

PHILIPP HARMS

International Macroeconomics

2nd edition



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Philipp Harms

International Macroeconomics

2nd, revised edition

Mohr Siebeck

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To Juli and Leo

Preface

Motivation

Several considerations motivated me to write this book. First and foremost, it was the hope that I could reduce the gap between existing textbooks at the advanced bachelors or masters level and current research in international macroeconomics.

Against the backdrop of economic globalization, the field of international macroeconomics has developed rapidly in recent years. This development was driven by the need to address new questions emerging from a changing economic environment, but it also reflects the new orientation of macroeconomics – most notably its stronger reliance on microeconomic concepts and methods. Integrating the microeconomic focus on individual optimization into the macroeconomic analysis of national and international aggregates has turned out to be extremely productive during the past decades: first, arguing in the spirit of the “New Neoclassical Synthesis” allows researchers to clearly identify the frictions that are responsible for the frequent deviation of observed economic outcomes from socially desirable equilibria. Second, such an approach makes it possible to thoroughly describe the role of consumers’ and firms’ expectations in shaping the behavior of macroeconomic aggregates. Finally, the specification of a clearly defined objective function enables researchers and policymakers to assess the normative implications of alternative policy measures and institutions.

The goal of this book is to build upon the recent developments in economic analysis as outlined above, and to present a coherent theoretical framework that can be used to address a large set of issues in the field of international macroeconomics. Presenting the core ingredients of dynamic general equilibrium models used in research and policy analysis, it nevertheless aims at making the presented concepts and methods digestible to an audience of advanced bachelor and master students. Moreover, it will highlight the policy-relevance of the formal approaches it presents, and it will juxtapose the most important theoretical insights with the available empirical evidence. Readers will thus be guided through the key concepts and methods of modern international macroeconomics, they will be enabled to critically appreciate both the contributions and the deficits of existing approaches, and they will learn to address relevant questions at the national or firm level in a rigorous and transparent fashion.

On the Second Edition

The decision to publish the second edition of this book in English, whereas the first edition was written in German, mirrors the fact that globalization not only influences individual decisions at the household, firm and government level as well as the conduct of academic research, but also the composition and ambition of academic audiences: nowadays, a growing number of courses are taught in English even in non-English speaking countries – often because they target an international group of students who use English as their “lingua franca”. The transition from “Internationale Makroökonomik” to “International Macroeconomics” intends to reflect this development.

What was originally meant to be a mere translation with a few adjustments eventually turned out to be a major overhaul. In fact, while the basic structure of the first edition has been preserved, large parts of the text have been completely re-written. This is for several reasons: first, some things have simply changed – e.g. the rules underlying the balance of payments. These were re-defined in the context of the sixth edition of the Balance of Payments and International Investment Position Manual, and a thorough revision of the previous text was necessary to account for these developments in order to provide readers with accurate and reliable information. Second, the roughly eight years since the publication of the first edition have seen dramatic changes not only in the economic environment, but also in the way both researchers and policymakers interpret the world and develop practical conclusions. While some of the discussions on the “Global Financial Crisis” and the “European Debt Crisis” are still ongoing, a textbook in international macroeconomics must give justice to the practical and intellectual implications of these events. In Chapter I, I will describe in more detail how this insight has shaped the contents of this book.

On a more technical level, the second edition allowed me to update the data material presented in this book. Moreover, my recent experience in teaching – both at Johannes Gutenberg University Mainz and at the Study Center Gerzensee – suggested that some concepts could (and should) be presented in a sharper and more coherent way. Finally, working on a second edition provided me with an opportunity to eliminate the errors that had been overlooked in the original version. While I am fully aware of the fact that new mistakes may have slipped into the text despite several rounds of proofreading, I do hope that the difference between errors removed and errors inserted is positive.

Audience

This book is written for students at the advanced bachelor or early master level in economics or management programs. Its focus on relevant policy questions

and the rich data material presented also make it recommendable to practitioners in policy institutions and business. To fully benefit from the text, readers need a basic knowledge of algebra as well as microeconomics and macroeconomics.

Other Textbooks

The goal of this book is to guide readers towards the current frontier of research in international macroeconomics. At the same time, formal concepts and analytical methods have been simplified wherever possible, and the presentation is meant to have a strong focus on real-world phenomena and problems of practical relevance. I tried to bridge the gap between typical undergraduate texts in international economics or international finance – such as Krugman, Melitz and Obstfeld (2014), Solnik and McLeavey (2013), or van Marrewijk (2012) – and books such as Turnovsky (1997), Mark (2001) or Vegh (2013), which address more advanced students in economics and put a stronger emphasis on methodological issues.

Every new textbook in international macroeconomics is necessarily inspired by the groundbreaking work of Obstfeld and Rogoff (1996). The present book adopts their focus on the intertemporal approach to the analysis of open economies, which is based on spelling out the dynamic optimization problems underlying individuals' and firms' decisions. However, it is less ambitious in terms of formal methods while devoting more space to the discussion of empirical phenomena and to economic policy applications. Moreover, it covers some of the progress in research that has been made during the past two decades and addresses the lessons to be learned from the recent financial crises.

Acknowledgements

I remain indebted to those who helped me with the first edition of this book. In addition, I would like to thank all those who, in one way or the other, contributed to putting together this second edition: Christoph Wirp navigated his way through the various technical and organizational challenges associated with making this manuscript compatible with the publisher's standards. Sofya Linkova took over this task and not only supported me in numerous practical matters – formatting and proofreading a constantly changing text – but also provided many insightful and challenging comments on the book. The same applies to my collaborators at Johannes Gutenberg University Mainz, Tobias Gruhle, Jakub Knaze, Laura Schmidt, and Jakob Schwab, whose suggestions contributed to making the book more readable. I am particularly grateful to Tobias Krahnke: his policy experience and knowledge of institutional details prevented me from making numerous mistakes.

I also owe a lot to various colleagues, most notably Bernd Kempa (University of Münster) who meticulously read the German first edition of this book and provided numerous important comments that have been adopted in the second edition. Carsten Hefeker (University of Siegen) read the entire English manuscript and made very helpful suggestions. Christoph Fischer (Bundesbank), Matthias Lutz (Swiss National Bank), Julian Schumacher (European Central Bank), Iryna Stewen (Johannes Gutenberg University Mainz), Leopold von Thadden (European Central Bank), and Beatrice Weder di Mauro (Johannes Gutenberg University Mainz) went through individual chapters and allowed me to amply benefit from their expertise on specific issues. An anonymous proof-reader polished the text and addressed numerous issues in spelling and style. Of course, I alone am responsible for all remaining mistakes.

Finally, I am indebted to my beloved wife Claudia who consistently supported me in this project, and to my sons Leonard and Julian who are a constant reminder of the fact that a favorable economic environment is a necessary, but by no means sufficient, condition for living a full and happy life.

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Chapter I

Introduction

I.1 Motivation

Over the last decades, the integration of global goods, services and capital markets has proceeded rapidly. As documented by Figure 1.1, the volume of global trade – measured as the total value of goods and services exports – amounted to 30 percent of global Gross Domestic Product (GDP) in 2014, substantially exceeding the level observed in 1970.

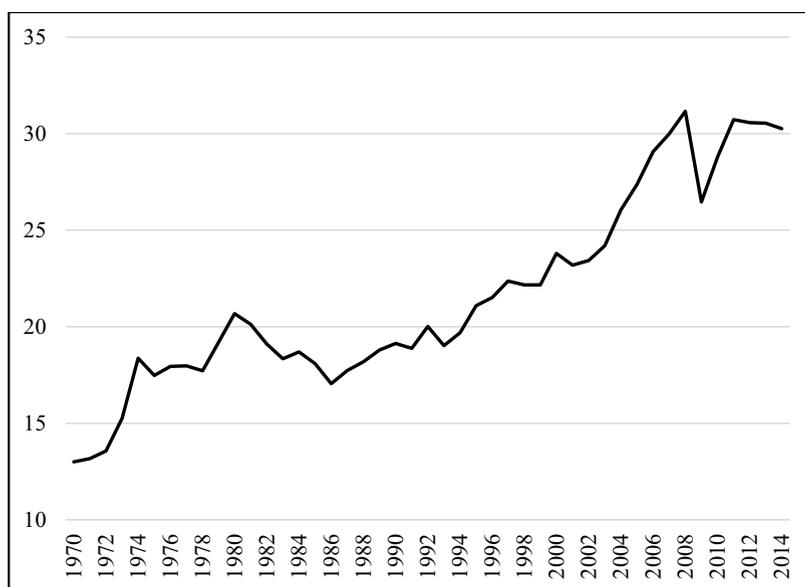


Figure 1.1 : The evolution of world trade. Sum of national exports of goods and services relative to global Gross Domestic Product (in percent). Source: World Bank (World Development Indicators).

The integration of *international capital markets* occurred at an even quicker pace. Figure 1.2 shows that in 2011 the value of countries' external assets and liabilities relative to their GDP was eight times higher than in 1970.

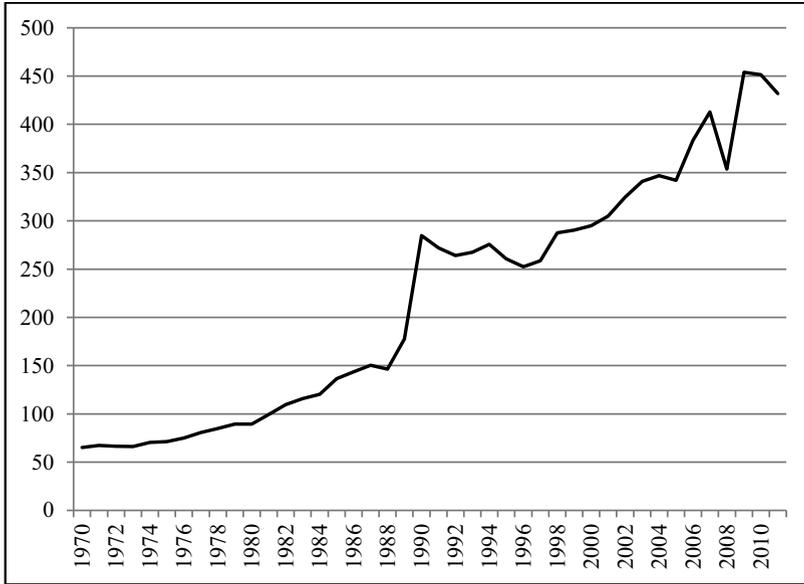


Figure 1.2 : The evolution of financial globalization (sum of countries' external assets and liabilities relative to global GDP, in percent). Source: Updated and extended version of the dataset constructed by Lane and Milesi-Ferretti (2007).

While the “*Global Financial Crisis*” of 2008 and the subsequent “*Great Trade Collapse*” are clearly discernible in these time series, the two graphs also illustrate that both the value of countries' external assets and liabilities and the volume of goods and services trade have recovered from these dramatic contractions.

There are many causes that explain the expansion of cross-border activities that could be observed in the 1990s and early 2000s and whose various aspects are often summarized under the term “*economic globalization*”: after the failure of planned economies in Central and Eastern Europe and the start of fundamental economic reforms in India and China, large countries that had been isolated for decades in the 20th century became integrated into global markets for goods, services and assets. At the same time, the world experienced a rapid deregulation of international trade and capital flows. And, finally, a set of technological innovations – most notably, the internet – substantially reduced both trade costs and the costs of retrieving and transmitting information, thus facilitating international transactions.

The pace at which the process of economic globalization advances may have slowed down in recent years. However, it is still true that there are few aspects

of economic activity which are not affected by the international environment. This applies to the conduct of economic policy, whose scope is substantially shaped by macroeconomic interdependencies, but also to individual household- and firm-level decisions, which are often affected by the evolution of exchange rates, access to financial markets, and global business cycle conditions. The experience of the past decades illustrates the income and welfare gains that potentially result from the integration of international goods and capital markets, but they also highlight the distributional conflicts and the vulnerability to crises that are associated with the rapid advance of globalization.

The goal of this book is to contribute to a better understanding of these developments by introducing readers to the arguments that are brought forward in academic and policy discussions on international macroeconomic issues, and by presenting the formal concepts and methods that are used to structure these discussions. After reading this book, readers should be in a position to interpret developments on international goods and capital markets, to assess the consequences of these developments for both economic policy and firm-level decisions, and to evaluate the normative implications of economic globalization.

I.2 International Macroeconomics in Times of Crises

When the first edition of this book went into print in the summer of 2008, signs of increasing financial stress were already visible both in the United States and in Europe. However, at that time few economists anticipated the turmoil on capital markets which started to unfold in September 2008, and which eventually resulted in the worst recession that many countries experienced after the Second World War. Even fewer economists expected that, less than three years after 2008, the Greek government would be forced to renege on its debt and that the Euro area would be on the brink of dissolution.

The “*Global Financial Crisis*” and the “*European Debt Crisis*” have heavily influenced economic reasoning in the past years, and the need to account for recent developments in the theory and application of international macroeconomics is one of the motivations for this book’s second edition. While the basic structure of the book has been preserved – in particular, its focus on dynamic models of the open economy with explicit microeconomic foundations – the revised text has absorbed some of the lessons learned from those crises. These lessons include, *inter alia*, a reduced trust in the efficiency of financial markets, a less optimistic perspective on the benefits of international capital flows, a redefinition of imperatives and taboos in monetary policy, and a reappraisal of fiscal policy as a tool of active stabilization policy. Finally, the different crises have exposed the substantial distributional conflicts that are associated with the

rapid advance of economic globalization, and it would be naïve to ignore the serious political consequences resulting from these conflicts.

As a reaction to the Global Financial Crisis, some prominent economists argued that the paradigm of “*Dynamic Stochastic General Equilibrium (DSGE)*” models, which had been shaping macroeconomic thinking for almost two decades, had run its course, and that it was time to replace this framework with models which did not rely on the assumptions of rational optimization and frictionless markets.¹ Regarding that debate, this book takes a middle ground: while it sticks to the principle of modeling macroeconomic variables as being driven by individuals’ and firms’ rational decisions, it acknowledges and repeatedly refers to the serious institutional defects and informational frictions prevailing on financial markets and the non-trivial distributional implications of financial globalization.

These novel developments and reappraisals will not be presented in a separate chapter. Instead, they will surface in various parts of the text, sometimes superseding the old exposition, sometimes adding a new perspective or new observations. In Chapter II, we will touch upon the consequences of the Global Financial Crisis when considering the importance of valuation effects for countries’ net international investment position. The distributional effects of financial globalization will be discussed repeatedly in Chapter III. Chapter V will confront the theoretical discussion of the growth effects of international capital flows with the rather sobering empirical evidence. In Chapter VI, we will link our general discussion of sovereign default to the European Debt Crisis. Chapter VIII on the nominal exchange rate will present the standard operating procedures of central banks, but also discuss the various “unconventional” policy measures adopted in times of crisis. Moreover, Chapter VIII will address the problem of balance of payments equilibrium within monetary unions. In Chapter X, finally, we will review the recent discussion on the perils of deflation, offer interpretations of the Global Financial Crisis and the European Debt Crisis as particular variants of “international financial crises”, and introduce the reader to the arguments brought forward in favor of imposing capital controls in order to limit international asset trade.

I.3 Overview

This section provides a brief overview of the book’s structure and outlines the questions that will be addressed in the following chapters.

¹ An easily accessible summary of the controversy about the future path of macroeconomics is offered by The Economist (2009). Bussière et al. (2013) sketch the lessons that international macroeconomics should learn from the Global Financial Crisis.

Chapter II presents the most important definitions and rules that are used by countries in compiling their *balance of payments* statistics. The exposition introduces the novel definitions and conventions stipulated by the sixth edition of the International Monetary Fund’s “*Balance of Payments and International Investment Position Manual (BPM6)*”. Moreover, it gives justice to the growing importance of *valuation effects* in shaping countries’ net international investment position. The material presented in this chapter is important for (at least) two reasons: first, a firm grasp of balance of payments accounting is of crucial importance for a correct interpretation of observed data. Second, the structure of the balance of payments motivates the *intertemporal approach to the current account*, which emphasizes the role of saving and investment decisions in determining a country’s current account balance.

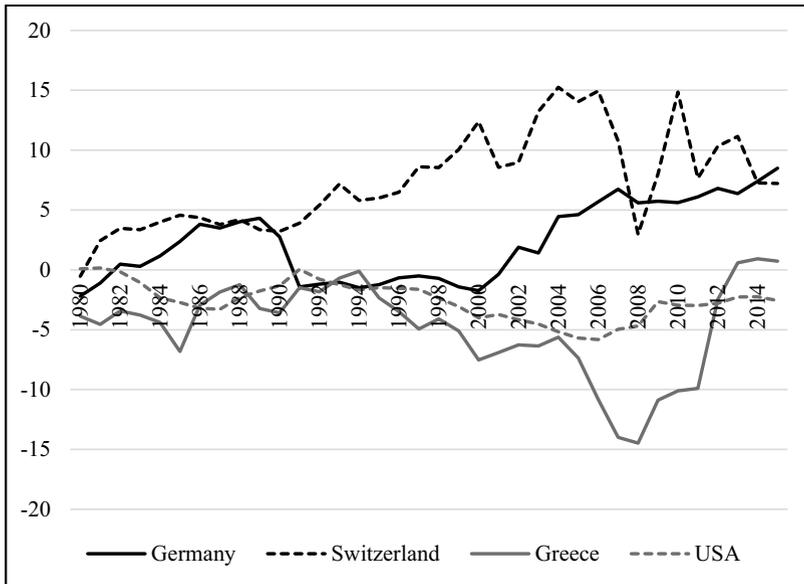


Figure 1.3 : Countries’ current account balances relative to their Gross Domestic Product (in percent). Source: IMF (World Economic Outlook database).

Figure 1.3 presents the current account balances (relative to GDP) for a sample of four countries. Apparently, the current accounts of Switzerland, Greece and the USA widened towards the mid-2000s, only to contract in the more recent past, while the current account of Germany has been following an upward trend since the turn of the millennium. To assess whether these developments are unusual – or even alarming – one needs an analytical toolbox that allows identification of the fundamental determinants of current account balances.

In **Chapter III**, we will introduce such an analytical framework. We will spell out the intertemporal optimization problems underlying individual saving and investment choices, and will show how the interaction of these decisions determines the volume and the direction of international capital flows. Moreover, we will discuss how *intertemporal trade* – i.e. the trade in assets that establish claims on future payments – affects aggregate welfare and the income distribution. While a large part of this chapter will be based on the notion that there is a *representative consumer* whose decisions determine aggregate savings and investment, we will also show how this concept can be reconciled with the idea of a market economy that is populated by independently optimizing individuals and firms. The focus on a market economy will also allow us to identify the *distributional effects* of financial globalization.

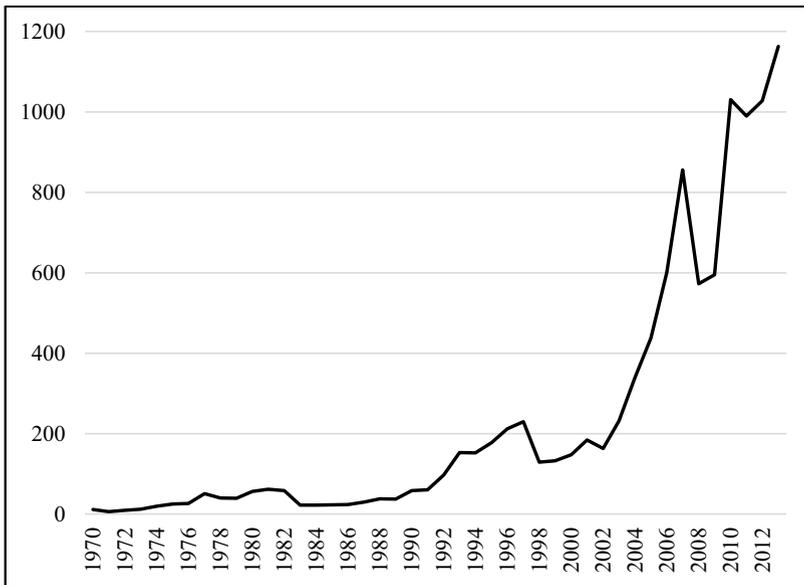


Figure 1.4 : Private foreign capital flows to emerging and developing economies (billions of US dollars). Source: World Bank (International Debt Statistics).

In **Chapter IV**, we will extend and modify the basic model of intertemporal trade to address several questions of practical policy relevance: how does demographic change affect international capital flows? What is the relationship between a government's budget deficit and the current account? Do the results of the standard model introduced in Chapter III change if international goods and services trade is hampered by physical and administrative barriers? And

how can the international capital market be used to diversify national income risks? To answer these questions, we will continue to use the basic principles of dynamic optimization, and we will demonstrate that the intertemporal approach offers a useful and flexible framework that allows to identify the fundamental determinants of current account balances and to characterize the consequences of financial globalization.

Chapter V will focus on the question of how the integration of international financial markets – in particular, the massive increase of private foreign capital flows to developing and emerging economies illustrated by Figure 1.4 – affects the growth prospects of recipient countries. To answer this question, we will first review the most important approaches to explaining *economic growth* in closed economies. In a next step, we will discuss what economic theory has to say on the consequences of integrated goods and asset markets for investment, innovation, and economic development. Finally, we will confront the theoretical predictions on the relationship between financial globalization and economic performance with the empirical evidence.

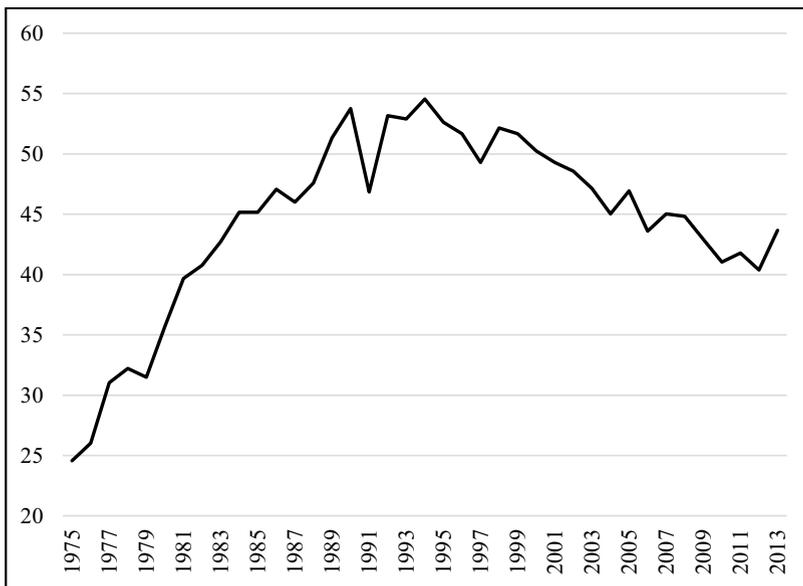


Figure 1.5 : Sovereigns in default (in percent of all sovereigns). Source: Beers and Nadeau (2015).²

² A sovereign in default is a government that has failed to make due payments on outstanding debt. When considering the large percentages in Figure 1.5, note that Beers and Nadeau (2015) do not weight countries by their aggregate output, population, or some other measure of size.

In **Chapter VI**, we will first explain how to assess the *sustainability* of countries' net international investment positions and current accounts, defining solvency as a country's ability to comply with its intertemporal budget constraint. We will then shift the focus from the ability to pay to the willingness to pay, and discuss the risks faced by investors when purchasing foreign assets. As indicated by Figure 1.5, the percentage of sovereign governments („sovereigns“) that failed to make due payments on their debt has decreased substantially since the mid-1990s. However, the *default* of the Argentinian government in 2000 and the near-bankruptcy of Greece in the context of the European Debt Crisis indicate that these risks are more prevalent than ever. Against this background, the second part of Chapter VI discusses the determinants and consequences of default and *expropriation* risks.

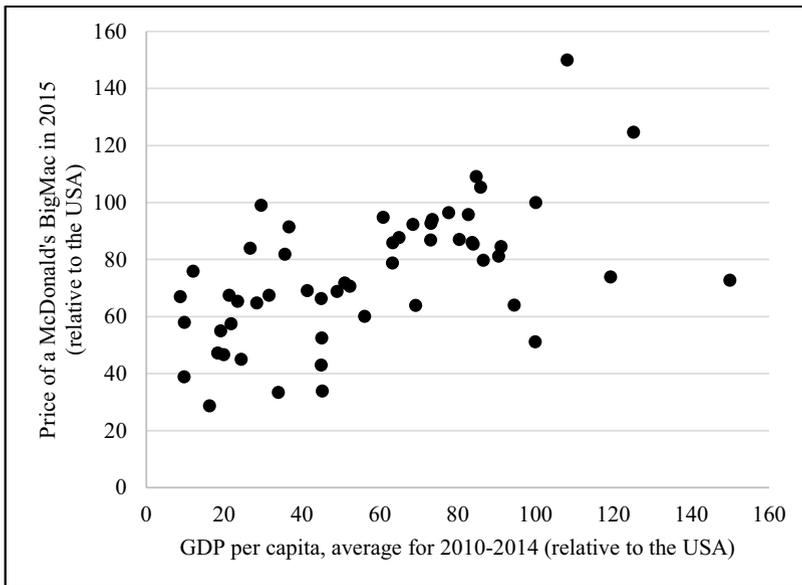


Figure 1.6 : Per capita incomes (average for 2010-2014, relative to the USA in percent) and relative prices of a McDonald's Big Mac in 2015 (relative to the USA in percent). Sources: *The Economist* and World Bank (World Development Indicators).

While the analytical framework presented in the first chapters largely assumed that frictionless goods and services trade eliminated all price differences across countries, **Chapter VII** will allow for deviations from the *law of one price* and introduce the *real exchange rate* as the relative price of a foreign goods bundle

in terms of a domestic goods bundle. We will identify different sources of international price differences and discuss both the theoretical foundations and the empirical relevance of *purchasing power parity* as a simple theory of the real exchange rate. In a next step, we will show that the existence of non-tradable goods may give rise to systematic deviations from purchasing power parity, driven either by windfall income gains or differences in labor productivity. The insights conveyed in that section will enable readers to better understand systematic cross-country differences in price levels, as indicated by Figure 1.6, which relates the relative price of a McDonald's Big Mac in 2015 to countries' average per capita income in the preceding five years.

The real exchange rate is often interpreted as indicating an economy's *price competitiveness*. In the later part of Chapter VII, we will discuss under which conditions such a view is justified, and present both the theory and the empirical evidence on the relationship between the real exchange rate and countries' net exports. Finally, we will show how this relationship can be used to identify the *equilibrium real exchange rate* – i.e. the value of the real exchange rate that is in line with fundamental technology and preference parameters as well as appropriate policy choices.

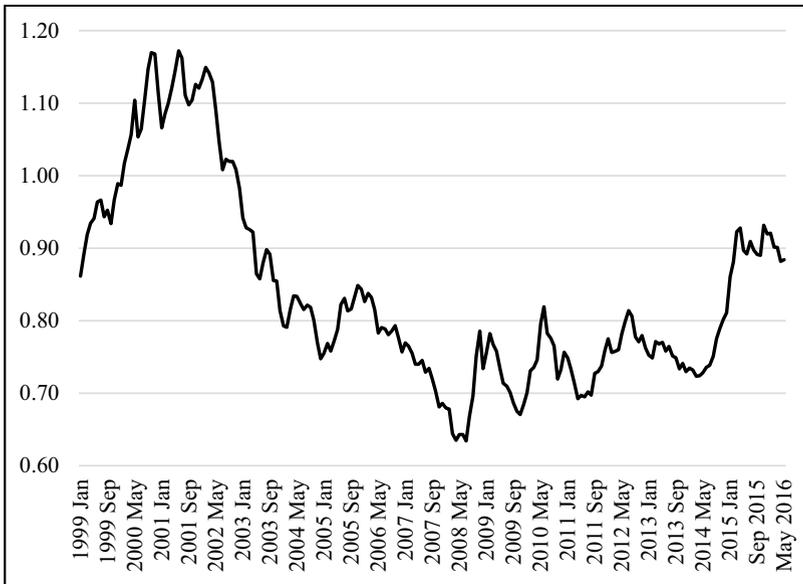


Figure 1.7 : The nominal USD/EUR exchange rate (Euros per US dollar). Source: IMF (International Financial Statistics).

Chapter VIII will focus on the determinants of the *nominal exchange rate*, which is the price of one currency in terms of another currency. We will start by presenting the basic operation of different *exchange rate regimes*, and explain the implications of these regimes for monetary policy. After this, we will introduce the concept of *uncovered interest rate parity*, which relates the expected evolution of the nominal exchange rate to cross-country interest rate differences. We will show that uncovered interest rate parity is the basis of the *asset market approach*, which highlights the importance of market participants' expectations in determining fluctuations of the exchange rate – for example, the USD/EUR exchange rate depicted in Figure 1.7.

Based on this insight, the *monetary model* interprets the current exchange rate as a function of observed and expected future monetary policy decisions and real-economy developments. While this perspective is of crucial importance when it comes to understanding exchange rate fluctuations, the monetary model fails to explain the observation that nominal exchange rates are usually more volatile than the underlying fundamentals. In Section VIII.5, we will therefore present the *Dornbusch “overshooting” model*, whose name goes back to the economist Rüdiger Dornbusch, and which explains the excess volatility of nominal exchange rates. Finally, we will explore how monetary authorities can affect exchange rates without varying the money supply through *sterilized foreign exchange interventions*, and we will present a simple *portfolio balance model* that relates the effectiveness of such interventions to the imperfect substitutability of foreign and domestic assets.

How do supply and demand shocks as well as monetary and fiscal policy affect aggregate output in open economies? To answer this question, **Chapter IX** will start by reviewing the crucial role of *nominal rigidities* – i.e. the delayed adjustment of goods prices – for the effect of aggregate demand on economic activity. We will introduce the *Mundell-Fleming model*, developed by Robert Mundell (1963) and Marcus Fleming (1962), as a simple framework to analyze the consequences of changes in government spending or variations of the money supply in a small open economy, and we will highlight the crucial role of the exchange rate regime for these effects. Furthermore, we will use the Mundell-Fleming model to demonstrate that a unilateral monetary expansion in a large open economy can come at the expense of other countries' output, and that the existence of such *beggars-thy-neighbor effects* underlines the importance of international monetary coordination. While its simplicity and transparency is a clear advantage of the Mundell-Fleming model, the absence of explicit microeconomic foundations makes it susceptible to the *Lucas critique*, i.e. the problem highlighted by Robert Lucas (1976) that structural relationships crucially depend on agents' expectations and may therefore change over time. Moreover,

the nature of the Mundell-Fleming model prevents us from drawing any meaningful normative conclusions. As a reaction to these problems, the *New Open Economy Macroeconomics (NOEM)* emerged as a new paradigm in the late 1990s and has dominated research and policy discussions in recent years. The second part of Chapter IX will present the details of a canonical NOEM model by Corsetti and Pesenti (2001). Using this model to analyze the effects of monetary and fiscal policy in open economies, we will show, e.g., that the normative implications of an expansionary monetary policy may deviate from the predictions of the Mundell-Fleming model once the effect of changing *terms of trade* on individuals' consumption possibilities are explicitly taken into account. In the last part of Chapter IX, we will consider alternative variants of the NOEM framework and will demonstrate how some of the model implications may change if one makes different assumptions on consumers' preferences or firms' price-setting strategies.

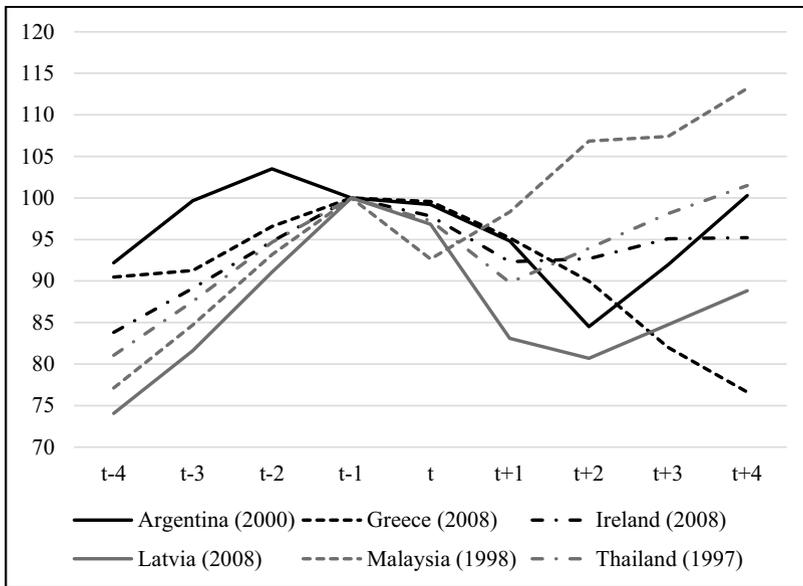


Figure 1.8 : Real GDP before and after an international financial crisis (with GDP normalized to 100 in the year $t-1$ that preceded the start of the crisis). Source: International Monetary Fund (World Economic Outlook database).

Chapter X will use the insights gained in previous chapters to approach some important questions faced by policymakers in open economies: what are the advantages and disadvantages of having a *fixed exchange rate*? And is there a case for limiting the cross-border trade of assets by imposing *capital controls*?

As we will argue in the first part of that chapter, the choice of an exchange rate regime reflects the fundamental trade-off between *flexibility* and *credibility*: a floating exchange rate offers the advantage that the central bank can quickly react to supply and demand shocks by adjusting its monetary policy. However, there is a risk that policymakers misuse this instrument to constantly stimulate demand. As a result, a systematically higher inflation rate – an *inflation bias* – may emerge. Given this problem, a fixed exchange rate may be an effective tool for fighting high inflation rates – especially in countries in which announcements to curb inflation are not trusted. However, a fixed exchange rate may also be a source of macroeconomic instability. Recent economic history is rife with examples where pegged currencies were the subject of *speculative attacks* such that monetary authorities eventually had to abandon a fixed exchange rate. In Section X.3, we will show that such *balance of payments crises* may result from an inconsistent economic policy, but that they may also be driven by the self-fulfilling expectations of foreign exchange market participants.

Models of currency crises are useful to explain the breakdown of fixed exchange rate regimes that several economies experienced in the late 1990s and early 2000s. However, the *Global Financial Crisis*, which started with the collapse of the US real estate market in 2007, followed a different pattern. In Section X.3.5, we will therefore present a simple framework that demonstrates how international linkages between banks can turn a national problem into a global capital market crisis. Section X.3.6, finally, relates the *European Debt Crisis* to the occurrence of a “*sudden stop*” – the reluctance of foreign investors to finance current account deficits – and explains how the consequences for countries in the Euro area differed from the experience of emerging markets in previous decades.

Regardless of whether they were driven by speculative attacks, a sudden stop of capital inflows or a contagion via the balance sheets of financial institutions, the episodes of economic turmoil witnessed in the past decades have illustrated the perils associated with financial globalization. Figure 1.8 shows the evolution of real GDP for a set of countries that were hit by some type of “international financial crisis”. While the specific time path – in particular, the depth of the recession and the speed of recovery – differs across countries, the figure illustrates the substantial output losses experienced by the affected economies. Given these observations, the last part of Chapter X addresses the choice of an *exchange rate regime* and discusses the question whether countries should limit the free cross-border flow of assets by establishing *capital controls*. Finally, the last subsections of Chapter X briefly describe the role of the *International Monetary Fund* and of the *World Bank* in the context of the *international financial architecture*.

I.4 A User's Manual

The structure of this book reflects the goal to present a coherent modeling framework that allows analyzing and assessing different aspects of economic reality. By moving from one chapter to another, the reader is guided towards a canonical model of the “New Open Macroeconomics (NOEM)”, i.e. the paradigm which has shaped research and policy discussions in recent years, and which is likely to guide theoretical and empirical analyses in the foreseeable future. This model will be presented in the second part of Chapter IX, and a thorough understanding of it requires being familiar with the contents of preceding chapters. Readers who are mainly interested in coming to terms with the NOEM paradigm should therefore adhere to the following roadmap: we recommend to start with the review of balance of payments accounting in Chapter II, as the relationships presented in this chapter motivate the intertemporal approach to the current account. Because this approach is essential for the NOEM, it is advisable to thoroughly read Chapter III. In Section IV.4, the reader is introduced to dynamic models with multiple goods, which are another key building block of the NOEM. Chapter VII on the real exchange rate is relevant since it introduces fundamental concepts like the law of one price, purchasing power parity, etc. Chapter VIII on the nominal exchange rate presents the concept of uncovered interest rate parity as well as a dynamic model of money demand, both important ingredients of the NOEM model. Finally, we stress the importance of reading the first sections of Chapter IX, since a thorough knowledge of the Mundell-Fleming model allows an appreciation of the strengths and limitations of the NOEM approach. In conclusion, Chapter X uses the insights from the previous chapters and discusses their implications both for the conduct of economic policy and for the design of monetary-policy institutions. In that chapter, we will present a simplified NOEM model, which accounts for the implications of individuals' and firms' intertemporal optimization, but reduces the sophisticated apparatus of the original framework to a small number of equations.

Readers who are mainly interested in topics at the intersection of international macroeconomics and development economics are also recommended to start with Chapters II and III. Section IV.2 considers the implications of demographic change, and thus focuses on a phenomenon that will influence capital flows between industrialized and developing countries for the foreseeable future. Chapter V explores the factors that determine the long-run growth of an economy and sheds light on the potential role of international investment. Both Chapter VI and the second part of Chapter X deal with the causes and consequences of international financial crises. While Chapter VI analyzes the incentives and mechanics behind sovereign defaults and expropriation, Chapter X

focuses on currency crises and the more recent Global Financial Crisis and European Debt Crisis. The first part of Chapter X discusses the advantages and shortcomings of alternative monetary policy arrangements, emphasizing the importance of credible rules – in particular in countries where monetary authorities do not have a reputation of guarding price stability. Based on the insights provided by this analysis, the last part of Chapter X presents some arguments that are relevant for the choice of policies and institutions in open economies – e.g. the exchange rate regime or the extent of capital mobility – and discusses the role of the World Bank and the International Monetary Fund.

Chapter II

The Balance of Payments

II.1 Definitions and Rules

II.1.1 Overview

The balance of payments reports all economic transactions that take place between domestic and foreign residents during a specific time period. While balance of payments data as such do not reveal any causal mechanisms, a firm grasp of the definitions and structural relationships of this accounting framework is of crucial importance for a correct interpretation and, ultimately, explanation of observed phenomena. This is why this book starts with an introduction to the most important principles underlying the balance of payments.¹

The transactions reported in the balance of payments may be subdivided into three basic categories: the first group comprises transactions reflecting the international trade in *goods* and *services*, as well as payments associated with the supply of *factors of production* (e.g. capital or labor) or *financial resources*, the second group of transactions reflects international *transfers*, i.e. the provision of resources that is not associated with any obvious material return, while the third category reflects the change of ownership of *assets*, with an “asset” representing any store of value that is associated with a claim on future payments – a bond, a share in a company, but also an internationally recognized means of payment (e.g. a liquid currency like the US dollar or gold).

The balance of payments consists of three accounts – the *current account*, the *capital account*, and the *financial account* – each of which reports a specific subset of the transactions mentioned above. In what follows, we will first describe the principles according to which observed transactions are assigned to the individual balance of payments accounts. After this, we will consider how these accounts are related to each other.

¹ Our presentation is based on the sixth edition of the International Monetary Fund’s *Balance of Payments and International Investment Position Manual* (IMF, 2009). The rules stipulated in this manual – the “*BPM6*” – have now been adopted by most institutions in charge of publishing the balance of payments (usually countries’ central banks). The changes associated with the transition from BPM5 to BPM6 were substantial. Nevertheless, you are likely to meet fellow students, practitioners and academics who will refer to the old (BPM5) framework for quite a while.