Global Imbalances from the Historical Perspective

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DECLARATION

I hereby declare that no parts of the thesis have been submitted to no other institution different from CEU towards a degree. To my knowledge nor does the thesis contains unreferenced material or ideas from other authors.

Marcela Veselkova

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Abstract

This dissertation examines the global imbalances from the historical perspective. The main aim is to examine the factors that determine the current account balances. To this end, this dissertation relies on the combination of the historical narrative and econometric analysis. The former traces changes in the current account imbalances and their reflex influence exerted on the course of economic and political events. The latter determines the short- and medium-run determinants of the current account balances in two eras of globalization. The results of Chapter 5 suggest that the transitory shocks to income are the main source of variation in the trade balance, whereas the permanent shocks to income determine the changes in the income Thus, in the short-run it is possible to increase the current account balance by fiscal or monetary tightening. Chapter 6 investigates the determinants of the current account balances for 14 countries in the period of 1865-1913 and 107 countries for the period of 1970-2007. The comparison has yielded several similarities. In both periods, the excess saving was redistributed to relatively rich countries with developed financial markets, high quality institutions and high proportion of dependent persons in the population. Second, the results suggest that the global savings glut and the twin deficits hypothesis are not mutually exclusive. But whereas the former holds for both eras of globalization and both developed and developing countries, the latter holds only in the short-run in the pre-War period and for developing countries in the period of 1970-2007.

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INTRODUCTION

Global imbalances are not a new phenomenon. Throughout the modern history, significant imbalances affected both politics and economic fortunes of countries. However, the past decade witnessed an unprecedented reversal in the current account financing. The current account deficit of the world's largest economy, the United States, reached the low of astonishing 803.5 billion USD or 6 percent of GDP in 2006 (WEO 2009). This deficit was mirrored by the growing current account surpluses in East Asian and oil-exporting countries. Thus, emerging economies transferred net savings to advanced economies.

The current debate surrounding the global imbalances typically contrasts two views: the twin deficits hypothesis and the global savings glut hypothesis. The former draws a link between the U.S. current account deficit and the growing U.S. budget deficit, which represents a decrease in the public savings (Sachs and Roubini 1987, Ueda 1988, Roubini 2006, Ito 2009). This argument draws on intertemporal models of the current account, which suggest that the government budget deficits induce current account deficits by redistributing income from future to present generations (Obstfeld and Rogoff 1998). In contrast stands the global savings glut hypothesis, according to which the excess of savings in developing countries combined with their underdeveloped financial markets directs these excess savings to the United States, whose deep and liquid financial markets are able to absorb it (Bernanke 2005; Blanchard *et al.* 2005; Caballero *et al.* 2006, 2008, 2009; Gruber and Kamin 2005; Legg *et al.* 2007; Prasad *et al.* 2006; Smaghi 2008). Thus, the two hypotheses yield different policy recommendations. According to the twin deficits hypothesis, the burden of adjustment rests on the United States and involves the cost of fiscal tightening. On the other hand, the global savings glut hypothesis suggests that it is the emerging countries that are able to trigger

the global imbalances adjustment through the policies aimed at the financial market development and capital account liberalization.

This dissertation contributes to this debate by examining the determinants of external balances from the historical perspective. I adopt the New Comparative Economic History approach, which "reflects a belief that economic processes can best be understood by systematically comparing experiences across time, regions, and, above all, countries (Hatton, O'Rourke and Taylor 2007, 1)." This approach is motivated by the belief that history can inform current debates by focusing on long-term rather than short-term trends (ibid, 2).

The dissertation consists of three interconnected parts. First part seeks to provide a comprehensive account of the global imbalances for nearly two centuries. The first four chapters therefore trace changes in the current account imbalances and their financial dimension, as captured by gross and net international capital flows and the build-up of international investment positions, and analyze the reflex influence that the global imbalances exerted on the course of economic and political events.

The second and the third part of the dissertation analyze the main determinants of global imbalances in two periods (1865-1913 and 1970-2007), which are commonly referred to as the two eras of globalization (see Sachs and Warner 1995, Williamson 1996, O'Rourke and Williamson 1999, Obstfeld and Taylor 2004). The choice of the periods under study was thus motivated by their resemblance, which allows to draw useful lessons from the past for the present. Both eras saw an unprecedented integration of national economies into the international economy through trade, capital and labor flows. This integration was brought by new telecommunication and transportation technologies, which connected distant world markets. In the past, these included telegraph, telephone, railways and steam vessels; nowadays they include the internet or the widespread commercial use of airplanes. New emerging economies joined the international economy. In the pre-War period, these were

mostly the countries of the New World, such as the United States, Canada, Australia, or Argentina. In the second era of globalization, the countries that joined the international economy were geographically located mostly in Asia and former Eastern bloc.

However, one should be cautious about the differences between two periods. Although both periods witnessed increasing capital mobility and financial integration (Obstfeld and Taylor 2004), the solution to the trilemma in the two periods was different. The classical gold standard of the prewar period rested on the fixed exchange rates and free capital mobility at the cost of independent monetary policy. Following the collapse of the Bretton Woods international monetary system, most of the developed countries gradually moved towards flexible exchange rates, whereas a significant part of the developing world continued to peg their currencies. Furthermore, the prewar period was characterized by significant flows of migrants from the Old World to vast empty territories of the New World. These are absent in the current era and impossible to replicate.

Given these similarities, as well as differences, it is of interest to test whether the current models and explanations of the global imbalances are not time- or place-specific. In other words, we may ask whether forces determining the savings and investment balances, and thus the current account balances, were the same in two eras of globalization. To this end, I examine the main determinants of the external balances. The determinants are separated to two groups: (1) cyclical factors that explain short-run fluctuations in external positions; and (2) structural factors that explain medium- to long-run movements of the current account balance. Chapter 5 focuses on the short-term fluctuations in the trade balance of seven European countries in the period of 1865-1913 and the U.S. trade balance in the period from 1957 to the first quarter of 2010. The emphasis is on the income effects and thus only permanent and transitory income shocks to the trade balance are considered. The results suggest the dominance of transitory over permanent shocks to income in determining the

trade balance fluctuations for both periods under study. As the results of these two chapters do now allow to differentiate between various sources of transitory income shocks, the final chapter adopts a different approach. It draws on the previous empirical works (Chinn and Prasad 2003; Ito and Chinn 2007, Chinn and Ito 2007a; and Debelle and Faruqee 1996), with the main focus on the twin deficits and the global savings glut hypothesis. Again, the empirical analysis relies upon the dataset comprised of 14 countries for the period of 1865 through 1913 and 107 countries (21 developed and 86 developing) for the period of 1970 through 2007. The results suggest that relatively rich countries with developed financial markets, high quality institutions and high proportion of dependent persons tend to run current account deficits (or lower surpluses) in both periods. The results provide mixed evidence for the twin deficits hypothesis. In the pre-War period, the government budget balance had a positive effect on the current account balance only in the short-run, suggesting the importance of the short-run fluctuations in the current account balance documented in Chapters 5. In the period of 1970-2007, the twin deficits hypothesis holds better for developing countries. In developed countries the government budget balance plays the role only when bond markets are incorporated. These results suggest that the twin deficit hypothesis and the global savings glut hypothesis are not mutually exclusive.

CHAPTER 1 – GLOBAL IMBALANCES UNDER PAX BRITANNICA[1]

1.1 Political and Economic Background

This chapter discusses the global imbalances during the first era of globalization. In the pre-1914 era, key creditor nations, principally Britain, France and Germany, developed enormous one-way positions in their portfolios. Britain, the largest capital exporter, invested abroad 5 percent of GDP between 1873 and 1913, reaching peak of 10 percent just before the outbreak of war (Fishlow 1985, 384). The capital exports of France averaged roughly half of British levels, both on average and for the final surge in 1910-13 (ibid). Germany, which was a latecomer, exported 2 percent of GDP (ibid). Overall, in 1914, these three countries accounted for almost three quarters of the world total foreign investment (Esteves 2008, 31, Table 1). As indicated by the title of Feis's (1930) book, Europe was a true banker of the world.

The capital exports were directed to various world regions. Great Britain invested mostly in the New World and within the Empire (see Stone 1999). The largest capital importer was the United States. However, foreign lending accounted for no more than 10 to 15 percent of the U.S. investment during the peak years (Fishlow 1985, 384). In contrast to Great Britain, France and Germany exported the capital mostly to their colonies and Europe, with Russia being the largest debtor. The majority of these capital flows were directed to relatively rich countries (Clemens and Williamson 2004; Schularick and Steger 2008; Esteves 2008), giving empirical support to the classical paradox of capital's failure to flow from

[1] An earlier draft of this chapter was presented 2nd Graduate Network Conference: Understanding Complexity – Methodology and Research Design in the Social Sciences, 11.12.2008-14.12.2008, Budapest.

countries with relatively high capital/labor ratios to countries with relatively low ratios (Lucas 1990).

The extended credit of Great Britain, France and Germany to the rest of the world coincided with *Pax Britannica*, a period of relative peace in Europe, following the Britain's victory in the Napoleonic wars. The international order established by the Congress of Vienna rested upon two elements (Gilpin 1975, 81-82). First, the redistribution of territory kept continental powers in check by their rivalries, allowing Britain to play a balancing and mediating role. Second, British naval supremacy and its control over the strategic control points enabled it to deny continental Europe's excess to the outside world and exercise a powerful influence over global politics.

The political stability during *Pax Britannica* decreased the political risks to investment, this way positively affecting the financial stability and creating an investment-supportive environment. For example, based on the study of the behavior of consol returns since 1729, Brown *et al.* (2006) identify a greater-than-50 % decline in volatility during the period of 1815-1914. They argue that since news events and macroeconomic variables cannot account for this period of reduced volatility, underlying political stability under *Pax Britannica* seems to be a more likely explanation.

In addition to the naval supremacy, *Pax Britannica* rested also on the British industrial supremacy.[2] When Queen Victoria opened the Great Exhibition in the Crystal Palace in 1851, Britain was a true "workshop of the world." The little island, with a population half that of France, produced about two-thirds of the world's coal, more than half of its iron and cotton

[2] There are several competing explanations of the origins and sources of the industrial revolution. Mokyr (1993, 6), inspired by Hartwell (1971b, 143-154) identifies four different schools of thought on the origins of the industrial revolution. The Social Change School (Toynbee or Polanyi) emphasizes the changes in the way economic transactions between people took place, i.e. emergence of formal, competitive, and impersonal markets in goods and factors of production. The starting point of Industrial Organization School (Mantoux) is the structure and scale of the firm, the rise of capitalist employment and eventually factory system, such as industrial mills, mines and railroads, where production was managed. The Macroeconomic School highlights the importance of the growth in the national income or the rate of capital formation (Rostow, Deane and Cole). Finally, the Technological School focuses on invention and diffusion of new technological knowledge and argues that changes in technology were primary to all other changes (Landes).

cloth (Landes 2003, 124). For few decades, it dominated the world trade. The British share of world trade to next highest was 2.01 (France) in 1860, 2.22 (France) in 1880, 2.17 (1890 Germany) in 1900 and 1.20 (the United States) in 1913 (Krasner 1976, 333). British income *per capita* was higher than that of its continental neighbors. In 1860 *per capita* income was about £32.6 for the United Kingdom, £21.1 for France (1859), and £13.3 for Germany (1860-9 average, 1913 area) (Landes 2003, 124). Globally, the ratio of British value of *per capita* income to next highest was 0.91 (US) in 1860, 1.30 (US) in 1880, 1.05 (1899 US) in 1900 and 0.92 (US) in 1913 (Krasner 1976, 333).

From the point of view of this study, an important effect of the industrial revolution was the accumulation of capital in hands of a small, but numerically increasing, class of investors, with only a small proportion of these people being very wealthy: most were members of the middle or upper-class who channeled their relatively modest savings through Britain's financial networks and who were looking, above all, for safe investments (Meredith and Dyster 1999, 40).

The movement of the accumulated capital was eased by the victory of liberalism over mercantilism. Mercantilists believed that the prosperity of the country rests upon the accumulation of bullion. Therefore, they favored protectionist state interventions in the economy, such as the use of tariffs and other trade barriers, which favored exports and led to a positive balance of trade and the inflow of the bullion. In sharp contrast, Smith and other classical liberals argued in favor of free market, in which rational behavior of self-interested individuals trying to maximize their individual revenue benefits a society as a whole.[3]

[3] Smith (1776, Vol. 4, Chapter 2) observed: "But the annual revenue of every society is always precisely equal to the exchangeable value of the whole annual produce of its industry, or rather is precisely the same thing with that exchangeable value. As every individual, therefore, endeavors as much he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labors to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the

Therefore, they argued in favor of the removal of tariffs, customs and other restrictions because free trade, through stimulation of competitiveness and innovation, leads to the economic growth.

The ideas of Smith and later proponents of free trade became dominant over the next century. However, they started to significantly influence the high politics only in the middle of the century with the repeal of the Corn Laws, the import tariffs supporting the prices of domestic British corn against the foreign competition between 1815 and 1846. In 1838, the Anti-Corn-Law League (ACLL) was founded in Manchester. The ACLL led an intense campaign for the repeal of the Corn Laws, which included propaganda in the form of pamphlets or public meetings, and attacks on the government.[4] Although the Prime Minister Robert Peel was in favor of the repeal, he had come to power as the head of a Conservative/Tory government in 1841 on a platform of maintaining the Corn Laws (Bloy 1997).[5] Peel was therefore able to push for the repeal of the Corn Laws only following the start of the Irish potato famine. Although Peel knew that the repealing of the laws would cost him the ministry because the majority of his party was against the repeal, in May 1846, the repeal of the Corn Laws was passed.[6] The victory of liberalism in the domestic politics was proven also by the 1849 repeal of the Navigation acts restricting the use of foreign shipping and trade between Great Britain and its colonies or the Cobden-Chevalier Treaty signed between Great Britain and France in 1860. The Treaty provided that French protective duties were to be reduced to a maximum of 25 percent within five years, with free entry of all French products except wines into Great Britain (Encyclopedia Britannica, undated). France

worse for the society that it was not part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it."

[4] As a reaction, in 1844 an Anti-League was formed by landowners who wanted to retain the Corn Laws.

[5] As a partial solution, Peel reduced tariffs on some goods in 1842.

[6] As a consequence, the next bill was voted down and Peel resigned.

ended the treaty in 1892. This free trade treaty was followed by tens of similar bilateral treaties, leading to a relatively free international trading system.

The government applied the *laissez-faire* philosophy also to the foreign investment. With the exceptions such as Turkey and China (see below), there were no restrictions on the floatation of government loans in contrast to France, Belgium and Germany, nor any stipulations as to how the proceeds of the loans should be spent nor to their remittance (Stone 1999, 10).[7]

The last third of the nineteenth century was marked by significant political and economic changes. Due to the spread of industrial revolution, Great Britain had to face rising competition of other countries, especially Germany and the United States. The best illustration of relative industrial decline of Great Britain is the development in British flag industry, iron and steel. In the early 1870s, Britain was making four times as much iron and twice as much steel as the German *Zollverein*; in the period of 1910-14, Germany produced almost twice as much iron and more than twice as much steel (the point of passing was 1893 for steel, 1903 for pig iron) (Landes 2003, 269). In 1890 Great Britain was surpassed as the number one producer of iron and steel by the United States (ibid). As a result, British share of world trade fell from a quarter in 1880 to a sixth in 1913. The positive current account balance was sustained mostly due to the export of services, predominantly financial services and shipping, as Great Britain moved to a more advanced stage of economic development and started to develop a complex services sector.

Second, Britain's power did not decline relatively to its main rivals only economically but also politically. The most important moment was the Franco-Prussian War of 1870, leading to the unification of Germany in 1871. The continental balance of power shifted and

[7] However, Stone (1999, 11) argues that despite minimal governmental interference in the London capital market, there was an absence of *laissez-faire* because merchant bankers did not compete with each other for customers; rather, certain countries and geographic regions were clients of particular merchant banks and the personnel did not tend to change from one house to another.

became frozen, especially because of the German annexation of most of Alsace and parts of Lorraine in the War. Britain, previously acting as a balancer within the shifting alliances of the continental powers, suddenly found it difficult to perform this function (Cohen 1973, 77).

The economic and political rivalries among Great Britain, continental powers and the United States brought changes in both the British international and domestic politics. Internationally, the competition among the countries led to the rise of the "new imperialism."[8] Great Britain and continental countries (France, Russia and unified Germany and Italy), later joined by the United States and Japan, got involved in an extensive struggle for the new territories, establishing the greatest empires in history. Britain acquired the most new territory – some 4.75 million square miles populated by an estimated eighty-eight million people and by 1900 the British Empire covered one-fifth of the land area of the globe and included something like one-quarter of its population (Cohen 1973, 29-30).

The Empire influenced the British capital exports in a twofold way. First, exploration of new territories provided new investment opportunities for the British investors, e.g. discovery of gold and diamonds in Africa, the United States or Australia. Second, it reduced the risks perceived by investors, be it political risks, such as military conflicts, or economic risks, such as sovereign default. For example, Ferguson and Schularick (2006) suggest that during the period 1880 to 1913 the colonial status significantly reduced the default risk perceived by investors. The "empire effect" enabled British colonies to borrow in London at significantly lower rates of interest than noncolonies because of their colonial status, which mattered more than either gold standard adherence or the sustainability of fiscal policies. On

[8] There are several competing explanations of the rise of the "new imperialism." Economic explanations, such as marxist represented by Lenin or liberal represented by Hobson, are based on the assumption of some flaw in the capitalist system, focusing mostly on the material needs of the capitalist countries, such as need for cheap raw materials or the new markets. These material needs lead to the rush for colonies (for an illuminating critique of these theories, see Cohen 1973, 34-72). In contrast, political explanations are based on the premise that the "new imperialism" arose in reaction to the changes in the political system, especially the changes in the balance of power after the unification of Germany (Cohen 1973, 75-80).

average, a discount was around 100 basis points, rising up to 175 basis points for African and Asian colonies.

This study is in contrast with the conclusions of Bordo and Rockoff (1996) who emphasize the importance of the gold standard as a "good housekeeping seal of approval." They argue that the successful adherence to gold in the period from 1870 to 1914 significantly improved the terms at which peripheral countries could borrow from the core countries. All other things equal, the rate on a gold bond would be 40 basis points lower if the country were on the gold standard. However, Bordo and Rockoff do not control for any economic, demographic or geographic fundamentals (Clemens and Williamson 2004, 333). Furthermore, compared to Ferguson and Schularick (2006), their sample did not include any Asian or African countries, which could significantly alter the results.

The changing structure of international economy and politics brought changes also within the British domestic politics. Facing Britain's relative decline in world markets and diplomacy, calls for a strong empire, resting upon military strength and imperial preference in trade emerged. Although the general course of the *laissez-faire* policies did not change, capital investments became highly politicized and there were several episodes, which point out to the execution of the political influence over the course of the movement of the British capital.[9] These include the influence exercised by the Colonial Secretary, sporadic governmental interventions due to the political reasons, the bailout of the Baring Brothers or the systemic intervention through the Colonial Stock Acts.

The most apparent interventions in the capital movement are those of Joseph Chamberlain through his position of the Colonial Secretary. Within weeks of taking office in 1895 Chamberlain publicly pledged himself to a policy of development in the crown colonies, many of which he regarded "as being in the condition of underdeveloped estates" to be

[9] For the discussion of the interaction between British overseas investment and the "New Liberalism," see Offer (1983).

developed "by the judicious investment of British money (Will 1970, 131)." The development support focused mostly on Africa and West Indies.[10] Chamberlain's interference in the direction of capital flows is the best apparent in the West African railway finance. Difficulties which beset the sale of colonial inscribed railway stock between 1898 and 1905 illustrate that the success of these projects depended almost entirely on the backing of the Colonial Office and crown agents for the colonies (quasi-governmental body which served as the commercial and financial representative for the crown colonies and protected territories) (Dumett 1975, 316).

Government intervened only sporadically (see Feis 1974). One of the episodes was a sudden removal of the Governmental support from the Bagdad Railway scheme (Feis 1974, 342-360; and Francis 1973). The Bagdad Railway scheme was a project to build a trunk across Turkey, from Constantinople to the Persian Gulf. Once it was clear that the railway would be built, Britain decided to negotiate with the German group to take part in the enterprise based on the view that "the line should be placed upon an international basis, so that no part of it would be controlled or guarded by a single power (Francis 1973, 170-171)." However, after many previously given indications of interest, and after drawing the banks into the negotiations, the British Government in 1903 withdrew its support from the project, a move, which was followed by the withdrawal of those British banks that had arranged to participate in the financing and operation of the line (Feis 1974, 89). The explanations vary. Whereas Feis (1974) suggests that the reason behind the withdrawal might be a strong opposition shown in the press and Parliament, Francis (1973) argues that there is an additional and more important factor, namely Chamberlain's advocacy of protection against continental manufacturers and the resulting opposition to a scheme for commercial co-operation with Germany, as well as his ability to persuade the majority of his colleagues that the proposed

[10] For a closer account of Chamberlain's involvement in Africa, see Dumett (1975) and in the West Indies, see Will (1970).

scheme did not meet the British demand for equality. For the next decade, the opposition of the government prevented the entry of British capital to the project and at least once, the Foreign Office intervened in financial negotiations with Turkey in other projects, when it induced to the head of the newly founded National Bank of Turkey to withdraw from a loan for the Turkish Government arranged in cooperation with the Deutsche Bank (Feis 1974, 90).

The most obvious intervention of the British Government appeared in 1912, when the London firm of C. Birch Crisp and Company attempted to provide a loan to Chinese Government under a more favorable terms than the International Consortium with the official support of the Government (Feis 1974, 430-462; Edwards 1928; and Chan 1971). When Crisp called on the Foreign Office and informed it of the loan, he was informed that the Government would not put a pressure on the Crisp syndicate but they could and would put pressure on the Chinese government (Edwards 1928, 686). As a result, only 40 percent of the first installment offered in London by Crisp could be disposed of and the second installment was never issued.

One of the most interesting governmental interventions was the bail out of the Baring Brothers, one of the first coordinated bail outs (for the overview of the Baring crisis, see the section on British investment in Argentina below). On 14 November 1890 the British Government agreed secretly with the Governor of the Bank of England to bear half of any loss which might be incurred by continuing to honor the signature of Baring Brothers on bill presented for payment (Clapham 1944, ii, 332, cited in Ferns 1960, 436). The purpose of so radical departure from the accepted rules of a *laissez-faire* economy was to avoid a financial collapse compared to which that of 1866 would, in the opinion of the Chancellor of the Exchequer, "be a trifle (Ferns 1960, 436)."

In addition to the above mentioned one-time interventions, a more systemic tool was used to affect the movement of British capital, namely the Colonial Stock Acts (especially

1900 revision). Their aim was to promote the economic development of the colonies and dominions by directing the capital towards the British dominions and colonies (Feis 1974, 92-95). To achieve this, the securities of the British colonial and dominion governments were – upon certain conditions – given "trustee" status. They became purchasable by trust bodies and institutions. This provided them a strong market within which the bonds of foreign governments could not compete. However, it must be noted that although the volume of capital for Empire Colonial and Provincial obligations nearly doubled between 1900 and 1914, the proportion of British capital exports destined for the British Empire declined steadily after 1900 (Stone 1999, 12).

1.2 Financial markets in the pre-War Great Britain

British capital market played an important role in the transfer of the capital funds from Britain to the rest of the world.[11] Although the foundation for the securities market took place in 1693 when the British government for the first time borrowed by creating a permanent debt that was transferable, the events that led to the financial leadership of London happened outside of Britain (Michie 1999, 18, 33). The most crucial were the 1789 Revolution in France, 1793 closing of the Paris Stock Exchange, 1795 occupation of Amsterdam by French troops and the Napoleonic wars, ending with Napoleon's defeat at Waterloo in 1815 (ibid, 33). All of these events, resulting in the political instability in the continental Europe and disorganization of the trade and financial centers established in the previous centuries, led to the inflow of merchants, predominantly Jews and Huguenots, fleeing from the religious

[11] For the discussion of British overseas investment with the focus on European *émigrés*, see Cottrell (1975). For the detailed history of the London Stock Exchange, see Michie (1999, 15-142).

persecution, and others who possessed wealth, to London.[12] These merchants imported wealth, skills and important family-ties, which allowed involvement in the riskier business. In addition to that, Amsterdam, the previous financial center, never regained its former importance, though Paris and Frankfurt-on-Main did continue to be capital markets of some standing (Cottrell 1975, 17). The competition to the British capital market in the first half of the nineteenth century was eliminated.

The family and religious ties of European *émigrés* allowed for two developments. First, they contributed to the establishment of London as the international financial center. Merchant bankers, with connections and operations in two or more countries, provided the credit required by the international trade, which led to the development of the market in the credits and debits, allowing for the settlement of the final balance between two countries instead of the transport of the precious metals by each transaction (Michie 1999, 28).[13] With the emigration of merchant bankers and the transfer of their activities, it was also the transfer of the world's payment system from Amsterdam, as the former center, to London.

Second, the high level of trust enabled the innovation in the financial institutions and instruments. Although the merchant banks, which increased in size and numbers, remained the single most important group, being responsible for 37 percent of all overseas issues between 1870 and 1914, new forms of financial institutions emerged, such as groupings and syndicates, often based upon the leading banks' correspondent network and filial and religious links; or corporate investment and overseas banks, established and managed by merchant bankers but using capital subscribed by the public (Cottrell 1975, 30, 32, Landes 1969).

[12] Among those that transferred their operation to London were people, such as a Paris banker Walter Boyd, Amsterdam bankers and brokers Henry Rope, Raphael Raphael, and Samuel Zoete, and German Johan Schroder and Nathan Rothschild (Michie 1999, 31).

[13] Exploiting their international connections to engage in the inter-country movement of securities, currency and gold were the Raphaels, as Amsterdam Jews, Nathan Rothschild or Mr. da Veiga (Michie 1999, 51).

Box 1.1: New communication technologies

New communication technologies significantly increased the efficiency of the financial market by shortening the time needed for the information transfer. Their benefits can be illustrated by one of the biggest frauds in the history, the case of Poyais (see Hasbrouck 1927 and Sinclair 2004). In 1822, the year of booming stock markets in London and Edinburgh, a loan of 200 000 pounds sterling in 4 percent bonds was floated in London for the service of the "State of Poyais" (Hasbrouck 1927, 442). Sir Gregor MacGregor, Cacique of Poyais, established the Poyaisian Legation in London, where he advertised the sale of lands in Poyais at bargain prices. Ballads were sung in London and Edinburgh streets to popularize the country. A book entitled Sketch of the Mosquito Shore, including the Territory of Poyais, allegedly written by "Capt. Thomas Strangeways, K. G. C., Capt. 1st Native Poyer Regiment and Aide-de-Camp to His Highness Gregor, Cazique of Poyais " depicted Poyais as tropical Eden with fertile land and an elegant capital St. Joseph with public buildings and an opera house. Immigrants bought land and commissions. They even exchanged their Bank of England notes, for which there would be no use in Poyais, for Bank of Poyais notes. Four ships set off to Poyais. The first one set off in September 1822 and arrived to Mosquito Coast in February 1823. Only there did they discover that Poyais was pure fiction. What they saw was a malarial swamp. Many of the settlers died of tropical diseases and only a fraction of them returned back home.

In addition to the innovation in financial institutions and instruments, the capital markets worldwide were significantly influenced also by the technological innovations, predominantly invention of telegraph in 1837, connection of London and Paris by a submarine cable in 1851 and London and New York in 1866, introduction of the ticker-tape

machine in 1867 and telephone in 1878 (see Box 1.1). The improvements in communications allowed for the arbitrage, leading to a more efficient functioning of the capital markets.[14] For example, Brown and Easton (1989) conclude that between 1821 and 1860 the market for 3 percent consols was efficient, judged by the standards of the late twentieth century.

These developments were reflected also in the growth of the British capital market. A market for new issue of foreign securities was established in London by the early 1820s when investors started to look at investments with the same flexibility as a holding in the National Debt but a better rate of return, turning their attention to securities issued by other governments, especially neighboring Western European countries, newly independent Latin American countries or issues of newly formed joint-stock companies (Michie 1999, 53, 56).

By 1850, the British capital market was already the biggest and the most developed in the world, reflecting the strength of British economy. Michie (1999, 71) illustrates the widening and deepening of the investing public:

> In 1850 financial assets represented an estimated 39 per cent of all assets owned by the British people, and comprised such items as mortgages, bank deposits, trade credit, and government and corporate debt. By 1912/13 the proportion had risen to 64 per cent, or by two-thirds, at the expense of real property such as land and buildings. At the same time the stock of total assets was itself growing strongly. The value of domestic fixed assets in the UK tripled from colonial £4.2bn.to £12.9bn., at constant (1930) prices, between 1856 and 1913. Within this rapid growth of financial assets the most rapidly expanding proportion was that of transferable securities. In 1850 an estimated 56 per cent of financial assets could be classified as domestic or foreign debt, much of which would be transferable, whereas in 1913 this had reached 64 per cent of the total. This was despite the rapid growth of the banking system and stagnation in the size of the British government's own debt. In particular, the share taken by foreign assets had grown from 8 per cent to 28 per cent between 1850 and 1913.

Despite the widening and deepening of the British capital market, doubts about its efficiency and perfection emerged towards the end of the nineteenth century when Great Britain started to face an increased competition in the international markets. The debate

[14] For the discussion of the efficiency of capital markets, see, for example, Fama (1965, 1970).

emerged around the issue of the potential overinvestment abroad to the detriment of domestic economic growth.[15] The theoretical explanations supporting the argument that the banks failed the industry can be divided into three main models, the "early start thesis," institutionalist explanations and explanations examining financial interests within a socio-political context (Collins 1991, 13-21). The early start thesis (see Gerschenkron 1966) is based on the argument that Britain as an early industrializer developed a banking system that was appropriate for the needs of the economy at that time. Since firms back then were mostly small, family units able to finance their development from their own sources, the demand for the long-term bank credit for industrial development was small.[16] As a result, the developed banking system focused more on the provision of the short-term funds and was not able to meet the demand for the long-term industrial capital needs of the firms in the later stages of the industrial revolution. Institutionalists formalized Gerschenkron's indirect comments on the performance of the British capital markets and argue that British financial institutions, once established, showed strong path-dependency (for example, see Elbaum and Lazonick 1986, 1-17). Finally, the critics approaching the problem from the sociological point of view emphasized the conflict between the financiers and industrialists. Since the profits of the British financial institutions came mostly from international trade and their role within the multilateral system of payments, they promoted the policies of free trade and opposed the policies aimed at the protection of the domestic industry (for example, see Hilferding 1910; Rubinstein 1977; Overbeek 1980; Ingham 1984).

The basic counterargument is based on the neoclassical reasoning, which is summarized in Collins (1991, 11-12):

[15] For the review and discussion of the literature, see Collins (1991) or McCloskey (1970).
[16] See also Heaton (1972).

The money and capital markets can be likened to other competitive markets in which demand and supply are reconciled and price and the allocation of resources determined. Seen from a neo-classical perspective it seems incredible that over a number of months, or years (let alone decades or centuries!) unsatisfied demand would not provoke a positive response on the supply side to the profitable opportunities so created – surely suppliers would act to increase their profits by correcting any obvious deficiency? In fact, if you believe that markets – including British financial markets – work quite well, then it is simply not credible that British industry could have been constantly demanding long-term capital (creating a potentially profitable opportunity for those banks prepared to meet the demand) which profit-making financial institutions refused to supply. In effect, acceptance of the rationale of markets – with usual assumptions of rationality, optimality and of profit-maximising – denies the possibility of bank "failure" in this area. In fact, in this particular case, it is often suggested that the absence of certain financial services probably reflected the lack of demand for them rather than any failure on the supply side. It is likely, so those who believe in the efficacy of markets argue, that the demand of British industrialists for funds from outside their companies was either insignificant or was being met from sources other than the banks. On this line of argument, then, if banks did not provide long-term industrial finance there were sound market reasons for not doing so – there was no large volume of unsatisfied demand.

The attempted bias in the operation of the capital markets was formally tested by Edelstein (1976). Under the assumption of perfect markets, he concludes that there was no bias in favor of overseas assets, nor a bias in favor of large borrowers during the period of 1870-1913. Rather, British investors preferred overseas securities because these provided higher returns than domestic securities. Edelestien (1994) estimated that the average return on overseas securities was 5.7 percent compared to 4.6 percent return on domestic securities. Michie (1999, 137) points out that there is little evidence that continental European banks were better in the provision of the long-term industrial credit, especially when they are compared not with the commercial banks alone but the spread of British financial institutions including the merchant banks, investment trusts and company promoters. Furthermore, despite the criticism, the London Stock Exchange welcomed the securities with a high degree of risk, such as nascent oil or radio industry (ibid, 138). The oft cited lack of support for the new electrical industry was predominantly the result of the hostility of the central government legislations and local authorities as owners of the competing gas industry (ibid, 138).

1.3 Regional Distribution of Capital

British capital went to the regions of recent settlement, mostly North America, Latin America and Oceania. Clemens and Williamson (2004) document the existence of the "wealth bias", or the Lucas Paradox (1990), according to which the capital favored rich to poor countries. They conclude that "British capital exports especially that invested in private enterprise went where it was most profitable, chasing natural resources, educated populations, migration flows, and young populations." However, Clemens and Williamson (2004) do not control for the institutional quality. Once the differences in institutional quality between rich and poor countries are taken into account, they account for the sharply divergent patterns of international capital movements (Schularick and Steger 2008).

In contrast to British, French and German capital exports were directed mostly to Eastern Europe, Scandinavia and Middle East. The difference in the regional distribution of the British investment on the one hand and the French and German investment on the other hand, led to the widespread belief that whereas British capital exports were market-driven and directed towards productive assets, French and German were politicized and directed to unproductive European assets, mostly loans to European governments (Feis 1930, Cameron 1961, Fishlow 1985, and Lévy-Leboyer 1977).

This traditional view asserts that foreign investment was politicized as France and Germany attempted to underwrite their sphere of influence in certain regions. However, the recent studies paint a different picture. They rely on improved estimates of the capital flows and econometric techniques and suggest a wider role of economic factors. Relying on a portfolio model, Parent and Rault (2004) illustrate that French foreign investment from the end of the nineteenth century until the eve of the First World War was driven by economic and financial considerations. Similarly, Esteves (2008) supports the view that German capital

flows responded to long-term prospects of growth of recipient countries as much as British investment.

1.3.1 United States

The biggest importer of the British capital was the United States, which received 20.5% of the total capital called between 1865 and 1914 (see Appendix A.1). The highest amount – 61,6% – went into the railways.[17] This means that American railways received almost 13% of total British capital exports between 1865 and 1914. What was behind the popularity of the U.S. railroads?

The construction of railroads began at the end of the 1820s, concentrating in the east of the United States. The major advantages of the railroads over the existing steamboat and canal transportation were its speed and flexibility and by the middle 1850s these advantages were enough to offset its higher cost compared to the competing ways of transportation (Niemi 1980, 70, 71). The fastest construction of new railroad routes began after the end of the Civil War and the start of the development of three transcontinental routes, which tied the East and the West of America. Fishlow identifies three major waves in the late nineteenth-century pattern of main track construction: 1868-1873, 1879-1883, and 1886-1892 (Fishlow 1972, 500, quoted in Walton and Rockoff 1998, 355), with construction booms ending promptly with each of the major financial crises of the period: 1873, 1882, and 1893 (Walton and Rockoff 1998, 355). The railroad mileage in operation grew from 23 miles in 1830, to 18 374 in 1855, and to 291 231 miles in 1915 (U.S. Bureau of the Census. 1973, Series Q 284-312 and Q 321-28). The railroads connected the vast spaces that separated East from West. They enabled safer and faster movement of migrants across the country, compared to the

[17] See Adler (1970) or Jenks (1951).

wagon trails and sea routes via the Isthmus of Panama or around Cape Horn (Walton and Rockoff 1998, 352). At the same time, they eased the transportation of agricultural production (mostly cotton, tobacco and later wheat) to harbors in the East Coast, from where it was exported to Europe.

However, despite these advantages, there is a debate on the contribution of American railways to the economic growth. Whereas Schumpeter (1949) and Rostow (1960, Chapter 4) argue that railroads were build ahead of the demand and were the leading sector of economic growth, the works of Fishlow (1965, Chapter IV) and Fogel (1964) counter their arguments through estimates of the social savings of the railroad in 1859 (Fishlow) and in 1890 (Fogel), demonstrating that had there been no railways, the economic growth would have been postponed only for two years.

The London market participated in the American railway financing since the very beginning, when there appeared first bonds for the construction of the Camden&Amboy, Philadelphia&Reading, and Baltimore&Ohio (Jenks 1951, 376) in the late 1820s and early 1830s. However, the investment in the American railroads took off especially after the end of the Civil War with the beginning of the transcontinental routes construction. Most of the investment took form of the portfolio investment and speculation in railway securities became common. The London Stock Exchange became an important alternative market to New York. In 1887, one half of all new securities listed in New York were listed almost at once in London (Jenks 1951, 377), reaching 18 per cent of all quoted securities in the London Stock Exchange in 1913 (Michie 1999, 91-92). One of the reasons behind this development is the redemption of the U.S. government bonds and their replacement by the more lucrative railroad bonds: early in 1869 the currency yield on railroad bonds moved permanently above the gold yield on the government bonds, and maintained a 2 percentage point gap from late 1870s on (Friedman and Schwartz 1993, 76-77). The refunding operations of the U.S.

government and the differences in the currency yield give the hint why only 5.8%, the smallest amount compared to all other major recipients of the British capital, was invested in the government bonds (see Appendix A.2).

1.3.2 Canada

Canada ranked as the second among the major recipients of British capital between 1865 and 1914, attracting 10.1% of the overall British capital exports (£412.3 million). Similarly to the United States, the highest amount of British capital in Canada was invested in the railways, which absorbed 40.3% of all the capital called between 1865 and 1914. The railways were built for similar reasons. They enabled the transportation of products and people across the country and to and from the harbors and this way tied together and opened new markets. Their comparative advantage over the poor roads and waterways frozen for up to 5 months per year (The Canadian Encyclopedia, undated, a) was obvious, given the fact that Canadian exports rested mostly upon the agricultural production of the fertile prairies.

The first Canadian railway line was the Champlain and Saint Lawrence Railroad opened in 1836. The railroad building then expanded both eastward and westward. The second phase of railway building came with Confederation of Canada in 1867. In fact, the building of the transcontinental railroad, the Intercolonial Railway was a condition written into the Constitution Act, 1867 (Canadian Encyclopedia, undated, b) and its successful completion was the condition upon which British Columbia agreed to join. The last phase came after 1900 with the increase in the agricultural production and immigration.

The British capital was involved in the financing since the beginning. For example, £53 000 was raised in Britain for the St. Lawrence and Atlantic Railroad after residents of Montréal paid up only 10% of the initially subscribed £100 000 and by 1860 the Grand trunk

Railway was £800 000 in debt to the British banks of Baring Bros and Glyn Mills (Canadian Encyclopedia, a). The Intercolonial Railway was owned and operated by the federal government and was largely financed with British loans backed by imperial guarantees (Canadian Encyclopedia, b).

Unlike the U.S. railroads, which, despite the initial governmental support were mostly financed by the private capital, the Canadian governments on all levels actively promoted the railway securities. Approximately twenty percent of all new Canadian securities issued in the British capital market were floated mixed enterprises, through which Canada obtained 42 percent of the aggregate funds supplied by British investors during the half century prior to 1914 (Simon 1970, 243). The federal government provided £154.9 million ($754.5 million) of cash and subsidies to railways and turned over 47 291 000 acres in land grants to them in conjunction with provincial governments (ibid). In addition to that, provincial and municipal governments provided cash subsidies of $46 million (£9.44 million) and subscribed to $49 million (£10.1 million, given the rate applied above) of railway shares (ibid, 244). Part of this assistance was made possible by direct loans offered by Dominion and Provincial authorities in the British capital market, with these government issues totaling almost 15 percent of the rail borrowing in London (ibid, 244).

The British investment was directed also to other industries (for more details, see Stone 1999, 52-61). During the period 1865-1914, 10.1% of the overall British capital exported to Canada was invested in industrial production, more precisely, 7.4% went into commercial and industrial activities, such as manufacturing, agriculture, and trade; 2.4% went into the production of iron, coal and steel and the rest into breweries and distilleries. The financial sector absorbed 6.2% of the British capital. Reflecting an increase in urbanization and immigration since the beginning of the 1900s, there was an increased demand for the public utilities. Throughout the period under study, the public utilities attracted 5.65% of the

British capital exports to Canada. The highest share went into the electric lightning and power and the tramways and omnibuses, with both sectors attracting equally 2.4%. Finally, mines received 3.5% of the British investment. This investment reflected the discoveries and development of rich deposits of mineral ores in the Cobalt, Porcupine and other districts between 1900 and 1913 (Cairncross 1992, 42).

1.3.3 Argentina

Argentina was the third largest importer of the British capital between 1865 and 1914. It attracted 8.6% of the total British capital called (£349.2 million). During 1885-1889, it attracted 16.7 percent of British capital exports, becoming the number one importer of British capital worldwide (see Appendix A.3). Besides that, it attracted 40 to 50 percent of all lending that occurred outside the United Kingdom in 1889 (Mitchener and Weidenmier 2007, 3).

The capital was pulled in due to the rapid economic expansion in the 1880s. Between 1870 and 1890 the traditional staple of Argentine exports, hides, had doubled; wool exports had grown by 500% and Argentina had ceased to be an importer of cereals and flour, and had become a large exporter after 1883 (Ferns 1992, 248). This economic development was supported by economic policies, aimed at the construction of railways and harbor building and development of public utilities. There was a significant demand for such investment. Investment in railways allowed taking control over the vast Argentine territories. Troops could move quickly across the country to the point of conflict, enhancing the state security. Second, railways allowed bringing the agricultural production in a short time to the harbors, from which it could be exported overseas.[18] As a result of technical improvements, such as

[18] Because of the shallow waters of the River Plate, the harbor of Buenos Aires was not a good natural port and the steam vessels had to stop some twelve miles from the shore, with the costs of unloading into lighters being nearly as great as the freight from England to Buenos Aires (Ferns 1992, 245).

steam driven vessels of steel construction and refrigerating, price in ocean grain-freight rates started to decline when Argentine exports were growing rapidly (Ferns 1960, 406). Finally, the investment in the water and sewage system was necessary in order to prevent further plagues of cholera because of contaminated water. As a result of the demand for the transportation services and public utilities, 57.5 percent of British capital exported to Argentina went into railways, 8.9 into public utilities and 22.4 to the government financing throughout the period 1865-1914 (see Appendix A.2).

Despite the economic expansion, there were serious problems in the macroeconomic management of the country, leading to the crisis known as the Baring, or Argentine, crisis of 1890. The Baring crisis was a combination of the maturity and the currency mismatch crisis.[19] The maturity mismatch stemmed from the imbalances between the long-term assets and short-term liabilities. The investment projects, such as railways or public utilities, generate revenues in the long-run and therefore failed to generate sufficient revenues to keep in line with the interest charges on overseas debt. The currency mismatch stemmed from the fact that with the exception of the *cedulas* (land mortgage bonds), the Argentine bonds were issued on European capital markets in sterling or gold. However, Argentina, after several failures to adopt the gold standard, operated on a fiat money. With the rising inflation, the country started to have problems servicing its gold debts. The gold premium, by which the degree of domestic inflation could be measured, rose from 35% in 1887 to 48% in 1888 to 94% in 1889, which meant that the cost of servicing the foreign debt of Argentina in the national currency was nearly double what it had been before the great surge in foreign investment had begun (Ferns 1992, 257).

The crisis was imported to Great Britain through the merchant bank the House of Baring, which promoted a private enterprise which took over the water and sewage system of

[19] Much has been written on the Baring Crisis. For the discussion of the Baring crisis as the maturity and mismatch crisis, see, for example, Ford (1956). For the detailed discussion of the British and Argentine economic relations, the events leading to the Baring crisis and its resolution, see Ferns (1960, 1992).

Buenos Aires and could not be placed in the London market. The House of Baring was saved by the Bank of England, which, in cooperation with the Bank of France and British financial institutions, formed a rescue fund. On the other hand, Argentina defaulted on nearly £48 million of debt in 1890, which ended up constituting nearly 60 percent of the world's defaulted debt in the 1890s and Argentina's real GDP fell by 11 percent between 1890 and 1891 (Mitchener and Weidenmier 2007, 7).

The crisis had global effects on the direction of the capital flows, which diverted from the Latin America. Mitchener and Weidenmier (2007, 2) examined the global effects of the Baring Crisis and conclude that the country risk premium for Latin American countries increased by more than 840 basis points between 1890 and 1891, and more than 1,600 basis points between 1890 and 1895. In contrast, yield spreads for non-Latin emerging markets and "core" countries (high income European countries and the U.S.) were generally flat or unchanged during this period. As a direct result of the Baring Crisis bond yields in Latin-American countries were more than 200 basis points higher. The capital flows started to grow again only when Argentina recovered from the crisis in 1896.

1.3.4 Australia

The fourth largest importer of the British capital was Australia. Between 1865 and 1914 it imported 8.3% of the overall British capital exports. The highest share of the British capital exports to Australia, 65.8%, represented the colonial and provincial government loans. In the nineteenth and the first half of the twentieth century, governments used these loans to finance a variety of expensive infrastructure projects, such as railways, roads, port facilities, urban transport, social amenities, gas, electricity, water supply and sewerage (Meredith and Dyster 1999, 11). The highest share of the capital raised through the government loans went

to the railways.[20] In the early years of the twentieth century railway debt made up 60 percent of total public debt of colonial governments (Butlin *et al*. 1982, 262). For example, the borrowing helped to finance the virtual completion of the trunk lines of southeastern Australia, so that, by 1901, over 19 000 km of track were being operated (ibid, 262).

There are several reasons behind the public rather than private financing of the Australian railways. Most of them are related to the ability of the government to mobilize larger stocks of capital though taxation, land sales and ability to borrow at cheaper rates than private companies due to the colonial status; or the ability of the government to capture substantial external economic benefits and to accept moderate rates of return (see Butlin *et al.* 1982, 262; Meredith and Dyster 1999, 59). Clark (1908, 402-403) stresses the influence of the land policy, which, based on the interference of the Imperial Government, did not allow to grant crown lands to railways. Since private capital in Australia was earning from 20 to 50 percent in land and mine speculation, it could not be diverted to less remunerative railways (Clark 1908, 402).

The mining, as the largest subcategory of raw material investment, attracted almost 13% of the British capital exports to Australia. British firms in Australia were active in copper mining at Kapunda and Burra Burra in the 1840s, in the New South Wales and Victoria gold rushes of the 1850s, and in exploiting the rich copper deposits of the Yorke peninsula in the 1860s (Harvey and Press 1989, 67). The Australian gold rushes, which started after the discovery of gold in 1851 and were triggered by further gold discoveries, had an important impact on Australia. They provided incentives for railway and telegraph building, immigration and supported Australian trade. Already in the 1850s the colony of Victoria contributed more than one third of the world's gold output (Australian Government 2007).

[20] For a detailed analysis of the Australian railways, see Clark (1908) or Butlin *et al.* (1982, 259-293).

The gold bullion that was shipped to London brought a huge flow of imports and the population of Australia trebled from 430 000 in 1851 to 1.7 million in 1871 (ibid).

Financial industry received 11.6% of total British exports to Australia between 1965 and 1914, with 6.5% going to speculative land investment. The number of the land acquired by the companies listed on the London Stock Exchange rose from 4 873 thousand hectares owned by 36 companies in 1885 (19% of the overall land acquired worldwide) to 10 997 thousand hectares owned by 108 companies in 1913 (15.5% of land worldwide) (Christopher 1985, 456, see Table I.). This investment was dominated by the investment in land for speculative or vague developmental purposes. In 1885, there were 11 companies listed on the London Stock Exchange which acquired 2 518 thousand hectares of land in Australia, which represented more than 17% of the overall land area acquired for speculative purposes worldwide (Christopher 1985, 458, see Table III). In 1913, there were 8 companies which acquired 3 689 thousand hectares, which accounts for almost 15% of the overall land area for speculative purposes in the world (ibid). Most of the land acquired for the speculative purposes coincides with the Melbourne land boom of the 1880s, which ended with a collapse in GDP per capita in 1891 due to the 1891 balance of payments crisis and the difficulties in servicing the growing overseas liabilities.[21] However, the investment in land continued also during the Australian depression of the 1890s, although at a smaller scale and more-or-less ended in 1900.

[21] Butlin (1962, 460; 1970, 282) calculated that real GDP per capita in Australia dropped from £66 in 1889 to £48 in 1897; the 1890 aggregate real product was surpassed only in 1904 and the level of per capita real income attained in 1890 was restored only by 1907. The year of 1891 (and also of 1925) is identified as the year of the collapse in the Australian GDP per capita also by Greasly and Oxley (1998), who argue that the causes of the Australian economy's comparative decline after 1890 should centre on the collapses after 1891 and 1925, rather than on the alleged slowdown in the trend growth from the 1890s.

1.3.5 India

The fifth largest importer of the British capital was India. Overall, it received 7.8% of the British capital exports between 1865 and 1914. The highest share, 45.8%, went to the government financing. Indian railways received 40.5% of British capital exports to India. The motivation behind the railway construction was similar to that in other countries, relying on commercial, social and military interests. They were considered a tool for a quick movement of the military troops, spread of "English" values and the movement of the cotton and other commodities to the ports. Virtually all investment in Indian railway was British. Since the first proposal for the construction in mid-1840s, the British investors were not keen on sole investment. Therefore, the East India Company, and after 1858 the British Crown guaranteed investors a 5 percent return, afforded the railway companies free use of land and offered a 99-year operating contract (Macpherson 1955, 180-181, Law Commission 2007, 2). The guarantees turned out to be justified by the realized returns since in no case did the profits of any company reach the guaranteed 5 percent before 1866-7, with the percentage of net earnings on capital outlay of all Indian railways being only 0.22 in 1854, 1.98 in 1864 and 3.05 in 1869 (Macpherson 1955, 181). From 1869, the state (a Secretary of State representing the British Crown) undertook directly the construction of all proposed line in reaction to the cost burden imposed by the original guarantee system. However, only a year later the state realized the financial burden of this move and introduced a new guarantee system, with a guaranteed 4% return on the capital for a limited five-year-period, this way triggering the new private investment (Law Commission 2007, 3-4). Guarantees thus showed to be the most important factor in the flow of the British capital into the Indian railways, attracting predominantly investors who sought safety.

Considerably smaller amounts of the British capital went into other industrial fields. Raw materials, with the lead of mines and the tea production, attracted almost 6% of the overall imports of British capital to India between 1865 and 1914. Public utilities attracted more than 3%, industrial sector approximately 2% and financial sector only around 1.5% of the overall British financing during the period under study.

1.3.6 South Africa

After the Baring crisis, the investment was redirected into the new geographic region, South Africa. Transvaal received the highest share of British capital between 1895 and 1904, namely 6.4%, which amounted to 232.2 million pounds. During the period of 1895-99, it received 8.9% and during the period of 1900-04 it received 14.4% of the British capital, ranking second after the United States (see Appendix A.3). The capital was attracted mostly by the diamond discovery near the Vaal River in 1867, which triggered a diamond rush, and the discovery of rich gold bearing ores on the Witwatersrand in 1885. By the late 1890s, the Transvaal was producing over a quarter of the world's annual output of gold (*Annual Report of the Transvaal Chamber of Mines for the Year 1910*, 1911, cited in Van-Helten 1982). Mining attracted 33.5% of the British capital called to South Africa throughout the period 1865-1914, right behind the 50.9% lent to the government (see Appendix A.2).

As already noted above, there was a relationship between the investment in the South Africa and the politics. Interesting is that this relationship worked in both directions. On the one hand, there were tries to stimulate the investment in the South Africa as a part of the political development projects (see the above discussion of Chamberlain's work in the Colonial Office). On the other hand, interests of the investors were able to influence the political decisions. Leading investors in the Transvaal and Rhodesia – especially Cecil

Rhodes himself – exerted a powerful personal influence on Britain's colonial policy (Cohen 1973, 68). British gold and diamond interests were directly responsible for the outbreak of the Boer War, the "war for 45% dividends," as Lloyd George called it (as quoted in Cohen 1973, 68).

1.3.7 Brazil

Brazil was the seventh largest importer of the British capital worldwide, attracting 4.2% (£172,742 million) of the overall British capital exports throughout the period of 1865-1914. During the Empire (1850 and 1890), British influence in Brazil was vast. Britain was virtually the only supplier of capital to Brazil, with British-owned commercial banks operating in Brazil playing a major role in financing trade, agriculture and industry (de Paiva Abreu 1988, 8).

The highest share of the British capital exports to Brazil, 45.9%, was borrowed by the government. However, between 1890 and 1895 the London capital market was unwelcoming to the loans to the Brazilian government. This was the result of the problems faced by the Brazilian economy before and during early Republican period. Political problems, such as abolition of slavery in 1888 disliked by the landed oligarchs, the military coup instituting the republic in 1889 and the second military coup in 1891, were combined with serious economic problems. Brazil went on gold standard at the end of 1888; however, this move was accompanied with the loose monetary policies, which led to the acceleration of inflation. Expansionary policies resulted in abandonment of the gold standard in 1890 and the financial crisis. Triner and Wandschneider (2005) argue that in addition to the domestic factors inducing the financial instability, the Argentine crisis of 1890 had a crucial exogenous

influence in the timing and perhaps extent of Brazilian financial deterioration, suggesting the "contagion" character of the Argentine crisis and its spilling over to Brazil.

Railways attracted 31.6% between 1865 and 1914. The demand for the railways came from the land- and until abolition of slavery in 1888 the slave-owners, who were the major political force under the imperial government until 1889 and also under the following republic. Their demand stemmed from the need for the means of cheap transport, predominantly of coffee but also rubber, sugar and cotton, which were the main export articles of Brazil.[22] However, the capital began to flow into the railways only with the first provision of guaranteed dividends by the imperial government in 1852 (Summerhill 1998, 545). The guaranteed minimum rate of return typically of 6% or 7% for up to 60 years were usually split between the central and provincial government, with profits above a certain rate of return, typically 8%, split between the companies and guarantors (de Paiva Abreu 1988, 8). The government-supplied dividend guarantees thus enabled Brazil to build some 20 000 kilometers of track between 1852 and 1900 (ibid, 542).[23]

Public utilities attracted 10.2% of the overall British capital exports to Brazil between 1865 and 1914. The demand was induced predominantly by the fast rate of urbanization, a situation similar to other regions of recent settlement, such as the United States, Canada, Argentina or Australia. Industrial sector received more than 6.5%, raw material 2.9% and the financial sector 2.1% of the overall British financing between 1865 and 1914.

1.3.8 Russia

Russia, the largest European debtor, was the eighth largest importer of the British capital between 1865 and 1914. During the period under study, it attracted 3.4% of British

[22] During the 1890s, Brazilian coffee production increased from about one-half to 70 percent of the global total (Fritsch, 1988. Cited in Triner and Wandschneider 2006, 24).
[23] See Summerhill (1998) for a detailed discussion of the railway subsidies in Brazil, 1854-1913.

capital exports to the world. However, the majority of this capital was acquired after 1906. In the 1880s and 1890s, there was virtually no British investment in Russia, most probably as a result of the rivalry between the British Empire and the Russian Empire for supremacy in Central Asia.[24] However, as the Russo-Japanese War reduced Russia's capacity for aggression in China and Persia and the revolutionary agitation forced the Czar to grant a constitution and permit the establishment of a legislative body, the Duma, which was expected to curb the will of the Czar and cabinet, the Russian Government sought the financial means (Feis 1974, 229). Thus, the Russian Government took the initiative, which resulted in the issue of the Russian government loan of 1906 in London, the first large new direct Russian government loan in the market in three decades, being one of the steps towards the Anglo-Russian Agreement of 1907 (Feis 1974, 233), which finally defined the British and Russian spheres of influence in Persia, Afghanistan, and Tibet. Another government loan was issued in 1909 and earlier government issues were admitted to the stock exchange price list (ibid). Overall, the loans to the Russian government amounted to the 50.3% share of the overall British capital exports to Russia.

The improved political relations led also to the renewed private investment. Railways accounted for the 24.8%, raw materials for 12, financial sector for 5.9%, industrial production for 3.9% and public utilities for 3% of the total British capital exports to Russia between 1865 and 1914 (see Appendix A.2).

However, the majority of Russian foreign investment came from France. The Franco-Russian Alliance between 1894 and 1917 was preceded by the floatation of *Emprunts russes*, Russian government bonds, on the Paris Bourse from 1888 to 1894 (Parent and Rault 2004, 330). The financial and military cooperation between France and Russia was supposed to balance Triple Alliance of Germany, Austria-Hungary and Italy.

[24] In addition to this rivalry, Feis (1974, 229) notices the failure to provide the governmental loan in the beginning of the twentieth century because the new persecution of the Jews re-aroused Rothschild hostility; and the availability of the London market during the Russo-Japanese War only to Japan.

1.4 Conclusion

Great Britain, France and Germany were the countries running the largest current account surpluses during the first era of globalization. The capital flows were influenced by several factors. First, the whole period under study coincided with the British industrial and military predominance in the world. The industrial predominance led to the accumulation of capital and emergence of the significant middle class. The amount of the capital available for investment was enlarged also by the transfer of the merchant bankers to London as a result of the continental distress. The British financial market was soon transformed into the most development financial market of the era and acted as a significant facilitator in the transfer of the accumulated savings to the rest of the world. Second, the military and naval predominance led to the stability and created an investment-friendly environment. Finally, the capital flows were enabled by the political victory of liberalism, which translated in the removal of barriers to free capital flows. Generally, movement of capital from Great Britain was unhampered by the governmental intervention.

In the last third of the nineteenth century and the years running to the World War I, Great Britain had to face rising industrial competition from the United States and the continental powers France and Germany. As British economy matured into a complex service economy, its positive current account balance was sustained mostly by the export of financial services and shipping, as well as the inflows of income from foreign investment. At the eve of the World War I, British current account surplus reached the value of 8.6 percent of GDP. (Taylor 2002). On the surplus side of global imbalances Great Britain was accompanied by France and Germany, who ran the surplus of 3.3 and 1.3 percent respectively during the 14 years running to the World War I (ibid). The British, French and German current account surpluses were matched by current account deficits in the New World and Europe. Whereas

Great Britain invested mostly in the countries of the New World, French and German capital exports were directed mostly to Eastern Europe, Scandinavia and Middle East. The capital inflows from the core countries to the periphery were invested mostly into the build-up of railroads, social amenities or used to finance budget deficits.

The first era of globalization resembles the current situation. Both periods were characterized by an unprecedented integration of national economies into the international economy through trade, capital and labor flows. Both periods witnessed persistent current account imbalances accompanied by massive capital flows. The adjustment mechanism was rather smooth (for a detailed discussion of the balance of payments adjustment under gold standard, see Chapter 5). However, there were few malign current account reversals, such as the Baring crisis of 1890, which began in Argentina and quickly spread to Brazil (Triner and Wandschneider 2005). This resembles the emerging market crises of the 1980s and 1990s. Finally, both periods were characterized by the stable prices in the major industrial countries as a result of adherence to gold standard in the past and adherence to credible domestic nominal anchors today.

However, it must be noted that there were several notable differences between the two periods. First, whereas the world's largest economy and the major military power was the world's largest creditor in the pre-War era, it has been the world's largest debtor in the past decades. Second, in the pre-War period the gross asset and liability positions were very close to net positions, whereas nowadays the major industrial countries are both major creditors and debtors (Obstfeld and Taylor 2004, 249). Thus, today's foreign asset distribution is more about asset swapping by rich countries and international financial diversification (ibid). Third, although both periods were characterized by increasing capital mobility, the solution to the trilemma, and hence the adjustment mechanism, was different. The classical gold standard of the pre-War period rested on the fixed exchange rates and free capital mobility at the cost of

independent monetary policy. On the other hand, following the collapse of the Bretton Woods system, most of the developed countries gradually moved towards flexible exchange rates, whereas a significant part of the developing world continued to peg their currencies.

Given these similarities, as well as differences, it is of interest to test whether the current models and explanations of the global imbalances are not time- or place-specific. The main determinants of the current account balances in the pre-War period are analyzed in Chapters 5 and 6. The former examines the major sources of changes in the trade balance of seven European countries before World War I, with the emphasis on the transitory and permanent shocks to income. As this approach does not differentiate between various sources of income shocks, Chapter 6 tests the relative importance of current account determinants in fourteen countries before World War I and 107 countries in the post-Bretton-Woods period. The following chapter discusses the global imbalances after the breakout of the World War I.

CHAPTER 2 – GLOBAL IMBALANCES, 1914-1945[25]

2.1 Political and Economic Background

The period between the outbreak of the World War I and the end of the World War II is best characterized as an interlude between two episodes of the world's hegemon being the major creditor nation. The World War I served as a catalyst to the changes in the prevailing economic, political and financial structures. It diminished the capacity of Great Britain and other European powers to credit the rest of the world through disruption of their economies, liquidation of their assets and rising indebtedness.

In order to finance the war efforts, Europe was forced to liquidate major part of its huge assets abroad. Britain sold £207 million out of £800-900 million in dollar investments, plus another £54 million of sterling; while France sold 3.5 billion out of 45, in addition to losing half of her holdings abroad (23 to 45 billion) because her debtors were wiped out – 12 billion in Russia alone (Landes 2003, 362).

The liquidation of assets was not sufficient and European powers soon found it necessary to borrow from abroad. Great Britain received loans to the amount of £1365 million, of which £1027 million came from the USA, £135 million from Canada and the remainder mostly from neutral countries (Pollard 1992, 27). Much of these loans were transmitted to other Allies. From the outbreak of war until the end of the financial year 1918/19, Britain had lent some £1741 million, including £171 million to countries within the Empire, £434.5 million to France, £568 million to Russia and £412.5 million to Italy (Pollard 1992, 27). The French covered their foreign exchange deficit partly by public loans (more

[25] An earlier draft of this chapter was presented at the 5th CEU Graduate Conference in Social Sciences: "Old Challenges in a New Era: Development and Participation," 19-21 June 2009, Budapest.

than 4.5 billion gold francs), but far more by direct borrowing from their Allies (more than 30 billions, mostly from the United States) (Landes 2003, 363).

On the other hand, the War mobilized the U.S. economy and largely accelerated its transition from a net debtor to an important creditor nation.[26] Between 1914 and 1919, America's net debtor position of $3.8 billion was transformed into a net creditor position of comparable magnitude; if war debts are added to U.S. foreign assets, the U.S. net creditor position in 1919 exceeds $12 billion (Eichengreen 1989, 110).

In the postwar period the United States replaced Britain as chief capital exporter. The United States emerged from the war with a significant trade surplus and large gold reserves. However, there was also the official component to American creditor status, namely the war debts to the Allies. These turned out to significantly influence the capital flows in the 1920s. France and Great Britain linked the war debts to German reparations and the United States linked the settlement of the war debts to the restoration of the foreign lending. As a result, the U.S. foreign investment was limited until 1924, when the Dawes Plan attempted to fix the reparation problems (Fishlow 1985, 418). The Dawes Plan sparkled the lending to Germany and was soon followed by other loans. Foreign borrowing, combined with reparations, transformed Germany from the third largest prewar lender to the largest debtor to the world throughout the 1920s. The $14 billion of long-term international lending between 1920 and 1930 emanated entirely from the United States and Britain in a ratio of two to one (Felix 1987, 14).

British capital exports remained substantial, but the annual flow averaged 11 percent below that between 1910 and 1913 (ibid). The British creditor position weakened also relative to the United States. In its heyday between 1924 and 1928, the foreign capital issues in New York reached the value of 1142 million dollars, almost twice the value of London foreign

[26] Except for the period of 1900-1905, the United States was a net debtor until the outbreak of the World War I in 1914 (Krasner, 1976 334, 347).

capital issues of 587 million dollars (Fishlow 1985, 418, table 4). Furthermore, Britain took into consideration the weakened balance of payments. Therefore, capital flows to foreign governments were embargoed before 1922 and again in 1925, 1929, and 1931 (Fishlow 1985, 418). Finally, France, which had been the second largest prewar creditor, withdrew from long-term lending until 1927 and invested mostly in its colonies and East European allies (Felix 1987, 14).

2.2 British-American Financial Relations during the War

Before the War, Great Britain was the most important foreign investor in the United States. However, after the outbreak of the war, this situation changed incredibly fast and Britain found itself overly dependent on the U.S. willingness to finance its war efforts. How did Great Britain become so financially dependent on the United States? By early 1915, British productive capacity switched from exports to war production, its exports of merchandise, as well as of shipping and financial services began to fall off and Britain found itself importing much of the supplies for its war factories (Pollard 1992, 27). The main items included food, cotton, oil and various kinds of munitions. Most of these imports came from the overseas and Britain started accumulating current account deficit against the United States. The pace of the rise in U.S. exports to Europe may be documented since the very beginning of the War. From April to June 1915, American exports to Europe more than doubled over the corresponding period in 1914 (van Alstyne 1933, 182). The rising amount of U.S exports to Europe and the resulting need to exchange pounds for dollars in order to pay for these exports, resulted in depreciation pressures on the British pound, which began falling. So the problems of the war finance and exchange rate turned out to be the two major issues of British financial policy during the World War I (see below).

From the beginning of the World War I until the end of the U.S. neutrality in 1917, Great Britain sought funds predominantly in the U.S. private market. The major loans for Great Britain (and also France) were floated by the banking house J. P. Morgan & Co. Morgan's started to act as a financial agent for the British government soon after the outbreak of the war. In January 1915, it was officially appointed the British government's purchasing agent in the U.S. and it assumed the same position for the French government in May 1915 (Horn 2000, 85). Until the U.S. entry to the War, Morgan's purchased goods, floated loans, handled foreign exchange operations of Britain and France; and advised British and French officials.[27]

The first major loan was floated after a significant drop in the British pound exchange rate.[28] On 14 August 1915, the rate of exchange dropped to nearly $4.70 to the pound from 4.86 at the outbreak of the war and Morgan's had only $4 million to cover payments due the following week totaling $17 million (Burk 1979a, 353). The British government therefore agreed that American securities would be purchased from their British owners for re-sale in New York and that £100 million in gold would be shipped to America (ibid). However, these were only temporary measures. So a joint Anglo-French mission, headed by the Earl of Reading, was sent to the United States to attempt to raise a loan on the private market.

The financial mission opened deliberations with a group of American financiers headed by J. P. Morgan & Co. in September 1915. The negotiations were hard, guided by

[27] The House of Morgan consisted of J. P. Morgan & Co. in New York, Morgan Grenfell & Co. in London, Drexel & Co. in Philadelphia, and Morgan, Harjes in Paris (Horn 2000, 85). "Until the spring of 1917 the procedure was that Grenfell would call in at the Treasury each day to talk over the trend in the exchange rate or problems connected with the payment of British government debts in the United States, and then he would cable the chancellor's instructions to the Morgan firm in New York. Further, Morgan personally kept Grenfell abreast of American financial and business developments, information about which Grenfell then passed on to the Treasury (Burk 1979, 352). In February 1917, the Treasury sent its own financial mission to the United States. The mission was headed by S. Hardman Lever, who had his office in the Morgan office in New York (ibid, 359-60).

[28] The first loan ever, consisting of a 10 million dollar advance to France in October 8, 1914, was made by the National City Bank (van Alstyne 1933, 182). Similar modest advances were made to France, Russia, and Germany by other banking institutions (ibid). However, due to the growing Allied demand for U.S. goods, these loans were very modest compared to the great Anglo-French loan described below.

financial principles rather than pro-Allied sentiments. The mission quickly abandoned expectations of borrowing $1 billion or even $750 million (Cooper 1976, 213). The resulting Anglo-French loan was the largest single advance and the only unsecured loan (van Alstyne 1933, 193). It amounted to 500 million dollars and was oversubscribed by 12 276 200 dollars. However, a syndicate price was 96 cents on the dollar which, after deductions for expenses, netted less than $475 million (Cooper 1976, 213).[29]

Further humiliation followed when the loan was offered to the public. Most of the subscribers were concentrated in the eastern part of the country and consisted mostly of large subscribers, such as financial institutions or industrialists. This reflected the low support for the loan in the Midwest and West with significant German and Scandinavian settlements (see van Alstyne 1933, 187; and Burk 1979a, 354). Thus, although six large munitions manufacturers bought $100 million of the loan, when the sixty-day offering period expired on December 14, 1915, $180 million remained unsubscribed and the house of Morgan itself took up the balance for future distribution (Cooper 1976, 213). This led to a change in the policy. Thereafter, Britain floated only secured loans. The British Treasury relied upon short-term commercial drafts and longer-term borrowing backed by British-owned American securities and shipments of gold as collateral (ibid, 214).

Except for the short-lived ban on loans at the outbreak of the war, the Anglo-French loan formed the Wilson administration's first dealings with the financial side of diplomacy (Cooper 1976, 215). Wilson himself took a cagey position towards the loan and argued that "[p]arties would take no action either for or against such a transaction," differing in opinion from the Secretary of the Treasury William Gibbs McAdoo and Secretary of State Robert Lansing, who tried to get Wilson to give a public blessing to the loan (Cooper 1976, 216).

[29] Britain and France had pledged both to keep, and to spend the loan wholly, in the United States (Burk, 1979).

The attitude of the Federal Reserve System, which had then been in operation only since November 1914, was mixed. Whereas some members of the board (Benjamin Strong, Frederic Delano, and Charles Sumner Hamlin) harbored pro-Allied sentiments, others (Paul M. Warburg and Adolph Miller) were initially against relaxing credit for the war trade (Cooper 1976, 215). Second, there were considerations for enhancing American financial power. Strong, governor of the Federal Reserve Bank of New York, wanted the Fed, especially his bank in New York, to supplant the Bank of England as the leader in international finance and believed that foreign loans and easier credit for war trade would hasten the day of American primacy in the world economy (Cooper 1976, 216). However, Strong had fallen victim to tuberculosis and had to remain in convalescence from June 1916 until the spring of 1917 (ibid). So the most effective supporter of loans to the Allies from the Federal Reserve Board was removed at a critical juncture (ibid).

Throughout 1916, the relations between the United States and Great Britain were soured by rising diplomatic tensions (see Burk 1979a, 356; or Cooper 1976, 218). The Americans were unsatisfied with the British shipping blockade, the British cable and mail censorship and the British dealing with the Easter rising in Dublin, especially the execution of its leaders. When Britain published a blacklist of some 87 American and 350 Latin-American firms accused or suspected of trading with the Central powers in July 1916, Congress empowered the President to retaliate commercially against countries that discriminated against American trade.[30] The Administration and Congress amended a revenue bill to slap a 12.5% direct profits tax on the gross incomes of all munitions makers, who promptly passed them on to the British government in the form of higher prices.

The American retaliatory legislation prompted the British government in September and October 1916 to initiate a comprehensive inquiry into dependence upon American trade

[30] The retaliatory measure was an amendment to the Revenue Act of 1916; see Cong. Rec., 64 Cong., 1 sess. (Sept. 5, 1916), 13790.

(Cooper 1976, 219). According to the report, of the £5 million which the Treasury had to find daily for the prosecution of the war, about £2 million had to be found in North America (Burk 1979a, 356). By March 1917, British reserves of gold and securities would be gone: "Now, in these circumstances," wrote Lord Eustace Percy of the Foreign Office, the chairman of the interdepartmental committee, "our job is not merely to maintain decently friendly relations with the United States, but to keep sentiment in America so sweet that it will lend us practically unlimited money (Cooper 1976, 220)." Thus, instead of a reprisal, Percy urged conciliation toward the United States (ibid).

In the meantime, Britain struggled to finance its imports of food and arms. When it was clear that sales of British-owned American securities – by then subject to a penal tax if not deposited with the British Treasury – would not be enough to finance the alliance purchases, Britain floated another loan through Morgan's for $250 million, secured by Canadian, American and foreign securities in September 1916 (Burk 1979a, 354). It was followed by another $300 million secured loan only a month later, in October 1916 (ibid, 357). However, the plans for an unsecured loan – to be floated in January 1917 – had to be abandoned because of a serious British financial crisis (see Burk 1979a, 357-60; or Cooper 1976, 222-227).

In November 1917, Morgan's decided to issue short-term, unsecured British treasury bills, intending them to be bought by American banks and repeatedly renewed, to overcome the brewing exchange crisis until more collateral arrived (Burk 1979a, 357). Since the Federal Reserve Board had privately disapproved of a $100 million French industrial credit proposed by the Bankers trust Company at the end of October 1916, one of the Morgan partners, Henry P. Davison, traveled to Washington on November 19 to inform the board and President Wilson about the planned issue (Cooper 1976, 22-3). The Federal Reserve Board feared that the amount (estimated to half a billion to billion dollars by Davison) would force the British

to convert it into long-term bonds, lessening the liquidity of the banks (Burk 1979a, 357). Furthermore, relations between the House of Morgan and the Wilson administration were strained because Wall Street had backed the Republicans in the recent election (Cooper 1979, 223). Wilson also decided to use the situation to pressure the Allies to further his plans for mediation and strengthened the warning by adding a note to the private investor to consider short-term issues carefully (Burk 1979a, 357).

The public statement issued on November 27, 1916, was a joint statement of the Federal Reserve Board and president Wilson. The statement urged American bankers not to extend too much credit to foreign borrowers and pursue a policy of keeping themselves liquid (Cooper 1976, 222). In an unprecedented step, it cautioned private investors to seek full and authoritative data, particularly in the case of unsecured loans (ibid). As justification for the warning, the board noted, "[t]he United States has now attained a position of wealth and international financial power, which, in the natural course of events, it could not have reached for a generation. We must be careful not to impair this position of strength and independence (ibid)."

When the warning was published in *New York Times* on 28 October 1916, the price of Allied bonds and American war stocks tumbled, and Morgan's had to buy nearly $20 million worth of sterling to maintain the exchange rate (Burk 1979a, 358). Within a week values in the securities market had fallen by $1 billion (ibid). Britain struggled on, sometimes with little more than a week's money in hand for American payments (ibid, 360). However, even with the cancellation of orders occasioned by the crisis, Britain was in February 1917 spending an average of $83 million a week in North America (ibid). To loosen the Morgan tie unpopular in the U.S. Administration, British Treasury sent its own representative, Sir Hardman Lever, to the United States in January 1917 (Cooper 1976, 227).

Finally, in February 1917, the United States broke off diplomatic relations with Germany. Once the United States entered the war on 6 April 1917, Britain opened relations with the American Treasury (Burk 1979a, 360). A high-level political mission, headed by A. J. Balfour, the secretary of foreign affairs, was sent to the United States to convince the American government to make an immediate loan of about $200 million (ibid, 360-1). The British intended to float a collateral loan in February 1917 but the U.S. secretary of the Treasury, William Gibbs McAdoo, asked them not to do so because the American Treasury began planning for a huge American war loan, the Liberty Loan, and McAdoo was afraid the British would pre-empt available funds (ibid). The loan was, therefore cancelled, which resulted in an overdraft of nearly $350 million at Morgan's by the beginning of April (ibid). Instead, McAdoo agreed to make a temporary loan to tide the British over until a bill could be passed by Congress which would provide for the purchasing of the bonds of the Allies by the American government – the genesis of the war debts (ibid). Finally, on 2 May 1917, at the first formal meeting of the Balfour mission with American treasury officials, McAdoo agreed to advance $200 million in three installments in May (ibid, 362).

However, these funds were not sufficient and the summer 1917 was complicated by British struggles to find the finance, as well as tensions between McAdoo and the British representation. The two main issues were the exchange rate and McAdoo's dissatisfaction with the British lack of communication. First, McAdoo was afraid that Congress would not accept the amount required by the British to support the rate of exchange in New York as a "war purpose" – the only purpose for which the American Treasury was empowered to purchase Allied bonds (Burk 1979b, 410). Discussions were not successful and the American Treasury's refusal to pay over promised funds on 26 June brought Britain to within hours of suspending payments in New York (ibid).

The second problem was McAdoo's complaints about the lack of information provided by the British. When on 12 July McAdoo cabled to Balfour that "America's cooperation cannot mean that America can assume the entire burden of financing the war," the British Treasury finally provided a detailed statement (ibid). Keynes drafted the reply to the Chancellor's specifications and the cable sent on 23 July 1917 stated that Britain had given the Allies nearly £194 million from 1 April to 14 July 1917, while the United States had given them only £90 million (Burk 1979a, 365; Burk 1979b, 410). He acknowledged that the American government had given Britain nearly £145 million in addition to the funds for the other Allies, but even since America came into the war financial assistance afforded to the other Allies by the United Kingdom has been more than double the assistance afforded them by the United States (Burk 1979a, 364-5). He concluded (Burk 1979, 365):

> In short our resources available for payments in America are exhausted. Unless the United States Government can meet in full our expenses in the United States, including exchange, the whole financial fabric of the Alliance will collapse. This conclusion will be a matter not of months but of days.

After this cable, financial aid came in agreed monthly advances. However, the question of using American funds to maintain the exchange rate had to be still settled. Late in July 1917 the pressures on pound were heavy once again. Since the beginning of the war Britain had exported to the United States a total of £305 million in actual gold and in 23 July Memorandum the chancellor had warned McAdoo that no more could be sent without destroying British credit by lowering the currency reserves (Burk 1979b, 412). In the meantime, Lever had been maintaining the rate in New York by, among other things, importing gold held for the bank of England in Ottawa, but by 23 July there was only £10 million left for this purpose (ibid). Keynes therefore suggested that in a choice between the rate of exchange and the remaining gold, the rate would have to give way (ibid, 412-3).

The new policy, as well as the Memorandum on Exchange was communicated to McAdoo by the British Ambassador in Washington, Sir Cecil Spring-Rice on 31 July 1917 and led to an additional advance of $50 million for August to meet the exchange situation (ibid, 413-4). The rate remained at 4.73 throughout the war. After April 1917, Britain retained some financial independence of the American government by raising finance by shipping gold, selling securities and borrowing in other countries, although the amount raised was only $800 million, whereas the American government lent over $4000 million to Britain from 1917 to 1919 (Burk 1979a, 371).

The last conflict during the war concerned the overdraft at Morgan's, when the British at McAdoo's request refrained from floating a loan to keep the market free for the Liberty Loan (Burk 1979, 365). In July 1917 Davison called at the American Treasury and demanded to know when the repayment of the overdraft would begin. McAdoo gave the permission for an issue of short-term Treasury paper in August and this was taken up by the banks involved as part payment (Burk 1979a, 366-7). However, the Americans argued that if they provided money to help to retire these obligations, they should be entitled to take over the collateral (British-owned American and other securities) deposited with Morgan's as security for the overdraft (ibid, 369):

> The American Treasury had forced the British to resign control over their own assets, a concession symbolic of the changed financial relationship between the two countries: no one doubted any longer who held the whip hand, and this led to growing fear in the British Treasury during 1918 that the United States would not hesitate to use it.

In order to provide the loans, as well as to finance the American war efforts, the United States relied on several sources of financing. Friedman and Schwartz (1993, 221) provide an account of the war financing. Total federal government expenditures between March 1917 and May 1919 were $32 billion and additions to Treasury cash balances $2 billion. Of that total of $34 billion approximately 25 percent was financed by explicit tax plus

nontax receipts; 70 percent by explicit borrowing; and 5 percent by direct money creation, which may be regarded for that period as largely an implicit tax on money balances levied through the rise in prices. As can be seen, the highest amount of war financing came from direct borrowing.

McAdoo hoped to create a broad market for government bonds, the famous Liberty Loans, by following an aggressive policy of "capitalizing patriotism" (see Rockoff 2004; Kang and Rockoff 2006). In order to make the public to express its support for the war by buying war bonds, he enlisted leading artists to paint posters urging the purchase of bonds and organized giant bond rallies featuring Hollywood stars (ibid). The Boy Scouts were enlisted under the slogan "Every Scout to Save a Soldier (Rockoff 2004, 12)." Four Liberty Loans were issued between 15 June 1917 and 24 October 1918 and one Victory Loan in April-May 1919. The total amount of Liberty Loans was 16.945 billion dollars (21.455 billion, including the Victory Loan).[31] These Liberty Bonds served as an instrument for the war debts, which played a significant role in the interwar period.

2.3 War Debts

The link between the reparations and the war debts was peculiar. The United States did not sign the Treaty of Versailles and did not expect any reparations from Germany. However, it insisted on repayment of the war debts to Allies. Thus, a situation emerged, in which Germany paid reparations to Allies, who used it to repay their war debts to the United States. However, the United States insisted that there was no link between the reparations and war debts and refused to accept reparations directly from Germany.

[31] However, Rockoff (2004) and Kang and Rockoff (2006) argue that patriotism proved to be a weak offset to normal market forces. They suggest that market forces played a more important role than the patriotism.

This was in contrast to the reasoning of Allies. The British suggestion for cancellation of war debts, originally advanced in Keynes (1920), was put forward in a series of formal exchanges of 1920 ending up in letters between Lloyd George and President Wilson and especially in the Balfour note of August 1, 1922 (Kindleberger 1986, 25). The note was addressed to French ambassador in London and to the diplomatic representatives of the Governments of Italy, Yugoslavia, Rumania, Portugal, and Greece (Federal Reserve 1922). It stated that inasmuch the United States had insisted on collecting its war debts, Britain had no choice but to collect debts owed to them but would do so only up to the limit of the British debt to the United States (Kindleberger 1986, 25).

The United States rejected tries to cancel the war debt and attempted to pressure the Allies to repay the debts. In 1922, it created the World War Foreign Debt Commission, which negotiated repayment agreements with its debtors on an individual basis. Furthermore, it used access to the New York capital market as a means of pressure to collect the debts. On 3 March 1922, Department of State issued a public statement in which, after referring to the increasing number of foreign bond issues being floated in the American market, it requested that American bankers contemplating making foreign loans should inform the Department of State so it could advice the bankers as to whether there was or was not objection to any particular issue (Dulles 1926, 33). Although the Department had no legal power to require bankers to consult the loans, the publicly indicated disapproval could destroy the marketability of the loan issue. The most notable example is the intervention in the French attempt to raise a loan. The Department of State prevented France from borrowing in New York in November 1924 by the informal ban because France did not attempt to settle war debts (Feis 1950, 21-23, cited in Kindleberger 1986, 26, fn. 32). The ban was renewed in September 1925 when a French delegation in Washington failed to reach agreement with the United States, and once again in April 1926, after agreement had been reached but no French

government dared to submit it to the Chamber for ratification (ibid). This ban forced France and other U.S. debtors to take part in the conference led by Dawes (see above). The position of the Administration was expressed in an article by Secretary Mellon (Dulles 1926, 36-37):

> Early in the year 1925, after much consideration, it was decided that it was contrary to the best interests of this country to permit foreign governments which refused to adjust or make a reasonable effort to adjust their debts to the United States, to finance any portion of their requirements within our borders. States, municipalities and private enterprises within the foreign country concerned were included in the prohibition, and bankers consulting the State Department were notified that this Government objected to such financing.
>
> While the United States is reluctant to exert pressure by this means on any foreign government to settle its indebtedness, and while this country has every desire to see its surplus resources at work in the economic reconstruction and development of foreign nations, our national interest demands that our resources be not permitted to flow into countries which do not honor their obligations to the United States and to its citizens.

However, despite these occasional interventions and frowning on the private loans to the countries with unsettled war debts, it must be noted that Americans, just like British in the nineteenth century, applied the *laissez-faire* attitude to the capital flows. The thrust of American economic policy in the 1920s was to eliminate or minimize barriers to the free flow of goods and capital across frontiers (Costiglia 1977, 915, fn 15).

2.4 Reparations

The history of reparations falls into three periods: (1) from Versailles in 1919 to the Dawes Plan in 1924; (2) from the Dawes Plan to the Young Plan (1924 to 1930); and (3) from the initiation of the Young Plan in April 1930 to the Hoover moratorium in June 1931.[32]

The bases of Germany's reparation burdens are Article 231 and Article 232 of the Versailles Treaty, which assigned responsibility for the war to Germany and her allies and

[32] For an overview, see Kindleberger (1986, 17-26), Moulton and Pasvolsky (1932) or Marks (1978).

required Germany to make compensation for all the damage done.[33] The Versailles Treaty specified that Germany make an interim payment of 20 billion gold marks (Marks 1978, 233). The total amount of the damage was to be determined by the Reparation Commission. Contrary to common belief, the United States had claims upon Germany amounting almost $1.5 billion (nearly 6 billion gold marks) and it received regular shipments of dyes until late 1922 when it renounced its right to reparations dyes (Marks 1978, 235). Altogether, the United States received over 400 million gold marks of private individuals claims, Rhineland occupation costs and governmental reparations claims (ibid).

The Powers had already agreed at Spa Conference in 1920 (the finding of the Commission not being out until May 1921) on the main percentages in which the reparation debt from Germany was to be shared between them (ibid). France won 52 percent, Britain 22, Italy 10 and Belgium 8 percent of German payments (Britannica, undated). The Reparation Commission fixed the sum at 132 billion marks with 5 or 6% interest in April 1921. Germany was supposed to hand over to the Reparation Commission three series of bonds, "Series A" totaling 12, "Series B" totaling 38 and "Series C" totaling 82 billion marks. The "A" and "B" bonds were to provide for 5% interest from 1921; the "C" bonds were to be handed over without coupons (Feilchenfeld 1928, 301). The latter would not be issued until the first two series were paid and existed as much to balance against Allies' debts to the United States as actually to be paid by Germany (Britannica, undated).

[33] "Art. 231. The Allied and Associated Governments affirm and Germany accepts the responsibility of Germany and her allies for causing all the loss and damage to which the Allied and Associated Governments and their nationals have been subjected as a consequence of the war imposed upon them by the aggression of Germany and her allies.
Art. 232. The Allied and Associated Governments recognize that the resources of Germany are not adequate, after taking into account permanent diminutions of such resources which will result from other provisions of the present Treaty, to make complete reparation for all such loss and damage. The Allied and Associated Governments, however, require, and Germany undertakes, that she will make compensation for all damage done to the civilian population of the Allied and Associated Powers and to their property during the period of the belligerency of each as an Allied and 'Associated Power against Germany by such aggression by land, by sea and from the air, and in general all damage as defined in Annex I hereto. .... (cited in Feilchenfeld, 1928, 300)."

There was a dispute between the Allied members and Germany about the amounts already paid. Whereas the Commission calculated that 7.9 billion had been paid in securities, ships and deliveries, Germans claimed credit for having paid 20 billion (Kindleberger 1986, 19). The difference of almost 12 billion marks was claimed as the value of state works in ceded territories by Germans (ibid). The overall difference amounted to almost 47 billion gold marks.

Germany was required to pay 2 billion gold marks a year, plus 26 percent of German exports in addition to occupation expenses, which would amount to about 6 percent of GNP using 1925 data (Dornbusch 1985, 5). The 1921 payments were met in early 1922 (ibid). In the meantime, an economic crisis got hold of Germany. The mark collapsed and inflation started to accelerate (see below). On 31 May 1922 the Reparations Commission granted Germany a six-month moratorium in the hope that the German economy would recover. However, at the end of the moratorium, the Reparations Commission declared Germany in default because of a delayed delivery of timber to France. "It was remarked at the time by the British delegate that probably timber had never played so important a part in international relations since the days of the Wooden Horse of Troy (Williams 1932, 188)." No action was taken on timber default. However, on January 9, 1923, the Reparation Commission declared the coal default by a vote of three to one (Britain was against) and by the same vote, decided to occupy the Ruhr, the centre of the German coal and steel industries (Marks 1978, 244. For a detailed overview of the events leading to the Ruhr occupation, see Cornebise 1972). In the first four months, the French collected $625 000 over costs, compared with $50 million in the same period of 1922 (Kindleberger 1986, 21).

During the occupation the inflation that began to accelerate in 1922 spiraled into hyperinflation. German prices as well as the dollar rate doubled each month, except of March and April due to a *Reichsbank* intervention in the exchange market (Dornbusch 1985, 7). The

inflation rose from 3.5 percent per day in July to 6.5 percent in August, to 11.2 percent in September, and finally to 20.9 percent in November (at 20 percent per day inflation, the price level doubles in less than four days) (ibid, 7-8). The exchange rate fell from 275 marks to the dollar in May 1922 to 370 in June, to 485 in October and to 16 667 in June 1923 (Kindleberger 1986, 20).[34]

In June 1923, the German government made a proposal to the Allied and Associated powers of a mortgage on Germany's real estate to secure an issue of 10 billion gold marks of bonds (Finletter 1925, 256). On November 30, 1923, the Reparation Commission invited the Report of the First Committee of Experts to "consider the means of balancing the budget and the measures to be taken to stabilize the currency" of Germany (ibid). The commission was chaired by Charles G. Dawes.[35] The main aim was to stabilize Germany and find the way to make it pay the reparations. The resulting Dawes Plan presented in April 1924 was based on the following. First, Germany's annual reparation payments would be initially reduced and increase once German economy improved. The schedule of annual payments would start at 1 billion gold marks in the first year and rise to 2.5 billion in the fifth, varying according to changes in world prosperity, i.e. if gold prices changed upward or downward by more than 10 percent (Kindleberger 1986, 21). However, the overall amount of reparations remained unchanged. Second, the Ruhr area would be evacuated by the Allied occupation troops. Third, German finances would be reorganized under the foreign supervision. New currency, the *Reichsmark*, replaced the old *Rentenmark*. The conversion rate was a trillion *Rentemark* per 1

[34] Dornbush (1985, 7-8) observed: "The stories of life in the most dramatic stages of hyperinflation are well known. Keynes reports how people would order two beers at a time because the beer would grow warm and stale more slowly than the price was rising. Taxis were preferred to streetcars because you paid at the end of the trip. Other accounts include stories on how firms made payments of workers by furniture van. Schacht (1927) reports that the demand for notes was so immense that 133 printing firms produced notes for the government on more than 1783 machines with 30 paper factories working full time for the government needs."

[35] Dawes received a Nobel Prize for the Dawes Plan.

Reichsmark (ibid, 27).[36] *Reichsbank* became independent of the German government and was required to maintain reserves, three-quarters gold, one-quarter foreign exchange, at a 40 percent ratio to note and deposit liabilities (ibid). Finally, a loan of 800 million marks ($200 million) was to be floated against the collateral of German railroad securities (ibid, 22). The German external loan floated on the U.S. market by a syndicate headed by J. P. Morgan was a huge success. It was heavily oversubscribed, selling 110 million dollars. The demand was so high that the loan, bearing a 7% coupon, offered for subscription at 92 by the syndicate went to a premium over the subscription price of 92 and at one time sold over 95 (*Time*, 27 October 1924).[37]

Although there were other big foreign loans, e.g. $150 million loan for Japan in February 1924 and $100 million for France to assist stabilization in March 1924 issued by Morgan's, the Dawes loan sparkled the foreign lending to Germany and Latin America and was quickly followed up by similar bond issues for Krupp and Stahlverein, Thyssen, Krupp twice again, and subsequently for German municipalities (Feis 1950, 42, cited in Kindleberger 1986, 22, fn. 26; see below).

Under the Dawes Plan, Germany met her obligations almost in full, especially because of the constant inflow of foreign capital. However, the plan was considered a temporary solution to the reparations problem. The call for the final solution came from Seymour Parker Gilbert, the Agent-General for Reparations. In his report on third year of reparations, he called for a thorough and satisfactory settlement of the reparations problem which would finally determine the amount of Germany's indebtedness, set aside the prevailing transfer measures,

[36] In 1924, Dr. Schacht, the president of the *Reichsbank*, performed what to Germans seemed a miracle. "When they went to bed, a dollar was worth 42,000,000,000,000 old German marks. When they woke up, a dollar was worth only four new marks (Time, 25 June 1934)."

[37] However, Marks (1978, 248-9) observed that behind the scenes, decisive pressure was exerted by representatives of J. P. Morgan and Company, whose imprimatur was essential to raise the large loan to Germany upon which the Dawes Plan depended. Further, the French franc had continued to decline, and France urgently needed loans from American bankers, again dependent upon Morgan approval. Thus France had to accept the final scheme, even though Morgan agents required provisions making future sanctions against default virtually impossible, since the American loans would extend for twenty-five years, whatever happened to reparations.

and abolish the Dawes Plan supervision of German finances (Bergmann 1930, 585). Germany, whose Dawes payment of 2.5 billion marks approached and who was interested in evacuation of Rhineland took the call (Marks 1978, 249).

A committee formed in the autumn 1928 was chaired by Owen D. Young, the head of General Electric and a member of the Dawes committee. The plan specified that Germany pay annuities below the Dawes standard-year figure of 2.5 billion for fifty-nine years but only 660 millions marks of each annuity was unconditionally payable, the remainder being postponable under conditions of economic or monetary distress (Marks 1978, 250). The plan also involved the establishment of a Bank for International Settlements in Basel to facilitate the payment of reparations and thus supersede the Reparations Commission and the Dawes foreign supervision.

The Young Plan raised hostility in Germany. On 22 December 1929, there was a German referendum on the Young Plan, in which Adolf Hitler gained significant national attention, with 5.8 million voters opposing the plan (ibid, 251). However, the referendum was a defeat for the nationalists. The *Reichstag* ratified the Young Plan on 12 March 1930.

In the meantime, the world started sinking into the recession. German recovery after the stabilization of 1924 was short-lived. From 1928 on, German output declined within four years by more than 30 percent relative to trend, and then almost completely recovered within the following five years (Fisher and Hornstein 2001, 1; on the sources of the depression, see Box 2.1). There was a dramatic fall also in employment, consumption and investment. In 1929 and 1930, the Reichsbank had to deal with two foreign exchange runs: in the first case in cooperation with other central banks and in the second with a private American loan consortium led by the Boston bank of Lee Higginson & Co (James 1984, 69). In spring 1929, market feared that the experts of the Paris Experts' Committee on reparations would not be able to reach agreement on a new reparations plan, in September 1930, money flowed out of

Germany after the Nazi party did unexpectedly well in the Reichstag elections (ibid). As a result of the 1930 crisis, Germany sought the reparations relief (Marks 1978, 252). However, the final hit for the reparations came the following year.

Box 2.1: Sources of the Great Depression in Germany

There is an ongoing debate on the causes of German depression. Borchardt (1991) argues that the causes of the depression lie in the German conditions before 1928. He argues that the main cause were high labor costs, which made German goods uncompetitive on world markets. Because of this, Germany did not accumulate export surpluses to finance reparations. Instead, it was forced to borrow abroad. This left it vulnerable to a sudden halt in capital inflows. Importance of the real wages is emphasized also by Fisher and Hornstein (2001), although they take the economic conditions in 1928 as given. Their results suggest that the real wages, which were significantly above their market clearing levels, were the most important factor for the economic decline, with changes in productivity and fiscal policy playing an important role as well. However, they do not control for alternative explanations, such as monetary policy, malfunctioning financial system, the reparations payments imposed by the Versailles Treaty and international trade. Alternative view sees the major cause of the German depression in the failure to cut the link with gold (Eichengreen and Sachs 1985; Eichengreen and Temin 2000): "It [the mentality of gold standard] survived the First World War and promised a safe haven for ships of state buffeted by stormy social, political and economic seas. But once those ships began taking on water, gold was a millstone around their necks (Eichengreen and Temin 2000, 206)."

In May 1931, Austria's largest bank *Creditanstalt* declared bankruptcy (see Schubert 1991; and Aguado 2001). The failure was of great importance because about two-thirds of Austria's industries depended upon it for their credit requirements (Murad 1932, 176). France exacerbated the 1931 run on the Austrian shilling in order to force Austria to abandon the Austro-German customs union project announced in March 1931 (see Aguado 2001). The crisis spread quickly. On 13 July 1931, the Darmstädter- und Nationalbank, a major German financial institution, failed (James 1984, 69). This lead to a general run on the banks and a forced closure of all German institutions, which reopened for a limited business after two days and resumed normal operations only on 5 August (ibid, on the sources of the 1931 German crisis, see Box 2.2).

In order to deal with the inability of Germany to pay reparations, president Herbert Hoover proposed a one-year moratorium on all intergovernmental debts, which was accepted in July 1931. The measure was designed to insure the safety of private investments of creditor nations (Marks 1978, 252) based on a belief that the reparation payments would be renewed once the economic conditions improve. However, the conditions of the international economy continued to decline in the following months. Britain continued to pay installments on the war debts to the United States in December 1932 and June 1933 (Kindleberger 1986, 18). The reparations were declared dead in the Lausanne Conference of July 1932 (ibid). By mid-1933, all European debtors except Finland had defaulted on their loans from the United States. Finally, on 14 June 1934, Germany declared suspension of all payments in foreign currencies on its foreign market debt, the major of which were the Dawes and the Young bonds (Auld 1934, 6). This act immediately followed by the formal Allied default on war loans (ibid).

Box 2.2: Sources of the 1931 German crisis

Ritschl and Sarferaz (2008) provide an overview of the sources of the 1931 German crisis. James (1984, 1986) – in line with Borschardt (1979) – links the July 1931 crisis to the problems of German public finance in the late 1920s, especially Reichsbank's curb of the credit facilities to banks and businesses. According to James, Germany's international position in July 1931 deteriorated primarily through domestic capital flight. The banking perspective was supported by Schnabel (2004) and Adalet (2003) who argue that the German banking system had been weak since the hyperinflation and was heavily exposed internationally. On the other hand, Holtfrerich (1991) argues that the crisis was triggered by aggressive foreign statements by the German government, which resulted in the refusal of otherwise available foreign credit to avert the crisis. The currency position was taken also by Ferguson and Temin (2004) and Temin (2008), who argue that the banking system was not unhealthy and the foreign policy games by Brüning precipitated an avoidable currency crisis. Finally, Ritschl and Sarferaz (2008) challenge both views and argue that the underlying problem of the 1931 crisis was foreign debt, to which the currency and banking problems at the time were arguably endogenous.

Auld (1934) describes how the Allies used the clearing systems to enforce debt collection. All the Allies, apart of the United States, ran trade deficits with Germany. Only few days after the German default the British Chancellor of the Exchequer obtained from Parliament a discretionary authority to set up debt collection through clearings. Germany threatened a retaliation against the British Dominions which sold more to Germany than buy from it. However, by July 4 Germany had agreed to provide sterling to pay British holders of coupons maturing to December 1934 on bonds of the two issues which on June 15 had been

in the ownership of British holders (ibid, 7). France, Switzerland and Holland obtained similar agreements. On the other hand, the United States, not being a party to the international treaties underlying the Reich bonds, dealt with the default as part of the broad question of the status of all American investment in Germany. The German government and Schacht expressed a desire to obtain special concessions for the German export trade. However, the U.S. government rejected it on the basis of the equal treatment to American investors. The reparation and war debt flows were not renewed.

2.5 Private Capital Flows

The first post-War years saw only little foreign lending, in contrast to the burst that started in 1924 and lasted to an abrupt halt in 1929. The United States conditioned the lending by the European reconstruction based on the return to the gold standard, balanced budgets and the war debts settlements. Part of this was accepted in the 1924 Dawes Plan and the United States restored the foreign lending to Europe.

However, Great Britain had a different plan for the postwar financial reconstruction, a plan which would restore London as the financial centre.[38] The key step was the resumption of the domestic gold convertibility. The question was at what rate. Although pound emerged from the war weaker, devaluation did not seem an option. The British feared that it would undermine the credibility of Britain's commitment to gold and drive international investors to New York. The return to the gold at the pre-war parity of $4.86 per pound therefore meant either deflation in Britain or inflation in the United States. Between 1918 and 1925, some Britons, including John Maynard Keynes and Chancellor of the Exchequer Winston Churchill, considered the possibility of forcing inflation on the United States by paying the

[38] For a detailed account of the Anglo-American financial rivalry in the 1920s, see Costigliola (1977). The story of the monetary problems in the interwar period and the return to the gold standard is in Eichengreen (1996, Chapter 3).

war debt in gold rather than dollars (Costigliola 1977, 920-921). However, British Treasury financial counselor Otto Niemeyer found the idea of overfeeding the United States with gold unworkable. He believed that the United States could absorb much gold without any significant effect on the price level. The only solution left was to push up sterling against the dollar through deflation. The Bank of England raised the interest rates. Prices began to fall. However, the deflation was recessionary. The percentage of the insured labor force recorded as unemployed had risen from 2 to 11.3 percent in 1920-21 (Eichengreen 1996, 58). Overvalued pound and undervalued French, Belgian and German currencies made British exporters less price competitive. The rising unemployment made Britons, especially Churchill, reluctant to return on gold. The factor that pushed Britain back on gold came from the outside. In early 1925, South Africa announced it would adopt the gold standard whether Britain did so or not. Australia was about to do the same. The potential alienation of the dominions and the threat of the international gold standard based on the U.S. dollar led to the Britain's adoption of the gold standard in April 1925, few months before the expiration of the Parliament act suspending the gold convertibility. At the end of the year, Great Britain withdrew an embargo placed on foreign loans during the war.

The foreign lending was the most robust in the period of 1924-1929. In the 11 years ending in 1930, U.S. investors lent more than $10 billion, 40 percent in the form of direct foreign investment, and 45 percent through the purchase of long-term foreign securities (Eichengreen 1989, 110). This was the only period in the U.S. history of foreign lending, when portfolio investment was greater than direct investment. The U.S. direct investment abroad began after the Civil War and involved companies with national sales plans and unique products (Wilkins 1970, 35, cited in Lipsey 1987, 9).[39] The share of direct investment in the foreign investment was more than 90 percent in 1897, more than 75 percent in 1914 but

[39] The first American international business with salaried sales representatives abroad in the 1860s and the first foreign factory by the late 1860s was Singer, the manufacturer of sewing machines (Wilkins 1970, 37-42).

less than half in 1930 (Eichengreen 1989, 110). The primacy of direct investment reappeared by 1935 after a series of defaults and so the 1920s are an exceptional episode in the U.S. foreign lending.

Geographically, most of the lending was directed to Europe and Latin America. Whereas most of the investment in Latin America took the form of direct foreign investment, portfolio investment was heavily directed toward Europe (Eichengreen 1989, 115). Between 1924 and 1929, the direct investment went predominantly to the primary production (agriculture, mining and petroleum production), manufacturing and public utilities. Public utilities saw the highest increase from 4.2% in 1924 to 13.6% in 1929.

Eichengreen (1989, 115-6) argues that relative rates of return played some role in allocating U.S. savings between domestic and foreign uses because yields on foreign bonds exceeded those on U.S. government securities and high-grade corporate bonds, if not always those on domestic medium grade bonds.[40]

Overall, the United States loaned abroad some $6.4 billion and the United Kingdom $3.3 billion in the period of 1924-1929, during which the growth in foreign lending was the highest (Kindleberger 1986, 41). The first changes in the foreign lending appeared in late 1920s. The United States withdrew the capital from Europe. This came at the end of a longer period of the reversal in the capital flows. Whereas after war most of the capital flow took the form of purchase of European securities by American investors, by the late twentieth this source of supply thinned out, as rapidly appreciating American common stocks proved more attractive; and the transfer of funds took the far more dangerous form of short-term or call loans, placed in Europe by bankers who were attracted by higher interest rates (Landes 2003,

[40] Eichengreen (1989, 116) observes that "[d]espite sterilization by the Federal Reserve, a steady gold influx in conjunction with the expansion of bank credit depressed the returns on domestic assets. After 1921 the rate on bankers' acceptances declined to less than 4 percent, while call money rates fluctuated between 2 and 5 percent. Domestic bond yields declined from 1923 through 1928. In a period such as 1927-28 when medium-grade domestic bonds yielded only 5.5 percent, foreign bonds which might yield seven or eight percent were understandably attractive."

371). The problem of this "hot" money flows was that it could be easily reversed. This turned out to be the case in 1928, when the boom in American home securities diverted all funds to Wall Street (Pollard 1992, 89). By late 1928 and early 1929 American banks began calling their European loans, so that net exports of capital from the United States, which had risen from less than $200 million in 1926 to over a billion dollars in 1928, plunged to $200 million again in 1929 (Landes 2003, 371).

The U.S. stock market boomed. In mid-1927, domestic corporate bonds had turned down in favor of corporate stocks and foreign bonds reached new peaks in the fourth quarter of 1927 and the first half of 1928 (Kindleberger 1986, 54). The collapse in foreign-lending occurred after June 1928, especially for German, other European, and Asian and Oceanian issues (ibid). Canadian borrowing dropped sharply in the third quarter of 1928 but recovered and the new issues for Latin America held up until the Great Crash in the third quarter of 1929 (ibid).

The Great Crash ended a period of the stock market boom. The nominal Standard and Poor's composite index rose 64 percent between January 1928 and September 1929, fell 33 percent between September and December 1929, recovered about halfway to its 1929 peak, and then fell again to a low point in the summer of 1932: 66 percent below its December 1929 level and 77 percent below its September 1929 average (de Long and Schleifer 1991; see also Box 2.3). During the eight frantic sessions between Wednesday, October 23 and Thursday, October 31, a total of nearly 70.8 million shares were traded – more than had changed hands in any month prior to March 1928 (Klein 2001, 325).

Box 2.3: Stock market bubble in 1929?

There is an ongoing debate on whether there was a stock market bubble in 1929 or not. Historical explanations, focusing on short-term behavior of the market, emphasize the role of panics and manias (See Galbraith 1988, Kindleberger 1978, Noyes 1938). This view was challenged by empirical analyses, which claim that there are no persistent bubbles and stock markets move closely enough with their fundamentals measured by dividends (see Sirkin 1975, Santoni and Dwyer 1990, Barsky and De Long 1990). However, there are studies which attempt to find anomalous behavior in wider financial markets, such as brokers' loans, which investors used to fund stock purchases (Rappoport and White 1993) or closed-end funds (De Long and Schleifer 1991). Both studies support the hypothesis that there was a bubble. For a detailed literature review, see Klein (2001).

The Great Crash is often marked as the beginning of the Great Depression, however, the link between the two is debated. The main argument for the inability of the Great Crash to cause the Great Depression is based on the fact that the real output started down before stock prices collapsed and because the largest falls in output did not occur until nearly two years later, after the banking panics of 1931 (see Dornbusch and Fischer 1984). However, some authors (Temin 1976, Romer 1990) suggest the link between the crash and the consumer confidence and spending. Romer (1990) suggests an "uncertainty" link between the two events: the collapse of stock prices in October 1929 generated temporary uncertainty about future income which led consumers to forgo purchases of durable goods (see also Box 2.4).

Box 2.4: Causes of the Great Depression

There is no consensus on the causes of the Great Depression. There are several competing explanations and the debate is mostly organized along keynesian vs. monetarist explanations, i.e. spending vs. money. The keynesian explanations revolve around the autonomous decline in spending (see Keynes 1930, vol. 2, 194, 196; 1936, 323. For an overview of the econometric studies of the spending hypothesis, see Temin 1976, 31-83). Friedman and Schwartz (1993) see the main cause of the Great Depression in policy of the Federal Reserve System, which led to the money contraction. Meltzer (1976) extends this explanation by an international aspect of the Smoot-Hawley Act of June 1930. On the contrary, the Austrian school argues that the Great Depression was caused by the easy credit policies of the Federal Reserve System in the 1920s (see Rothbard 1963). Eichengreen and Temin (2000) link the causes of the Great Depression to the inherent problems of the gold standard of the 1920s. Finally, Kindleberger (1973) argues that the Great Depression was caused by the absence of the hegemon in the international arena. See also Box 2.1.

The Great Depression led to a number of defaults (see Mintz 1951, 30-1). The first defaults occurred in Latin America. Bolivia suspended service on its dollar bonds in January 1931, followed by Peru, Chile, Brazil, Colombia and Costa Rica throughout the year, Uruguay and El Salvador in 1932 and Panama and Cuba in 1933. A wave of European defaults started in 1932 and rapidly spread through agricultural countries of Eastern Europe – Hungary, Greece, Yugoslavia and Rumania. Germany reduced and then suspended payments on dollar bonds in 1933 and defaulted on the Dawes and Young loans in 1934. Poland defaulted in 1937. Several countries defaulted on some of their issues but maintained on others in full: Canada, Argentina, Panama, Cuba and Czechoslovakia. Altogether,

approximately two-third of foreign securities held by American investors fell into default over the course of the Depression decade (Eichengreen 1989, 137).

Mintz (1951) argues that the major cause of the defaults was the deteriorating quality of new foreign issues (measured by the proportion that subsequently defaulted) in 1920-30. The percentage of issues that went to borrowers who defaulted in 1930s increased from 6 percent of the issues of 1920 to 63 percent of the issues of 1928. Of all loans issues in the period of 1920-24, only 18 percent went to borrowers who defaulted in the 1930s while for 1925-29 the ratio is as high as 50 percent. Mintz argues that the most important single factor leading investors to be less cautious was the complete absence of defaults on foreign bonds during the 1920s. Furthermore, she argues that the foreign lending market changed from a buyers' to a sellers' market, where the buyers correspond to the lenders and the sellers to the borrowers. Thus, whereas in the 1920s a borrower had to seek out a banker willing to lend, and the resistance of the banker and the public had to be overcome by high yields and large spread, the process was reversed in the late 1920s, where New York bankers sent their representative to foreign capitals to search for those willing to borrow.[41]

Eichengreen (1989) investigates the hypothesis that borrowers in the 1920s failed to discriminate adequately among borrowers. His results provide some evidence that lenders discriminated among potential borrowers on the basis of reputation and political factors conveying information about the probability of default, but little evidence that they were responsive to current economic conditions in the indebted countries.

[41] The two exceptions were J.P. Morgan and Co. And Kuhn, Loeb and Co., who followed the tradition of the borrower seeking the lender. They also cut their lending in the second half of the period. Their default indexes were the second and the third lowest of the group investigated by Mintz (1951, 68).

2.6 Policy Response

The policy response to the Great Depression and the International Financial Crisis of 1931 was varied. In response to the currency runs of the 1931, numerous countries raised exchange controls (see Obstfeld and Taylor 1997). Germany, Austria and Hungary developed complex systems of "blocked currencies" and bilateral clearings, which were later joined by other Central and Eastern European countries, this way leading to the return of virtual barter conditions in many goods markets and repression of foreign investment (ibid, 19). The forcible confinement of foreign exchange within borders was institutionalized in the system of "blocked balances" in Latin American countries. Restrictions on foreign exchange to prevent capital flight were applied also in Great Britain, Belgium, France, Japan and Australia. As a result, the international economy was fragmented into (1) sterling area countries trading mostly with Britain; (2) Central European countries isolated behind exchange controls; and (3) gold standard countries (the United States, the Netherlands, Belgium, France, Switzerland and Poland) sheltered behind trade barriers (Eichengreen 1992, 258).

Thus, instead of the international cooperation and a joint approach to the problem, states relied mostly on unilateral solutions. This was the result of several factors. First, the Bank for International Settlements could not facilitate central bank cooperation because of the reparations problems. Since it was responsible for the reparations transfer and the U.S. Congress opposed any action that drew links between reparations and the repayment of war debts, the Federal Reserve System did not join the regular meetings of the B.I.S. (ibid, 259). Similarly, the London Economic Conference of 1933 aimed at tackling the global depression, revival of international trade and stabilization of currencies turned out to be a failure, when President Roosevelt abandoned the gold standard midway through the proceedings.

Finally, the financial instability weakened the international economy. The United States itself experienced a wave of bank failures followed by a wave of withdrawals by panicstricken depositors. The second day after the inauguration, President Roosevelt called a special session of Congress which instituted a mandatory four-day bank holiday. The aim was to close down insolvent banks and reorganize and reopen those banks that were able to survive. After the four days of book-checking (similar to bank "stress tests" of 2009), more than 10% of U.S. banks were permanently closed (Romer 2009, 9). In response, real stock prices rose over 40% from March to may 1933, commodity prices soared, and interest-rate spreads shrank (ibid).

Between 1935 and 1940, the United States was a destination of flight capital despite the low level of economic activity. Foreign private investment in the United States more than doubled and short-term investment solely more than quadrupled (Lipsey 1987 19). On the other hand, U.S. direct and especially portfolio investment abroad declined. As a result, after two decades of being a net creditor on private account, the United States slipped back into the position of a net debtor, aside from U.S. government holdings of official reserve assets (ibid, 21).

The position of the United States as a creditor was re-established during the World War II. The United States turned away from the non-interventionism and started to deliberately plan the post-war international economic order based on the liberal ideas. Its interest in the abolition of the interwar tariffs, which would enable the placement of U.S. products in foreign markets, translated into several policies influencing the flows of capital.

First, the Lend-Lease program was launched in 1941. The Lend-Lease Act allowed the President to sell, transfer title to, exchange, lease, lend, or otherwise dispose of any defense article for the government of any country whose defense the President deemed vital to the defense of the United States (Lend Lease Act, 11 March 1941). In return for, mostly military,

goods and services, recipients of aid agreed to participate with the United States in constructing a multilateral world trading system after the war, different from the bilateralism of the 1930s (Kindleberger 1993, 413).[42] A total of $50.1 billion worth of supplies were shipped: $31.4 billion to Britain, $11.3 billion to the Soviet Union, $3.2 billion to France and $1.6 billion to China. Reverse lend-lease that went to the U.S. totaled $7.8 billion, of which $6.8 billion came from Great Britain and the Commonwealth. The settlement of the debt was quite generous, with large parts of debt cancelled.[43]

The U.S. support for war efforts was accompanied by the relief and rehabilitation programs. The United Nations Relief and Rehabilitation Administration (UNRRA) was proposed to the U.S. Congress by president Roosevelt in June 1943. The agency was created to prevent starvation and diseases in areas liberated from Axis powers after the World War II. It was equipped with surplus stocks of military and civilian supplies already in existence. The United States furnished 72% of the first contribution that consisted of goods with a value of $2.6 billion and 12% of the second contribution (Kindleberger 1993, 417). However, it refused to take part in the third contribution on the grounds of being a major contributor but having the same voting right as the others. Overall, in the first two post-war years the United States contributed about 4 billion dollars a year to relief and reconstruction through UNRRA and other programs (De Long and Eichengreen 1991, 14).

[42] "A set of broad principles along these lines has already been accepted by President Roosevelt and prime Minister Winston Churchill in the Atlantic Charter, signed on a battleship in Placentia bay in Newfoundland in August 1941 (Kindleberger, 1993, 413)."

[43] For example, in Great Britain, the net amount of debt was approximately $26 billion ($30 billion minus $4 billion reverse lend-lease). Some $6 billion of surplus property in Britain, and lend-lease goods not yet transferred, were sold for $532 million. A full charge was made for prime peacetime goods in the pipeline that Britain did not cancel, for $118 million. This total of $650 million was financed by a 2-percent fifty-year credit. The remaining $20 billion was cancelled (all data from Kindleberger 1993, 413).

2.7 Conclusion

The period between the beginning of the World War I and the end of the World War II was marked by significant changes in the existing economic and political structures. The World War I diminished the capacity of Great Britain and other European powers to credit the rest of the world. At the same time, it transformed the U.S. economy from the net debtor to the net creditor. The flows of credit in the interwar period were influenced by both the political and the economic factors. Politically, the credit and capital flows were influenced by the political tensions revolving around the war debts and the reparations. As a result, the U.S. foreign lending was limited until 1924, when the Dawes Plan attempted to fix the reparations problems. The Dawes Plan initiated the lending to Germany, which soon transformed Germany from the third largest prewar lender to the largest debtor throughout the 1920s. British withdrew an embargo placed on foreign loans in 1925 after the return to the gold standard. Geographically, New York lent mostly to Europe and Latin America, while London favored the Empire. However, the outburst of foreign lending was short and was brought to an abrupt halt with the Great Crash of 1929. The recovery in the private foreign lending was prevented by the Great Depression.

The interwar period provides only limited insight into the current global imbalances. The interwar gold standard had serious flaws that prevented the smooth balance of payments adjustment. The problem was that major industrial countries returned to gold at misaligned exchange rates. The British pound emerged from the War weaker. However, Britain – willing to restore London as financial center – decided to return to gold at the pre-War parity. The sterling was therefore pushed up against the dollar through deflation. But whereas British pound was overvalued, German mark and French franc were undervalued. As a result,

Germany, France and the United States tended to run current account surpluses, whereas Britain and its empire tended to run current account deficits.

In response to the International Financial Crisis of 1931 and the Great Depression, countries relied on foreign exchange restrictions to prevent capital flight and trade barriers to protect domestic producers from foreign competition. As a result, the international economy was fragmented into the trading blocs: (1) sterling area, (2) Central European countries, and (3) gold standard countries. The foreign investment was repressed and recovered only after the World War II.

CHAPTER 3 – GLOBAL IMBALANCES UNDER THE BRETTON WOODS SYSTEM, 1945-1970

3.1 Political and Economic Background

In contrast to the gold standard, which emerged informally, the Bretton Woods international monetary system was negotiated among the Allies. The two-and-a-half years of planning for the postwar financial reconstruction culminated at the United Nations Monetary and Financial Conference held at Bretton Woods, New Hampshire in July 1944. The new order rested on the liberalized trade, which aimed to prevent establishment of trading blocks that could renew the economic nationalism of the 1930s and develop into political or military alliances. However, the liberalism did not translate into the internationally free flow of capital. The disastrous experience of the 1930s defaults still fresh in the memory, the negotiators opted for the solution to trilemma, which *de facto* rested on the fixed-exchange rates, independent monetary policy and restrictions on capital flows.[44]

The rivaling plans of John Maynard Keynes and Harry Dexter White stressed different aspects of the post-war monetary arrangement. Whereas U.S. White's plan focused on the exchange rate stability superintended by the international institution and the capital mobility, the Keynes plan stressed the importance of the autonomous domestic policy and flexible exchange rates. The Joint Statement and the Articles of Agreement of the International Monetary Fund signed in July 1944 brought a compromise in the form of the "adjustable peg". The U.S. dollar was pegged to gold at the rate $35 per ounce of gold and other currencies were pegged to the U.S. dollar. The pegged exchange rates were adjustable in the face of a "fundamental disequilibrium," which was left undefined. Governments were

[44] For a detailed overview of the Bretton Woods system, see Eichengreen (1996, chapter four).

supposed to stabilize temporary shocks to their balance of payments by domestic policy. International capital flows were controlled. Two new institutions were established. The International bank for Reconstruction and Development (IBRD) was supposed to bridge the period until private investors would resume the practice of buying the securities of foreign governments. International Monetary Fund (IMF) was established to provide liquidity to the countries experiencing balance-of-payments disequilibria and to manage the monetary system.

However, the Bretton Woods did not work quite as expected. The modest quotas and drawing rights were soon dwarfed by the dollar shortage as a result of Western European trade deficit against the United States.[45] It was clear that the quotas were insufficient to deal with European balance of payments deficits. The dollar shortage hampered also the postwar reconstruction. The IBRD did not have enough capital to help Europe from the slump. In May 1947, only the U.S. share of $571.5 million could be used for Bank lending (Mason and Asher 1973, 105). The first loan to France was a commitment to more than one-third of the loanable funds held by the Bank as of June 1, 1947 (ibid). In order to avoid the scramble for gold, the United States deliberately encouraged the outflow of dollars through various aid programs, such as the aid to the pro-U.S. Greek and Turkish governments or Marshall Plan.

3.2 U.S. Financial Aid

The United States emerged from the Second World War as a hegemon. In 1945, it controlled over half of the world's GNP, most of its food surpluses and it stockpiled 80% of the world's gold (Cox 1990, 26). The United States outgrew the rest of the world in terms of

[45] Members of the IMF were assigned quotas, which reflected their relative economic power. Members were obliged to pay a subscription commensurate to the quota. If the Fund member short of reserves ran a current account deficit, it was able to borrow foreign currency from this fund in amounts determined by the size of the quota.

the aggregate size of its economy, per capita income and the share of world trade. Since the World War I until the breakdown of the Bretton-Woods, the size of U.S. economy was permanently more than double of the next largest economy. In 1950, it was 3.15 size of the Soviet economy, its income per capita was 1.78 higher and its share of the world trade 1.44 higher than the British (Krasner 1974, 334). In the late 1940s, US blast furnaces produced 50% of the world's steel while Americans owned 70% of the world's merchant marine fleet and about 75% of the world's transport and commercial aircraft (White 1982, cited in Cox 1990, 36-7).

In addition to the economic dominance, the United States was dominant also militarily. It alone controlled the atomic bomb and the means to deliver it, its world-wide network of military bases stretched from China across the Pacific to Europe and its navy and air force were unchallengeable (Cox 1990, 26). The only potential challenger was the Soviet Union, with its huge natural resources, large population and armies.[46] This challenge turned out to be a significant element in the U.S. endorsement of its role as a hegemon.

The speech of the president Truman to Congress on 12 March 1947 was a clear manifestation of the change in the U.S. foreign policy from non-interventionism to internationalism.[47] "One of the primary objectives of the foreign policy," he said, "is the creation of conditions in which we and other nations will be able to work out a way of life free from coercion. (…) We shall not realize our objectives, however, unless we are willing to help free peoples to maintain their free institutions and their national integrity against aggressive movements that seek to impose upon them totalitarian regimes. This is no more than a frank recognition that totalitarian regimes imposed on free peoples, by direct or indirect

[46] In this dissertation, the Soviet Union is taken into account only indirectly, through its impact on politics which had an influence on the U.S. external position or the global capital flows. Otherwise, I abstract from taking the Eastern bloc into consideration, since it was isolated and did not significantly participate in the international economy.

[47] On Truman Doctrine and the wider problematic of containment, see for example Kissinger (1994).

aggression, undermine the foundations of international peace and hence the security of the United States."

The primary goal of the speech was to render all necessary aid to Greece and Turkey to resist communist aggression, after Great Britain had announced it could no longer underwrite the security of eastern Mediterranean region. Truman believed that the help should come "primarily through economic and financial aid which is essential to economic stability and orderly political processes." The underlying assumption was that the "seeds of totalitarian regimes are nurtured by misery and want," i.e. that poor regions are more prone to fall under the communist control, whereas orderly developing countries are more prone to remain democratic. Therefore, $300 million in military and economic aid was granted to Greece and another $100 million to Turkey.

Although Truman did not mention the Soviet Union or communism in his speech a single time, the Truman Doctrine effectively defined the policy of containment of aggressive communism. The U.S. leadership in ensuring the peace of the world was extended to all the democratic countries. The policy of containment soon translated into a concrete economic policy, which had a profound effect on the capital flows through the European Recovery Program, known as the Marshall Plan.[48]

The thoughts for the Marshall Plan emerged as the help provided through UNRRA proved to be insufficient to put Europe, once the most prosperous world region, on its feet. In early 1947, industrial output of Germany was only 27 percent of the prewar volume, had not reached two-thirds of the 1938 level in Austria, Italy, and Greece, and was below prewar levels in France and Netherlands, whereas the U.S. industrial output had more than doubled between 1938 and 1947 (Price 1955, 29). There was a shortage of basic materials, especially of coal. In 1947, German coal production grew at little more than half of the pre-World War II

[48] On Marshall Plan, see Mee (1984), Price (1955) or a recent rethinking of the impact of the Marshall Plan by Eichengreen and Uzan (1992).

pace, Dutch and Belgian production was 20 percent below and British 10 percent below 1938 levels (De Long and Eichengreen 1991, 17). The lack of coal was accentuated during the cold winter of 1946-47. The coal for industrial uses was diverted to heating and a fifth of Britain's coal-burning and electricity using industry was shutdown in February 1947 (ibid, 18).

Agricultural yields in most areas were not yet up to 80 percent of the prewar level, whereas the population had grown by approximately 8 percent between 1937 and 1947 (ibid, 29-30). There was a general shortage of food. The lack of fertilizers and machinery combined with a fierce winter resulted in a disastrous harvest in 1947 (De Long and Eichengreen 1991, 18). Farmers were not willing to market their products for inflationary currencies. For example, the wholesale prices in France rose 80 percent in 1946 and by further 50 percent in the second half of 1947, as the government's attempt to arrest the upward inflationary spiral failed (Price 1955, 31). Farmers therefore hoarded their crops for home consumption and barter. Thousands of city dwellers traveled to the countryside to trade their household possessions – clothes, lamps, crockery – for eggs and potatoes (Kindleberger 1991, 121).

Finally, there was a problem of payments. Although all of the above could be obtained from the New World, Europe's assets were more or less liquidated during the war; its foreign exchange reserves depleted and the savings diminished. Europe was running trade deficits and had no means of obtaining the hard currency. Dollar shortage hampered the postwar reconstruction.

However, economically strong Europe was in the interest of the United States. It was the war production that finally pulled the States from the recession. Strong domestic and foreign demand enabled a smooth transformation from war to peace production. The U.S. 1946 export surplus of $6.5 billion reached an annual rate of $20 billion a year by mid-1947 (Block 1977, 82). Since the U.S. bankers were not willing to loan capital to Europe because of the dismal returns on investments in Europe after World War I and the communist electoral

strength, the U.S. exports surplus was financed mostly by U.S. government aid channeled through the UNRRA and European foreign exchange reserves (De Long and Eichengreen 1991, 9; Block 1977, 82). Once the foreign exchange reserves and the aid were gone, it would have been very difficult for Europe to import U.S. products and this way support the U.S. economic growth and employment.

This was recognized in early 1947 by American planners in a high-level State-Navy-War Coordinating Committee, who concluded that "the world will not be able to continue to buy U.S. exports at the 1946-47 rate beyond another 12-18 months," which would seriously effect business activity and employment (Block 1977, 82). The Committee Proposal of a major U.S. aid program to finance a continued high level of U.S. export was introduced to the public by U.S. Secretary of State, General George Marshall at Harvard University on 5 June 1947.

Coming less than 3 months after Truman's speech, Marshall's speech emphasized certain elements of the Truman Doctrine, especially the belief that the economic prosperity is necessary for the political stability. The aid was meant to draw the suffering Western Europe away from the lure of communism by providing them an immediate economic help. However, the aid was not offered unconditionally. The United States was ready to contribute to European recovery but it expected the initiative to come from Europe and the program to be "a joint one, agreed to by a number, if not all European nations (Marshall Speech, 1947)."[49] In addition to economic integration, the United States pushed also for liberalization of European economies. There is a debate whether this conditionality proved to be successful or not. Whereas Price (1955) and Arkes (1972) accept the importance of conditionality, others, such as Esposito (1985) or Wall (1991) argue it was ineffectual. Eichengreen and Uzan (1992, 47) argue that the American conditionality was least effective in fiscally strong, large economies,

[49] For the contribution of the Marshall Plan to European integration, see for example Dinan (2005).

such as France or the United Kingdom. Nevertheless, the United States managed to facilitate the restoration of financial stability and the liberalization of production and prices and pushed European political economy in a direction of "mixed economies" with more "market" and less "controls" in the mix (Eichengreen and Uzan 1992; De Long and Eichengreen 1991).

European reconstruction proposal asking for $22 billion in aid was sent to Washington. Although Truman cut this sum, the plan met sharp opposition in Congress coming from the isolationists. The most prominent representative of this group, Senator Robert A. Taft, kept trying to cut the amount of aid. Senator Arthur Vandenberg, the chairman of the Committee, disposed of this by saying it did no good to throw a 15-foot rope to a man drowning 20 feet away (Kindleberger 1991). The opposition to the Marshall plan was greatly reduced by the shock of the bloodless communist *coup d'état* in Czechoslovakia in February 1948. Soon after, Congress passed a bill granting initial $5 billion.[50] Between 1948 and 1951, the United States transferred $13 billion worth aid to Western Europe. The total amount disbursed under the Marshall Plan was equivalent to roughly 5.4 percent of U.S. GNP in the year of Marshall's speech, or 1.1 percent spread over the whole period of the program, which dated from April 1948, when the Foreign Assistance Act was passed, to June 1952, when the last payment was made (Ferguson 2009, 307).

Government-to-government financial aid dominated the international financial transactions in the first postwar years and created most of the liquidity in Europe. European trade deficits and the dollar shortage disappeared only after the massive U.S. financial aid under provisions of the Marshall plan and the 30 percent devaluation of European currencies

[50] (Kindleberger 1991, 123) observed that "[o]ne of the difficulties of working for a political constituency, the Congress, is that one cannot come completely clean and confess to slips and errors, or adjust changes and new information. We early settled on a figure of $ 5.2 billions for the first fifteen months, from April 1 to June 30, 1948, and for the fiscal year that followed and thereafter were unable to change it, no matter what new data became available or corrections were made. It was one of the first uses of computers known to me, those in the basement of the Pentagon, and we joked that for years thereafter whenever these machines were asked a question the answer always came out $ 5.2 billions."

at the insistence of the United States in 1949 (Eichengreen 1996, 98). Europe entered the path of fast economic growth.[51]

The 1950s saw a rapid expansion of production and trade in Europe and Japan. Real GNP in the six members of the European Economic Community (EEC) rose 70 percent between 1950 and 1960, an average annual increase of 5.5 percent (Cooper 1964, 155). The share of world manufacture exports by the EEC rose from 33 percent in 1951 to 46 percent in 1961 and Japanese share rose from 4 to 7 percent (ibid). The European and Japanese exports were partly supported by the currency devaluation of 1949 that made their products cheaper relative to the U.S. products. On the other hand, the U.S. imports of finished manufactures rose 250 percent between 1950 and 1960, compared with a rise in U.S. industrial production of only 45 percent (ibid). As the U.S. trade surplus dwindled, so did its foreign exchange reserves.

Before moving to the discussion of the balance-of-payments disequilibria, it is important to point out the differences among various concepts of balance of payments surplus/deficit used during the Bretton Woods.[52] Nowadays, the most commonly used concept is the current account balance, which is defined as the sum of the trade balance (exports minus imports), net factor income and net unilateral current transfers. However, under fixed exchange rate regime, much attention was paid to alternative measures of the balance of payments, especially those calculated on the liquidity basis and on the official transactions basis. The gross liquidity balance measures the liquidity position of the United States. In addition to the current account, it includes also the long-term capital flows and short term US capital flows. The distinction between the U.S. and foreign short-term capital flows was based on the assumption that whereas in case of trouble the U.S. residents' claims on foreigners

[51] De Long and Eichengreen (1991) and Eichengreen and Uzan (1992) argue that contrary to the folk wisdom, Marshall Plan did not stimulate fast European post-war economic growth through stimulating investment, augmenting imports, and financing infrastructure repair, but through moving the politics in Europe towards liberalization and financial stability, as opposed to the postwar protectionism.

[52] For a more detailed discussion of these concepts, see Stern (2007) and Kuwayama (1975).

could not be mobilized to defend the exchange rate, the U.S. liabilities to private foreigners represented a potential "call" on the U.S. official reserves. The liquidity balance thus measures addition to the potential drain on the U.S. monetary reserves. The larger the negative liquidity balance, the higher the risk of a temporary depreciation. The official reserve transactions balance adds the current account, long-term capital flows and short-term private capital flows. This measure reflects the amounts of foreign exchange which monetary authorities supply to the markets to balance private supply and demand at current exchange rates. In case of the deficit, it is a measure of the necessary intervention in the foreign exchange market to prevent the depreciation of the currency by (1) drawing down the foreign exchange reserves, (2) obtaining foreign exchange by exporting gold, or (3) borrowing foreign exchange from foreign central banks. However, although both alternative measures of the balance of payments equilibrium draw attention to the ability of the central bank to maintain the fixed exchange rate at its current rate, they can yield much different results. For example, in 1969, the net liquidity balance showed a $6.1 billion deficit and the balance on official reserve transactions a $2.7 billion surplus (Stern 2007, 11). The current account showed a 0.4 billion surplus (BEA).

3.3 Balance-of-Payments Disequilibria[53]

In the beginning of the 1950s, there was not much concern about the U.S. balance of payments. Europe and Japan were hungry for hard currency to finance their development. The inelastic gold supply made foreign central banks to accumulate U.S. dollars (and to a lesser extent the British pound). However, the growing amount of the dollars in the foreign exchange reserves soon exposed the fundamental problem of the Bretton Woods system. The

[53] For an overview, see Eichengreen (2000) and Gavin (2004).

system based on the confidence in the continued dollar convertibility could work only if foreign central banks were ready to support the dollar. The growing amount of dollars relative to gold led to devaluation pressures and created incentives for foreign central banks to convert their dollar reserves to gold, making the United States vulnerable to the "bank run."

As the decade progressed, the U.S. balance of payments deteriorated as a result of rising imports, growing military expenditures overseas and corporate outflows. The concerns about the gold coverage of the U.S. dollar started to grow in 1958, when the U.S. current account fell to a $3.5 billion deficit in 1958 (Cohen 2001, 135). Foreign central banks started to exercise their convertibility rights in significant amounts. U.S. gold reserves fell by almost 10 percent from 22.86 billion USD in 1957 to 20.86 billion USD in 1958 (IFS). Overall, the United States lost $3.4 billion in gold and liquid dollar assets, while Western Europe gained $3.7 billion in 1958 (Gavin 2004, 38).

President Dwight D. Eisenhower and part of his administration, notably Secretary of the Treasury Robert Anderson, blamed the payments imbalances and gold loss on American overseas military commitment.[54] The proposed solution was, therefore, to redeploy the American troops from Europe. Especially the president found it irritating that the surplus countries taking the largest share of gold from the U.S. Treasury were the same European countries that benefited from American protection. However, the strategy was abandoned in the face of the Berlin crisis, as well as the shift in the NATO strategy away from the full nuclear strike to the strategy of flexible response in conflicts with the Soviet Union. Both of these developments required higher rather than lower number of American troops.

In the meantime, the U.S. balance of payments continued to deteriorate and the gold outflow continued. The psychological breakthrough came in 1960, when foreign claims on the United States exceeded U.S. monetary gold reserves (Eichengreen 2000, 5). The amount of

[54] For a detailed overview of the Eisenhower administration's policies in response to the payments imbalances, see Gavin (2004, 33-57).

dollars in foreign hands surpassed the amount of gold held by the U.S. Treasury. The Berlin crisis aggravated further move from dollar into gold in search of the safety. At the same time, it was becoming clear that John F. Kennedy would win the fall's election. His plan to use expansionary policy to promote economic growth convinced the markets that the value of dollar undermined by domestic inflation would result in further gold outflows. In fact, the U.S. interest rates were already lower than the German or British as the Federal Reserve eased monetary policy to curb recession. This resulted in the flight of the short-term capital from the United States and further worsened the U.S. balance of payments.

In this context, the London gold price shot up to $40 per ounce of gold in October, $5 above the official price in the United States. The discrepancy between the official and market price pointed out to the overvaluation of the U.S. dollar. It also created incentive for the central banks to demand exchange of dollars for gold from the U.S. Treasury. This turned out to be true. Before 1958, less than 10 percent of U.S. deficits had been financed by calls on the U.S. gold stock, the rest being financed with dollars, but during the next decade, almost two-thirds of the U.S. cumulative deficit was transferred in the form of gold, mostly to Europe (Cohen 2001, 135). The dollar shortage turned into the dollar glut.

In response to the gold crisis of 1960, Eisenhower restricted the private holding of gold overseas. The ban was supposed to halt the outflow of gold.[55] The price of gold was further supported by an informal deal between the New York Federal Reserve and the Bank of England, in which the Fed agreed to resupply the Bank of England with any gold it spent in suppressing the gold price (Koning 2009). By March 1961, the price of gold was back to $35.10 (ibid).

[55] Other options suggested by Anderson in November 1960 included the reduction in the 25 percent gold coverage for currency required by the Federal Reserve Act, dollar devaluation, a move to the flexible exchange rates or a redeployment of American troops in Europe. Eisenhower was interested whether or not it would be possible to replace gold with uranium as our major reserve. "We now have $21 billion worth of refined uranium and plutonium. This had great future value as a source of power." He wondered "if this could be substituted for gold (see Gavin 2004, 49)."

These events exposed the paradoxical nature of the Bretton Woods system, as illuminated by economist Robert Triffin in his famous testimony to Congress. He argued that the United States had no choice but to run persistent current account deficits in order to provide the liquidity to the expanding world economy. If the United States stopped running current account deficits, the liquidity shortage would pull the United States as well as the global economy into a contractionary spiral. If the United States continued running current account deficits, the dollar outflow would continue to fuel world economic growth. However, it would also lead to devaluation pressures on the dollar and the loss of confidence in the U.S. ability to maintain the dollar's convertibility. Without confidence, the dollar would no longer be accepted as the world's reserve currency and the fixed exchange rate system would break down. The Triffin dilemma thus explained the problem of the use of a national currency as global reserve currency: the country supplying the global reserve currency was supposed to do the impossible of running the current account deficit and the current account surplus at the same time.

3.4 Policy Response

In order to keep the market price of gold close to the official, European central banks agreed to refrain from buying gold in the London market for monetary purposes whenever the price rose above $35.20, the official price plus costs of shipping and insurance (Eichengreen 2000, 26). On 1 November 1961, the Federal Reserve and seven European central banks created a Gold Pool, with United States providing 50% of the required gold supply for sale. They agreed to stabilize the gold price through interventions in the London gold market and sell gold whenever the price rose above the official level.

On the current-account side, the administration took steps to reduce the deficit with those countries that gained foreign exchange as a result of U.S. military expenditures. Under the threat of the troop redeployment, the administration therefore decided to push the countries under the American security umbrella to offset the gain by spending surplus dollars on military equipment from the United States. As the foreign exchange cost of the American troops in Germany made up a large part of the current account deficit, Germany was the subject to the highest pressure. Although the German government was initially reluctant to pay offsets, the intensification of the Berlin crisis and the erection of the Berlin wall made Germany to give in 1961. Minor agreements to purchase military hardware from the United States were reached with Italy and Japan but only Germany was expected to provide a full offset.

The American attempts to draw a link between the troop costs and the balance of payments made Europeans wonder whether they would be left unprotected if the costs of defense were perceived as too high in the United States. Combined with the recent move toward the flexible response doctrine, the offset strategy undermined the European confidence in the U.S. commitment to defend Europe with nuclear weapons against Soviet attack. National nuclear programs in Europe were the second source of conflict. The offset arrangement enabled the United States to keep Germany nonnuclear. However, both France and Great Britain wanted to become independent nuclear powers. Although the United States was initially against it, in December 1962 president John F. Kennedy and the British prime minister Harold Macmillan negotiated the basis for the British nuclear deterrent in the form of Polaris missiles. Similar offer was prepared for France. However, the French president Charles de Gaulle considered the United Kingdom U.S. Trojan horse in the Common Market. On 14 January 1963, de Gaulle rejected this offer, as well as British application for

membership in the European Economic Community. Nine days later, the Franco-German Élysée Treaty calling for consultations on all important questions was concluded.

The deteriorated political relations between the United States on the one hand and France and Germany on the other challenged the U.S. balance-of-payments policy, which relied on the cooperation of these surplus countries. Germany attempted to renegotiate the 1961 offset agreement. However, with the further U.S. threats of the troop withdrawal and the German realization that the Franco-German bloc policy means dependence on another, albeit weaker country, Germans agreed to full offset arrangement in October 1963. In response, the United States promised to end the threats of troop withdrawal.

However, as it turned out that the deficit could not be easily eliminated. The escalation of the Vietnam War posed further burden on the U.S. balance of payments. The U.S. policies diverted to the introduction of capital controls in 1964. These controls included an Interest Equalization Tax designed to discourage bond offerings in the United States and the Federal Reserve Bank's Voluntary Credit Restriction Program that encouraged banks to limit their foreign lending operations (Block 1977, 155, 158). These capital controls were removed only in January 1974 (ibid).

The new Johnson's administration also announced a plan for an international monetary conference to create a new, nonnational form of liquidity called special drawing rights (SDRs). This plan met a strong opposition from French who resisted the proposal for more than two years and wanted a return to the gold standard. With France and the United States in a disagreement over how to reform the international monetary system, the prospects of the reform were gloomy.

The Franco-American conflict culminated in the beginning of 1965. In his press conference on 4 February 1965, de Gaulle proclaimed that the primacy of the dollar in international dealings was finished and called for a return to a pure gold standard. At the same

time, France planned conversion of another $150 million into gold, in addition to $150 million that France converted in January (TIME, 12 Feb 1965). Furthermore, de Gaulle called U.S. foreign investments "a form of expropriation," suggesting that printing of U.S. dollars enables the Americans to purchase foreign assets.

The last statement was met with irritation. Undersecretary of State George Ball warned that there were "a lot of very angry Congressmen and Senators" who may "want to pass a Resolution, which they probably could unanimously, to have the French pay the four and a half billion dollars they owe us" in defaulted loans from the First World War (Gavin 2004, 124). President Johnson rejected de Gaulle's proposal to a return to a pure gold standard, which he described as a "system which brought us all to disaster in the early 1930s (ibid, 125)." Instead, the administration started to concentrate on the international monetary reform based on a new reserve, the Special Drawing Rights.

However, things did not go as planned. In November 1967, the sterling was in trouble once again. After weeks of feverish speculation, the British government announced a 14.3% pound devaluation from $2.80 to $2.40 on 18 November. The decision came after a day, in which the Bank of England spent £200 million trying to save the pound (BBC, undated).

The run on the pound was triggered by the publication of October trade figures, which showed a gross deficit of nearly $300 million, the worst such monthly gap in the country's history (Time, 24 Nov. 1967). However, the negative trade figures were a mere episode in the long series of economic problems. Devaluation loomed already in autumn 1964, when the Labour election victory increased concerns about the possible devaluation of the pound due to increased social spending. Britain was saved by a $3 billion line of credit from a consortium led by the Federal Reserve Bank of New York, the Bank for International Settlements, and the central banks of Canada, Japan, and each of the Common Market Countries (Gavin 2004, 165). Further speculative attacks on the pound came in summer 1965 and summer 1966. The

government responded with an austerity package on 20 July 1966. However, this move came too late and failed to work.

Economic problems were coupled by political. Arab-Israeli conflict led to the Egyptian blockade of the Suez Canal, which lasted until June 1975. The closure cost Britain some $600 million a year in higher shipping costs for its exports and higher prices for its raw material imports (TIME, 24 Nov. 1967). Angry sheikhs pulled more than $100 million out of London banks and exchanged them to dollars (ibid). Another $180 million bill came, when dock strikes in London and Liverpool prevented exports to be shipped abroad (ibid). Finally, the UK's Community accession negotiations that began in May led to the expectations of the sterling devaluation, which was one of the de Gaulle's and the Common Market Commission's requirement for entry.

The effect of the sterling devaluation on the international monetary system seemed to be limited. Fear that it might trigger the domino-effect competitive devalutions similar to those in the 1930s turned out to be outfunded. Twenty two countries followed the British lead and devalued their currencies. However, most of them were small, sterling-area countries whose well-being depended on their exports to Britain, or to other devaluing countries.[56] The currencies of the major trading countries, the United States, Japan, Canada, Australia and the Common Market, remained unchanged.

The United States feared the effect of the sterling devaluation on the confidence in dollar. The fortunes of dollar and sterling, two international reserve currencies, were closely linked in the minds of traders. President Johnson tried to calm markets down and avoid an uncontrolled flight from the dollar immediately after Britain's announcement of the devaluation. In a White House statement, he endorsed the move as a way for the UK to

[56] Of the 22, 16 matched the 14.3% British devaluation: Barbados, Bermuda, Cyprus, Fiji, Gambia, Guyana, Israel, Ireland, Jamaica, Malawi, Malta, Mauritius, Nepal, Sierra Leone, Spain and Trinidad and Tobago. Hong Kong cut its initial 14.3 percent devaluation to 5.7% due to a fear of political violence. Malaysia devalued its old sterling-based currency but not its new gold-backed dollar. Denmark devalued by 7.9%, New Zealand by 19.45%, Ceylon by 20% and Iceland by 24.5% (TIME, 1 Dec 1967).

"achieve the needed improvement in its ability to compete in world markets." At the same time, he said that he could "reaffirm unequivocally the commitment of the U.S. to buy and sell gold at the existing price of $35 an ounce." The Federal Reserve declared its readiness to defend the dollar by raising its basic interest rates from 4% to 4.5% (TIME, 1 Dec 1967).

Despite these measures, the week of feverish gold-buying speculation cost the U.S. $475 million in gold, the biggest single week's loss that sent the U.S. gold reserves to a 30-year low of $12.43 billion (TIME, 15 Dec 1967). Further loss due to the dollar reserve were suffered by Britain, West Germany, Italy, Switzerland, Belgium and The Netherlands, who held a 41% share in the gold pool. By the end of December, gold pool losses reached $1.5 billion (Gavin 2004, 172). The European countries were growing more and more reluctant to sell more gold and accumulate more dollars. Support for the gold pool was deteriorating. In December 1967, Hubert Ansiaux of the Belgian central bank speaking on a phone to William McChesny Martin said, speaking also on behalf of Belgium, Germany, Italy, Netherlands and Switzerland, that they recommend to stop intervention in the London market. However, they agreed to continue the pool under two conditions: that the Americans reimburse the European in gold for excessive accumulations of dollars and that the administration announces a strong balance of payments program within the next weeks (ibid).

On 1 January 1968, Johnson announced a new balance-of-payments program that strengthened investment, loans and trade controls and requested citizens to limit overseas travel and spending with the aim of reducing the balance of payments deficit. In the first weeks of 1968, the program seemed to work. Gold markets calmed down and the dollar strengthened. However, the bad news began to mount again: the Tet offensive in Vietnam fueled the expectations of an increase in the military expenditures, inflation rose and the tax surcharge expected by Europeans met the opposition from the public and the House.

The gold market broke out suddenly in March. The Gold Pool lost $123 million in gold in the first week of March (Gavin 2004, 180). By the end of the second week, the Gold Pool was losing $1 million of gold every 1 minute 53 seconds (Roberts 2006, 10). United States asked for the closure of the London gold market, which handled 80% of the world's bullion dealings on Friday 15 March. Emergency meeting of central bankers was scheduled on the weekend in Washington, D.C.

The situation was grave. Between Britain's November 18 devaluation and March 15, the gold frenzy drained the pool of some $2.5 billion of gold – nearly 2.5 time the amount mined in California during the 25 years from the gold rush to 1874 (TIME , 22 Dec 1967). This loss amounted to almost 9% of the gold pool reserves, or $1.5 billion (ibid).[57] As a result, the gold pool was disintegrated after seven years of operation on Sunday 17 March 1968, as central banks agreed to refrain from buying and selling gold on the free market, a strategy quietly discussed since British devaluation. Furthermore, on Monday 18 March 1968, the Congress repealed a 1945 law requiring a 25% gold backing of the value of currency in circulation. At that time, the depleted U.S. gold stock just equaled the required 25% (TIME, 29 Mar 1968). This act freed the entire U.S. gold supply to defend the dollar abroad.

To return the international monetary system to working order, a two-tier system for gold transactions was introduced. In the official market, the United States and its allies continued to exchange the dollar for gold at the $35-an-ounce price for central banking purposes. In the private market, the price of gold for industrial and speculative purposes was determined by the laws of supply and demand. As Zurich Banker Hans J. Baer put it: "The central banks are saying to the speculators: 'Take it to the dentist.' (TIME 29 Mar 1968)." In order to prevent central banks to purchase gold for the official price and sell it for the higher

[57] An estimated $2 billion went into the hands of speculators who were betting that the U.S. would raise the price of gold and so hand them a swift profit (ibid).

market price, the United States made it clear that its gold window would be shut to governments that refuse to cooperate. Furthermore, although the private sector was unable to convert their dollars into U.S. gold at official price, they could swap them for another currency, creating depreciating pressures on the U.S. dollar. However, the two-tier system was considered only a temporary solution to the monetary problems and the central bankers hoped that the creation of a new international reserve, the Special Drawing Rights, would meet the liquidity needs of an expanding world economy.

Finally, in June 1968, Johnson signed a 10 percent surcharge on individual income taxes at the price of agreeing immediate spending cuts, a difficult compromise which reduced his domestic programs of the Great Society. Fiscal tightening combined with the measures taken to stop the gold outflow led to an improvement in the balance of payments. It was further strengthened by the capital flight from Europe due to May riots in France and August invasion of Czechoslovakia by the Warsaw Treaty armies. The United States ended the year with a small surplus, calculated on both the liquidity and the official transactions basis. However, that was not enough to resolve the persisting balance of payments disequilibria.

French franc was devalued by 11.22% on 10 August 1969 as a result of persisting economic problems. The wage increases to settle the May 1968 general strike pushed up costs. Rising inflation and imports and lagging exports led to a speculative run on franc and the French gold reserves. In November 1968, G-10 agreed to lend France $2 billion at the meeting of finance ministers and central bankers in Bonn. The IMF agreed to lend additional almost $1 billion. Franc was supposed to devalue. However, de Gaulle declared he had no intention of devaluing franc. In response to the announcement, franc started moving upwards. However, the confidence in the commitment not to devalue was not universally held. Some of the franc speculators in Paris sold franc and bought gold, stocks and other currencies. French in panic tried to exchange their francs for furs, jewels or rare stamps. The speculation against

franc heated up again when de Gaulle stepped down in April 1969, following the rejection of his proposed reform of the Senate and local governments in a referendum. Two months later, the new president Georges Pompidou devalued the franc.

Germany faced exactly opposite problems. Its strong trade balance and the continued inflow of capital put appreciating pressures on the mark. The resulting increase in the money supply led to concerns about inflationary pressures. The revaluation seemed to be inevitable by March 1969. De Gaulle's resignation in April removed the obstacle to the international solution to the monetary problems. However, the German government decided to keep the status quo when none other countries took action, a decision which produced a protest from sixty-one professors of economics but was approved by 87 percent of the electorate (Michael Balfour 1992, 180). However, on September 28 the mark was allowed to float, putting an end to the further speculation. The free rate was maintained almost for a month, after which the value of mark was fixed 8.5 percent higher. However, the revaluation was not big enough. Between the autumn of 1969 and the spring of 1971, prices rose at an annual rate of 4.5 percent (ibid, 190).

Further revaluation came in 1971. A massive flight from dollar to mark in spring put pressures toward revaluation. On 5 May 1971, the Bundesbank purchased $1 billion in the first forty minutes of trading to keep the mark at its ceiling (Cox and Skidmore 1999, 127). Then German authorities, fearful of inflationary pressures, allowed the mark to float, taking with it the Dutch guilder, the Swiss franc, and the Austrian schilling (ibid).

The international problems were coupled with the troubled domestic economy. By the summer of 1971, the U.S. rate of unemployment was close to 6 percent. In the first eight months of 1971, the increase in the consumer price index rose at an annual rate of 3.6 percent, compared to 6.1 percent in 1969 and 5.5 percent in 1970 (Rockoff 1984, 200). Looking toward his 1972 reelection campaign, Nixon was concerned about unemployment and

believed that expansionary monetary policy should be used to reduce it. "I've never seen anybody beaten on inflation in the United States. I've seen many people beaten on unemployment," he said (Abrams and Butkiewicz 2007, 17). However, lowering interest rates could accelerate international monetary crisis. Therefore, Arthur Burns, chairman of the Federal Reserve Board, argued in favor of wage and price controls. This was based on the belief that inflation was propelled by expectations and not by underlying demand and supply conditions. The freeze would calm inflationary expectations. Nixon initially did not find this idea intriguing. As a young man during World War II, he worked in the tire-rationing division of the Office of Price Administration and this experience left him with a distaste for price controls (Yergin and Stanislaw 1998, 64). He considered controls "a scheme to socialize America" (Abrams and Butkiewicz 2007, 20). However, the concerns about the international situation and persuasion by Secretary of Treasury John Connally pushed Nixon to change his opinion. The run on the dollar was no longer a theoretical issue. In second week of August 1971, the British ambassador turned up at the Treasury Department to request that $3 billion be converted into gold (Yergin and Stanislaw 1997, 60). During the first twelve days of August, the United States lost over $3.6 billion of reserves (Abrams and Butkiewicz 2007, 23). The Camp David meetings that began on Friday 13 August 1971 culminated in an adoption of the New Economic Policy. On 15 August 1971, president Nixon closed the gold window, suspending the convertibility, and announced a 90-day freeze of wages and prices.

Nixon's speech was welcomed by the American public and media. The U.S. stock market soared. The Dow Jones Industrial Average registered a 32.9 points increase on Monday after President's announcement, the largest one-day increase up to then (Yergin and Stanislaw 1997, 63). The immediate response abroad was more anxious. Foreign exchange markets shut down for two weeks. Then the European currencies were allowed to float against the dollar. Over the following four months, the G-10 countries negotiated the reform of the

international monetary system. In December 1971, the Group of Ten signed the Smithsonian Agreement in Washington, D.C., in which the countries agreed to revalue their currencies against the U.S. dollar. The U.S. dollar was devalued by 8 percent. The yen, the Swiss franc, the deutsche mark and the Benelux currencies were revalued. Fluctuation bands widened from 1 to 2.25 percent. However, the adjustable fixed exchange rates were not to last. Although price controls suppressed the manifestation of inflation and the living costs went up at a rate of only 1.7% from September through November (TIME, 3 Jan 1972), the U.S. expansionary policy undermined the dollar peg to foreign currencies. The attack on sterling in 1972 led to the British withdrawal from the Smithsonian band. The 10 percent devaluation of the U.S. dollar as a result of another flight from the dollar in early 1973 resulted in the float of the European currencies upward.

3.5 Impact of the Bretton Woods on the Integration of Capital Markets

Although the Bretton Woods system relied on the control of the capital flows, the capital found its way around the capital controls. A reversal point in the efficiency of the capital controls was the resumed current account convertibility.[58] Until the return to the current account convertibility in 1958, capital controls worked more or less as planned (Eichengreen 1996, 94):

> Interest rates were capped. The assets in which banks could invest were restricted. Governments regulated financial markets to channel credit toward strategic sectors. The need to obtain import licenses complicated efforts to channel capital transactions through the current account. Controls held back the flood because they were not just one rock in a swiftly flowing stream. They were part of the series of levees and locks with which the raging rapids were tamed.

[58] This means that nonresidents were permitted to exchange the currency they earned in the course of trade for another currency at exchange rates within established margins.

However, after the return to the current account convertibility, the capital controls turned out to be less efficient. Some money crossed borders in suitcases but most of it was moved through arrangements with those having access to foreign exchange through trade (Shafer 2008, 124). The amount of leakages is best documented by the size of the errors and omissions recorded in the balance of payments. The most visible evidence of leakages was the growth of the Eurodollar maker in London during the 1960s (ibid).[59]

Despite the decreasing efficiency of the capital controls, countries had few other choices to rely on when facing the balance-of-payments disequilibria. Self-equilibrating mechanism of balance-of-payments adjustment similar to the price-specie-flow mechanism under gold standard was missing under the Bretton-Woods system. Capital controls came to be widely used as a tool of macroeconomic management. Countries running current account surpluses imposed controls on capital inflows to deal with the appreciation and inflationary pressures, whereas countries running current account deficits relied on controls on capital outflows to deal with the pressures on the currency depreciation.

Germany experienced current account deficits in the early years after the war and therefore relied on strict controls of capital exports to protect its foreign exchange reserves (see Goodman and Pauly 1993, 60-64). However, by the early 1950s its current account turned into surplus. In response, restrictions on the foreign direct investment abroad began to be liberalized in 1952, residents were allowed to purchase foreign securities in 1956 and by

[59] Shafer (2008, 124) observes: Perhaps the most spectacular visible evidence of leakages from capital flows was the growth of the Eurodollar market in London during the 1960s. Although this market had its beginnings in the late 1950s as a mechanism for the Moscow Norodny Bank and others to hold dollars without putting them in New York, the market grew on the flow of dollars out of the United States despite capital controls. It also provided a way of doing international business in London at a time when sterling transactions were tightly restricted. The dollars were placed in London because they could earn a higher yield there, since dollars outside the net of U.S. capital controls were less encumbered and hence more valuable than in New York. Many of the depositors were placing money in the market that they had obtained outside their own country's network of capital controls, as well as those of the United States. Indeed, the market was not limited to dollars. Either explicitly, or implicitly through combining a dollar deposit with a foreign exchange swap contract for the same maturity, many currencies were available. The Eurocurrency market at the end of the 1960s was a creation of capital controls, and a testimony to their porousness. Having grown to maturity, the market has lived on to fulfill new roles in a world where capital controls are much less important.

1957 export of capital by residents was generally permitted without authorization (Goodman and Pauly 1993, 60). However, the liberalization was not matched for the capital inflows. As the current account surplus grew, the appreciation pressures on the Deutsche mark intensified. However, revaluation was politically not feasible because Germany adopted the export-led growth strategy. Revaluation would thus harm its export sectors by making their products more expensive in the world markets. The *Bundesbank* therefore intervened in the foreign exchange market whenever the intervention point with the dollar was reached. This led to money expansion and inflationary pressures. In order to keep the price stability, the *Bundesbank* had to rely on capital controls to limit further inflow of the capital into the economy.[60]

Situation in Japan was similar. Japan relied on export-led growth strategy and capital controls over both inflows and outflows of short-term capital were the key elements of the strategy (see Goodman and Pauly 1993, 64-70). Certain inflows of hard currency, mainly U.S. dollars in the form of portfolio investment and foreign currency loans from American banks were allowed but outflows and direct investment inflows were discouraged. The accumulated capital was channeled to the leading industries. The controls on capital outflows began to loosen only when Japan began to generate current account surpluses in the early 1970s. However, short-term capital inflows continued to be discouraged in order to decrease the pressures for the yen revaluation. The rest of the world relied on the similar approach to the capital controls.

The disintegration of the Bretton Woods opened the way for the capital account liberalization. However, the dismantling of the capital controls came very slowly. Although the United States dropped its restrictions on capital outflows over the years 1974 and 1975, its example was not followed immediately by the rest of the world, who faced persisting

[60] Notice that China faces a similar problem nowadays.

macroeconomic problems (Obstfeld and Taylor 2004, 160). The capital account liberalizations gained momentum only in the 1980s. The United Kingdom liberalized its capital account in October 1979, when the freshly elected Conservative government abolished exchange control. Although deutsche mark was allowed to float in 1973 and Germany began to loosen the restrictions on capital flows, it did not dismantle its control apparatus entirely (see Goodman and Pauly 1993, 60-64). In fact, in face of weakening dollar, the *Bundesbank* tightened the controls on capital inflows to prevent the mark appreciation. However, the second oil shock sent the German current account from a surplus of 17.5 billion mark in 1978 to a deficit of 10.5 billion mark in 1979 (ibid, 62). Germany was forced to finance the deficit by borrowing and later by using its reserves. In 1981, the *Bundesbank* lifted the remaining controls. Japan eased controls on capital inflows to enable financing of the current account deficit between 1973 and 1975 (see Goodman and Pauly 1993, 64-70). However, as the current account switched to surplus again in 1976, Japan started to face the familiar pressures on yen appreciation and resorted to controls on short-term inflows once again. Japan announced capital account liberalization in 1979 and the new law marked a turning point in policy. Australia and New Zealand dismantled most controls in 1983 and 1984, the Netherlands fully liberalized by 1986, Denmark and France completed the liberalization by the end of the 1980s, Sweden and Norway liberalized rapidly in 1989 and 1990 and other EC countries and Austria liberalized in the late 1980s (Shafer 2008, 136). The capital account liberalization in the European Community was to a large extent motivated by the 1988 decision to phase out capital controls as a part of the Unified Market Program.

Another factor that made controls less effective and more costly was the technological innovations, especially in telecommunications. The daily turnover on the world's exchange market grew from 100 billions USD in the late 1970s to 650 billions USD in the late 1980s (Goodman and Pauly 1993, 57). In the midst of the currency crisis in March 1973, $3 billion

were converted into European currencies in one day (ibid). Second, the growing integration of the world financial markets posed a threat that those who would not liberalize would be left behind.

All of these changes enabled the renewed integration of the global financial system. Obstfeld and Taylor (2004) demonstrate that for most of the measures of market integration, international capital mobility advanced in the late nineteenth century and then followed a U-shape pattern, starting from the height reached on the eve of World War one, through a sharp decline during the Great Depression and World War Two, to a gradual recovery in the first postwar decades before beginning a steeper ascent in the final decades of the twentieth century.

3.6 Conclusion

The United States emerged from the Second World War as the world's largest creditor. On the other hand, Europe's assets were liquidated, its foreign exchange reserves depleted and the savings diminished. Europe, running trade deficits, had no means of obtaining the hard currency. The dollar shortage in Europe was curbed only after the massive U.S. financial aid and the devaluation of European currencies. Thus, international financial transactions in the first postwar years were dominated by government-to-government financial aid.

Throughout the 1950s, the dollar shortage turned into the dollar glut. As the European central banks accumulated growing dollar reserves, concerns about the continued dollar convertibility into gold emerged. This led to devaluation pressures and created incentives for foreign central banks to convert their dollar reserves to gold. The psychological breakthrough came in 1960 when the amount of dollars in foreign hands surpassed the amount of gold held

by the U.S. Treasury. In this context, the London gold price shot up to $40 per ounce of gold in October 1965, $5 above the official price in the United States. To deal with the gold crisis, the U.S. diplomacy relied on several measures, such as the creation of the Gold Pool or pressures on the German government to "offset" part of the balance-of-payments burden of maintaining U.S. troops in Germany, as these made up a large part of the U.S. current account deficit. However, these measures failed to prevent further speculative attacks on the exchange rates established by the Bretton Woods system. The turbulence on markets led to the pound devaluation in 1967 and the franc devaluation in 1969. The mark revalued in 1969 and again in 1971 after a massive flight from the dollar. Facing the rising unemployment, inflation and the potential run on the U.S. dollar, president Nixon decided to unilaterally close the gold window, suspending the dollar convertibility in August 1971.

Dooley *et al.* (2003) argue that the global imbalances of the last decade were Bretton Woods reborn. Similarly to Europe of the 1950s and the 1960s, Asian countries pegged their currencies to the U.S. dollar and kept them undervalued to support the export-led growth. Similarly to European and Japanese hoarding of U.S. dollars under the original Bretton Woods system, Asian countries were willing to accumulate dollar assets in exchange for current account surpluses with the United States. This reestablished the United States as the center country in the Bretton Woods II international monetary system and enabled it to live beyond its means.

Although there are many similarities between the two periods, significant differences occur upon closer examination (see especially Eichengreen 2004). First of all, there are differences related to the balance of payments adjustment. The original Bretton-Woods evolved into a gold-dollar standard, where the U.S. dollar was pegged to gold and other currencies were pegged to the U.S. dollar. There were strong restrictions on capital flows to prevent them from undermining the pegs. These capital controls prevented large transfers of

net savings between countries. Thus, in contrast to the post-Bretton-Woods period, as well as the classical gold standard, the balance of payments adjustment was not self-equilibrating. Instead, countries were supposed to stabilize temporary shocks to their balance of payments by domestic policies. The International Monetary Fund was supposed to provide additional liquidity to countries experiencing balance-of-payments disequilibria, although this facility did not work as expected. In contrast, following the collapse of the Bretton Woods system in 1971 most of the developed countries gradually moved towards flexible exchange rates, whereas a significant part of the developing world continued to peg their currencies. The period witnessed increasing capital mobility, which makes it more difficult and costly to maintain the status quo.

Second, in the Bretton Woods era there were no good substitutes for the dollar as the world's reserve currency. Gold supply is inelastic. The British pound was subject to repeating runs in the 1960s. Today there is a viable alternative, the euro. The euro markets are liquid enough for euro to be a reserve asset and euro-denominated government securities provide an alternative to the U.S. treasuries (ibid, 23).

Finally, in the Bretton Woods period, the United States remained a net creditor and acted as a banker to the rest of the world. The U.S. current account was in surplus between 1954 and 1971, with a single exception of 1959 (ibid, 10). On the other hand, the United States has been running a current account deficit since 1982, with a single exception of 1991 and has been a net debtor since 1986.

CHAPTER 4 – GLOBAL IMBALANCES IN THE POST-BRETTON-WOODS PERIOD

4.1 Petrodollar Recycling

The balance of payments financing underwent a significant change in the 1970s. Under the Bretton Woods, the main source of the balance of payments financing were official institutions, predominantly the International Monetary Fund. In the late 1960s, as much as one-third of all payments financing was intermediated by banking institutions between surplus countries (mainly countries of the Group of Ten) and deficit countries (Cohen 1982, 458). However, during the 1970s, this role was taken over by the private institutions.

This development was to a large extent related to current account surpluses accumulated by the oil-exporting countries after the 1973 oil shock when on 17 October 1973 the members of Organization of Arab Petroleum Exporting Countries (Arab members of OPEC and Egypt and Syria) proclaimed an oil embargo in response to the U.S. decision to re-supply the Israeli military during the Yom Kippur war. The embargo banned petroleum exports to countries that supported Israel and introduced cuts in oil production. As a result of a sudden drop in oil supply, the price of oil quadrupled by 1974 to nearly 12$ per barrel.[61]

The increase in the oil price shifted the current account balances. Following the oil price shocks in 1973 and 1979, the oil-importing countries experienced a sharp deterioration

61 The role of the Middle-East war and embargo in the oil price increase is not universally held. Barsky and Kilian (2002) provide an alternative demand-driven account of oil price movements: in the short run, the effective supply curve for oil, which depends on pipelines and tanker capacity at least as much as on oil reserves in the ground, can be very steep. The upward pressure on oil prices in the 1970s was thus caused not by a shift in productivity, but by worldwide monetary expansions that drove output levels above potential for sustained periods and were followed by periods of unusually low real interest rates. Thus, the causality here is reversed and it is not oil shock affecting the macroeconomy but macroeconomic conditions affecting the oil price. For the general overview of major explanations of the relationship between oil and macroeconomy, see Barsky and Kilian (2004).

of their current account. On the other hand, oil-exporting countries experienced growing surpluses. The conventional view held that current account deficits increased most in economies that were heavily dependent on oil imports and least in the self-sufficient economies. However, Sachs (1981, 208, 210) suggested a different outcome if the oil price increase was perceived as permanent:

> In that case, differential dependence on oil imports will have little effect on the relative current account position. If the shock is perceived as temporary, however, the conventional view is correct. Market expectations of the permanence of an oil shock cannot be reconstructed, and no doubt initially there was certainly a wide dispersion of expectations. It is assumed that by 1975 the predominant expectation was that the higher relative price would be maintained, and that this expectation prevailed until the second big price increase that followed the Iranian revolution. These assumptions correspond to what actually happened to prices.

Sachs' (1981) thus shows that transitory and permanent shocks to income have different effects on the trade balance. Whereas the transitory shocks to income are the main source of variation in the trade balance, the permanent shocks to income determine only the changes in the income. In other words, if consumers expect an increase in the oil price to be temporary (a temporary reduction in their income), they try to smooth their consumption over time and borrow abroad to spread the burden of higher oil prices and shift part of it to the future. As they lower their savings, the current account deteriorates (for a detailed discussion of the issue, see Chapter 5).

The inflow of petrodollars to oil-exporting countries in payment for oil exports was accumulated at such a rate that it could not have been invested domestically, either because of the early stage of industrialization or small populations. If the money were allowed to enter the economy, it would lead to inflationary pressures. Oil-exporting countries, therefore, placed this money in the Eurodollar market.[62] The banks active in the Eurodollar market

62 The Eurodollar market started to develop in 1958 when European banks, notably in London and Switzerland, began to deal in dollars. This was beneficial because deposits denominated in US dollars at banks outside the United States were not under the jurisdiction of the Federal Reserve and were, therefore, subject to much less

recycled the petrodollar surpluses to current account deficit countries through bank credits and bond issues. Banks were encouraged to recycle the petrodollars to the developing world. Seidman, former economic counselor to President Ford remarked that "the entire Ford Administration, including me, told the large banks that the process of recycling petrodollars to the less developed countries was beneficial, and perhaps a patriotic duty (FDIC 1997, 206)." The banks were also allowed to avoid complying with laws that limited a bank's loan to a borrower to 15 percent of the bank's capital and loans to an assortment of state institutions owned by a foreign government were all treated as individual loans (Vásquez 1996).

The market channeled the funds to developing countries, mostly to Latin American and some African countries but Eastern European countries entered the market too.[63] In fact, the lending to these countries began before the first oil shock. For more than a decade before oil price quadrupled in 1973-74, the less developed countries (LDCs) grew by 6 percent per year on average (FDIC 1997, 192). Their soaring economies attracted the foreign investment. However, the increase in the oil price resulted in the deterioration of their current accounts and an increased need for external financing. Their borrowing increased significantly. Total outstanding debt of Latin America from all sources grew from approximately $29 billion at the end of 1970 to approximately $159 billion by the end of 1978, an annual compound growth rate of almost 24 percent (ibid). Approximately 80 percent of this debt was sovereign (ibid). However, this episode of foreign lending to poor countries ended up in default.

regulation than similar deposits in the United States. The petrodollar recycling in the 1970s led to rapid expansion of the market.

63 Spiro (1999) challenges the mainstream view that the petrodollar recycling was market-driven, i.e. that international capital markets acted as an intermediary between OPEC nations with capital surpluses and less developed countries (LDCs) with capital deficits. Instead, he argues that American hegemony played the greatest role in recycling petrodollars: "Before his appointment to public office, Simon had been a very successful bond salesman. (…) His answer to the myriad problems faced by the Treasury – and by the United States in general, and indeed by most of the world – was to sell bonds. In 1974, Simon negotiated a secret deal so the Saudi central bank could buy U.S. Treasury securities outside of the normal auction. A few years later, Treasury Secretary Michael Blumenthal cut a secret deal with the Saudis so that OPEC would continue to price oil in dollars. These deals were secret because the United States had promised other industrialized democracies that it would not pursue such unilateral policies (ibid, x)."

After the second oil shock in 1979, the borrowing by Latin American countries accelerated. Between the start of 1979 and the end of 1982 total Latin American debt more than doubled, increasing from $159 billion to $327 billion (FDIC 1997, 197). In response to this demand, U.S. banks increased their lending to the LDCs during the following four years: the outstanding loans of the eight largest money-center banks rose from approximately $36 billion to $55 billion, more than a 50 percent increase (ibid).

The problems arose in the early 1980s when the United States raised interest rates to combat high inflation. Most of the LDCs credits were priced to LIBOR rates, which were sensitive to changes in short-term U.S. interest rates as Eurocurrency deposits were primarily a dollar-denominated market. LIBOR rates averaged 10.2 percent through 1980; for 1981 and 1982 they averaged 15.8 percent (ibid, 205, fn 38). It was estimated that for every percentage point increase in LIBOR, debt-service costs for all developing nations rose by $2 billion. For these countries, interest payments almost tripled during 1978-80, rising from $15.8 billion to $41.1 billion (ibid, 205, fn 38). Increase in debt-servicing costs coupled with the global recession and drop in commodity prices resulted in the situation when the foreign debt exceeded earnings power.

The debt crisis of the Latin American countries broke out in August 1982 when Mexico announced the United States that it would be unable to meet its debt obligations. By October 1983, 27 countries owing $329 billion had rescheduled their debts to banks or were in the process of doing so (FDIC 1997, 191). Sixteen of the nations were from Latin America, and the four largest – Mexico, Brazil, Venezuela, and Argentina – owed $176 billion, or approximately 74 percent of the total LDC debt outstanding (ibid). Of that amount, roughly $37 billion was owed to the eight largest U.S. banks, and constituted approximately 147 percent of their capital and reserves at the time (ibid).

The exposure of the U.S. commercial banks thus significantly exceeded their total bank capital. This posed threat not only to the U.S. banking system, but also the international financial system. In response to the crisis, the U.S. banks stopped making new loans to the debtor countries. These were left cut off of international capital market, unable to raise further funds.

The general default was avoided through rescheduling orchestrated by the United States and the IMF. The problem was dealt with in several phases (see Vásquez 1996). In the first phase, from 1982 to 1985, the crisis was treated as liquidity and not solvency crisis. Developing countries were provided new loans through commercial banks and the IMF. The IMF-sponsored programs were based on market-oriented reforms. These included reduction of taxes, tariffs, privatization of state enterprises or capital account liberalization. Nevertheless, the recovery did not appear.

When it became clear that developing countries were not getting less but more indebted, the Secretary of the Treasury of the new Bush administration devised a new plan that emphasized debt-forgiveness for highly indebted countries. The Brady plan enabled banks to choose from a menu of options to reduce or increase their exposure.[64] Vásquez (1996) argues that the Brady Plan was driven by political, not market, considerations: "Washington saw the issue as a security and geopolitical concern. Whether to pursue the Brady strategy or not was to "choose democracy or debt." Indeed, the bloody riots in Caracas, Venezuela, in early 1989 reinforced the view that adjustment by highly indebted countries would be destabilizing without an active debt reduction strategy."

64 The announcement of the Brady plan was treated as "good news" by the market participants. Unal et al. (1993) demonstrate that the stock prices of U.S. multinationals banks showed the strongest positive reaction among all U.S. and Japanese banks to the Brady announcement and the Mexican agreement.

4.2 United States and Japan

When the oil shock hit in 1973, price controls introduced by Nixon were still in effect. The initial ninety-day freeze of prices and wages was prolonged into almost 1000 days, which were known as Phase I, II, III, and IV. By the time controls were dismantled in April 1974, the "catch-up" inflation had reached double digits. In 1974-1975, the U.S. economy experienced real output decline. The unemployment rate rose and peaked at 8.5% in 1975. The popular inverse relationship between the inflation and unemployment known as the Philips curve did not seem to hold anymore. U.S. economy, as well as most of the Western world, slipped into the Great Stagflation.

As the oil shock and the persistent inflation coincided, one view suggests a link between the inflation and the oil crisis through the mechanism of the cost-pushed inflation (Blinder 1982; Blinder and Rudd 2008). According to this view, the stagflation was the result of an adverse shift in the aggregate supply curve that lowered output and raised prices. A more plausible explanation points out at the policy mistake of too expansionary monetary policy (Barsky and Kilian 2001; de Long 1995; Taylor 1998). This monetary policy mistake was caused by the widespread belief in a long-run Phillips curve, which made it more difficult for the Federal Reserve to defend low inflation (Taylor 1998). Each time the policy-makers had to choose between tackling the rising inflation or rising unemployment, the great fear of unemployment carried over from the Great Depression made them opt for the latter (De Long 1995). As the excessive ease in policy began before the oil price shocks of the 1970s, it is doubtful that the oil shocks were the cause of the 1970s inflation.

The reversal in the persistent 1970s inflation came only with the monetary tightening of the new Federal Reserve Chairman Paul Volcker, who was appointed by the president Jimmy Carter under pressure from Wall Street in 1979. When he assumed the office in

August 1979, the annual average inflation rate was 9% (Goodfriend and King 2005, 1). To tackle the high inflation, as well as falling dollar, Volcker tightened credit and raised interest rates. However, the course reversed in-mid 1980 when the Federal Reserve allowed the inflation to rise again in an attempt to fight the recession (Goodfriend and King 2005, 3-4). The deliberate disinflation started only in late 1980 when the federal funds rate rose to 19% (ibid). The high cost of money was felt in the entire economy, from homebuilders to local governments. Humorist Art Buchwald said that 1980 would go down in history as the year when it was cheaper to borrow money from Mafia than the local bank. In 1982, the real GDP contracted by -1.9% and in December the unemployment reached 10.8% (WEO, U.S. Bureau of Labor Statistics). Despite continuing attacks, Ronald Reagan, who assumed the office in January 1981, supported Volcker's war on inflation. Reagan, who made stagflation the key economic problem during his campaign, believed that inflation was a purely monetary phenomenon. Therefore, the successful disinflation, which cut the inflation from more than 13% in 1981 to 3.2% by 1983, has to be partly credited also to his granting the political mandate to combat inflation even at the cost of recession.

The high interest rates had two important effects. First, the demand for dollar denominated assets that brought high yields rose and led to capital inflows. The current account experienced a temporary increase and achieved positive values in 1980 and 1981. This development is in line with the empirical results of Chapter 5: the monetary tightening leads to an increase in the current account balance. Second, the monetary tightening and the increased demand for dollar-denominated assets put huge appreciating pressures on the U.S. dollar. From 1980 and February 1985, the U.S. dollar appreciated by 59 percent in the Fed's trade-weighted index (Frankel 1994, 293).[65] Further attractiveness of the U.S. dollar was underpinned by the positive developments of the U.S. economy, which emerged from the

65 For a more detailed discussion of the strong dollar and its effect on the trade relations, see below.

disinflation stronger. Already in 1983, the real GDP grew by a solid 4.5% and the next year by an astonishing 7.2% (WEO). Throughout the entire Reagan term of 1981-1989, the real GDP grew by a solid average rate of 3.4%. The high unemployment rate fell from the December 1981 peak of 10.8% by exactly one half by the end of his term and reached the value of 8.4 percent (Bureau of Labor Statistics).

The most striking development of the 1980s was the development in world trade and financial patterns. The U.S. trade deficit ballooned, whereas Japan started running persistent trade surpluses. As a financial counterpart of these trade developments, the United States, once the world's largest creditor, became a net debtor. Its current account turned into deficit in 1982 and reached the low in 1987, when it equaled 160.7 billion USD or -3.39% of GDP. Further breaking point came in 1986, when the U.S. net international investment position, a difference between U.S.-owned assets abroad and foreign-owned assets in the United States, turned negative and reached the value of -21.8 billion USD (BEA). This means that in addition to being a net debtor in flow terms (negative U.S. current account deficit), the United States became a net debtor also in stock terms.

The country that replaced the United States in its traditional role of the world's largest creditor was Japan, a relatively small country poor in natural resources. When General Douglas MacArthur, the Supreme Commander of the Allied Powers in Japan, accepted the formal Japanese surrender on 2 September 1945, Japanese economy was in shambles. World War II wiped out many of the gains Japan had made since the Meiji Restoration of 1868, which is considered the beginning of Japanese industrial growth. Major cities were reduced to rubbles. Nearly three million people – almost 4 percent of the population – died of war-related causes (Takemae and Rickkers 2003, xxxviii). One quarter of Japan's physical structures had been destroyed, including more than a third of its industrial machine tools, and 82 per cent of the merchant marine was destructed (ibid). The control of Asian markets that Japan had

acquired since the beginning of the World War I was lost, the dream of the pan-Asian Empire gone. Industrial output stood at a mere 10 per cent of the prewar level, agricultural production had fallen to 60 percent and real wages to 30 percent (ibid). The total damage was the equivalent of 25 percent of the national wealth (ibid). However, Japan's rail network, hydroelectric structures and two thirds of its heavy industrial base remained intact, providing a modest foundation for postwar recovery (ibid).

Initially, the Allied policies aimed at demilitarization to ensure that Japan would not become an aggressive military power again. The famous "Peace Clause" (Article 9) of the constitution imposed on Japan in 1946, renounced war and banned Japan from maintaining any armed forces. The constitution introduced also democratization reforms. The sovereignty was transferred from the emperor to the people. The emperor who was considered "sacred and inviolable" in prewar Japan became no more than a "symbol of the state and of the unity of the people (TIME 4 Oct 1971)." The Constitution also enfranchised women, guaranteed fundamental human rights, strengthened the powers of Parliament and the Cabinet, and decentralized the police and local government (Takemae and Rickkers 2003, xxxix). Shinto religion was separated from the state.

The political liberalization was coupled with economic liberalization. Central to the economic reforms were anti-monopoly policies. The financial cliques, *zaibatsu*, which rose to prominence in the Meiji era, were disintegrated. *Zaibatsu* were giant family-controlled financial and industrial conglomerates that monopolized a significant part of economy. In 1945, the four largest and six "new" *zaibatsu* controlled 49 percent of capital investment in mining, machinery and heavy industry, 50 percent in banking and 61 percent in shipping (ibid, 334). The dissolution of *zaibatsu* was combined with new labor laws, which strengthened workers' rights and a land reform that redistributed 2 million hectares of agricultural land to former tenants at a fraction of its actual value (ibid, 544).

With the deepening of the Cold War, the American policy shifted from liberalization and democratization to economic stabilization. In October 1948 the U.S. National Security Council adopted the resolution, which stated that Japan's economic recovery using its own resources would be expedited so as to create a "bulwark against Communism" (Nishiguchi 1994, 54). The stabilization program, also known as the Dodge Plan (analogous to Marshall Plan in Europe), was based on fiscal and monetary tightening and fixing the exchange rate at 360 yen per dollar. The effect of the Dodge deflation is still a matter of debate. It generated huge political opposition and plunged the economy into recession. However, it was soon superseded by the Korean War, which broke out in 1950. American purchases of supplies from Japan for United Nations forces in Korea rescued the Japanese economy from recession. The long period of remarkable economic growth started.

Between 1950 and 1973 the Japanese economy grew at an average rate of 10 percent a year, doubling its size every seven years (Ito 1992, 43). This rate was roughly twice that of the western industrialized economies. This economic growth is a typical example of the catch-up effect. According standard growth theories, less developed countries have a potential to grow faster than developed ones for two reasons. One reason is that workers in developing countries have little access to capital and so their productivity is often low. A small increase in capital can therefore lead to fast productivity growth. Because of diminishing returns to capital, the gains from an additional increase in capital are much smaller in the capital-rich countries. The second reason to expect catch-up is related to the fact that the growth process of a technological leader is different from that of a follower. Whereas a leader must undertake original research, followers are able to grow through import and replication of production methods and technologies from advanced countries.

In the process of convergence, the Japanese economy made a leap to 56.7 percent the U.S. level in 1973, starting from only 25.5 percent of U.S. GDP per capita in 1960 (Jorgenson

and Nomura 2007, 1). This remarkable economic growth was backed by productivity growth, measured as both labor and total factor productivity (TFP) growth (see Christiensen, Cummings and Jorgenson 1980; Denison and Chung 1976). As a result of the fast productivity growth, the productivity gap between Japan and the United States shrank. In 1955, the TFP in Japan was around 50% of the U.S. level, but by 1980 it had reached around 90% of that of the USA (Cameron 2005, 398).[66] Initially, capital intensity played an important role in narrowing the productivity gap. Between 1950 and 1973 the average growth rate of manufacturing investment was 15 percent in Japan, against 4.2 percent in the United States and 7.5 percent in Germany (van Ark and Pilar 1993, 22). The increase in the productivity was backed also by highly educated and skilled workforce in manufacturing or innovations in management and organization. An example is "just-in-time," a strategy aimed at the reduction of inventory and associated carrying costs. Using data for 52 Japanese automotive assemblers and parts suppliers over the period from 1965 to 1991, Lieberman and Demeester (1999) find that on average, each 10% reduction in inventory led to about a 1% gain in labor productivity with a lag of about one year (for alternative explanations of the Japanese economic miracle, see box 4.1).

By 1970s, Japan emerged as an economic power. Important role in the process of expansion was played by exports. Japanese share of world exports rose from only 1.3% in 1950 to 7.7% by 1981 (Grimwade 2000, 200). Taking manufactures only, Japan's share of world trade rose from 7% in 1955 to over 18% in 1983, giving it a larger share of the world manufacturing exports than either the United States or West Germany (ibid). Furthermore, Japanese exports moved swiftly up the chain value. In the early postwar period Japanese exports were dominated by textiles and clothing, which represented over 40% of the overall exports (ibid). Around 1960 steel rose to prominence and over the next decade Japan

66 Although the estimates of the labor and total factor productivity may differ based on the method used, the general picture holds: in the three decades after the World War II the productivity gap between Japan and the United States, the technological leaders, significantly narrowed.

diversified into capital-intensive industries, such as shipbuilding, automotive industry and consumer electronics. By 1979, 61% share of exports accounted for by machinery and transport equipment, whereas the share of textiles and clothing had fallen to 5% (ibid).

Box 4.1: Alternative explanations of the Japanese economic miracle

In contrast to the traditional neo-classical economic explanations presented in the text, which interpreted the economic performance as a result of "actions and efforts of private individuals and enterprises responding to the opportunities provided in quite free markets for commodities and labor" (Patrick 1979, 222), others searched for an explanation elsewhere. Particularly popular was a counter-argument, which pointed out to the close links between the government and companies, which inspired the nickname "Japan, Inc." Whereas Johnson (1982) argued that the economic miracle was a product of the carefully-designed industrial policies of the Ministry of International Trade and Industry (MITI) to promote infant industries, Samuel (1987) and Okimoto (1989) argued for a broader consensus-based system, where the Japanese bureaucracy had to negotiate the policy with private actors, especially banks. However, the role of bureaucratic policies is questionable. Friedman (1988, 33) documents how bureaucratic policies failed in case of the machine tool industry: "Not one post war market or production plan came close to being realised; the machinery industry grew in a pattern the reverse of what the bureaucracy sought. MITI's long-standing desire was to build up economies of scale through cartels, restrictions on market entry, and consolidation. Instead, Japanese machinery makers fragmented the market: new entrants flooded high-tech equipment sectors, existing firms flatly refused to coordinate or consolidate production."

Another group of scholars argued that Japan benefited from the Allied Occupation. The argument is that Americans helped to "jump-start" the Japanese economy through contributions to Japanese science and technology (Dees 1997). At the same time, Japan embraced under the American security umbrella could enjoy the benefits of low defense expenditure and free access to U.S. markets (Gilpin 1976). There are two problems related to these arguments (see Johnson 1975, 15-16). First, in Japan, where capital formation exceeded 30 percent of GNP during high-speed growth, the effect of low defense expenditures was negligible. This point can be illustrated also by cases of South Korea and Taiwan, which experienced the fast growth even despite high expenditure defense. Second, Japanese exports represented only about 9.6 percent of GNP by the late 1960s and so Japanese economy depended more on the development of the domestic market. Finally, humanities approaches emphasized unique Japanese cultural values. However, all of these hypotheses are ad hoc explanations tailored to specific historical circumstances.

The rapid economic development of Japan was dubbed an "economic miracle," a term that had become a catch phrase for spectacular economic growth. Numerous studies praised Japan and tried to draw lessons from its experience (see the seminal study of the *Economist* from 1962, Hewins 1967, Stone 1969 or Vogel 1985 among the many). The first problems came with the oil shocks in 1973-74. The sharp increase in oil prices and an absolute reliance of Japan on oil imports pushed its trade balance into the red. The Japanese economic growth rate fell to about 5 percent (Ito 1992, 43). However, the recovery was fast. Throughout the 1980s, the Japanese economy thrived. The optimism was reminiscent to the Roaring Twenties. Japanese buyers paid record prices for Impressionist art. The asset market boomed. At certain point it was estimated that the land surrounding the Imperial Palace in Tokyo was worth more than the entire state of California. Between 1985 and 1990, the land prices in

Japan's six largest cities almost tripled in real terms (Barsky 2009, 2). The stock market soared too. The real value of the Nikkei 225 stock price index also tripled between January 1985 and December 1989 (ibid). When the Nikkei peaked at 38 916 on December 29, 1989, nothing suggested that Japan was about to experience what came to be known as two lost decades (on the sources of the asset prices boom, see box 4.2).

The bust was not immediately perceptible. Although the stock market collapsed at the beginning of the 1990, the land prices continued to rise. It was not until 1991 that the real estate prices started to move down. However, the recovery was marked by anemic growth and deflation. The average growth rate from 1990 to 2010 was just above 1 percent (WEO, April 2009). In December 2009, the Nikkei index stood at one-quarter of its December 1989 peak (The Economist, 30 Dec 2009). Between 1998 and 2005 the inflation (measured as average consumer prices) was negative, with a single exception of 2004, when it was zero (WEO, April 2009). Although it started to rise slightly since then, in 2010 it was 2 percent below its 2000 level (WEO). Furthermore, as Japan started to approach the Western technological frontier, it could no longer exploit rapid catch-up effects. The Japanese manufacturing sector productivity achieved parity with its U.S. counterpart by the end of the 1990s (Jorgenson and Nomura 2007). By 2004, the U.S.-Japan productivity gap expanded to 79.9 percent (ibid). This can be attributed to rapid productivity growth in the IT-industries in the U.S.[67] The miracle of Japan, once celebrated as "number 1" (Vogel 1985) and predicted to dominate the world economy, seemed to be over.

67 Yet others attributed the slowdown in the Japanese growth to the industrial policies, which were useful in the 1950s and 1960s but at the advanced stage of economic development shifted from promoting winners to protecting losers. The result is the creation of the „deformed dual economy", a dysfunctional hybrid of strong exporting industries and weak domestic sectors (see Katz 1998).

Box 4.2: Japanese asset prices boom

Some attribute the asset prices boom to expansionary monetary policy of the Bank of Japan in 1986-89 (Hayami 2004, Siebert 2000). In Japan, the laxity of the monetary policy is typically attributed to the international pressure upon Japan from the United States, which believed that the large Japanese trade surplus could be adjusted through stimulation of the domestic demand by monetary and fiscal policies (see Jinushi *et al.* 2000). The Japanese government agreed to stimulate domestic growth first in the Plaza Accord, 1985, and after additional U.S. pressure again in the Louvre Agreement of 1987. The problem with this argument is that land prices were already rising before the Plaza Accord, let alone the full force of the BOJ' rate cuts (Posen 2003, 9).

Another group of scholars suggests the importance of nonmonetary factors, especially the financial deregulation of the 1980s (Hoshi and Kashyap 1999, Cargill, Hutchison, and Ito 2000, and Mikitani and Posen 2000). The liberalization of the securities markets allowed large companies to seek the direct financing there. In response, Japanese banks turned their attention to the small and medium enterprises. The share of lending to the SMEs in the banks' loan portfolio grew from 42 percent in 1983 to 57 percent in 1989, while the loan portfolios expanded by more than half (Posen 2003, 12). The companies that tended to hold substantial real estate used it as collateral to borrow more under the assumption that the land prices would rise. Japanese banks lending directly to firms in the real estate sector rose from 6 percent of total lending in 1983 to more than 12 percent in 1989 (ibid). Some argue that the expectations of rising land values were fueled by unrealistic expectations about monetary policy, believing that low interest rates would persist for longer period (Okina and Shiratsuka 2003 and Shiratsuka 1999).

The rapid economic development had its financial counterpart. As Japanese economy grew, Japan matured from a net debtor to a net creditor. The Japanese current account has been in surplus since 1981. During the 1980s, it continued to rise rapidly, reaching a peak of more than 4 percent of GDP in 1986, or $85,9 billion in absolute terms (IFS). In the same year, Japan became the world's largest creditor. Japanese foreign assets totaled $437.7 billion, while liabilities amounted to $307.9 billion, leaving Japan with net assets of $129.8 billion (New York Times, 28 May 1986).

How to deal with the imbalance was a matter of heated debate among scientists as well as in Washington. Some associated the deteriorating trade balance with the appreciating dollar. Krugman (1985) and Cooper (1985) argued that the foreign exchange market had been driven by an irrational "speculative bubble", which pushed dollar above "fundamental" levels, and this way induced the trade deficit. As a result of the fast dollar appreciation, the price competitiveness of U.S. products relative to the rest of the world decreased. The most suffering industries on the export side included particularly agriculture, capital goods, and aircraft and other transportation equipment; on the import side they included textiles, steel, motorcycles, and consumer electronics; and on both sides they included semiconductors and automobiles (Frankel 1994, 296). The policy recommendation was to talk the dollar down or intervene in the foreign exchange market, possibly in combination with a fiscal contraction.[68]

The need for the fiscal contraction was emphasized by the European countries and Japan, which were concerned about the ballooning U.S. budget deficit, as the Reagan administration cut income tax, indexed tax brackets for inflation and increased the defense spending. The latter was a result of Reagan's turn in the foreign policy. After a decade of *détente*, Reagan decided to take a stand against the Soviet Union. He advocated the turnaround in his famous March 8, 1983 speech: "In your discussions of the nuclear freeze

68 This strategy was partly employed in 1985 Plaza Accord, by which governments of the major trading nations agreed to depreciate the U.S. dollar in relation to the Japanese yen and German Mark by intervening in the currency markets. Despite the success of the interventions, the U.S. trade deficit did not significantly decrease.

proposals, I urge you to beware the temptation of pride, the temptation of blithely declaring yourselves above it all and label both sides equally at fault, to ignore the facts of history and the aggressive impulses of an evil empire, to simply call the arms race a giant misunderstanding and thereby remove yourself from the struggle between right and wrong and good and evil." This rhetoric translated into a 35 percent increase in the defense spending during two Reagan terms (White House, undated). As a result of these policies, the budget deficit rose from 2.6% of GDP in 1981 when Reagan assumed the office to the record low of 5.1% of GDP in 1985, before it returned to 3.1% of GDP at the end of his term in 1988.

The call for fiscal contraction found its support in the twin deficit argument, which points out to the correlation between the fiscal and the trade deficit. The two are linked through the changes in interest rates. The U.S. fiscal expansion and the Japanese fiscal contraction raised U.S. interest rates relative to Japanese rates, induced a capital inflow from Japan to the United States, caused the dollar appreciation and worsened the U.S. trade balance.

Sachs and Roubini (1987) examine the determinants of the global trade and financial imbalances in the 1980s through a macroeconomic simulation model. Their results suggest that a combination of sharply higher fiscal deficits in the United States and sharply reduced deficits in Japan and the cutoff in lending to the non-oil developing countries in the early 1980s can account for most of the trade balance movements of the U.S. and Japan, and some of the exchange rate movements since 1980. However, the model does not explain the drop in the dollar vis-à-vis the yen since late 1985. Ueda (1988) arrives at a similar conclusion by examining the determinants of the Japanese trade surplus. He argues that the movements in the Japanese current account in the 1980s correspond to (1) a large excess of domestic savings over investment and (2) a fiscal contraction. The results of his model suggest that during the period of 1980-85, the trade balance movements were the result of U.S. economic expansion,

decreases in oil price and the decrease in Japanese government expenditures. In 1986-87 the current account behavior was dominated by the sharp decrease in oil prices. Ito (2009) examines two U.S. current account episodes, one in the 1980s and the other in the 2000s. His empirical findings are consistent with the "Twin Deficit" argument. A one percentage point increase in the budget balance raises the current account balance by 0.10-0.49 percentage point for industrialized countries. However, although the twin deficit hypothesis seems to capture the U.S. experience in the 1980s, it fails to explain the U.S. current account deficit accompanied by the budget surplus in the late 1990s or Japan's experience during the 1990s.

In contrast to the theories presented above, stands the position that the U.S. trade deficit was the result of U.S. economic strength. "It is a mystery to me why," says Milton Friedman (1988), "it is regarded as a sign of Japanese strength and American weakness that the Japanese find it more attractive to invest in the U.S. than Japan. Surely it is precisely the reverse – a sign of U.S. strength and Japanese weakness." According to this view, the international capital flew to the economy with the best investment opportunities. Therefore, the policy recommendation was to do nothing.

This *laissez-faire* attitude prevailed during the first Reagan administration, 1981-1984.[69] It was in line with the so-called Reaganomics, which was based on scaling down the government, lower taxes and less interference with the market economy. Donald Regan, Secretary of the Treasury, subscribed to the "safe-haven" view that the pattern of capital inflow, dollar appreciation, and trade deficit were the result of the favorable investment climate created by the Reagan tax cuts and regulatory changes (Frankel 1994, 298). When the Europeans complained to Reagan about America's budget deficit and its effects such as high interest rates in the meeting of the heads of state of the G-7 countries at Williamsburg, Virginia in May 1983, Reagan and Regan responded that the strong dollar and U.S. trade

69 For an overview of the trade policy, see the classic work by Destler (2005). For an overview of the American economic policy, refer to Feldstein (1984).

deficits were not problems and, in any case, were not due to high interest rates and fiscal expansion (Putnam and Bayne 1987, 179, cited in Frankel 1994, 298).

The main opposition to the non-interventionist attitude of the White House and the Treasury came from the Congress. The growth of the imports to the United States was matched by the growth of the protectionist rhetoric. Pressures to protect U.S. industries and regions (especially in the industrial "Rust Belt" in the mid-Atlantic and Midwest states, where some companies still had not fully recovered from the past recession) rose (Richardson 1994, 631). "The continuing Japanese attack on our basic industries is another Pearl Harbor. The time has come to close America's door to the flood of Japanese imported products," stated Senator Donald Reigle in 1983 (cited in McGee and Yeomin 1996, 2).

The shift in the government policy came when the trade deficit was heading to a new record in 1985, nearly four times what it was in 1981. In order to reduce the deficit and deal with the protectionist pressure in the Congress, the administration moved towards activism on exchange rates and pressures on opening of foreign markets to U.S. exports.

On 22 September 1985, after a meeting at the Plaza Hotel in New York City, the Reagan administration together with France, West Germany, Japan and the United Kingdom announced a campaign to depreciate the dollar through interventions in the foreign exchange markets. With the Plaza Accord, the five agreed that "orderly appreciation of the main nondollar currencies against the dollar is desirable (TIME 7 Oct 1985)." Whereas the United States tried to tackle the growing trade deficit, the Europe and Japan hoped that a weaker dollar would not pull investment capital out of their economies and would ease the pressure on keeping high interest rates to prevent still more money fleeing to the United States. When the exchange markets opened on Monday morning, the volume of private dollar sells was such that the U.S. dollar fell about 5% against major currencies that day (ibid). In fact, the dollar had begun to decline in February 1985 but the coordinated interventions helped to

sustain this decline, especially against the yen.[70] From the February peak, the dollar fell by some 30% against other major currencies within 18 months (TIME, 6 Oct 1986). Despite the dollar depreciation, the hoped for reduction in the trade deficit did not happen.

The second change in the trade balance policy was the U.S. call for the fair trade practices. Reagan, a committed free-trader, was persuaded that the prosecution of unfair trade practices was consistent with free trade. "I will not stand by and watch American workers lose their jobs because other nations do not play by the rules," Reagan announced on Monday following the Plaza Accord (TIME 7 Oct 1985). At the same time, he said he would veto measures that diminish the international trade. To appease the Congress, he proposed a $300 million export subsidy from Treasury to help U.S. companies compete against subsidized foreign exports.

But neither the dollar depreciation, nor the calls for fair trade managed to decrease the protectionist sentiments of Congress. The urge on Capitol Hill to do something was overwhelming. The perceived unfair trade policies were to be tackled by the congressionally initiated Omnibus Trade and Competitiveness Act of 1988. It targeted countries running highest trade surpluses with the United States, who were therefore identified as "unfair traders." However, the law made no fundamental changes. The original targets were Brazil, India and Japan, each of which appeared on the Super 301 unfair trade list but both Brazil and Japan were removed from the list before the law expired in 1990 (Mcgee and Yoon 1996, 8).[71] Further frictions between Japan and the United States were fueled by the rising Japanese investment in the United States, which generated a large public stir, especially after Japanese bought few American icons like Columbia Pictures or Rockefeller Centre.[72]

70 Statistically significant effect of interventions on exchange rates in the post-Plaza Accord period was documented by Dominguez and Frankel (1993).

71 Omnibus Trade and Competitiveness Act of 1988 expired in 1991 and was not renewed until 1994 by Clinton. It again expired in 1997 and was renewed once more by Clinton in 1999.

72 Connecticut's Democratic Senator Joseph Lieberman cited the transaction as evidence that the U.S. must redouble its efforts to become more competitive: "This year when they turn on the lights of that Christmas tree in

Japan's foreign direct investment began in the early 1950s.[73] However, it was conducted on a small scale, in part due to stringent government regulations imposed because of the weak balance of payments. Until the 1970s, almost two thirds went to developing countries (Kähkönen 1997, 27). Most of the investment took the form of the vertical integration. It was directed into upstream investment in raw materials, especially mining, to supply manufacturing in Japan, and labor-intensive manufacturing of intermediate goods in nearby Asian countries. Later, downstream investment in distributing networks to help place exports in the world markets developed.

In the 1970s, Japan's foreign investment started to grow significantly. Between 1971 and 1973 the Japanese FDI rose fivefold (ibid, 27). The year 1972 was dubbed "the *gannen* (the very first year) of direct investment (Komiya and Wakasugi 1991, 51)." Since the early 1980s, Japan has been the world's largest exporter of capital. The composition of the investment moved from vertical integration to geographical diversification. It changed away from manufacturing to the tertiary sectors, such as finance, transport and real estate. The destination of the capital changed too. The share of developing countries shrank in favor of industrial countries, which absorbed over two thirds of Japanese FDI, with the United States receiving over 40 percent in the 1980s (Kähkönen 1997, 27).

There are several competing explanations of this surge. First and foremost, the simple fact that Japan was running a current account surplus means that it had to run an equal capital account deficit.[74] This means that the capital surplus, which Japan accumulated through exports and growth and did not spend at home, was transferred to the countries running the current account deficit, i.e. those in the need for external financing. However, whereas the

Rockefeller Center, we Americans are going to have to come to grips with the reality that this great national celebration is actually occurring on Japanese property (Time, 13 Nov 1989)."

73 For an overview of the Japanese foreign investment, see Komiya and Wakasugi (1991); Kähkönen (1997); and Froot (1991).

74 Or increase its foreign exchange reserves. The yen was permitted to fluctuate more widely since the first oil shock.

current account surplus explains the capital exports, it fails to explain the surge in the foreign direct investment and not in the portfolio investment (see Froot 1991). Thus, other factors must be taken into account to explain why the capital outflows took the form of the foreign direct investment instead of the portfolio flows.

A possible factor to explain the initial spurt was the liberalization of capital controls. When the Japanese current account turned into a large surplus, Japan eased government regulations on FDI and introduced first policies to promote it between 1969 and 1972. The Japan Export-Import Bank lowered rates on foreign investment funds. Tax provisions were revised for FDI in developing countries and FDI by small and medium-sized enterprises. Although Japanese enterprises in manufacturing, commerce and services were generally free to undertake FDI before the revision of foreign exchange laws in December 1980, after the revision financial and insurance firms became free to invest abroad (Kähkönen 1997, 31). In the event, FDI in finance and insurance came to account for 31 percent of the increase in Japanese FDI in 1986-90 (ibid).

Another macroeconomic channel through which the foreign direct investment might have been influenced was the yen appreciation. The yen appreciated by 42 percent in real effective terms between the fall of 1985 and late 1988 (ibid). The yen appreciation increased the dollar-value of assets of Japanese investors. As a result, they could more easily collateralize assets to finance new investments compared with competitors in countries with depreciated currencies (Froot and Stein 1991). Thus, a yen appreciation led to an increase in the liquidity of the Japanese investors.

Alternative explanations are based on industrial-organization view, which emphasize existence of some firm-specific intangible assets, which make it more profitable for a firm to internalize the rents on these advantages through overseas investment, rather than through licensing or exports.

A more subtle argument is related to the FDI as a means of circumventing the trade barriers. If a firm faces an increase in the protectionism and is unable to export its products to a certain country, it solves the problem by transferring the entire production to that country. However, this explanation is sensible only for firms that produce differentiated products (see Froot 1991, 20). If a foreign and a domestic firm produce identical goods, the price increase due to protection makes it more profitable for both the domestic and the foreign firm to invest in the production of those goods. However, protection could enable the domestic firm to explore all the additional investment opportunities.

This explanation fits well the 1980s, which were the period of the trade frictions between Japan and the United States. Furthermore, it is supported by two facts. First, Japanese products were complex and differentiated goods. Second, the Japanese investment was skewed toward "greenfield" investments. The argument is supported also by econometric studies. Controlling for market size and relative labor costs, Barrell and Pain (1999) find that investment was significantly influenced by trade protection measures, and in particular by the level of anti-dumping actions initiated in the 1990s. Farrell *et al.* (2004) use a panel data for 8 manufacturing industries and 15 countries and find that Japanese FDI was primarily affected by domestic macroeconomic conditions and increasing use of antidumping investigations by host countries.

The FDI culminated in the second half of the 1980s, when the Japanese economy experienced an asset price boom. Similar to the rise in an exchange rate, the increase in the land price translated into an increase in the collateral, this way acting as a subsidy to Japanese firms investing abroad (Graham and Krugman 1991, 47). After the bubble burst out in the early 1990s, there was a contraction in foreign lending, both long-term and short-term.[75]

75 Portfolio capital flows have exceeded the size of the foreign direct investment. However, there is one significant difference. Whereas the outward FDI have exceeded the size of the inward FDI, there have been comparable inward and outward portfolio flows. Japanese portfolio flows to a large extent include debt

The rising foreign direct investment in the United States led to several protectionist outbursts in the Congress. Two cases played a central role in the U.S. policy on the foreign direct investment.[76] First, there was a greenmail attack on Goodyear, the tire company, by the British financier James Goldsmith and the investment group Hanson in 1986. They bought 11% of Goodyear stock and threatened a takeover unless Goodyear bought back its shares at an inflated price. Second, there was a Fairchild-Fujitsu case in 1987. Japanese Fujitsu proposed a purchase of 80% of Fairchild, back then a U.S. leader in the semiconductor industry, from the French parent, Schlumberger. The case was politicized as an example of the potential Japanese takeover of the entire semiconductor market. Fujitsu backed off. However, the Congressional concern over expanding foreign presence remained.

Partly in response to Goodyear and Fairchild controversies, Congress began debating the regulation of incoming foreign direct investment. The proposals to grant President authority to limit foreign investment that threatens national security or necessary U.S. commerce were made by Senator J. James Exon and representative James J. Florio. President Reagan feared that Exon-Florio Amendment would create a climate that would hinder foreign investment and said that he would veto the 1988 Trade Act unless the original Exon-Florio proposal was watered-down. Finally, the Congress enacted the Exon-Florio Amendment under the Omnibus Trade and Competitiveness Act of 1988. According to the Amendment, President may block investment that poses threat to the national security. President Reagan delegated the review process of the foreign investment to the Committee on Foreign Investment in the United States (CFIUS).

From 1988 through 1994, CFIUS reviewed very few transactions: there were 918 voluntary notifications and CFIUS conducted investigations of fifteen transactions (Mostaghel 2007). The President took action in one case, and, in five other cases, the

securities, mostly U.S. treasuries. Japan was the biggest foreign holder of U.S. Treasuries until September 2008, when it was surpassed by China (Bloomberg, 18 Nov 2008).

76 On U.S. policy toward foreign direct investment, see Graham and Krugman (1995, Chapter 6).

companies withdrew their investment offers (ibid). The only case, in which the President formally intervened to block or unwind a transaction was the case of the China National Aero-Technology Import and Export Corporation (CATIC), a Chinese government agency, which proposed a purchase of MAMCO Manufacturing Inc., an aircraft parts maker located in Seattle. The transaction was concluded in November 1988. However, in May 1990, based on a CFIUS report, President George Bush ordered CATIC to divest its interest in MAMCO within three months. In August 1990, CATIC announced it would sell MAMCO to DeCrane Aircraft Holdings Inc., a U.S. Company (Mostaghel 2007). Although the CFIUS proceedings are confidential, it appears that national security concerns were related to the purchaser, who may have previously violated export control regulations by trying to obtain sensitive technology used for military purposes.

An important case that led to major amendments to Exon-Florio was Thomson's attempted acquisition in 1992 of LTV Corporations' Missile Division. Once again, the case was politicized. LTV, although in bankruptcy, was a large defense contractor. Second, approximately 60% of Thomson was owned by the French government. The company was a major military contractor in France, hence the fear that the sensitive information might be acquired by the foreign government. Recognizing that the bid was likely to be blocked, Thomson withdrew it. The case led to the "Byrd" amendment to Exon-Florio, which went into effect in 1993. According to the amendment, foreign governments or foreign government sponsored agencies were prohibited from acquiring US defense contractors or sensitive information unless a waiver is granted by the Secretary of Defense.

Despite these changes, the U.S. policy toward incoming foreign direct investment remained liberal. The CFIUS operated at a fairly low-level. Richard Perle, who worked for the Reagan, Clinton and both Bush administrations said: "The committee almost never met,

and when it deliberated it was usually at a fairly low bureaucratic level. (…) I think it's a bit of a joke (CBS News, 22 Feb 2006)."

The protectionist pressures slightly eased in the light of the political developments of the 1990s. Although Senator Paul Tsongas captured the popular opinion of excessive cost of the Cold War when saying "The cold war is over; Japan won," Japan of the 1990s was quite different from Japan of the 1980s. The miraculous economic growth turned into sluggish and Japan struggled with deflation. After the collapse of the Soviet Union, the United States enjoyed its "unipolar moment (Krauthammer 1990, 2002)."

Further easing of the protectionist pressures came with a temporary reduction in the U.S. current account deficit due to the brief 1990-1991 recession. In 1991, the current account balance achieved a single positive value since 1982. However, the modest surplus of 1991 was mostly caused by large unilateral transfers from the U.S. allies in the Gulf War. The recession had its roots in the Black Monday of 1987. On October 19, 1987, the stock markets around the world crashed. The crash began in Hong Kong and spread westwards through international time zones, hitting the United States after other markets had already declined. The Dow Jones Industrial Average dropped by an unprecedented 22.61%, the collapse larger than that of 1929. In response, the Federal Reserve supplied liquidity to the market and agreed to act as the lender of last resort. The financial panic was prevented but the economy slowed and 1989 saw a wave of bank failures. In response, the nominal federal funds rate rose from 6.22% in 1987:1 to 9.73% in 1989:2 and stayed above 8% until 1990:4 (Hester 2003, 5). The recession was relatively brief and shallow; real GDP (in 1996$) fell from a peak of $6732 billion in 1990:3 to $6632 billion in 1991:4 and passed its previous peak in 1992:1 (Hester 2003, 8). However, the recovery was sluggish.

The economic situation started to change in the second half of the 1990s. The U.S. labor productivity jumped from about 1.5 percent during the two decades preceding 1995 to

roughly 3 percent in the period since then (Ferguson 2005). The productivity resurgence was IT-led and could be traced to the industries that either produced IT or used IT most intensively (Jorgensen et al. 2007, Stiroh 2001, Basu et al. 2003, Oliner and Sichel 2000). Oliner and Sichel (2000) estimate that the use of information technology and the production of computers accounted for about two-thirds of the 1 percentage step-up in productivity growth between the first and second halves of the 1990s. The fast productivity and output growth and the resulting increase in the tax revenues contributed to short-lived budget surpluses. The unemployment rate was reduced and the inflation remained low. Between 1993 and 2000, the United States exhibited the best economic performance of the past three decades.

The rising productivity enabled the Clinton Administration to sustain a posture of benign neglect toward the trade deficit, which began to mushroom again in 1993. According to the Administration, the trade deficit reflected the rapid productivity growth and economic growth, which made the United States a more attractive place to invest relative to the rest of the world (DeLong and Eichengreen 2002, 203). As Ferguson (2005) observed, the surge in the productivity had several consequences. First, it boosted perceived rates of return on U.S. investments, thereby generating capital inflows that boosted the dollar. Second, the higher rates of return led also to a rise in domestic investment. Finally, expectations of higher returns boosted equity prices, household wealth and perceived long-run income. As a result, consumption rose and savings rate declined. Looking at it from this perspective, all these factors helped to widen the current account deficit.[77]

77 Contrary to this is the view that the import of the capital was to a certain extent driven by an asset bubble. Ventura (2001, 7) suggests the following link between the bubble and the current account: "In the 1990s U.S. investors enjoyed very large returns to their wealth in the form of asset price revaluation. Rather than spend these returns, U.S. investors largely decided to keep them and buy domestic and foreign assets roughly in the same proportions as their average portfolio. Since the average portfolio is short in foreign assets, this means that the United States leveraged itself more, so that it could invest in domestic assets beyond the increase in wealth. Hence the large current account deficits." The problem of this explanation is that it fails to explain the further current account widening after the stock prices collapsed.

With the accelerating decline in prices of IT-related equipment in the late 1990s and firms' massive investment in IT, the popularity of IT-companies started to grow. In addition to the traditional computer hardware and software companies, such as DELL or Microsoft, the attention was drawn to internet-based companies, commonly referred to as *dot-coms*. When Netscape Communications, Inc., a US computer company known for a back-then popular web browser, went public on August 9, 1995, its stock shot from $28 to $58.25 per share at the end of the day (DeLong and Magin 2006, 2). However, the real frenzy came by the end of the 1990s. As the interest rates began to fall in 1998, the venture capitalists saw an opportunity in the soaring stock market. The number of dot-coms mushroomed. Their businesses strategy was based on operating a net loss today in order to capture the market share in their respective sector through the brand awareness campaigns. At the height of the dot-com boom, 17 dot-com companies paid at least $2 million apiece for an add during the Super Bowl On January 30, 2000 (USA Today, 27 July 2000). The problem of only one company being able to become a winner in their sector did not seem to be apparent to investors. Between 1990 and the peak in mid-2000, U.S. equity prices increased nearly five-fold, and the growth rate of equity prices accelerated from 10.4 percent per year between 1990 and 1995, to 21.2 percent per year between 1995 and 2000 (Kraay and Ventura 2005, 2-3). Numerically, the bubble burst on March 10, 2000, when the NASDAQ Composite index peaked at 5048.62, more than double its value a year before. Mostly due to the dot-com crash, technology was the worst performing sector of the 2000s. According to the *Financial Times*, if you had invested £1000 in a tech fund on December 31, 1999, it would have been worth only £448 on average a decade later (Financial Times, 19 Dec 2009).

4.3 Developing World

The stock market boom was probably partly fueled also by the funds repatriated after the series of financial crises that swept the world at the end of the 1990s. These crises ended the second major episode of the capital inflows to the developing countries between 1988 and 1997. The lending was geographically concentrated in Latin America and East Asia.

The 1980s in the Latin American countries were the "Lost Decade" marked by stagnation and denied access to the international capital markets. However, the situation began to change by the end of the 1980s, partly because of market-oriented reforms in several Latin American countries, partly because of the low interest rates in the United States and Japan, which made investors looking for a higher yield elsewhere. Capital began to flow to Latin America again. The neoliberal reform in Chile was followed by similar efforts in Mexico. In the beginning of the 1990s, Mexico was a showcase of economic reform and successful institutional and financial stabilization.

The main Mexican problem was the high current account deficit, which ballooned from $6 billion in 1989 to more than $20 billion in 1993, or approximately 7 percent of GNP. This led many observers worry that Mexican peso was overvalued. The macroeconomic problems were coupled by the political instability: a guerilla rebellion in the southern province of Chiapas in January 1994 and assassination of the ruling party's presidential candidate on March 23. As a result, investors started placing a larger risk premium on Mexican assets. Peso started to depreciate. As the central bank was trying to maintain the peg, the foreign exchange reserves were running down. In about four weeks, Mexico lost nearly $11 billion in reserves (Whitt 1996, 2). The situation turned into an effective crisis with the official 15 percent devaluation of the Mexican peso in December 1994, to about four pesos per dollar, when foreign economists expected the devaluation of around 20 percent (see

Dornbusch *et al.* 1994). Capital flew from the country. The peso abandoned the peg and devalued by 50 percent. Because Mexican government tried to retain confidence in the stable exchange rate throughout 1994 and introduced "Tesebonos," a short-term security indexed to the dollar, the currency crisis turned into the government crisis. When the currency fell and no one was willing to lend in hard currency to Mexico, Mexico faced possible default. If the government decided to raise interest rates to keep the capital in the country, it would throw the country into the recession. If it started printing money to meet its liabilities, it would fall into the spiral of hyperinflation and depreciation.[78]

A week of intense currency crisis stabilized after the promise of international help, orchestrated by the United States. The U.S. help was provided through the Treasury's Exchange Stabilization Fund as President Clinton failed to pass the Mexican Stabilization Act through Congress. The United States thus acted as the lender of last resort. Further help came from the IMF, BIS and the Bank of Canada.

East Asia was the second region, which experienced significant capital inflows. Asian countries attracted the capital inflows because of their high growth rates, which came to be known as "Asian economic miracle."[79] Until the 1960s, it seemed that industrialization was privilege for the European-settled regions, with the sole exception of Japan (Frankel 2000, 330):

> In the original Industrial Revolution, it took the United Kingdom fifty-eight years to double its income (starting from 1780). It took the United States almost as long (forty-seven years, starting from 1839) and Japan thirty-five years (from 1885). Korea accomplished the feat in eleven years (from 1966) and then China just ten years (counting from 1977).

In the 1960s, Four Asian Tigers – Hong Kong, South Korea, Singapore and Taiwan, experienced high growth rates and rapid industrialization. By 1995, they were among the

78 This real disequilibria hypotheses is challenged by Sachs et al. (1996), who argue that the Mexican crisis had a self-fulfilling panic aspect to it. However, the self-fulfilling expectations became decisive in generating a panic only after the government ran down gross reserves and ran up short-term dollar debt.
79 For an overview of the Asian crisis and events leading to it, see Eichengreen (1996, 186-191).

world's twenty leading exporters and accounted for more than 10% of world exports (Krueger 1999, 11). By the 1980s, Southeast Asian countries – Indonesia, Thailand and Malaysia – followed and achieved some of the highest rates of economic growth in the world. This performance persisted into the 1990s. Between 1992 and 1995 Indonesia, Malaysia, Singapore, South Korea, and Thailand all grew at rates in excess of 7 percent per annum (Eichengreen 1996, 187).

Factors that were traditionally associated with the rapid growth of Asian countries include outward orientation, high domestic saving rates, strong inflows of foreign direct investment, technological "catch up," relatively low income inequality, a stable macroeconomic environment, and a market-friendly policy environment (for example, see World Bank 1993). However, this view was challenged by the studies, which showed that there was little growth in total factor productivity and rapid growth of the East Asian economies relied predominantly on the mobilization of additional resources, especially capital accumulation (see Kim and Lay 1994; Krugman 1994; Young 1994, 1995).

In the early 1990s, the rapid growth spurred private capital inflows. An additional factor why investors turned their attention to the emerging economies was interest rate differential between developed and developing countries. Japanese interest rates were low as a result of depressed financial conditions in Japan and yields on U.S. equity investment had been depressed by a soaring stock market (Eichengreen 1996, 187). Investors therefore borrowed cheap in yen and dollars and invested in higher-yielding Asian securities. Most of the capital inflows thus came from the United States and Japan.

The growth of capital inflows was tremendous. In 1990, total capital flows to emerging markets (developing countries and transition economies) were about $50 billion, of which half went to Asia and one-third to Latin America. By 1993, total capital flows rose to

$160 billion, of which slightly less than 40 percent went to Asia and slightly more than one third to Latin America (Ito 1999, 112).

The composition of the capital flows differed across the world regions. Whereas the capital flows to Latin America took mostly the form of the portfolio investment, most of the capital flows to Asia took the form of the direct investment. The composition of the capital inflows across Asia, however, differed. Whereas China received mostly the FDI, Korea and Thailand relied mostly on the bank credits, Malaysia a mix of bank credit and equity investment and Indonesia started to increase the portion of bank credit. The bank credit turned out to be an important element in the financial crisis which started in Thailand in summer 1997.

Thailand began to open to international trade in the 1980s. Its export-led development strategy resulted in the average growth rate of more than 8 percent in the late 1980s and early 1990s. Thailand experienced current account deficits but these were easily financed by the capital inflows, which came into the country mostly in the form of bank credit. To ease the flow of the funds from foreign banks, Thailand opened an international offshore banking facility (Bangkok International Banking Facility) in 1993. As a result, there was a threefold increase in bank credit inflows between 1993 and 1994 (Ito 1999, 117).

A significant share of the funds was invested in property lending. The growth of lending by finance companies to property sector averaged 41 percent per annum, compared with total lending growth of 33 percent per annum during 1990-1995 (Miller and Luangaram 1998, 9). As a result, the percentage share of property loans increased from 15 percent to about 24 percent, while manufacturing loans steadily declined from 22 to 15 percent during 1988-96 (ibid). The situation was reflected in the stock market. A year before the abandonment of peg in July 1997, the share price of the property companies in Thailand fell significantly by about 68 percent (ibid, 12).

The situation began to change in the mid-1990s. The dollar appreciated against the yen by 50 percent from mid 1995 to end 1997 (Miller and Luangaram 1998, 4). Since the Thai baht was pegged at 25 to the U.S. dollar, Thai exports lost price competitiveness in the Japanese market. The twelve-month export growth rate became zero by the beginning of 1997 (Ito 1999). With the fall in exports, the current account deficit became a problem. Initially, it was financed by capital inflows. Fast growing Thailand was able to grow out of the debt. When the growth slowed down, the debt started to accumulate.

These problems led to the reversal in the central bank's intervention in the foreign exchange market. During the period of the capital inflows, the foreign investors lent money to Thai banks. This involved a purchase of baht and a sale of the foreign currency. The demand for baht increased and therefore led to pressures on baht appreciation. Because baht was pegged to dollar, the Thai central bank had to come to the foreign exchange market and sell baht to increase its supply. When the direction of the capital flows reversed, the central bank had to intervene in the foreign exchange market again but this time it had to purchase baht in order to decrease the pressures on its depreciation against the dollar.[80] However, this strategy worked only to the point when the central bank exhausted its foreign exchange reserves. This happened in summer 1997. Thai central bank let the currency to float on 2 July. The crisis spread quickly to Indonesia, Malaysia, Korea, Hong Kong, Russia and then Latin America.

There are several types of explanations of causes of the Asian crisis. The first one focuses on the "crony capitalism," where personal connections and not the market determine who gets access to credit (see Rajan and Zingales 1998, McKinnon and Pill 1998, Krugman 1998). In order to protect their investments in the relationship-based system, Western investors kept their claims short-term (Rajan and Zingales 1998). This made the system prone to shocks. It also led to the currency and maturity mismatch, where short-term liabilities were

80 Alternative strategies would be to raise interest rates or to let the currency go. However, the economy experienced a slowdown. The rise in interest rates would throw the country into recession. Currency devaluation would lead to the loss of business confidence and to an increase of the foreign-currency denominated debt.

denominated in foreign currency and long-term assets were denominated in local currency (see Chang and Velasco 1998). The domestic factors included asset bubbles (Quigley 2001; Miller and Luangaram 1998, Krugman 1998).

However, the type of capitalism in the country fails to explain why the crisis erupted at that time and why it spread so fast to other countries. Although there were economic imbalances, it is not clear why there was such a huge reversal of fortune in the entire region. The explanation is that the crisis was caused by the financial panic (see Furman *et al.* 1998; Radelet *et al.* 1998; Radelet and Sachs 2000; and Taylor 1998). The crisis thus involved an element of self-fulfilling prophecy and was essentially a bank run that manifested itself through the foreign exchange market (see Radelet and Sachs 2000). Baig and Goldfajn (1999) examine the five most affected countries – Thailand, Malaysia, Indonesia, Korea and the Philippines – and provide evidence of cross-border contagion in the currency and equity markets. One of the factors that may explain this is the nature of the portfolio investment, which was channeled into the East Asian region through "Asia-Pacific" funds rather than funds for individual countries (Hu 1998, 35). Thus, when one country was hit by the crisis, investors did not differentiate between the countries and withdrew the funds from the entire region. Miller and Luangaram (1998) connect the two explanations and argue that the macroeconomic problems in asset prices and resources allocation combined with the creditor panic led to a vicious downward spiral that brought the region to its knees.

The crisis was followed by a reversal in private capital flows. Net private flows turned from an inflow of 93 billion USD in 1996 to an outflow of 12 billion in 1997 (see line 3 of Table 4.1). The largest outflow was in the bank lending, which fell from 55.5 billion USD in 1996 to -21.3 billion USD in 1997 (line 8). However, although there was a massive flight of short-term capital and large sell-offs of foreign equity holdings, at the same time there was an increase in the inward direct investment (see line 5). Krugman (1998b) suggests that this

inward investment reflected policy changes, as Asian government, under pressure from the IMF, had dropped old policies unfavorable to foreign ownership; and at the same time it reflected the perception of many multinational firms that they could buy Asian companies and assets at fire-sale prices.

Table 4.1: Net Capital Flows in Five Asian Economies[1], billions of USD

	1994	*1995*	*1996*	*1997*	*1998*
Current account balance	-24.6	-41.3	-54.9	-26	17.6
External financing, net	47.4	80.9	92.8	15.2	15.2
Net private flows	40.5	77.4	93	-12.1	-9.4
Equity investment	12.2	15.5	19.1	-4.5	7.9
Direct equity	4.7	4.9	7	7.2	9.8
Portfolio equity	7.6	10.6	12.1	-11.6	1.9
Private creditors	28.2	61.8	74	-7.6	-17.3
Commercial banks	24	49.5	55.5	-21.3	-14.1
Non-bank private creditors	4.2	12.4	18.4	13.7	-3.2
Net official flows	7	3.6	-0.2	27.2	24.6
International financial institutions	-0.4	-0.6	-1	23	18.5
Bilateral creditors	7.4	4.2	0.7	4.3	6.1
Resident lending/other, net[2]	-17.5	-25.9	-19.6	-11.9	-5.7
Reserves exl.gold (- =increase)	-5.4	-13.7	-18.3	22.7	-27.1

Notes:

1 - South Korea, Indonesia, Malaysia, Thailand, and the Philippines

2 - Including resident net lending, monetary gold, and errors and omissions.

Source: Miller and Luangaram (1998, 7)

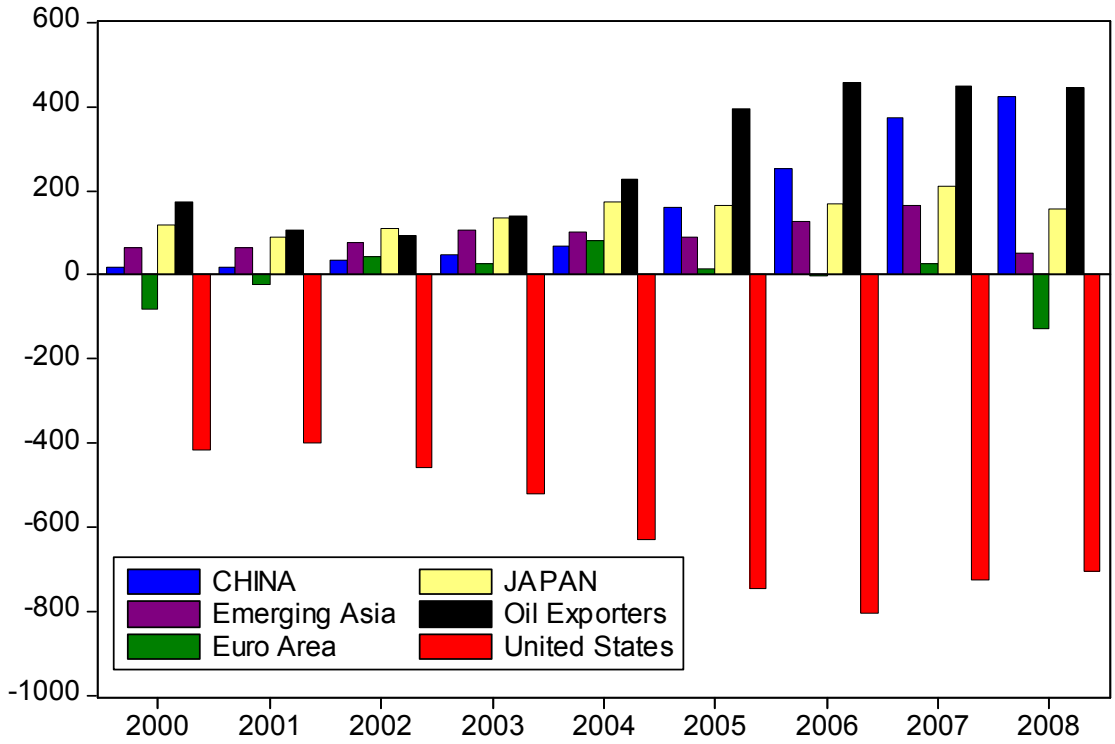
In response to the crisis, the IMF created a series of rescue packages for the most affected countries. The packages were conditioned upon structural adjustment packages based on neoliberal economic principles.

Wincoop and Yi (2000) tried to follow the trail of money out of Asia to ascertain its final destination. They found out that the majority of the outflows went to offshore center banks, which channeled the capital to banks in Europe. Almost half of the outflows went to banks whose nationalities were not American, Japanese, or European. Yet, the United States and Europe were the final destinations for most of the outflows from the crisis countries and from Japan.

4.4 Global Imbalances

The first decade of the twenty-first millennium was marked by the most puzzling development in the pattern of the capital flows (see Figure 4.1). In 1999 the developing world as a whole stopped running current account deficits (Wolf 2009, 39). In East Asia, the current account surpluses were motivated by the traumatizing experience of the East Asian crisis and were meant to buffer the impacts of the future potential crises. Compared to South East Asia, China was unaffected by the crisis. Its enormous current account was a result of a combination of the export-led growth and the fixed exchange regime. The source of the recent current account surpluses of the oil-exporting countries lied elsewhere. Following the high increase in the price of oil, these countries quickly started to accumulate petrodollars in exchange for their oil exports.

Figure 4.1: Current accounts in selected countries and regions, 2000-2008, billion USD.



Note: Emerging Asia: Indonesia, Malaysia, Philippines, Thailand, South Korea, Singapore, Hong Kong and Taiwan. Oil/gas exporting countries are Algeria, Angola, Azerbaijan, Bahrain, Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Syria, Turkmenistan, United Arab Emirates, Venezuela, and Yemen.

Source: author. Data from IFS (CD ROM). Central Bank of the Republic of China (Taiwan) for Taiwan, IMF WEO Database 2009 for Algeria, Equatorial Guinea, Qatar, Turkmenistan and United Arab Emirates.

On the other side of the specter was the United States, the world's largest economy and the major military power and at the same time the world's largest debtor. In 2005 it absorbed at least 80% of the savings that the rest of the world did not invest at home (Roubini and Setser 2005a, 2). The U.S. current account reached the low of 6% GDP or 803.5 billion USD in 2006. This trend has been a major deviation from the historical pattern, where world's largest economies tended to credit the rest of the world, as was the case of Great Britain in the nineteenth century or the United States after the World War II. The only region, which

seemed to behave in line with the historical experience and theory, was the Euroarea, which ran modest current account surpluses between 2002 and 2006. However, these were wiped out by the oil price increases and the financial crisis, which began in 2007.

The large current account imbalances reflected the imbalances in the world investment and savings ratios (see Table 4.2). Whereas the U.S. national savings rate kept falling from almost 19% in 1998 to barely 13% in 2008, the Chinese savings rate rose from approximately 40% to almost 52% over the same period (WEO). Between 2005 and 2008, the difference between the U.S. and Chinese savings rate jumped to more than 33 percent. A significant increase in the savings rates can be observed also by the oil-exporters, whose savings rate rose from 22% 1995-1999 average to 38% 2005-2008 average. The savings rates in Emerging Asia remained at approximately 30% of GDP level. However, following the 1997 Asian crisis, the investment levels fell from roughly 30% of GDP to approximately 23%, this way widening current account surpluses.

The interdependency relationship that emerged between China and America, which Niall Ferguson and Moritz Schularick labeled *Chimerica*, captured the most attraction. On the one hand, the continuing inflow of capital from the countries running current account surpluses to the United States enabled the United States to sustain the high spending as well as the current account deficits throughout the last decade. On the other side of the planet, China's trade surplus with the United States led to inflow of U.S. dollars to Chinese economy in payment for the exports. China – whose banking system was soaked with high private and company savings due to lack of alternative investment – could not allow the money to flow into the circulation because it would lead to inflationary pressures and the pressures for renminbi appreciation. Instead, it mopped up the excess liquidity by selling sterilization bonds. The accumulated foreign exchange reserves were then – mostly – invested into the

U.S. Treasuries. Thus, China exported products to the United States and in turn, the United States exported financial assets to China.

Table 4.2: Saving/Investment Balances as a percentage of GDP

	Savings			*Investment*			*Current Account*		
Region	1995-1999	2000-2004	2005-2008	1995-1999	2000-2004	2005-2008	1995-1999	2000-2004	2005-2008
United States	16.89	14.79	13.91	18.99	19.26	19.41	-2.10	-4.48	-5.49
Japan	29.67	26.74	27.29	27.36	23.83	23.40	2.30	2.91	3.88
Euroarea	21.43	20.97	20.94	20.66	20.54	20.99	0.78	0.43	-0.05
China	40.82	41.11	52.94	38.83	38.74	43.55	2.00	2.36	9.39
Emerging Asia	32.10	29.74	30.97	29.53	23.71	23.35	2.57	6.03	7.62
Oil Exporters	21.99	30.02	37.89	26.03	22.73	23.56	-4.04	7.29	14.33

Note: Emerging Asia: Indonesia, Malaysia, Philippines, Thailand, South Korea, Singapore, Hong Kong and Taiwan. Oil/gas exporting countries are Algeria, Angola, Azerbaijan, Bahrain, Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Syria, Turkmenistan, United Arab Emirates, Venezuela, and Yemen.

Source: International Financial Statistics, World Economic Outlook, national data. Data missing for Angola 1995, Libya 2006-2008, Oman 2008, Qatar 2008, Turkmenistan 1995 and United Arab Emirates 2008.

In the following section, I discuss the reasons behind the ability (economic dimension) and the willingness (political dimension) of various regions to finance the U.S. current account deficit. First, I discuss the rise of China to an economic power, the sources of its savings and its motivation to finance the U.S. current deficit. The next section discusses the current account surpluses of emerging Asia and oil-exporting countries. Finally, the attention is paid to the effects of the capital flows from South-East Asia and oil-exporters to the United States.

4.4.1 China

Similar to the postwar Japan, the rise of China to an economic power seemed to be nothing short of an economic miracle. Thirty years ago, China was a poor and isolated country. In 1978, after years of state control of all productive assets, China launched an economic reform, which introduced market elements into the centrally planned economy and set the country on the path of the economic growth. The launch of the economic reform is puzzling. The Chinese economy did not exhaust its growth potential under the Soviet-type system of development. Thus, the economic reform cannot be viewed as a direct consequence of the economic state in China after Mao Zedong's death in 1976. Harding (1987) argues that the reforms were the result of political engineering by a coalition of reform-minded leaders led by Deng Xiaoping, who gained supremacy over the conservative faction in the Chinese Communist Party. However, Deng Xiaoping was not always a proponent of economic reform and up to 1978, he supported rapid heavy industrial development (Bachman 1985, 60; Naughton 1995, 62). Naughton (1995) argues that as neither economic, nor political factors can satisfactorily explain the launch of the economic reform, it is necessary to look elsewhere for the explanation. He claims that the reform was the result of the economic crisis created by the planners of the recovery program. Between Mao's death in 1976 and the end of 1978, there were twin impulses of rehabilitation of the command economic system and accelerated growth. As a result, the policies of the infeasible Ten Year Plan adopted during 1978 collapsed at the end of 1978, this way opening the space for the dramatic set of economic reforms.

The reform was eased also by international factors. Chinese leaders witnessed the fast economic development of Japan and other Asian economies. They desired to import Western technology and increase foreign-exchange earning capacity. This led to an attempt to reform the export sector even before the beginning of the reform era (Naughton 1995, 63). The

economic cooperation with the West was enabled once the political relations improved. The Sino-Soviet split resulted in Mao's belief that the geographical proximity of Soviet Union made it a greater threat to China than the United States. To confront the Soviet Union, China sought a pragmatic rapprochement with the United States. In January 1979, Deng Xiaoping was the first Chinese leader to visit the United States.[81]

Since the introduction of reforms, China has been growing at an impressive pace of more than 9 percent a year with few ups and downs. It developed into the third largest economy after the United States and Japan with a nominal GDP of 4833 billion USD in 2009 (WEO). This represents approximately 35% of the U.S. nominal GDP and almost 97% of the Japanese nominal GDP (ibid). This strong economic growth was fueled by rapid productivity growth (CSLS 2003, Wang 2009, Hu and Khan 1997). Over the 1978-2001 period labor productivity in China advanced at a rate of 6.6 percent per year, contributing 70 percent of output growth (CSLS 2003, 7). However, the productivity growth was not uniform across sectors. It was the lowest in the agricultural sector and the highest in the industrial sector (ibid). The productivity growth was fueled by high domestic rates of investments, inclusion of underemployed labor force from agriculture and innovative manufacturing forms, such as town enterprises.

The strong economic growth boosted exports. Just between 1992 and 2007, China's real exports increased by more than 500 percent (Amiti and Freund 2008). In 2007, China's share in world's exports reached 8.8%, making it the world's second largest exporter, only after Germany (China Daily, 28 Oct 2008). Initially, China exported mostly labor-intensive products, such as textile products. The success of the Chinese textile industry is to a large extent given by the ability to form so-called "lump economies" or industrial clusters focused on one product in a locality, this way exploiting the economies of scale to a maximum (see

81 Ferguson (2009) jokingly asserts that Deng Xiaoping set China on a new economic course by visiting the United States and seeing for himself what the free market can achieve.

Zhang et al. 2004 or Wang 2007). A famous example is Datang, the world's socks capital. In the late 1970s, Datang was a rice farming village with 1000 people who gathered and stitched socks. In 2004, Datang produced nine billion pairs of socks each year – more than one set for every person on the planet and over a third of the world's output (Barboza 2004). What is even more astonishing, China was able to diversify the composition of its exports. In a relatively short period of time it evolved from the socks superpower to a complex exporter. Between 1992 and 2007, its exports saw an increasing share of hard manufactures, such as consumer electronics, appliances and computers (Amiti and Freund 2008). The rise in exports resulted in a large trade surplus with various world regions. The United States, which has been open to Chinese imports, tops the list. Already in 2000, China had become the largest contributor to the U.S. trade deficit, replacing the long-time leading contributor, Japan. In 2007, the U.S. trade deficit with China was $256 billion (32% of total), about triple Japan's figure ($83 billion) (Ito 2009, 5).

The reforms were, obviously, a success. The economy grew out of the plan. In 1978, state enterprises generated 80 percent of China's GDP, while the rural commune produced the other 20 percent (Gregory and Zhou 2009-2010). By 2002, the nonstate sector's share exceeded two-thirds of GDP, with the share produced by truly private companies comprising more than half (ibid). In 1978, private entrepreneurship was illegal. In 2009, there were over 40 million entrepreneurs, whose businesses employed over 200 million and generated two-thirds of industrial output (ibid). However, the resource allocation by China's visible hand can still be observed in some areas of economic activity. An illustration is Ordos, a city in Inner Mongolia. The place is described as China's Texas, thanks to the massive coal deposits. Between 2004 and 2009, the government built a new Ordos, a city some 30 km away from the old Ordos. At the end of 2009, the streets and new modern buildings of the new Ordos, a city meant for one million residents, were still empty. Patrick Chovanec from Tsinghua University

suggests that the project was motivated by the desire to report the targeted GDP growth: "Who wants to be a man who reports that he didn't get 8 % GDP growth this year? Nobody wants to come forwards so the incentives in the system are to build and if that's the easiest way to achieve that growth, then you build (AlJazeeraEnglish, 9 Nov 2009)." What is interesting in regard to the topic of this dissertation is the motivation behind the investment to the real estate. Chovanec argues that people do not view real estate as a place to live but as a place where they can put their cash. The lack of domestic investment opportunities will play an important role in the story told below.

4.4.1.1 Solution to Trilemma

The willingness of China to finance the U.S. current account deficit stems from its commitment to the export-led growth and the solution to the trilemma subordinated to this development model. China opted for the stability of the fixed exchange rates and capital controls to prevent capital flows from undermining the peg. The independent monetary policy was sacrificed. Such a solution to the trilemma resembles the post-World War II monetary system and was therefore dubbed as "Bretton Woods II" by some (see Dooley *et al.* 2003).

Since the beginning of the reforms, renminbi was devalued several times from about 1.50 renminbi per dollar in 1980 to 8.62 renminbi per USD in 1994, when the official and parallel exchange markets unified. Between 1997 and 2005, the currency was pegged to dollar at the rate of 8.27 renminbi per dollar. The value of the Chinese peg caused much political stir in the United States. Similar to the Japanese-American trade debate, the protectionist opposition came from Congress.[82] China was accused of manipulating its currency to maintain the price competitiveness of its exports. Between September 2003 and 2008, some

82 For the review of the Sino-American trade relations and the Congressional bills aimed at the renminbi revalution, refer to Hufbauer and Brunel (2008) and Hufbauer *et al.* (2006).

three dozen new congressional bills with various sponsors were floated to challenge alleged Chinese unfair commercial practices, and bills introduced since January 2005 focused increasingly on the currency value (Hufbauer and Brunel 2008). A similar rhetoric was partially adopted by the White House. Treasury Secretaries John Snow and Henry Paulson tried to persuade China that exchange rate flexibility is in its own interest, as well as in the interest of the global economy and the United States.

However, Chinese authorities have had a different stance on the issue. They reject the accusation that Chinese exchange-rate policy has given China an unfair advantage, as well as the idea that an appreciation of renminbi would resolve the global imbalances. Instead, they point out to the problems of the U.S. economy – low savings rate, and suggest cuts in both the consumer and government spending.

Nevertheless, Chinese authorities introduced a constrained float on July 2005. Zhou Xiaochuan, head of the People's Bank of China, said that the shift was made because the dollar had become too volatile, so it was in China's own long-term interest to change. The renminbi was revalued by 2.1%, from 8.28 to 8.11 renminbi per U.S. dollar. The exchange rate has been pegged to a basket of foreign currencies and allowed to fluctuate within a narrow band of 0.3% around the central parity per trading day. The permitted daily fluctuation was widened to 0.5% in May 2007. Following the 2007 revaluation, the renminbi appreciated by 17% by July 2008, but on a real trade-weighted basis, the degree of appreciation is merely 8% (Ito 2009, 6). However, the effect of the revaluation were limited as during the same time period, the U.S. dollar depreciated by 15% on a real trade-weighted basis, indicating that the yuan's appreciation is minimal at best and that China essentially maintains a fixed exchange rate system (ibid). This can be evidenced by the rapid rise in the country's international reserves holdings in the last few years (see below).[83]

83 Ito (2009, 6) sums that "[t]he debate on whether and how much the renminbi is undervalued is far from settled. Dunaway, *et al.* (2006) estimate the degree of undervaluation ranging from zero to 50%. Cheung et al.

In order to protect the peg from the disruptive capital flows, China relies on the capital controls. The policy makers tend to "lean against the wind," i.e. to impose controls on outflows to resist depreciation pressures and to impose controls on inflows to resist appreciation pressures. Since the start of Open Door policies, the foreign direct investment inflows have been encouraged, while portfolio inflows and capital outflows were initially heavily controlled.[84] However, controls for more volatile cross-border flows remained tight. Liberalization of non-FDI capital flows has been slow. When the appreciation pressures on the renminbi began to mount, China started to encourage outflows. The restrictions on currency conversion by domestic residents were relaxed, firms and banks were given flexibility to issue foreign-exchange denominated bonds in local markets and to raise their direct overseas investment (Glick and Hutchinson 2008, 7).

Despite the administration's effort, the capital controls were leaky and tended to be less effective over time even before their recent relaxation, as can be documented by the size of external flows on both the current and capital accounts. As a percentage of GDP, China's gross cross-border flows more than quintupled to above 120% in 2005 from less than 20% in 1982 (Ma and McCauley 2007, 2). The increase was visible not only on the current account but also on the capital account. China's gross capital account flows represented one third of China's total gross cross-border flows in 2005, compared with 13% in 1982 (ibid). Nevertheless, China's capital controls still remain substantially binding. This is documented especially by sustained and significant gaps between onshore and offshore renminbi interest rates and persistent dollar/renminbi interest rate differentials during the period of a *de facto*

(2007) find little statistical evidence that the RMB is undervalued. Cline and Williamson (2008) survey and compare studies on the degree of renminbi's undervaluation. In a more recent paper, by using updated World Bank's price surveys, Cheung *et al.* (2009) estimate the extent of RMB undervaluation to be at most 10% as of 2006."

84 China allows free exchange for current account transactions since December 1996. For a brief overview of the capital controls in China, see Glick and Hutchison (2008). Prasad and Wei (2005) provide an extensive chronology of capital controls over the period 1980 – January 2005.

dollar peg (see Cheung *et al.* 2006; Ma and McCauley 2007; Liu and Otani 2005; and Glick and Hutchison 2008).

4.4.1.2 Macroeconomic considerations

The peg has been undermined by the capital inflows resulting from trade surplus or from foreign purchases of renminbi-denominated assets. However, the ability of the Chinese residents to reinvest the dollars that they acquire through trade and inward investments outside of the country is limited (Humpage and Shenk 2008). Instead, they must exchange the lion's share of these dollars and other foreign currencies for renminbi with the People's Bank (ibid).

As a result of this policy, the foreign exchange reserves have skyrocketed during the 2000s. In 2007, China replaced Japan as the world's largest holder of the foreign exchange reserves. As of July 2009, China's foreign exchange reserves, the world's biggest, topped $2000 billion for the first time (Bloomberg, 15 July 15 2009).

When the central bank buys U.S. dollars from and sells renminbi to Chinese residents, the renminbi monetary base expands.[85] If dollar purchases by the central bank were not routinely sterilized, uncontrolled increase in the money supply would lead to an overheating of the economy and inflation. The People's Bank of China uses several tools of the sterilization. The standard tools include administrative and quantitative controls on lending, such as raised reserve requirements, window guidance to banks to curb excessive lending to certain sectors, or higher interest rates on the rediscounting and uncollaterilized lending facilities. In April 2003, the central bank introduced the "sterilization bonds". These are bought primarily by commercial banks. This effectively decreases the amount of their capital

85 Additional liquidity comes from the substantial private savings, see below.

available for credit. Solely in 2004, the stock of sterilization paper increased by 300%, rising from 303 RMB billion to 1108 RMB billion (Roubini and Setser 2005b, 3).[86]

On the other hand, the Chinese central bank invests its large foreign exchange reserves into the U.S. dollar denominated bonds, with the highest share going into the U.S. Treasuries. In July 2009, China held $763.5 billion of Treasuries (Bloomberg, 15 July 15 2009). However, a portion of reserves has been invested also in other debt assets. For example, as of June 2007, China held $376 billion in securities issued by the troubled Fannie Mae and Freddie Mac, the two mortgage-finance companies, which account for almost half of the home-loan market in the United States (New York Times, 21 July 2008).

The strategy of selling sterilization bonds and buying U.S. Treasuries is associated with several problems. First, the sterilization is costly. The central bank sells high-yielding sterilization bonds and buys low-yielding U.S. Treasuries. Although the yield on U.S. Treasury securities has exceeded the interest rate on short-term Chinese securities over the past few years, these profits may have disappeared since the beginning of the financial crisis in summer 2007, as inflation in China has pushed rates on the Bank's short-term instruments up and turmoil in financial markets has pushed yields on U.S. Treasury securities lower (Humpage and Shenk 2008). Second, sterilization bonds could substitute for other assets that might be held by banks and private investors, potentially interfering with the growth and development of private financial markets (Bernanke 2006). Thus, there is a significant opportunity cost to banking system holding the sterilization bonds. Finally, the U.S. debt is denominated in the U.S. dollars. This means that the United States is theoretically able to inflate its debt away simply by printing more dollars. Once the dollar depreciates, the value of the Chinese foreign exchange reserves shrinks relative to other currencies.

86 The success of the sterilization is debated. For example, Wu (2009) suggests that only 35 cents are sterilized for a yuan of foreign-exchange reserve that flows into China.

The Chinese authorities are well aware of these problems. However, the apparent solution of renminbi revaluation against the U.S. dollar is politically not feasible. This decision is in the hands of the State Council focused primarily on political stability rather than financial issues, and the State Council believes that the political stability is dependent on the continued economic growth that will provide the tens of millions of new jobs needed by unemployed or underemployed workers (Berry 2005).

Furthermore, the currency mismatch between renminbi-denominated liabilities and foreign currency-denominated assets makes the central bank a subject to the financial loss associated with further appreciation in the renminbi.

In order to diversify out of dollars without triggering a fall of the U.S. dollar, China adopted two strategies. First, it attempts to persuade the world to adopt a new global currency. In March 2009, Zhou Xiaochuan, the governor of the People's Bank of China, argued that the international financial system based on a national currency would tend to exacerbate global imbalances (The Economist, 11 July 2009). He said that the dollar's reserve-currency status let America borrow cheaply, causing country's credit and housing bubbles to persist for longer than otherwise would have. Therefore, he proposed to replace the dollar with a global reserve currency, the Special Drawing Rights. This argument is strongly reminiscent of the Triffin's dilemma during the original Bretton Woods and the solution to the balance-of-payments imbalances problems based on the introduction of the SDRs. Zhou's proposal was backed also by Brazil, India and Russia, countries, who are also concerned about their large dollar foreign exchange reserves. There are several problems with this proposal. First, it is not clear who would bear exchange rate losses of dollar-to-SDR foreign exchanges (ibid). Second, a sudden shift in the traditional role of the U.S. dollar as the main reserve currency is unlikely. The development of SDR money markets that are liquid enough for the SDR to be a

reserve asset would take years (ibid). Furthermore, the U.S. dollar replaced the British pound only after the United States won a major war.

The second strategy of China to diversify out of dollars is to encourage the international use of the renminbi in international trade and finance. In June 2009, Russia and China agreed to expand the use of their currencies in bilateral trade and similar ideas are discussed between Brazil and China (ibid). The People's Bank of China also signed currency-swap agreements with Argentina, Belarus, Hong Kong, Indonesia, Malaysia and South Korea. However, without full renminbi convertibility and a real forward market for renminbi, China's trading partners will be reluctant to use renminbi for invoicing (ibid).

China is also unlikely to diversify its portfolio away from U.S. debt securities in a short-term horizon. First and foremost, the continued inflow of U.S. dollars as a result of the trade surplus makes it problematic for China to diversify away from U.S. dollar or U.S. dollar-denominated assets because that would require sale of dollars in the foreign exchange market. The sale of dollars would be counterproductive to the central bank's effort to sustain the peg because it would lead to depreciation pressures on the U.S. dollar and appreciation pressures on the renminbi.

Second, the Chinese financial market is underdeveloped and unable to generate high quality financial assets. At the same time, the financial intermediation, such as administrative controls on lending to certain sectors, makes it difficult to invest the money at home. The money is therefore directed to the United States, which has the most liquid and the deepest financial market and at the same time has outperformed Europe in economic growth in recent years. This is the argument of the global imbalances explanations, which emphasize importance of the financial development – or the lack thereof (see Blanchard *et al.* 2005; Caballero *et al.* 2006; Ito and Chinn 2007).[87] This argument is well illustrated by the cry of

87 For a detailed discussion of the theories, see Chapter 6.

Luo Ping, a director-general at the China Banking Regulatory Commission, whose English – according to *Financial Times* – tends toward the colloquial. After a speech in New York he said that China would continue to buy Treasuries in spite of its misgivings about US finances (Sender 2009):

> Except for US Treasuries, what can you hold? Gold? You don't hold Japanese government bonds or UK bonds. US Treasuries are the safe haven. For everyone, including China, it is the only option. (...) We hate you guys. Once you start issuing $1 trillion-$2 trillion [$1,000bn-$2,000bn] . . . we know the dollar is going to depreciate, so we hate you guys but there is nothing much we can do.

So far, there have been only small steps towards the portfolio diversification. In early 2007, the State Administration of Foreign Exchange (SAFE), which manages $2,000 billion of reserves, began diversifying into equities and continued this strategy at least until the collapse of the US mortgage finance providers Freddie Mac and Fannie Mae in July 2008 (Anderlini 2009). By that point SAFE had moved well over 15 per cent of the country's $1,800bn reserves into riskier assets, including equities and corporate bonds. Chinese losses on those investments would exceed $80 billion, or more than 50 per cent (ibid). The bulk of SAFE's holdings remain in US Treasury bills and much of the loss on its riskier assets will be offset by gains on long-term bills.[88]

4.4.1.3 Microeconomic considerations

A further factor that adds to the discrepancy between savings and investment of various world regions is Chinese high savings rate – 50 % or more of GDP. The household savings represent approximately half of its national savings: in 2007, the household savings as

88 In addition to the portfolio diversification, China diversified also the management of China's foreign exchange assets. In 2007, it established the State Investment Company (SIC), which is expected to acquire 200 billion USD, or one sixth of foreign exchange reserves through issuing bonds (Yam, CFA, and Wang 2007).

a share of the household disposal income was 30% (Wei and Zhang 2009, 2). These savings add to the banks' liquidity and this way enhance further need for the monetary sterilization. There are three possible explanations of such a high savings rate.

First type of explanation builds on the dependency hypothesis advanced by Coale and Hoover (1958). The hypothesis emphasizes the intertemporal considerations in savings decisions: countries with a low ratio of working population to non-working population (youth and old) tend to save less than countries with a high ratio as the savings are employed to support the non-working population. The validity of the hypothesis of China's savings was tested by Modigliani and Cao (2004). Their results suggest that the household savings has risen due to the Open Door economic reforms and the growth prospects they generated, as well as the introduction of the one-child policy at around the same time, which led to a gradual increase in the ratio of employed to total population (see also Kraay 2000).

However, Chamon and Prasad (2008) argue that this explanation does not appear to hold at household level. Instead, they argue that the savings patterns are guided by precautionary motives (see also Bernanke 2006). The lack of social safety nets in China and the rising private burden of expenditures on housing, education, and health care lead to precautionary savings, even in the poor rural areas. For example, only about 14 percent of the population is covered by health insurance; and pension plans (which, in any case, replace only about 20 percent of pre-retirement earnings) apply to only about 16 percent of the economically active population (Bernanke 2006).

However, although both pension systems and the public provision of health care in China have improved since 2003, household savings as a share of disposable income rose sharply during the same period (Wei and Zhang 2009, 2). Thus, although the lack of social safety net can explain the high savings rate, it is unable to explain a further increase in savings in the past years. Wei and Shang (2009) offer an interesting complementary hypothesis. They

argue that as the country experiences a rising sex ratio imbalance as a result of the one child policy and the family preference of sons over daughters, families with sons compete with each other to raise their savings rate to ensure that their sons are competitive in the marriage market. Competitive savings by these families spills over to greater savings by other families, possibly through raising the prices of nontradable goods such as housing. They estimate that this factor could potentially account for about half of the actual increase in the household savings rate between 1990 and 2007.

4.4.2 Other Economies Financing U.S. Current Account Deficit

Although Chinese and Japanese current account surpluses attract the most attention of the U.S. politicians, as well as media and researchers, in 2005 these too countries provided only about 40% of America's saving deficit (The Economist, 24 Sept 2005). The rest comes from a group of smaller countries, which have been running current account surpluses for different reasons.

The first group of countries is emerging Asian economies. After the 1997-98 Asian crisis, the East Asian economies were cut off the international capital markets, their economies were in turmoil and their monetary standards fell apart. The single exception was China, which grew to an economic power. The emerging Asia depended on China's demand and at the same time competed with it in the third markets.

The lessons drawn from the Asian crisis were different by the IMF and by the affected economies. The IMF advocated an economic model balanced between the production for exports and for domestic consumption and more flexible exchange rate mechanism. On the other hand, the East Asian economies did not want to abandon the proven export-led growth model. Remembering the recent crisis, they were also reluctant to allow bigger exchange rate

flexibility (see McKinnon and Schnabl 2004). The macroeconomic rationale can be explained by what Calvo and Reinhart (2002) called "fear of floating": countries are reluctant to allow the appreciation when the circumstance are favorable and when circumstances are adverse, the fear of a collapse in the exchange rate comes from pervasive liability dollarization. The case for dollar peg was supported also by the fact that most of East Asian commodity trade is invoiced in dollars (McKinnon 2000).

The East Asian economies continued to pursue the export-led growth and slowly returned to the soft pegs. By 2002, the day-to-day volatility of each country's exchange rate against the dollar has again become negligible (McKinnon and Schnabl 2004). Similarly to China, these countries began to rapidly accumulate official dollar reserves, which serve also as a protection against future possible currency attacks.

The second group of countries consists of oil-exporters. Compared to Chinese current account surplus, the current account surpluses of oil-exporters have been higher in both aggregate size and relative to GDP. Whereas cumulative Chinese current account surplus in the five years to 2008 was almost 1.3 trillion USD, the surplus in oil-exporting countries was 2.3 trillion USD (WEO, April 2009). In 2008, Kuwait ran a current account surplus of 44.7% of GDP, Saudi Arabia 28.9% and Norway 18.4%. On the other hand, Chinese current surplus was only 10% of GDP.

The ballooning current account surpluses of oil-exporting countries are a result of a sudden hike in oil prices. During 2003, the inflation-adjusted price of a barrel of crude oil on New York Mercantile Exchange rose above $30, reached $60 by August 2005 and peaked at $147.30 in July 2008. Oil price increase determines export revenues of oil exporters that in turn affect their external balances. Arezki and Hasanov (2009) argue that the oil price increase is not the only factor behind the current account surpluses of oil exporters. They suggest that twin surpluses play a role. They find that fiscal policy has a much stronger effect on current

account of oil exporters than on current account of other countries. A 1 percentage change in the fiscal balance affects current account by 0.9-1.4 percentage points (compared to 0.3-0.4 percent for other countries).

Similarly to the 1970s, the oil-exporting countries have been stacked in cash. In real terms, the oil-exporters' current account surplus was more than twice in 2006 as it was at its peak in the 1970s' after oil-price shocks (The Economist, 9 Dec 2006). However, compared to the 1970s there are several changes.

First, there is a change in the pattern of the petrodollars recycling (see Wiegand 2008, Boorman 2006, The Economist, 9 Dec 2006). The share of gross capital outflows from oil-exporting countries in the form of deposits to banks in BIS reporting countries has been smaller than in the 1970s and 1980s, amounting to more than a quarter between 2001 and the end of 2004 (Wiegand 2008, 19). These large deposit outflows came especially from Russia, the world's second largest oil exporter, as well as Libya, Nigeria, and Angola. In this period, banks in BIS reporting countries passed almost half of deposit inflows received from the "periphery" on to emerging market economies, while funds received from the "core" were typically put to other uses (ibid).

In contrast, Middle Eastern oil exporters made little use of bank deposits. Although, it must be noted that nowadays the petrodollars are harder to trace. In contrast to China, which uses its foreign exchange dealers to buy American treasuries directly from American brokers or dealers, or Russia, whose foreign exchange reserves and bank deposits rose sharply, Middle Eastern countries hold their foreign assets in secretive government investment funds and purchase bonds through intermediaries in London, hiding their true ownership (The Economist, 9 Dec 2006).[89]

89 This is mostly due to the reservations to the ownership by the foreign government in sensitive industries. For example, Dubai Ports World, a state-owned company located in the United Arab Emirates, entered into an agreement with a London-based P7O, which ran port operations at six American ports. The two companies asked for voluntary CFIUS review under Exon-Florio in October 2005. The sale was approved by administration in

Part of the accumulated capital stays in the region. This issue is related also to the foreign exchange arrangements in the region. Saudi Arabia, Kuwait, the United Arab Emirates and most other Gulf states peg their currencies to the dollar. This way, they import the U.S. monetary policy. Low interest rates result in excess domestic liquidity, which fuels increase in asset prices. For example, share prices in Saudi Arabia increased fourfold between 2003 and 2006, and its stock market had the largest capitalization among stock markets of emerging countries (The Economist, 9 Dec 2006).

4.4.3 The United States

The capital inflows to the United States enabled the United States to borrow at lower cost. Warnock and Warnock (2005) demonstrate that had there been no foreign flows into U.S. bonds in 2004, the 10-year Treasury yield would be 150 basis points higher. However, the impact of the headline-grabbing foreign official flows, which make a relatively small subset of total foreign accumulation of U.S. bonds, is markedly smaller, yet still significant. The foreign capital inflows are thus able to explain a puzzling development in the long-term yields on government Notes and Bonds. Since early 2000, the yield on the 10-year Note fell from 6% to 4% between early 2000 and 2005. Over the course of 2004, as inflation picked up

January 2006. However, the deal met with strong bipartisan opposition in Congress. Whereas the Bush administration explained that Dubai Ports World would not be responsible for security at the ports but only for running terminal facilities and loading and unloading ships and storing the containers they transport, the critics were concerned about the national security. A bipartisan group of seven House and Senate members contended that although the UAE may have a strongly pro-U.S. government, the country was traversed by some of the Sept. 11, 2001, hijackers and its banking system has been used by group affiliated with al Qaeda (Washington Post, 16 Feb 2006). As a result of the negative reaction in Congress and the media, the Dubai Port World announced it would sell the U.S. port operations to a U.S. company.

This case, together with a 2005 attempt of a state-owned China National Offshore Oil Corporation (CNOOC) to buy American oil company Unocal Corporation led to reform of CFIUS activities by the Foreign Investment and National Security Act of 2007 (FINSA). FINSA addresses the main issues that were the focus of concern in the cases described above. It mandates additional CFIUS scrutiny of transactions, which involve foreign government or U.S. defense.

and the Fed started its series of small interest rate increases, the yield fell from 4.6% to 4%, a development that Alan Greenspan (2005) termed "conundrum".[90]

"Like water seeking its level, saving flowed from where it was abundant to where it was deficient, with the result that the United States and some other advanced countries experienced large capital inflows for more than a decade," explained Federal Reserve Chairman Ben Bernanke in a March 10, 2009 speech (TIME, 1 Apr 2009). This global savings glut (a term coined by Bernanke 2005) argument draws on the existence of excessive savings and too little investment opportunities in the developing countries. The major causes of the excessive savings appear on both micro- and macro-economic levels. On the microeconomic level, it is the precautionary saving by individuals because of the missing social safety nets and small share of dependent (youth, old) people in the population. On the macroeconomic level, the main causes are the export-led growth supported by rigid fixed exchange rate systems and capital controls, accumulation of "war chests" of foreign reserves to avoid the financial crises – a lesson drawn from the Asian crisis 1997-1999 – and recent increases in oil prices.

In the second step, it is necessary to ask why the accumulated savings flow to the United States and not elsewhere or why they are not invested at home. The explanations focus on the limited ability of the East Asian and oil-exporting countries to absorb the accumulated savings, which have been therefore transferred to the countries with deep financial markets and safe financial instruments, such as the United States or the United Kingdom (see Bernanke 2005; Blanchard *et al.* 2005; Caballero *et al.* 2006, 2008, 2009; Gruber and Kamin 2005; Legg *et al.* 2007; Prasad *et al.* 2006; Smaghi 2008). The "global savings glut" led to a chronic excess demand for financial assets and diverted the capital flows to the United States,

90 However, Rudebusch et al. (2006) argue that the foreign official purchases of U.S. Treasuries played little or no role and a portion of the conundrum may be explained by declines in long-term volatility.

which, in contrast to the Eurozone and Japan, had higher economic growth (Caballero *et al.* 2006, 2008).

In opposition to the global savings glut hypothesis stands the twin deficits argument, which draws a link between the current account deficit and the growing budget deficit, which represents a decrease in the public savings. The budget deficit grew to a large extent in response to the events at the beginning of the millennium. Following the burst of the dot-com bubble, a series of corporate accounting scandals and the 9/11 terrorist attacks, the U.S. economy slipped into a short recession. Policymakers were quick to respond. In order to stimulate the consumer and investment spending, the Federal Reserve lowered the interest rates and the incoming Bush administration sponsored a tax cut in 2001, including an immediate tax rebate, and another tax cut in 2003. However, the recovery was sluggish and similar to the jobless recovery at the end of President George H.W. Bush's term in 1993. Furthermore, tax cuts were combined with an increased government spending, as the Bush administration launched attacks on Afghanistan and Iraq in response to the 9/11 terrorist attacks on the World Trade Centre and the Pentagon. As a result, the large federal surplus of 2000, 236.2 billion USD or 2.4% of GDP, turned into a large deficit beginning in 2002. The budget deficit reached the low of 412.7 billion USD or -3.6% of GDP in 2004.

Ito (2009) suggests that a one percentage point increase in the budget balance raises the current account balance by 0.10-0.49 percentage point for industrialized countries. He argues that the saving glut argument about the effect of financial and legal development as well as financial liberalization seems to be applicable only for countries with highly-developed legal systems and open financial markets. However, the argument that the fiscal policy plays a major role in determining the current account is challenged by Greenspan (2005b, c), Ferguson (2004) and Corsetti and Müller (2006, 2007). Corsetti and Müller (2006, 2007) find that the relationship between the budget and the current account balance holds only

for economies that are open to trade. In the United States, which is less open to trade, the external impact of shocks to either government spending or budget deficits is limited, while private investment responds significantly (Corsetti and Müller 2006) and the correlation of the government budget balance and the trade balance is S-shaped (Corsetti and Müller 2007).[91]

The turn in the development of the current account deficit came in 2006 with the bursting of the U.S. housing bubble. The U.S. house prices began to decline in 2006-2007. The subprime mortgage crisis started in earnest with the Bear Stearns' – at the time one of the top five U.S. investment banks – bailout of two of its hedge funds, which were involved in securities backed by subprime mortgages. Within weeks, the deflation of the housing bubble turned into the liquidity crisis, as the funding for entire banking segments dried up. Several U.S. and European banking institutions collapsed and had to be rescued. Despite the central banks' effort for the stabilization of the financial system, the subprime mortgage crisis intensified during the first week of September 2008, starting with the government rescue of the government-sponsored enterprises Fannie Mae (Federal National Mortgage Association) and Freddie Mac (Federal Home Loan Mortgage Corporation) on 7 September 2008 and culminating with the collapse of the Lehman Brothers only a week later on 15 September.[92]

The bankruptcy of the Lehman Brothers was a watershed. Whereas up to that point the crisis was contained within the financial sector, afterwards it quickly spread to the real economy. Following the Lehman Brothers collapse, the panic spreading in the financial markets led to the lending collapse. Central banks and governments flooded the economies with additional liquidity. Nevertheless, the world economic growth was the slowest since the World War II. The U.S. economy experienced a contraction of -5.4% in the fourth quarter of 2008 and -4.6% in the first quarter of 2009 (BEA).

91 For a more detailed literature review on the global imbalances, see Chapter 6.

92 September 21, 2008 was an end to the era of big investment banks in the Wall Street, as the Federal Reserve granted permission for the last two major U.S. investment banks – Goldman Sachs and Morgan Stanley – to become bank holding companies in order to stay in business. Previously, Lehman Brothers had been liquidated and Bear Stearns and Merrill Lynch sold at fire-sale prices.

Similarly to the early 1990s recession, the U.S. current account deficit was reduced from the peak of 6% of GDP in 2006 to 4.89% of GDP in 2008. In the first quarter of 2009, the deficit was the smallest since the fourth quarter of 2001 (BEA).

There is a growing body of literature that draws a link between the financial crisis and the global imbalances (Caballero *et al.* 2008, 2009; Dunaway, 2009; Smaghi 2008, Wolf 2008). The explanations build on the global savings glut hypothesis on the one hand, and the global asset scarcity on the other hand. The shortage of assets in the world economy triggered large capital flows to the United States and the creation of bubbles (Caballero *et al.* 2008). Thus, the financial crisis was the result of the capital thrust upon the United States. The capital flows flooding in lowered interest rates and lifted house prices. Furthermore, since the capital flows to the United States were seeking safe investment, the U.S. financial sector has been selling the riskless assets to foreigners and has been left holding "toxic waste" assets (Caballero *et al.* 2009).[93]

4.5 Conclusion

The United States, once the world's largest creditor, became a net debtor in 1982, when its current account balance slipped into deficit of 3.4% of GDP and has remained there ever since, with a single exception of 1991. Further breaking point came in 1986, when the U.S. net international investment position, a difference between U.S.-owned assets abroad and foreign-owned assets in the United States, turned negative and reached the value of -21.8 billion USD (U.S. Bureau of Economic Analysis). The United States was thus the net debtor in both the flow and stock terms. The country that replaced the United States in its traditional role of the world's largest creditor was Japan, which rose to an economic power by the 1970s.

93 However, it is important to emphasize that there are many alternative explanations of the financial crisis, ranging from the lack of regulation, through failed monetary policy to financial innovation and deregulation.

The Japanese current account balance has been in surplus since 1981, when it peaked at more than 4 percent of GDP in 1986. In that year, Japanese net assets reached the value of 129.8 billion USD, making Japan the world's largest creditor.

How to deal with the imbalance was a matter of heated debate among scientists as well as in Washington. Some associated the deteriorating trade balance with the appreciating dollar (Krugman 1985, Cooper 1985) and suggested to intervene in the foreign exchange market or talk the dollar down. This strategy was partly employed in 1985 Plaza Accord. However, the U.S. dollar depreciation in relation to the Japanese yen and German mark did not significantly reduce the U.S. trade deficit. Japan and European countries pointed their fingers at the ballooning U.S. budget deficit. Their call for fiscal contraction found support in the twin deficits argument, which draws a link between the current account deficit and the growing budget deficit, i.e. a decrease in the public savings. Finally, the U.S. administration, especially during the first Reagan administration, 1981-1984, adhered to the "safe haven" view that the U.S. current account deficit was induced by the capital inflow due to favorable investment climate created by the Reagan tax cuts and regulatory changes.

These debates re-emerged in the first decade of the new millennium, when the U.S. current account deficit rose to historically unprecedented values and reached the low of 6 percent of GDP in 2006. However, this time China replaced Japan as the largest contributor to the U.S. trade deficit. Further regions on the surplus side of the global imbalances included East Asian economies, oil-exporters and initially also Euroarea. The global imbalances thus weaved the world economies into a complex web of interdependence. Whereas the United States opened its markets to cheap imports of foreign goods, the surplus countries imported the U.S. financial assets. Thus, the United States enjoyed cheap credit and was able to live beyond its means and the surplus countries were able to pursue the export-led development strategy.

There are two competing explanations of the global imbalances. First, the twin deficits hypothesis draws a link between the current account balance and the budget balance. Similarly to Japan in the 1980s, this argument is advanced by the Chinese officials who point out to low U.S. savings rate, and suggest cuts in both the consumer and government spending. In contrast stands the global savings glut hypothesis (Bernanke 2005, Caballero *et al.* 2006, Ferguson 2009), according to which the excess of savings in developing countries combined with their underdeveloped financial markets directs these excess savings to the United States, whose deep and liquid financial markets are able to absorb it. Thus, similarly to the United States in the 1980s, the policy recommendation is to do nothing on the U.S. part. Instead, China and other developing countries are advised to liberalize their capital account and adopt policies that would enhance the development of their financial markets. These two hypotheses are formally tested in Chapter 6, whereas the following two chapters examines the cyclical fluctuations in the trade balance in two eras of globalization.

CHAPTER 5 – INCOME SHOCKS TO TRADE BALANCE UNDER THE GOLD STANDARD[94]

5.1 Introduction

The intertemporal trade is measured by the current account of the balance of payments. Current account represents national savings or borrowings *vis-à-vis* the rest of the world and as such it is an outcome of intertemporal choices of households, firms and governments. There are two competing hypotheses in the intertemporal theory of the trade balance.

Using a model incorporating permanent income theory of consumption, Sachs (1981) shows that transitory and permanent shocks to income have different effects on the trade balance, under the assumption that the consumers' rate time of preference and the world interest rate are equal. Within this model, an increase in permanent income does not affect the trade balance because income and consumption increase by the same proportion. On the other hand, a transitory increase in income leads to an improvement in the trade balance if the increase is induced by the aggregate demand and to a deterioration of the trade balance if the increase is induced by an aggregate supply. The negative correlation between the trade balance and real income over the business cycle is taken as an evidence for the dominance of demand shocks.

Real business cycle models challenge Sachs and argue that real supply shocks can explain both long-term growth in income and cyclical variations in income and the trade balance (see Mendoza 1991; Razin 1993; Glick and Rogoff 1995). Here, the countercyclical behavior of the trade balance can be compatible with permanent productivity shocks, and not

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necessarily with the demand disturbances. The model is extended by the claim that demand shocks, such as changes in fiscal or monetary policy, are unable to explain the countercyclicality of the trade balance (Cardia 1991).

Using long-run historical data, which span from the last third of the nineteenth century to 1992, Kim (1998) examines the response of trade balance to demand and supply shocks in the United States, United Kingdom, Australia, Canada and Sweden. He concludes that the trade balance is explained mostly by shocks that cause transitory changes in income. The countercyclical behavior of the trade balance seems to be a robust feature in the U.K. and Canada but not in the smaller economies of Australia and Sweden. The evidence of the empirical studies for the post-World-War II period is mixed. The prevalence of the trade balance response to the transitory disturbances to income was documented for four industrialized countries by Kim (1996), for five European economies by Miljkovic *et al.* (2000) and for Visegrad Four and Baltic countries by Veselkova and Horvath (2008). Hoffman (2001) and Kano (2003) document that the current account fluctuations are explained predominantly by the country-specific transitory shocks. Lee and Chinn (2006) suggest that with the exceptions of the United States, temporary shocks play a larger role in explaining the variation in the current account of the G-7 countries. On the contrary, Hossain (1999) concludes that permanent component of income has statistically insignificant long-run effects on U.S. current account balance, whereas these effects are statistically significant in Japan.

The main aim of this chapter is to implement the intertemporal considerations on the pre-World War I data of seven European countries: Denmark, France, Great Britain, Germany, Italy, Norway and Sweden. The emphasis is on the income effects and thus only permanent and transitory income shocks to the trade balance are considered. The results suggest that the transitory income shocks are responsible for most of the variation in the trade

balance. On the other hand, permanent shocks are the main driving force of income but have little significant effects on the trade balance.

The rest of the chapter is organized as follows. Section 2 discusses the potential demand and supply shocks and the adjustment mechanism under the gold standard. The methodology and the results are presented in section 3. The final section concludes.

5.2 Demand and Supply Shocks under Gold Standard

The classic gold standard as an internationally recognized monetary regime emerged in 1870 and lasted until the outbreak of the Word War I. Great Britain was on a full legal gold standard from 1860 and on a *de facto* gold standard since 1717, when Isaac Newton, as master of the mint, did not sufficiently lower the price of overvalued gold, which drove the undervalued silver coins out of circulation – an illustration of Gresham's law. Germany adopted the gold standard in 1871, following the unification. Italy and France adopted the gold standard in 1873, following the creation of the Latin Monetary Union together with Belgium and Switzerland. Finally, Denmark and Sweden went on gold in 1873 upon the establishment of Scandinavian monetary union. Norway joined in 1875.

Different monetary regimes impose different restrictions on the ability of monetary authorities to influence the real economic variables as a result of the inevitable choice of two out of three desired goals of international monetary system. These are known as a "trilemma" or "impossible trinity" and imply tradeoff among exchange rate stability, independent monetary policy and free capital mobility (see Mundell 1961a, 1961b, 1962). During the gold standard countries enjoyed the stability of (mostly) fixed exchange rates and the benefits of free capital flows at the cost of independent monetary policy.

There are two competing explanations of the macroeconomic adjustment after the shock occurs in capital, money or commodity markets (for an overview of the literature, see Bordo 1984 or Eichengreen 1989). According to the conventional model of gold standard, the macroeconomic adjustment occurs through the working of the price-specie-flow model of David Hume. Assume two countries with the circulation of gold only. If a country runs the trade deficit, it means that it imports more goods than it exports. The gold flows to the other country as a payment for the imported goods. As a result, less gold circulates in the country, which drives the prices down, and lowers the demand for the foreign products. The country with the trade surplus experiences the opposite. Thus, balance of payments disequilibria are self-equilibrating through the change in the relative prices. The adjustment predicted by the price-specie-flow mechanism is sluggish due to lags between gold flows, changes in monetary base and the resulting changes in price.

A competing modern approach to the gold standard assumes internationally integrated goods and capital markets (see Niehans 1978; Barro 1979; McCallum 1989; McCloskey and Zecher 1976; Calomiris and Hubbard 1987; Dick and Floyd 1992). Here, the price level is determined by the interactions between the money market and the commodity market: demand and supply conditions in the commodity market determine the real price of gold and, given the fixed nominal price of gold, the price level is determined by the demand and supply for the monetary stocks (Bordo 1999, 29). As the prices and interest rates maintain levels consistent with foreign interest rates and prices in the short run, the modern approach predicts a relatively fast adjustment to shocks.

The empirical evidence on adjustment-related outcomes under the gold standard points out to inconsistencies with the price-specie-flow mechanism. First, the simple price-specie-flow-mechanism predicts an inverse correlation in the price levels of two countries on the gold standard. However, McCloskey and Zecher (1976) found positive correlations, i.e.

arbitrage, equally high between regions as between nations for internationally traded commodities and a significant correlation of wholesale price indices between the United States and the United Kingdom. Second, the actual flows of gold in the late nineteenth century appear to be too small to play the large role assigned to them (ibid, 187). This does not have to be counterevidence to the price-specie flow mechanism. If central banks adjusted domestic credit in the same direction as changes in their foreign reserves (in other words, if they played by the rules of the game), the need for actual gold movements would be minimized. Small movements of gold would serve as a mere signal for central banks to expand or contract their economies. In case of a deficit, the central bank would increase an interest rate and deflate the economy, this way speeding up the adjustment. However, many scholars argue against the image of central bankers as automatons who followed rules oriented around external adjustment (Bloomfield 1959; Whale 1953; Pippenger 1984; Dutton 1984; Ford 1962; Jonung 1984; McGouldrick 1984). Quite the contrary, the central banks often tried to negate the impact of inflows or outflows of gold and foreign exchange on the domestic money supply.

The different assumptions of the competing approaches to the gold standard have to be taken into account in the discussion of the aggregate demand-aggregate supply framework, which is the methodological point of departure of this chapter. Within the AD/AS framework, the aggregate demand is downward sloping in price-output space, reflecting that lower prices raise real money balances and therefore demand. The short-run aggregate supply is upward sloping, reflecting the short-run variations in capacity utilization in response to changes in aggregate demand. The long-run aggregate supply is vertical because capacity utilization returns to its normal level, preventing demand shocks from permanently affecting the production level. Solely temporary effects of demand shocks on output are used as the main identifying restriction in the model below. An open economy is thus exposed to two types of

macroeconomic disturbances: demand shocks and supply shocks. Examples of demand shocks include monetary shocks or fiscal policy changes. Examples of supply shocks include a favorable technology shock that permanently raises potential output or a reduction in the supply of output due to natural disasters.

The main difference between two approaches to gold standard is related to the monetary shocks. The differences in assumptions have implications on the ability of the monetary authorities to influence the real money supply (see Calomiris and Hubbard 1987). In order for the monetary authority to be able to influence the aggregate money supply and interest rates, it is necessary to assume inelastic gold supply and sticky commodity prices. This view is consistent with the price-specie-flow mechanism. On the other hand, the modern approach predicts a very limited ability of the central bank to influence the aggregate money supply or the rates of return on internationally traded securities. Under the assumption of a highly elastic gold supply and internationally integrated capital and commodity markets, these are given by the international economy.

Shocks to the supply of or demand for monetary gold derive from two sources: gold production and shifts between monetary and non-monetary holdings (see Bordo 1999, 29-31). Most of the supply shocks to world's gold (but also silver) markets originated in the United States, e.g. gold discovery in Coloma, California in 1848. However, there were significant gold discoveries also in other continents, e.g. in Australia near Bathurst in 1851, in South Africa in 1884 or in Klondike, Canada in 1897. The gold discoveries in California in 1848 and Australia in 1851 brought about a tenfold increase in world gold production (Eichengreen 1996, 13). A similar effect was gained by the invention of the cyanide process in the 1880s, which permitted the extraction of gold from lower-quality ores.

The adjustment of the shocks is self-equilibrating. In case of an increase in the supply of gold, additional gold results in an increased price level. Given the fixed nominal price of

gold, the real price falls and this way reduces profits and production in the gold mining sector and encourages a shift from monetary to non-monetary gold (Bordo 1999, 30). The reversal in the amount of monetary gold restores the equilibrium.

The adjustment of the shocks to demand for gold works in a similar way. The deflationary effects of an increase in productivity in the nongold sector of the economy or an increase in the number of countries on gold are offset by gold production and shifts from non-monetary to monetary gold holdings in response to the rise in the real price of gold.

Fiscal shocks are another textbook example of demand shocks. When the government increases its expenditures, individuals borrow abroad to spread the burden of higher taxes today and shift part of it to the future. As a result, the country runs a current account deficit today and the current account surplus in the future (Obstfeld and Rogoff 1996, Chapter 1). Larger effects of temporary – especially war-time – government spending changes on the trade deficit than permanent ones was documented for Great Britain (Ahmed 1986, 1987). Similarly, Barro (1987) argues that bulk of budget deficits for Great Britain from the early 1700s through the World War I was associated with temporary changes in military spending. He found only two major non-war deficits – one associated with compensation payments to slaveowners in 1835-36 and the other with a dispute over the income tax in 1909-10. Thus, a typical example of the fiscal shock is an increase in the British government purchases during the Boer War from 1899 to 1902 (Kaminsky and Klein 1994, 8).

The significance of wartime periods for the temporary components of shocks to government purchases is associated with the very nature of war. War is expected to be temporary. It creates a scarcity of goods for private, nonwar consumption today relative to the amounts in the postwar future. As individuals try to smooth their consumption over time, they lower their savings at every interest rate. The current account deteriorates. Opposite is true for the peace country. This was observed during the World War I. Europe, led by Great Britain,

liquidated major part of its assets abroad and borrowed heavily. On the other hand, the war accelerated the transition of the United States from a net debtor to a major creditor nation.

A textbook example of the supply shock is a favorable technology shock. A technological improvement increases the level of total factor productivity (TFP). This stimulates investment, which depends positively on the marginal product of capital, and leads to a rising path for output. Thus, the new technology works as a positive supply shock, which shifts the long-run supply curve to the right, equilibrating in the point of higher output and lower prices.

The period under study coincided with the industrial revolution, a supply-side phenomenon. A traditional view asserts that the industrial revolution brought a radical transformation of the economy and the society (Ashton 1971 and Landes 1969). This broad view of the industrial revolution is challenged by Crafts and Harley, who estimate modest rates of output growth during the industrial revolution and argue that the industrial revolution was a narrower phenomenon, as the result of a technological change in few industries – textiles, iron and transportation (Crafts 1985, Crafts and Harley 1992, 2000).

Supply shocks may have also transitory effects on output. A classic example of a temporary negative supply shock is a failed agricultural harvest. As households attempt to smooth the effects of a poor harvest on current consumption, the demand for short-term loanable funds will increase and cause the short-term interest rates to rise (see Denslow and Rush 1989 for the study of the nineteenth century French data).

The above discussion focused on the potential demand and supply shocks during the gold standard. The basic concepts used in the analysis were introduced in a non-technical manner. The next section presents the methodology. As already discussed in the introduction, there are two competing intertemporal models of trade balance, which predict a different response of the trade balance to permanent and transitory shocks. The permanent and

transitory components are isolated by Blanchard and Quah (1989) procedure, where shocks with a permanent impact on output are interpreted as supply disturbances and shocks with only a temporary impact on output as demand disturbances.

5.3 Data, Methodology and Results

This part examines how transitory and permanent components in income (Y) affect the trade balance (TB) of the seven European countries before the World War I. Income is measured as a natural log of real GDP or GNP. Trade balance is measured as a ratio of net exports to GDP in order to control for scale effects. Using the trade balance as a ratio to GDP reflects the saving and investment propensities of the economy and empirical results can be interpreted in line with intertemporal models. The data is obtained from Mitchell (1976). The end period of the yearly data is 1913. The beginning period varies according to the data availability as follows: 1850 for France and Great Britain, 1861 for Italy and Sweden, 1865 for Norway, 1870 for Denmark and 1880 for Germany. The periods roughly correspond with the periods, during which the countries were on the gold standard.

I rely on the model proposed by Kim (1996), where permanent and transitory shocks to income and their effect on the trade balance are characterized by equation (5.1).

$$X_t = \mu + \sum_{k=0}^{\infty} G_k U_{t-k} \qquad (5.1)$$

$X_t = (\Delta y_t, \Delta b_t)'$ and $U_t = (u^p_t, u^t_t)'$ where y_t is the real income and b_t is the trade balance expressed as a ratio to income. Δ denotes the first difference operator, μ is a vector of deterministic components and G_k's are matrices of coefficients. u^p_t, denotes the structural

shock generating permanent changes in income and u^t_t denotes the structural shock generating transitory changes in income.

The transitory and permanent components in income are isolated using the Blanchard and Quah (1989) methodology, where the long-run identifying restriction is defined as a zero effect of a transitory shock on real income. Blanchard and Quah (1989) interpret these disturbances in terms of the textbook aggregate supply/aggregate demand (AS/AD) model where a vertical long-run aggregate supply curve implies that permanent shocks to output are caused by supply disturbances and aggregate demand shocks have temporary effects on output. Examples of demand disturbances would thus include changes in monetary or fiscal policy or autonomous changes in consumption. Examples of supply disturbances might include technological improvements or oil price shocks.

The Blanchard-Quah methodology requires stationarity (Enders 1995, 332). Augmented Dickey-Fuller test for unit roots was employed to determine whether the measures of income and trade balance have unit roots (not reported here). I was unable to reject the presence of a unit root for the income and trade balance data for all the series. Two exceptions were the trade balance series of Denmark and France. In the former, the presence of the unit root was not rejected only in the case of no trend and intercept, in the latter it was not rejected only in the case of trend and intercept. Based on these results, all GDP and trade balance series are considered to be integrated of order one. In order to determine the lag order, I consider various lag order selection criteria, such as the lag exclusion Wald tests, Lagrange multiplier test for serial correlation in residuals and residual normality test. Lag length 1 was indicated for all the countries except of Germany. In case of Germany, standard lag length criteria indicated the lag length 0. However, lag 0 would not allow to proceed with the analysis. Therefore, lag length 1 was chosen – similar preference of lag length 1 to 0 can be

found in Keating and Nye (1998) and their analysis of permanent and transitory shocks in real output in the nineteenth century. Therefore, I use 1 lag in estimation for all the countries.

Table 5.1: Variance Decomposition, 1850-1913

Country	Years ahead	Y-P	TB-T
Denmark	1	98.17 (0.0290)	98.51 (0.0397)
	2	95.54 (0.0299)	98.62 (0.0434)
	4	95.16 (0.0300)	98.68 (0.0445)
	10	95.14 (0.0300)	98.68 (0.0445)
France	1	94.94 (0.0466)	99.37 (0.0142)
	2	86.31 (0.0517)	96.17 (0.0146)
	4	84.64 (0.0523)	95.05 (0.0147)
	10	84.64 (0.0523)	95.05 (0.0147)
Great Britain	1	99.96 (0.0289)	99.46 (0.0118)
	2	99.91 (0.0290)	96.56 (0.0120)
	4	99.91 (0.0290)	96.52 (0.0120)
	10	99.91 (0.0290)	96.52 (0.0120)
Germany	1	98.30 (0.0287)	94.81 (0.0096)
	2	95.65 (0.0292)	94.48 (0.0098)
	4	95.43 (0.0292)	94.45 (0.0098)
	10	95.43 (0.0292)	94.45 (0.0098)
Italy	1	84.36 (0.0291)	49.93 (0.0106)
	2	58.03 (0.0351)	49.99 (0.0108)
	4	49.92 (0.0381)	50.00 (0.0108)
	10	49.33 (0.0383)	50.00 (0.0108)
Norway	1	99.74 (0.0183)	99.21 (0.0164)
	2	99.54 (0.0191)	88.24 (0.0181)
	4	99.54 (0.0192)	88.22 (0.0182)
	10	99.54 (0.0192)	88.22 (0.0182)
Sweden	1	97.75 (0.0452)	99.73 (0.0150)
	2	94.17 (0.0492)	91.39 (0.0157)
	4	93.62 (0.0496)	89.96 (0.0158)
	10	93.62 (0.0496)	89.96 (0.0159)

Notes: Column Y-P shows the proportion of the variance in real income explained by permanent shocks to income. Column T-B shows the proportion of the variance in trade balance explained by transitory shocks to income. Numbers in parentheses refer to one standard error.

The results of the variance decomposition are reported in Table 5.1. Column *Y-P* shows the proportion of the variance in real income explained by permanent shocks to income. Column *TB-T* shows the proportion of the variance in trade balance explained by transitory shocks to income. I provide for each variable only the percentage of variance explained by one of the shocks because the two sum to 100%. Years ahead denote the number

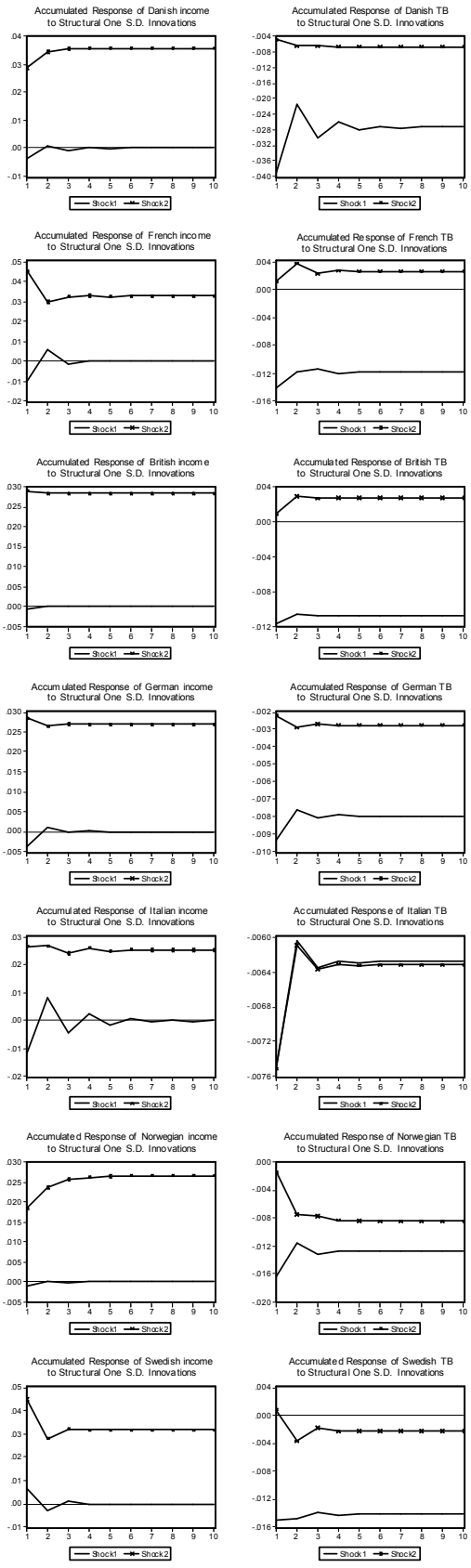
of steps in years. These results show that major portion of the variance in real income is explained by permanent shocks. Within 2-year horizon, permanent changes in income account for approximately 95% of variation in the real income of these countries. The exceptions are France, where permanent changes account for more than 85% of variation in the real income, and Italy, where they account for less than 60% of the variation.

The column TB-T shows important finding of the chapter: the major portion of the variance in trade balance is explained by transitory shocks to income. Within 2-year horizon, transitory changes account for 98.62 % movements in the Danish trade balance, 96.17 % in the French, 96.56 % in the British, 94.48 % in the German, 88.24 % in the Norwegian, and 91.39 % in the Swedish trade balance. The single exception is Italy, where the transitory changes to income explain approximately 50% of the variation in its trade balance.

Figure 5.1 plots the accumulated responses of income and trade to structural one standard deviation innovations. Figures for each country are organized in pairs. The left figure plots the impulse response function of the real income to shock 1 (shock with temporary effect on income) and to shock 2 (shock with permanent effect on income). The right side figure plots the impulse response function of the trade balance to the shock 1 (temporary) and the shock 2 (permanent).

A permanent shock increases the income permanently in all the countries. A transitory shock has mixed effects. In the case of Denmark, Great Britain and Norway, it increases the income. In case of France and Germany, it initially reduces the income but in the second year the effect changes and the transitory shock increases the income. In case of Italy and Sweden, there is a fluctuation in the effects of the transitory shock. In case of Sweden, the transitory shock initially increases the income. An increase is followed by a reduction in the second year and a further increase in the third year, before the effects die out. The fluctuation is even more

Figure 5.3: Impulse Responses, 1850-1913



profound in case of Italy. By the identification assumptions, the transitory shock has no long-term effect on the income. Thus, the effects of the transitory shock die out after few years.

On the trade balance, a transitory shock reduces the trade balance in all cases. The effects of permanent shocks are more diverse. In case of Denmark, Germany, Italy and Norway, the trade balance decreases with the permanent shock, whereas it increases in France and Great Britain. In Sweden, an increase is followed by the decrease in the second year.

The puzzling finding is the lack of evidence on the countercyclical relationship between income and the trade balance. In the previous historical studies, the positive correlation was observed for Sweden 1869-1991 by Kim (1998) and 1871-1986 by Vredin and Warne (1991). In this study, there is a positive correlation in case of Denmark, Great Britain and Norway. The relationship is not clear in case of other countries due to fluctuations in the response of income to the transitory shock. Furthermore, the positive relationship of income and the trade balance in case of Great Britain is contrary to the results of Kim (1998). This may be due to a slight difference in the methodology or a difference in time spans. Whereas this chapter covers the period of 1850-1913, Kim (1998) examines a longer period of 1870-1992, which covers also the Bretton Woods period and the post-Bretton-Woods period of free float.

The positive correlation between the income and trade balance is addressed in three ways. First, the response of the trade balance to a temporary change in income is different depending on the source of the change. It is assumed to decrease (increase), if it is due to a demand (supply) shock (Sachs 1981). Thus, the positive correlation of the trade balance and temporary changes in income may point out to the prevalence of the temporary supply shocks, such as failed harvests, in explaining temporary changes in income. Second, as Kim (1998, 590) points out, small open economies are subject to more external shocks, which tend to cause income and the trade balance to move in the same direction. Finally, the correlation

between the income and the trade balance is questioned by real business cycle research. For example, Baxter (1995) suggests that demand shocks such as change in government spending or taxes can also induce a positive correlation between income and the trade balance. In that case, the only conclusion to be drawn from the above analysis is the importance of temporary shocks to income in determining the trade balance movements.

5.4 The United States, 1957-2010

For the comparison purposes, I estimate the equation (5.1) also for the for the United States. I use the quarterly data for the United States for 1957:1 through 2010:1. The data are obtained from *International Financial Statistics* (CD ROM). Real income is measured as a natural log of real GDP (GDP at 2005 prices). The trade balance is measured as the ratio of nominal net exports to nominal GDP. The representation of the trade balance as a ratio to GDP reflects the savings and investment propensities of the economy. The period under study is determined by the availability of the quarterly data.

The variables are tested for the unit roots (not reported here). Based on the augmented Dickey-Fuller test, the hypothesis of a unit root in level cannot be rejected at conventional significance levels for any of the variables. However, it can be rejected in the first difference at conventional significance levels in case of all the variables. These are therefore transformed and in the following I assume each variable to be integrated of order 1.

In estimation, I use 4 lags for the United States. Tables 5.2 to 5.3 show the variance decomposition from structural factorization. Y denotes income. B denotes the trade balance. S.E. refers to one standard error. Shock 1 refers to a shock generating permanent changes in income. Shock 2 refers to a shock generating transitory changes in income.

Table 5.2 shows the variance decomposition of the United States 1957-2006. Approximately 97% of income changes are permanent. The role of permanent changes in income relative to transitory is greater than those estimated by Kim for the period from 1957 to 2003, where only approximately 70% of income changes were permanent (Kim 1996, 466).

The second part of the table shows the effect of changes in income on the trade balance. Within the 2-year horizon, transitory changes account for more than 84% of movements in the U.S. trade balance. This is in accordance with the findings of Kim (1996). The long-run effect of permanent component of income on US current account balance was documented also by Hossain (1999), however, this effect was not statistically significant.

Table 5.2: Variance decomposition from structural factorization, United States, 1957 – 2010

Years ahead	Y-P	TB-T
1	97.628 (0.008)	93.034 (0.003)
2	97.404 (0.009)	85.805 (0.003)
3	97.163 (0.009)	84.916 (0.003)
4	97.158 (0.009)	84.464 (0.003)
5	97.143 (0.009)	84.427 (0.003)
6	97.143 (0.009)	84.427 (0.003)
7	97.144 (0.009)	84.408 (0.003)
8	97.144 (0.009)	84.407 (0.003)
20	97.144 (0.009)	84.407 (0.003)

Notes: See Table 5.1.

Table 5.3 documents the variance decomposition of the U.S. current account balance for the post-Bretton-Woods period. Within two-year period, permanent shocks explain more than 98% of the variance in income, whereas the transitory changes in income account for more than 82% of changes in the U.S. trade balance.

Table 5.3: Variance decomposition from structural factorization, United States, 1971 – 2010

Years ahead	Y-P	TB-T
1	99.782 (0.008)	98.341 (0.003)
2	98.246 (0.009)	82.951 (0.003)
3	98.327 (0.009)	82.677 (0.003)
4	98.285 (0.009)	82.666 (0.003)
5	98.217 (0.009)	82.574 (0.003)
6	98.180 (0.009)	82.586 (0.003)
7	98.177 (0.009)	82.584 (0.003)
8	98.177 (0.009)	82.578 (0.003)
20	98.177 (0.009)	82.579 (0.003)

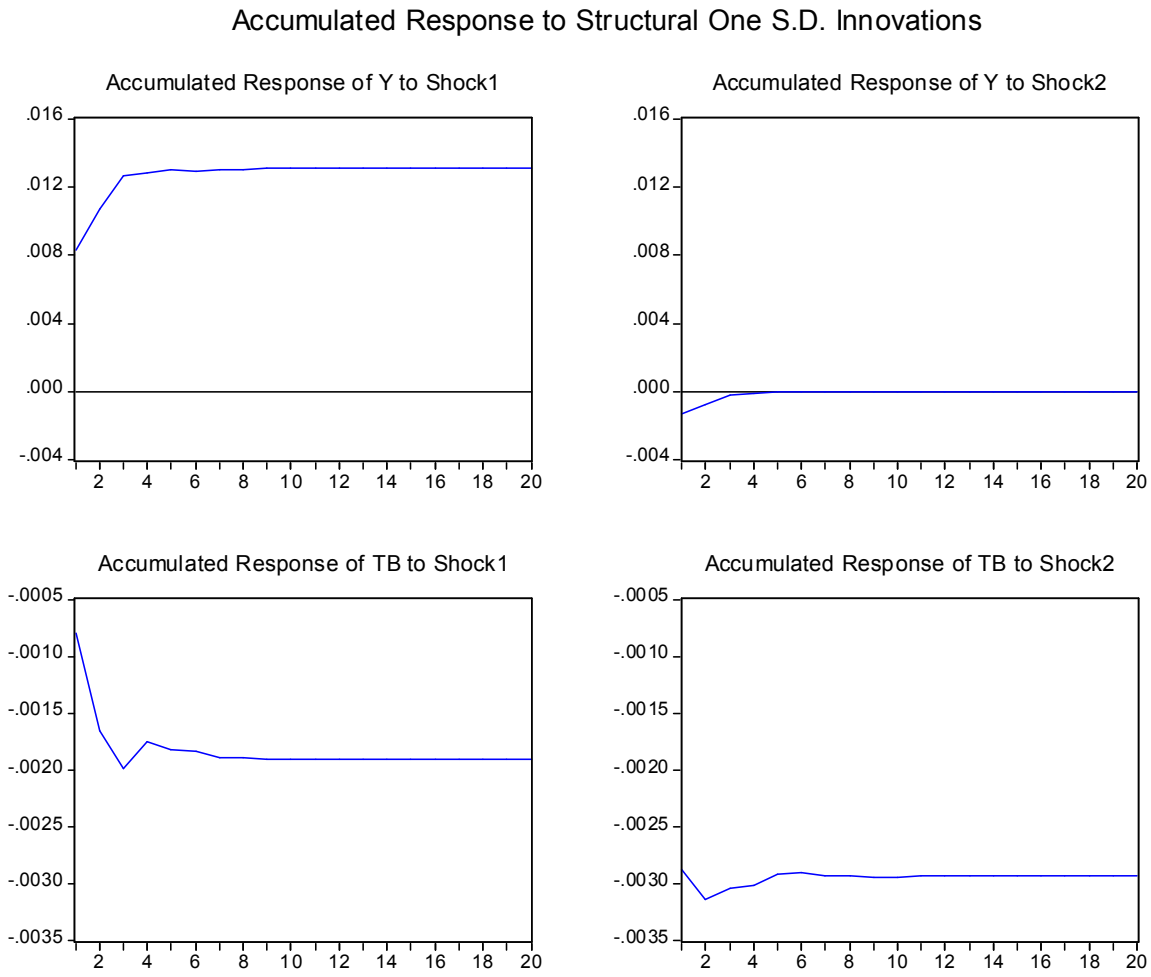
Notes: See Table 5.1.

These findings support the hypothesis that permanent shocks are more important in determining income changes, whereas transitory shocks are more important for the trade balance.

Figures 5.2 to 5.3 show the plots of accumulated impulse responses. For each country-period, four impulses are presented. The left two panels show the response of income (Y) and trade balance (B) to a permanent shock (shock 1). The right two panels show the accumulated response of income and trade balance to a transitory shock (shock 2).

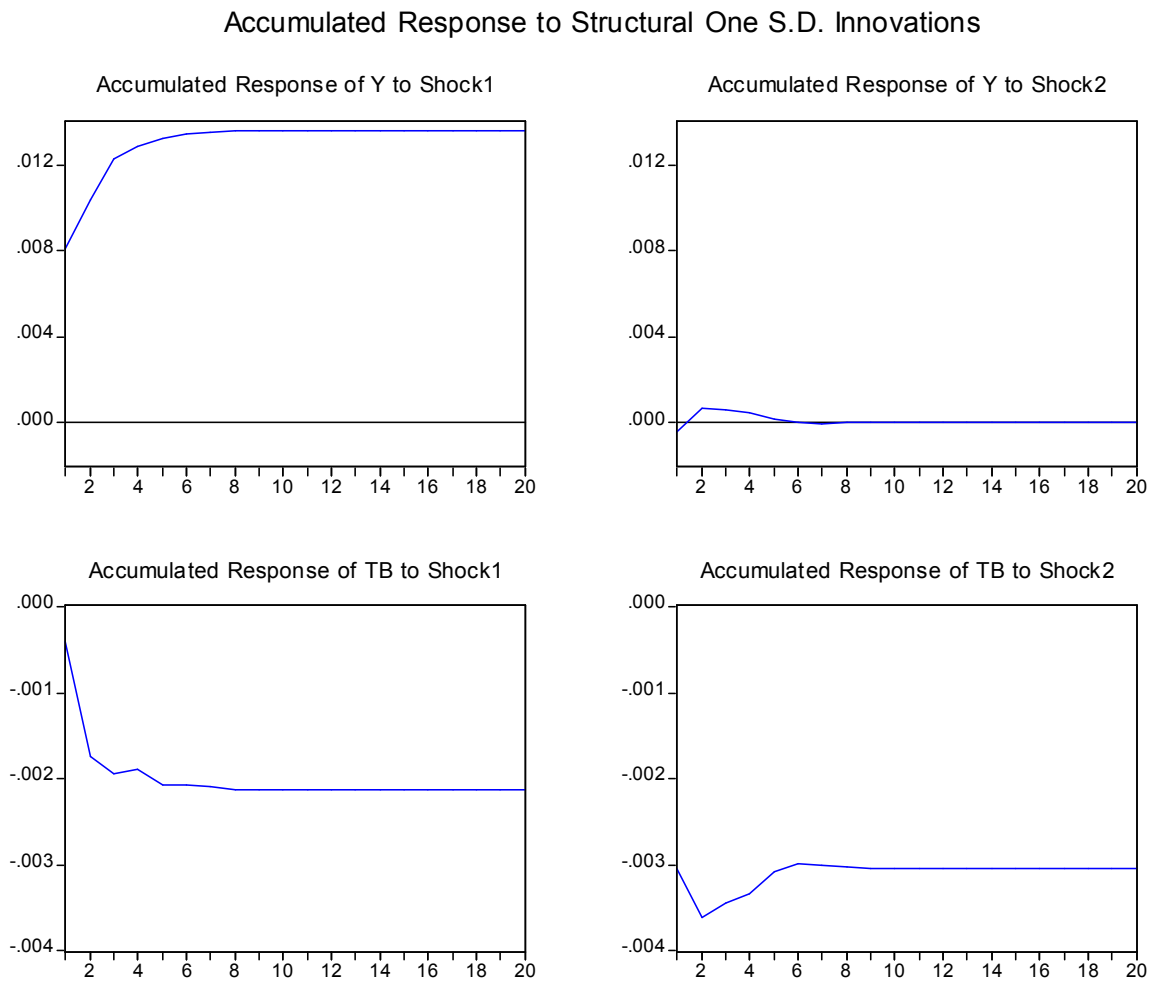
In the United States, income increases permanently due to a permanent income shock. On the other hand, transitory shock to income decreases the trade balance. This holds also for the period of 1971-2010.

Figure 5.2: Accumulated responses, United States, 1957-2010



The findings are consistent with the findings of the previous section. Whereas permanent shocks to income lead to a permanent increase in income, transitory shocks to income tend to reduce the trade balance. These results suggest that the sources of the short-run fluctuations in the trade balance were the same in the pre-War I and the post-World-War II period.

Figure 5.3: Accumulated responses, United States, 1971-2010



5.5 Conclusion

The main findings of this chapter suggest that factors determining the changes in the trade balance are different from those determining changes in the long-run income. These findings are consistent with the Sachs' (1981) intertemporal model of trade balance and are in line with the findings of Hoffman (2001), Kano (2003), Kim (1996, 1998), Miljkovic *et al.* (2000) and Veselkova and Horvath (2008).

The results of this chapter support the view that the changes in the trade balance are associated with the transitory shocks to income. In the aggregate demand/aggregate supply framework, these are identified as the demand shocks or temporary supply shocks. The potential demand shocks in the nineteenth century are the shocks to demand and supply of gold. Significant gold discoveries or the invention of the cyanide process for extraction of gold from low-grade ores worked as monetary expansion. On the other hand, an increase in the number of countries on gold worked as a monetary contraction, leading to deflationary pressures. The fiscal shocks were related mostly to an increased government spending during the military conflicts. A typical example of the temporary supply shock is a failed harvest.

Second, the results of this chapter suggest that the changes in the income are associated with the permanents shocks to income. The income grew in response to the permanent shock to income in all the countries. This is hardly surprising as the period under study coincided with the industrial revolution. Examples of the positive supply side shocks thus include technological improvements in the production of iron, improvements in transportation, manufacturing or communication.

In contrast to most of the previous studies, the results suggest the positive correlation between the income and trade balance in case of Denmark, Great Britain and Norway. The positive correlation may be due to the differences in time spans (gold standard period vs. longer time spans reaching to the post-Bretton-Woods period) or slight differences in the methodology. Within the traditional intertemporal model, the positive correlation points out to the relative importance of the temporary supply shocks over demand shocks. Alternatively, Baxter (1995) argues that the demand shocks can also induce a positive correlation between income and the trade balance. As this approach does not allow to differentiate between various sources of transitory income shocks, in Chapter 6, I focus on various current account determinants, although the focus is on the medium-run factors.

CHAPTER 6 – GLOBAL IMBALANCES FROM THE HISTORICAL PERSPECTIVE[95]

6.1 Introduction

The past decade was marked by the puzzling development in the international economy. In 1999 the developing world as a whole stopped running current account deficits (Wolf 2009, 39). On the other hand, the United States, the world's largest economy and the major military power, started running the current account deficit of an unprecedented size. In 2006, the U.S. current account deficit reached its low of 6 percent of GDP or 803.5 billion USD in absolute terms. Surprisingly, this deficit was financed mostly by the developing countries in East Asia and oil-exporters. The phenomenon was termed the global imbalances.

The current debate surrounding the global imbalances typically contrasts two views: the twin deficit hypothesis and the savings glut hypothesis. The former asserts that the large U.S. current account deficit is the result of the large budget deficit; the latter argues that the U.S. current account deficit is driven by the savings glut in the rest of the world. These excess savings are then channeled to the world's deepest and the most liquid financial markets, which happen to be in the United States.

The global imbalances took place also in the past globalization process. Between 1870 and 1913, a period known as the first era of globalization, Britain ran an average current account surplus of 4.5 percent of GDP. At the eve of the World War I, this surplus reached an astonishing value of 8.6 percent of GDP. France and Germany, the second and the third biggest creditors of the period, ran the surplus of 3.3 and 1.3 percent respectively during the 14 years running to the World War I. These large current account surpluses were matched by

[95] A revised version of this chapter is forthcoming in *Historical Social Research. An International Journal for the Application of Formal Methods to History. Section 'Cliometrics'* .

the persistent current account deficits of the countries in the New World but also in Northern or Eastern Europe. For example, Canada and Australia ran current account deficits of more than 7 percent of GDP between 1870 and 1913 (all data come from Taylor 2002).

Previous studies of the pre-World War I creditors and debtors focused mostly on the main determinants of the capital flows, such as the dependency ratio (Williamson and Taylor 1994), natural resources, migrants, and educated, young, urban populations (Clemens and Williamson 2004), the colonial status that significantly reduced the default risk perceived by investors (Ferguson and Schularick 2006), or institutional quality (Schularick and Steger 2008).

This chapter takes a different approach and examines the main determinants of the current account directly, drawing on the previous empirical works (Chinn and Prasad 2003; Ito and Chinn 2007, Chinn and Ito 2007a; and Debelle and Faruqee 1996). The main aim of the chapter is to test the twin deficits and global savings glut hypothesis. The empirical analysis relies upon the dataset comprised of 14 countries for the period of 1865 through 1913 and 107 countries (21 developed and 86 developing) for the period of 1970 through 2007.

To anticipate the findings, I find the following. The results suggest that the twin deficits hypothesis and the global savings glut hypothesis are not mutually exclusive. The former holds better for developing countries. In developed countries, the government budget balance is significant only when bond markets are incorporated. There, its positive effect on the current account balance is mitigated by its interaction with the public bond market capitalization. In the pre-War period, the government budget balance is significant only in the short-run, suggesting the importance of the short-run fluctuations in the current account balance (see Chapter 5). The global savings glut hypothesis holds for the post-Bretton-Woods period. Countries with more developed financial markets tend to run current account deficits (or lower current account surpluses). However, the significance of the capital openness was

not confirmed. Similar conclusions hold for the pre-War period. There, however, the testing of the hypothesis is limited by the data availability. Finally, the higher the initial level of the net foreign assets, the higher the current account balance. This was true especially in the pre-World-War I period.

6.2 Theoretical issues

There are two major competing explanations of the global imbalances: the twin deficits hypothesis and the global savings glut hypothesis. The former draws the link between the current account balance and the budget balance, the latter between the current account on the one hand and the financial development and capital openness on the other.

Financial Development

The effect of the financial deepening on the current account balance is ambiguous. Edwards (1995) suggests that the financial deepening could induce more saving. On the other hand, he notes that if the financial deepening is understood as a relaxed borrowing constraint, it may have the opposite effect and lead to the reduction in savings. The latter is emphasized by the proponents of the global savings glut hypothesis.

The global savings glut hypothesis predicts the negative relationship between the financial development and savings: less financially developed markets offer little investment opportunities and therefore lead to higher savings rate. The accumulated savings are then transferred to the countries with more developed financial markets (Bernanke 2005). The ability of countries to generate financial assets from real investments was emphasized by Caballero et al. (2006). Their formal model illustrates that in the world comprised of (1) countries with deep financial markets and good growth conditions, (2) countries with deep financial markets but temporarily bad growth conditions and (3) countries with

underdeveloped financial markets but exceptional growth conditions, the capital will flow to the first and generate the current account deficit.

The imperfect substitutability of financial instruments was stressed for both periods of globalization. Temin (1987, 453; 1989) argues that in the pre-War period the British investors faced a choice between liquid foreign bonds and illiquid equities of domestic firms. Similarly, Blanchard *et al.* (2005) argue that there is imperfect substitutability not only between U.S. and foreign goods but also between U.S. and foreign assets. The U.S. current account deficit is thus a result from exogenous increase in U.S. demand for foreign goods and in foreign demand for U.S. assets.[96]

The financial development proxies were based on M1 or M2 monetary aggregates. For the period of 1865-1913, M2 as a share of GDP (M2GDP) is used as the proxy of the financial development. Although this proxy gives the picture of the monetization of the economy, it does not capture more specific aspects of the financial development, such as the stock and bond market development. These played an important role in Great Britain: in 1850 an estimated 56 percent of financial assets could be classified as domestic or foreign debt, whereas in 1913 this had reached 64 percent of the total (Michie 1999 ,71).

De Gregorio and Guidotti (1995) argue that M1 and M2 may be a poor proxy of financial development because they do not capture the ability of financial intermediaries to channel funds from savers to borrowers. Rather, M1 and M2 are more related to the ability of financial systems to provide transaction services. Therefore, in line with King and Levine (1993), I proxy the financial development as M3 as % of GDP (the liquid liabilities) for the period of 1970-2007. This measure includes currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase

[96] Unfortunately, the imperfect substitutability of financial instruments is difficult to test for a broad sample using the pre-war data.

agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.[97]

The second proxy of the financial development is the ratio of domestic credit (CREDIT) to the private sector to GDP (see De Gregorio and Guidotti 1995, King and Levine 1993, Ito and Chinn 2007). The major advantage over the monetization ratio is that it excludes credit to the public sector and therefore captures the role of financial intermediaries in channeling funds to the private sector. Thus, an increase in the credit to the private sector may be understood as a relaxed borrowing constraint.

The problem of this proxy is that it captures only the financial development that occurs through the banking system and does not capture the financial development that occurs in the non-bank system, e.g. in stock markets. Therefore, the third proxy of the financial development is the stock market capitalization as a percentage of GDP (STOCK). To capture the effect of the overall size of the financial market, I use SIZE, the sum of private credit creation and stock market capitalization, both measured as a ratio to GDP (Chinn and Ito 2007, 7).

As the size of the financial market may be less relevant if there is little market activity (Beck et al. 2001), I control also for the activeness of the market. Following Ito and Chinn (2007), I use the stock market total value (SMTV) traded as a ratio to GDP and stock market turnover (SMTO) as a ratio to GDP as proxies of the financial market activity. Second, to capture the efficiency of the financial market, I rely on two banking sector indicators: the net interest margin (MARGIN) and bank's overhead costs as a share of their total assets (OVERHEAD). Finally, I control also for the effect of the public bond market capitalization (PBBM). M3/GDP data comes from WDI. The rest of the data for the period of 1970 through

[97] It must be noted that if measured as the monetization, the U.S. financial development is above average but not exceptional: the average U.S. M3GDP between 1970 and 2007 is 0.71. This value is close to the mean plus 1 s.d. value of 0.84. Similarly, British monetization ratio is relatively smaller compared, i.e. to Scandinavian or German, probably reflecting the dominance of the stock market over the banking financial development.

2007 comes from the December 2009 update of Beck et al. (2000) database. The historical data for the pre-War period come from Butlin (1961), Bordo et al. (2001), Capie and Webber (2005), de Mattia (1967), Gregory (2004), Grytten (2004), Klovland (2004), Mitchell (2008), Tilly (1973), United States Bureau of the Census (1975), and Urquhart (1963).

Capital openness

In the global imbalances debate, Bernanke (2005) suggests that the openness of the financial markets can affect the direction of cross-border capital flows. For example, the capital account liberalization in East Asian economies allowed the excessive savings flow to the United States and other countries with developed financial markets. It is of interest to examine also the interaction between the financial development and the capital openness. The proxy of the capital openness is KAOPEN index (Chinn-Ito 2007b).

The variable is not included in the analysis of the pre-war current account. The main reason is the data availability.[98] However, I do not expect that exclusion of this variable would have a significant effect on the results because the classical gold standard era was associated with free capital mobility. Even in countries, where governments tried to control the way their citizens or banks invested their capital, the latter had the choice of channeling their funds through other financial centers, especially London (Esteves 2008, 1).

Budget balance

In contrast to the global savings glut stands the twin deficits argument that points out to the positive correlation of the current account and the budget balance. The intertemporal models of the current account suggest that the government budget deficits induce current

[98] A possible solution would be to replace KAOPEN index by the net foreign capital flows as a share of GDP. However, there is a theoretical difficulty in equaling capital inflows with capital openness. An economy with a high degree of capital openness may still attract only small capital inflows, if other factors, such as institutional quality or educated labor force are missing. Second, the most widely used data on British capital exports gathered by Stone (1999) would pose two problems. First, based on the studies by Clemens and Williamson (2004), Esteves (2008) or Schularick and Steger (2008), it is reasonable to expect a high correlation between the capital inflows and the GDP per capita. This would plague the regression with multicollinearity. Second, these data do not cover French and German capital flows, which played an important role in Europe. For example, Russia, the largest European debtor, enjoyed large capital inflows from France thanks to the Franco-Russian Alliance. Thus, Stone's data would underestimate the capital inflows to European regions.

account deficits by redistributing income from future to present generations (Obstfeld and Rogoff 1998). In case of absent Ricardian equivalence (Barro 1974), i.e. the budget deficit coupled by an increase in the private savings as the taxpayers save for the future tax rise; the budget deficit might result in the decrease in national savings (or a Keynesian increase in aggregate demand).[99] The expected sign of the government budget estimate is therefore positive. The fiscal balance is measured as government budget balance as a share of GDP.

For the period of 1970-2007, the budget balance (GOVBAL) was measured as the cash surplus/deficit as a percentage of GDP. The data come from World Development Indicators database. For the pre-War period, the budget balance was measured as the difference between the government revenue and the government expenditure as a percentage of GDP. The data come from Mitchell (2008), Bordo *et al.* (2001), and Obstfeld and Jones (1997).

In addition to the twin deficits and the global savings glut hypotheses, there is a large body of literature that points out to other determinants of the current account balance over the medium-run.

Dependency ratio

Widely discussed are demographic factors, especially the one child policy of China. According to the life cycle theory, a higher share of economically dependent persons in the population reduces national savings, and hence the current account balance (see Mason 1988). However, the demographic profiles matter only in case when they differ across countries. Williamson and Taylor (1994) argue that in the pre-War period high dependency rates in three New World countries (Argentina, Australia and Canada) depressed domestic savings rates and pulled in foreign investment. Therefore, it is appropriate to view the large capital inflows as an intergenerational transfer from old savers in the Old World to young savers in the New

[99] For the review of the literature on the Ricardian effects, see Bernheim (1987) and Briotti (2005).

World. Typically, a one-percentage-point rise in the dependency rate led approximately to a one-percentage-point fall in the aggregate savings rate. However, this did not hold for the fourth country in their sample, the United States. The reason could be that Great Britain and the United States had roughly similar youth dependency ratios from 1880 to 1910. Green and Urquhart (1976, 228, fn) note that the emigration of those in the 20-40 age group increased the youth dependency in the UK, whereas the immigration of the same age group to the United States decreased the youth dependency despite higher U.S. natural increase rates.

The story of dependency ratios of the past decade is well-known. Chinese policy of one child decreased the dependency rates. Furthermore, preference of sons over daughters leads to a distortion in the natural male-female rates in the population. In China alone, the imbalance between the sexes was 108 boys to 100 girls for the generation born in the late 1980s and escalated to 124 to 100 for the generation of the early 2000s (Economist, 4 March 2010). Distorted sex ratios can be found also in other East Asian countries or western Balkans and the Caucasus. Wei and Shang (2009) suggest that this imbalance further raises savings in China via the bequest motives, as families with sons save to make their son competitive in the marriage market.

Modigliani (1970) also suggests that in a life-cycle setting, higher income growth will lead to higher private savings as a result of aggregation across households. However, Carroll and Summers (1991) argue that the relationship between the economic growth and savings is ambiguous and should be negative in the short run. To capture the differences in the demographic profiles of countries, I use total (DEPR), old (OLDEP) and youth dependency ratio (YTHDEP) as a percentage of GDP, where the age dependency ratio is defined as the share of young and old age population (below 15 and above 65) to working age population (between 15 and 64). The data come from WDI database. For the pre-war period, I use the

youth dependency ratio measured as the proportion of the children aged 14 or below as a fraction of the total population. The data comes from Clemens and Williamson (2004).

Economic growth

Economic growth is another factor often cited as the current account determinant. The stage of economic development hypothesis suggests that a country moving from a low to an intermediate stage of development requires higher investment (see Kindleberger 1993 or Lassudrie-Duchêne *et al*. 1990). Therefore, it imports capital and runs the current account deficit. As the country matures, its current account balance improves and it is able to repay its external liabilities. Lassudrie-Duchêne *et al.* (1990) point out that as the competition from the developing countries rises, the profitability of mature economies falls. They lower their savings and increase their consumption, which results in the trade balance deficit.

Two proxies are used to capture the stage of economic development hypothesis. First, the real per capita income (relative to the average real per capita income of Great Britain, France and Germany in the pre-War period (RELYINCOME) or relative to the average real per capita income of the high-income OECD countries in the post-BW period (RELYOECD)) is expected to have a positive relationship with the current account, as the countries at the lower stage of economic development are assumed to run current account deficits. However, if taking into account Lassudrie-Duchêne *et al.* (1990), the expectations about the sign are ambiguous. Second, real economic growth (ECONGROWTH) is expected to have the negative relationship with the current account, as the less developed countries tend to grow faster than the developed countries and are borrowing against their future income. For the period of 1970-2007, the data come from the WDI database. For the pre-War period, the data come from Clemens and Williamson (2004).

Net foreign assets

As the current account is the sum of the trade balance and the return on a country's stock of net foreign assets (NFA), the stock of NFA serves as an initial condition. There are two hypothetical relationships between the NFA and the CA. Countries with a higher initial NFA can sustain a higher trade deficit while remaining solvent. Here, the relationship between the NFA and the CA is negative. The positive relationship exists for countries with higher NFA that enjoy higher foreign income flows. This was the case of the prewar Great Britain. The net income from shipping, insurance, interest and dividends were more than sufficient to produce a substantial current account surplus, despite a deficit on merchandise trade (Eichengreen 2005, 14). The NFA is measured as net foreign assets in the initial year of the five-year average. The data come from an updated version of Lane and Milesi-Ferretti (2007). For the pre-War period, the data come from Goldsmith (1985). Here, the sample is drawn down to six countries due to data availability.

Institutional quality

Institutional quality affects the incentives to save and invest, as it defines how well the returns from these activities are protected. For example, the high risk of expropriation has a negative impact on the incentive to invest.[100] Decisions by foreign residents are affected too. Alfaro et al. (2005) document that the institutional quality is the major factor that attracted the capital flows during 1970-2000. Similar conclusion was made by Schularick and Steger (2008) for the prewar period.

Chinn and Ito (2005) find that in the developed countries, the effect of the financial development on savings is conditional on the legal system and open financial markets: countries with highly developed legal system and open financial countries undertake less

[100] Goetzmann and Ukhov (2006) document that British investors had access to information about political and economic situation.

savings. For less developed countries and emerging market countries they find the reverse correlation: greater financial development leads to higher savings.

Three proxies are used to capture institutional quality. The primary proxy is POLITY2 score of the POLITY IV Project.[101] The score reflects various aspects of the institutional quality, such as existing constraints on the exercise of power by the executive, competitiveness and openness of executive recruitment and competitiveness and regulation of political participation. The range is (-10, 10). The higher the score, the higher the institutional quality. The second proxy is XCONST score of the POLITY IV Project, i.e. the existing constraints on the executive. The score is included in the POLITY2 variable but it is of interest to test for its effect separately, as it can be understood as a proxy of the risk of expropriation. Finally, bond spread (SPREAD) is assumed to capture the creditworthiness of the country in the prewar period.

Trade openness

The importance of trade openness was emphasized by some of the U.S. politicians since the 1980s, who suggested the link between low trade barriers and the U.S. current account deficit. Trade openness could be correlated with the factors that make the country attractive to foreign investment. It may also signal a better ability to service external debt. This was particularly important in the prewar period. I measure the trade openness as the sum of imports and exports to GDP (TRADEGDP).

Terms of trade volatility

Higher terms of trade of volatility might induce precautionary savings as consumers try to smooth their consumption in the face of more volatile income flows. I measure the terms of trade volatility as the standard deviation of the terms of trade over the corresponding

[101] For a more detailed information, see Marshall and Jaggers (2009).

five-year period (TOTSD). For the pre-War period, the data come from Williamson (2008). For the period of 1970-2008, the data come from WDI database.

Oil

Finally, Sachs (1981) suggests that if the oil shock is expected to have a transitory effect on income, it will lead to the reduction in the current account balance. From this perspective, being an oil exporter may lead to an increase in the current account balance in episodes of oil price shocks. In order to control for the effect of oil, I include the OIL dummy, which takes the value of 1 for oil-exporting countries and 0 otherwise.

6.3 The medium-term determinants of the current account balance, 1865-1913

This part examines the medium-term determinants of the current account balance in the pre-World War I period. The data set is comprised of yearly data for 14 countries and covers the period of 1865-1913. The countries included in the sample are: Argentina (ARG), Australia (AUS), Canada (CAN), Denmark (DEN), France (FRA), Germany (GER), Italy (ITA), Japan (JPN), Norway (NOR), Russia (RUS), Spain (SPA), Sweden (SWE), United Kingdom (UK), and the United States (USA). The number of countries in the sample was constrained by the data availability. Nevertheless, in 1913 the countries included in the sample produced almost 62 percent of the world GDP (Maddison 2001).[102] For the complete list of variables and the data sources, see Appendix B.1.

To capture the medium-term effects, 5-year non-overlapping averages are used.[103] For the last period 1910-1913, a 4-year average is used. In order to check the robustness of the

[102] Note that the proportion may be overestimated, as the data for Russia include all the countries of the former Soviet Union.

[103] It is important to note that the 5-year averages panel consists of 14 countries and 10 time periods. The panels with n>T are called short panels. Such panels pose different requirements on certain aspects of the estimation. These issues are discussed in more detail below.

results and to capture the long-term and short-term determinants of the current account, cross-section averages, as well as yearly data are used (see section on the robustness of the results).

The current account deficit ranged from –30 percent of GDP to 8.6 percent of GDP (see descriptive statistics in Appendix B.2). The highest current account deficit was reached by Argentina in the years running up to the Baring Crisis of 1890. In 1989, the Argentinean current account deficit reached the value of more than 30 percent of GDP. The maximum current account surplus of 8.6 percent of GDP was reached by Great Britain in 1913.

Most of the correlations of explanatory variables are below 0.50 (see Appendix B.3). The correlation of POLITY2 and relative income per capita is slightly over 50%. This is in line with the seminal work of Acemoglu *et al.* (2001) who document the positive relationship between the economic growth and the quality of institutions. A more troublesome is the correlation between M2GDP and TRADEGDP, which is more than 70 percent. Therefore, I calculate the variance inflation factor (VIF) (see Appendix B.4). As a rule of thumb, there is evidence of multicollinearity if the largest VIF is greater than 10 (some choose the more conservative threshold value of 30) and the mean of all the VIFs is considerably larger than 1.[104] The largest VIF (POLITY2) is 10.899 and the mean VIF is 3.493. To check the robustness of the results, I re-estimated the current account regressions without insignificant interaction terms. This decreased the largest VIF to 2.446 (TRADEGDP) and the mean VIF to 1.701. There was no significant change in the magnitude or the size of the coefficients in FE or PCSE model (see below). However, the effect of institutional quality in the FE model was no longer significant (the p-value was 14.6%).

[104] However, some argue that the rules of thumb for VIF should be taken with caution. For example, O'Brien (2007) argues that "values of VIF of 10, 20, 40 or even higher do not, by themselves, discount the results of regression analyses (…)."

6.3.1 General model

The aim of the empirical analysis is to identify the main determinants of current account deficit during the period of 1865-1913. The empirical approach follows the previous empirical studies of Debelle and Faruqee (1996), Calderon et al. (2002), Chinn and Prasad (2003), Ito and Chinn (2007), Chinn and Ito (2007a) and Lee (2008). To test the various explanations of the current account behavior, I estimate the model proposed by Ito and Chinn (2007, 10), which may be expressed in the following form:

$$y_{i,t} = \alpha_i + \beta_1 FD_{i,t} + \beta_1 IQ_{i,t} + \beta_2 KAOPEN_{i,t} + \beta_3 (FD_{i,t} * IQ_{i,t}) + \beta_4 (FD_{i,t} * KAOPEN_{i,t}) + \beta_5 (IQ_{i,t} * KAOPEN_{i,t}) + \lambda X_{it} + \nu_{i,t} \quad (6.1)$$

where the dependent variable is the current account balance expressed as a percentage of GDP (negative values indicate a deficit) for the *i*-th unit at time *t*. As the current account equals the difference between the saving and investment, the model is estimated also with savings and investment (as a percentage of GDP) as the dependent variables. The independent variables include the financial development (FD), institutional quality (IQ) and the capital openness (KAOPEN). $X_{i,t}$ is the vector of control variables (real economic growth, real per capita income relative to the real per capita income of the average income of the UK, France and Germany, government balance, youth dependency ratio, trade openness, the terms of trade volatility and the initial net foreign assets). The vector β and λ is a vector of coefficients and $\nu_{i,t}$ is the composite error.

To estimate the model, several techniques are considered. First, pooled ordinary least squares (OLS), fixed effects and random effects are estimated.[105] Each of the specifications is

[105] For an overview of the econometric analysis of the panel data, see Wooldridge (2002), chapters 13-14.

based on certain assumptions. The most common assumption made is the one of parameter homogeneity, i.e. we assume that $\alpha_{it} = \alpha$ and $\beta_{it} = \beta$ for all *i, t*. In other words, we assume that there is neither significant country nor significant temporal effect. However, it is more reasonable to assume that heterogeneity is the main characteristic of the countries under consideration. To model heterogeneity, one assumes that the composite error $v_{i,t}$ – in case of the twoway model – consists of three components: (1) the country-specific and time-invariant error term u_i, sometimes referred to as the unobserved effect, (2) the specific time effect and (3) an idiosyncratic error ε_{it} that captures the residual errors.

There are two assumptions made about the individual and/or time effects and the independent variables. The random effects assumption is that the unobserved effect is not correlated with the independent variables. The fixed effects assumption is that the unobserved effect is correlated with the independent variables. If the random effects assumption holds, the random effects model is preferred to the fixed effects model because the random effects estimator is more efficient than the fixed effects estimator. However, if there is correlation between the individual and/or time effects and the independent variables, then the individual and time effects must be estimated as dummy variables in order to solve the endogeneity problem. Therefore, the fixed effects model is sometimes called the least squares dummy variable model.

To put these considerations into practice, at first the simple pooled OLS model of equation 6.1 is estimated. This model serves as the benchmark model. Then the Breusch-Pagan Lagrange multiplier tests of country or/time effects based on the results of the pooling model are implemented (Breusch and Pagan 1980). The test results suggest significant country and/or time effects (see Appendix B.5).

Therefore, the panel techniques are preferred to the simple pooled OLS model, i.e. the fixed effects and random effects models are estimated. Next, Hausman test is used to test

whether the random effects assumption of no correlation between the individual and/or time effects and the independent variables holds (see Appendix B.6). The results of the test indicate that the random effects assumption does not hold and so the fixed effects model provides a better specification. Finally, the F test is used to test whether the country, temporal or twoway effects are redundant (see Appendix B.7). The results suggest the use of fixed effects model with country effects.

Based on the above, the model of interest is the fixed effects model with country effects. Here, a note must be made about the autocorrelation in the model. The Durbin-Watson statistic formed by computing the first-order residual correlation on the stacked set of residuals suggests the presence of autocorrelation in the model. The presence of autocorrelation was further tested (see Appendix B.8). The results suggest the presence of serial correlation in idiosyncratic errors. This is supported especially by Wooldridge's test for the serial correlation in errors (see Wooldridge 2002, 10.6.3) listed in Appendix B.8.6. An advantage of this test is that it does not rely on large T asymptotics and has good properties in "short" panels. It is also robust to general heteroskedasticity.

I deal with the autocorrelation problem in two ways. First, I adopt Arellano (1987) approach of computing White coefficient covariance estimates that are robust to heteroskedasticity and serial correlation and rely on large n asymptotics with small T, as is the case of the panel data used in this study.

Second, I adopt panel-corrected standard error estimator (PCSE) developed by Beck and Katz (1995), who suggest weighting the observations for AR(1) serial correlations and then adjusting the standard errors for cross-sectional correlation. The standard errors computed this way are robust to more general serial correlation. In regard to this study, the main advantage of the PCSE estimator is that it estimates the Parks model even when n>T.

Estimation results are reported in Tables 6.1, 6.2 and 6.3. As the current account is the difference between savings and investment, I re-estimate the basic model also with savings and investment as dependent variables. The relative income and growth rate are significant in both models. Contrary to the predictions of the stage of economic development hypothesis, the coefficient of the relative income is negative. A 1 percentage point increase in relative income leads to a 0.115 to 0.128 percentage point decrease in the current account balance.

Table 6.1: Current Account Regressions, 1865-1913

Model	FE country	PCSE FE country	FE country	PCSE
C	23.135	14.362	-9.046	9.444
	(7.724, 0.004)	(13.231,0.283)	(11.780,0.449)	(11.419,0.415)
RELY INCOME	-0.115	-0.128	-0.083	0.010
	(0.054, 0.036)	(0.056, 0.025)	(0.104, 0.430)	(0.033, 0.761)
GGROWTH	0.559	0.413	0.041	0.267
	(0.149, 0.000)	(0.161, 0.013)	(0.188, 0.828)	(0.294, 0.372)
YTHDEP	-0.434	-0.103	0.140	-0.182
	(0.150, 0.005)	(0.332, 0.759)	(0.207, 0.504)	(0.333, 0.589)
GOVBAL	0.073	0.098	-0.007	-0.110
	(0.207, 0.725)	(0.152, 0.523)	(0.161, 0.964)	(0.148, 0.465)
TRADEGDP	-0.071	0.100	0.337	0.974
	(0.113, 0.529)	(0.114, 0.386)	(0.139, 0.022)	(0.076, 0.211)
M2GDP	0.033	-0.101	0.034	-0.144
	(0.033, 0.323)	(0.052, 0.056)	(0.029, 0.250)	(0.062, 0.029)
POLITY2	-0.384	-0.385	-0.596	-0.229
	(0.216, 0.079)	(0.346, 0.271)	(0.146, 0.000)	(0.432, 0.600)
M2GDP* POLITY2	0.003	0.007	0.006	0.003
	(0.004, 0.458)	(0.005, 0.215)	(0.004, 0.201)	(0.006, 0.613)
TOTSD	-0.035	-0.016	0.027	0.004
	(0.044, 0.432)	(0.044, 0.720)	(0.022, 0.240)	(0.059, 0.944)
NFAin			0.088	0.021
			(0.019, 0.000)	(0.017, 0.230)
AR(1)		0.505		0.490
		(0.175, 0.006)		(0.186, 0.014)
R-squared	0.805	0.840	0.774	0.731
Adj. R-squared	0.743	0.772	0.657	0.621
D-W stat	1.536	1.723	1.805	1.672
Sample	14	14	6	6
Observations	92	78	45	39
Time span	1865-1913	1870-1913	1865-1913	1870-1913

Notes: White period standard errors and p-values in parentheses.
Sample 14: Argentina (ARG), Australia (AUS), Canada (CAN), Denmark (DEN), France (FRA), Germany (GER), Italy (ITA), Japan (JPN), Norway (NOR), Russia (RUS), Spain (SPA), Sweden (SWE), United Kingdom (UK), United States (USA).
Sample 6: Denmark, France, Italy, Japan, United Kingdom, United States.

Table 6.2: Savings regressions, 1865-1913

Model	FE twoways	PCSE FE country	FE twoways	PCSE FE country
C	-4.126 (11.625,0.724)	-1.666 (14.177,0.907)	-62.174 (10.629,0.000)	-34.465 (21.211,0.118)
RELYINCOME	0.084 (0.059, 0.160)	0.176 (0.039, 0.000)	0.160 (0.119, 0.193)	0.048 (0.065, 0.471)
GGROWTH	0.526 (0.235, 0.029)	0.425 (0.193, 0.032)	-0.318 (0.433, 0.471)	-0.005 (0.389, 0.990)
YTHDEP	0.171 (0.364, 0.641)	-0.049 (0.338, 0.886)	0.724 (0.733, 0.335)	0.489 (0.545, 0.379)
GOVBAL	-0.045 (0.234, 0.849)	0.270 (0.375, 0.474)	0.384 (0.436, 0.389)	-0.053 (0.414, 0.899)
TRADEGDP	0.276 (0.190, 0.152)	0.364 (0.125, 0.005)	1.164 (0.342, 0.003)	0.724 (0.182, 0.001)
M2GDP	-0.060 (0.057, 0.298)	-0.132 (0.062, 0.038)	0.0365 (0.103, 0.727)	0.053 (0.057, 0.365)
POLITY2	0.131 (0.622, 0.834)	-0.340 (0.331, 0.309)	0.267 (1.066, 0.805)	1.198 (0.873, 0.184)
M2GDP*POLITY2	-0.008 (0.009, 0.358)	0.005 (0.005, 0.350)	-0.005 (0.012, 0.672)	-0.010 (0.014, 0.509)
TOTSD	0.006 (0.075, 0.937)	-0.005 (0.071, 0.941)	0.079 (0.054, 0.161)	0.044 (0.088, 0.626)
NFAin			0.184 (0.617, 0.008)	0.125 (0.053, 0.027)
AR(1)		0.625 (0.144, 0.000)		-0.174 (0.284, 0.546)
R-squared	0.842	0.859	0.866	0.797
Adj. R-squared	0.760	0.798	0.705	0.649
Durbin-Watson stat	1.364	2.428	2.846	1.933
Sample	14	14	6	6
Observations	92	78	45	39
Time span	1865-1913	1870-1913	1865-1913	1870-1913

Notes: see Table 6.1.

Table 6.3: Investment regressions, 1865-1913

Model	FE country	PCSE FE country	FE country	PCSE
C	-22.942	-22.352	-30.536	-17.640
	(18.787,0.226)	(14.820,0.137)	(15.389,0.057)	(21.538,0.422)
RELYINCOME	0.237	0.290	0.116	0.119
	(0.099, 0.019)	(0.067, 0.000)	(0.101, 0.266)	(0.097, 0.232)
GGROWTH	-0.156	0.026	0.074	-0.188
	(0.157, 0.325)	(0.223, 0.909)	(0.158, 0.646)	(0.400, 0.643)
YTHDEP	0.247	0.143	0.550	0.190
	(0.330, 0.457)	(0.331, 0.667)	(0.376, 0.154)	(0.599, 0.754)
GOVBAL	0.144	0.103	0.033	0.013
	(0.141, 0.313)	(0.276, 0.710)	(0.191, 0.864)	(0.295, 0.966)
TRADEGDP	0.371	0.353	0.455	0.323
	(0.150, 0.016)	(0.136, 0.012)	(0.233, 0.060)	(0.173, 0.074)
M2GDP	-0.004	-0.009	0.013	0.022
	(0.037, 0.921)	(0.054, 0.867)	(0.066, 0.839)	(0.055, 0.698)
POLITY2	0.802	0.307	0.771	2.297
	(0.461, 0.086)	(0.399, 0.445)	(0.494, 0.129)	(0.853, 0.013)
M2GDP*POLITY2	-0.013	-0.006	-0.005	-0.022
	(0.007, 0.068)	(0.006, 0.341)	(0.008, 0.524)	(0.013, 0.120)
TOTSD	0.026	0.017	0.050	-0.030
	(0.043, 0.545)	(0.069, 0.805)	(0.051, 0.330)	(0.079, 0.712)
NFAin			0.046	0.023
			(0.043, 0.286)	(0.040, 0.568)
AR(1)		0.408		-0.076
		(0.184, 0.030)		(0.234, 0.749)
R-squared	0.823	0.861	0.819	0.868
Adj. R-squared	0.767	0.803	0.725	0.0772
Durbin-Watson stat	1.380	1.966	1.953	1.827
Sample	14	14	6	6
Observations	93	79	45	39
Time span	1865-1913	1870-1913	1865-1913	1870-1913

Notes: see table 6.1.

Similarly, the sign of the GDP growth indicates that faster growing countries tended to run current account surpluses. This is against the theoretical expectations that domestic economic growth accelerates demand for foreign goods and services and the current account balance deteriorates (see Abel and Bernanke 2001). A 1 percentage point increase in economic growth leads to a 0.413 to 0.559 percentage point increase in the current account balance.

Inspecting the results from the saving and investment regressions yields additional insights. The effect of the relative income and economic growth on the current account is less

puzzling when looking at the savings and investment regressions. A 1 percentage-point increase in the economic growth leads to a –0.156 to 0.026 percentage point change in the investment but an effect of a higher economic growth on savings is much higher. A 1 percentage point increase in economic growth leads to a 0.425 to 0.526 increase in savings.

The effect of the youth dependency on the current account is in line with the theoretical predictions. A 1 percentage point increase in the youth dependency leads to a 0.434 percentage point decrease in the current account. Interestingly, the effect of youth dependency on savings is not significant.

The effect of the government balance is positive, albeit insignificant. However, when regressing the yearly data, it is highly significant (see robustness tests below). This suggests the importance of temporary shocks in determining the current account balance, as suggested by the results of Chapter 5.

The institutional quality has a negative effect on the current account. According to the FE model, a 1 point increase in POLITY2 leads to a 0.384 percentage-point decrease in the CA balance. When looking at the savings and investment channels, higher institutional quality has a positive effect on both the savings and investment but this effect is stronger and significant in case of investment, where a 1 point increase in institutional quality leads to a 0.802 percentage point increase in investment. Furthermore, in case of investment regression, the effect of POLITY2 is mitigated by the interaction with the level of financial development. To estimate the partial effect of POLITY2 on INVESTMENT conditional on M2GDP (and vice versa), it is of interest to plug in some meaningful values of POLITY2 (or M2GDP), such as mean, low and high 10 percentile and see whether this effect is significant. The results are listed in Table 6.4 and 6.5 below.

For low levels of financial development, improvement in institutional quality leads to higher investment rates, whereas the opposite is true for high values of financial development. Note that the effect is significant only at minimum, maximum and low 10 percentile.

Table 6.4: Effect of POLITY2 on INVESTMENT conditional on M2GDP

Value of M2GDP	Minimum	Low 10 percentile	Mean	High 10 percentile	maximum
(12.96, 87.25)	12.96	19.42	40.25	71.28	87.25
Effect of POLITY2	0.636	0.553	0.286	-0.113	-0.318
(-10, 10)	(0.372, 0.092)	(0.329, 0.097)	(0.190, 0.137)	(0.077, 0.149)	(0.162, 0.054)

Notes: see table 6.1.

Table 6.5: Effect of M2GDP on INVESTMENT conditional on POLITY2

Value of POLITY2	Minimum	Low 10 percentile	Mean	High 10 percentile	maximum
(-10, 10)	-10	-4.86	1.52	9.46	10
Effect of M2GDP	0.125	0.059	-0.023	-0.125	-0.132
(12.96, 87.25)	(0.061, 0.043)	(0.036, 0.107)	(0.043, 0.592)	(0.089, 0.166)	(0.093, 0.159)

Notes: see table 6.1.

According to the PCSE model, the effect of POLITY2 on the current account balance is of the same magnitude, albeit insignificant. However, there is a difference in the sign of the M2GDP effect on the current account balance between the two models of interest. PCSE model predicts that a 1 percentage point increase in M2GDP leads to a 0.101 reduction in the current account balance. On the contrary, the FE model predicts a 0.033 increase in the current account balance. Here, however, the effect is insignificant.

The implied current accounts (Appendix B.9) suggest that the FE model performs better in capturing the current account behavior between 1865 and 1913. Based on this, the main effect of the financial development on the current account comes through the investment channel. The results, thus, give some support to the global savings glut hypothesis that the

excess savings, in this case accumulated by Great Britain, France or Germany, were distributed to countries with high degree of financial and institutional development. A note must be made about the proxy of the financial development. Measured as M2GDP, the financial development of Great Britain reached only average level, in contrast to Germany or Scandinavian countries that had the highest M2GDP. This probably reflects the dominance of stock market based financial system in Great Britain and bank based financial system in Germany. Therefore, M2GDP does not seem to capture the high level of the British stock and bond market development. It is therefore possible to speculate, whether the effect of the financial development would be different if measured as stock and bond market development. Unfortunately, such data are not available for a broad sample of countries. Second, it must be noted that (unlike the U.S. nowadays), the British level of institutional quality did not reach the high 10 percentile value.

As the role of income from foreign investment played a significant role in the prewar Britain, the last two columns of tables 6.1, 6.2 and 6.3 report estimation results controlling for the initial value of the net foreign assets.[106] Due to the data unavailability, the sample includes only the following countries: Denmark, France, Italy, Japan, the United Kingdom, and the United States. The results suggest that the net foreign assets were an important determinant of the current account balance: a 1 percentage point increase in the NFA increased the current account balance by 0.088 percentage points. This effect came through the savings channel, where a 1 percentage point increase in net foreign assets increased the savings by 0.184 percentage points. The effect of both the institutional quality and the financial development remains negative. This suggests that countries with higher levels of institutional quality and financial deepening tend to run current account deficits (or lower surpluses). Finally, trade openness has a significant positive effect on the current account: the

[106] Note that the AR term was insignificant in both the savings and investment regressions. Thus, the interpretation of results relies only on the fixed effects model.

higher the participation in the international trade, the higher the current account balance. Other variables are insignificant or marginally significant. For example, the effect of the institutional quality on investment has the p-value of 12.9%. The difference may be due to the smaller sample size or a stronger effect of the net foreign assets on the current account balance than the effect of other variables.

6.3.2 Robustness tests

In order to examine the robustness of the results at higher frequencies, I reestimated the panel regressions using annual data (Appendix B.10). As the models suffered from autocorrelation, I computed White period standard errors robust against serial autocorrelation. Based on the criteria listed above, the models of interest are FE and PCSE. Furthermore, to control for factors influencing the current account in the long-run, I estimated also the between model (Appendix B.11).

In general, the results support the regression using 5-year averages. The relationship between the youth dependency and the current account is negative: a 1 percentage-point increase in youth dependency decreases the current account balance by 0.362 percentage points (FE model). Higher institutional quality also decreases the current account balance: a 1 point increase in institutional quality leads to a 0.328 percentage point decrease in the current account balance (PCSE model).

Interestingly, the financial development has a significant negative effect on both the savings and the investment. A 1 percentage point increase in M2GDP decreases the savings by 0.054 to 0.078 percentage point and investment by 0.051 percentage point. However, in the long-run, the relationship between M2GDP and savings is positive: a 1 percentage point increase in M2GDP leads to a 0.374 increase in savings.

The major difference between the regressions using the yearly data and 5-year averages is in the significance of the government budget balance. Whereas it is insignificant in the medium-term, it is significant in the short-term: a 1 percentage point increase in the government budget balance leads to a 0.182 percentage point increase in the current account balance. This points out to the importance of the temporary shocks in determining the current account balance (see Chapter 5).

The effect of an increase in the government budget balance on savings is of a similar magnitude: a 1-percentage point increase in the government budget balance increases savings by 0.149 percentage points. This suggests that the government budget balance has a non-Ricardian effect on the savings rate, where the Ricardian offset in savings is 0.85 percentage point.

Neither relative income, nor growth rate coefficients were significant in case of the current account regression. However, the savings and investment regressions bring more insights into the effect of the economic development. Higher relative income leads to higher current account balance: a 1 percentage point increase in relative income increases savings by 0.105 to 0.111 percentage point. The effect on investment is stronger: a 1 percentage point increase in relative income leads to a 0.143 to 0.207 percentage point increase in investment. As a result, the effect of the relative income on the current account is negative, albeit insignificant. In the long-run, relative income is the single most important factor that determines both the current account balance and investment. Here, however, the sign of the coefficient is in line with the theoretical predictions: a 1-percentage point increase in economic growth leads to a 4.592 percentage point decrease in the current account balance and 5.374 increase in investment.

Finally, the trade openness has a positive effect on both savings and investment: A 1 percentage point increase leads to a 0.265 percentage point increase in savings and a 0.301

percentage point increase in investment. This suggests that an increasing participation in international trade leads to (1) an increase in savings due to revenue generated by trade, and (2) an increase in investment in the profitable export-oriented businesses.

To test the robustness of the results, I used two further proxies of institutional quality. First, I used constraint on the executive as a proxy of the risk of expropriation (Appendix B.12). Surprisingly, its effect was insignificant. Second, I used SPREAD variable (Ferguson and Schularick 2006), which measures the difference between the yield on a country's bond and the yield on British consols. Clemens and Williamson (2004) used SPREAD as a proxy of investment risk not explained by economic fundamentals. There are small discrepancies compared to the base regression. The effect of the financial development is negative at all levels of SPREAD. However, the effect of institutional quality measured as SPREAD is different from the base results. An increase in institutional quality, i.e. a decrease in spread, decreases the CA balance in countries with low levels of financial deepening. On the contrary, it increases the CA balance in financially developed countries (here, however, the effect is insignificant). The difference in the effect of SPREAD may come from two sources. First, the sample is smaller and does not include developed European countries, such as Great Britain, France or Germany.[107] Second, although the differences in spreads signal the creditworthiness of the country, it is debatable whether they are solely the result of differences in underlying institutional quality or whether these differences capture also the differences in the macroeconomic fundamentals.[108]

[107] SPREAD sample: ARG, AUS, CAN, DEN, ITA, NOR, RUS, SPA, SWE, USA.
[108] Ferguson and Schularick (2006) provide some evidence for the former, whereas Flandreau and Zumer (2004) provide the evidence for the latter.

6.4 Medium-term Determinants of the Current Account Balance, 1970-2007

This section deals with the medium-term determinants of the CA balance during the period of 1970-2007. To capture the medium-term effects, 5-year non-overlapping averages are used. For the last period of 2005-2007, a 3-year average is used. To check the robustness of the results and to capture the long-term and short-term determinants of the current account, yearly data and cross-section averages are used (see section on the robustness of the results). The dataset covers 107 countries – 21 developed, 86 developing (this base sample is listed in Appendix B.13). The complete list of variables and sources is listed in Appendix B.14.

Between 1970 and 2007, the current account balance as a percentage of GDP ranged from the minimum of –240 to the maximum of 99, with the mean CA balance equal to –2.571 (see Appendix 18 for the descriptive statistics). To capture the sensitivity of results to outliers, I perform robustness tests, where I exclude all countries with the CAGDP higher than 10 or lower than –10 percent of GDP (see robustness tests). None of the correlations of explanatory variables is significantly higher than 50% (see Appendix B.16). The highest correlation of 54.2% is between the capital openness (KAOPEN) and real per capita income relative to the average real per capita income of the high-income OECD countries (RELYOECD).

6.4.1 Estimation results

Estimation results are reported in Tables 6.6, 6.7 and 6.8. As Ito and Chinn (2007) documented different determinants of the CA for developed and developing countries, I re-run the regression also for various country groups (developed/developing/developing excluding Africa).

First, contrary to the stages of economic development hypothesis, there is a negative relationship between the relative income per capita and the current account: a 1-percentage point increase in per capita relative to the OECD average leads to 0.084 to 0.158 percentage point decrease in the current account balance. This effect is driven by the significant positive effect of RELYOECD on investment (0.071 to 0.152). The sign of the economic growth coefficient is negative as expected but significant only when the financial development is proxied as private credit creation (CREDIT). There, a 1 percentage point increase in the economic growth rate leads to a 0.376 percentage point decrease in the current account balance. Looking at the savings and investment regressions sheds more light on the effect of economic growth on the current account. Faster economic growth increases both the savings and investment but the effect is stronger and more significant in case of investment. These results suggest that both the richer and the faster growing economies tend to run current account deficits.

Second, there is a positive relationship between the government budget balance and the current account. A 1 percentage point increase in the budget balance leads to a 0.341 to 0.647 percentage point increase in the current account. These results give support to the twin deficits hypothesis. The effect of an increase in the government budget balance on savings is also positive: a 1 percentage point increase leads to 0.452 to 0.679 percentage point increase in savings rate. This suggests that the government budget balance has a non-Ricardian effect on the savings rate, where the Ricardian offset in savings is 0.321 to 0.548 percentage point.

Table 6.6: Current account regressions, 1970-2007

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	Fe country
C	3.564	15.603	14.716	2.467	10.436	13.488	14.256	25.083	14.558
	(6.808, 0.601)	(7.146, 0.031)	(6.961, 0.037)	(6.484, 0.704)	(10.118, 0.306)	(8.972, 0.135)	(8.222, 0.085)	(10.992, 0.024)	(8.470, 0.088)
RELYOECD	0.039	-0.051	-0.084	0.047	-0.144	-0.121	-0.116	-0.158	-0.114
	(0.043, 0.366)	(0.050, 0.312)	(0.042, 0.049)	(0.044, 0.284)	(0.046, 0.003)	(0.047, 0.011)	(0.043, 0.008)	(0.059, 0.008)	(0.047, 0.017)
POLITY2	-0.217	-0.185	-0.092	-0.266	0.502	0.024	-0.056	-0.100	0.386
	(0.172, 0.209)	(0.203, 0.364)	(0.156, 0.558)	(0.163, 0.105)	(0.214, 0.022)	(0.211, 0.911)	(0.150, 0.709)	(0.380, 0.794)	(0.339, 0.257)
FD	-0.001	-0.064	-0.060	-0.074	0.169	0.002	-0.014	-0.237	1.209
	(0.032, 0.967)	(0.030, 0.035)	(0.040, 0.142)	(0.033, 0.027)	(0.063, 0.009)	(0.009, 0.834)	(0.038, 0.712)	(0.509, 0.642)	(0.555, 0.031)
KAOPEN	1.451	-0.449	-0.765	0.532	0.292	-0.808	-0.395	-0.739	-0.680
	(0.794, 0.069)	(0.898, 0.618)	(0.792, 0.336)	(0.743, 0.475)	(0.833, 0.727)	(0.767, 0.294)	(0.680, 0.562)	(1.194, 0.538)	(0.991, 0.494)
GOVBAL	0.341	0.359	0.250	0.447	0.647	0.153	0.157	0.509	0.398
	(0.110, 0.002)	(0.194, 0.067)	(0.183, 0.173)	(0.122, 0.000)	(0.364, 0.080)	(0.201, 0.448)	(0.183, 0.393)	(0.244, 0.039)	(0.204, 0.054)
NFAIN	0.001	0.038	0.044	0.060	-0.002	0.050	0.039	0.034	0.032
	(0.002, 0.544)	(0.031, 0.224)	(0.028, 0.124)	(0.025, 0.018)	(0.021, 0.904)	(0.034, 0.138)	(0.028, 0.164)	(0.029, 0.237)	(0.033, 0.326)
DEPR	-0.040	-0.172	-0.198	0.041	-0.195	-0.118	-0.150	-0.258	-0.226
	(0.074, 0.590)	(0.085, 0.046)	(0.093, 0.034)	(0.077, 0.597)	(0.148, 0.190)	(0.094, 0.212)	(0.100, 0.135)	(0.160, 0.108)	(0.123, 0.070)
POLITY2*FD	0.000	0.003	0.004	0.003	-0.017	-0.001	0.003	0.073	-0.038
	(0.003, 0.938)	(0.002, 0.216)	(0.004, 0.355)	(0.004, 0.453)	(0.008, 0.035)	(0.002, 0.576)	(0.004, 0.530)	(0.069, 0.290)	(0.059, 0.522)
POLITY2*KAOPEN	-0.055	-0.021	0.018	-0.055	-0.044	0.076	0.073	-0.031	0.049
	(0.081, 0.499)	(0.083, 0.805)	(0.069, 0.795)	(0.077, 0.478)	(0.122, 0.721)	(0.054, 0.157)	(0.062, 0.251)	(0.087, 0.720)	(0.087, 0.574)
KAOPEN*FD	-0.026	0.004	0.009	-0.012	-0.015	0.003	-0.004	0.034	-0.078
	(0.008, 0.002)	(0.007, 0.558)	(0.012, 0.445)	(0.010, 0.247)	(0.024, 0.532)	(0.007, 0.704)	(0.012, 0.738)	(0.157, 0.830)	(0.210, 0.713)
TRADEGDP	-0.014	0.060	0.049	0.006	0.082	0.003	0.010	-0.028	-0.027
	(0.032, 0.668)	(0.036, 0.096)	(0.036, 0.169)	(0.030, 0.833)	(0.042, 0.056)	(0.043, 0.939)	(0.041, 0.805)	(0.057, 0.628)	(0.050, 0.586)
ECONGROWTH	-0.201	-0.364	-0.198	-0.376	-0.244	-0.314	-0.309	-0.169	-0.122
	(0.131, 0.128)	(0.260, 0.165)	(0.247, 0.423)	(0.185, 0.043)	(0.280, 0.386)	(0.250, 0.211)	(0.256, 0.230)	(0.212, 0.427)	(0.201, 0.541)
PBBM*GOVBAL					-0.008				
					(0.004, 0.084)				
R-squared	0.727	0.833	0.819	0.760	0.862	0.809	0.803	0.855	0.852
Adj. R-squared	0.606	0.710	0.691	0.653	0.758	0.677	0.670	0.729	0.732
Durbin-Watson stat	2.446	2.718	2.648	2.119	2.122	2.578	2.603	2.632	2.765
Countries	107	68	73	96	43	73	73	87	86
Observations	409	199	216	371	136	219	224	219	218
Time spam	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1975 - 2007	1990 - 2007	1990 - 2007

Notes: see table 6.1.

Table 6.7: Savings regressions, 1970-2007

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE country	FE country	FE country	FE country	FE country	FE country	FE country	FE country	FE country
C	17.232 (7.995, 0.032)	35.126 (9.147, 0.000)	30.400 (9.535, 0.002)	23.642 (8.462, 0.006)	32.143 (16.084, 0.049)	34.709 (10.748, 0.002)	24.222 (7.405, 0.001)	36.470 (11.079, 0.001)	39.142 (11.375, 0.001)
RELYOECD	0.074 (0.042, 0.081)	0.027 (0.049, 0.581)	0.029 (0.040, 0.470)	0.074 (0.041, 0.069)	-0.045 (0.037, 0.231)	1.537 (4.037, 0.704)	0.051 (0.037, 0.168)	0.008 (0.045, 0.851)	-0.003 (0.043, 0.949)
POLITY2	0.118 (0.190, 0.534)	-0.369 (0.265, 0.167)	-0.134 (0.237, 0.574)	0.062 (0.260, 0.812)	0.619 (0.329, 0.064)	-0.030 (0.245, 0.904)	-0.019 (0.200, 0.925)	-0.090 (0.558, 0.872)	0.136 (0.472, 0.773)
FD	0.099 (0.038, 0.011)	-0.056 (0.036, 0.129)	-0.039 (0.051, 0.443)	0.022 (0.077, 0.772)	0.138 (0.074, 0.065)	0.192 (1.245, 0.878)	-0.003 (0.042, 0.944)	-0.425 (0.724, 0.558)	-0.087 (0.787, 0.913)
KAOPEN	1.734 (1.087, 0.112)	-1.032 (1.298, 0.428)	-1.299 (1.140, 0.257)	0.032 (1.000, 0.975)	1.949 (1.680, 0.250)	-1.662 (1.191, 0.165)	-0.983 (1.188, 0.409)	-1.255 (2.724, 0.646)	-0.462 (3.103, 0.882)
GOVBAL	0.496 (0.151, 0.001)	0.503 (0.315, 0.114)	0.505 (0.338, 0.138)	0.452 (0.166, 0.007)	0.671 (0.276, 0.017)	0.329 (0.298, 0.271)	0.271 (0.261, 0.301)	0.679 (0.272, 0.014)	0.677 (0.260, 0.011)
NFAIN	0.019 (0.015, 0.188)	0.022 (0.023, 0.335)	0.025 (0.024, 0.295)	0.031 (0.020, 0.114)	0.017 (0.024, 0.482)	3.645 (3.158, 0.251)	0.037 (0.028, 0.187)	0.045 (0.029, 0.126)	0.047 (0.032, 0.148)
DEPR	-0.041 (0.078, 0.602)	-0.185 (0.100, 0.068)	-0.148 (0.102, 0.151)	-0.090 (0.084, 0.285)	-0.194 (0.239, 0.421)	-0.183 (0.120, 0.129)	-0.071 (0.085, 0.407)	-0.153 (0.194, 0.430)	-0.215 (0.191, 0.262)
POLITY2*FD	-0.002 (0.004, 0.604)	0.005 (0.003, 0.058)	0.003 (0.005, 0.489)	-0.004 (0.009, 0.667)	-0.019 (0.010, 0.065)	0.029 (0.173, 0.867)	0.003 (0.005, 0.588)	0.049 (0.080, 0.545)	0.007 (0.096, 0.939)
POLITY2*KAOPEN	0.110 (0.103, 0.291)	0.035 (0.130, 0.792)	0.038 (0.116, 0.746)	0.050 (0.109, 0.647)	-0.190 (0.150, 0.210)	0.101 (0.117, 0.381)	0.096 (0.104, 0.362)	-0.092 (0.239, 0.703)	-0.118 (0.257, 0.647)
KAOPEN*FD	-0.057 (0.017, 0.001)	-0.001 (0.010, 0.888)	-0.003 (0.016, 0.845)	-0.013 (0.019, 0.488)	-0.012 (0.037, 0.735)	0.352 (0.709, 0.621)	-0.010 (0.015, 0.487)	0.299 (0.186, 0.110)	0.237 (0.228, 0.301)
TRADEGDP	-0.004 (0.038, 0.919)	0.019 (0.052, 0.721)	0.019 (0.044, 0.672)	0.016 (0.035, 0.641)	-0.015 (0.044, 0.743)	-0.026 (0.041, 0.528)	0.0003 (0.031, 0.992)	-0.050 (0.039, 0.211)	-0.062 (0.038, 0.101)
ECONGROWTH	0.262 (0.111, 0.019)	0.378 (0.340, 0.269)	0.488 (0.311, 0.120)	0.233 (0.155, 0.135)	0.490 (0.304, 0.111)	0.320 (0.308, 0.301)	0.397 (0.252, 0.117)	0.558 (0.184, 0.003)	0.568 (0.197, 0.005)
PBBM*GOVBAL					-0.008 (0.005, 0.114)				
R-squared	0.848	0.876	0.886	0.811	0.928	0.896	0.891	0.908	0.905
Adj. R-squared	0.784	0.786	0.806	0.734	0.875	0.827	0.820	0.831	0.826
Durbin-Watson stat	1.482	2.102	2.093	1.369	1.798	2.054	2.052	2.405	2.418
Countries	95	63	67	87	41	66	67	77	76
Observations	358	176	190	339	127	193	197	196	194
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1975 - 2007	1975 - 2007	1990 - 2007	1990 - 2007

Notes: see table 6.1.

Table 6.8: Investment regressions, 1970-2007

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE twoways	FE twoways	FE twoways	FE country	FE twoways	FE twoways	FE twoways	FE twoways
C	14.069 (5.898, 0.018)	12.588 (4.345, 0.005)	11.601 (4.914, 0.020)	11.422 (5.448, 0.037)	29.125 (8.240, 0.001)	13.384 (6.557, 0.043)	10.450 (5.209, 0.047)	13.249 (7.718, 0.089)	19.916 (7.291, 0.007)
RELYOECD	0.071 (0.026, 0.007)	0.072 (0.036, 0.050)	0.118 (0.026, 0.000)	0.073 (0.029, 0.013)	0.035 (0.035, 0.310)	0.142 (0.026, 0.000)	0.152 (0.026, 0.000)	0.142 (0.035, 0.000)	0.122 (0.034, 0.000)
POLITY2	0.365 (0.161, 0.024)	-0.117 (0.128, 0.363)	-0.074 (0.083, 0.374)	0.309 (0.167, 0.066)	0.014 (0.187, 0.939)	-0.117 (0.113, 0.306)	0.027 (0.094, 0.774)	-0.052 (0.240, 0.828)	-0.097 (0.161, 0.549)
FD	0.061 (0.031, 0.050)	0.040 (0.023, 0.083)	0.040 (0.024, 0.094)	0.108 (0.042, 0.012)	-0.023 (0.064, 0.718)	-0.001 (0.006, 0.924)	0.013 (0.017, 0.435)	0.001 (0.422, 0.999)	-0.659 (0.358, 0.069)
KAOPEN	-0.005 (0.604, 0.993)	0.060 (0.649, 0.927)	-0.062 (0.556, 0.912)	-0.158 (0.601, 0.794)	1.490 (0.749, 0.050)	-0.508 (0.601, 0.399)	-0.325 (0.538, 0.547)	-0.718 (0.826, 0.387)	-0.742 (0.696, 0.289)
GOVBAL	-0.053 (0.088, 0.546)	-0.096 (0.112, 0.396)	-0.053 (0.120, 0.661)	-0.033 (0.096, 0.733)	0.251 (0.324, 0.441)	0.051 (0.135, 0.710)	0.028 (0.141, 0.844)	0.082 (0.140, 0.561)	0.115 (0.139, 0.409)
NFAIN	0.003 (0.002, 0.175)	0.018 (0.011, 0.088)	0.015 (0.012, 0.236)	0.021 (0.015, 0.175)	0.009 (0.013, 0.521)	0.015 (0.009, 0.099)	0.020 (0.014, 0.162)	0.017 (0.013, 0.186)	0.011 (0.012, 0.373)
DEPR	-0.051 (0.063, 0.414)	0.005 (0.056, 0.925)	0.026 (0.053, 0.625)	-0.007 (0.060, 0.902)	-0.113 (0.123, 0.363)	-0.015 (0.061, 0.802)	-0.001 (0.059, 0.985)	0.039 (0.099, 0.696)	-0.012 (0.097, 0.905)
POLITY2*FD	-0.006 (0.003, 0.064)	0.001 (0.002, 0.715)	0.0004 (0.002, 0.807)	-0.008 (0.004, 0.051)	-0.003 (0.009, 0.772)	0.001 (0.001, 0.086)	0.001 (0.002, 0.668)	-0.001 (0.045, 0.983)	0.013 (0.040, 0.751)
POLITY2*KAOPEN	0.066 (0.045, 0.143)	0.060 (0.055, 0.272)	0.021 (0.044, 0.635)	0.076 (0.048, 0.117)	-0.142 (0.092, 0.126)	0.005 (0.041, 0.911)	0.003 (0.048, 0.952)	-0.014 (0.049, 0.780)	-0.047 (0.052, 0.363)
KAOPEN*FD	-0.007 (0.009, 0.450)	-0.009 (0.006, 0.116)	-0.013 (0.008, 0.082)	-0.007 (0.012, 0.535)	-0.006 (0.019, 0.749)	-0.002 (0.004, 0.628)	-0.006 (0.008, 0.471)	0.204 (0.153, 0.185)	0.267 (0.151, 0.081)
TRADEGDP	0.073 (0.027, 0.007)	0.011 (0.046, 0.813)	0.026 (0.041, 0.533)	0.050 (0.027, 0.065)	-0.037 (0.037, 0.327)	0.041 (0.040, 0.307)	0.060 (0.042, 0.150)	0.010 (0.055, 0.860)	0.009 (0.055, 0.864)
ECONGROWTH	0.463 (0.125, 0.000)	0.804 (0.238, 0.001)	0.693 (0.222, 0.002)	0.555 (0.133, 0.000)	0.631 (0.269, 0.021)	0.802 (0.196, 0.000)	0.694 (0.220, 0.002)	0.526 (0.176, 0.003)	0.436 (0.156, 0.006)
PBBM*GOVBAL					-0.003 (0.005, 0.516)				
R-squared	0.789	0.889	0.894	0.788	0.909	0.886	0.873	0.895	0.896
Adj. R-squared	0.708	0.809	0.820	0.704	0.848	0.809	0.790	0.807	0.809
Durbin-Watson stat	1.484	2.715	2.571	1.477	2.192	2.670	2.463	2.581	2.579
Countries	107	68	73	96	43	73	73	87	86
Observations	452	201	218	401	138	223	228	223	221
Time span	1970 - 2007	1975 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1975 - 2007	1975 - 2007	1990 - 2007	1990 - 2007

Notes: see table 6.1.

These results are in line with Chinn and Ito (2007a), where a one percentage point increase in the budget balance increases the CA balance by 0.1-0.49 percentage point for industrialized countries for the period of 1971 through 2004; and Ito (2009), where a one percentage point increase in the budget balance raises the current account balance by 0.10-0.49 percentage point for industrialized countries. The role of fiscal balance was documented also for oil-exporting countries (Morsy 2009) and for Middle East and North Africa countries Aristovnik (2007) at higher frequencies. On the other hand, the results stand in contrast to Ito and Chinn (2007), where the budget variable is not statistically significant. As this chapter estimates the same model, it is of interest to discuss possible explanations. First, the sample size, its composition and the time span might play the role. Whereas the analysis of Ito and Chinn (2007) encompasses the sample of 19 industrialized and 70 developing countries for the period of 1986 through 2005, this chapter encompasses the sample of 21 developed and 86 developing countries for the period of 1970 through 2007. The longer time span enables to include more post-communist or emerging economies in the sample. Furthermore, the longer time span enables to better capture the global imbalances phenomenon related to the past decade.

Third, there is a negative relationship between the dependency rate and the current account balance as expected. A 1 percentage point increase in the dependency rate leads to a 0.172 to 0.226 percentage point decrease in the current account. This effect is significant only when SIZE, STOCK and OVERHEAD are used as proxies of the financial development. Fourth, the effect of initial levels of net foreign assets is positive albeit significant only in regressions with CREDIT as the proxy of the financial development: a 1 percentage point increase in the NFA leads to a 0.060 percentage point increase in the CA balance.

TRADEGDP, a variable emphasized by the policy-makers has a positive effect on the CA balance. The higher the participation in the international trade, the higher the CA balance.

The effect of TOTSD was tested separately because the data availability draws the sample size down to the maximum of 79 (see Appendix B.18). The effect is insignificant.

Finally, the estimation results give some support also to the savings glut hypothesis. Size of the financial market has a significant negative effect on the current account balance: a 1 point increase in SIZE decreases the CA balance by 0.064 percentage point. As SIZE is measured as the sum of the stock market capitalization (STOCK) and (CREDIT), it is of interest to examine the separate effect of these two variables to see, which of the components of SIZE is driving the results for the regression with SIZE. Both variables have a negative effect on the CA balance but whereas the effect of STOCK is insignificant, the effect of CREDIT is significant: a 1-percentage point increase in CREDIT decreases the CA balance by 0.074 percentage points. The efficiency of the banking sector was significant as well. OVERHEAD has a significant positive effect on the CA balance. This suggests that the better the cost performance of the banking sector, i.e. the lower the bank's overhead costs as a share of its total assets, the lower the CA balance. A 1 percentage point decrease in OVERHEAD decreases the CA balance by 1.209 percentage points.

Two proxies of financial development (M3GDP and PBBM) have a significant interaction term; the former with the capital openness, the latter with the institutional quality and the government budget balance (see Appendix B.19). M3GDP is used as a proxy of the financial deepening. Its effect on the CA balance is positive, albeit insignificant, for countries with low level of institutional quality and low capital openness such as China. On the other hand, an increase in the M3GDP has a significant negative effect on the CA balance in countries with the high levels of both the capital openness and institutional quality. Similarly, an increase in the capital openness reduces the CA balance for countries with high levels of financial development (measured as M3GDP) and average to high levels of institutional quality.

The further proxy of interest is the size of the public bond market (PBBM), as the ability to generate safe financial instruments has been emphasized as the main reason of the U.S. current account deficit.[109] The effect of PBBM on the CA balance is positive but this effect is mitigated by its interaction with the institutional quality and the government budget balance. At low 10 percentile values of KAOPEN, POLITY and GOVBAL, a 1-percentage increase in PBBM decreases the CA balance by 0.287 percentage points. On the other hand, the effect of PBBM at high 10 percentile values is positive, albeit insignificant. In countries with high institutional quality, high level of capital openness and high budget deficits (such as USA), PBBM has a negative effect on the CA balance. However, this effect is insignificant. The effect of POLITY yields more interesting results. In countries with high level of capital openness and large public bond markets, a 1 percentage point increase in POLITY2 decreases the CA balance by 0.793 percentage points.

Which of the models is the best? If looking at the adjusted R-squared, the model with PBBM as the proxy of the financial development outperforms others, as it explains 75.8 percent of the variance in the CAGDP. Models with proxies of the banking sector development and the overall size of the financial sector follow. When comparing models, it is also of interest to look at the current accounts predicted by each model. The implied current accounts with two standard error banks, which provide an approximate 95% forecast intervals suggest that SIZE model predicts the behavior of the U.S. and Japanese CA balance the best, although it underestimates German CA balance for the period of 2005-07 (see Appendix B.20).[110]

[109] Here it must be noted that the U.S. PBBM reaches only average values compared to, for example, Japan, the country with the largest public bond market. To control for the possible outlier effect, I estimated the pooled OLS PBBM model with the dummy for Japan. This dummy was insignificant.

[110] Here, a note must be made about the multicollinearity problem. The largest VIF in SIZE regression was reported for the interaction term of POLITY2 and SIZE (13.297), see Appendix B.17. The mean VIF was 4.479. As none of the interaction terms was significant, I re-estimated the regression without interaction terms. This reduced the mean VIF to 1.765. The largest VIF was reported for relative income (3.188). Dropping interaction terms did not significantly change magnitude or the sign of coefficients with a single exception. The SIZE coefficient was reduced from -0.064 to -0.036 and its significance increased from p-value of 3.47% to 0.62%.

Ito and Chinn (2007) documented different determinants of the CA for developed and developing countries. Therefore, I re-estimate the model for countries grouped by their stage of development. Tables 6.9 and 6.10 list the estimation of equation (6.1) for developed, and developing countries excluding Africa respectively.[111] This alters the results in regard to the base results discussed above. In case of the developed countries, the most interesting change is in the effect of the government budget balance. Although it remains positive, it is significant only in a single regression when the financial development is proxied as CREDIT. Otherwise, the effect of GOVBAL is insignificant. On the other hand, the interaction terms of the financial development with POLITY2 and KAOPEN are significant in all cases, except of models with SMTV and M3GDP (in the latter case, the p-value of the interaction term of M3GDP and KAOPEN is 18.2%). For more details, see Appendix B.24.a.

Here, however, there are several changes. First, the effect of SIZE conditional on POLITY2 and KAOPEN remains negative. These findings are in line with the global savings glut hypothesis. However, the effect of KAOPEN conditional on SIZE and POLITY2 contradicts the predictions of the global savings glut hypothesis. For developed countries, an increase in the capital openness decreases the CA balance in countries with smallest financial markets and increases the CA balance in countries with the largest financial markets

Furthermore, the dependency ratio did not retain its significance: the p-value increased from 4.6% to 13.26%. Similarly, dropping the insignificant interaction terms from the current account regression using M3GDP as the proxy of the financial development reduced the largest VIF from 12.036 to 5.282 (interaction term of KAOPEN and M3GDP) and the mean VIF from 3.788 to 2.310. This did not lead to any significant changes in the magnitude, sign or significance of the coefficients. However, it is not possible to see more sensitivity tests because dropping significant interaction terms would lead to the loss of information.

[111] The results for developing countries, all countries excluding Africa and all countries excluding oil-exporting countries are listed in Appendices B.21-23. The results for developing countries do not significantly differ from the results for developing countries, excluding Africa. Neither did exclusion of Africa significantly alter the base results.

Table 6.9: Current account regressions (developed countries)

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE country	FE country	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways
C	-29.033 (21.637, 0.184)	9.609 (21.544, 0.658)	4.105 (23.321, 0.861)	-32.880 (19.040, 0.088)	-42.759 (25.671, 0.104)	-22.233 (30.863, 0.475)	2.819 (29.256, 0.924)	52.319 (37.119, 0.168)	-256.035 (65.650, 0.000)
RELYOECD	-0.016 (0.047, 0.734)	-0.071 (0.051, 0.172)	-0.102 (0.049, 0.043)	-0.002 (0.035, 0.945)	-0.129 (0.076, 0.101)	-0.136 (0.053, 0.014)	-0.142 (0.061, 0.025)	-0.114 (0.049, 0.027)	-0.121 (0.055, 0.035)
POLITY2	0.945 (0.897, 0.295)	2.161 (0.604, 0.001)	1.639 (0.657, 0.016)	2.050 (1.247, 0.104)	4.960 (1.280, 0.000)	3.728 (1.478, 0.015)	1.328 (1.095, 0.232)	-5.110 (3.783, 0.186)	27.851 (6.122, 0.000)
FD	0.110 (0.104, 0.296)	-0.065 (0.131, 0.624)	0.029 (0.318, 0.928)	0.221 (0.111, 0.050)	-0.834 (0.352, 0.023)	0.030 (0.181, 0.869)	0.093 (0.227, 0.684)	-42.816 (22.913, 0.070)	54.120 (15.118, 0.001)
KAOPEN	-1.783 (7.408, 0.810)	-18.357 (4.778, 0.000)	-14.555 (6.805, 0.038)	-4.493 (7.382, 0.545)	19.472 (12.399, 0.125)	-28.031 (14.059, 0.053)	-9.417 (8.756, 0.288)	-13.769 (10.150, 0.184)	15.978 (10.237, 0.128)
GOVBAL	0.156 (0.192, 0.417)	0.273 (0.231, 0.243)	0.073 (0.201, 0.718)	0.298 (0.137, 0.033)	0.359 (0.529, 0.502)	-0.051 (0.235, 0.828)	0.081 (0.236, 0.733)	0.225 (0.240, 0.355)	0.148 (0.299, 0.623)
NFAIN	-0.005 (0.027, 0.866)	-0.009 (0.029, 0.747)	0.004 (0.028, 0.896)	-0.005 (0.023, 0.828)	-0.027 (0.017, 0.121)	-0.021 (0.017, 0.222)	-0.010 (0.022, 0.659)	-0.016 (0.016, 0.311)	-0.030 (0.022, 0.197)
DEPR	0.176 (0.185, 0.344)	-0.474 (0.251, 0.066)	-0.270 (0.298, 0.370)	0.165 (0.163, 0.317)	-0.073 (0.309, 0.816)	-0.343 (0.289, 0.243)	-0.360 (0.329, 0.281)	-0.286 (0.293, 0.337)	-0.386 (0.284, 0.183)
POLITY2*FD	-0.008 (0.011, 0.445)	-0.003 (0.012, 0.793)	-0.012 (0.029, 0.680)	-0.025 (0.014, 0.074)	0.073 (0.033, 0.034)	-0.012 (0.020, 0.549)	-0.012 (0.023, 0.618)	4.761 (2.213, 0.039)	-5.439 (1.543, 0.001)
POLITY2*KAOPEN	0.277 (0.754, 0.714)	1.491 (0.457, 0.002)	1.236 (0.704, 0.086)	0.429 (0.723, 0.554)	-2.347 (1.332, 0.086)	2.516 (1.355, 0.070)	0.852 (0.856, 0.325)	1.754 (0.932, 0.068)	-1.970 (1.041, 0.067)
KAOPEN*FD	-0.018 (0.013, 0.182)	0.029 (0.010, 0.005)	0.044 (0.018, 0.016)	-0.005 (0.017, 0.792)	0.037 (0.027, 0.181)	0.039 (0.014, 0.006)	0.014 (0.014, 0.309)	-1.681 (0.641, 0.013)	0.312 (0.589, 0.599)
TRADEGDP	0.158 (0.054, 0.005)	0.172 (0.058, 0.005)	0.077 (0.068, 0.264)	0.131 (0.048, 0.009)	0.245 (0.063, 0.000)	0.278 (0.073, 0.000)	0.212 (0.081, 0.012)	0.188 (0.067, 0.008)	0.227 (0.061, 0.001)
ECONGROWTH	-0.021 (0.417, 0.961)	0.211 (0.427, 0.623)	0.406 (0.445, 0.366)	-0.220 (0.354, 0.536)	0.500 (0.585, 0.399)	0.551 (0.370, 0.144)	0.180 (0.525, 0.733)	0.381 (0.413, 0.363)	0.423 (0.500, 0.404)
PBBM*GOVBAL					-0.005 (0.006, 0.427)				
R-squared	0.789	0.907	0.875	0.819	0.936	0.917	0.896	0.952	0.939
Adj. R-squared	0.667	0.829	0.780	0.719	0.871	0.837	0.798	0.898	0.871
Durbin-Watson stat	1.374	2.000	1.763	1.384	1.976	2.208	1.726	2.735	2.674
Countries	25	25	25	25	22	25	25	24	24
Observations	118	80	84	122	75	85	85	73	73
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1980 - 2007	1990 - 2007	1990 – 2007

Notes: see table 6.1.

supported by high quality institutions. These findings contradict the global savings glut hypothesis, which assumes that countries with the most developed financial markets and with high levels of capital openness tend to run current account deficits. Indeed, this model overestimates the CA balance of the United States for the period of 2005-07 (see Appendix B.25). The effect of KAOPEN is contrary to the predictions of the global savings glut hypothesis also in regressions using STOCK and SMTO as proxies of the financial development: in countries with the most financially developed markets and the highest level of institutional quality an increase in the capital openness decreases the CA balance. On the other hand, CREDIT has the opposite effect on the CA balance, an effect that is in line with the global savings glut hypothesis. Similar conclusions can be made about OVERHEAD and MARGIN. This suggests that for developed countries, the stock market development and the banking sector development have opposite effects on the CA balance. PBBM has a significant negative effect on the CA balance for countries with low levels of KAOPEN, POLITY2 and GOVBAL. The effect of KAOPEN conditional on PBBM and POLITY2 is as expected: negative for countries with high levels of POLITY2. However, there is a significant change in the effect of POLITY2, which is positive at all levels of PBBM and KAOPEN. From the policy perspective, such finding is irrelevant for the United States, whose score on the institutional quality is the highest, similarly to most of the developed countries. Therefore, it is not possible to increase the CA balance by improving the institutional quality.

Results are altered also for the models re-estimated for the developing countries (excluding Africa), see Table 6.10. There is a mixed evidence on the effect of the relative income per capita, which ranges from the positive effect of 0.169 to the negative effect of –0.408. The effect of the GOVBAL is significantly positive: a 1-percentage point increase in GOVBAL increase the CA balance by 0.405 to 0.581 percentage points. These results also suggest that in the medium-run the government balance is more important in influencing the

behavior of the CA balance in developing countries. The twin deficits hypothesis thus fits developing world better than the developed world. The effect of SIZE and PBBM conditional on POLITY2 and KAOPEN, as well as of MARGIN, is in line with predictions of the global savings glut hypothesis (see Appendix B.24.b). Thus, the results suggest that an increase in the size of the financial market would reduce the CA surplus in developing countries. This result is in contrast to the findings of Ito and Chinn (2007), where increase in the size of financial markets induces an increase in the CA balance in developing countries. The difference in results may stem from the difference in the sample size and time span (see above). The only result supportive of Ito and Chinn's (2007) conclusion about the positive effect of financial development on the CA balance is the effect of POLITY2 conditional on PBBM and KAOPEN, which suggests that an increase in the institutional quality would increase the CA balance in countries with small public bond markets and low level of capital openness, such as China.

When looking at models estimated for developed and developing countries (excluding Africa), PBBM, MARGIN and OVERHEAD models have the highest adjusted R-squared (0.871, 0.898 and 0.871 respectively). In case of the United States, PBBM and CREDIT models seem to best capture the CA development (see implied current accounts in Appendix B.25). PBBM model provides the best prediction of the Chinese, Japanese and German CA as well.

Table 6.10: CA Regressions, developing countries excluding Africa

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE twoways	FE twoways	FE twoways	FE country	FE twoways	FE twoways	RE country	FE country
C	-2.683 (9.940, 0.788)	4.624 (9.985, 0.645)	2.916 (8.916, 0.745)	-3.581 (10.502, 0.734)	13.430 (12.732, 0.302)	8.218 (15.031, 0.587)	4.058 (14.216, 0.776)	16.838 (3.320, 0.000)	15.227 (11.953, 0.208)
RELYOECD	0.142 (0.068, 0.038)	-0.123 (0.180, 0.498)	-0.155 (0.165, 0.350)	0.169 (0.082, 0.040)	-0.408 (0.168, 0.023)	-0.228 (0.125, 0.075)	-0.126 (0.103, 0.227)	-0.214 (0.066, 0.002)	-0.253 (0.154, 0.105)
POLITY2	-0.012 (0.262, 0.963)	-0.463 (0.248, 0.069)	-0.197 (0.199, 0.327)	-0.103 (0.261, 0.694)	0.604 (0.177, 0.002)	-0.103 (0.227, 0.652)	-0.068 (0.183, 0.709)	-0.434 (0.132, 0.001)	0.163 (0.366, 0.657)
FD	-0.047 (0.038, 0.224)	-0.059 (0.036, 0.109)	-0.056 (0.056, 0.316)	-0.061 (0.053, 0.257)	0.089 (0.089, 0.330)	-0.004 (0.018, 0.807)	0.006 (0.042, 0.891)	-0.830 (0.245, 0.001)	1.187 (0.681, 0.087)
KAOPEN	-0.018 (0.948, 0.985)	0.227 (1.272, 0.859)	0.026 (1.190, 0.983)	-0.261 (0.937, 0.781)	1.463 (0.997, 0.155)	-0.580 (1.288, 0.654)	0.638 (1.126, 0.573)	0.038 (0.759, 0.960)	-0.489 (1.676, 0.772)
GOVBAL	0.181 (0.138, 0.190)	0.513 (0.231, 0.031)	0.405 (0.229, 0.082)	0.235 (0.208, 0.260)	0.184 (0.406, 0.655)	0.130 (0.283, 0.648)	0.117 (0.273, 0.670)	0.581 (0.188, 0.003)	0.325 (0.335, 0.336)
NFAIN	0.003 (0.002, 0.138)	0.047 (0.029, 0.115)	0.043 (0.033, 0.185)	0.027 (0.035, 0.430)	-0.058 (0.043, 0.187)	0.068 (0.037, 0.069)	0.031 (0.030, 0.301)	0.058 (0.011, 0.000)	0.044 (0.047, 0.356)
DEPR	0.051 (0.137, 0.710)	0.020 (0.141, 0.888)	-5.57E-05 (0.128, 0.9997)	0.100 (0.143, 0.488)	-0.279 (0.198, 0.172)	-0.019 (0.190, 0.922)	-0.015 (0.183, 0.934)	-0.063 (0.032, 0.051)	-0.218 (0.181, 0.236)
POLITY2*FD	-0.003 (0.006, 0.665)	0.007 (0.003, 0.012)	0.007 (0.006, 0.299)	-0.001 (0.008, 0.937)	-0.023 (0.009, 0.015)	-0.001 (0.002, 0.532)	0.001 (0.006, 0.862)	0.077 (0.027, 0.005)	-0.051 (0.086, 0.554)
POLITY2*KAOPEN	-0.118 (0.073, 0.108)	-0.139 (0.144, 0.341)	-0.104 (0.124, 0.404)	-0.096 (0.078, 0.217)	-0.091 (0.116, 0.443)	0.068 (0.084, 0.421)	0.026 (0.084, 0.754)	0.036 (0.034, 0.288)	0.129 (0.148, 0.387)
KAOPEN*FD	-0.010 (0.013, 0.463)	0.002 (0.010, 0.834)	0.002 (0.018, 0.899)	-0.007 (0.017, 0.704)	-0.016 (0.039, 0.682)	0.005 (0.013, 0.689)	-0.027 (0.017, 0.107)	-0.059 (0.127, 0.644)	-0.143 (0.281, 0.613)
TRADEGDP	-0.017 (0.033, 0.609)	0.047 (0.039, 0.236)	0.051 (0.037, 0.166)	-0.026 (0.035, 0.463)	0.057 (0.035, 0.117)	-0.005 (0.049, 0.925)	0.008 (0.055, 0.884)	-0.025 (0.015, 0.101)	-0.030 (0.070, 0.667)
ECONGROWTH	-0.136 (0.193, 0.483)	-0.523 (0.299, 0.086)	-0.388 (0.309, 0.214)	-0.290 (0.265, 0.278)	-0.268 (0.217, 0.229)	-0.454 (0.326, 0.169)	-0.546 (0.275, 0.052)	-0.790 (0.200, 0.000)	-0.283 (0.391, 0.472)
PBBM*GOVBAL					-0.009 (0.013, 0.509)				
OIL								5.155 (1.141, 0.000)	
R-squared	0.854	0.894	0.870	0.834	0.907	0.842	0.843	0.553	0.846
Adjusted R-squared	0.768	0.767	0.726	0.729	0.784	0.671	0.681	0.499	0.668
Durbin-Watson stat	2.715	2.824	2.892	2.694	3.000	2.830	2.640	1.691	3.003
Sample	59	40	45	50	20	45	45	54	54
Observations	209	104	117	177	57	118	123	122	121
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1975 - 2007	1990 - 2007	1990 - 2007

6.4.2 Robustness Tests

To check if the baseline results are sensitive to outliers, I excluded all observations for which the dependent variable was lower than –10 or greater than 10 (see Appendix B.26). This reduced the sample size to the maximum of 69. Some of the coefficients that had been significant before did not retain their statistical significance. This holds especially for the government budget balance, which was significant only in case when PBBM was used as a proxy of the FD. This is probably due to smaller positive effect of GOVBAL on SAVINGS than in the base sample. On the other hand, the coefficients on the proxies of financial development, as well as its interactions with KAOPEN and POLITY2 remained virtually unchanged even after excluding the extreme values of CAGDP. Finally, the economic growth is insignificant.

In order to examine the robustness of the results to the choice of data frequency, I reestimated the panel regression using annual data and cross-section averages. Using the annual data, I reestimated the model and also included lagged logarithms of the real effective exchange rate (see Appendix B.27). In general, results are similar to those using 5-year averages. More important role is played by the real economic growth and the government budget balance, suggesting the importance of income shocks. Net foreign assets have a significant positive effect on the CA balance in the short-run. The effect of the financial development remains unchanged when proxied as M3GDP, SIZE and PBBM. Once again, PBBM model has the highest adjusted R-squared (0.76) and predicts that an increase in the capital openness decreases the CA balance in countries with largest public bond markets supported by high-quality institutions.

Cross-section regressions (see Appendix B.28) suggest that in the long-run, the behavior of the CA balance is determined by different factors. The fiscal balance has a

significant positive effect on the CA balance, however, this effect is mitigated by its interaction with PBBM. The effect of the financial development on the CA balance is positive in the long-run but this effect is mitigated by the interaction with POLITY2. The single exception is PBBM model, where the negative effect of PBBM is further magnified by its interaction with the fiscal balance. Nevertheless, the model suggests that countries with high-quality institutions and developed financial markets tend to run CA deficit (or smaller CA surplus). In contrast to the short- and medium-run models, the between model supports the stages of development hypothesis that poorer and faster growing economies tend to borrow against their future income and run the CA deficit. Finally, the model suggests that being an oil exporter increases the CA balance by 3.068 to 6.933 percentage points. On the other hand, the USA dummy is significant in 4 out of 8 models and suggests a decrease in the CA balance by 4.878 to 6.168 percentage points. These results suggest that there is some unexplained factor unique to the United States. Originally, the USA dummy was included in the model to control for the significantly larger size of the U.S. financial market relative to the rest of the world. However, this unexplained factor might capture broader phenomena, such as the specific position of the United States in the world economy or the perceived "safe haven" position of U.S. financial instruments.

Ito and Chinn (2007) document that their estimation results are sensitive to the inclusion or exclusion of African countries. Therefore, I re-estimated the model. Exclusion of African countries did not significantly alter the results. The major change is in the significance of the interaction term of SIZE and POLITY2, which makes the results more similar to those of developed countries. Second, I re-estimated the model without oil-exporting countries. This did not significantly alter the results.

Finally, I re-estimated the regression using XCONST (constraint on the executive) as a proxy of the institutional quality (see Appendix B.29). This variables is used as a proxy of the

risk of expropriation. Similarly to the period of 1865 to 1913, the effect of XCONST and its interactions is insignificant, except of PBBM regression, where the results are similar to the base regression using PBBM as the proxy of the financial development and POLITY2 as the proxy of the institutional quality.

6.5. Conclusions and policy recommendations

This chapter empirically tested the medium-term determinants of the current account in two eras of globalization. The main aim was to examine whether the redistribution of excess savings was driven by the same factors. The comparison has yielded several similarities. Thus, although the excess savings were produced by the developed part of the world during the first era of globalization and has been produced (mostly) by the developing part of the world in the past decade, this excess savings were redistributed along similar lines to relatively rich countries with developed financial markets, high quality institutions and high proportion of dependent persons. An important role was played by the government budget balance, albeit only in the short-run between 1865 and 1913. However, there were also several differences, especially in the effect of the economic growth.

In general, the effect of the relative income per capita was negative for both periods. A 1 percentage point increase in the relative income per capita decreased the CA balance by 0.115 to 0.128 percentage points in the pre-War period and by 0.084 to 0.121 percentage points in the post-BW period. These results support the Lassudrie-Duchêne *et al.* (1990) version of the stages of development hypothesis. On the other hand, the effect of the economic growth was different during two examined periods. Whereas in the pre-War period faster-growing economies tended to run the CA surplus, the opposite was true for the post-BW period.

Dependency rates played some role in both periods, suggesting the importance of the "intergenerational transfer" (Taylor and Williamson 1994). Thus, whereas in the pre-War period the excess savings were transferred from old savers in the Old World to young savers in the New World, in the past decade, the excess savings were transferred from old savers in China and other East Asian countries to young savers in various parts of the world.

In the pre-War period, the government budget balance is insignificant in the medium-run. However, its effect in the short-run is positive, as predicted by the twin deficits hypothesis. This suggests the importance of the short-run shocks to income (see Chapter 5). In the post-BW period, the government budget balance has a positive effect on the CA balance but this effect seems to be more important for developing countries. In developed countries, the fiscal balances were significant when bond markets were incorporated (see also Ito and Chinn 2007).

Finally, this analysis focused also on the effect of the financial development and its interaction with the institutional quality and capital openness. In the pre-War period, a 1 point increase in the institutional quality reduced the CA balance by 0.384 percentage points. The results suggested that the financial development played an important role as well: an increase in the financial deepening reduced the current account balance. The two variables had a joint effect on the investment rates. In countries with low-quality institutions, further financial deepening led to an increase in investment rates. The opposite was true for countries with high-quality institutions. Similarly, improvement in the quality of institutions led to an increase in the investment rates in less financially developed economies and to a decrease in more financially developed countries.

Here, it must be noted that the comparison is complicated by the data availability for the pre-War period. There, financial deepening was measured as monetary aggregate M2 as a percentage of GDP. For the post-Bretton-Woods period, the financial deepening was

measured as monetary aggregate M3 as a percentage of GDP. However, other proxies of the financial development, such as the size of the financial market, size of the public bond market or the efficiency of the banking sector yielded more interesting results. As both Great Britain in the pre-War period and the United States in the post-BW period reached only average levels of financial development if measured as monetary aggregate M2 or M3, it is reasonable to assume that the effect of the financial development on the CA balance in the pre-War period would be different if measured as the stock or the bond market development. Some insights are provided by the analysis of the post-BW period.

Size of the financial market, measured as the sum of the stock market capitalization and the private credit creation, has a significant negative effect on the CA balance. These results hold, whether looking at all countries or developed and developing countries separately. Thus, the results support the common view that the United States attracts capital from the rest of the world because its financial market is the deepest and the most liquid. Similar results were obtained when examining the efficiency of the banking sector.

The effect of the capital openness provides mixed evidence to the global savings glut hypothesis. An increase in the capital openness increases the current account in developed countries with the largest financial markets and the high-quality institutions. This is in contrast to the claims that the more financially developed countries with high level of capital openness absorb the capital from abroad and therefore tend to run the current account deficit. The effect of the capital openness is insignificant for developing countries. These results do not give much support to the claim that the capital account liberalization in developing countries might reduce their CA surpluses.

These results suggest that the global savings glut and twin deficits hypothesis are not mutually exclusive (see also Ito and Chinn 2007). But whereas the twin deficits hypothesis holds better for the developing countries in the post-Bretton-Woods period and only in the

short-run for the pre-War period, the global savings glut hypothesis holds for both periods under study and for both developed and developing countries in the second period under study. On the other hand, the effect of the capital openness on the current account is insignificant for developing countries. Based on these results, the dismantling of capital controls in China would not help to reduce the Chinese current account deficit. To unwind the global imbalances, the surplus countries with low levels of financial development should rather focus on policies aimed at the development of their financial markets. Similarly, the short-to-medium-run reduction in the current account deficit could be achieved through fiscal loosening. The negative relationship between the current account balance and the dependency ratio suggests that the reduction in the Chinese current account surplus might be triggered by the abandonment of the one child policy. Finally, the long-run regression suggests that there is some unexplained factor related to the United States: being the United States decreases the current account balance by 4.878 to 6.168 percentage points. This factor may be related to the size or efficiency of the U.S. financial market relative to other national financial markets or to the specific position of the United States in the world economy, as discussed in Chapter 4.

CONCLUSION

The past decade saw an unprecedented reversal in the current account financing. The current account deficit of the world's largest economy, the United States, was mirrored by the current account surpluses in emerging economies, especially East Asian and oil-exporting countries. This dissertation explored these global imbalances from the historical perspective, comparing them to the past episodes of global imbalances. In the first era of globalization, which spanned roughly from 1870 to the outbreak of the World War I, Britain ran an average current account surplus of 4.5 percent of GDP. As a financial counterpart of this surplus, Britain invested abroad 5 percent of GDP between 1873 and 1913. The current account surpluses of Great Britain and other continental powers were matched by current account deficits in the New World countries.

This dissertation surveyed the long history of the global imbalances to inform the debates that swirl around the question of their emergence and persistence. The current debates surrounding the global imbalances usually contrast two views: the twin deficits and the global savings glut hypothesis. The first draws a link between the current account balance and the budget balance, the latter between the current account balance on the one hand and the level of the financial development and capital openness on the other hand. Motivated by these debates, I adopted the New Comparative Economic History approach and compared the global imbalances in two eras of globalization. The main aim was to see whether the two hypotheses are able to explain the current account behavior also in the past or whether they are specific to the current period.

To this end, I utilized two methodologies. First, I used the structural vector autoregression to analyze the relative dominance of permanent or transitory shocks in determining the trade balance. Second, I used the panel data analysis to examine the main

determinants of the current account balances, with the main focus on the medium-run factors. The analysis tested the relative importance of the twin deficits and the global savings glut hypothesis, while controlling for other commonly used determinants of the current account balance. The results yielded many similarities and few differences in the behavior of the current account balance.

First, Chapter 5 examined the major sources of changes in the trade balance of seven European countries – Denmark, France, Great Britain, Germany, Italy, Norway, and Sweden – before the World War I. The results suggest that the transitory shocks to income are the main source of variation in the trade balance, whereas the permanent shocks to income determine the changes in the income. These findings are in line with the findings for the second era of globalization, as documented by Hoffman (2001), Kano (2003), Kim (1996, 1998), Miljkovic *et al.* (2000) and Veselkova and Horvath (2008).

As the results of Chapter 5 do not differentiate between various sources of transitory income shocks, Chapter 6 adopts a different approach and examines the determinants of the current account balance using a panel data analysis. The main focus is on the medium-run or structural factors that provide hints about the persistence of the global imbalances. Here, the results are not uniform across the two periods under study.

The results suggest that relatively rich countries with developed financial markets, high quality institutions and high proportion of dependent persons tend to run current account deficits (or lower surpluses) in both periods. On the other hand, the high initial level of net foreign assets increases the current account balance. This holds especially in the prewar period. The government budget balance has a positive effect on the current account balance in some instances. In the prewar period, the government budget balance is significant only in the short-run, suggesting the importance of the transitory shocks to income documented in

Chapter 5. The twin deficits hypothesis plays a more important role in the second era of the globalization. However, it holds better for developing countries.

Based on the above, it is possible to make two conclusions. First, the current account balances were determined by similar factors in both eras of the globalization. Second, the global savings glut and the twin deficits hypothesis are not mutually exclusive (see also Ito and Chinn 2007). In the medium-run, however, the twin deficits hypothesis seems to hold only for developing countries. On the other hand, the effect of the financial development is universal for both developed and developing countries, whether measured as the overall size or efficiency of the financial market. Furthermore, the results provide some evidence for the negative relationship between the current account balance and the level of financial development also for the pre-War period. These results support the view that countries with more developed financial markets tend to be capital importers. However, the effect of capital openness is in contrast to the predictions of the global savings glut hypothesis. In developing countries, the capital openness does not seem to play any role in determining the current account balance in the medium-run, whereas in developed countries its effect is positive for countries with large financial markets and high degree of capital openness. These results bring us to the second conclusion, the policy recommendations. Based on the above it is possible to argue against the oft-claimed argument that capital account liberalization in East Asia would reduce the large current account surpluses in the region. Rather, these countries should opt for policies that would enhance their financial development. In case of China, these policies might include the privatization through the stock market or further banking sector reforms. Expansionary fiscal policy would have the similar effect in both the short- and the medium-run. Changes in the one-child policy might reduce the Chinese current account surplus as well. Finally, the long-run regressions suggest that there is some unexplained factor related to the United States. This factor may either be related to the size of the U.S. financial market

relative to other countries or to the broad phenomenon related to the specific position of the United States or its currency in the international economy.

A: APPENDIX TO CHAPTER 1.

A.1: Major recipients of British capital exports, ranked, 1865-1914

Rank	Country or colony	Percentage of total capital called	Cumulative percentage	Amount (£ 000)
1	U.S.A.	20,5		836371
2	Canada	10,1		412283
3	Argentina	8,6		349243
4	Australia	8,3		339001
5	India	7,8		317174
			55,3	
6	South Africa[1]	6,4		232233
7	Brazil	4,2		172742
8	Russia[2]	3,4		139348
9	New Zealand	2,1		84495
10	Mexico	2		81532
			73,4	
11	Japan	1,9		78285
12	China	1,8		73747
13	Egypt	1,6		66193
14	Chile	1,5		61818
15	France	1,4		57920
			81,7	
16	Rhodesia	1,1		46232
17	Turkey[3]	1		42268
18	Italy	1		41427
19	Austria-Hungary	1		39954
20	Peru	0,9		37173
			86,8	
21	Spain	0,8		33912
22	Uruguay	0,8		30678
23	Cuba	0,6		26314
24	Germany	0,6		24493
25	Greece	0,5		19300
			90,1	
	Total capital called	100		4079254

1. Includes South Africa, Cape of Good Hope, Natal, Orange River Colony, Transvaal and Orange Free State. 2. Includes European and Asian Russia. 3. Includes European and Asian Turkey.
Source: Stone (1999, 411)

A.2: Industrial composition of British capital exports to the ten major recipients, 1865-1914 (percentage of capital called in each country)

Broad industrial group	United States	Canada	Argentina	Australia	India	South Africa[1]	Brazil	Russia	New Zealand	Mexico	All countries & colonies
Government	5,8	33,9	22,4	65,8	45,8	50,9	45,9	50,3	64,3	19,7	36,3
Railways	61,6	40,3	57,5	0	40,5	1,9	31,6	24,8	2	36,6	31,7
Public Utilities	9,5	5,6	8,9	3,5	3,1	2,4	10,2	3	5,1	12,1	6,4
Financial	6,3	6,2	5,4	11,6	1,5	6,4	2,1	5,9	17,8	9	7,3
Raw Materials	5,5	3,7	0,5	13,4	5,9	33,7	2,9	12	6,4	15,5	10
Mines	4,6	3,5	0,5	12,9	3,2	33,5	1,3	3,9	6,1	8,9	7,6
Industrial & Misc.	10,8	10,1	4,6	3,5	2	4,1	6,5	3,9	2,7	5,8	7,2
mfg.	5,7	3,1	1,5	0,6	0,7	0,6	1,3	2,3	0,6	2,2	2,9
Shipping	0,5	0,2	0,8	1,2	1,1	0,4	0,9	0,2	1,6	1,2	1,3
Total Private[3]	94,2	66,1	77,6	34,2	54,2	49,1	54,1	49,7	35,7	80,3	63,7
Grand Total[4]	100	100	100	100	100	100	100	100	100	100	100

(1) Includes South Africa, Cape of Good Hope, Natal, Orange River Colony, Transvaal, and Orange Free State.
(2) Includes European and Asian Russia.
(3) All broad industrial groups with exception of Government.
(4) Details may not add to totals due to rounding.
Source: Stone (1999, 412)

A. 3: Major recipients of British overseas investment – Total investment (capital called in £ 000)

	1865-69	1870-74	1875-79	1880-84	1885-89	1890-94	1895-99	1900-04	1905-09	1910-14	1865-1914
1	India 32107	U.S.A. 83774	Australia 23385	U.S.A. 78412	Argentina 75489	U.S.A. 77653	U.S.A. 60139	U.S.A. 84362	U.S.A. 211283	U.S.A. 211283	U.S.A. 836371
2	Russia 15828	France 32704	U.S.A. 22244	Australia 49664	U.S.A. 72058	Australia 43657	India 53524	Transvaal 51962	Argentina 79612	Canada 191577	Canada 412283
3	Egypt 12677	Russia 31177	India 18667	India 25023	Australia 66601	Canada 26435	Australia 48275	Argentina 25788	Canada 76928	Argentina 89093	Argentina 349243
4	U.S.A. 11156	Peru 22052	Canada 15462	Argentina 19275	India 40539	Argentina 25850	Transvaal 34385	India 23658	India 46550	Brazil 66814	Australia 339001
5	Australia 8220	Canada 18034	New Zealand 13559	Italy 18819	Canada 34204	India 23039	China 20232	Australia 21294	Japan 40557	Australia 46222	India 317174
	Share of the 5 leading recipients										
	59%	54%	59%	62%	64%	67%	56%	58%	58%	61%	55%
	Total investment										
	136267	344521	158190	307576	451674	295281	386561	359601	653155	986428	4079254

Source: Stone (1999, 393)

B: APPENDIX TO CHAPTER 6.

B.1: Data sources, 1865-1913

Current account, savings and investment (as a share of GDP)

Data were kindly provided by Alan M. Taylor. Source: Taylor 2002.

Real economic growth (ECONGROWTH)

Data come from Clemens and Williamson (2004) and were kindly provided by Jeffrey Williamson.

Relative income (RELYincome)

Real GDP per capita relative to the average of real GDP per capita of Great Britain, France and Germany. GDP *per capita*, 1990 USD dollars. Logged GDP *per capita* used in the analysis. Source: Williamson (2008).

Youth dependency ratio

Youth dependency measures the proportion of the children aged 14 or below as a fraction of the total population. Data come from Clemens and Williamson (2004) and were kindly provided by Jeffrey Williamson.

Terms of trade volatility

Terms of trade volatility was calculated as the standard deviation of the terms of trade for each respective 5-year average. Data come from Williamson (2008) and were kindly provided by Jeffrey Williamson.

SPREAD

Spread measures the spread of bond yields over the consols. The data were kindly provided by Niall Ferguson and Moritz Schularick. Source: Ferguson and Schularick (2006).

Trade openness (TRADEGDP)

Trade openness is measured as imports plus exports (as a percentage of GDP).
United Kingdom, Italy, Norway, Sweden, France, Germany and Denmark: data for imports, exports and nominal GDP come from Mitchell (2008).
Spain: imports and exports come from Mitchell (2008) and nominal GDP from Bordo *et al.* (2001).
Australia and Japan: data on imports and exports in USD comes from Banks (1976), nominal GDP in national currency and exchange rate comes from Bordo *et al.* (2001).
Canada: data on imports and exports in USD comes from Banks, nominal GDP from Mitchell (2008), exchange rate from Bordo *et al.* (2001).
Russia: data on imports and exports in USD comes from Banks (1976), nominal GDP in national currency and exchange rate from Obstfeld and Jones (1997).

Government expenditure to GDP

France, Sweden, Norway, Denmark, Italy, Japan, Australia, United States, Canada, United Kingdom, Germany: central government expenditure, central government revenue and GNP in current prices from Mitchell (2008).

Spain and Argentina: government expenditure and revenue from Mitchell (2008), nominal GDP from Bordo *et al.* (2001).
Russia: government expenditure and revenue from Mitchell (2008), nominal GDP from Obstfeld and Jones (1997).

Money supply (M2) to GDP

Australia:
M2 1861-1913 (currency in circulation, deposits in commercial banks, savings banks deposits) in Mitchell (2008), nominal GDP in Butlin (1961).

Canada:
M2 – 1868-1914 (currency in circulation, deposits in commercial banks, savings banks deposits) in Mitchell (2008); nominal GNP in Urquhart (1963).

Denmark:
M2 (banknote circulation, deposits in commercial banks and deposits in savings banks) and nominal GDP in Mitchell (2008).

Germany:
M2 (coins, banknotes, Reich's treasury notes, giro assets and bank gold) in Tilly (1973), NNP in Mitchell (2008).

Italy:
M2 in de Mattia (1967), banknotes in circulation in table 5; coins in circulation in table 14; deposits in table 23; GNP in Mitchell (2008).

Norway:
M2 in Klovland (2004), Table A1, p.2o8-9; GNP comes from Grytten (2004), Table 4: GDP for Norway 1830-1865.

Russia
M2 (banknote in circulation, deposits in commercial banks, savings banks deposits) in Mitchell (2008). Net national product in 1913 prices and the Moscow-Petersburg (Kokna) price index in Paul R. Gregory, Russian National Income, 1885-1913, Table 3.1.

Sweden
M2 (banknote in circulation, deposits in commercial banks, savings banks deposits) and GDP in Mitchell (2008).

USA:
M2 in United States from Bureau of the Census (1975) Historical statistics of the United States, colonial times to 1970, U.S. Department of Commerce, Bureau of the Census, Washington; Series X. 410-419. Money Stock-Currency, Deposits, Bank Vault Cash, and Gold: 1867 to 1970. (in billions of dollars. Annual averages) in Chapter X: Money Supply and Gold (Series X 410-443). GNP in Mitchell (2008).

United Kingdom:

M3GDP comes from Capie and Webber (2005), Table I.(3) M3, M3 multiplier, and Money Supply Proximate Determinants, 1870-1969 (pounds 000s). GDP in current prices comes from Mitchell.

Argentina, France, Japan, Spain from Bordo *et al.* (2001).

POLITY2
POLITY2 is the revised Combined Polity Score (POLITY). It is a unified polity scale that rangers from +10 (strongly democratic) to –10 (strongly autocratic). Source: POLITY IV Project. Political Regime Characteristics and Transitions, 1800-2004. For more information on the variables, see POLITY IV Project Dataset User's Manual.

XCONST
XCONST refers to Executive Constraints (Decision Rules). This variable refers to the Extent of institutionalized constrains on the decision-making powers of chief executives, whether individuals or collectives. A seven-category scale ranges from Unlimited Authority (1) to Executive Parity or Subordination (7). Source: POLITY IV Project. Political Regime Characteristics and Transitions, 1800-2004.

Net foreign assets (NFA)
The NFA is measured as net foreign assets in the initial year of the five-year average. For the pre-War period, the data come from Goldsmith (1985).

B.2: Descriptive statistics (yearly data), 1865-1913

	Mean	Maximum	Minimum	Std. Dev.	Observations
CAGDP	-1.587	8.625	-30.405	4.733	601
SAVINGS	12.362	30.087	-18.676	6.137	601
INVESTMENT	13.975	32.538	2.875	5.178	617
RELYINCOME	79.557	180.642	28.996	33.996	681
GGROWTH	1.342	17.515	-15.810	3.546	681
GOVBAL	-0.489	17.660	-14.695	2.599	536
YTHDEP	33.566	45.070	24.811	3.548	681
M2GDP	0.397	0.905	0.119	0.185	546
POLITY2	1.445	10	-10	5.767	681
TRADEGDP	28.219	61.881	2.841	14.919	551

B.3: Pairwise correlations

Table B.3.1: Pairwise correlations (yearly data)

	CAGDP	SAVINGS	INVESTMENT	RELY INCOME	GGROWTH	GOVBAL	YTHDEP	M2GDP	POLITY2	TRADE GDP
CAGDP	1.000	0.566	-0.241	-0.120	0.015	0.041	-0.444	0.244	-0.097	0.151
SAVINGS	0.566	1.000	0.663	0.023	-0.028	0.104	-0.219	0.261	0.143	0.115
INVESTMENT	-0.241	0.663	1.000	0.135	-0.045	0.076	0.144	0.086	0.247	-0.002
RELY INCOME	-0.120	0.023	0.135	1.000	-0.046	-0.076	0.243	-0.005	0.561	0.387
GGROWTH	0.015	-0.028	-0.045	-0.046	1.000	-0.028	0.069	0.031	0.028	-0.005
GOVBAL	0.041	0.104	0.076	-0.076	-0.028	1.000	0.012	-0.156	0.149	-0.090
YTHDEP	-0.444	-0.219	0.144	0.243	0.069	0.012	1.000	-0.364	0.113	-0.089
M2GDP	0.244	0.261	0.086	-0.005	0.031	-0.156	-0.364	1.000	-0.022	0.716
POLITY2	-0.097	0.143	0.247	0.561	0.028	0.149	0.113	-0.022	1.000	0.054
TRADE GDP	0.151	0.115	-0.002	0.387	-0.005	-0.090	-0.089	0.716	0.054	1.000

Table B.3.2: Pairwise correlations (5-year averages)

	CAGDP	SAVINGS	INVESTMENT	RELYINCOME	GGROWTH	GOVBAL	M2GDP	POLITY	TRADE GDP	YTHDEP
CAGDP	1.000	0.551	-0.253	-0.127	0.044	0.015	0.286	-0.096	0.204	-0.489
SAVINGS	0.551	1.000	0.669	0.018	0.024	0.131	0.314	0.171	0.157	-0.251
INVESTMENT	-0.253	0.669	1.000	0.132	0.004	0.121	0.114	0.267	0.006	0.144
RELYINCOME	-0.127	0.018	0.132	1.000	-0.064	-0.112	-0.017	0.570	0.375	0.236
GGROWTH	0.044	0.024	0.004	-0.064	1.000	0.049	0.038	0.060	-0.003	0.156
GOVBAL	0.015	0.131	0.121	-0.112	0.049	1.000	-0.169	0.168	-0.122	0.018
M2GDP	0.286	0.314	0.114	-0.017	0.038	-0.169	1.000	-0.010	0.729	-0.374
POLITY2	-0.096	0.171	0.267	0.570	0.060	0.168	-0.010	1.000	0.055	0.102
TRADE GDP	0.204	0.157	0.006	0.375	-0.003	-0.122	0.729	0.055	1.000	-0.098
YTHDEP	-0.489	-0.251	0.144	0.236	0.156	0.018	-0.374	0.102	-0.098	1.000

B.4: Variance Inflation Factor

Table B.4.1: Variance Inflation Factor (5-year averages, 1865-1913)

Variable	Rely income	ggrowth	govbal	m2gdp	polity2	tradegdp	ythdep	polity2* m2gdp
VIF	2,343	1,043	1,214	2,434	10,899	2,403	1,427	8,418

B.5: Lagrange Multiplier Test

5.1: Lagrange Multiplier Test – individual effects (Breusch-Pagan)

Equation: cagdp = ggrowth + ythdep + polity2 + m2gdp + polity2 * m2gdp + govbal + tradegdp + relyincome + totsd
chisq = 812.1731, df = 1, p-value < 2.2e-16
alternative hypothesis: significant effects

5.2: Lagrange Multiplier Test - time effects (Breusch-Pagan)

Equation: cagdp = ggrowth + ythdep + polity2 + m2gdp + polity2 * m2gdp + govbal + tradegdp + relyincome + totsd
chisq = 0.1863, df = 1, p-value = 0.666
alternative hypothesis: significant effects

5.3: Lagrange Multiplier Test - two-ways effects (Breusch-Pagan)

Equation: cagdp = ggrowth + ythdep + polity2 + m2gdp + polity2 * m2gdp + govbal + tradegdp + relyincome + totsd
chisq = 812.3594, df = 2, p-value < 2.2e-16
alternative hypothesis: significant effects

B.6: Hausman Test (Correlated Random Effects)

Equation: cagdp = ggrowth + ythdep + polity2 + m2gdp + polity2 * m2gdp + govbal + tradegdp + relyincome + totsd

Table B.6.1: Hausman Test - cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	21.480	9	0.011

B.7: F-test (Redundant Fixed Effects Tests)

Equation: cagdp = ggrowth + ythdep + polity2 + m2gdp + polity2 * m2gdp + govbal + tradegdp + relyincome + totsd

Table B.7.1: F-Test - cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	13.268	(13,69)	0.000
Cross-section Chi-square	115.250	13	0.000

Table B.7.2: F-Test - cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	14.172	(13,60)	0.000
Cross-section Chi-square	129.150	13	0.000
Period F	1.490	(9,60)	0.173
Period Chi-square	18.553	9	0.029
Cross-Section/Period F	8.950	(22,60)	0.000
Cross-Section/Period Chi-square	133.803	22	0.000

Table B.7.3: F-Test - period fixed effects

Effects Test	Statistic	d.f.	Prob.
Period F	0.421	(9,73)	0.920
Period Chi-square	4.654	9	0.863

B.8: Autocorrelation tests

B.8.1: Wooldridge's test for unobserved individual effects

z = 2.1211, p-value = 0.03391
alternative hypothesis: unobserved effect

B.8.2: Baltagi and Li AR-RE joint test

chisq = 69.248, df = 2, p-value < 2.2e-16
alternative hypothesis: AR(1) errors or random effects

B.8.3: Bera, Sosa-Escudero and Yoon locally robust test

chisq = 23.8411, df = 1, p-value = 1.046e-06
alternative hypothesis: AR(1) errors sub random effects

B.8.4: Bera, Sosa-Escudero and Yoon locally robust test

z = 3.8434, p-value = 6.066e-05
alternative hypothesis: random effects sub AR(1) errors

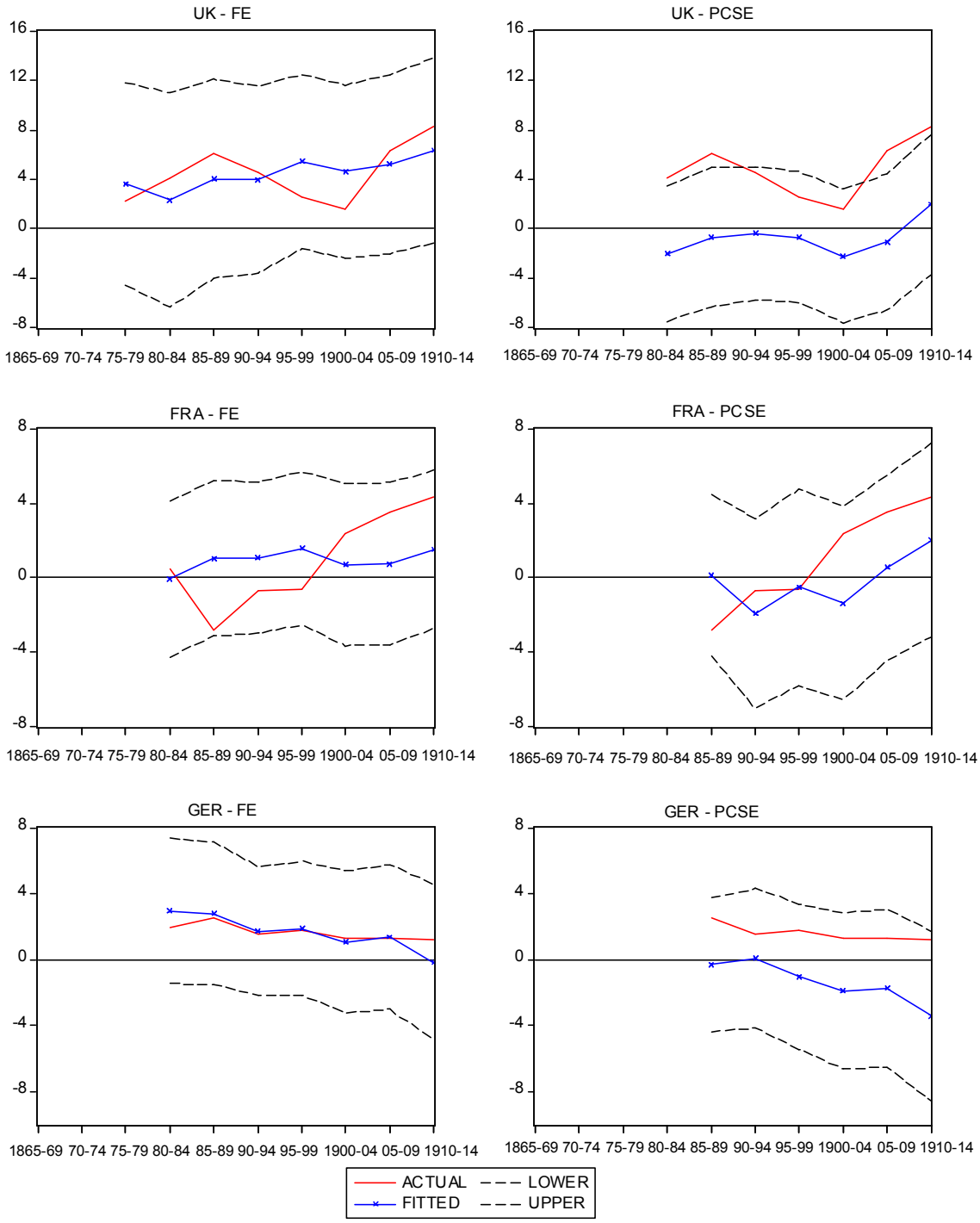
B.8.5: Breusch-Godfrey/Wooldridge test for serial correlation in panel models

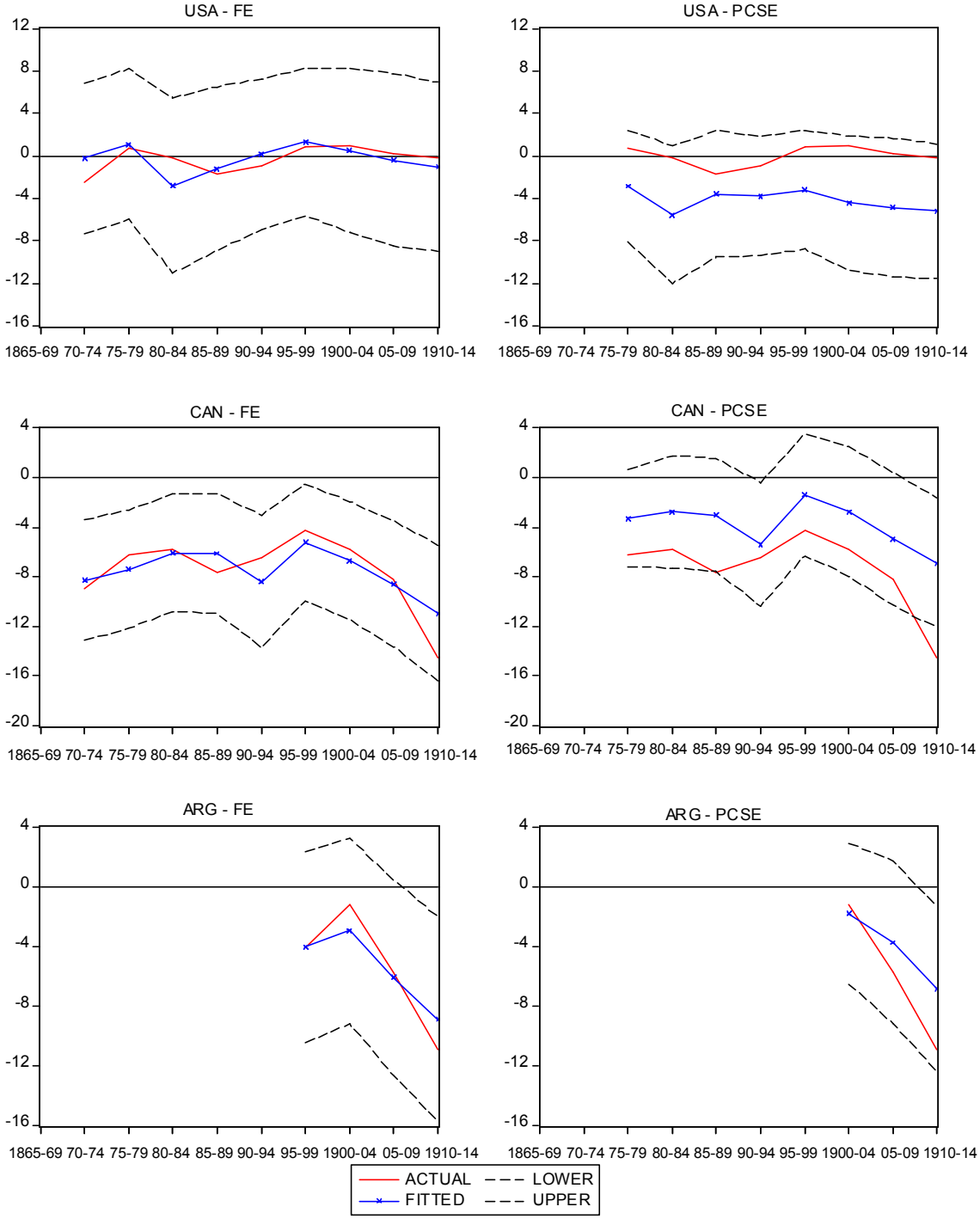
chisq = 3.7076, df = 2, p-value = 0.1566
alternative hypothesis: serial correlation in idiosyncratic errors

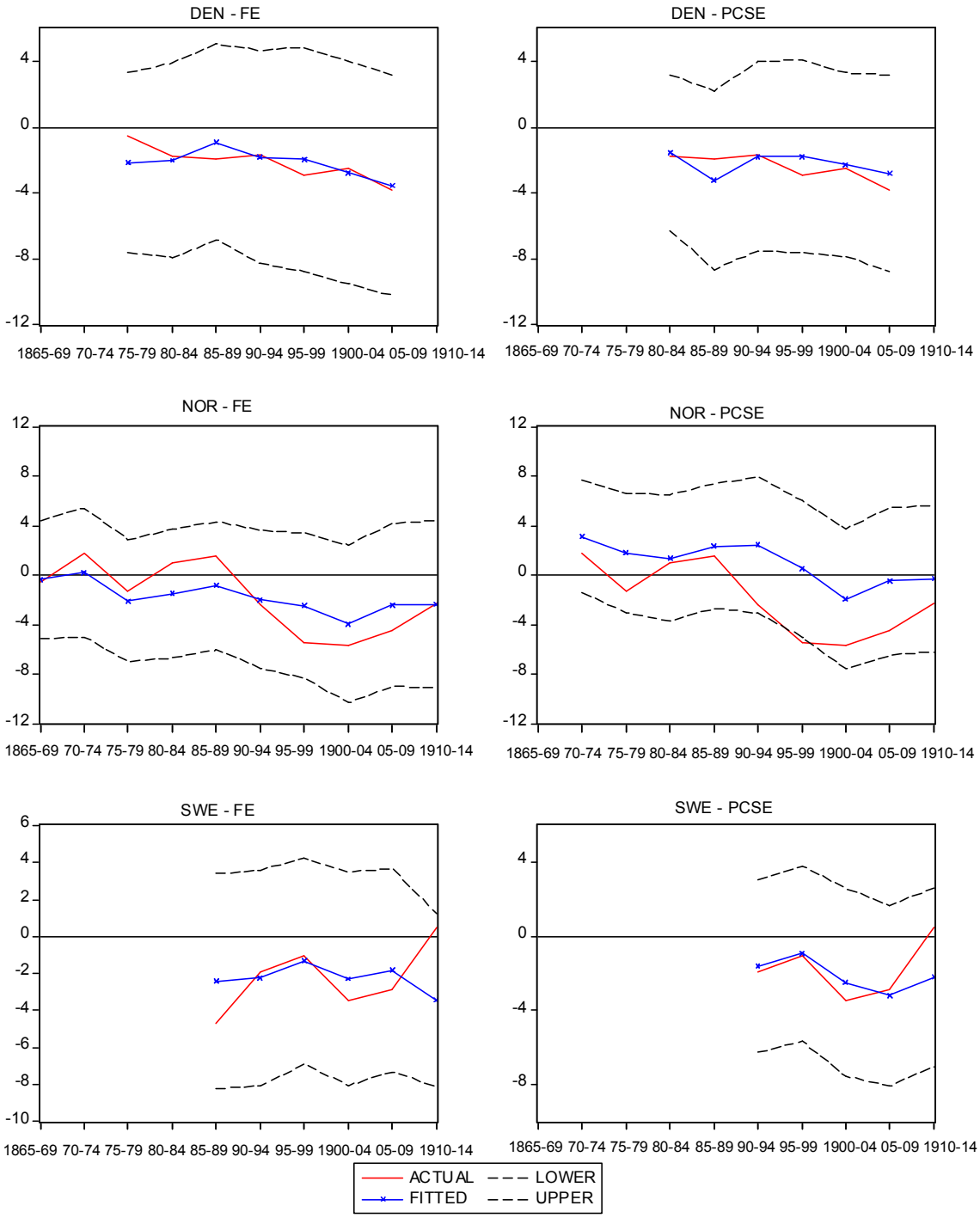
B.8.6: Wooldridge's first-difference test for serial correlation in panel

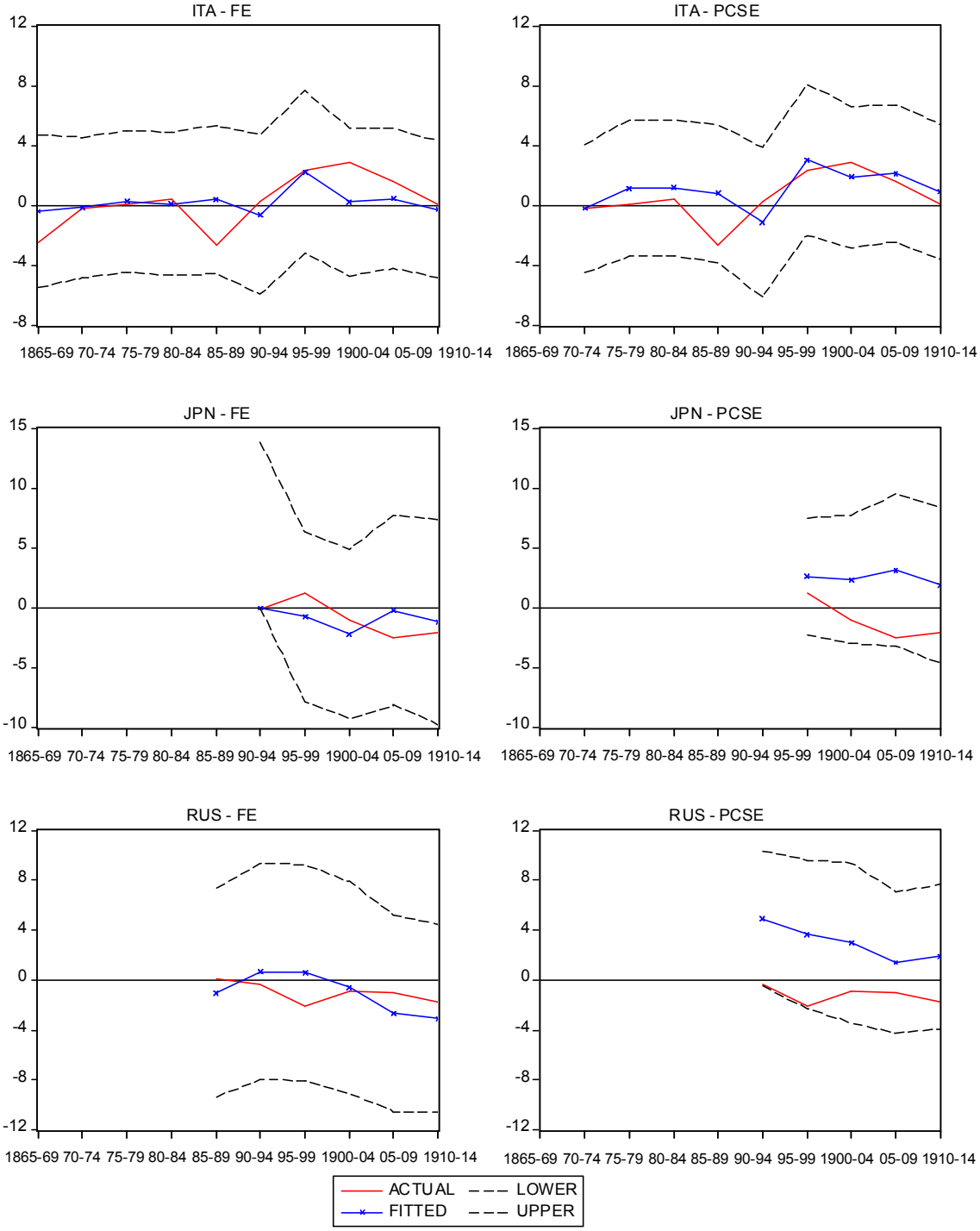
chisq = 24.304, p-value = 8.227e-07
alternative hypothesis: serial correlation in original errors

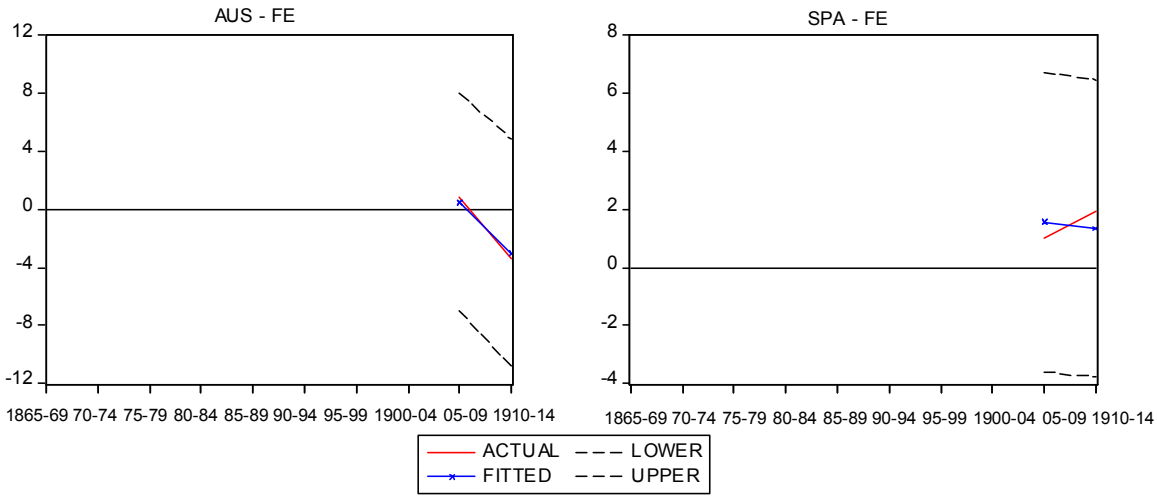
B.9: Implied current accounts, 1865-1914











B.10: Regressions at yearly frequency, 1865-1913

Table B.10.1: Current account regressions, yearly, 1865-1913

Model	FE country	PCSE
C	17.494 (7.514, 0.020)	10.588 (7.284, 0.147)
RELYINCOME	-0.073 (0.054, 0.171)	-0.033 (0.035, 0.341)
GGROWTH	0.050 (0.037, 0.180)	-0.027 (0.024, 0.260)
YTHDEP	-0.362 (0.127, 0.005)	-0.213 (0.172, 0.217)
GOVBAL	0.182 (0.057, 0.002)	0.138 (0.087, 0.111)
TRADEGDP	-0.035 (0.084, 0.680)	-0.046 (0.044, 0.289)
M2GDP	0.020 (0.026, 0.450)	-0.002 (0.023, 0.941)
POLITY2	-0.301 (0.183, 0.101)	-0.328 (0.175, 0.063)
M2GDP*POLITY2	0.002 (0.003, 0.552)	0.004 (0.003, 0.260)
AR(1)		0.697 (0.054, 0.000)
R-squared	0.631	0.805
Adjusted R-squared	0.614	0.795
Durbin-Watson stat	0.683	1.986
Sample	14	14
Observations	472	458

Table B.10.2: Savings regressions, yearly, 1865-1913

Model	FE twoways	PCSE FE country
C	-4.785 (10.882, 0.660)	11.332 (10.333, 0.273)
RELYINCOME	0.105 (0.047, 0.025)	0.111 (0.042, 0.008)
GGROWTH	0.012 (0.048, 0.806)	-0.052 (0.030, 0.080)
YTHDEP	0.181 (0.368, 0.624)	-0.193 (0.258, 0.455)
GOVBAL	0.149 (0.084, 0.079)	0.162 (0.087, 0.064)
TRADEGDP	0.265 (0.128, 0.038)	0.086 (0.055, 0.121)
M2GDP	-0.078 (0.040, 0.053)	-0.054 (0.032, 0.094)
POLITY2	0.230 (0.494, 0.642)	-0.054 (0.273, 0.844)
M2GDP*POLITY2	-0.008 (0.007, 0.228)	0.003 (0.005, 0.531)
AR(1)		0.679 (0.047, 0.000)
R-squared	0.746	0.806
Adjusted R-squared	0.703	0.796
Durbin-Watson stat	0.878	2.408
Sample	14	14
Observations	471	

Table B.10.3: Investment regressions, yearly, 1865-1913

Model	FE twoways	PCSE FE
C	-25.250	1.131
	(11.333, 0.026)	(10.110, 0.911)
RELYINCOME	0.207	0.143
	(0.067, 0.002)	(0.039, 0.000)
GGROWTH	-0.010	-0.025
	(0.052, 0.848)	(0.025, 0.319)
YTHDEP	0.483	0.023
	(0.295, 0.103)	(0.259, 0.928)
GOVBAL	0.019	0.021
	(0.104, 0.852)	(0.065, 0.749)
TRADEGDP	0.301	0.115
	(0.094, 0.001)	(0.050, 0.021)
M2GDP	-0.040	-0.051
	(0.031, 0.206)	(0.028, 0.068)
POLITY2	0.696	0.251
	(0.519, 0.181)	(0.279, 0.369)
M2GDP*POLITY2	-0.012	0.000
	(0.008, 0.108)	(0.005, 0.990)
AR(1)		0.696
		(0.045, 0.000)
R-squared	0.784	0.834
Adjusted R-squared	0.748	0.825
Durbin-Watson stat	0.890	2.427
Sample	14	14
Observations		463

B.11: Between model, 1978-1913

IV	CAGDP	SAVINGS	INVESTMENT
C	-1.808	-18.362	-17.712
	(11.403, 0.880)	(26.013, 0.512)	(19.106, 0.396)
RELYINCOME	0.069	-0.003	-0.072
	(0.036, 0.115)	(0.083, 0.974)	(0.060, 0.282)
GGROWTH	-4.592	0.696	5.374
	(1.384, 0.021)	(3.158, 0.834)	(2.300, 0.067)
YTHDEP	0.033	0.687	0.674
	(0.321, 0.921)	(0.732, 0.391)	(0.534, 0.263)
GOVBAL	0.612	1.003	0.420
	(0.409, 0.195)	(0.933, 0.332)	(0.680, 0.564)
TRADEGDP	-0.128	-0.301	-0.174
	(0.085, 0.191)	(0.193, 0.180)	(0.139, 0.267)
M2GDP	0.111	0.374	0.276
	(0.080, 0.224)	(0.183, 0.097)	(0.137, 0.100)
POLITY2	-0.776	-0.655	0.132
	(0.417, 0.122)	(0.951, 0.522)	(0.690, 0.855)
M2GDP*POLITY2	0.016	0.031	0.015
	(0.012, 0.236)	(0.027, 0.292)	(0.019, 0.468)
R-squared	0.797	0.531	0.697
Sample	14	14	14
Observations	472	472	477

B.12: Robustness tests

Table B.12.1: Current account regressions, 1865-1913

IQ proxy	XCONST	XCONST	SPREAD	SPREAD
Model	FE country	PCSE FE country	FE twoways	PCSE
C	21.218 (8.370, 0.014)	23.267 (14.975, 0.127)	65.368 (28.872, 0.033)	-6.556 (25.342, 0.798)
RELYINCOME	-0.107 (0.072, 0.143)	-0.135 (0.059, 0.025)	-0.282 (0.167, 0.103)	-0.078 (0.061, 0.212)
GGROWTH	0.567 (0.181, 0.003)	0.472 (0.178, 0.011)	0.900 (0.294, 0.005)	0.631 (0.158, 0.000)
YTHDEP	-0.431 (0.126, 0.001)	-0.303 (0.373, 0.421)	-0.941 (0.450, 0.047)	-0.144 (0.527, 0.787)
GOVBAL	0.095 (0.219, 0.666)	0.099 (0.174, 0.572)	0.785 (0.273, 0.008)	0.545 (0.387, 0.170)
TRADEGDP	-0.079 (0.153, 0.608)	0.082 (0.122, 0.507)	-0.404 (0.169, 0.025)	-0.239 (0.173, 0.177)
M2GDP	0.083 (0.113, 0.468)	-0.167 (0.142, 0.245)	-0.138 (0.097, 0.165)	-0.083 (0.122, 0.500)
IQ	0.546 (1.264, 0.667)	-0.179 (1.525, 0.907)	0.026 (0.043, 0.543)	0.068 (0.025, 0.010)
M2GDP*IQ	-0.019 (0.026, 0.479)	0.010 (0.027, 0.715)	0.000 (0.001, 0.693)	-0.002 (0.001, 0.025)
TOTSD	-0.028 (0.042, 0.511)	-0.011 (0.052, 0.830)	-0.078 (0.070, 0.276)	-0.009 (0.046, 0.851)
AR(1)		0.471 (0.182, 0.013)		1.032 (0.039, 0.000)
R-squared	0.804	0.847	0.906	0.833
Adjusted R-squared	0.737	0.774	0.815	0.775
Durbin-Watson stat	1.381	1.762	1.890	1.864
Sample	14	14	10	10
Observations	87	72	50	40
Time span	1865-1913	1870-1913	1880-1913	1885-1913

Notes: SPREAD sample: ARG, AUS, CAN, DEN, ITA, NOR, RUS, SPA, SWE, USA,

Table B.12.2: Effect of SPREAD on CA balance conditional on M2GDP (PCSE model)

Value of M2GDP	Low 10 percentile	Mean	High 10 Percentile
(12.962, 87.254)	19.205	38.139	72.670
Effect of SPREAD	0.036 (0.015, 0.026)	0.005 (0.015, 0.761)	-0.053 (0.033, 0.120)

Table B. 12.3: Effect of M2GDP on CA balance conditional on SPREAD

	Low 10 percentile	Mean	High 10 Percentile
Value of SPREAD (9.838, 622.209)	45.326	140.365	283.701
Effect of M2GDP	-0.159 (0.100, 0.122)	-0.318 (0.081, 0.001)	-0.558 (0.136, 0.000)

B.13: Base sample 1970-2007

United Arab Emirates (ARE), Argentina (ARG), Armenia (ARM), Australia (AUS), Austria (AUT), Burundi (BDI), Belgium (BEL), Burkina Faso (BFA), Bulgaria (BGR), Bahrain (BHR), Belarus (BLR), Bolivia (BOL), Brazil (BRA), Bhutan (BTN), Botswana (BWA), Canada (CAN), Colombia (COL), Congo, Dem, Rep,(ZAR), Costa Rica (CRI), Cyprus (CYP), Czech Republic (CZE), Germany (DEU), Denmark (DNK), Dominican Republic (DOM), Algeria (DZA), Ecuador (ECU), Egypt, Arab Rep, (EGY), Spain (ESP), Estonia (EST), Ethiopia (ETH), Finland (FIN), Fiji (FJI), France (FRA), United Kingdom (GBR), Georgia (GEO), Greece (GRC), Guatemala (GTM), Guyana (GUY), Honduras (HND), Croatia (HRV), Haiti (HTI), Hungary (HUN), Switzerland (CHE), Chile (CHL), China (CHN), Indonesia (IDN), India (IND), Ireland (IRL), Iran, Islamic Rep, (IRN), Israel (ISR), Italy (ITA), Jamaica (JAM), Jordan (JOR), Japan (JPN), Kazakhstan (KAZ), Kenya (KEN), Kyrgyz Republic (KGZ), Korea, Rep, (KOR), Kuwait (KWT), Lebanon (LBN), Sri Lanka (LKA), Lesotho (LSO), Lithuania (LTU), Latvia (LVA), Moldova (MDA), Madagascar (MDG), Mexico (MEX), Mali (MLI), Myanmar (MMR), Mauritania (MRT), Mauritius (MUS), Malawi (MWI), Malaysia (MYS), Namibia (NAM), Nicaragua (NIC), Netherlands (NLD), Nepal (NPL), New Zealand (NZL), Oman (OMN), Pakistan (PAK), Panama (PAN), Peru (PER), Papua New Guinea (PNG), Poland (POL), Portugal (PRT), Paraguay (PRY), Russian Federation (RUS), Rwanda (RWA), Singapore (SGP), Sierra Leone (SLE), El Salvador (SLV), Slovak Republic (SVK), Slovenia (SVN), Sweden (SWE), Swaziland (SWZ), Chad (TCD), Togo (TGO), Thailand (THA), Tunisia (TUN), Tanzania (TZA), Ukraine (UKR), Uruguay (URY), United States (USA), Venezuela, RB (VEN), Yemen, Rep, (YEM), South Africa (ZAF), Zambia (ZMB).

B.14: Data sources

Mnemonic	Source	Variable description
CAGDP	WDI	Current account as a percentage of GDP[112]
SAVINGS	WDI	Savings (%GDP)
INVESTMENT	WDI	Investment (%GDP)
RELYOECD	WDI	Real per capita GDP relative to OECD average
ECONGROWTH	WDI	Real GDP growth
POLITY2	POLITY IV Project[113]	Polity Score (-10, 10). Higher values indicate higher institutional quality.
XCONST	POLITY IV Project	Executive Constraints
KAOPEN	Chinn-Ito (2007c)	index to measure a country's degree of capital account openness. Higher values of this index indicate greater financial openness
GOVBAL	WDI	Cash surplus
NFAin	LMF	net foreign assets relative to GDP (in the initial year of each 5-year average)
DEPR	WDI	Age dependency ratio (% of working-age population)
TRADEGDP	WDI	Trade (%GDP) as a measure of trade openness
TOTSD	WDI	Standard deviation of terms of trade
REER	WDI	Real effective exchange rate
M3GDP	WDI	Liquid liabilities (%GDP)
SIZE	BDL	STOCK+CREDIT
STOCK	BDL	STOCK MARKET CAPITALIZATION / GDP
CREDIT	BDL	PRIVATE CREDIT BY DEPOSIT MONEY BANKS AND OTHER FINANCIAL INSTITUTIONS / GDP
PBBM	BDL	public bond market capitalization as a ratio to GDP
SMTO	BDL	STOCK MARKET TURNOVER RATIO
SMTV	BDL	stock market total value as a ratio to GDP, as a measure of financial market activeness
MARGIN	BDL	accounting value of bank's net interest revenue as a share of its interest-bearing (total earning) assets
OVERHEAD	BDL	accounting value of a bank's overhead costs as a share of its total assets
OIL		Dummy for oil/gas exporting countries

Notes: Oil/gas exporting countries are Algeria, Angola, Azerbaijan, Bahrain, Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Syria, Turkmenistan, United Arab Emirates, Venezuela, and Yemen. Timor Leste.
Sources: World Development Indicators (WDI), Lane and Milesi-Ferretti (2007) - updated and extended version of the External Wealth of Nations Mark II database (LMF), Beck, Demirgüç-Kunt and Levine (2000) - BDL, POLITY IV Project.

[112] Current account balance (% of GDP) from WDI. Data for following countries come from WEO April 2009: Afghanistan 2002-2008, Algeria, 1992-2008, Bhutan, 1980-2008, Brunei, 1985-2008, Burkina Faso 1995-2008, Cambodia -1986-1994, Congo, Dem. Rep. 1980-2008, Equatorial Guinea, 1980-2008, Eritrea 2003-2008, Hong Kong -1980-1997, Iran 2001-2008, Iraq 2004-2008, Lebanon 1980-2001, Montenegro 2003-2008, Qatar 1980-2008, Timor-Lesotho 1999-2008, Turkmenistan 1998-2008, United Arab Emirates 1980-2008, Uzbekistan 1996-2008, Zimbabwe 1994-2008.
[113] For more information on the variables, see POLITY IV Project Dataset User's Manual.

B.15: Descriptive statistics

Table B.15.1: Descriptive statistics, explanatory variables

	CAGDP	SAVINGS	INVEST MENT	ECON GROWTH	RELYOECD	POLITY2	KAOPEN	GOVBAL	NFA	DEPR	TRADE GDP
Mean	-2,571	19,368	22,615	3,915	33,129	1,838	0,214	-2,550	-33,681	70,809	67,555
Std. Dev.	9,594	10,028	8,325	5,614	44,177	7,477	1,562	6,723	84,384	19,417	41,351
Maximum	99,406	85,166	80,394	81,888	354,670	10,000	2,541	60,018	550,510	116,471	456,646
Minimum	-240,496	-42,165	-23,763	-50,248	0,262	-10,000	-1,808	-185,983	-2566,358	25,246	0,309
Observations	3211	2888	4260	4402	4459	4655	3438	3114	3572	5240	4285

Table B.15.2: Descriptive statistics, proxies of financial development

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Mean	54,267	101,542	40,725	41,115	34,285	40,827	23,815	5,150	4,394
Std. Dev.	296,665	84,002	47,843	36,864	27,181	55,408	46,220	3,582	2,942
Maximum	11511,300	470,633	303,442	202,417	324,673	622,425	427,854	32,960	26,980
Minimum	0,151	3,999	0,013	0,397	0,000	0,000	0,000	0,672	0,177
Observations	4245	1362	1479	3479	774	1527	1543	1547	1554

B.16: Pairwise correlations

	CAGDP	SAVINGS	INVEST MENT	ECON GROWTH	RELYOECD	POLITY2	KAOPEN	GOVBAL	NFA	DEPR	TRADE GDP
CAGDP	1	0,507	-0,140	-0,019	0,294	0,014	0,154	0,402	0,387	-0,212	0,0461
SAVINGS	0,507	1	0,622	0,155	0,217	0,163	0,138	0,294	0,472	-0,389	0,1568
INVEST MENT	-0,140	0,622	1	0,184	0,079	0,062	0,027	0,034	0,066	-0,241	0,2671
ECON GROWTH	-0,019	0,155	0,184	1	-0,037	-0,092	0,007	0,153	0,098	0,059	0,0169
RELYOECD	0,294	0,217	0,079	-0,037	1	0,393	0,542	0,144	0,342	-0,513	0,0112
POLITY2	0,014	0,163	0,062	-0,092	0,393	1	0,288	0,008	-0,026	-0,470	0,0542
KAOPEN	0,154	0,138	0,027	0,007	0,542	0,288	1	0,164	0,228	-0,451	0,2242
GOVBAL	0,402	0,294	0,034	0,153	0,144	0,008	0,164	1	0,538	-0,143	0,0386
NFA	0,387	0,472	0,066	0,098	0,342	-0,026	0,228	0,538	1	-0,265	0,0175
DEPR	-0,212	-0,389	-0,241	0,059	-0,513	-0,470	-0,451	-0,143	-0,265	1	-0,1876
TRADEGDP	0,046	0,157	0,267	0,017	0,011	0,054	0,224	0,039	0,017	-0,188	1

B.17: VIFs for the 5-year averages

Explanatory variable	RELY OECD	ECON GRO WTH	POLI TY2	M3 GDP	KAO PEN	GOV BAL	NFAIN	DEPR	TRADE GDP	TOTSD	POLITY2* M3GDP	POLITY2* KAOPEN	KAOPEN* M3GDP
VIF	2,328	1,26	4,933	2,239	5,731	1,503	1,312	2,212	1,284	1,235	9,74	3,436	12,036

B.18: Current account regression controlling for the terms of trade volatility

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE country	FE twoways	FE twoways	FE twoways	FE country	FE twoways	FE country	FE country	FE country
C	9.709 (7.703, 0.209)	14.121 (7.134, 0.051)	12.520 (7.172, 0.084)	13.413 (7.009, 0.057)	6.452 (9.598, 0.504)	10.654 (10.391,0.308)	12.344 (7.867, 0.119)	22.431 (9.158, 0.016)	18.726 (8.854, 0.037)
RELYOECD	-0.041 (0.031, 0.186)	-0.025 (0.044, 0.568)	-0.060 (0.033, 0.073)	-0.032 (0.032, 0.323)	-0.106 (0.050, 0.039)	-0.104 (0.048, 0.032)	-0.085 (0.038, 0.028)	-0.095 (0.053, 0.077)	-0.101 (0.049, 0.044)
POLITY2	-0.095 (0.236, 0.689)	-0.135 (0.189, 0.479)	-0.011 (0.138, 0.935)	-0.057 (0.327, 0.862)	0.390 (0.191, 0.045)	0.023 (0.235, 0.924)	-0.015 (0.151, 0.919)	0.017 (0.578, 0.977)	0.290 (0.455, 0.525)
M3GDP	0.048 (0.030, 0.111)	-0.073 (0.031, 0.020)	-0.068 (0.038, 0.076)	-0.021 (0.079, 0.792)	0.136 (0.063, 0.035)	-0.003 (0.012, 0.769)	-0.032 (0.034, 0.349)	-0.801 (0.884, 0.367)	0.185 (0.900, 0.838)
KAOPEN	0.813 (0.938, 0.387)	-0.136 (0.746, 0.856)	-0.349 (0.649, 0.592)	-0.576 (0.753, 0.445)	0.318 (0.777, 0.683)	-0.315 (0.643, 0.626)	-0.461 (0.586, 0.433)	-1.565 (0.964, 0.108)	-1.436 (0.950, 0.134)
GOVBAL	0.244 (0.142, 0.086)	0.268 (0.190, 0.162)	0.201 (0.199, 0.313)	0.233 (0.134, 0.084)	0.068 (0.376, 0.856)	0.093 (0.229, 0.684)	0.036 (0.186, 0.846)	0.377 (0.248, 0.131)	0.360 (0.227, 0.115)
NFAIN	0.002 (0.003, 0.495)	0.066 (0.023, 0.005)	0.066 (0.024, 0.006)	0.093 (0.031, 0.004)	0.022 (0.028, 0.430)	0.071 (0.030, 0.018)	0.058 (0.028, 0.045)	0.063 (0.035, 0.073)	0.059 (0.035, 0.101)
DEPR	-0.160 (0.086, 0.065)	-0.202 (0.090, 0.027)	-0.202 (0.102, 0.049)	-0.121 (0.077, 0.116)	-0.110 (0.134, 0.415)	-0.115 (0.108, 0.291)	-0.164 (0.079, 0.041)	-0.226 (0.129, 0.083)	-0.238 (0.117, 0.046)
POLITY2*M3GDP	-0.001 (0.003, 0.835)	0.003 (0.003, 0.228)	0.003 (0.004, 0.524)	-0.002 (0.008, 0.837)	-0.015 (0.008, 0.060)	0.000 (0.002, 0.958)	0.003 (0.003, 0.441)	0.056 (0.110, 0.613)	-0.004 (0.106, 0.969)
POLITY2*KAOPEN	0.061 (0.066, 0.359)	-0.020 (0.078, 0.797)	0.029 (0.069, 0.671)	0.066 (0.067, 0.333)	-0.022 (0.110, 0.843)	0.095 (0.054, 0.081)	0.092 (0.060, 0.126)	0.006 (0.096, 0.947)	0.046 (0.095, 0.625)
KAOPEN*M3GDP	-0.022 (0.012, 0.056)	0.005 (0.007, 0.466)	0.007 (0.011, 0.534)	-0.001 (0.012, 0.959)	-0.007 (0.018, 0.695)	-0.004 (0.008, 0.586)	-0.001 (0.010, 0.940)	0.212 (0.132, 0.110)	0.139 (0.144, 0.339)
TRADEGDP	-0.015 (0.036, 0.680)	0.114 (0.033, 0.001)	0.092 (0.030, 0.002)	0.016 (0.032, 0.627)	0.059 (0.036, 0.105)	0.040 (0.033, 0.234)	0.043 (0.025, 0.081)	0.013 (0.043, 0.764)	0.005 (0.046, 0.917)
ECONGROWTH	-0.091 (0.164, 0.580)	-0.473 (0.222, 0.036)	-0.301 (0.217, 0.170)	-0.363 (0.211, 0.087)	-0.357 (0.220, 0.110)	-0.347 (0.244, 0.157)	-0.317 (0.225, 0.160)	-0.477 (0.257, 0.067)	-0.349 (0.246, 0.159)
TOTSD	0.045 (0.040, 0.259)	0.084 (0.054, 0.126)	0.062 (0.049, 0.211)	0.018 (0.045, 0.699)	-0.002 (0.052, 0.970)	0.032 (0.046, 0.498)	0.033 (0.043, 0.444)	0.026 (0.039, 0.519)	0.022 (0.038, 0.559)
PBBM*GOVBAL					-0.002 (0.005, 0.653)				
R-squared	0.662	0.839	0.817	0.743	0.839	0.804	0.788	0.865	0.864
Adjusted R-squared	0.509	0.721	0.690	0.613	0.722	0.671	0.665	0.753	0.754
Durbin-Watson stat	2.493	2.886	2.667	2.014	2.202	2.732	2.884	2.729	2.747
Sample	79	53	56	73	37	55	54	64	63
Observations	294	166	179	268	120	179	181	169	168
Time span	1980 - 2007	1980 - 2007	1980 - 2007	1980 - 2007	1990 - 2007	1980 - 2007	1980 - 2007	1990 - 2007	1990 - 2007

B.19: Interaction terms

B.19.a.: Current account estimation of equation 1, base sample, 1970-2007.

Table B.19.a.1: Effect of M3GDP on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.265	0.249	2.541
POLITY2 (-10,10)	low 10 percentile	-7.92	0.033 (0.051, 0.518)	-0.006 (0.051, 0.908)	-0.065 (0.056, 0.248)
	mean	2.275	0.031 (0.031, 0.328)	-0.008 (0.028, 0.769)	-0.067 (0.033, 0.044)
	high 10 percentile	10	0.029 (0.032, 0.365)	-0.010 (0.026, 0.703)	-0.069 (0.029, 0.017)

Note: standard errors and p-values i parentheses

Table B.19.a.2: Effect of KAOPEN on CA conditional on M3GDP and POLITY2

			M3GDP (0.075, 2.541)		
			low 10 percentile	mean	high 10 percentile
			19.327	49.985	91.914
POLITY2 (-10,10)	low 10 percentile	-7.92	1.390 (1.254, 0.269)	0.601 (1.206, 0.619)	-0.478 (1.224, 0.697)
	mean	2.275	0.828 (0.593, 0.164)	0.039 (0.511, 0.939)	-1.039 (0.585, 0.077)
	high 10 percentile	10	0.403 (0.586, 0.688)	-0.386 (0.522, 0.460)	-1.465 (0.617, 0.018)

Table B.19.a.3: Effect of POLITY2 on CA conditional on KAOPEN and M3GDP

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.265	0.249	2.541
M3GDP (0.075, 2.541)	low 10 percentile	19.327	-0.152 (0.149, 0.309)	-0.235 (0.165, 0.156)	-0.362 (0.304, 0.236)
	mean	49.985	-0.159 (0.170, 0.351)	-0.243 (0.181, 0.182)	-0.369 (0.310, 0.236)
	high 10 percentile	91.914	-0.169 (0.257, 0.511)	-0.252 (0.261, 0.335)	-0.379 (0.359, 0.293)

Table B.19.a.4: Effect of PBBM on CA conditional on KAOPEN, POLITY and GOVBAL

Values of KAOPEN, POLITY, GOVBAL	Low 10 percentile	Mean	High 10 percentile	KAOPEN and POLITY (high 10 perc), GOVBAL (low 10 perc.)
Effect of PBBM on CA	0.287 (0.101, 0.006)	0.055 (0.037, 0.146)	-0.043 (0.046, 0.356)	-0.043 (0.046, 0.358)

Table B.19.a.5: Effect of KAOPEN on CA conditional on PBBM and POLITY2

			PBBM (0.083, 154.549)		
			low 10 percentile	mean	high 10 percentile
			7.270	34.810	68.110
POLITY2 (-10,10)	low 10 percentile	-5.8	0.436 (1.479, 0.769)	0.023 (1.878, 0.990)	-0.475 (2.510, 0.850)
	mean	5.935	-0.076 (0.585, 0.897)	-0.488 (0.793, 0.540)	-0.987 (1.458, 0.501)
	high 10 percentile	10	-0.253 (0.808, 0.755)	-0.665 (0.758, 0.383)	-1.164 (1.277, 0.365)

Table B.19.a.6: Effect of POLITY2 on CA conditional on KAOPEN and PBBM

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.129	0.737	2.541
PBBM (0.083, 154.549)	low 10 percentile	7.270	0.425 (0.285, 0.139)	0.344 (0.149, 0.024)	0.265 (0.251, 0.295)
	mean	34.810	-0.054 (0.265, 0.839)	-0.135 (0.233, 0.562)	-0.214 (0.369, 0.563)
	high 10 percentile	68.110	-0.634 (0.438, 0.152)	-0.715 (0.476, 0.137)	-0.793 (0.598, 0.189)

Table B.19.a.7: Effect of GOVBAL on CA conditional on PBBM

Value of PBBM	Low 10 percentile 7.270	Mean 34.810	High 10 percentile 68.110
Effect of GOVBAL on CA	0.590 (0.342, 0.089)	0.376 (0.279, 0.182)	0.116 (0.265, 0.662)

B.19.a.: Savings estimation of equation 1, base sample, 1970-2007.

Table B.19.b.1: Effect of M3GDP on SAVINGS conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.265	0.249	2.541
POLITY2 (-10,10)	low 10 percentile	-7.92	0.187 (0.061, 0.003)	0.100 (0.058, 0.088)	-0.031 (0.073, 0.665)
	mean	2.275	0.167 (0.047, 0.001)	0.080 (0.034, 0.019)	-0.051 (0.044, 0.243)
	high 10 percentile	10	0.152 (0.055, 0.0.006)	0.065 (0.037, 0.082)	-0.066 (0.036, 0.069)

Table B.19.b.2: Effect of KAOPEN on SAVINGS conditional on M3GDP and POLITY2

			M3GDP (0.075, 2.541)		
			low 10 percentile	mean	high 10 percentile
			19.327	49.985	91.914
POLITY2 (-10,10)	low 10 percentile	-7.92	-0.241 (1.522, 0.874)	-1.998 (1.602, 0.214)	-4.401 (1.937, 0.024)
	mean	2.275	0.876 (0.827, 0.291)	-0.881 (0.703, 0.211)	-3.284 (1.038, 0.002)
	high 10 percentile	10	1.722 (0.963, 0.075)	-0.035 (0.635, 0.956)	-2.438 (0.729, 0.001)

Table B.19.b.3: Effect of SIZE on SAVINGS conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.129	0.498	2.541
POLITY2 (-10,10)	low 10 percentile	-6.84	-0.090 (0.054, 0.097)	-0.092 (0.047, 0.050)	-0.095 (0.045, 0.036)
	mean	5.105	-0,027 (0.042, 0.519)	-0.029 (0.028, 0.301)	-0.032 (0.019, 0.090)
	high 10 percentile	10	-0.001 (0.044, 0.0.978)	-0.004 (0.029, 0.905)	-0.006 (0.017, 0.715)

Table B.19.b.4: Effect of KAOPEN on SAVINGS conditional on SIZE and POLITY2

			SIZE (4.949, 440.933)		
			low 10 percentile	mean	high 10 percentile
			31.041	114.148	246.45
POLITY2 (-10,10)	low 10 percentile	-6.84	-1.312 (1.943, 0.501)	-1.430 (2.091, 0.496)	-1.617 (2.863, 0.574)
	mean	5.105	-0.900 (0.870, 0.304)	-1.943 (0.943, 0.283)	-1.204 (1.991, 0.547)
	high 10 percentile	10	-0.731 (0.962, 0.449)	-0.848 (0.930, 0.364)	-1.035 (1.906, 0.588)

Table B.19.b.5: Effect of PBBM on SAVINGS conditional on KAOPEN, POLITY and GOVBAL

Values of KAOPEN, POLITY, GOVBAL	Low 10 percentile	Mean	High 10 percentile	KAOPEN and POLITY (high 10 perc), GOVBAL (low 10 perc.)
Effect of PBBM on CA	0.287 (0.113, 0.013)	0.030 (0.048, 0.527)	-0.087 (0.039, 0.019)	-0.030 (0.026, 0.255)

Table B.19.b.6: Effect of KAOPEN on SAVINGS conditional on PBBM and POLITY2

			PBBM (0.083, 154.549)		
			low 10 percentile	mean	high 10 percentile
			8.200	35.583	71.244
POLITY2 (-10,10)	low 10 percentile	-4.68	2.735 (2.093, 0.195)	2.395 (2.228, 0.286)	1.953 (2.953, 0.511)
	mean	6.357	0.642 (1.195, 0.592)	-0.303 (0.918, 0.743)	-0.140 (1.754, 0.937)
	high 10 percentile	10	-0.048 (1.286, 0.970)	-0.388 (0.826, 0.640)	-0.830 (1.554, 0.595)

B.19.c: Investment estimation of equation 1, base sample, 1970-2007.

Table B.19.c.1: Effect of M3GDP on INVESTMENT conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.265	0.249	2.541
POLITY2 (-10,10)	low 10 percentile	-7.92	0.117 (0.049, 0.019)	0.107 (0.050, 0.033)	0.091 (0.057, 0.109)
	mean	2.275	0.056 (0.033, 0.091)	0.046 (0.027, 0.095)	0.030 (0.030, 0.314)
	high 10 percentile	10	0.009 (0.039, 0.809)	-0.001 (0.029, 0.979)	-0.016 (0.024, 0.502)

Table B.19.c.2: Effect of KAOPEN on INVESTMENT conditional on M3GDP and POLITY2

			M3GDP (0.075, 2.541)		
			low 10 percentile	mean	high 10 percentile
			19.327	49.985	91.914
POLITY2 (-10,10)	low 10 percentile	-7.92	-0.657 (0.642, 0.307)	-0.861 (0.553, 0.120)	-1.140 (0.629, 0.071)
	mean	2.275	0.016 (0.467, 0.973)	-0.188 (0.344, 0.584)	-0.468 (0.465, 0.316)
	high 10 percentile	10	0.525 (0.592, 0.376)	0.321 (0.505, 0.526)	0.042 (0.600, 0.944)

Table B.19.c.3: Effect of STOCK on INVESTMENT conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.137	0.526	2.541
POLITY2 (-10,10)	low 10 percentile	-7	0.052 (0.031, 0.097)	0.030 (0.024, 0.222)	0.003 (0.024, 0.906)
	mean	4.070	0.057 (0.031, 0.071)	0.034 (0.022, 0.124)	0.007 (0.019, 0.697)
	high 10 percentile	10	0.059 (0.035, 0.096)	0.037 (0.027, 0.170)	0.010 (0.022, 0.667)

Table B.19.c.4: Effect of KAOPEN on INVESTMENT conditional on STOCK and POLITY2

			STOCK (0.101, 276.739)		
			low 10 percentile	mean	high 10 percentile
			6.207	46.630	115.426
POLITY2 (-10,10)	low 10 percentile	-7	-0.291 (0.677, 0.668)	-0.297 (0.675, 0.661)	-1.758 (0.798, 0.029)
	mean	4.070	-0.060 (0.511, 0.906)	-0.066 (0.510, 0.897)	-0.527 (0.688, 0.028)
	high 10 percentile	10	0.063 (0.592, 0.915)	0.058 (0.590, 0.922)	-1.403 (0.762, 0.068)

Table B.19.c.5: Effect of CREDIT on INVESTMENT conditional on KAOPEN and POLITY2

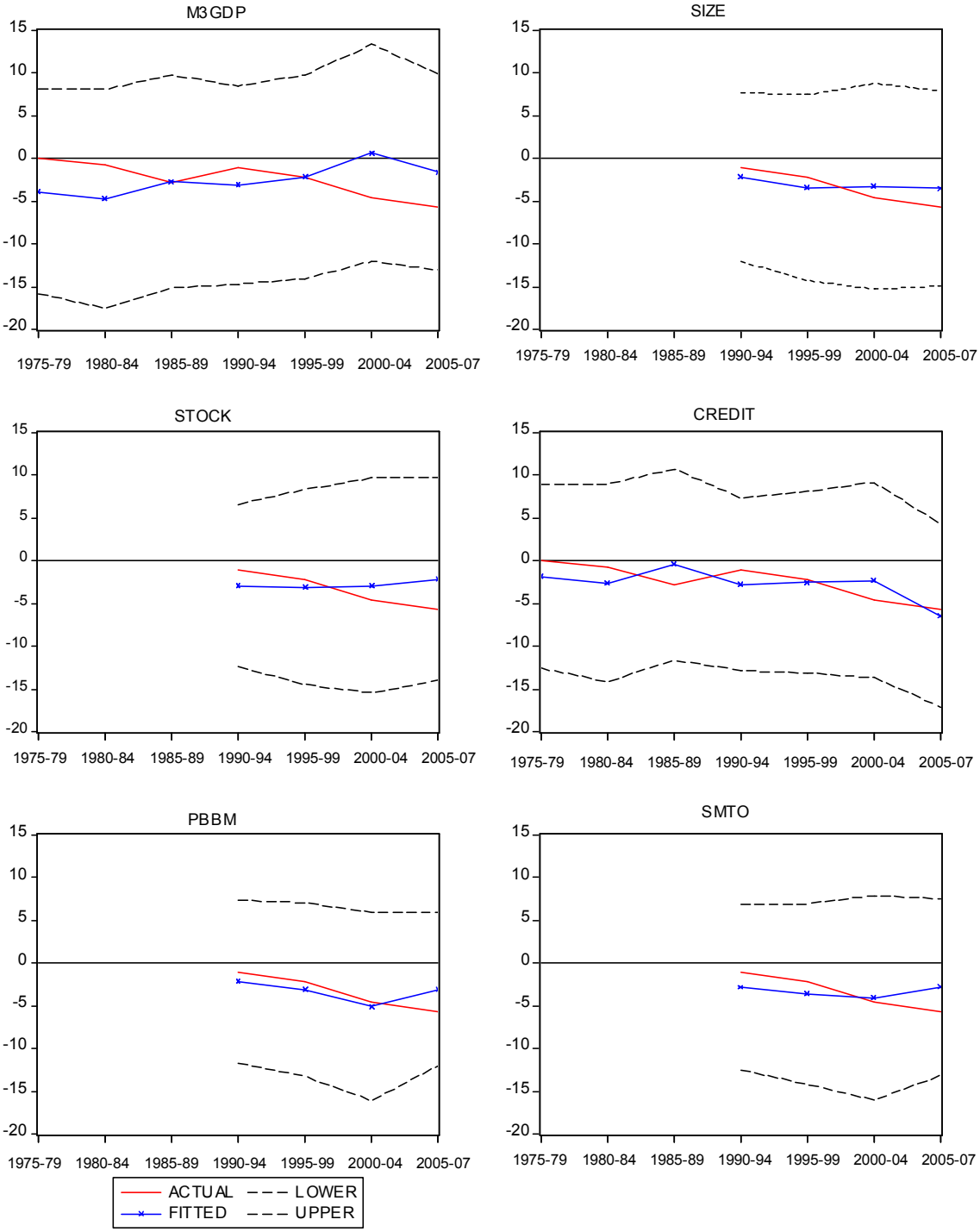
			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.265	0.216	2.541
POLITY2 (-10,10)	low 10 percentile	-7	0.173 (0.070, 0.014)	0.162 (0.066, 0.015)	0.145 (0.070, 0.039)
	mean	2.780	0.095 (0.045, 0.035)	0.084 (0.033, 0.013)	0.066 (0.032, 0.039)
	high 10 percentile	10	0.037 (0.044, 0.401)	0.026 (0.028, 0.351)	0.009 (0.015, 0.568)

Table B.19.c.6: Effect of KAOPEN on INVESTMENT conditional on CREDIT and POLITY2

			CREDIT (1,914, 195.186)		
			low 10 percentile	mean	high 10 percentile
			9.663	45.203	102.179
POLITY2 (-10,10)	low 10 percentile	-7	-0.762 (0.696, 0.274)	-1.027 (0.620, 0.099)	-1.452 (0.992, 0.144)
	mean	2.780	-0.018 (0.493, 0.971)	-0.283 (0.341, 0.407)	-0.709 (0.821, 0.389)
	high 10 percentile	10	0.531 (0.594, 0.372)	0.266 (0.454, 0.559)	-0.160 (0.855, 0.852)

B.20: Implied current accounts, base sample

Figure 4: Implied current account - United States, base sample



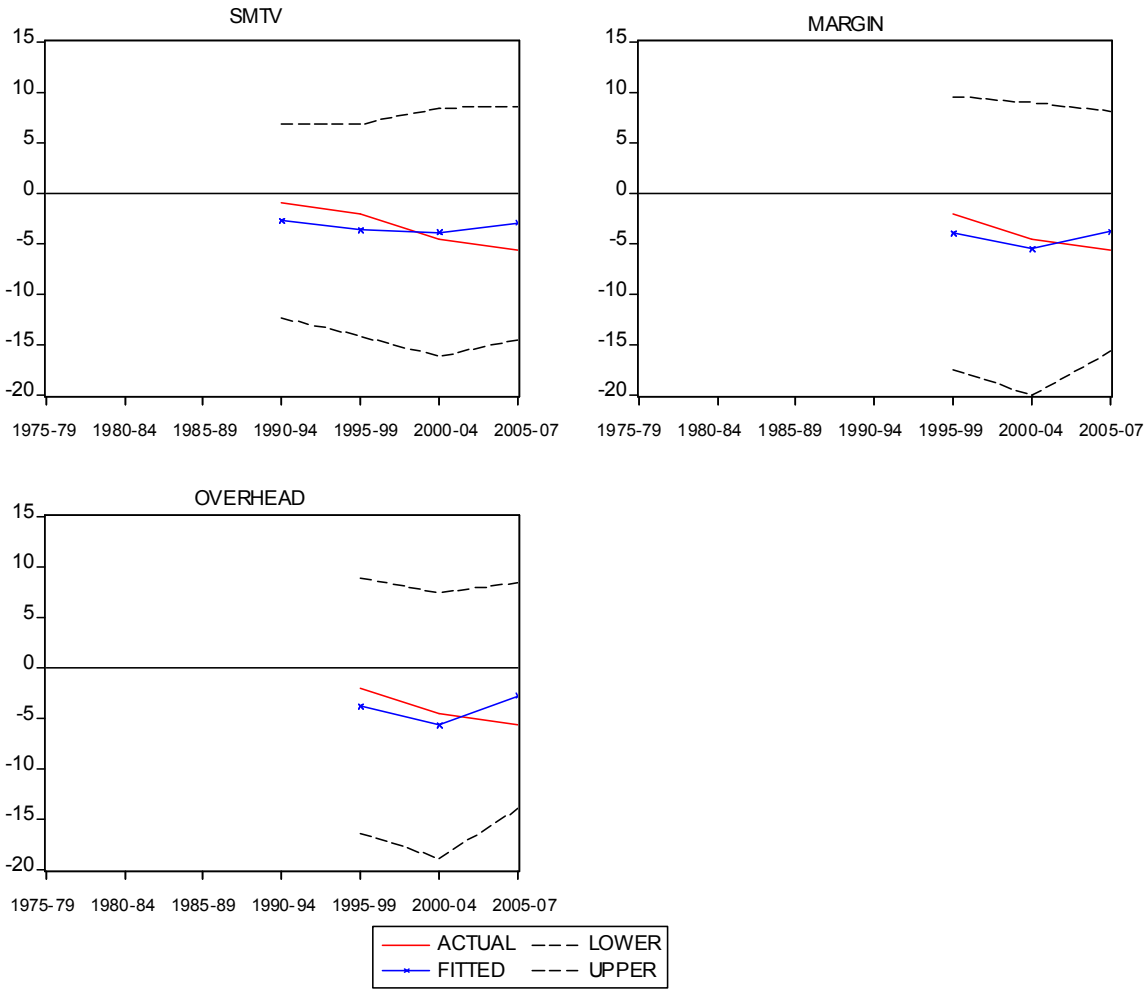
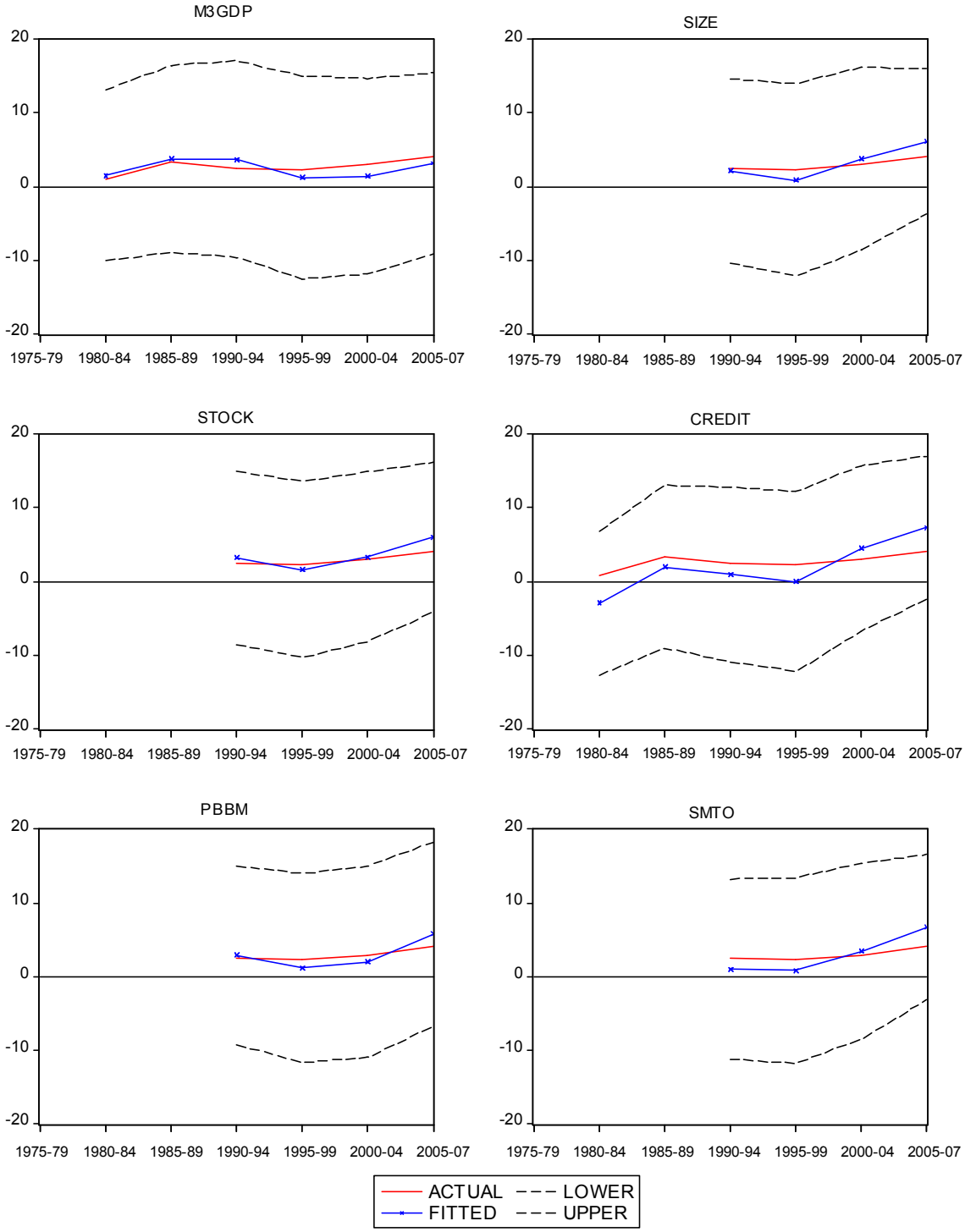


Figure 2: Implied current account – Japan, base sample



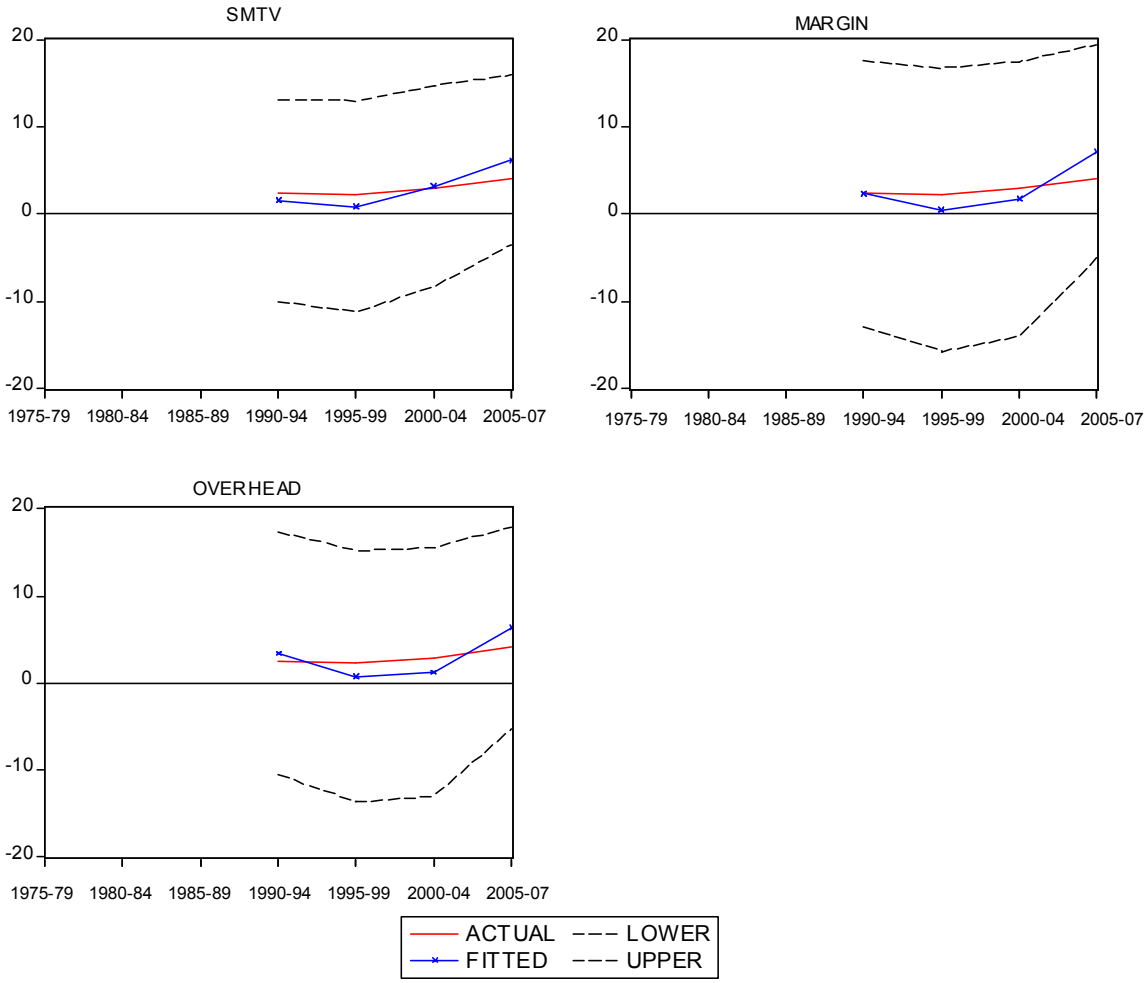
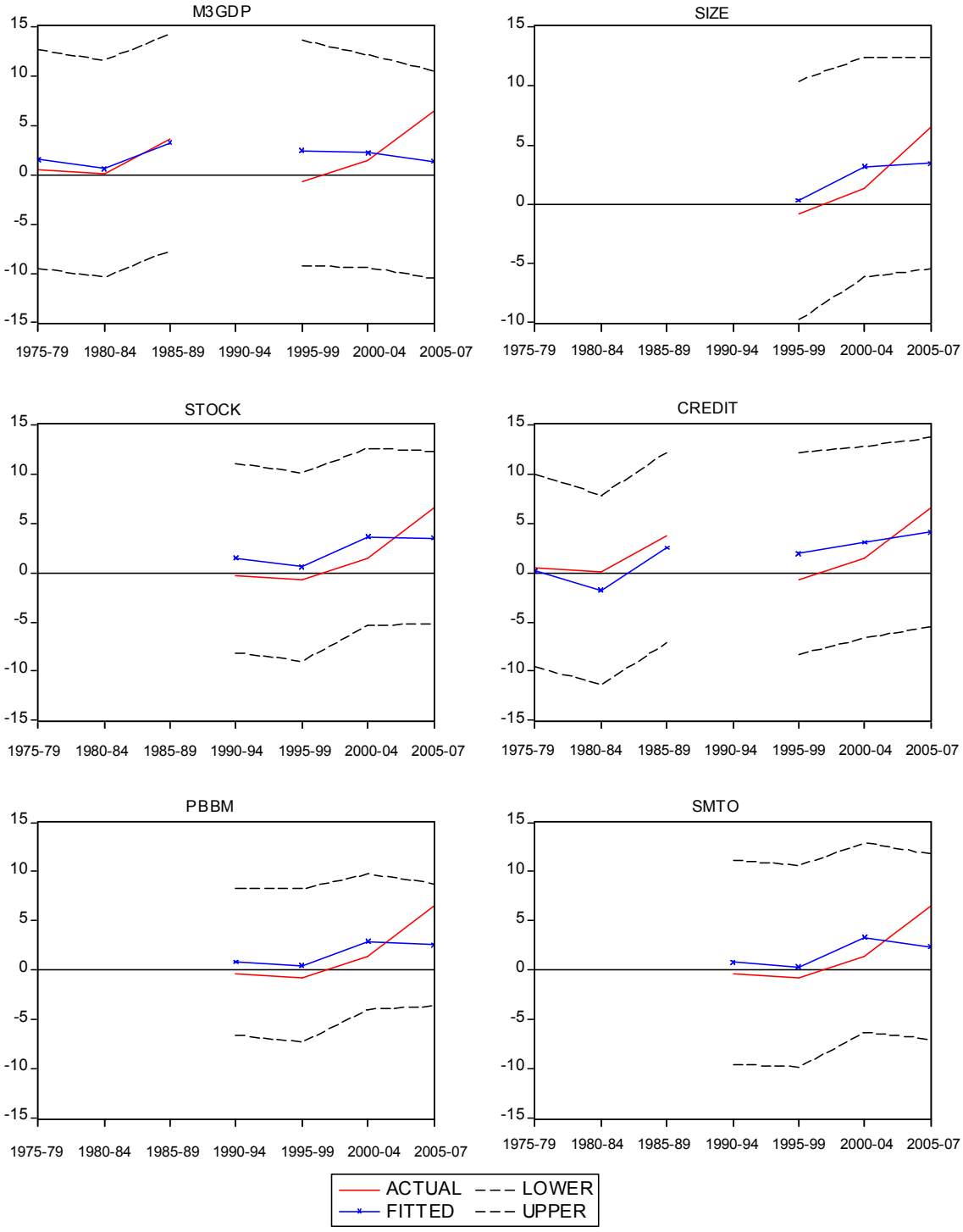
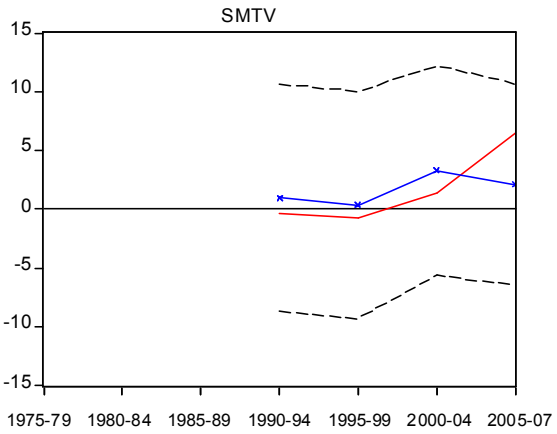
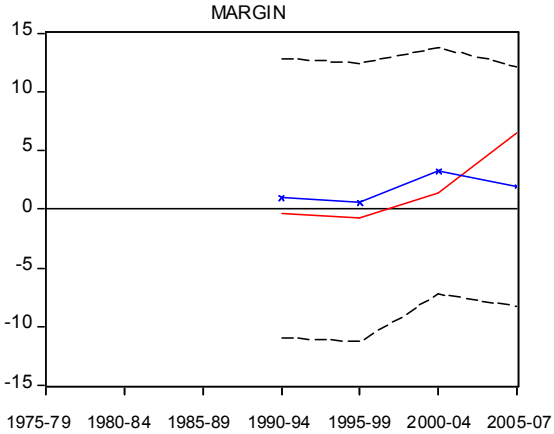


Figure 3: Implied current account – Germany, base sample







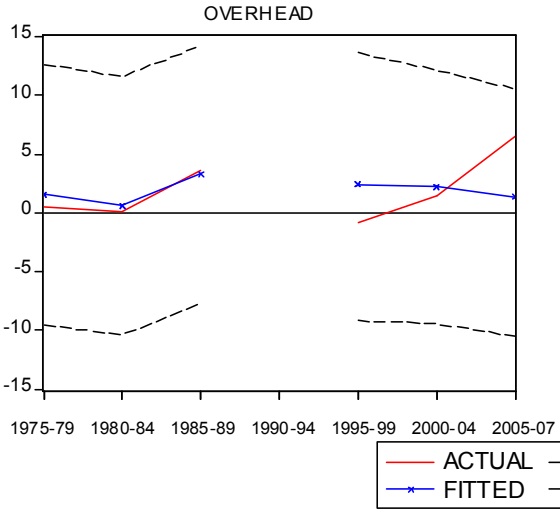
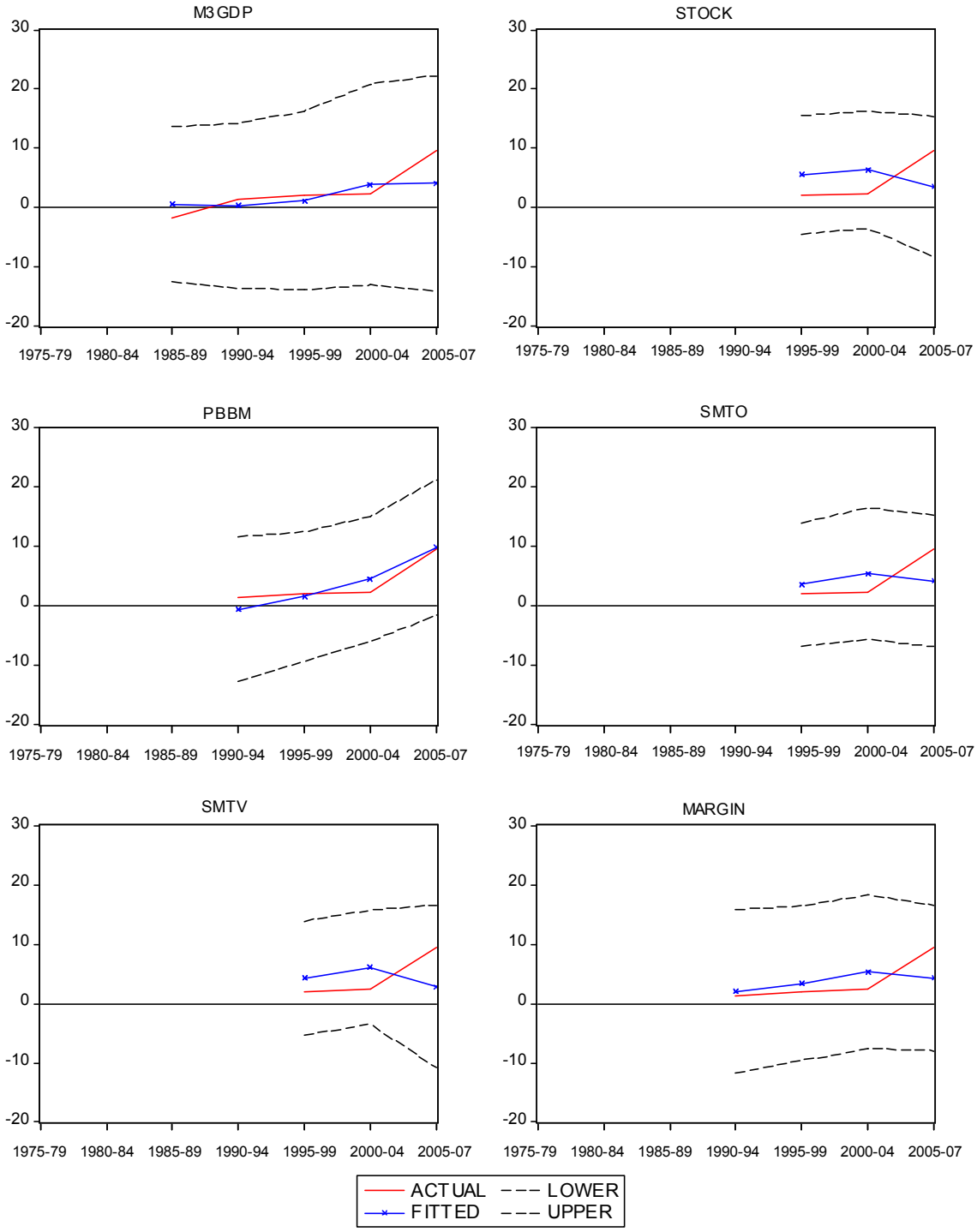
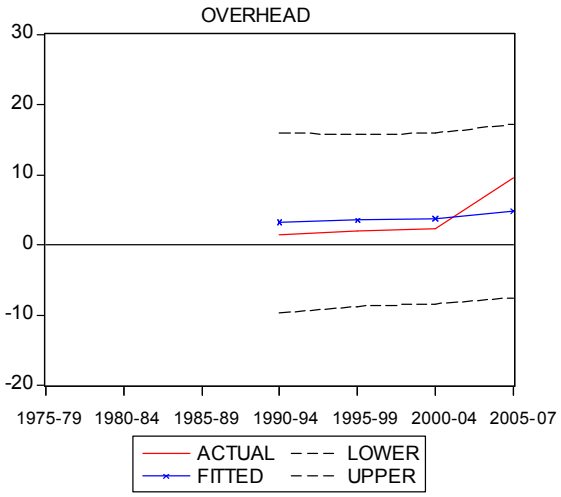


Figure 4: Implied current account – China, base sample





B.21: Current account regressions, developing countries

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE country	FE twoways	FE twoways	FE twoways	FE country	FE twoways	FE twoways	RE country	FE country
C	11.230 (7.626, 0.143)	3.556 (11.163, 0.751)	1.466 (10.625, 0.891)	4.546 (7.564, 0.549)	10.425 (10.708, 0.339)	11.113 (12.513, 0.378)	6.606 (12.705, 0.605)	14.730 (3.362, 0.000)	14.155 (10.817, 0.195)
RELYOECD	0.098 (0.068, 0.152)	-0.024 (0.174, 0.892)	-0.109 (0.165, 0.512)	0.178 (0.064, 0.006)	-0.464 (0.185, 0.018)	-0.203 (0.132, 0.128)	-0.087 (0.105, 0.409)	-0.203 (0.062, 0.001)	-0.218 (0.158, 0.170)
POLITY2	-0.027 (0.261, 0.918)	-0.226 (0.274, 0.412)	-0.062 (0.187, 0.742)	-0.215 (0.197, 0.277)	0.536 (0.161, 0.003)	0.015 (0.201, 0.940)	-0.005 (0.164, 0.978)	-0.469 (0.157, 0.003)	0.385 (0.375, 0.308)
FD	0.019 (0.037, 0.602)	-0.065 (0.038, 0.091)	-0.067 (0.049, 0.178	-0.080 (0.046, 0.080)	0.099 (0.070, 0.172)	5.3E-05 (0.017, 0.998)	-0.016 (0.031, 0.622)	-0.790 (0.234, 0.001)	1.191 (0.616, 0.057)
KAOPEN	1.162 (0.963, 0.229)	-0.344 (1.025, 0.738)	-0.343 (0.946, 0.718)	0.168 (0.825, 0.839)	1.586 (0.969, 0.113)	-0.726 (0.990, 0.466)	-0.107 (0.870, 0.902)	0.227 (0.735, 0.759)	-0.931 (1.548, 0.550)
GOVBAL	0.396 (0.162, 0.016)	0.445 (0.260, 0.092)	0.408 (0.249, 0.105)	0.375 (0.179, 0.037)	0.253 (0.425, 0.556)	0.123 (0.278, 0.661)	0.152 (0.285, 0.595)	0.551 (0.172, 0.002)	0.363 (0.239, 0.133)
NFAIN	-0.0003 (0.002, 0.913)	0.049 (0.035, 0.169)	0.049 (0.035, 0.157)	0.078 (0.031, 0.012)	-0.050 (0.045, 0.278)	0.079 (0.035, 0.026)	0.045 (0.031, 0.144)	0.057 (0.010, 0.000)	0.049 (0.042, 0.254)
DEPR	-0.149 (0.074, 0.048)	0.029 (0.166, 0.861)	0.024 (0.157, 0.882)	-0.011 (0.100, 0.912)	-0.209 (0.171, 0.233)	-0.078 (0.155, 0.616)	-0.060 (0.159, 0.708)	-0.064 (0.033, 0.054)	-0.230 (0.153, 0.136)
POLITY2*FD	-0.004 (0.005, 0.454)	0.003 (0.004, 0.419)	0.001 (0.006, 0.804)	0.001 (0.006, 0.835)	-0.022 (0.008, 0.012)	-0.002 (0.002, 0.289)	-0.004 (0.004, 0.360)	0.097 (0.035, 0.006)	-0.042 (0.069, 0.545)
POLITY2*KAOPEN	-0.020 (0.093, 0.830)	-0.076 (0.147, 0.608)	-0.048 (0.125, 0.701)	-0.030 (0.085, 0.724)	-0.024 (0.113, 0.830)	0.095 (0.087, 0.277)	0.056 (0.084, 0.508)	0.036 (0.037, 0.333)	0.048 (0.143, 0.740)
KAOPEN*FD	-0.022 (0.013, 0.083)	0.007 (0.001, 0.513)	0.008 (0.016, 0.603)	-0.011 (0.017, 0.511)	-0.029 (0.043, 0.513)	0.008 (0.011, 0.488)	-0.017 (0.012, 0.168)	-0.087 (0.126, 0.490)	-0.045 (0.280, 0.873)
TRADEGDP	-0.043 (0.039, 0.270)	0.050 (0.043, 0.247)	0.052 (0.039, 0.188)	0.002 (0.035, 0.956)	0.056 (0.036, 0.135)	0.001 (0.049, 0.987)	0.012 (0.056, 0.826)	-0.024 (0.014, 0.085)	-0.031 (0.072, 0.664)
ECONGROWTH	-0.160 (0.113, 0.158)	-0.670 (0.322, 0.042)	-0.474 (0.325, 0.150)	-0.331 (0.194, 0.091)	-0.347 (0.229, 0.142)	-0.544 (0.365, 0.141)	-0.540 (0.320, 0.095)	-0.567 (0.220, 0.014)	-0.101 (0.279, 0.719)
PBBM*GOVBAL					-0.021 (0.012, 0.092)				
OIL								5.558 (1.007, 0.000)	
R-squared	0.715	0.851	0.849	0.778	0.892	0.824	0.821	0.561	0.859
Adjusted R-squared	0.580	0.690	0.672	0.654	0.759	0.645	0.648	0.519	0.702
Durbin-Watson stat	2.647	2.983	2.997	2.405	2.969	2.960	2.823	1.707	3.083
Sample	82	48	54	71	21	54	54	68	68
Observations	291	124	138	249	61	140	145	151	150
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1975 - 2007	1990 - 2007	1990 - 2007

B.22: Current account regressions (all countries excluding Africa)

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE country
C	-0.652 (6.442, 0.920)	19.988 (6.456, 0.003)	18.703 (6.361, 0.004)	-0.184 (7.486, 0.980)	22.472 (9.580, 0.022)	15.100 (9.768, 0.125)	16.212 (7.951, 0.044)	21.032 (11.904, 0.080)	14.989 (9.130, 0.104)
RELYOECD	0.041 (0.043, 0.336)	-0.086 (0.053, 0.105)	-0.105 (0.044, 0.019)	0.045 (0.043, 0.288)	-0.162 (0.048, 0.001)	-0.127 (0.049, 0.010)	-0.133 (0.045, 0.004)	-0.148 (0.062, 0.019)	-0.116 (0.049, 0.019)
POLITY2	-0.096 (0.184, 0.602)	-0.333 (0.178, 0.064)	-0.179 (0.146, 0.222)	-0.137 (0.196, 0.486)	0.546 (0.193, 0.006)	-0.084 (0.224, 0.708)	-0.124 (0.135, 0.361)	-0.329 (0.337, 0.331)	0.133 (0.290, 0.648)
M3GDP	-0.027 (0.034, 0.440)	-0.058 (0.031, 0.064)	-0.042 (0.042, 0.322)	-0.061 (0.038, 0.112)	0.116 (0.072, 0.110)	-0.001 (0.010, 0.904)	-0.004 (0.035, 0.920)	-0.200 (0.497, 0.688)	1.082 (0.569, 0.060)
KAOPEN	0.901 (0.863, 0.298)	0.116 (1.002, 0.908)	-0.331 (0.874, 0.705)	0.219 (0.715, 0.760)	0.152 (0.742, 0.838)	-0.738 (0.884, 0.405)	-0.060 (0.769, 0.938)	-1.029 (1.072, 0.339)	-0.769 (0.872, 0.380)
GOVBAL	0.259 (0.081, 0.002)	0.329 (0.184, 0.077)	0.181 (0.170, 0.288)	0.354 (0.124, 0.005)	0.650 (0.343, 0.062)	0.139 (0.188, 0.462)	0.116 (0.160, 0.469)	0.362 (0.270, 0.182)	0.346 (0.235, 0.144)
NFAIN	0.002 (0.001, 0.211)	0.033 (0.030, 0.283)	0.039 (0.027, 0.157)	0.019 (0.023, 0.394)	-0.005 (0.020, 0.804)	0.044 (0.035, 0.214)	0.027 (0.026, 0.308)	0.025 (0.030, 0.395)	0.027 (0.035, 0.442)
DEPR	0.014 (0.080, 0.862)	-0.244 (0.079, 0.003)	-0.273 (0.085, 0.002)	0.062 (0.086, 0.471)	-0.380 (0.141, 0.009)	-0.128 (0.110, 0.246)	-0.186 (0.097, 0.057)	-0.172 (0.177, 0.336)	-0.202 (0.132, 0.130)
POLITY2*M3GDP	0.000 (0.003, 0.994)	0.005 (0.002, 0.010)	0.007 (0.004, 0.062)	0.001 (0.005, 0.878)	-0.016 (0.009, 0.062)	0.000 (0.002, 0.907)	0.005 (0.003, 0.134)	0.075 (0.074, 0.310)	-0.030 (0.067, 0.652)
POLITY2*KAOPEN	-0.096 (0.078, 0.217)	-0.049 (0.077, 0.532)	-0.015 (0.066, 0.826)	-0.082 (0.068, 0.231)	-0.149 (0.118, 0.210)	0.055 (0.052, 0.295)	0.044 (0.061, 0.477)	0.014 (0.073, 0.850)	0.089 (0.073, 0.225)
KAOPEN*M3GDP	-0.019 (0.008, 0.026)	-0.002 (0.008, 0.804)	-0.002 (0.012, 0.858)	-0.008 (0.009, 0.401)	0.009 (0.021, 0.654)	0.000 (0.008, 0.981)	-0.017 (0.009, 0.071)	0.029 (0.163, 0.859)	-0.092 (0.215, 0.671)
TRADEGDP	0.010 (0.028, 0.729)	0.059 (0.036, 0.105)	0.048 (0.035, 0.169)	0.006 (0.028, 0.829)	0.082 (0.041, 0.048)	0.001 (0.043, 0.987)	0.016 (0.040, 0.683)	-0.031 (0.056, 0.583)	-0.020 (0.047, 0.668)
ECONGROWTH	-0.146 (0.167, 0.383)	-0.232 (0.247, 0.349)	-0.094 (0.230, 0.684)	-0.320 (0.224, 0.154)	-0.163 (0.272, 0.550)	-0.231 (0.238, 0.332)	-0.211 (0.247, 0.396)	-0.143 (0.327, 0.664)	-0.222 (0.281, 0.432)
PBBM*GOVBAL					-0.006 (0.004, 0.137)				
R-squared	0.826	0.860	0.846	0.808	0.874	0.823	0.826	0.849	0.847
Adjusted R-squared	0.746	0.748	0.730	0.721	0.778	0.693	0.700	0.712	0.717
Durbin-Watson stat	2.259	2.466	2.519	2.277	2.180	2.430	2.449	2.573	2.738
Sample	84	65	70	75	42	70	70	78	78
Observations	327	184	201	299	132	203	208	195	195
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1975 - 2007	1990 - 2007	1990 - 2007

B.23: Current account regressions, all countries excluding oil-exporters

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE country	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways
C	8.087	13.808	13.094	6,245	8.303	8.904	11.824	27.904	23.908
	(6.987, 0.248)	(7.766, 0.078)	(7.671, 0.091)	(6.835, 0.362)	(9.888, 0.404)	(9.502, 0.351)	(8.977, 0.190)	(10.007, 0.006)	(8.969, 0.009)
RELYOECD	-0.050	-0.060	-0.090	-0,026	-0.143	-0.115	-0.127	-0.175	-0.162
	(0.037, 0.182)	(0.052, 0.247)	(0.044, 0.042)	(0.028, 0.345)	(0.048, 0.004)	(0.046, 0.014)	(0.049, 0.011)	(0.062, 0.006)	(0.054, 0.004)
POLITY2	-0.072	-0.123	-0.029	-0,219	0.556	0.220	0.029	-0.510	0.121
	(0.187, 0.701)	(0.244, 0.615)	(0.177, 0.868)	(0.202, 0.278)	(0.217, 0.012)	(0.186, 0.239)	(0.157, 0.855)	(0.314, 0.108)	(0.410, 0.768)
FD	0.042	-0.064	-0.058	-0,069	0.174	0.007	-0.008	-0.600	0.548
	(0.024, 0.079)	(0.034, 0.062)	(0.046, 0.208)	(0.048, 0.155)	(0.063, 0.007)	(0.009, 0.440)	(0.040, 0.831)	(0.550, 0.278)	(0.755, 0.470)
KAOPEN	0.509	-0.577	-0.883	-0,215	0.155	-0.891	-0.570	-1.157	-1.129
	(0.757, 0.502)	(0.982, 0.558)	(0.853, 0.303)	(0.744, 0.773)	(0.921, 0.867)	(0.805, 0.271)	(0.729, 0.436)	(1.011, 0.255)	(0.963, 0.244)
GOVBAL	0.377	0.357	0.247	0,347	0.760	0.193	0.172	0.501	0.509
	(0.129, 0.004)	(0.257, 0.168)	(0.252, 0.328)	(0.123, 0.005)	(0.350, 0.033)	(0.244, 0.431)	(0.230, 0.456)	(0.286, 0.082)	(0.275, 0.067)
NFAIN	0.000	0.036	0.044	0,063	0.000	0.049	0.039	0.022	0.021
	(0.002, 0.960)	(0.034, 0.283)	(0.032, 0.169)	(0.030, 0.038)	(0.022, 0.999)	(0.036, 0.183)	(0.031, 0.205)	(0.028, 0.437)	(0.030, 0.488)
DEPR	-0.105	-0.152	-0.182	0,000	-0.169	-0.073	-0.107	-0.256	-0.303
	(0.071, 0.144)	(0.099, 0.129)	(0.108, 0.095)	(0.081, 0.996)	(0.141, 0.234)	(0.094, 0.437)	(0.114, 0.347)	(0.142, 0.075)	(0.142, 0.035)
POLITY2*FD	-0.002	0.003	0.004	0,003	-0.019	-0.002	0.002	0.136	0.018
	(0.002, 0.486)	(0.003, 0.307)	(0.005, 0.442)	(0.005, 0.543)	(0.008, 0.022)	(0.001, 0.236)	(0.004, 0.692)	(0.060, 0.025)	(0.078, 0.820)
POLITY2*KAOPEN	0.042	-0.023	0.018	0,015	-0.034	0.062	0.067	0.012	0.054
	(0.065, 0.514)	(0.087, 0.789)	(0.072, 0.806)	(0.070, 0.834)	(0.126, 0.785)	(0.056, 0.269)	(0.065, 0.308)	(0.069, 0.859)	(0.075, 0.473)
KAOPEN*FD	-0.017	0.005	0.010	-0,007	-0.013	0.004	-0.003	0.029	-0.046
	(0.008, 0.035)	(0.007, 0.488)	(0.013, 0.431)	(0.012, 0.546)	(0.023, 0.552)	(0.007, 0.561)	(0.012, 0.789)	(0.165, 0.859)	(0.237, 0.846)
TRADEGDP	-0.031	0.062	0.051	0,004	0.091	0.011	0.007	-0.031	-0.034
	(0.035, 0.371)	(0.041, 0.134)	(0.041, 0.220)	(0.033, 0.905)	(0.044, 0.041)	(0.047, 0.808)	(0.046, 0.888)	(0.056, 0.579)	(0.060, 0.568)
ECONGROWTH	-0.112	-0.348	-0.187	-0,264	-0.262	-0.370	-0.278	-0.192	-0.070
	(0.119, 0.347)	(0.285, 0.224)	(0.269, 0.490)	(0.191, 0.168)	(0.308, 0.398)	(0.264, 0.165)	(0.273, 0.311)	(0.207, 0.355)	(0.192, 0.717)
PBBM*GOVBAL					-0.009				
					(0.004, 0.033)				
R-squared	0.594	0.793	0.779	0,619	0.858	0.773	0.762	0.834	0.836
Adj. R-squared	0.429	0.629	0.615	0,446	0.750	0.607	0.592	0.686	0.690
Durbin-Watson stat	2.496	2.719	2.679	2,124	2.082	2.620	2.571	2.614	2.687
Sample	96	67	71	88	41	71	71	81	81
Observations	371	189	205	340	131	207	210	203	203
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1980 - 2007	1990 - 2007	1990 - 2007

B.24: Interaction terms

B.24.a.: Current account estimation of equation 1, developed countries, 1970-2007.

Table B.24.a.1: 19Effect of SIZE on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-0.738	1.243	2.541
POLITY2 (-8,10)	low 10 percentile	7.88	-0.112 (0.046, 0.020)	-0.055 (0.034, 0.116)	-0.018 (0.031, 0.563)
	mean	8.731	-0.115 (0.041, 0.007)	-0.058 (0.027, 0.035)	-0.021 (0.023, 0.361)
	high 10 percentile	10	-0.120 (0.039, 0.004)	-0.062 (0.020, 0.004)	-0.025 (0.016, 0.133)

Note: standard errors and p-values i parentheses

Table B.24.a.2: Effect of KAOPEN on CA conditional on SIZE and POLITY2

			SIZE (32.339, 440.933)		
			low 10 percentile	mean	high 10 percentile
			69.986	175.301	274.645
POLITY2 (-8,10)	low 10 percentile	7.88	-4.606 (1.198, 0.000)	-1.592 (1.425, 0.270)	1.252 (2.124, 0.559)
	mean	8.731	-3.228 (0.964, 0.001)	-0.323 (1.335, 0.810)	2.520 (2.122, 0.242)
	high 10 percentile	10	-1.446 (0.857, 0.099)	1.569 (1.404, 0.270)	4.412 (2.148, 0.056)

Table B.24.a.3: Effect of STOCK on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-0.738	1.243	2.541
POLITY2 (-8,10)	low 10 percentile	7.88	-0.100 (0.099, 0.317)	-0.012 (0.078, 0.875)	0.045 (0.070, 0.526)
	mean	8.731	-0.110 (0.076, 0.154)	-0.022 (0.055, 0.681)	0.035 (0.050, 0.494)
	high 10 percentile	10	-0.126 (0.046, 0.009)	-0.038 (0.028, 0.178)	0.019 (0.035, 0.583)

Table B.24.a.4: Effect of KAOPEN on CA conditional on STOCK and POLITY2

			STOCK (0.423, 276.739)		
			low 10 percentile	mean	high 10 percentile
			15.432	70.933	139.235
POLITY2 (-8,10)	low 10 percentile	7.88	-4.133 (1.527, 0.009)	-1.684 (1.821, 0.360)	1.331 (2.674, 0.621)
	mean	8.731	-3.081 (1.082, 0.007)	-0.632 (1.343, 0.640)	2.383 (2.282, 0.302)
	high 10 percentile	10	-1.513 (0.880, 0.092)	0.937 (0.941, 0.324)	3.952 (1.909, 0.044)

Table B.24.a.5: Effect of CREDIT on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.809, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-0.738	1.243	2.541
POLITY2 (-8,10)	low 10 percentile	7.88	0.024 (0.035, 0.493)	0.015 (0.021, 0.480)	0.009 (0.035, 0.796)
	mean	8.731	0.003 (0.041, 0.949)	-0.007 (0.017, 0.699)	-0.013 (0.026, 0.629)
	high 10 percentile	10	-0.030 (0.053, 0.580)	-0.039 (0.024, 0.104)	-0.045 (0.019, 0.020)

Table B.24.a.6: Effect of KAOPEN on CA conditional on CREDIT and POLITY2

			CREDIT (17.929, 195.186)		
			low 10 percentile	mean	high 10 percentile
			31.485	83.615	145.668
POLITY2 (-8,10)	low 10 percentile	7.88	-1.257 (1.582, 0.429)	-1.498 (1.249, 0.234)	-1.785 (1.613, 0.272)
	mean	8.731	-0.891 (1.083, 0.413)	-1.133 (0.811, 0.166)	-1.420 (1.486, 0.342)
	high 10 percentile	10	-0.347 (0.772, 0.655)	-0.588 (0.847, 0.490)	-0.875 (1.740, 0.616)

Table B.24.a.7: Effect of PBBM on CA conditional on KAOPEN, POLITY and GOVBAL

Values of KAOPEN, POLITY, GOVBAL	Low 10 percentile	Mean	High 10 percentile	KAOPEN and POLITY (high 10 perc), GOVBAL (low 10 perc.)
Effect of PBBM on CA	-0.289 (0.131, 0.034)	-0.138 (0.067, 0.045)	-0.014 (0.048, 0.774)	0.030 (0.033, 0.371)

Table B.24.a.8: Effect of KAOPEN on CA conditional on PBBM and POLITY2

			PBBM (11.847, 101.383)		
			low 10 percentile	mean	high 10 percentile
			19.667	44.371	79.887
POLITY2 (-8,10)	low 10 percentile	7.3	3.068 (3.133, 0.334)	3.987 (3.455, 0.256)	5.307 (4.071, 0.200)
	mean	8.641	-0.079 (1.602, 0.961)	0.839 (1.785, 0.641)	2.159 (2.381, 0.370)
	high 10 percentile	10	-3.269 (1.315, 0.018)	-2.351 (0.913, 0.014)	-1.031 (1.065, 0.339)

Table B.24.a.9: Effect of POLITY on CA conditional on PBBM and KAOPEN

			PBBM (11.847, 101.383)		
			low 10 percentile	mean	high 10 percentile
			19.667	44.371	79.887
KAOPEN (-1.808, 2.541)	low 10 percentile	-0.712	8.073 (2.327, 0.001)	9.884 (2.894, 0.002)	12.487 (3.874, 0.003)
	mean	1.372	3.181 (1.351, 0.024)	4.992 (1.641, 0.004)	7.596 (2.514, 0.005)
	high 10 percentile	2.541	0.437 (2.562, 0.865)	2.248 (2.502, 0.375)	4.852 (2.864, 0.099)

Table B.24.a.10: Effect of GOVBAL on CA conditional on PBBM

Value of PBBM	Low 10 percentile 19.667	Mean 44.371	High 10 percentile 79.887
Effect of PBBM on CA	0.260 (0.418, 0.538)	0.135 (0.292, 0.646)	-0.044 (0.203, 0.831)

Table B.24.a.11: Effect of SMTO on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-0.738	1.243	2.541
POLITY2 (-8,10)	low 10 percentile	7.88	-0.094 (0.039, 0.022)	-0.016 (0.035, 0.655)	0.036 (0.042, 0.398)
	mean	8.731	-0.104 (0.035, 0.005)	-0.026 (0.021, 0.225)	0.026 (0.026, 0.340)
	high 10 percentile	10	-0.119 (0.043, 0.009)	-0.041 (0.019, 0.041)	0.010 (0.014, 0.458)

Table B.24.a.12: Effect of KAOPEN on CA conditional on SMTO and POLITY2

			SMTO (32.339, 440.933)		
			low 10 percentile	mean	high 10 percentile
			23.137	71.214	148.001
POLITY2 (-8,10)	low 10 percentile	7.88	-7.295 (3.343, 0.035)	-5.397 (3.051, 0.084)	-2.367 (2.848, 0.411)
	mean	8.731	-5.154 (2.266, 0.028)	-3.257 (1.980, 0.107)	-0.226 (1.944, 0.908)
	high 10 percentile	10	-1.962 (1.032, 0.064)	-0.064 (0.914, 0.944)	2.966 (1.503, 0.055)

Table B.24.a.13: Effect of MARGIN on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-0.767	1.233	2.541
POLITY2 (-8,10)	low 10 percentile	7.72	-4.774 (6.267, 0.452)	-8.137 (5.447, 0.145)	-10.336 (5.016, 0.047)
	mean	8.677	-0.218 (4.264, 0.960)	-3.581 (3.427, 0.294)	-5.780 (2.927, 0.057)
	high 10 percentile	10	6.080 (1.946, 0.004)	2.718 (0.813, 0.002)	0.519 (0.629, 0.415)

Table B.24.a.14: Effect of KAOPEN on CA conditional on MARGIN and POLITY2

			MARGIN (0.836, 6.054)		
			low 10 percentile	mean	high 10 percentile
			1.628	2.652	4.135
POLITY2 (-8,10)	low 10 percentile	7.72	-2.962 (2.962, 0.323)	-4.684 (2.666, 0.088)	-7.177 (2.507, 0.007)
	mean	8.677	-1.283 (2.234, 0.569)	-3.005 (1.866, 0.117)	-5.498 (1.682, 0.003)
	high 10 percentile	10	1.038 (1.560, 0.510)	-0.684 (1.044, 0.517)	-3.177 (0.819, 0.001)

Table B.24.a.15: Effect of OVERHEAD on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-0.767	1.233	2.541
POLITY2 (-8,10)	low 10 percentile	7.72	11.890 (3.442, 0.002)	162.515 (3.386, 0.001)	12.924 (3.567, 0.001)
	mean	8.677	6.685 (2.241, 0.005)	7.310 (1.945, 0.001)	7.719 (2.116, 0.001)
	high 10 percentile	10	-0.511 (1.662, 0.761)	0.114 (0.588, 0.847)	0.523 (0.516, 0.318)

Table B.24.a.1: 6Effect of KAOPEN on CA conditional on OVERHEAD and POLITY2

			OVERHEAD (0.759, 8.799)		
			low 10 percentile	mean	high 10 percentile
			1.493	2.949	4.501
POLITY2 (-8,10)	low 10 percentile	7.72	1.236 (2.258, 0.588)	1.691 (2.149, 0.437)	2.176 (2.394, 0.370)
	mean	8.677	-0.649 (1.440, 0.655)	-0.194 (1.297, 0.882)	0.291 (1.698, 0.865)
	high 10 percentile	10	-3.255 (1.077, 0.005)	-2.801 (0.942, 0.005)	-2.316 (1.489, 0.129)

B.24.b.: Current account estimation of equation 1, developing countries, excluding Africa, 1970-2007.

Table B.24.b.1: Effect of SIZE on CA conditional on KAOPEN and POLITY2

			KAOPEN (-1.808, 2.541)		
			low 10 percentile	mean	high 10 percentile
			-1.541	0.181	2.541
POLITY2 (-10,10)	low 10 percentile	-7	-0.112 (0.061, 0.072)	-0.104 (0.031, 0.001)	-0.103 (0.029, 0.001)
	mean	2.272	-0.046 (0.048, 0.336)	-0.038 (0.019, 0.053)	-0.038 (0.019, 0.048)
	high 10 percentile	9	-0.001 (0.045, 0.978)	0.009 (0.027, 0.740)	-0.010 (0.028, 0.727)

Table B.24.b.2: Effect of KAOPEN on CA conditional on SIZE and POLITY2

			SIZE (4.949, 332.832)		
			low 10 percentile	mean	high 10 percentile
			24.122	71.705	145.048
POLITY2 (-8,10)	low 10 percentile	-7	1.250 (1.364, 0.364)	1.349 (1.349, 0.323)	1.502 (1.619, 0.358)
	mean	2.272	-0.038 (1.226, 0.975)	0.061 (1.008, 0.952)	0.213 (1.063, 0.842)
	high 10 percentile	9	-0.973 (1.868, 0.605)	-0.874 (1.636, 0.596)	-0.722 (1.514, 0.636)

Table B.24.b.3: Effect of PBBM on CA conditional on KAOPEN, POLITY and GOVBAL

Values of KAOPEN, POLITY, GOVBAL	Low 10 percentile	Mean	High 10 percentile	KAOPEN and POLITY (high 10 perc), GOVBAL (low 10 perc.)
Effect of PBBM on CA	0.324 (0.171, 0.071)	0.046 (0.073, 0.532)	-0.164 (0.104, 0.129)	-0.111 (0.137, 0.428)

Table B.24.b.4: Effect of KAOPEN on CA conditional on PBBM and POLITY2

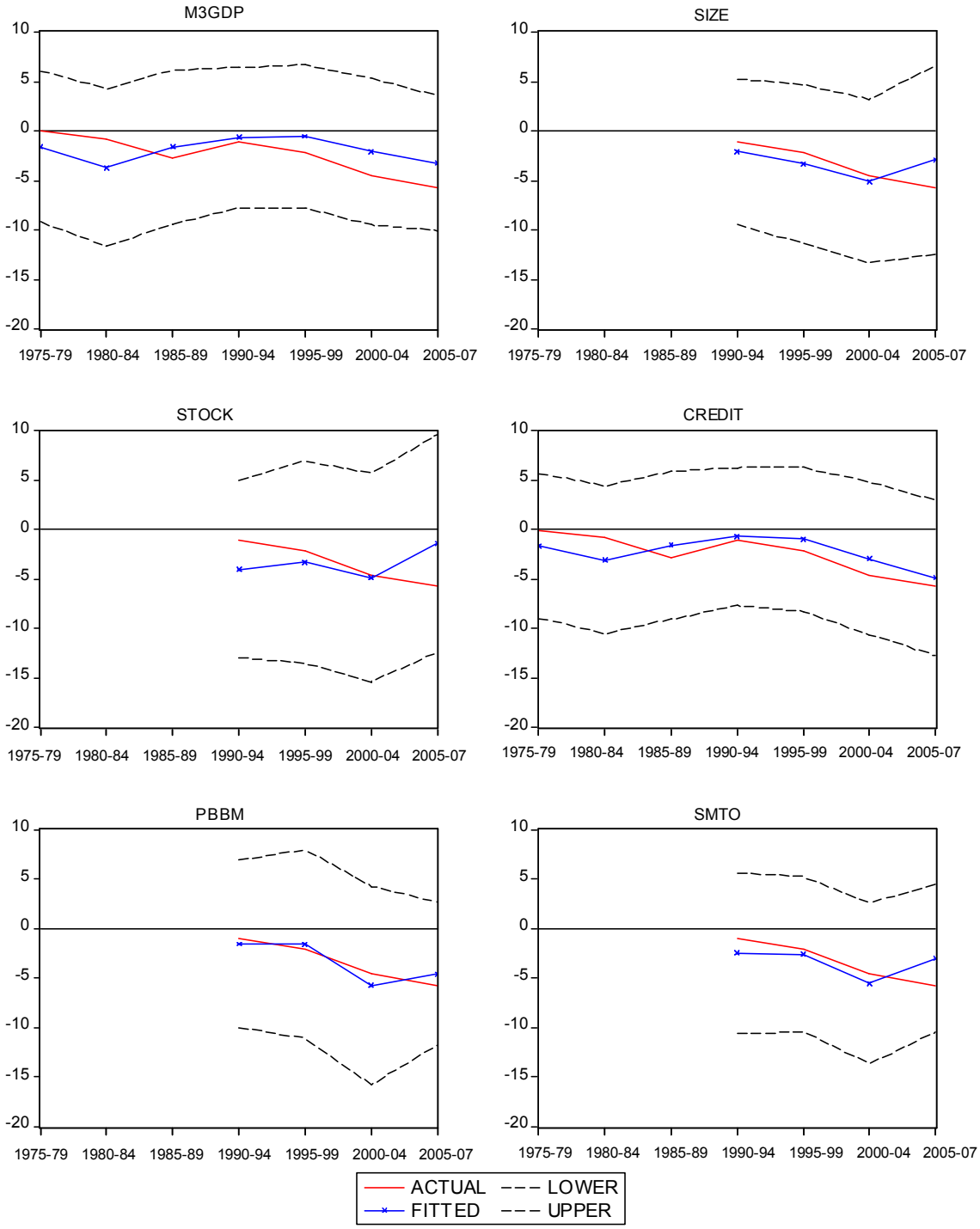
			PBBM (0.083, 130.535)		
			low 10 percentile	mean	high 10 percentile
			2.9	23.819	42.927
POLITY2 (-8,10)	low 10 percentile	-7	2.050 (1.390, 0.153)	1.711 (1.591, 0.293)	1.402 (2.060, 0.503)
	mean	2.568	1.184 (0.907, 0.204)	0.845 (0.692, 0.234)	0.536 (1.153, 0.646)
	high 10 percentile	9	0.601 (1.209, 0.624)	0.263 (0.694, 0.709)	-0.046 (0.868, 0.958)

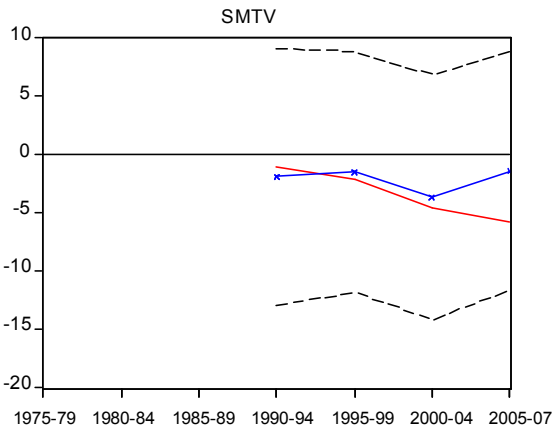
Table B.24.b.5: Effect of POLITY2 on CA conditional on PBBM and KAOPEN

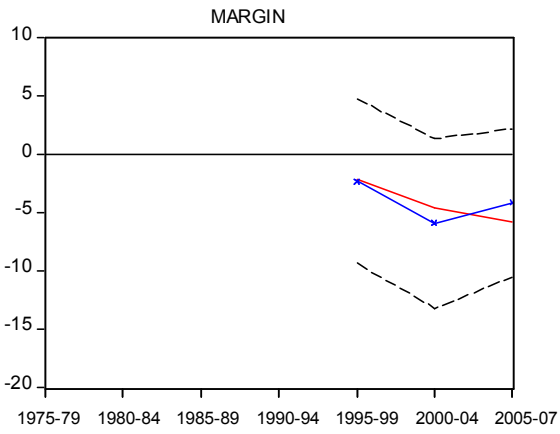
			PBBM (0.083, 130.535)		
			low 10 percentile	mean	high 10 percentile
			2.9	23.819	42.927
KAOPEN (-1.908, 2.541)	low 10 percentile	-1.618	0.683 (0.256, 0.013)	0.197 (0.223, 0.384)	-0.246 (0.308, 0.432)
	mean	0.021	0.0535 (0.157, 0.002)	0.049 (0.128, 0.704)	-0.395 (0.262, 0.145)
	high 10 percentile	2.313	0.327 (0.298, 0.283)	-0.158 (0302, 0.605)	-0.602 (0.391, 0.137)

B.25: Implied current accounts, estimation of equation 1 by country groups.

Figure 5: Implied current account - USA (developed sample)







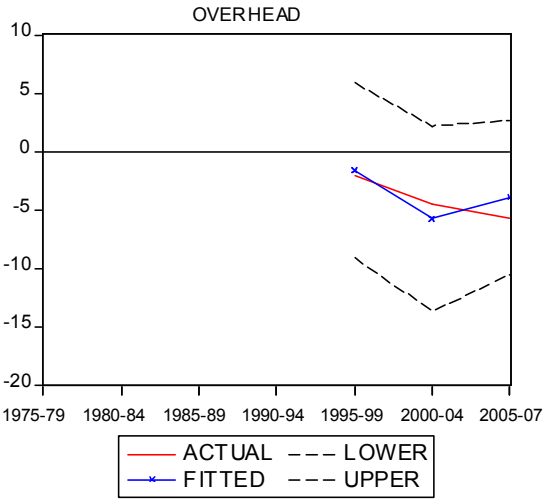
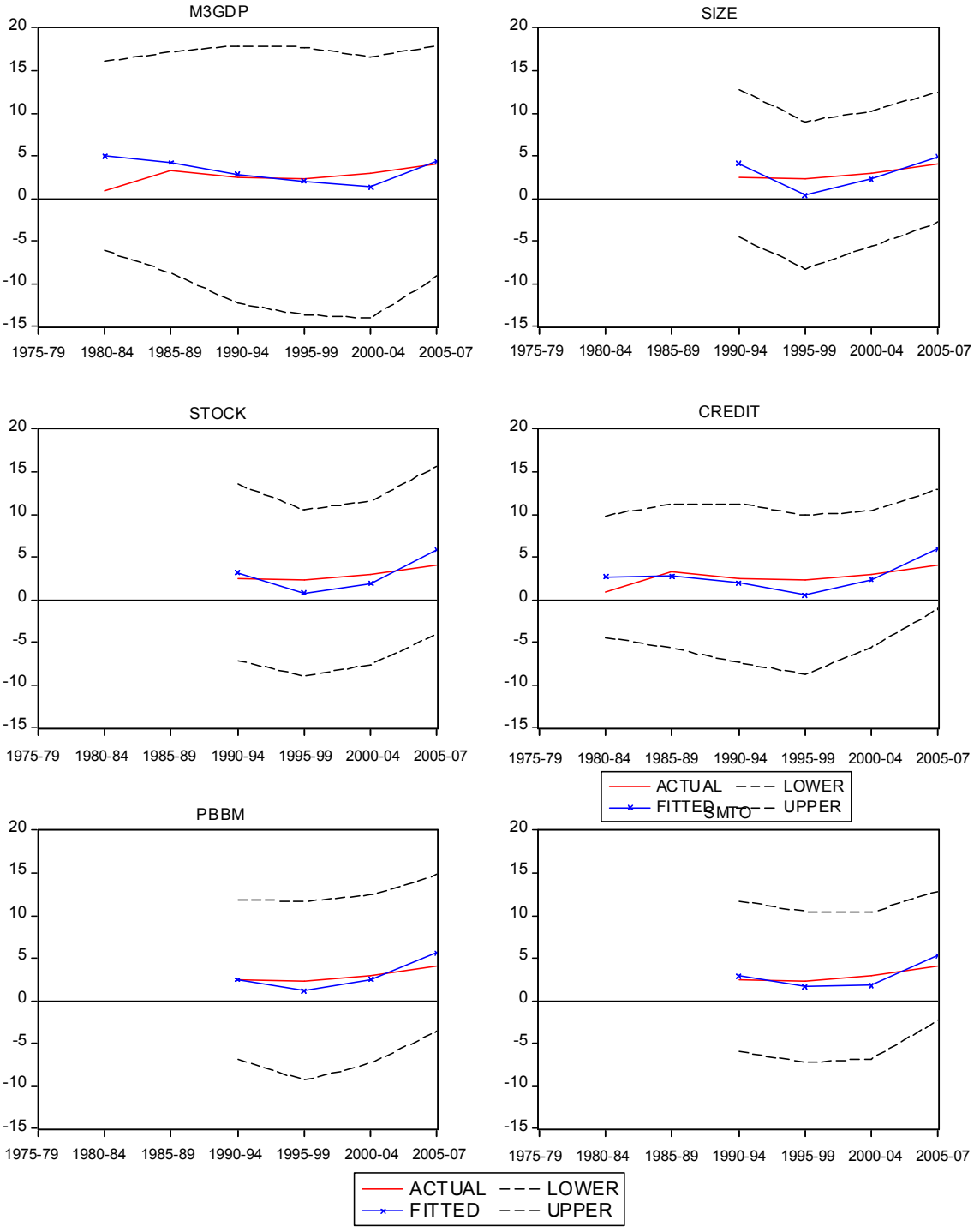


Figure 6: Implied current account - Japan (developed sample)



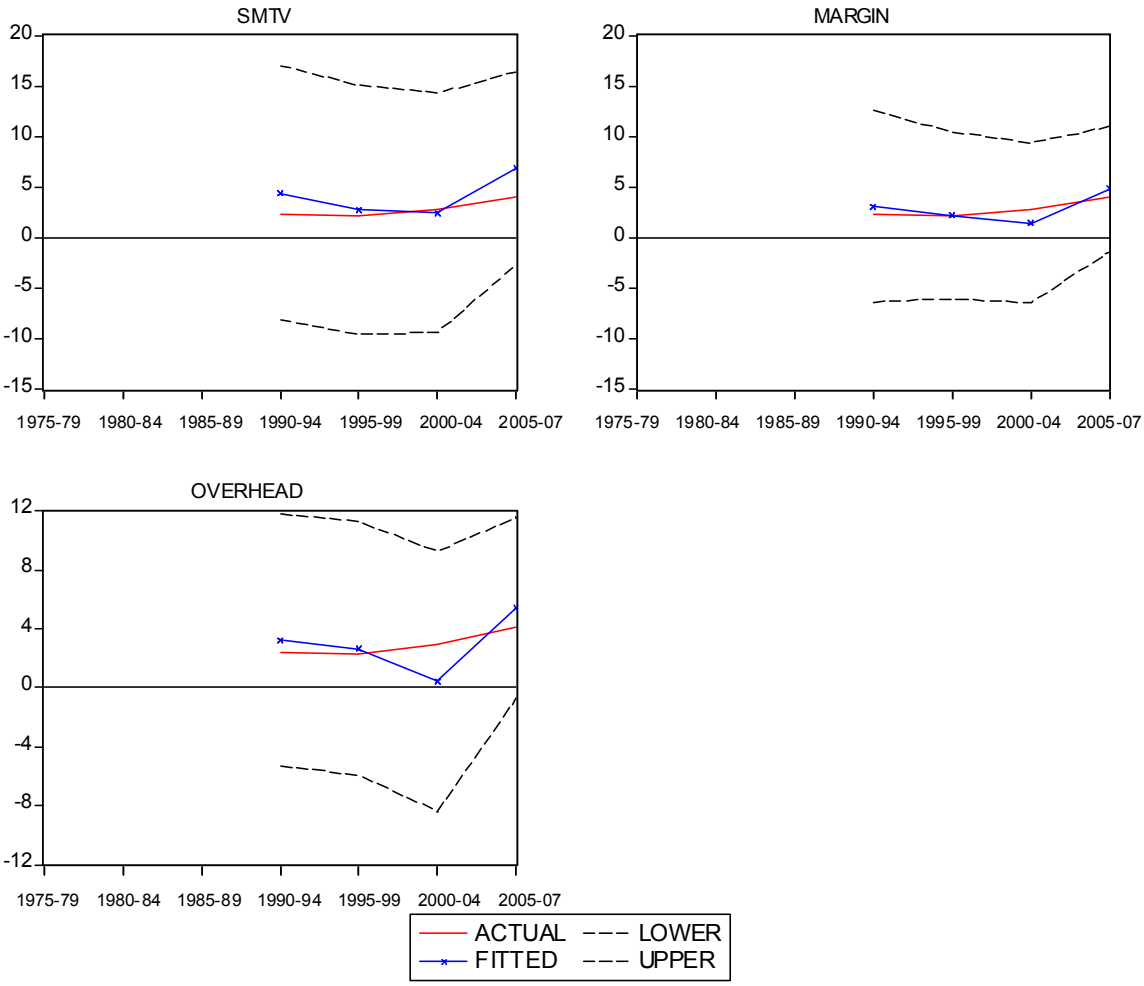
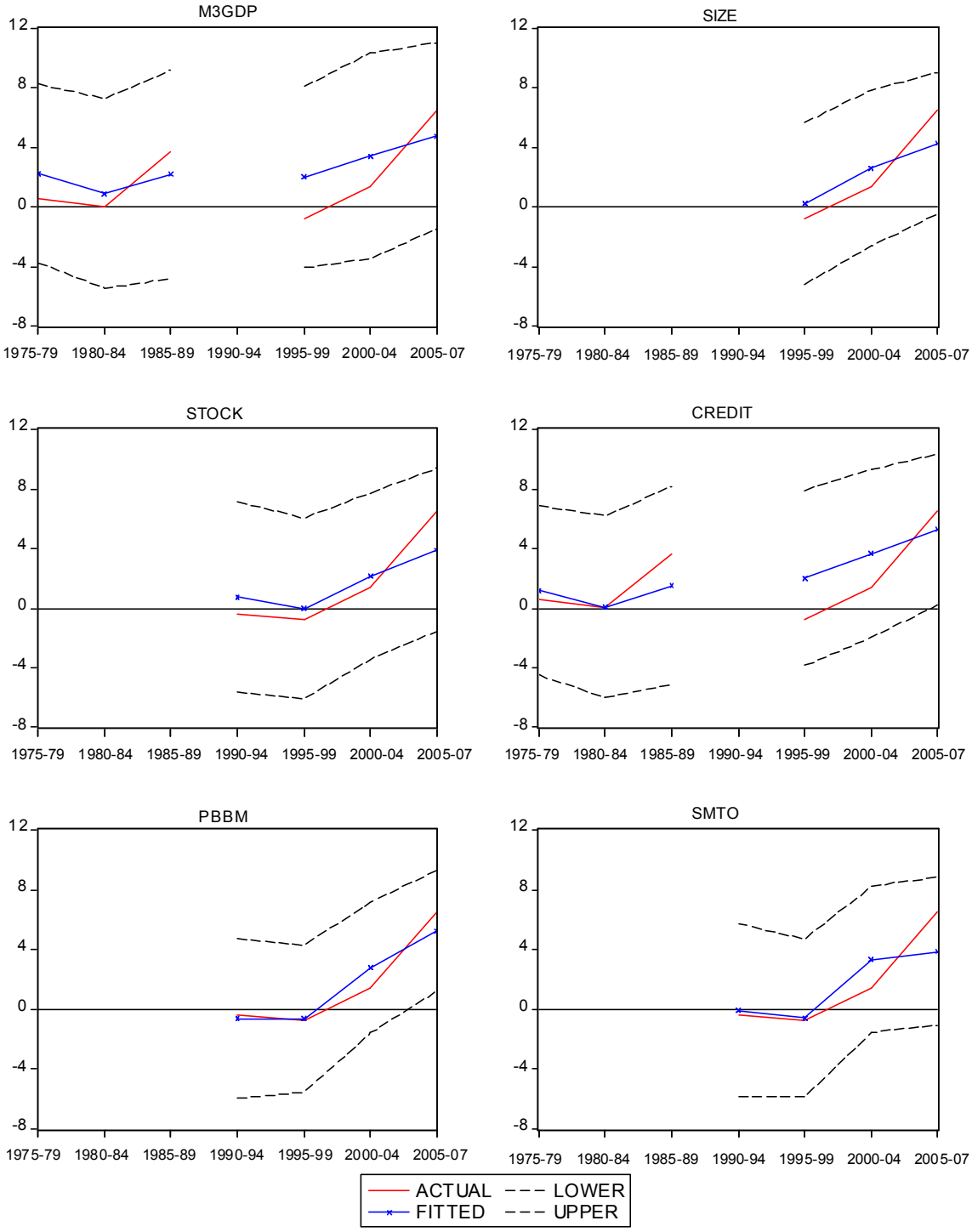


Figure 7: Implied current account - Germany (developed sample)



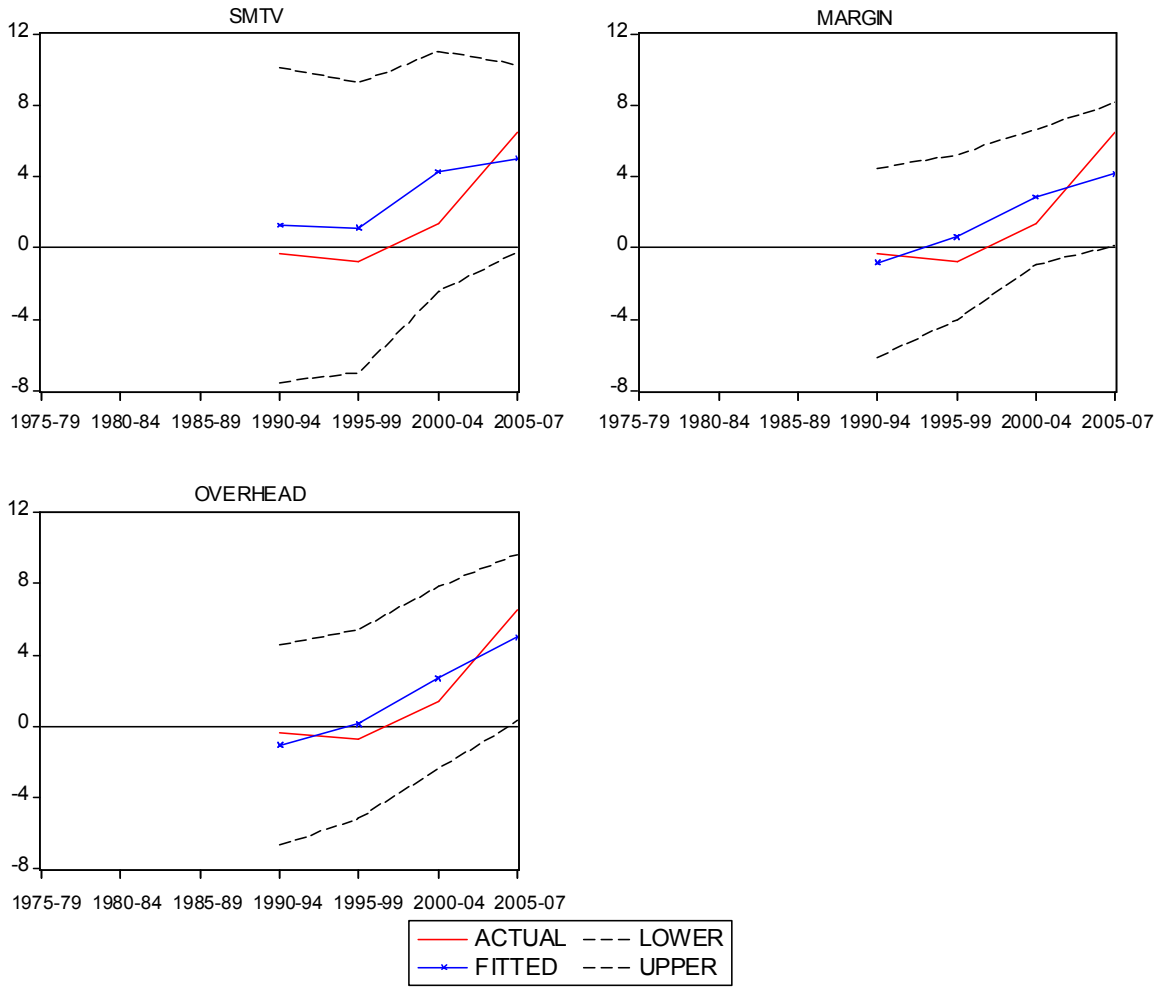
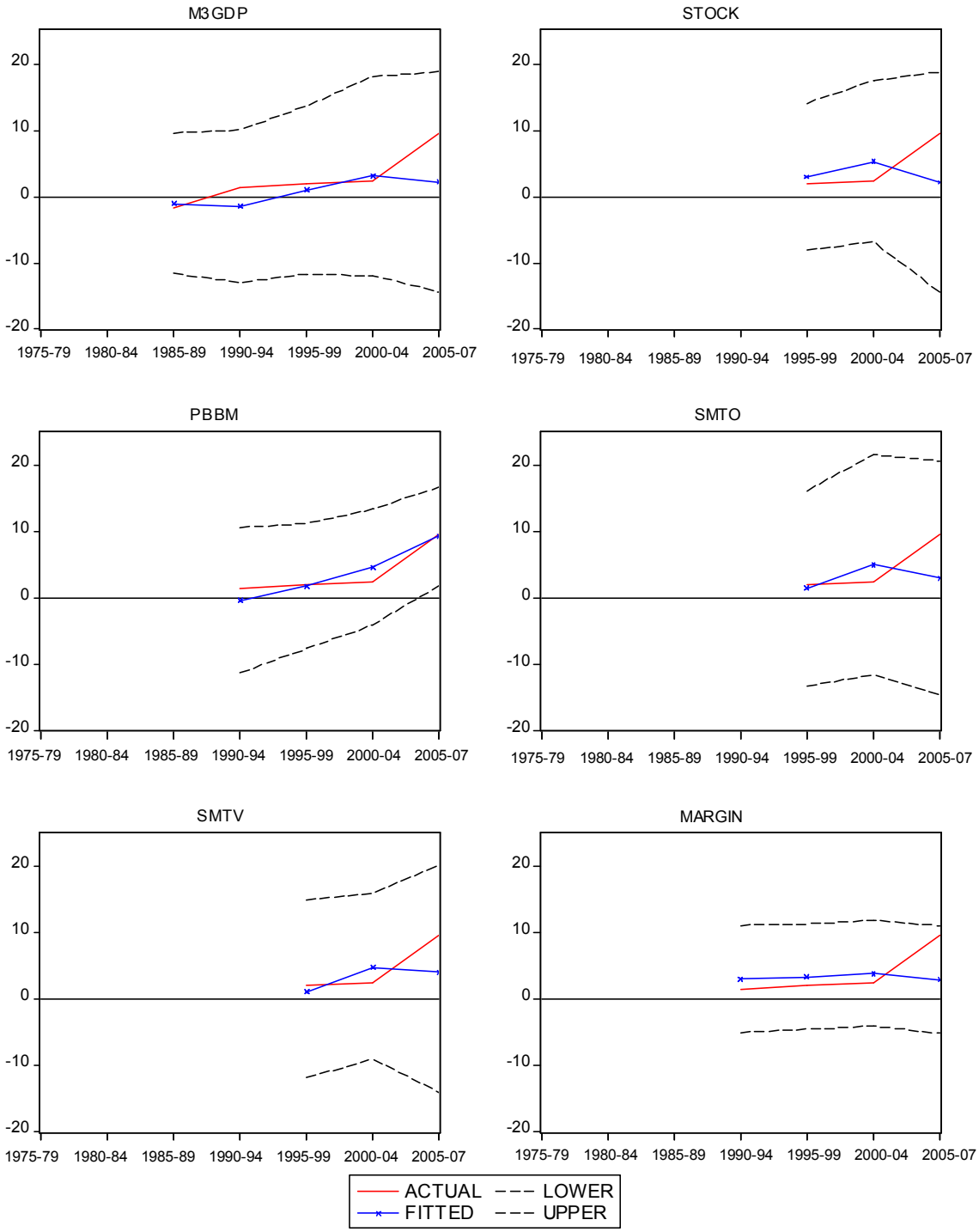
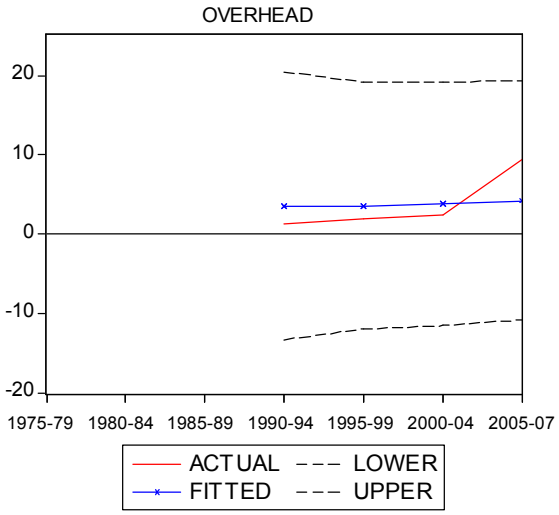


Figure 8: Implied current account - China (developing w/o Africa sample)





B.26: Sensitivity analysis (CAGDP less than –10 0r greater than 10 excluded from the sample)

Table B.26.1: Current account regressions (sensitivity analysis)

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE country	FE country	FE country	FE twoways	FE twoways	FE country	FE country	FE twoways	FE country
C	0.308	12.329	5.403	2.535	6.162	-2.331	1.007	11.264	6.220
	(4.484, 0.945)	(8.748, 0.162)	(8.085, 0.506)	(4.824, 0.600)	(9.622, 0.524)	(8.914, 0.794)	(7.796, 0.897)	(10.159, 0.271)	(9.078, 0.495)
RELYOECD	-0.032	-0.051	-0.065	-0.007	-0.119	-0.066	-0.064	-0.115	-0.087
	(0.028, 0.260)	(0.038, 0.180)	(0.040, 0.105)	(0.026, 0.795)	(0.044, 0.009)	(0.035, 0.065)	(0.036, 0.080)	(0.046, 0.016)	(0.041, 0.035)
POLITY2	0.044	-0.220	0.066	-0.120	0.599	0.145	0.094	-0.191	0.027
	(0.142, 0.759)	(0.257, 0.394)	(0.178, 0.713)	(0.188, 0.525)	(0.232, 0.012)	(0.219, 0.509)	(0.167, 0.573)	(0.318, 0.550)	(0.311, 0.931)
M3GDP	0.042	-0.071	-0.026	-0.045	0.199	0.008	0.007	-0.521	-0.020
	(0.019, 0.033)	(0.029, 0.018)	(0.050, 0.600)	(0.043, 0.292)	(0.073, 0.008)	(0.010, 0.446)	(0.026, 0.797)	(0.459, 0.260)	(0.531, 0.970)
KAOPEN	0.117	-0.829	-1.600	-0.377	0.314	-0.591	-0.872	-0.932	-0.975
	(0.604, 0.847)	(0.635, 0.195)	(0.626, 0.012)	(0.583, 0.519)	(0.985, 0.751)	(0.521, 0.259)	(0.480, 0.072)	(0.848, 0.275)	(0.826, 0.241)
GOVBAL	0.180	0.071	-0.035	0.204	0.814	-0.035	0.010	0.298	0.191
	(0.127, 0.157)	(0.256, 0.783)	(0.236, 0.883)	(0.132, 0.125)	(0.328, 0.015)	(0.215, 0.871)	(0.234, 0.966)	(0.245, 0.228)	(0.226, 0.400)
NFAIN	-0.002	0.005	0.003	0.003	0.001	-0.005	0.000	0.001	-0.006
	(0.016, 0.896)	(0.029, 0.872)	(0.023, 0.912)	(0.015, 0.843)	(0.021, 0.977)	(0.027, 0.866)	(0.025, 0.987)	(0.025, 0.962)	(0.029, 0.835)
DEPR	-0.061	-0.196	-0.139	-0.022	-0.151	-0.040	-0.080	-0.131	-0.101
	(0.047, 0.196)	(0.087, 0.026)	(0.084, 0.098)	(0.059, 0.712)	(0.144, 0.297)	(0.087, 0.645)	(0.078, 0.309)	(0.132, 0.322)	(0.099, 0.311)
POLITY2*M3GDP	-0.001	0.004	-0.001	0.001	-0.021	-0.001	-0.003	0.076	0.033
	(0.002, 0.533)	(0.003, 0.151)	(0.005, 0.825)	(0.005, 0.762)	(0.009, 0.030)	(0.002, 0.596)	(0.003, 0.337)	(0.050, 0.133)	(0.065, 0.612)
POLITY2*KAOPEN	0.053	0.019	0.061	0.049	-0.052	0.071	0.083	0.020	0.050
	(0.042, 0.213)	(0.074, 0.793)	(0.061, 0.316)	(0.045, 0.279)	(0.136, 0.702)	(0.051, 0.166)	(0.051, 0.107)	(0.069, 0.775)	(0.072, 0.488)
KAOPEN*M3GDP	-0.014	0.008	0.022	-0.008	-0.004	-0.002	0.010	0.114	0.081
	(0.008, 0.086)	(0.007, 0.200)	(0.009, 0.016)	(0.009, 0.423)	(0.022, 0.858)	(0.005, 0.619)	(0.011, 0.380)	(0.119, 0.342)	(0.148, 0.583)
TRADEGDP	0.027	0.077	0.064	0.031	0.079	0.072	0.064	0.038	0.027
	(0.021, 0.198)	(0.033, 0.022)	(0.030, 0.035)	(0.022, 0.157)	(0.047, 0.098)	(0.030, 0.019)	(0.027, 0.021)	(0.050, 0.447)	(0.042, 0.513)
ECONGROWTH	-0.019	-0.037	0.196	-0.250	-0.257	0.154	0.169	-0.009	-0.024
	(0.091, 0.837)	(0.271, 0.892)	(0.224, 0.384)	(0.172, 0.148)	(0.278, 0.358)	(0.234, 0.512)	(0.217, 0.438)	(0.326, 0.977)	(0.292, 0.935)
PBBM*GOVBAL					-0.008				
					(0.003, 0.017)				
R-squared	0.628	0.740	0.742	0.685	0.806	0.722	0.726	0.764	0.751
Adjusted R-squared	0.483	0.567	0.578	0.546	0.667	0.546	0.557	0.563	0.553
Durbin-Watson stat	1.937	2.288	2.241	1.882	1.987	2.181	2.223	2.516	2.492
Sample	69	51	56	62	36	56	56	63	63
Observations	285	156	173	263	123	174	176	168	168
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1980 - 2007	1980 - 2007	1990 - 2007	1990 - 2007

Table B.26.2: Savings regressions (sensitivity analysis)

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	RE country	FE country	FE twoways	FE country	FE country	FE country	FE country	FE twoways
C	18.071 (7.802, 0.022)	23.772 (5.024, 0.000)	22.446 (8.845, 0.013)	22.558 (7.178, 0.002)	24.061 (13.986, 0.090)	20.824 (9.954, 0.039)	1.007 (7.796, 0.897)	34.489 (9.251, 0.000)	44.384 (10.041, 0.000)
RELYOECD	0.072 (0.035, 0.042)	0.015 (0.018, 0.415)	0.022 (0.046, 0.627)	0.061 (0.032, 0.062)	-0.036 (0.038, 0.349)	0.040 (0.039, 0.318)	-0.064 (0.036, 0.080)	0.004 (0.036, 0.920)	-0.031 (0.038, 0.426)
POLITY2	0.050 (0.175, 0.774)	0.038 (0.244, 0.878)	0.266 (0.203, 0.194)	0.215 (0.264, 0.416)	0.815 (0.305, 0.009)	0.212 (0.252, 0.402)	0.094 (0.167, 0.573)	0.119 (0.481, 0.806)	-0.203 (0.458, 0.659)
M3GDP	0.080 (0.032, 0.014)	0.013 (0.030, 0.664)	0.067 (0.038, 0.078)	0.041 (0.069, 0.550)	0.162 (0.067, 0.019)	0.008 (0.013, 0.514)	0.007 (0.026, 0.797)	-0.435 (0.447, 0.334)	-1.219 (0.388, 0.002)
KAOPEN	0.689 (0.995, 0.489)	-1.099 (0.648, 0.092)	-1.169 (0.765, 0.130)	-0.878 (0.924, 0.343)	0.751 (1.332, 0.575)	-0.660 (0.940, 0.484)	-0.872 (0.480, 0.072)	-0.904 (1.966, 0.647)	-0.581 (1.975, 0.770)
GOVBAL	0.301 (0.153, 0.051)	0.048 (0.180, 0.790)	0.040 (0.340, 0.908)	0.251 (0.157, 0.112)	0.691 (0.242, 0.006)	0.125 (0.329, 0.704)	0.010 (0.234, 0.966)	0.488 (0.241, 0.046)	0.576 (0.250, 0.024)
NFAIN	-0.010 (0.021, 0.648)	0.030 (0.019, 0.115)	0.021 (0.021, 0.303)	-0.012 (0.021, 0.554)	0.014 (0.024, 0.574)	0.018 (0.027, 0.502)	0.000 (0.025, 0.987)	0.010 (0.025, 0.700)	0.002 (0.025, 0.944)
DEPR	-0.101 (0.071, 0.153)	-0.108 (0.051, 0.034)	-0.094 (0.079, 0.238)	-0.136 (0.071, 0.057)	-0.081 (0.215, 0.707)	-0.088 (0.093, 0.346)	-0.080 (0.078, 0.309)	-0.190 (0.168, 0.261)	-0.300 (0.161, 0.065)
POLITY2*M3GDP	0.000 (0.003, 0.941)	-0.001 (0.004, 0.842)	-0.007 (0.006, 0.187)	-0.006 (0.008, 0.498)	-0.024 (0.008, 0.003)	0.000 (0.002, 0.824)	-0.003 (0.003, 0.337)	0.022 (0.058, 0.698)	0.112 (0.063, 0.081)
POLITY2*KAOPEN	0.152 (0.101, 0.136)	-0.009 (0.054, 0.873)	-0.033 (0.065, 0.612)	0.048 (0.085, 0.568)	-0.144 (0.184, 0.436)	-0.052 (0.086, 0.547)	0.083 (0.051, 0.107)	-0.103 (0.153, 0.501)	-0.165 (0.150, 0.274)
KAOPEN*M3GDP	-0.048 (0.017, 0.005)	0.004 (0.008, 0.602)	0.014 (0.013, 0.277)	-0.002 (0.017, 0.930)	0.001 (0.033, 0.983)	0.000 (0.006, 0.948)	0.010 (0.011, 0.380)	0.178 (0.135, 0.191)	0.246 (0.186, 0.192)
TRADEGDP	0.023 (0.043, 0.600)	0.005 (0.015, 0.716)	0.002 (0.039, 0.969)	0.029 (0.036, 0.430)	-0.004 (0.036, 0.902)	0.023 (0.039, 0.557)	0.064 (0.027, 0.021)	-0.018 (0.038, 0.650)	-0.007 (0.051, 0.889)
ECONGROWTH	0.207 (0.149, 0.166)	0.766 (0.255, 0.003)	0.823 (0.335, 0.016)	0.280 (0.186, 0.134)	0.675 (0.249, 0.009)	0.848 (0.362, 0.021)	0.169 (0.217, 0.438)	0.606 (0.191, 0.002)	0.547 (0.250, 0.032)
USADUM		-8.265 (2.063, 0.000)							
OIL		6.597 (3.521, 0.063)							
PBBM*GOVBAL					-0.008 (0.004, 0.038)				
R-squared	0.879	0.375	0.910	0.831	0.932	0.900	0.726	0.921	0.928
Adjusted R-squared	0.824	0.306	0.850	0.757	0.886	0.836	0.557	0.854	0.861
Durbin-Watson stat	1.476	1.378	2.225	1.315	1.830	2.138	2.223	2.444	2.413
Sample	65	48	51	59	35	50	56	57	57
Observations	268	142	155	254	116	156	176	150	149
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1975 - 2007	1980 - 2007	1990 - 2007	1990 - 2007

Table B.26.3: Investment regressions (sensitivity analysis)

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE twoways	FE country	FE twoways	FE country	FE twoways	FE country	FE twoways	FE country
C	18.774 (7.390, 0.012)	13.012 (5.468, 0.020)	16.644 (5.971, 0.006)	16.497 (6.010, 0.007)	26.949 (7.714, 0.001)	20.884 (6.028, 0.001)	1.007 (7.796, 0.897)	21.005 (7.571, 0.007)	26.066 (7.117, 0.000)
RELYOECD	0.048 (0.033, 0.145)	0.055 (0.036, 0.126)	0.084 (0.030, 0.007)	0.038 (0.030, 0.213)	0.032 (0.034, 0.346)	0.109 (0.027, 0.000)	-0.064 (0.036, 0.080)	0.108 (0.030, 0.001)	0.077 (0.032, 0.019)
POLITY2	0.387 (0.184, 0.037)	0.036 (0.156, 0.820)	-0.015 (0.097, 0.877)	0.571 (0.169, 0.001)	0.100 (0.157, 0.525)	-0.141 (0.113, 0.217)	0.094 (0.167, 0.573)	-0.086 (0.254, 0.735)	-0.139 (0.231, 0.550)
M3GDP	0.046 (0.038, 0.234)	0.070 (0.036, 0.058)	0.051 (0.028, 0.069)	0.128 (0.048, 0.009)	-0.005 (0.055, 0.931)	-0.002 (0.006, 0.782)	0.007 (0.026, 0.797)	-0.040 (0.464, 0.931)	-0.636 (0.572, 0.269)
KAOPEN	-0.489 (0.792, 0.538)	-0.374 (0.734, 0.612)	0.188 (0.586, 0.749)	-0.933 (0.695, 0.181)	1.322 (0.562, 0.021)	-0.438 (0.492, 0.375)	-0.872 (0.480, 0.072)	-0.408 (0.593, 0.493)	-0.793 (0.622, 0.206)
GOVBAL	0.129 (0.134, 0.339)	0.046 (0.157, 0.771)	0.242 (0.198, 0.224)	0.054 (0.135, 0.687)	0.210 (0.346, 0.545)	0.187 (0.171, 0.278)	0.010 (0.234, 0.966)	0.266 (0.183, 0.150)	0.294 (0.196, 0.136)
NFAIN	0.003 (0.016, 0.872)	0.020 (0.008, 0.013)	0.019 (0.011, 0.094)	0.004 (0.016, 0.774)	0.013 (0.012, 0.285)	0.018 (0.011, 0.110)	0.000 (0.025, 0.987)	0.014 (0.014, 0.297)	0.013 (0.013, 0.330)
DEPR	-0.050 (0.072, 0.485)	0.043 (0.064, 0.504)	0.052 (0.052, 0.317)	-0.060 (0.055, 0.282)	-0.080 (0.125, 0.525)	-0.042 (0.064, 0.515)	-0.080 (0.078, 0.309)	-0.030 (0.109, 0.783)	-0.035 (0.087, 0.687)
POLITY2*M3GDP	-0.006 (0.004, 0.087)	-0.003 (0.003, 0.286)	-0.002 (0.003, 0.462)	-0.013 (0.005, 0.004)	-0.006 (0.008, 0.458)	0.001 (0.001, 0.161)	-0.003 (0.003, 0.337)	-0.004 (0.056, 0.939)	0.012 (0.066, 0.856)
POLITY2*KAOPEN	-0.011 (0.055, 0.844)	0.066 (0.071, 0.357)	-0.024 (0.043, 0.578)	0.003 (0.060, 0.959)	-0.170 (0.080, 0.037)	-0.028 (0.035, 0.436)	0.083 (0.051, 0.107)	-0.041 (0.042, 0.328)	-0.088 (0.047, 0.067)
KAOPEN*M3GDP	0.002 (0.012, 0.837)	-0.007 (0.007, 0.357)	-0.018 (0.011, 0.104)	0.012 (0.012, 0.338)	-0.003 (0.017, 0.847)	0.000 (0.004, 0.982)	0.010 (0.011, 0.380)	0.077 (0.093, 0.407)	0.199 (0.107, 0.065)
TRADEGDP	0.024 (0.029, 0.416)	-0.036 (0.044, 0.422)	-0.029 (0.036, 0.417)	0.011 (0.028, 0.710)	-0.036 (0.039, 0.355)	-0.013 (0.035, 0.713)	0.064 (0.027, 0.021)	-0.013 (0.061, 0.831)	-0.029 (0.052, 0.581)
ECONGROWTH	0.397 (0.186, 0.034)	0.804 (0.276, 0.005)	0.600 (0.198, 0.003)	0.658 (0.106, 0.000)	0.798 (0.222, 0.001)	0.649 (0.254, 0.012)	0.169 (0.217, 0.438)	0.463 (0.246, 0.063)	0.566 (0.217, 0.011)
PBBM*GOVBAL					-0.003 (0.005, 0.505)				
R-squared	0.789	0.901	0.893	0.779	0.915	0.901	0.726	0.903	0.898
Adjusted R-squared	0.707	0.827	0.826	0.693	0.860	0.831	0.557	0.822	0.817
Durbin-Watson stat	1.348	2.354	2.283	1.437	2.120	2.324	2.223	2.342	2.384
Sample	69	51	56	62	36	56	56	63	63
Observations	311	157	174	286	124	176	176	170	169
Time span	1970 - 2007	1980 - 2007	1980 - 2007	1970 - 2007	1990 - 2007	1975 - 2007	1980 - 2007	1990 - 2007	1990 - 2007

B.27: Current account regressions at yearly frequency, 1970-2007

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE country	FE country	FE twoways	FE country	FE country	FE twoways	FE country	FE country
C	5.589 (4.238, 0.187)	39.651 (13.802, 0.004)	37.801 (12.839, 0.003)	14.561 (6.873, 0.034)	34.299 (16.788, 0.042)	38.974 (12.782, 0.002)	37.496 (13.484, 0.006)	46.360 (14.048, 0.001)	43.652 (12.972, 0.001)
RELYOECD	-0.035 (0.018, 0.052)	-0.037 (0.028, 0.187)	-0.047 (0.027, 0.086)	-0.018 (0.019, 0.359)	-0.069 (0.035, 0.051)	-0.053 (0.029, 0.072)	-0.062 (0.033, 0.055)	-0.072 (0.036, 0.048)	-0.071 (0.035, 0.044)
POLITY2	-0.211 (0.229, 0.357)	-0.168 (0.141, 0.232)	-0.101 (0.128, 0.432)	-0.205 (0.282, 0.468)	0.511 (0.221, 0.021)	-0.131 (0.166, 0.428)	-0.082 (0.121, 0.499)	-0.036 (0.216, 0.866)	0.184 (0.244, 0.452)
M3GDP	0.051 (0.022, 0.021)	-0.052 (0.013, 0.000)	-0.042 (0.035, 0.229)	0.024 (0.037, 0.505)	0.111 (0.032, 0.001)	-0.009 (0.006, 0.146)	-0.014 (0.021, 0.523)	-0.033 (0.206, 0.873)	0.283 (0.279, 0.310)
KAOPEN	1.376 (0.785, 0.080)	-1.634 (0.784, 0.037)	-1.355 (0.720, 0.060)	0.358 (0.771, 0.643)	-3.226 (1.331, 0.016)	-1.175 (0.676, 0.083)	-1.024 (0.672, 0.128)	-1.063 (1.142, 0.352)	-1.543 (1.139, 0.176)
GOVBAL	0.014 (0.065, 0.829)	0.153 (0.086, 0.076)	0.126 (0.090, 0.162)	0.161 (0.069, 0.019)	0.381 (0.155, 0.014)	0.109 (0.080, 0.176)	0.102 (0.079, 0.192)	0.227 (0.113, 0.046)	0.213 (0.110, 0.053)
NFA	0.012 (0.006, 0.044)	0.059 (0.019, 0.002)	0.065 (0.016, 0.000)	0.066 (0.013, 0.000)	0.046 (0.024, 0.058)	0.063 (0.019, 0.001)	0.059 (0.019, 0.002)	0.057 (0.013, 0.000)	0.057 (0.013, 0.000)
DEPR	-0.096 (0.070, 0.168)	-0.256 (0.068, 0.000)	-0.232 (0.067, 0.001)	-0.003 (0.061, 0.957)	-0.177 (0.129, 0.173)	-0.173 (0.070, 0.013)	-0.187 (0.069, 0.007)	-0.251 (0.097, 0.010)	-0.257 (0.094, 0.007)
POLITY2*M3GDP	-0.003 (0.002, 0.214)	0.002 (0.002, 0.165)	0.001 (0.004, 0.778)	-0.005 (0.004, 0.151)	-0.006 (0.005, 0.295)	-0.002 (0.001, 0.112)	-0.003 (0.002, 0.234)	0.019 (0.028, 0.492)	-0.008 (0.032, 0.812)
POLITY2*KAOPEN	-0.035 (0.072, 0.628)	0.107 (0.081, 0.184)	0.109 (0.073, 0.136)	-0.016 (0.080, 0.843)	0.424 (0.136, 0.002)	0.117 (0.076, 0.123)	0.094 (0.072, 0.191)	0.136 (0.090, 0.132)	0.178 (0.098, 0.068)
KAOPEN*M3GDP	-0.017 (0.006, 0.008)	0.007 (0.005, 0.159)	0.012 (0.008, 0.130)	-0.004 (0.009, 0.633)	-0.028 (0.012, 0.017)	0.009 (0.005, 0.101)	0.016 (0.007, 0.016)	-0.028 (0.063, 0.652)	-0.014 (0.077, 0.858)
TRADEGDP	0.023 (0.017, 0.180)	0.068 (0.026, 0.008)	0.053 (0.027, 0.048)	0.012 (0.020, 0.531)	0.036 (0.025, 0.153)	0.032 (0.018, 0.079)	0.036 (0.021, 0.093)	-0.003 (0.026, 0.903)	-0.007 (0.026, 0.790)
ECONGROWTH	-0.019 (0.059, 0.753)	-0.204 (0.113, 0.072)	-0.167 (0.097, 0.087)	-0.121 (0.063, 0.053)	-0.189 (0.120, 0.114)	-0.165 (0.080, 0.041)	-0.195 (0.106, 0.068)	-0.091 (0.074, 0.218)	-0.090 (0.080, 0.261)
LAGLNREER	-0.330 (0.451, 0.464)	-4.876 (3.031, 0.108)	-4.955 (2.856, 0.083)	-2.189 (1.787, 0.221)	-6.003 (4.051, 0.139)	-5.582 (2.839, 0.050)	-5.171 (3.000, 0.085)	-5.929 (3.210, 0.065)	-5.664 (2.986, 0.058)
PBBM*GOVBAL					-0.006 (0.003, 0.017)				
R-squared	0.544	0.707	0.699	0.472	0.769	0.681	0.697	0.766	0.764
Adj. R-squared	0.502	0.680	0.671	0.422	0.746	0.652	0.656	0.743	0.741
Durbin-Watson stat	1.109	0.924	0.917	1.202	0.817	0.916	0.897	0.884	0.911
Sample	63	50	52	60	34	52	52	61	61
Observations	1288	720	761	1200	532	780	788	827	829
Time span	1975 to 2007	1978 to 2007	1978 to 2007	1975 to 2007	1990 to 2007	1977 to 2007	1976 to 2007	1987 to 2007	1987 to 2007

B.28: Current account regressions, between model

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
(Intercept)	-2.904 (2.479, 0.244)	-0.792 (3.061, 0.797)	-1.454 (3.386, 0.669)	-0.544 (2.700, 0.841)	-2.408 (3.532, 0.501)	-0.262 (3.551, 0.941)	-0.684 (3.206, 0.832)	3.606 (3.601, 0.319)	4.687 (3.503, 0.184)
RELYoecd	0.038 (0.015, 0.012)	0.030 (0.018, 0.109)	0.027 (0.020, 0.175)	0.036 (0.019, 0.058)	0.074 (0.021, 0.001)	0.042 (0.019, 0.032)	0.029 (0.018, 0.116)	0.036 (0.024, 0.135)	0.029 (0.021, 0.180)
polity2	0.320 (0.120, 0.009)	-0.059 (0.128, 0.647)	0.126 (0.110, 0.256)	0.168 (0.124, 0.177)	-0.455 (0.221, 0.049)	-0.007 (0.118, 0.955)	0.035 (0.103, 0.739)	-0.215 (0.249, 0.392)	-0.303 (0.205, 0.143)
m3gdp	0.060 (0.015, 0.000)	0.017 (0.013, 0.186)	0.070 (0.020, 0.001)	0.070 (0.024, 0.005)	-0.068 (0.073, 0.354)	0.012 (0.010, 0.260)	0.083 (0.030, 0.007)	-0.260 (0.274, 0.346)	-0.598 (0.252, 0.020)
kaopen	-1.424 (0.564, 0.013)	0.015 (0.553, 0.978)	-1.581 (0.441, 0.001)	-1.222 (0.494, 0.015)	-0.310 (0.811, 0.706)	-0.472 (0.461, 0.310)	-0.500 (0.406, 0.222)	-1.818 (0.981, 0.067)	-1.883 (0.841, 0.028)
govbal	0.610 (0.111, 0.000)	0.493 (0.106, 0.000)	0.480 (0.119, 0.000)	0.633 (0.117, 0.000)	0.511 (0.290, 0.090)	0.533 (0.123, 0.000)	0.493 (0.115, 0.000)	0.394 (0.128, 0.003)	0.409 (0.125, 0.001)
NFA	0.038 (0.007, 0.000)	0.058 (0.008, 0.000)	0.041 (0.008, 0.000)	0.030 (0.007, 0.000)	0.043 (0.013, 0.002)	0.058 (0.009, 0.000)	0.047 (0.009, 0.000)	0.043 (0.008, 0.000)	0.043 (0.008, 0.000)
depr	0.024 (0.024, 0.314)	0.044 (0.031, 0.163)	0.034 (0.034, 0.319)	0.016 (0.026, 0.546)	0.083 (0.050, 0.107)	0.030 (0.035, 0.398)	0.034 (0.032, 0.287)	-0.005 (0.035, 0.880)	-0.001 (0.033, 0.982)
m3gdp:polity2	-0.006 (0.002, 0.002)	-0.001 (0.001, 0.484)	-0.007 (0.002, 0.001)	-0.008 (0.003, 0.012)	0.004 (0.009, 0.658)	-0.002 (0.002, 0.232)	-0.008 (0.003, 0.006)	0.018 (0.043, 0.676)	0.047 (0.041, 0.247)
polity2:kaopen	-0.026 (0.046, 0.572)	-0.055 (0.067, 0.411)	0.088 (0.058, 0.136)	-0.033 (0.057, 0.560)	-0.134 (0.083, 0.119)	-0.042 (0.056, 0.449)	-0.022 (0.053, 0.681)	0.036 (0.068, 0.594)	0.054 (0.066, 0.416)
m3gdp:kaopen	0.011 (0.010, 0.260)	0.000 (0.004, 0.997)	0.008 (0.007, 0.286)	0.015 (0.010, 0.132)	0.014 (0.023, 0.561)	0.002 (0.007, 0.804)	0.006 (0.013, 0.622)	0.121 (0.149, 0.418)	0.124 (0.152, 0.416)
tradegdp	-0.003 (0.007, 0.670)	-0.011 (0.009, 0.218)	-0.023 (0.010, 0.018)	-0.006 (0.008, 0.434)	0.008 (0.011, 0.478)	-0.004 (0.008, 0.640)	-0.014 (0.009, 0.117)	0.011 (0.010, 0.248)	0.013 (0.010, 0.184)
econgrowth	-0.489 (0.175, 0.006)	-0.325 (0.198, 0.106)	-0.127 (0.222, 0.570)	-0.703 (0.206, 0.001)	-0.003 (0.329, 0.993)	-0.239 (0.236, 0.314)	-0.252 (0.219, 0.253)	-0.604 (0.279, 0.033)	-0.648 (0.270, 0.019)
govbal:pbbm					-0.006 (0.003, 0.079)				
Oil	3.633 (1.190, 0.003)	3.252 (1.338, 0.018)	2.394 (1.499, 0.115)	3.495 (1.251, 0.007)	6.933 (1.700, 0.000)	2.278 (1.512, 0.137)	3.068 (1.412, 0.033)	3.379 (1.735, 0.055)	3.154 (1.692, 0.066)
USA dummy	-2.782 (3.179, 0.384)	-5.202 (2.955, 0.083)	-5.963 (3.404, 0.084)	-4.467 (3.242, 0.172)	-4.878 (2.174, 0.033)	-4.109 (3.372, 0.227)	-6.168 (3.320, 0.068)	-3.491 (4.549, 0.445)	-2.958 (4.375, 0.501)
R-squared	0.808	0.826	0.742	0.778	0.897	0.764	0.793	0.622	0.638
Sample	107	79	85	99	43	82	82	101	101
Observations	2302	1124	1206	2093	669	1226	1235	1255	1258
Time span	1973-2008	1980-2008	1980-2008	1970-2008	1993-2008	1983-2008	1983-2008	1990-2008	1990-2008

B.29: Current account regressions, XCONST as the proxy of institutional quality

FD proxy	M3GDP	SIZE	STOCK	CREDIT	PBBM	SMTO	SMTV	MARGIN	OVERHEAD
Model	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE twoways	FE country
C	3.238 (7.724, 0.675)	14.748 (7.808, 0.062)	15.896 (7.110, 0.027)	4.053 (7.727, 0.600)	5.090 (10.363, 0.625)	12.191 (9.076, 0.182)	14.401 (7.557, 0.059)	25.323 (13.401, 0.061)	9.871 (10.711, 0.359)
RELYOECD	0.042 (0.046, 0.363)	-0.062 (0.053, 0.248)	-0.095 (0.045, 0.034)	0.048 (0.043, 0.263)	-0.158 (0.047, 0.001)	-0.124 (0.048, 0.011)	-0.122 (0.044, 0.007)	-0.158 (0.059, 0.009)	-0.116 (0.047, 0.015)
XCONST	-0.373 (0.570, 0.513)	-0.120 (0.576, 0.836)	-0.115 (0.416, 0.783)	-0.628 (0.631, 0.321)	2.243 (0.622, 0.001)	0.285 (0.614, 0.643)	-0.006 (0.390, 0.988)	0.105 (1.280, 0.935)	1.455 (1.131, 0.201)
M3GDP	-0.020 (0.072, 0.784)	-0.067 (0.058, 0.255)	-0.104 (0.075, 0.171)	-0.115 (0.094, 0.223)	0.539 (0.167, 0.002)	0.010 (0.023, 0.669)	-0.053 (0.055, 0.338)	-0.858 (1.268, 0.500)	2.059 (1.300, 0.116)
KAOPEN	2.056 (1.496, 0.171)	-0.215 (1.542, 0.890)	-0.723 (1.321, 0.585)	0.949 (1.503, 0.529)	2.502 (1.890, 0.190)	-1.413 (1.111, 0.206)	-0.911 (1.232, 0.461)	-0.459 (1.826, 0.802)	-1.495 (1.667, 0.372)
GOVBAL	0.265 (0.099, 0.008)	0.377 (0.203, 0.066)	0.259 (0.192, 0.180)	0.407 (0.134, 0.003)	0.614 (0.351, 0.084)	0.179 (0.204, 0.380)	0.157 (0.191, 0.412)	0.512 (0.241, 0.036)	0.411 (0.205, 0.047)
NFAIN	0.002 (0.002, 0.478)	0.037 (0.032, 0.246)	0.042 (0.029, 0.142)	0.054 (0.021, 0.011)	-0.007 (0.019, 0.700)	0.049 (0.034, 0.154)	0.036 (0.028, 0.198)	0.035 (0.029, 0.236)	0.035 (0.033, 0.299)
DEPR	-0.022 (0.085, 0.793)	-0.161 (0.082, 0.054)	-0.216 (0.087, 0.015)	0.053 (0.082, 0.518)	-0.261 (0.151, 0.088)	-0.118 (0.088, 0.182)	-0.157 (0.084, 0.063)	-0.269 (0.162, 0.099)	-0.236 (0.117, 0.047)
XCONST*M3GDP	0.002 (0.011, 0.832)	0.006 (0.008, 0.476)	0.015 (0.012, 0.238)	0.009 (0.015, 0.531)	-0.085 (0.028, 0.003)	-0.002 (0.005, 0.732)	0.012 (0.009, 0.201)	0.167 (0.224, 0.459)	-0.185 (0.216, 0.393)
XCONST*KAOPEN	-0.136 (0.252, 0.591)	-0.029 (0.279, 0.917)	0.025 (0.222, 0.911)	-0.123 (0.258, 0.634)	-0.528 (0.396, 0.186)	0.193 (0.184, 0.297)	0.175 (0.215, 0.419)	-0.092 (0.317, 0.772)	0.196 (0.306, 0.523)
KAOPEN*M3GDP	-0.027 (0.008, 0.001)	0.001 (0.007, 0.905)	0.004 (0.012, 0.716)	-0.011 (0.010, 0.291)	0.006 (0.025, 0.815)	0.000 (0.007, 0.975)	-0.011 (0.011, 0.338)	0.071 (0.149, 0.637)	-0.052 (0.202, 0.798)
TRADEGDP	-0.008 (0.033, 0.815)	0.047 (0.036, 0.188)	0.046 (0.035, 0.188)	0.008 (0.031, 0.806)	0.088 (0.041, 0.037)	0.001 (0.042, 0.978)	0.009 (0.042, 0.825)	-0.028 (0.056, 0.621)	-0.029 (0.046, 0.531)
ECONGROWTH	-0.249 (0.150, 0.098)	-0.326 (0.262, 0.216)	-0.177 (0.243, 0.469)	-0.502 (0.220, 0.023)	-0.134 (0.279, 0.632)	-0.313 (0.248, 0.209)	-0.294 (0.257, 0.255)	-0.237 (0.321, 0.461)	-0.238 (0.252, 0.347)
PBBM*GOVBAL					-0.007 (0.004, 0.091)				
R-squared	0.780	0.833	0.823	0.779	0.875	0.812	0.810	0.853	0.851
Adjusted R-squared	0.677	0.706	0.696	0.674	0.778	0.680	0.679	0.724	0.729
Durbin-Watson stat	2.030	2.764	2.723	2.249	2.127	2.608	2.621	2.698	2.816
Sample	104	68	73	94	43	73	73	86	85
Observations	384	196	213	349	134	216	221	215	214
Time span	1970-2007	1980-2007	1980-2007	1970-2007	1990-2007	1980-2007	1975-2007	1990-2007	1990-2007

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