Acknowledgements

Pursuing a doctor degree is really a tough work. Thanks to all the lovely individuals I met, it has become an unforgettable journey with not only stress and sweat, but also laughter, happiness and wonderful moments. At this moment, I want to express my sincere gratitude for all the individuals without whom this thesis could not have been finished.

Special appreciation and thanks go to my two great supervisors: Jakob de Haan and Bert Scholtens. They have spared no effort to train me and help me to become a better man. I feel so honored and so lucky to be their PhD candidate. I would like to thank Jakob, as he showed me how to make up a solid proposal, how to organize the paper, and how to do research rigorously. More important is that he always encourages me to face the challenge and to go further. These teachings will inspire me for a lifetime. I would like to thank Bert, as he instructed me to write a convincing paper in very detail. He is so kind and considerate. I could not have finished this thesis without his help.

I am indebted to my supervisor in University of Chinese Academy of Sciences (UCAS), Prof. Haizhen Yang. She led me into the door of the research. She taught me how to think logically and how to find valuable research questions based on the requirements in real economy. I am so grateful for her enduring support and help. I would also thank Prof. Xiaoguang Yang, who has provided valuable comments and suggestions on my research. His passion for research has inspired me to move forward.

A warm “Thank you!” goes to Prof. Jan Jacobs. He has provided a lot of instruction on the methodology in this thesis. Every time when I was confused and asked him for help, he answered my questions with great patience. I would also thank Prof. Rob Alessie for offering me valuable suggestions on econometric models in this thesis. I also benefits a lot from the comments by Prof. Steven Brakman and Prof. Dirk Bezemer in the PhD conference. Many thanks go to Prof. P. Tilmann, Prof. S.C.W. Eijffinger, and Prof. B.W. Lensink for reading all the chapters and for their valuable comments to improve this thesis.

I would like to thank all the professors who lauched the double-PhD program. I am also quite gratitude for the help from the entire SOM staff and the secretaries of GEM. Special thanks go to Arthur de Boer, Justin Drupsteen, Jenny Hill, Rina Koning, Ellen Nienhuis, Taco van der Vaart, and Herma van der Vleuten for helping me to deal with the
life and study difficulties in Groningen.

I am grateful to my colleagues Wen Chen, Jiasi Fan, Qiubin Huang, Aobo Jiang, Zhongbo Jing, Abdi Oumer, Kristiane Rozite, Yanping Zhao for sharing their insights with me. I am also grateful to all of my friends Yuwan Duan, Xin Fan, Feng Hu, Jing Jing, Ye Liu, Xiaofeng Liu, Leticia Lemus, Yan Shao, Donglin Sun, Kailan Tian, Xiao Wang, Jiyuan Wang, Sarayut Watchasit, Chengyong Xiao, Bingqian Yan, Yan Yan, Jingjing Zhang, Tao Zhu. Life in Groningen has become so colorful and joyful with all of your company. Special thanks go to all my brothers and sisters in Groningen Student Fellowship Xiaoshan Bai, Bing Han, Emily Jin, Zining Luo, Yiqun Ma, Chunshuang Qu, Yue Sun, Tian Wu, Rui Wu, Yuan Wu, Lujun Xu, Huifang Yin, Qian Zhou, Jiaxi Zhang, Haoxiao Zuo, Demi and Wanru. Whenever I was frustrated, you cheered me up. I could not have finished this thesis without your love and encouragement.

At last, I would like to express my sincere gratitude to my parents. Thank you for teaching me to appreciate this world. Thank you for your enduring support, encouragement, acceptance and love. Whatever happened, you are always by my side. Special thanks go to Peng, who shares all the happiness and pains with me in our lives. My beloved family, you are the most precious treasures in my life.

And thanks to all of you!

Suxiao Li
December 2016, Beijing
# Contents

1. **Introduction** ..................................................................................... 1  
   1.1 Background and motivation ............................................................. 1  
   1.2 Research questions ........................................................................ 6  
   1.3 Outline of the thesis ....................................................................... 7  

2. **Surges of International Fund Flows** ............................................. 11  
   2.1 Introduction .................................................................................. 11  
   2.2 Related literature ......................................................................... 14  
   2.3 Identifying surges of fund flows ..................................................... 16  
       2.3.1 Data on fund flows ................................................................. 17  
       2.3.2 Identifying surges ................................................................. 17  
   2.4 Methodology ................................................................................ 20  
       2.4.1 Models ................................................................................ 20  
       2.4.2 Definition of variables .......................................................... 21  
   2.5 Occurrence of surges .................................................................... 24  
       2.5.1 Baseline model .................................................................... 24  
       2.5.2 Developed versus developing countries .................................. 28  
       2.5.3 Sensitivity analysis ................................................................. 30  
   2.6 Magnitude of surges .................................................................... 32  
       2.6.1 Baseline model .................................................................... 32  
       2.6.2 Developed versus developing countries .................................. 34  
       2.6.3 Sensitivity analysis ................................................................. 36  
   2.7 Conclusions .................................................................................. 36  

3. **Sudden Stops of International Fund Flows** .................................. 39  
   3.1 Introduction .................................................................................. 39  
   3.2 Related literature ......................................................................... 41  
       3.2.1 Identification of sudden stops ............................................... 41  
       3.2.2 Determinants of sudden stops and their consequences .......... 42  
       3.2.3 Literature on fund flows ......................................................... 43  
   3.3 Identification and characteristics of fund flow sudden stops ........ 44  
       3.3.1 Data on fund flows ................................................................. 44  
       3.3.2 Identifying sudden stops ......................................................... 45  
       3.3.3 Economic developments: sudden stop and non-sudden stop periods ...... 50
3.4 Methodology ............................................................................................................. 52
  3.4.1 Models ................................................................................................................. 52
  3.4.2 Definition of variables ......................................................................................... 53
3.5 Occurrence of sudden stops ...................................................................................... 57
  3.5.1 Baseline model .................................................................................................... 57
  3.5.2 Developed versus developing countries .............................................................. 60
  3.5.3 Sensitivity analysis .............................................................................................. 62
3.6 Magnitude of sudden stops ....................................................................................... 63
  3.6.1 Baseline model .................................................................................................... 63
  3.6.2 Developed versus developing countries .............................................................. 65
  3.6.3 Sensitivity analysis .............................................................................................. 67
3.7 Conclusions ............................................................................................................... 67

4. Cyclical Behavior of International Fund Flows .......................................................... 71
  4.1 Introduction ............................................................................................................... 71
  4.2 Related literature ..................................................................................................... 75
  4.3 Data .......................................................................................................................... 77
  4.4 Methodology ............................................................................................................ 78
    4.4.1 Correlation-based approach .............................................................................. 78
    4.4.2 Regression-based approach ............................................................................. 78
  4.5 Cyclical behavior of fund flows .............................................................................. 80
    4.5.1 Correlation-based approach .............................................................................. 80
    4.5.2 Regression-based approach ............................................................................. 83
    4.5.3 OECD versus non-OECD countries ................................................................. 85
    4.5.4 Before versus after the global financial crisis ..................................................... 86
    4.5.5 Robustness check regarding the level of international fund flows ..................... 87
  4.6 Synchronization of fund flow cycles and business cycles ....................................... 88
    4.6.1 Concordance index ........................................................................................... 89
    4.6.2 Results .............................................................................................................. 90
  4.7 Conclusions ............................................................................................................... 91

5. Dynamic Interactions Between International Fund Flows, Equity Returns, and Exchange Rates ........................................................................................................ 93
  5.1 Introduction ............................................................................................................... 93
  5.2 Related literature and hypotheses ............................................................................ 95
    5.2.1 Interaction between international capital flows and equity returns ................. 96
    5.2.2 Interaction between international capital flows and exchange rates .............. 96
    5.2.3 Interaction between international capital flows, equity returns and exchange
List of Figures

Figure 1.1 Volume and growth rate of international capital flows ......................................................... 2
Figure 1.2 Total net asset of funds covered by EPFR Global (USD billion) ........................................... 4
Figure 1.3 Equity fund flows in China ........................................................................................................ 5

Figure 2.1 Fund flows into advanced and emerging markets (USD billion) ........................................... 12
Figure 2.2 Number of surge episodes (months) in each year ................................................................. 18
Figure 2.3 Number of surge episodes (months) by country groups ....................................................... 19
Figure 2.4 Number of surge episodes (months) by year and region ...................................................... 20

Figure 3.1 Total net assets of funds (USD billion) .................................................................................. 44
Figure 3.2 Identification of sudden stops: Argentina ............................................................................... 46
Figure 3.3 Number of sudden stops (months) for all countries .............................................................. 48
Figure 3.4 Number of sudden stops (months) by country groups .......................................................... 48
Figure 3.5 Number of sudden stops and economic contraction (months) .............................................. 51
Figure 3.6 Number of sudden stops and surges (months) ..................................................................... 52

Figure 4.1 The counter-cyclicality of fund flows: Austria ......................................................................... 81
Figure 4.2 Correlation of cyclical fund flows and cyclical industrial production .................................... 82
Figure 4.3 Correlation of fund flows and industrial production per income group ............................... 83
Figure 4.4 Correlation of level of fund flows and cyclical industrial production .................................... 87
Figure 4.5 Identification of business cycle ............................................................................................... 88
Figure 4.6 Concordance index for equity flows and bond flows ............................................................ 91
Figure 4.7 Concordance index for developed and developing countries .............................................. 91

Figure 5.1 Hypotheses ............................................................................................................................. 98
Figure 5.2 Total net asset of funds (USD billion) .................................................................................... 100
Figure 5.3 Equity flows (USD billion) ..................................................................................................... 101
Figure 5.4 Heat map of bilateral correlation of monthly equity flows .................................................... 103
Figure 5.5 Equity flows and equity price index: world aggregate and emerging markets .................. 104
Figure 5.6 Orthogonalized IRFs and cumulative orthogonalized IRFs for panel VARX(2) model ............. 112
Figure 5.7 Orthogonalized IRFs for panel VARX(1) model: developed versus emerging countries ........ 114
List of Tables

Table 2.1 Occurrence of surges: baseline model ................................................................. 27
Table 2.2 Occurrence of surges: developed versus developing countries (equity flows) ... 29
Table 2.3 Sensitivity analysis for surge episode and surge magnitude (equity flows) ...... 31
Table 2.4 Magnitude of surges: baseline model ................................................................. 33
Table 2.5 Magnitude of surges: developed versus developing countries (equity flows) ... 35

Table 3.1 Number of months and percentages of sudden stops by country groups ........ 50
Table 3.2 Mean and median performance of economic variables during sudden stop periods and non-sudden stop periods .............................................................................. 51
Table 3.3 Occurrence of sudden stops: baseline model ....................................................... 59
Table 3.4 Occurrence of sudden stops: developed versus developing countries .......... 61
Table 3.5 Magnitude of sudden stops: baseline model ....................................................... 64
Table 3.6 Magnitude of sudden stops: developed versus developing countries .......... 66

Table 4.1 Cyclicality of equity flows and bond flows: model 4.1 ........................................ 84
Table 4.2 Cyclicality of equity flows and bond flows: model 4.2 ........................................ 85
Table 4.3 Average fund flows when industrial production is above or below trend ....... 87
Table 4.4 Duration and amplitude of equity flow, bond flow and industrial production ... 90

Table 5.1 Pairwise correlation of equity flows: average within regions ......................... 103
Table 5.2 Correlation between monthly equity flows, equity returns and FX returns ..... 106
Table 5.3 Coefficients of four-variable panel VARX (2) model ........................................ 111
Table 5.4 Granger causality tests ...................................................................................... 111
List of Appendices

Appendix A.1 Countries included by region................................................................. 134
Appendix A.2 Definition of variables ........................................................................ 135
Appendix A.3 Sensitivity analysis for order of inclusion of variables (equity flows)..... 137
Appendix A.4 Occurrence of surges: developed versus developing countries (bond flows) .......................................................................................................................... 138
Appendix A.5 Sensitivity analysis for occurrence of surges: clog-log model ............ 139
Appendix A.6 Magnitude of surges: developed versus developing countries (bond flows) .......................................................................................................................... 140

Appendix B.1 Countries in the sample ....................................................................... 141
Appendix B.2 Sudden stops identified by the first method ........................................ 142
Appendix B.3 Definition of variables ........................................................................ 144
Appendix B.4 Summary statistics ............................................................................. 147
Appendix B.5 Correlation matrix .............................................................................. 148
Appendix B.6 Sensitivity analysis for order of inclusion of variables ....................... 149
Appendix B.7 Sensitivity analysis for occurrence of sudden stops: clog-log model..... 150
Appendix B.8 Sensitivity analysis for occurrence of sudden stops: variable changes .... 151
Appendix B.9 Sensitivity analysis for magnitude of sudden stops............................ 152

Appendix C.1 EPFR Global database coverage (February 2014)............................... 154
Appendix C.2 Countries in the sample ....................................................................... 155
Appendix C.3 Definition of variables ........................................................................ 156
Appendix C.4 Correlation matrix (after orthogonalization) ........................................ 156
Appendix C.5 Summary statistics ............................................................................. 157
Appendix C.6 Correlation result for each country ...................................................... 158
Appendix C.7 OECD versus non-OECD countries: model 4.2 ................................. 160
Appendix C.8 Before versus after the global financial crisis...................................... 161
Appendix C.9 Outcomes of two-samples t-test ............................................................ 163
Appendix C.10 Concordance index for each country .................................................. 164

Appendix D.1 Countries in the sample ....................................................................... 166
Appendix D.2 Interaction between equity flows and equity returns: three-variable panel VARX model .................................................................................................................. 167
Appendix D.3 Interaction between equity flows, equity returns and FX returns: developed versus emerging countries ................................................................. 169