictive power for sudden stops. Large capital inflows (surges) are argued to deteriorate the economic fundamentals of the recipient country and therefore to increase the likelihood of sudden stops (Sula, 2010; Agosin and Huaita, 2012). Third, contagion variables are important for surges as well as for sudden stops. One country is more likely to experience extreme episodes (surges and sudden stops) if their neighbors or trader partners experience them. As to policy implications, moderate credit growth contributes to the economic stability, and therefore it is helpful to control both surges and sudden stops. Besides, capital controls are not helpful to control fund flow surges as well as sudden stops.

The third research question is addressed in Chapter 4. As noted by Gelos (2013), fund flows are more volatile than other types of capital flows. In addition, they play an increasingly important role in international financial markets and the transmission of shocks (Gelos, 2013; Raddatz and Schmukler, 2012). Hence, investigating the cyclicality of international fund flows is of great importance. Only two papers have examined the cyclicality of international fund flows. Raddatz and Schmukler (2012) use micro-level data from Emerging Portfolio Fund Research (EPFR) Global to analyze the behavior of investors and managers of mutual funds. Based on monthly data from the same source, Puy (2016) concludes that periods of poor (good) macroeconomic outlooks in advanced markets are associated with equity and bond outflows (inflows) at the world level. However, Raddatz and Schmukler (2012) and Puy (2016) do not investigate the relationship between country-level fund flows and domestic business cycles, which is the focus of our research following previous studies on the cyclicality of gross or net capital flows such as Broner et al. (2013).

We examine the cyclicality of fund flows, where we follow Kaminsky et al. (2005) in defining counter- and pro-cyclical as the correlation between the cyclical component of net capital inflows and output is negative and positive, respectively. Therefore, we first derive the cyclical component of international fund flows and industrial production. To test the cyclicality, three methods are employed: correlation-based method, regression-based method, and concordance index. Based on data for 68 countries covering the period from January 1996 to June 2013 for equity flows and January 2004 to June 2013 for bond flows, we find that contemporaneously fund flows are counter-cyclical. Compared with
equity flows, bond flows appear to behave in a somewhat more cyclical manner. In addition, the counter-cyclical behavior of fund flows becomes more significant after the global financial crisis. Although most empirical studies find that net and gross capital flows are pro-cyclical, our results suggest that fund flows tend to be counter-cyclical contemporaneously. One possible explanation for the counter-cyclical tendency is that fund flows tend to be positively related with domestic stock returns (Warther, 1995; Bohn and Tesar, 1996; Choe et al., 1999; Froot et al., 2001; Lizardo and Mollick, 2009; Tsai, 2009), while domestic stock returns are leading indicators of real economic activities (Stock and Watson, 2003). Therefore, fund flows are pro-cyclical ahead of business cycle and counter-cyclical contemporaneously.

Chapter 5 addresses the last research question and investigates the dynamic interaction between fund flows, equity returns and exchange rates. In this chapter, we extend the existing literature in several ways. First, we show that equity flows are positively related to each other within regions, especially in emerging market economies. Second, we analyze the interaction between equity flows, equity returns and exchange rates instead of the interaction between only two of these variables as most previous studies did. Third, whereas previous studies focus on aggregate capital flows, we use equity fund flows, which are very volatile. Fourth, although some previous studies employ VAR models to examine (bivariate) interactions at the country level (Hau and Rey, 2004; Siourounis, 2004), we employ a panel VAR model to investigate the interaction between equity flows, equity returns and exchange rates for a large sample of countries. Fifth, we examine whether these interactions are different across developed and emerging market economies. Finally, this chapter sheds light on the investment behavior of international funds. Previous studies provide some evidence for a portfolio-rebalancing strategy by international investors (Hau and Rey, 2006; Gyntelberg et al, 2014). Our results also provide evidence for a positive-feedback trading strategy.

We first calculate a correlation matrix of monthly equity flows to examine the univariate behavior of fund flows. Employing data for 55 countries from January 1996 to December 2015, we find that international equity flows are positively correlated across countries and even more positively correlated within regions. A country appears to attract more equity flows if its neighbors also attract much equity flows. Then, we propose three hypotheses regarding the dynamic interaction between international fund flows, equity returns and exchange rates and employ a correlation analysis and panel-VARX models to
examine them. The results suggest that larger equity inflows are associated with a currency appreciation and higher equity returns. Higher domestic equity returns will lead to domestic currency appreciation. In addition, higher equity returns will result in equity inflows in the first month and lead to equity outflows in the following three to five months. FX returns exert little influence on equity flows in the full sample, but they affect equity flows if we estimate separate models for emerging and developed countries. Regarding policy implications, we suggest that policy makers should pay close attention to the potential large-scale fund withdrawals if its neighbors are experiencing large fund outflows. Besides, financial volatility stemming from international fund flows are more substantial in emerging countries.

This thesis also has some limitations. First, in Chapter 2 and Chapter 3, given the fact that fund flow data has a monthly frequency, we omit a few variables that are only available on an annual frequency when modeling the driving factors of surges/sudden stops, such as external debt (% of nominal GDP) and fiscal balance. We add them in the sensitivity analysis. Also in Chapter 2 and 3, we may have some econometric limitations. Following related literature (e.g. Ghosh et al., 2014), we include lagged values of domestic factors to mitigate potential endogeneity. But the reverse causality problem for a few variables (e.g. expected REER depreciation) may not be completely solved by taking their lagged values. Given the goal of these chapters and the difficulty to find a proper instrumental variable for expected REER depreciation, we leave it for the future discussion and improvement.

Second, in Chapter 5, we did not investigate the role of exchange rate regime on the interaction between fund flows, equity returns and exchange rates because the number of countries in each of the exchange rate regimes is too small to construct a panel-VARX model. Future studies can focus on these interactions under different exchange rate regime countries employing other methods, such as estimating VAR model for countries with different exchange rate regimes and comparing their differences or employing an OLS model to investigate the role of interactions between exchange rate regime and equity flows in determining exchange rate dynamics.

Third, because of the data limitations for other types of fund flows, namely, money market funds, balanced funds and alternative funds, we only examine the behavior of equity fund flows in Chapter 3 and Chapter 5. In Chapter 2 and Chapter 4, we also consider the bond fund flows. Although equity funds and bond funds accounts for more
than 70% of total net fund assets, it is still meaningful to investigate the behavior of other types of funds. With the continuous improvement of data availability, future research can focus on this. Another suggestion for future research is a comparative study between fund flows and other capital flows. In particular, are the drivers of fund flows the same as those of other capital flows, such as portfolio flows, FDIs and debt flows? Do the surge/sudden stop periods of fund flows coincide with those of other types of capital flows? How different is the impact of fund flows on domestic economies compared to that of other capital flows?