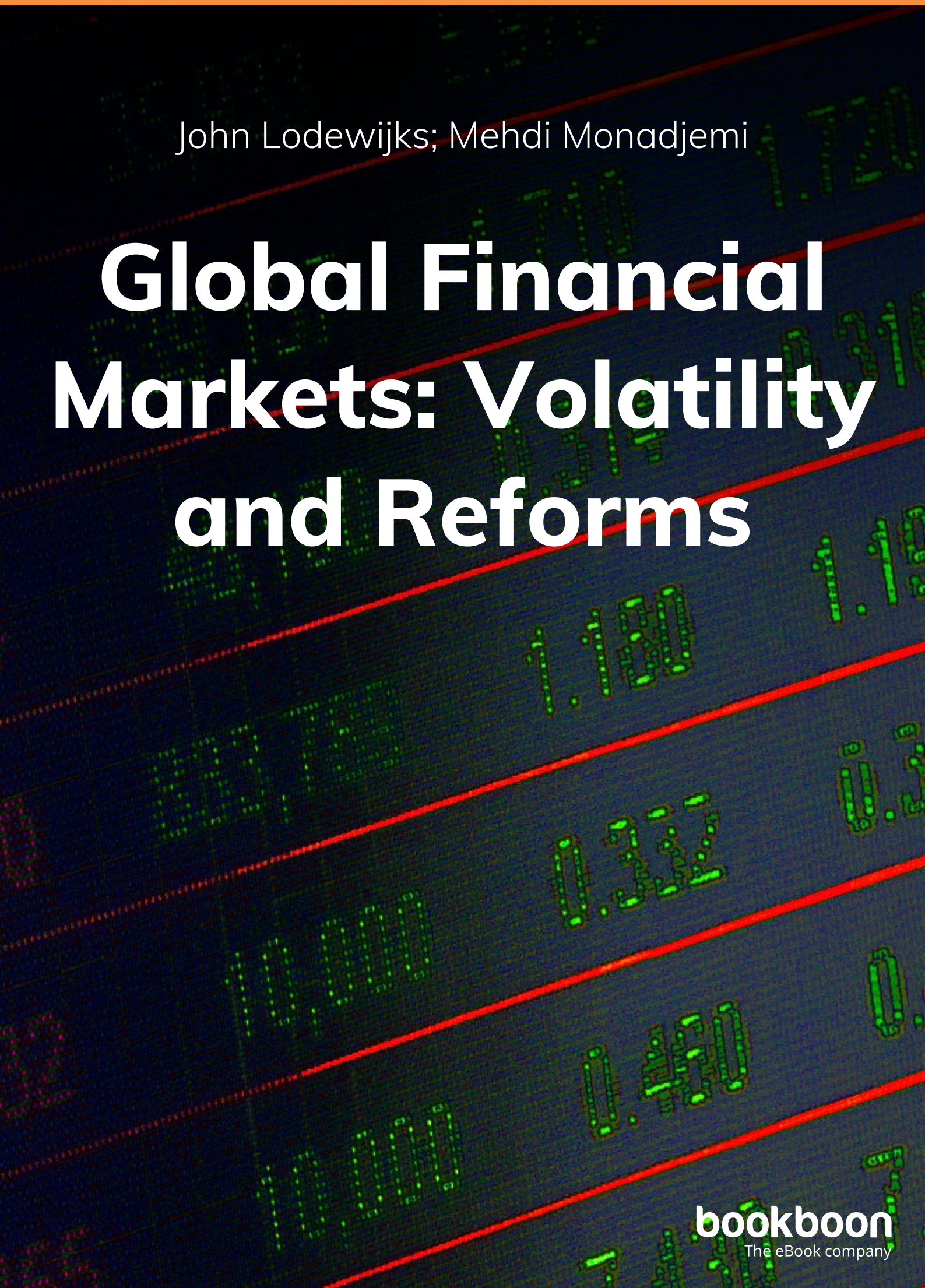
John Lodewijks; Mehdi Monadjemi

Global Financial Markets: Volatility and Reforms



bookboon
The eBook company

MEHDI MONADJEMI,
JOHN LODEWIJKS

GLOBAL FINANCIAL MARKETS: VOLATILITY AND REFORMS

Global Financial Markets: Volatility and Reforms
1st edition

ISBN 978-87-403-2648-2
Peer review by John Lodewijks, SP Jain School of Global Management,
Mehdi Monadjemi, UNSW Sydney· School of Economics

CONTENTS

PREFACE

As we write this, it is the 10-year anniversary of the collapse of Lehman Brothers. Just last year, we marked the 20-year anniversary of the Asian financial crisis. If the global economy were to plunge into another crisis, would we be ready? How would we respond to economic crises?

Turbulence, volatility and crises continue to dominate the economic landscape. Argentina is in crisis. Turkey is not far off. Markets have been rattled in Indonesia, Myanmar, Italy and Spain as financial conditions tighten. The fallout from Brexit is more uncertain than ever. The trade war between the United States and China has escalated at an alarming rate. China's financial system remains precarious. Geopolitical tensions remain high with Iran, North Korea and Russia.

With all these risks, now is a good time to reassess "International Financial Markets and Macroeconomic Stabilization" which is what we have now completed with this book. It is a complementary volume to our earlier "Money and Monetary Policy in an Open Economy" (Bookboon, London, 2015). This current book, however, is much more of the work of the senior author, given his extensive experience in central banks and financial institutions.

This book is dedicated to Professor Colm Kearney. We were deeply saddened with his premature death in late March 2018. He was the former Dean of the Faculty of Business and Economics and Head of the Monash Business School. But he was also our colleague, co-author and friend at the University of New South Wales. His knowledge of the issues we confront in this book far exceeded ours and he will be terribly missed.

M.M & J.L

October 2018

ABOUT THE AUTHORS

Dr Mehdi Monadjemi

Mehdi completed a B.S. in Economics from Utah State University and a M.S. and a Ph.D in Economics from Southern Illinois University, Carbondale, Illinois, U.S.A. His extensive experience in the banking and finance sector includes positions as Executive Director, Bank Refah and Bank Omran, Tehran, Iran, Economist, First Wisconsin National Bank of Milwaukee, London and Economist, Research Department, Reserve Bank of Australia. After eight years as Associate Professor of Economics, School of Economics and Political Science, The National University of Iran, he spent a further 20 years as an academic economist at the University of New South Wales, Australia including the Associate Head of the School of Economics position. He has held Visiting Scholar positions at Columbia University, London School of Economics and Political Science, and the University of Kent, Canterbury, United Kingdom. Currently he is visiting fellow at the School of Economics, University of New South Wales.

Dr John Lodewijks

John completed a Bachelor of Economics from the University of Sydney, Master of Economics from the University of New England and a M.A and PhD in Economics from Duke University, USA. He spent 22 years as an academic economist at the University of New South Wales, Australia including the Head of Department position. Thereafter he was Head of the School of Economics and Finance at the University of Western Sydney for a further five years. He is now associated with the S P Jain School of Global Management.

INTRODUCTION

Financial market's developments and decisions cause significant impact on the performance of the economies. The primary function of the financial markets is to act as an intermediary between savers and investors. As a result of increased international capital mobility and globalization, developments in financial markets lead to global financial and economic volatility. The book examines the operation of the international financial system with emphasis on their impacts on financial crises and stability. Several reforms introduced after the Great Recession of 2008 are also included. In addition the basic approaches to understanding banking, finance and monetary management in both closed and open economies and some pressing policy reforms in response to the Great Recession of 2008 are included Readers are provided with a more knowledgeable background enabling them to discuss financial market performance and global financial instability issues.

1 THE INTERNATIONAL FINANCIAL SYSTEM

The international Financial System (IFS) is a collection of institutions and regulations for conducting international transactions and settlement of balances of payments. International transactions include mainly trade and capital flows. Also the importance of trade in technology and intellectual property rights and the contentious migration of labour across national boundaries – legal and illegal are noted. Moreover, the study of the international financial system is of importance not only for macroeconomic stabilization but also for global disparities of income and wealth.

Angus Madison is regarded as the pioneer in terms of international comparisons of income. (See http://www.ggdc.net/maddison/maddison-project/home.htm). His data indicates that back in 1000 we did have a fairly equal world. The ratio of highest to lowest average income among regions of the world was just 1.1 : 1. So there was no global divide, no global inequality. The highest average income region was Asia followed by Japan and even Africa had higher average income levels than the West. But the differences were not stark. How things have changed. One thousand years later and there is great global income inequality. The ratio is now 19:1 and the West (and Japan) dwarf the rest of the world. How might we go about returning to a more equal world?

Opening up economies to global trade and technology has certainly helped China and now India improve their average income levels. China's average income grew by 10% annually over 1980-2010. Opening up domestic financial markets to foreign capital has been a more mixed success – 'hot' speculative capital flows have been closely associated with the Asian Financial Crisis and ten years later the Global Financial Crisis. While flows of goods and services, technology and capital have been relatively free across international borders the same cannot be said for the flow of labour. Illegal migration of refugees or others has been a constant problem and strongly resisted. On the other hand, the migration of highly skilled and educated has been received with open arms and there is fierce competition to attract human capital – this often goes by the term 'brain drain'.

Nevertheless, as the average incomes of truly large countries (like China and India) increases then global inequality will and has declined. What further can be done? The foreign exchange market is the largest financial market in the world with average daily turnover in excess of $US 1 trillion. Foreign exchange markets may suffer from asymmetric information, destabilising speculation and herd behaviour that give rise to sudden surges in capital inflows followed by dramatic capital outflows as euphoria turns to panic. The consequences include persistent misalignments and unstable exchange rates that can result in banking and financial crisis with painful consequences for the real economy.

The most obvious way to stop speculation in foreign exchange markets is to abolish separate currencies, as with the European Union. Introduction of the euro has already reduced the volume of foreign exchange trading. The abolition of national currencies and dollarisation is a fairly drastic step to take but a number of countries are considering just that alternative, particularly in Latin America. There has also been discussion of an Asian currency union. In the meantime, monetary authorities in East Asia are building up their stockpiles of foreign exchange reserves in case of another assault on their currencies. Short of regional or even a world currency, various 'second best' alternatives exist: direct controls on the movement of foreign capital and currency conversion, special deposit requirements on overseas borrowing, and transaction taxes.

Global expenditures on the military and defence are huge. In total, countries around the world splurged $1.686 trillion on arms in 2016, a 0.4 percent increase on 2015. (See https://www.forbes.com/sites/niallmccarthy/2017/04/24/the-top-15-countries-for-military-expenditure-in-2016-infographic/#5763dfa543f3). If there was one global currency (and hence no currency speculation) and if we could convince countries to demilitarize or establish a global peace keeping force (and disestablish national defence forces) then those funds could be used for more humanitarian purposes to alleviate global suffering and deprivation. Finally, there is the issue of global warming. As in other cases mentioned, the problem is that we are living in a globally integrated economy where corporations are global but governments and regulatory agencies are national. Hence governments cannot deal effectively with global issues like climate change. There needs to be global institutions to police global issues. The existing ones such as the United Nations or WTO have proved less than satisfactory. We need to design, and more importantly get international agreement, on more effective global structures that override specific national interests for the global good.

In this book we focus specifically on global financial institutions.

The financial institutions involved in international transactions are commercial and investment banks, central banks, the International Monetary Fund (IMF) and Bank of International Settlements (BIS). Most of the countries entered the IMS in 1880 under the gold standard system.

Financial markets (FMs) are markets for purchase and sales of non physical assets such as share markets, bond markets, foreign exchange markets and financial intermediaries (FIs). FIs are designed to channel funds from savers to investors. Without FIs the process of saving and investment becomes very lengthy and difficult. FIs include banks, investment banks, finance companies, credit unions and building societies (saving and loan associations). The primary function of these institutions is to attract saving deposits and extend short term and long term loans to investors. The investors are governments, corporations and individuals whose income is less than their expenditure. Banks are unique because they issue means of payment and are controlled by the central bank. The settlements of international transactions take place through transfer of bank deposits based on foreign exchange rate.

1.1 EUROCURRENCY MARKETS

International banks participate in the Eurocurrency market. Eurocurrency transactions refer to transactions (deposits and loans) in any currency which is different than the currency of the country that the participating bank is located-in. For example, a payment in yen paid in London is included in the Eurocurrency market. Eurocurrency transactions are in the offshore banking services of international banks. Because of the lack of regulations and efficiency advances in information technology, offshore banking services have grown very rapidly since their commencement. The largest Eurocurrency market is the Eurodollar market which originally started in the mid 1950s.

Friedman (see: https://www.chicagobooth.edu/~/media/44cee6c8a25b4ff2a48925163daa2f85.pdf) states that Eurodollars are US dollar liabilities of banks outside the United States. Participants in the Eurodollar market are foreign banks, foreign investment banks and foreign branches of US banks. Funds with these financial institutions may be owned by U.S. or foreign residents or corporations or governments. Euro-dollars have two basic features: first, they are short-term and second, they are US dollar obligations of banks' branches located outside the U.S.

Friedman argues that the difference in regulations has played a major role for the growth of the Euro-dollar market. The initial substantial Euro-dollar deposits in the post-World War II periods were owned by the Russians, who needed US dollar balances, but they were worried that their balances may be confiscated by the US government. Hence they kept their dollar claims outside of the U.S. governmental control.

Regulation Q is the most significant factor contributing to the development and rapid growth of the Euro-dollar market. Under the regulation Q the Federal Reserve requires that member banks pay fixed interest on time deposits. The interest rate differential made Euro-dollar deposits more attractive than U.S. deposits, causing the Euro-dollar market to expand. Additional factor has been the direct and indirect exchange controls imposed by the U.S. government for "balance-of-payments" purposes.

The entry in "Wikipedia maintains that by December 1985 the Eurocurrency market was estimated by Morgan Guaranty bank to have a net size of 1,668 Billion, of which 75% are likely Eurodollars. However, since the markets are not responsible to any government agency its growth is hard to estimate. The Eurodollar market is by a wide margin the largest source of global finance. In 1997, nearly 90% of all international loans were made this way."

The growth of Eurocurrency market 1964 – 2008 is presented in table 1. In eight years 2000 - 2008 the market expanded by 172 percent. Because of unregulated market, it is difficult to have accurate information on the recent size of the Eurocurrency market. However A 2014 study by the Federal Reserve Bank showed an average daily volume in the market of $140 billion. Read more: Eurodollar http://www.investopedia.com/terms/e/eurodollar.asp#ixzz4vbBqQr59

Year	Eurocurrency	Eurodollar %
1964	$19	NA
1980	839	71
2000	6077	63
2002	7505	61
2006	14168	59
2007	17931	55
2008	16512	58

Table 1 Eurocurrency Deposits and Eurodollars Billions of US Dollars
Source: Salvatore (2010), p.507 based on Morgan Guaranty Bank, *World Financial Markets*.

1.2 THE GOLD STANDARD

Prior to the 1973, countries settled their balance of payments by means of transferring gold. Those countries with a balance of payments deficit lost gold to those who maintained balance of payments surpluses. Under the gold standard all of the nations' currencies were backed by gold reserves. Those counties with balance of payments deficits experienced reduction in money supply and recession, and those with surpluses experience money supply increases and inflation. Hence under the gold standard, domestic economic activities were subject to the developments in the balance of payments. Under the gold standard each country defined the value of their currencies in terms of gold. Accordingly, the exchange rate between two currencies was determined in terms of their respective gold contents. For example, if one British pound was equivalent to 2 grams of gold and one US dollar was equal to one gram gold, the exchange rate was 2 US dollar for one British Pound. Under the gold standard system, the exchange rate remained fixed. Countries could revalue or devalue their currencies by changing the gold value of their currencies. The gold standard system prevailed from 1880 – 1914. The system collapsed during the WW I period. During the inter war period 1919 – 1924 there was no gold standard system and no fixed exchange rate. The exchange rates fluctuated widely in response to balance of payments disequilibrium.

1.3 BRETTON WOODS SYSTEM AND INTERNATIONAL MONETARY FUND (IMF)

The post WWI was the period of instability without any stable international monetary system and widely fluctuating exchange rates. The Great Depression of 1930s also contributed heavily to financial and economic instability. Nations attempted to protect their trade position by imposing tariffs and devaluations. The turmoil and instability in the international monetary system continued to the end of WWII. Salvatore (2010) argues that the instability in the international monetary system during the inter war periods, and the Great Depression encouraged allies to establish an international monetary system with some internal flexibility and a fixed and stable exchange rate.

In 1944 representatives of 42 countries met in Bretton Woods New Hampshire in order to establish an international Monetary System. As a result of this meeting, it was agreed to establish a fixed exchange rate system and the IMF. The International Monetary Fund was designed to supervise that nations respected set rules in trade and finance as well as provision of funds for those countries with balance of payments difficulty. The IMF commenced operation in 1947 with 30 members. The membership of IMF increased to 189 nations in 2017.

The Bretton Woods system was a gold exchange system where United States stood ready to purchase and sell gold at 35 dollars per ounce. Other counties had to fix the price of their currencies relative to US dollar. The par values of currencies were fixed in terms of US dollar within 1 percent margin. The central banks were to intervene by means of purchase and sales of US dollar whenever fluctuations of their currencies exceeded the 1 percent margin.

Under the Bretton Woods system, nations were allowed to borrow from the IMF whenever they experience temporary balance of payments deficits. Members were allowed to devalue or revalue when they experience balance of payments disequilibrium (persistent balance of payments deficits or surpluses).

The IMF fact sheet is a useful source of information on these issues. (See:http://www.imf.org/en/About/Factsheets/Sheets/2016/07/14/12/21/IMF-Quotas)

It notes that in 1944 when the IMF commenced operation every nation was assigned a quota. The total subscription at the beginning was 8.8 billion US dollars. Members' quotas were determined by their economic status. The US, the strongest economy at the time, was assigned 31 percent of total quotas.

"The current quota formula is a weighted average of GDP (weight of 50 percent), openness 30 percent), economic variability (15 percent), and international reserves (5 percent). For this purpose, GDP is measured through a blend of GDP—based on market exchange rates (weight of 60 percent) and on PPP exchange rates (40percent).

Quotas are denominated in Special Drawing Rights (SDRs), the IMF's unit of account. The largest member of the IMF is the United States, with a current quota (as of March 2017) of SDR82.99 billion (about US$113 billion), and the smallest member is Tuvalu, with a quota of SDR2.5 million (about US$3.4 million)".

1.4 THE ROLE OF QUOTAS

A member's quota with the IMF, includes:

Subscriptions. Subscription determines the maximum amount of financial resources the member is obliged to provide to the IMF. The subscription is fully payable upon joining the IMF: up to 25 percent must be paid in SDRs or widely accepted currencies (such as the US dollar, the euro, the Japanese yen, or the British pound sterling), while the rest can be paid in the member's own currency.

Voting power. The quota largely determines a member's voting power in IMF decisions. Each IMF member's votes are comprised of basic votes plus an additional vote for each SDR100,000 of quota. The 2008 reforms fixed the number of basic votes at 5.502 percent of total votes. The current share of basic votes in total votes represents close to a tripling of their share prior to the implementation of the 2008 reforms.

Access to financing. The amount of financing a member can obtain from the IMF (its access limit) is determined by its quota. For example, under Stand-By and Extended Arrangements, a member can borrow up to 145 percent of its quota annually and 435 percent of its quotas cumulatively. However, under exceptional circumstances higher financing may be possible.

Salvatore (2010) maintains that borrowing from the IMF is short-term; borrowers have to repay their obligations within three to five years. The borrowing member repays the loan by purchasing its own currency and other convertible currencies until IMF holds 75 percent of member's quotas in nation's currencies. If holdings of nation's currency at the Fund dropped below 75 percent of its quota, the member can borrow the difference from the Fund without having to repay its loan from the Fund. This arrangement was called the super gold tranche. The nation's net IMF position is its size of quota minus balance of its currency at the Fund. The total amount of gold reserves plus SDR and the balance of convertible currencies at the fund constitute nation's total value of international reserves.

1.5 SPECIAL DRAWING RIGHT (SDR)

The SDR was introduced in 1971 for the purpose of accounting transactions between central banks and IMF and between deficit and surplus nations. SDR is not used in private transactions. The value of SDR was set initially at 1 SDR = 1 US dollar and subsequently at $1.0857 and $1.2064 in December 1971 and February 1973 respectively due to devaluation of US dollar. In 1974, the value of SDR was set equal to the weighted average of the basket of 16 currencies. In 1999 with the introduction of euro, the value of SDR was set at a weighted average of a basket of 4 currencies. The weights in the basket were 45 percent US dollar, 29 percent euro, 17 percent yen and 11 percent British pounds.

The weights in the basket of SDR currencies are reviewed by IMF every five years. The weights assigned to each currency in the basket are adjusted based on their respective economies' current prominence in terms of international trade and national foreign exchange reserves. In the review in November 2015, the IMF declared that the Renminbi (Chinese yuan) would be added to the basket effective October 1, 2016. The weights in the most recent SDR basket of five currencies are: U.S. dollar 41.73%, Euro 30.93%, Renminbi (Chinese yuan) 10.92%, Japanese yen 8.33%, British pound 8.09 %. https://en.wikipedia.org/wiki/Special_drawing_rights

1.6 EVALUATION OF BRETTON WOODS (BWS)

The Bretton Woods System was a fixed exchange rate system as long as United States stood ready to purchase and sell gold at $35 an ounce. During the life of BWS, 1944 – 1973, initially United States experienced balance of payments surpluses in 1945 -1949. In the 1950s, United States attempted to reconstruct Europe through the Marshal Plan. This led to accumulation US dollars in foreign countries and reduction of US gold reserves as foreign nations exchange their dollar holdings with gold at a fixed price. The United States start experiencing small budget deficits in the 1950s. However, starting in 1958 US balance of payments deficits increased sharply combined with significant capital outflow, mainly due to direct investment in Europe and US inflation due to money creation to finance the Vietnam War. Salvatore (2010) argues that US gold reserves declined from $41 billion to $25 billion in 1971. Continuous US balance of payments deficits and the loss of gold reserves convinced investors that the US dollar will soon be devalued. In August 1971, President Nixon announced that the United States is no longer willing to purchase and sell at $35 per ounce. With this announcement the life of BWS of fixed exchange rate was terminated.

After the collapse of the BWS, the US dollar was devalued in 1971 and again in 1973. As the US balance of payments deficits continued, foreign countries lost confidence in the US dollar. Furthermore, large quantities of US dollar in foreign ownership added to the lack of international confidence in the currency. Salvatore (2010) suggests that the main cause of the collapse of the BWS was lack of adjustment mechanism as the US was unable to devalue in order to improve its persistent balance of payments deficits.

Since 1973 most of the countries in the world, particularly the industrial countries moved to a managed float exchange rate system. In this system the central banks intervene in the foreign exchange market in order to prevent excessive fluctuations of their currency. Some counties pegged their exchange rate to another currency (US dollar, Euro or a basket of currencies) and some chose a currency board system of exchange rate. The European Monetary System (EMS) was established in 1979 where eight European countries fixed their exchange rate against the German mark. Under EMS only 2.25 percent fluctuations of the exchange rate above or below of the par values were allowed. Central banks of the member countries were responsible to intervene to prevent excessive fluctuations. In this system the monetary policy of the member counties was determine d by the monetary policy of Germany. Similarly under the BWS, the monetary policy of the members was geared to the monetary policy of the United States.

In 1999 the European Monetary System (EMS) commenced operation with12 European members. The members of the EMU agreed to use a single currency, Euro, and similar monetary policy. Detailed discussion of the EMU and its existing problems will be discussed in the later chapters.

1.7 RECENT CHANGES IN IMF AND EXCHANGE RATE ARRANGEMENTS

Several recent changes have been implemented at the IMF. The quotas of members have increased. The conditions for implementing the quota increases agreed under the 14thGeneral Quota Review were met on January 26, 2016. As a result, the quotas of each of the IMF's 189 members increased to a combined SDR477 billion (about US$652 billion) from about SDR238.5 billion (about US$326 billion). As of March 2017, 179 of the 189 members had made their quota payments, accounting for over 99 percent of the total quota increases, and total quotas stood at SDR475 billion (about US$650 billion).

The new credit facilities at the IMF are:

Extended Fund Facility commenced in 1974 to assist members' structural reforms and long term balance of payments difficulties.

Supplemental Reserve Facility started in December 1997 during the Asian Crises, for assisting short term balance of payments problems caused by the loss of market confidence.

Compensatory Financing Facility established in 1963 to provide assistance for temporary fall of exports or excessive imports.

Emergency Assistance to provide fast help for balance of payments problems caused by natural disasters, civil unrest, political turmoils and arm conflicts.

Poverty Reduction and Growth Facility commenced in 1999 to provide assistance for long term balance of payments difficulties due to structural causes to encourage poverty reducing growth.

Exogenous Shock Facility established in 2006 to assist short term balance of payments problems due to unpredictable shocks.

Short Term Lending Facility introduced in 2008 during the Great Financial Crisis a precautionary credit of $100 billion from which members can borrow up to five times of their quotas for three months with possibility of two times rollover.

James Boughton, *2010 : The Year of IMF Reform (available at* https://blogs.imf.org/2010/12/28/2010-the-year-of-imf-reform/) discusses the IMF 2010 reforms as follows:

First, the fast-growing emerging market countries are going to have a larger say in the operation of the institution and how it deals with its membership**.** For the first time, the total voting power of the United States and the current European Union members will drop below 50 percent.

Second**,** the institution's lending policy has become more flexible.. At the end of the 1990s, the Fund had at least ten lending facilities. Those facilities in active use, required the borrower to present a detailed program of macroeconomic and structural reforms. Recently, the IMF has been able to set up lending facilities that are appropriate for members with good records and solid commitments to exercise macroeconomic reforms.

Third, the general financial resources of the IMF are to be doubled. That increase, however, is to be matched by a rollback in the Fund's standing borrowing arrangements. The main immediate effect of this reform will not increase the amount that the IMF can lend, but to "reduce the need for the Fund to borrow from creditor countries to finance large lending operations".

The reforms of 2010 are not the end of the process. One important ongoing effort is open the leadership of the IMF to non European, non American members. All of the Fund's ten Managing Directors have been European. All eight of the Deputy Managing Directors (First Deputies since 1994) have been from the United States. "The pressure has been intense for the selection process to be open fully to all candidates without regard to geography."

One of the most important problems with the present international financial system is the excessive and long volatility of the exchange rates. The US dollar appreciated significantly 1980 – 1985 and again large depreciation 1985 to the end of 1987. The appreciation of US dollar mid -1980s was mainly due to tight monetary policy and high interest rates in the United States. Subsequent depreciation of the US dollar and its over valuation in the late 1990s and early 2000 was due to persistent large US trade deficits. The dollar also showed wild fluctuations against Euro, since introduced in 1999. The dollar appreciated from $0.83 per Euro in October 2000 to $1.63 in July 2008.

Some coordinated efforts took place in September 1985 by central banks of US, Japan, UK, Germany and France to prevent excessive appreciation of the US dollar. In February 1987 G7 agreed to establish a target zone for dollar-yen and dollar mark exchange rates. The introduction of EMS in 1979 was to prevent fluctuations of the exchange rate among eight members of the system. The establishment of European Monetary Union and introduction of single currency was to avoid fluctuation of exchange rates between 12 original members of the Union.

Tobin (1987) maintained that most of exchange rate fluctuations are due to speculative flow of capital. Tobin tax on speculative capital movements was proposed to reduce exchange rate volatility. Monadjemi and Lodewijks (2015) maintain that turbulence in world financial markets has solicited greater interest in Tobin Taxes to reduce speculative currency trading and

to move the exchange rates closer to its long – run equilibrium determined by fundamentals. Whether the Tobin Tax is the solution is not clear but it would lead to a decline in the volume of foreign exchange transactions. How useful would a Tobin Tax be? Ideally the geographical area of the tax needs to be universal requiring an international agreement which may be difficult to reach. Paul Davidson (2002) argues that a Tobin Tax would not avert very large speculative attacks and there is a need for outright prohibition of such capital flows via an International Money Clearing Unit. Critics of this proposal also argue that it is very difficult to distinguish between capital flows based on trade and speculations.

1.8 BANK FOR INTERNATIONAL SETTLEMENTS (BIS)

Established on 17 May 1930, the Bank for International Settlements (BIS) is an international financial organisation owned by 60 member central eposits and loansbanks, representing countries from around the world that together make up about 95% of world GDP. Its head office is in Basel, Switzerland and it has two representative offices: in the Hong Kong Special Administrative Region of the People's Republic of China and in Mexico City.

The mission of the BIS is to serve central banks in their pursuit of monetary and financial stability, to foster international cooperation in those areas and to act as a bank for central banks.

In broad outline, the BIS pursues its mission by:

- fostering discussion and facilitating collaboration among central banks;
- supporting dialogue with other authorities that are responsible for promoting financial stability;
- carrying out research and policy analysis on issues of relevance for monetary and financial stability;
- acting as a prime counterparty for central banks in their financial transactions; and
- serving as an agent or trustee in connection with international financial operations.

Monetary and financial stability is a precondition for sustained economic growth and prosperity. Reflecting the public good character of this goal, the BIS makes part of its work available to the wider public, including:

- its own analyses of monetary and financial stability issues;
- international banking and financial statistics that underpin policymaking, academic research and public debate.

With regard to its banking activities, the customers of the BIS are central banks and international organisations. As a bank, the BIS does not accept deposits from, or provide financial services to, private individuals or corporate entities.

The central banks, across the globe, have a single major function, that is, managing that country's currency stability/parity vis-a-vis currencies of other countries; rest of the functions are revolving around this aspect — like defining credit policies for the banks, currency-parity wrt the prices of the commodities in the country, and so on;

the document specified above describes in greater depth, all these functions; what is applicable to RBI in India equally applies to other nation's Central Banks;

A ***Central bank***, or monetary authority, is a monopolized and often nationalized institution given privileged control over the production and distribution of money and credit. In modern economies, the central bank is responsible for the formulation of monetary policy and the regulation of member banks.

The central bank of the United States is the Federal Reserve System, or "the Fed," which Congress established with the 1913 Federal Reserve Act.

The central Bank of INDIA is RESERVE BANK OF INDIA established in 1st April 1935 in Kolkata. The Reserve Bank of India is India's central banking institution, which controls the monetary policy of the Indian rupee.

1.9 FUNCTIONS OF CENTRAL BANKS:

A ***Central bank***, or monetary authority, is a monopolized and often nationalized institution given privileged control over the production and distribution of money and credit. In modern economies, the central bank is responsible for the formulation of monetary policy and the regulation of member banks. The normative justification for central banking rests on three critical factors. First, the central bank manages the growth of national monetary aggregates in an attempt to guide economic policy, often with the aim of full employment. The bank also acts as an emergency lender to distressed commercial banks and other institutions. Finally, a central bank offers much greater financing flexibility the central government by providing a politically attractive alternative to taxation. Central banks conduct standard monetary policy by manipulating the money supply and interest rates. They regulate member banks through capital requirements, reserve requirements and deposit guarantees, among other tools. The first prototypes for modern central banking were the Bank of England and the Swedish Riksbank in the 17th century. The Bank of England was the first to acknowledge the role of lender of last resort. Other early central banks, notably Napoleon's Bank of France and Germany's Reichsbank, were established to finance expensive government military operations. The Central bank of the United States is the Federal Reserve System, or "the Fed," which Congress established with the 1913 Federal Reserve Act. The central Bank of INDIA is RESERVE BANK OF INDIA established in 1st April 1935 in Kolkata. The Reserve Bank of India is India's central banking institution, which controls the monetary policy of the Indian rupee (see https://www.quora.com/What-are-the-functions-of-central-banks).

The central banks, across the globe, also have another major function, that is, managing that country's currency stability/parity vis-a-vis currencies of other countries; the rest of the functions could be seen as revolving around this aspect — like defining credit policies for the banks, currency-parity with respect to the prices of the commodities in the country, and so on.

1.10 REFERENCES

Boughton, J. (2010), 2010: *The Year of IMF Reform*, available at:

https://blogs.imf.org/2010/12/28/2010-the-year-of-imf-reform/

Monetary Policy in Open Economies, Jointly written with J. Lodewijks, Chapter 8, online book published by Bookboon, August 2015.

Salvatore, D., *International Economics*, Tenth Edition, Wiley 2010

https://www.quora.com/What-are-the-functions-of-central-banks

https://en.wikipedia.org/wiki/Special_drawing_rights

http://www.imf.org/en/About/Factsheets/Sheets/2016/07/14/12/21/IMF-Quotas

Friedman, M. University of Chicago Lecture Notes in:

https://www.chicagobooth.edu/~/media/44cee6c8a25b4ff2a48925163daa2f85.pdfstates

2 INTERNATIONAL CAPITAL MOBILITY

International capital mobility (ICM) is an important topic because many observers claim that recent greater movements of capital across borders have contributed to global financial crises. Capital can move internationally in various forms such as foreign direct investment (FDI), bank deposits, shares and private and government bonds. The rapid reversal of capital movements can cause financial crises. FDI is the least risky form of capital flows. The flow of shares and short term bank deposits can be quickly reversed. Maturities of private and government bond are generally three years and longer and are not as risky as shares and bank deposits.

2.1 MEASUREMENTS OF ICM

The pioneer study in this area was Feldstein and Horioka (1980) (FH), ever since known as the Feldstein- Horioka puzzle. The authors argued that in a closed economy with no capital mobility and no trade, domestic investments are fully financed by domestic savings. In this closed economy the correlation between saving and investment is very close to 1. It follows that the correlation between saving and investment falls as the economy becomes more open to capital flows and trade. FH took a sample of 17 OECD countries in the period of 1960 - 1974 and found that the coefficient of S/Y in the regression of I/Y was 0.89. They concluded that capital mobility is far from perfect.

In a separate study Feldstein (1982) argued that the evidence and analysis in their paper support the earlier findings of Feldstein and Horioka (1980) that increases in domestic savings rates roughly generate equal increases in domestic rates of investment. New results for 17 OECD countries during the period 1974-79 imply that each extra dollar of domestic saving increases domestic investment by about 85 cents.

The empirical results of both FH (1982) and Feldstein (1982) are based on averages of annual data over the sample period and the regression is estimated using cross country sample of these averages. Coefficient estimates based on annual data on savings and investment ratios are biased due to simultaneity that is not present when annual observations are averaged. Feldstein (1982) maintains that government policies establish the framework for private international investors. Governments of OECD countries have attempted to restrict both inward and outward direct and portfolio investment. Even the United States, the most flexible of the OECD countries in its approach to capital movements, restricts certain class of institutions that are able to invest abroad and thereby reduces the total volume of foreign investment.

Jen and Yilmaz (2012) argue that the correlation of saving and investment ratios (S/Y and I/Y respectively) was low in the 2000s but has risen again after 2007. Jen and Yilmaz used time series data on S/Y and I/Y for 44 countries and examined changes in the coefficients of correlation. The correlations declined to 0.25 from mid-1990s to 2007 and rose to 0.80, almost the same as the FH's results, at the beginning of the Great Recession and later.

Jen and Yilmaz (2012) suggest that several factors have contributed to the sharp rise in the correlation between S/Y and I/Y. First, during 2001-07, the world's tolerance for high current account deficits (the difference between saving and investment) increased significantly. However, since 2008, this trend has completely changed, becoming very close to FH's level of around 0.8, from a low of 0.25 in 2007. They argue that a number of factors are at play: pressure on fixed exchange rate regimes such as EMU and Asian currencies pegged to US dollar; the global trend of growth will likely decline; and cross-border flows of capital rather than trade balances are more influential drivers of exchange rates. They conclude that "these observations are consistent with our expectation that the world's 'GDP Sharpe ratio' – the ratio of the expected economic growth rate to the volatility of growth – will likely be inferior to that prior to 2008."

FH's test of capital mobility has been criticized by several researchers. In general, it has been argued that the correlation between saving and investment is an indirect method for measuring capital mobility. The correlation can change as a result of changes in other factors besides capital mobility. For example, a change in aggregate income affects both saving and investment and causes higher or lowers correlation of S/Y and I/Y.

2.2 DIRECT MEASURES OF CAPITAL MOBILITY

Chinn (2007) argues that if interest parity conditions holds, there are no-arbitrage profit conditions for capital movement. The easiest way to understand this condition is consider how a typical investor can save in different locations.
Suppose the home currency is a dollar, and the foreign currency is a euro. Then, assuming a forward market exists, the investor can either save at home, receiving interest rate i, or converting by the exchange rate e, receiving interest rate i^* abroad, and then converting back then:

$$(1 + \mathrm{i}) = (1 + i^*) \mathrm{X} F_t / e_t \qquad (1)$$

Where i, i^*, F_t and e_t are domestic interest rate, foreign interest rate, forward exchange rate at time t for conversion at time t + 1 and e is the exchange rate. Equation 1 is covered interest parity condition which leaves no arbitrage profit opportunity for capital movement. Capital moves abroad if the left hand side of equation 1 is less than the right hand side and capital moves home if the right hand side is greater than the left hand. Equation 1 is called covered interest parity (CIP) because the investor is covered against the future exchange rate changes.

Equation 1 can be written as:

$$(i - i^*) / (1 + i^*) = (F_t - e_t) / e_t \qquad (2)$$

Assuming that expected future exchange rate (Ee_t is equal to the forward premium (discount) then equation 2 becomes uncovered interest parity (UIP) in 3.

$$(i - i^*) / (1 + i^*) = (Ee_t - e_t) / e_t \qquad (3)$$

Some researchers suggest that real interest parity (RIP) is the appropriate test for physical capital movements. The RIP can be derived. When interest rates are low 2 and 3 in logs can be written as:

$$(i - i^*) = f_t - \varepsilon_t \qquad (2)'$$

$$(i - i^*) = E\varepsilon_t - \varepsilon_t \qquad (3)'$$

where f_t and ε_t are logarithms of forward and spot exchange rates respectively.

The ex ante relative PPP is:

$$E\varepsilon_t - \varepsilon_t = (\pi_t^e - \pi_t) - (\pi_t^{e*} - \pi_t^*) \quad (4)$$

Combining equations 3' and 4 yields the real interest parity condition in equation 5 which can be employed for assessing the physical capital movement.

$$i - (\pi_t^e - \pi_t) = i^* - (\pi_t^{e*} - \pi_t^*) \quad (5)$$

where π_t and π_t^e are actual and expected inflation respectively. π_t^* and π_t^{e*} designate actual and expected inflation in foreign country. Chinn (2007) reported empirical assessments of both CIP and UIP. The author maintained that for developed economies since the removal of capital controls, CIP fits well. Research conducted by Frenkel and Levich (1975) found that, after allowing for transactions costs, CIP held within a 3 month period.
Chinn (2007) argued that assessment of UIP is difficult because the expected exchange rate is not observable. The author assumes that the spot exchange rate is an unbiased estimate of the future exchange rate (assuming rational expectations). Using this assumption and CIP, the following equation is derived.

$$Ee_{t+1} - e_t = \beta_0 + \beta_1(i_t - i_t^*) + u_{t+1} \quad (6)$$

where u_{t+1} is the random error. The hypothesis of UIP is accepted if $\beta_1 = 1$.Regression results of equation 6 are not supportive of UIP. However Chinn and Meredith (2004) showed that for 3, 5 and 10 years horizon, the estimate of β_1 is close to unity.

In Figure 1 an attempt was made to evaluate Jen and Yilmaz (2012) proposal by examining the direct measure of capital mobility rather than the indirect measure (using saving and investment). Jen and Yilmaz (2012) argued that capital mobility was low in the 1970s to 1990s, it was high in the 2000s until the Great Crash in 2008. After the financial crises, because of regulations and controls, capital mobility started becoming low again. An attempt is made to examine the trend of capital mobility using the real interest parity condition between Australia and New Zealand. Australia and New Zealand were chosen because both countries have floating exchange rates and no capital control. Additionally, both countries are politically stable, and their private and government assets bear the same level of risk. The result using quarterly data 2000 to 2017 is presented in Figure 2.1. The two series move very close to each other from 2004 until 2009 and move apart in later quarters. Furthermore, the coefficient of correlation[1] for the 2004 to 2009 was 0.93, whereas for the 2009 to 2017 the coefficient dropped to 0.41. During 2000 to 2004, the coefficient of correlation was 0.74. These preliminary observations indicate that the free movement of capital across borders was quite free from early 2000s to 2008 but became more restricted commencing 2008 after the financial crises. These conclusions are consistent with Yilmaz (2012) based on regression results of saving and investment

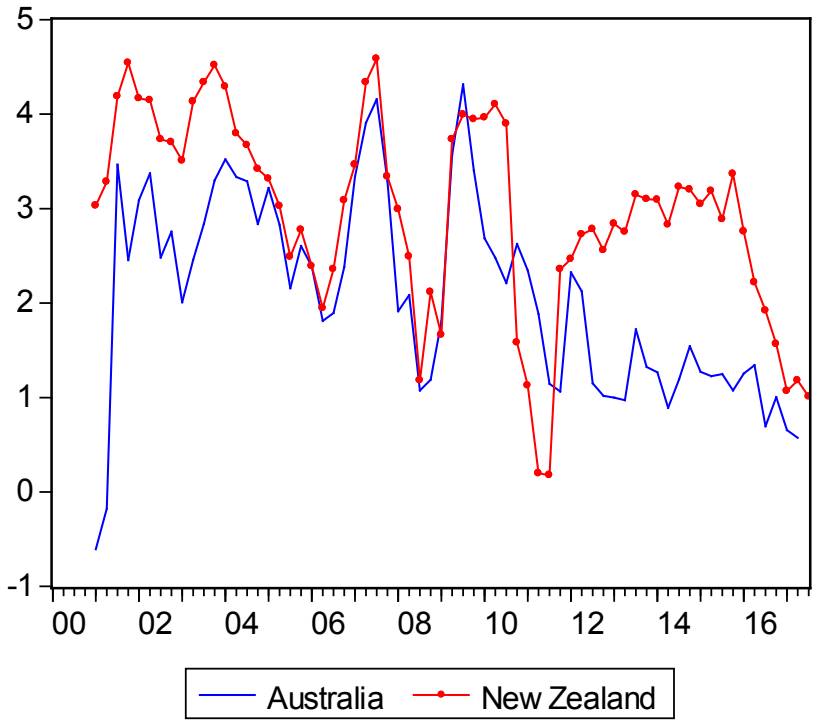


Figure 2.1 Real Interest Parity

In a separate study Monadjemi (1990) empirically examined consistency of direct and indirect measures of ICM using 1974 – 1984 quarterly data on 15 OECD countries. For the direct test of ICM Monadjemi (1990) developed a model with uncovered interest parity using the Dornbusch (1976) assumption for expected exchange rate changes where the exchange rate is expected to change whenever the actual exchange rate is different from its long run equilibrium. Dornbusch's expected exchange rate is presented in equation 2.7.

$$E\Delta e = f(e - \bar{e}) \tag{2.7}$$

Where e *and* $\bar{e}$ are the actual exchange rate and the equilibrium exchange rate (price of foreign currency). both expressed in percentages. Using uncovered interest parity and purchasing power parity, Monadjemi (1990) derives the following testable equation.

$$r_j - r_i = a_0 + a_1[\bar{e} + (\pi_j^{\varepsilon} - \pi_i^{\varepsilon})] \tag{2.8}$$

Where r_j, r_i, π_j^{ε} and π_i^{ε} are foreign interest rate, domestic interest rate, foreign expected inflation and domestic expectation of inflation respectively. Equation 2.8 was estimated using quarterly data on short term and long term interest rates for 15 pairs of OECD countries. The expected inflation was measured by the average of past 3 quarter's inflation rates for each country. The OLS regression results consistently rejected the hypotheses that $a_0 = 0$ *and* $a_1 = 1$.

Monadjemi (1990) indirectly tested ICM by estimating seasonally adjusted S/Y and I/Y. The OLS regression results of for the period 1974 – 1985 including 6 OECD countries also rejected the hypothesis of perfect capital mobility.

Monadjemi (1997) also examined movements of real interest rates in five OECD countries, including Australia, Netherlands, Germany, United Kingdom and United States, using monthly series 1960 to 1993. This study divided the sample period into 1960 – 1972 and 1973 – 1993. The research also investigated the extent that real interest rates in smaller economies are influenced by changes in larger economy's real interest rates. To this end, US was assumed a large economy, Australia and Netherlands small economy and Germany and United Kingdom medium size economies that can exert some influence on smaller economies. The empirical results of the study were based on Johansen's cointegration technique.[2] The cointegration results indicated that the real interest rates in five OECD countries are more closely integrated in the second sub-period than in the earlier period. Furthermore, the empirical results from the study showed that a shock of real interest rates in a large economy influences real interest rate in smaller economies but not vice versa. This finding implies that with increased ICM, monetary policy in smaller economies is determined by the conduct of monetary policy in dominant economies.

2.3 ICM AND FINANCIAL CRISES

Ahrend . Goujard. and Schwellnus (2012) argued that the component of a country's external liabilities, and the extent and nature of its international financial integration are main factors influencing its vulnerability to financial crises. This is supported by empirical analysis on OECD and emerging economies during the past four decades. Factors that most likely contribute to financial crises are: excessive debt in gross external liabilities and the excess of foreign currency liabilities over foreign currency assets. Furthermore, international banking integration has been a primary cause of contagion particularly, when cross-country bank lending was mainly short-term. Vulnerability to contagion is reduced when global liquidity has been available, indicating the importance of central banks to be accommodating by providing plenty liquidity during financial turmoil.

Structural policies may enhance financial stability through their effects on the division of the external financial account or on the vulnerability to contagion caused by financial shocks. Reduced barriers on FDI and lower regulations on product market can increase financial stability by transferring external liabilities from debt to FDI. The tax systems that favour debt over equity finance reduce stability by increasing the share of debt, including external debt, in corporate financing. Targeted capital controls on inflows related to credit operations have reduced the effect of financial contagion. More sever information disclosure regulations or capital requirements, and effective supervisory authorities have also reduced risk of financial crises.

Ahrend, et al (2012) show that external liabilities in the form of debt and the existence of financial turmoil in the neighbouring countries increase the chance of financial crisis. The authors use data on OECD countries and show that excessive short-term debt, as well as currency mismatch, a measure of sensitivity to exchange rate shocks, tends to increase the riskiness of countries' external balance sheets, and their risk of suffering financial turmoil.

That study concludes: first, most of the countries that suffered severely in the financial turmoil in recent periods had a large share of external debt prior to the 2007-09 financial crises. Second, over the decade that preceded this recent financial crisis, several advanced economies had increased their proportion of external debt, whereas emerging economies in general reduced it to a lower level. Accordingly, this development may have contributed to emerging markets being less affected during the recent crisis as well as during the financial crises of the 1990s.

Excessive reliance on debt instruments rather than equity finance, domestic or international, is often considered as a fundamental factor behind financial crises in general and in particular, the financial crises 2007 – 2009. Debt instruments need to be serviced regularly regardless of the borrowers' financial situation and cause more financial distress on the borrowers.

Ahrend and Goujard (2011) argued that OECD empirical analysis indicate that the larger is the share of debt in external liabilities the higher is the risk of systemic banking crises. This study selects a panel of 184 developed and emerging economies during 1970 to 2009. The results of the study show that a 24 percentage points increase in the share of debt in external liabilities, moves from the average low-debt OECD countries to the average high-debt OECD countries and in turn, would on average increase the chance of banking crises by 2½ percentage points. The authors argue that this increase in chance of banking crises is large given that on average a country's annual crisis risk is roughly around 2½-3%. In addition, bank debt indirectly affects financial-stability risk by enhancing exposure to banking crises contagion.

Kaminsky and Reinhart (1994) argued that generally financial crises are associated with a significant depreciation of a currency and substantial loss of central banks' foreign exchange reserves prior to crises. Based on this proposal, Monadjemi and Lodewiks (2006) developed the following index for indicating turbulence in the foreign exchange market.

$$I = \Delta e/e - \sigma e/\sigma r \times \Delta r/r \qquad (2.9)$$

Where e and r are exchange rate (price of foreign currency) and foreign exchange reserves respectively. $\Delta e/e$, the percentage change in the exchange rate is positively related to I because the index rises when the currency depreciates. $\Delta r/r$ appears with a negative sign because the index rises when reserves decline. $\sigma e/\sigma r$ is the ratio of the standard deviation of exchange rate to the standard deviation of reserves. The ratio is a weighting factor showing the relative importance of e and r in fluctuations of the index. The authors applied 2.9 to six countries that experienced major financial crises during the past three decades, including Argentina, Australia, Indonesia, Korea, Malaysia, Mexico and Thailand. Based on annual data 1970 – 2002, Argentina, Indonesia and Mexico showed the largest variation of reserves and exchange rate. Eichengreen et al (1995) suggested that financial crises are a period when the index changes by two standard deviation above or below its mean value. Monadjemi and Lodewijks (2007) used Eichengreen's suggestion and showed that during the Asian crises, Indonesia and Malaysia crises were more persistent than the other two countries. The Korean crises were the shortest.

Further evidence on the increased ICM during 1980s and the 1990s was presented in Monadjemi and Lodewijks (2003). This study followed a consumption smoothening current account model developed by Gosh (1995) for the indirect measure of ICM. The sample period was divided into 1973 – 1980 and 1981 – 2001. The data for the indirect method was quarterly observations on six OECD countries, including Canada, France, Germany, Switzerland, United Kingdom and United States. The direct method based on real interest parity condition used monthly averages of overnight money market interest rates for the above-

mentioned countries. Empirical results from this study based on direct and indirect methods of ICM showed an increased degree of ICM during the 1980s and the 1990s relative to the 1970s. The authors argued that implications of more international capital mobility included more macroeconomic volatility vulnerability of countries with less flexible financial systems. Examples of these implications are the Latin American debt crises in the 1980s, South-Eastern Asian crises in late 1990s and recent sub-prime global financial crises in 2007 - 2008.

2.4 CAPITAL CONTROLS

Capital controls refer to measures that manage the volume, allocation, or composition of international private capital flows. They were integral to the operation of the old Bretton Woods system. The controls can be tax-based (like the proposed Tobin taxes) or quantitative restrictions. These controls are still used in many emerging market economies such as Brazil, Chile and Colombia in Latin America and Korea, China, India, Vietnam and Malaysia in Asia. These controls are another weapon to be used to stem massive temporary inflows or outflows of debt and they can be adjusted depending on circumstances and in response to

detected evasion strategies. The purpose of these controls is to quarantine economies from excessive 'hot' money inflows and outflows that disrupt economic stability and lead to exchange rate misalignments. We now discuss the recent experiences with capital controls in a number of countries using the excellent information provided by Epstein, Grabel and Jomo (2003).

The 'Chilean' model of capital controls is often presented as an exemplar for other developing countries. In Chile foreign loans were taxed. Capital inflows were subject to a one-year residence requirement and a non-interest bearing reserve requirement was placed on all types of external credits and all foreign financial investments in the country. The required reserves were held by the Central bank for one year. The reserve requirement was in effect a tax to discourage short-term flows by raising the costs of these investments. It may be interpreted as a sort of Tobin tax but one imposed unilaterally not multilaterally. Chilean-style controls on capital inflow have been successful in lengthening the maturity of foreign debt without reducing the quantity of capital inflow. The only costs of these controls appear to be some rising in the capital costs to small-sized enterprises. The benefits were that the controls reduced the risk of financial crisis, allowed policy makers some degree of autonomy in its macroeconomic management, and thereby avoided the intrusions of the International Monetary Fund.

Taiwan also uses an extensive set of capital controls. There is no convertibility of the New Taiwan dollar and authorities maintain restriction on the ability of banks to engage in speculative activities and on foreign borrowing. In 1995 the Taiwan foreign exchange market was closed for a year when it was discovered that foreign inflows that had been approved for equity investment was actually used to speculate against the currency. In Singapore there is long-standing policy of not encouraging the internationalization of the Singapore dollar. This has helped the Singapore authorities to maintain a managed exchange rate. In the academic literature it is often noted that one can not simultaneously achieve the three goals of exchange rate stability, monetary policy autonomy and free capital flows. By restricting capital flows the other objectives can be reconciled.

Malaysian-type controls on capital flows are alleged to have allowed that country to recover quickly from the Asian crisis. Compared to countries that did not impose controls, Malaysian policies produced faster economic growth, smaller declines in employment and real wages, and a more rapid turnaround in the stock market. The controls were implemented transparently and with remarkable efficiency and the authorities were careful to target short-term speculative capital flows, insulating long-term direct foreign investment. The Malaysian experience is interesting because they had a history of open capital accounts and during the Asian crisis they refused to accept International Monetary Fund 'rescue' packages. Instead they infuriated the IMF and the international financial community by imposing capital controls on outflows. This allowed the authorities to use expansionary macroeconomic policies while protecting its exchange rate and international reserves. A system of graduated exit levies based on the duration of stay was later introduced. The main cost of these capital controls was the political favouritism associated with their implementation.

China and India have achieved high growth rates despite limited and selective capital account liberalization. India has had controls on inflows and outflows and strictly regulated the financial system to control foreign currency transactions. They have attempted to shift the composition of capital inflows from debt to equity. China has the most extensive foreign exchange and capital controls yet attracts very high levels of foreign direct investment. There are strict controls on foreign debt accumulation.

Edwards (1999) provides a detailed discussion of capital controls although he is a fierce opponent of such controls in most cases. Following the Asian Crisis of the late 1990's, there has been a renewed interest in the role of capital controls in developing countries. While numerous economists remain quite skeptical about the viability and desirability of controls, even strong proponents of capital account liberalization have acknowledged that many countries that avoided the worst effects of recent financial crises were also those that used capital controls. Indeed, a number of highly respected economists – such as Jagdish Bhagwati, Paul Krugman, Dani Rodrik and Joseph Stiglitz – have actively argued in favour of capital controls. Yet there remains much debate about whether the controls should be on inflows, outflows or both; the duration of the controls; the type of controls (the Chilean implicit taxes on foreign capital are often singled out for praise) and the relationship between the controls and the underlying macroeconomic fundamentals of a country. Recently even the International Monetary Fund appears to have softened their line on capital controls. They express cautious support for market-based capital inflow controls, Chilean style.

2.5 REFERENCES

Ahrend, R. and A. Goujard (2011), "Drivers of Systemic Banking Crises: The Role of Bank-Balance-Sheet Contagion and Financial Account Structure", *OECD Economics Department Working Papers*, No. 902.

Ahrend A. Goujard, A., Schwellnus, C.(2012), "International capital mobility: Which structural policies reduce financial fragility?", *OECD Economic Policy Papers*, OECD No. 2.

Chinn, M. (2007), "Interest Rate Parity 1, *World Economy,*pp. 1 – 9.

Chinn, Menzie D. and Guy Meredith, (2004), "Monetary Policy and Long Horizon Uncovered Interest Parity," *IMF Staff Papers 51*(3) (November), pp. 409-430.
Eichgreen, B., Rose, A. And Wyplosz, C. (1995), "Exchange Market Mayhem: The Antecedents and Aftermath of Speculative Attacks", *Economic Policy*, 21, pp. 249 – 312.

Edwards, Sebastian (1999) 'How Effective are Capital Controls?' *Journal of Economic Perspectives* Vol.13 No.4 Fall pp. 65-84.

Epstein, Gerald; Ilene Grabel and K.S. Jomo (2003) Capital Management Techniques in Developing Countries, Political Economy Research Institute, Working Paper No. 56, University of Massachusetts, Amherst

Feldstien, M. and Horioka, C.(1980),"Domestic Saving and International Capital Flows", *Economic Journal*, Vol. 90, pp. 314-329.

Feldstein, M., (1983), "Domestic Saving and International Capital Movements in the Long Rum and Short Run", *European Economic Review*, Vol. 21, pp. 129-151.

Gosh, AR., (1995), "International Capital Mobility amongst the Major Industrialized Countries: too Little or too High, *Economic Journal*, 105, pp. 107 – 128.

Jen. S.L and Yilmaz, F (2012), "The Return of the Feldstein-Horioka Puzzle" October 29. Available at: http://sljmacro.com/wp-content/uploads/2012/01/The-Return-of-the-Feldstein-Horioka-Puzzle.pdf

Johansen, S. (1988), "Statistical Analysis of Cointegrating Vectors", *Economic Dynamics and Control,* June – September, pp. 231 – 254.

Kaminsky, L. And Reinhart, C., "Financial Crises in Asia and Latin America: Then and Now", *American Economic Review Papers and Proceedings*, 88, (2), pp. 444-448.

Monadjemi. M. (1997). "International Interest Rates Linkages: Evidence from OECD Countries", *International Review of Financial Analysis*, 6, 3, pp. 229 – 240.

Monadjemi, M. and Lodewijks, J, (2003) "Testing Changes in International Capital Mobility: Evidence from the Current Account and Real Interest Rates", *Applied Economic Journal (ICFAI)*, vol. 11, No. 4, November, pp. 21-31.

Monadjemi, M. and Lodewijks, J., "Indicators of Financial Instability", in *Global Conference on Business & Economics 2006 Proceedings* Cambridge University, July.

3 INTERNATIONAL TRADE

During the APEC (Asia-Pacific Economic Cooperation) address November 2017, the president of China, the second biggest economy in the world, emphasised that globalization is irreversible. On the other hand the president of the United States said that international trade must be fair. Although both of these statements are mixed with politics, but the former is advocating free trade whereas the latter is implying barriers to free international trade.

International trade is one of the oldest topics in economic literature. The most famous advocator of free trade is David Ricardo who introduced the theory of comparative advantage in the 18the century. Ricardo argued that the purpose of trade was not merely to gain gold or silver. With the introduction of "comparative advantage" Ricardo emphasised specialisation and free trade. He recommended that industry specialization combined with free international trade is mutually beneficial. Ricardo's suggestion was built upon the concept of absolute advantage.

Ricardo argued that even if one country is more competitive in every industry than its trading partner, it is mutually beneficial if that country allocates resources only in industries where it has a comparative advantage that is in those industries in which it has lower cost of production relative to the other country. Once they specialize, both counties will be better off after trade.

3.1 OPEN ECONOMIES

An economy is open when international trade and inflow and outflow of capital are free. This chapter concentrates on international trade. Generally openness is defined in terms of international trade of exports and imports. Total exports of selected countries in billions of US dollar are presented in Figure 1.The nominal exports of all of the five countries have increased from 1992 to 2017. Rapid rise of exports started in the mid- 2000, after the fall in 2008 because of the global recession, started to rise again. The rise of exports is an indication of surge in openness of economies to international trade.

The degree of openness is measured by the ratio of exports to GDP which is called the index of openness. The index of openness for several countries that actively engage in international trade is presented in Table 1. Again, all of the indices indicate that openness has increased over time. The openness index is relative to the size of the economy. For example, according to the index of openness, China and United States being the largest two exporters in the world are not as open as other counties that are included in Table 1.

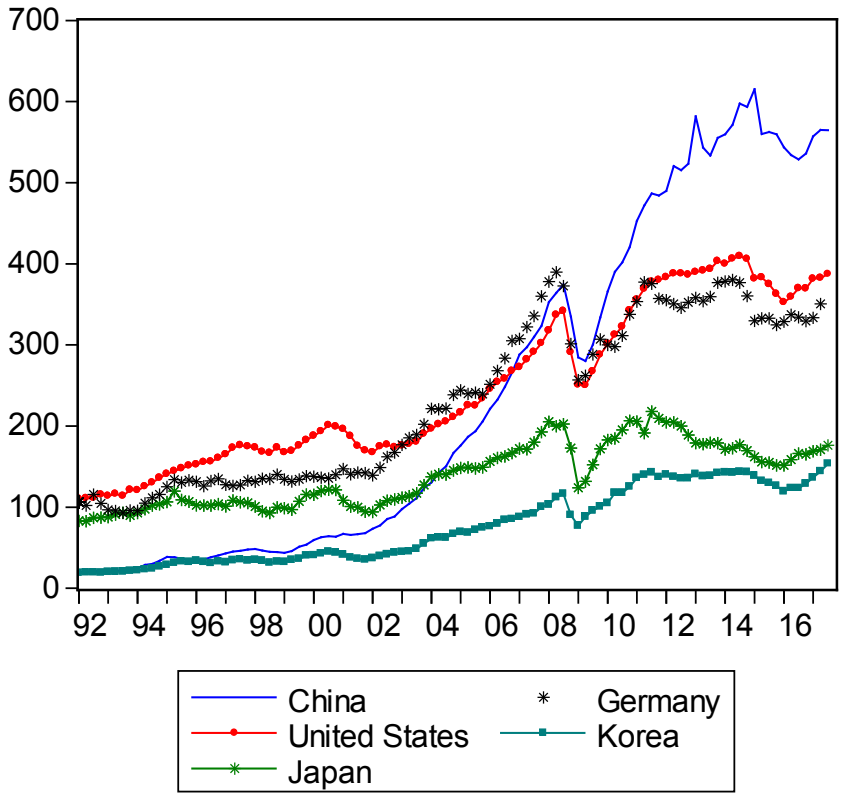


Figure 1 Total Exports in US Dollars (billions)

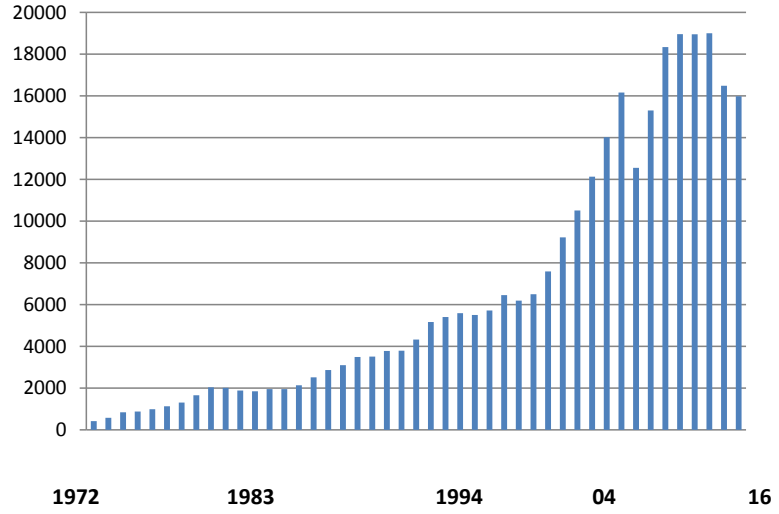


Figure 2 World Exports (billions US dollars)

Further evidence on the expansion of international trade is shown in Figure 3 where annual world's exports 1972 – 2016 are presented. World's exports have increased substantially, mainly in the first two decades of 2000.

Country	Index 1980	Index 2012	Index 2015
China	6.0	25.4	22.9
Japan	14	14.7	17.9
Germany	NA	46.0	46.8
France	22	28.6	30.0
Korea	34	56.3	45.9
United States	10	13.6	12.6
Canada	28.0	30.2	31.6

Table 1 Index of Openness
The entries in the first column of the above table were collected from Husted, S. And Melvin, M., *International Economics*, 9th edition, Pearson 2013. The rest of the entries were collected from the OECD site, main economic indicators.

3.2 INTERNATIONAL ECONOMIC THEORY

The pioneer arguments in favour of international trade were developed by Adam Smith and David Ricardo. Adam Smith's theory was based on specialization and absolute advantage. Smith argued that counties should specialize in production of goods that are suitable to their resources and trade them with other counties. As mentioned earlier, Ricardo introduced the concept of comparative advantage. Ricardo argued that countries should specialize in production of goods with lowest opportunity cost and export them to other counties.

The theory of comparative advantage is usually discussed using two countries producing two goods. One country has the absolute advantage in production of both goods, but each country has the comparative advantage in production of one of the goods. The example of comparative advantage is illustrated in table 2.

	Food	Cloth
Country A	8	4
Country B	6	2

Table 2 Comparative Advantage

Country A and B produce food and cloth using labour. In Table, 2 productions of food (F) and cloth (C) using one unit of labour hours are presented. Country A has the absolute advantage in production of both goods because it can produce more of both goods with one unit of labour, In country A, the opportunity cost of producing 1 unit of food is ½ cloth and the opportunity cost of 1 unit of coth is 2 units of food.

In A: 1 F = 1/2 C or 1 C = 2 F

In country B the opportunity cost of 1 unit of food is 1/3 cloth and the opportunity cost of 1 cloth is 3 foods.

In B: 1 F = 1/3 C and 1 C = 3 F.

The opportunity cost of food is lower in B and the opportunity cost of cloth is lower in A.

Ricardo argued that Country A should specialize in cloth and B should specialize in food and then engage in trade. After trade, both countries can consume more of both goods than before trade. After trade world output will rise. To illustrate the advantage of trade based upon comparative advantage, assume that 100 units of labour are available for each country. The production possibility curves (PPC) for both countries, assuming a constant return to scale, is presented in Figures 3 and 4.

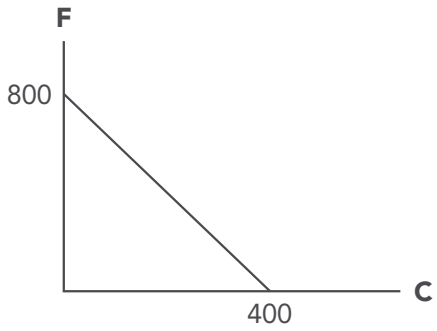


Figure 3 Country A

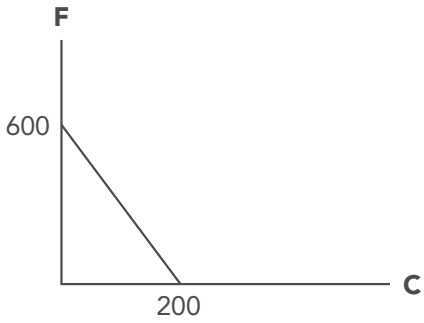


Figure 4 Country B

To trade, both countries must agree upon terms of trade (TT) which is beneficial to both (better than 1cloth for 2 food for A and better than 3 food for 1 cloth for B). Suppose TT are 1 C = 2.5 F and 1 F = 4C.

The consumption possibility curves (CPC), broken lines, and PPC for both countries before and after trade are shown in Figures 5 and 6.

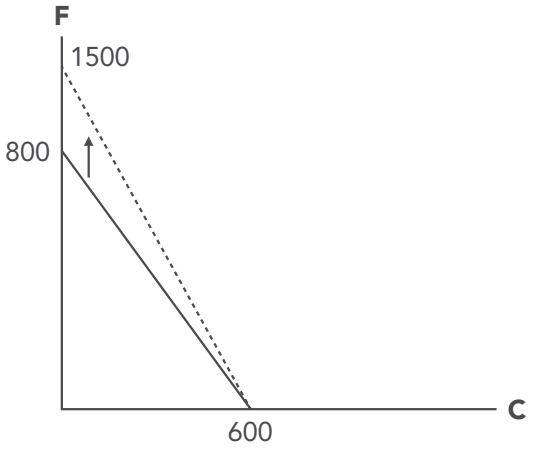


Figure 5 Country A

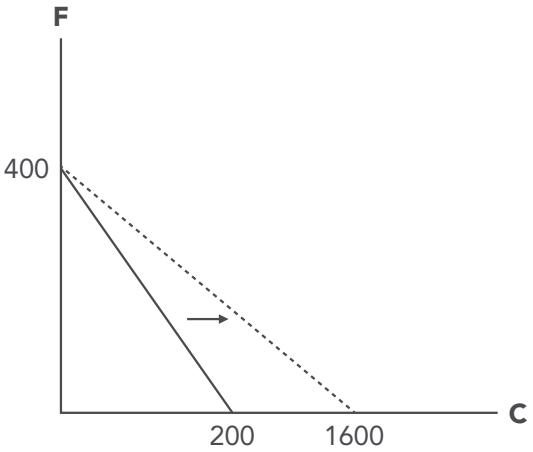


Figure 6 Country B

In Figure 5 Country A specializes in cloth and produces 600 units of cloth with 100 labour hour. A exchanges all of the cloth and obtains 1500 units of food. The CPC of A lies everywhere to the right of its PPC. This means that after trade, A is better-off at each level of cloth. In Figure 6, using the same reasoning, country B will also be better-off after trade.

Smith's and Ricardo's theories of absolute advantage and comparative advantage are known as the classical theory of international trade. Several studies have questioned the assumptions and conclusions of classical theory. For example, the assumption of constant opportunity cost is not realistic. Furthermore, in the classical theory labour is the only factor of production, and there is no role for capital and technology. Also, there is no justification for existence of import competing industries.

3.3 HECKSCHER – OHLIN (HO) THEOREM

The original study of the HO theorem was developed in 1919 in Swedish language. The English version of the book was published in 1933. The HO theorem attempts to present an international trade theory which is more realistic and does not rely on all of the assumptions of classical theory. The HO theorem is based on factor endowment. Countries differ in their factor endowments. Some have large amounts of land, some may have large labour force, and also some may have abundant capital and advanced technology. Depending on factor endowments, countries produce different goods. HO theory argues that countries should produce those goods that cost less in terms of factors of production, in other words those goods that in their production use abundant factors. A country will export those goods whose production is relatively intensive in that country's abundant factor. For example, Australia has large land, exports food. Countries like Japan and Germany are well endowed in capital and technology; they export manufactured and electronic products.

In the HO theorem production is subject to diminishing return or increasing opportunity cost. In production of two goods, the PPC in HO theorem is concave to the origin. Equal increase in production of one good requires (due to diminishing return) more and more sacrifice of the other good. Assume Australia and Japan produce two goods food (F) and automobile (A) respectively. Australia is land (L) abundant and Japan is the capital (K) abundant. The ratios of two factors of production in two countries are presented in inequality 1.

$$(K/L)_j > (K/L)_a \tag{1}$$

Assume that tastes are the same in both countries. Food prices are high in Japan and

automobile prices are high in Australia. The equilibrium points of production and consumption for Australia and Japan are presented in Figures 7 and 8.

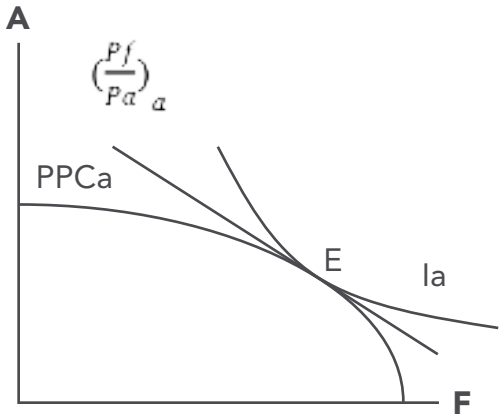


Figure 7 Australia

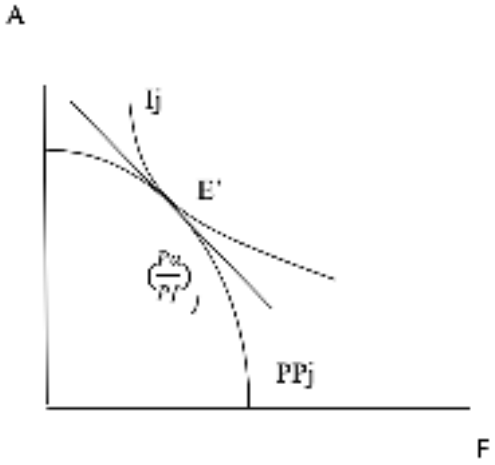


Figure 8 Japan

In Figures 7 PPCa, Ia and $(\frac{Pf}{Pa})_a$ are production possibility curve, indifference curve and the ratio of price of food to price of automobile (TT) for Australia respectively. In Figure 8 the same curves with subscripts j represent Japan. The terms of trade for Japan is $(\frac{Pa}{Pf})_j$ The TT is higher for Australia (the slope of the line) because food is relatively cheaper in Australia. In Japan Automobile prices are relatively low causing TT to be lower. The

equilibrium points in Australia and Japan are t points E and E' respectively where the terms of trade lines are tangent to indifference curves and PPCs in both countries. At E and E' there is no possibility of international trade because in each country consumption and production of two goods are equal. In the HO model international trade can take place when a country produces more than its domestic consumption (exports) or when it consumes more goods and services more than its domestic production (imports). The exporting country exports goods that are produced with its abundant factors and imports those goods that are produced with its less abundant factor. International trades between Australia and Japan are presented in Figures 9 and 10.

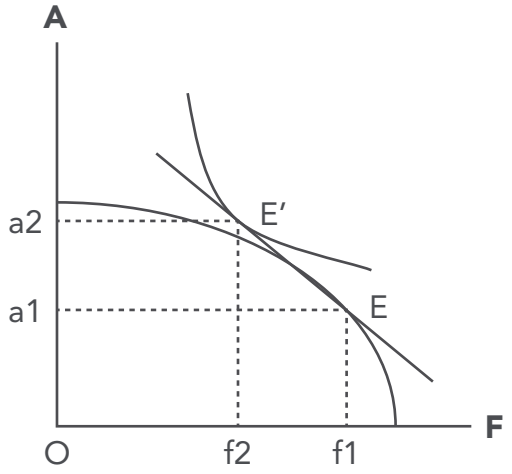


Figure 9 Australia

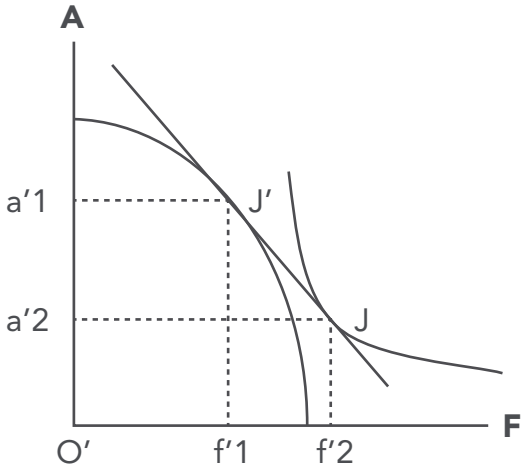


Figure 10 Japan

In Figure 9, E and E' are production and consumption equilibrium in Australia respectively. Australia produces Of1 food and consumes Of2, f1 f2 is Australia's food export. In Australia Oa2 is consumption of automobile and Oa1 is domestic production, a1a2 is Australia's imports of automobile from Japan. Japan's production and consumption of food and automobile is presented in Figure 10. The equilibrium points are J and J'. Japan's export of automobile is a'1a'2 and its import of food from Australia is f'1f'2. The equilibrium points

remain unchanged as long as terms of trade, tastes in two countries and factors' intensity and technology remain stable.

Gains from trade for Australia and Japan are presented in Figures 11 and 12.

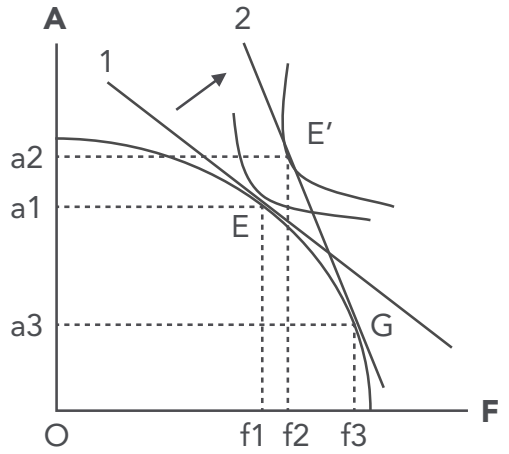


Figure 11 Australia

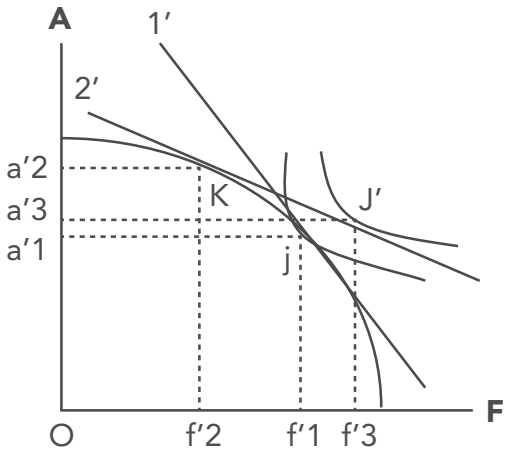


Figure 12 Japan

In Figure 11 the initial equilibrium in production and consumption for Australia without trade is E, where the terms of trade are represented by line 1. In this position, Australia is producing Of1 food and Oa1 automobile. Australia specializes in production of food at point G. Factors of production move to food production causing wages and food prices to rise causing $(\frac{Pf}{Pa})_a$ to rise, the TT line shifts to 2. In the new position Australia's production and consumption are G and E' respectively. After change in TT, Australia is better-off because it is consuming more of both goods. Australia's food export is f2f3 and automobile import is a2a3. Australia is producing less and importing more automobiles.

In Figure 12, initially without trade Japan is in equilibrium at point j where it produces and consumes Of'1 food and Oa'1 automobile. After specialization in production of automobiles, Japan's TT moves to 2'(lower slope because $_{Pa}$ increases and $(\frac{Pf}{Pa})_j$ falls). Japan's production

and consumption equilibriums after trade are at points K and J'. Japan exports a'2a'3 automobiles and imports f'2f'3 food. By moving to a higher indifference curve, Japan is also better-off after trade.

HO model is different from the classical theory of international trade because:

a. It allows for production of import substitutes which was not considered in the classical theory.
b. It is based upon two factors of production rather than labours only, in the classical model.
c. It assumes increasing rather than the constant opportunity cost.
d. It is based on incomplete specialization instead of full specialization in production of one commodity in the classical model.

Most of the objection to globalization and free trade are based on changes in demand and prices of factors of production in different countries. It is argued that free trade widens the inequality in distribution of income in different countries. However, overall consumers are better-off as a result of free trade because they are faced with a wide variety of goods and lower prices due to increased competition.

3.4 FREE TRADE RESTRICTIONS

Most of the arguments against free trade are based on loss of domestic industries and unemployment. Many developing countries restrict free trade by imposing tariffs, quotas or export's subsidies. These three restrictive methods are discussed in this section.

3.5 TARIFFS AND QUOTAS

Tariffs are taxes levied on imports, a fixed amount or as a percentage of imports. The effects of imposing tariffs on consumers, producers and the government are presented in Figure 13.

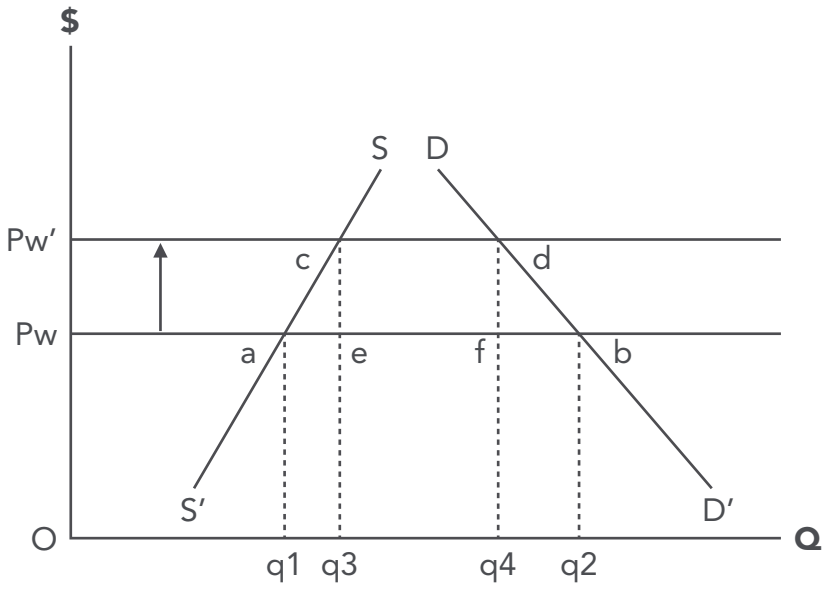


Figure 13 Tariffs and Quotas

Assume a small economy where changes in domestic output have no effect on the world price of the commodity, the world price, Pw is given. The imposition of tariff, t, raises the domestic price of the commodity to P'w. As a result increase in price quantity of imports falls from q1q2 to q3q4.

After imposition of tariff, consumer surplus declines by PwPw'bd. Producer surplus increases by PwPw'ca and government revenue from tariff is cdef. The two triangles ace and fdb are known as deadweight losses, losses to the society as a result of government intervention in the market. The introduction of tariffs shifts resources from the consumers to the producers and the government.

The effects of quotas are similar to tariffs. Quotas are permission to import limited quantity of a product. In Figure 13 suppose the government allows the quota holders to import cd instead of ab. The price of the product rises to Pw'as a result of restriction imposed on the

quantity of imports. The effects on consumer and producer surplus are the same as tariff. In case of quotas, cdef is collected by the quota holders rather than the government. The deadweight losses are as same as tariff. Overall, the society is better-off with tariffs than quotas because the government is collecting revenue rather than quota holders.

3.6 EXPORT SUBSIDIES

Export subsidies are designed to protect domestic produces from low international price. Subsidies are paid to the produces in lump sum or per unit exported. The effects of subsidies to domestic producers, consumers and government are presented in Figure 14.

The world price is Pw. After subsidy the price goes up to Ps and the price in the importing country declines to Pm. The loss of consumer surplus is a + b. The gain of producer surplus is a + b + c.

The cost of subsidy to the government is b+c+d+e+f+g.. The net welfare effect of subsidy is d+e+f+g.. The welfare loss of export subsidy is large because the price in the importing country declines.

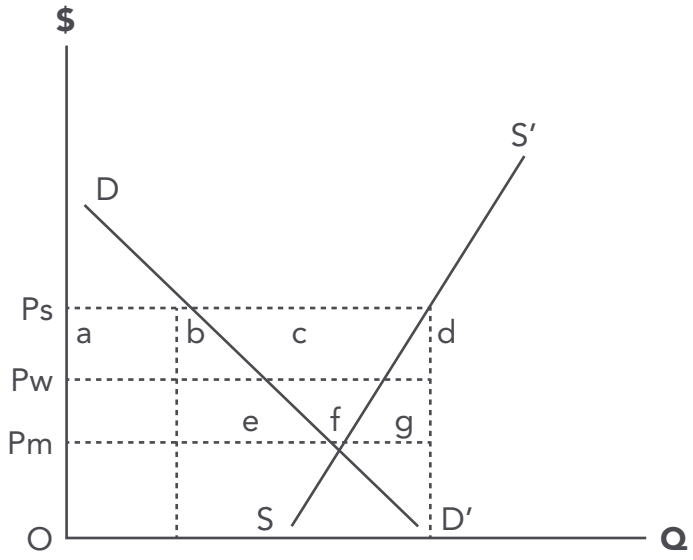


Figure 15 Export Subsidies

3.7 TRADE LIBERALIZATION

In 1960 less than one-sixth of the countries in the world had open trade policies. Most countries had various types of trade restrictions such as high tariff rates (taxes on imports) and extensive nontariff barriers (such as quotas that restricted the physical quantity of specific

imports allowed into a country). In addition, the official exchange rate often exceeded the black-market exchange rate, and governments exercised monopoly controls on exports and other trade-related matters. Yet by 2000 three-quarters of the countries in the world had removed many of these impediments and were now open to international trade. This is a remarkable transformation and highlights the importance of trade liberalization in the global economy.

What precipitated the extensive trade liberalization that occurred? Much of the credit is usually given to the sixty years of multilateral trade negotiations that has resulted in ever-lower trade barriers under the auspices of the General Agreement on Tariffs and Trade (GATT). Since GATT's inception in 1947, manufacturing tariffs in industrialized countries have fallen from 40 percent to 4 percent, and world trade has increased eighteen-fold. Initial GATT membership of 23 countries expanded to 148 countries and the trade rounds became the international forum in which member governments agreed on rules for the conduct of international trade. The multilateral trade agreements involved non-discriminatory tariff reductions so that all countries benefited—the "most favoured nation" clause—and the tariff cuts were "binding" and could not be restored at a later date.

Countries would not have agreed to lower levels of import protection unless there were good arguments in their favour. Trade liberalization allows countries to specialize production and export in their areas of relative strength and to import products that other countries can make at lower cost. It enables access to a wider range of products, and access to foreign products helps diffuse innovations and new technologies. Openness to trade provides additional competition that can spur local firms to greater efficiency and keeps domestic prices low.

In the context of developing countries, a series of country studies sponsored by the World Bank, the Organization for Economic Cooperation and Development (OECD), and the National Bureau of Economic Research demonstrated that trade barriers imposed significant costs, whereas trade openness appeared to be associated with improved economic performance, although the underlying empirical research has not gone unquestioned (Rodrik 1999). For these countries, import substitution using high effective rates of protection had been the dominant vehicle by which industrialization has proceeded. Initially, local suppliers would have to be nurtured and protected from the competitive pressures applied by long established foreign producers. Over time, domestic inefficiencies would decline as these "infants" learned from experience and were able to reduce costs of production. The end result would be a far more diversified and self-reliant industrial structure less dependent on the vagaries of the international commodity prices. In the 1970s increasing disenchantment with this strategy emerged, and an alternative approach, identified as outward- (or export-) oriented and associated with East Asian development, became more popular and trade barriers fell (Edwards 1993).

While trade barriers in manufacturing have fallen extensively, the trade liberalization agenda has expanded its scope and consequently run into considerable difficulties. In 1995 GATT's successor, the World Trade Organization (WTO), became operational. Whereas GATT focused on trade in goods, the WTO concentrates on trade in services, intellectual property, and agricultural subsidies. According to the OECD, rich countries spend $280 billion a year on agricultural producer support; agricultural price support amounts to 20 percent in the United States, 50 percent in Europe, and 80 percent in Japan. These agricultural subsidies are trade-distorting, encouraging supported farmers to produce more, and this in turn lowers world prices and hurts farmers in poor countries that have a comparative advantage in the production of these subsidized commodities. Poor countries want agricultural liberalization in rich countries, yet there has been little progress in persuading richer countries to dispense with these subsidies. This leads credence to the claims about unfairness in trade negotiations made by Kevin Watkins and Penny Fowler (2003).

Trade in services, especially related to issues of labor mobility across national boundaries, and TRIPs (trade-related aspects of intellectual property rights), which are of special interest to the pharmaceutical and software industries, are equally contentious issues. The latter is related to the manufacture of generic drugs and their sales to poor countries. Claims

for "fair trade" rather than "free trade" cloud trade negotiations even further, because nongovernment organizations have been advocating "social clauses" in trade liberalization agreements relating to child labor, human rights, the environment, wages, and conditions. Their position is that trade sanctions should be imposed against countries that do not meet international standards in these areas.

Given these stumbling blocks and complications, it is not surprising that there has been a move away from multilateral forums to negotiated bilateral or regional trade agreements outside the WTO framework. More than 300 such preferential trade agreements now exist. Whether these agreements assist global trade liberalization or hinder the process is not clear (Bhagwati 2002).

Trade liberalization is only part of a broader globalization movement and it needs to be carefully sequenced with other policy reforms. In general, trade liberalization should precede financial liberalization, domestic financial liberalization should precede external financial liberalization, and direct investment liberalization should precede portfolio and bank loan liberalization (capital account liberalization). Free inflows of foreign financial capital should only be allowed at the tail end of a liberalization program, and controls on suddenly increased inflows of short-term capital may be warranted. The purpose of these controls is to quarantine economies from excessive "hot" money inflows and outflows that disrupt economic stability and lead to exchange rate misalignments.

Overall, the welfare effects of trade liberalizations fall within the realm of second-best economics. There is still dispute about the direction of causation in the association between openness to trade and East Asia's rapid growth. What role have trade liberalization packages played in the performance of outward-oriented economies? A number of these countries, such as Japan, Korea, Singapore, and Taiwan, have promoted exports, but in an environment where imports had not been fully liberalized. The success of the East Asian countries with export-led growth suggests that some selectively determined degree of government intervention played a key role. Imports and lower tariffs may stimulate productivity, but import competition may have little impact on productivity growth if the domestic producers are technologically backward: Benefits accrue only to domestic producers that are roughly comparable to their foreign counterparts. This, then, suggests a role for trade-adjustment packages and safety nets for those disadvantaged by trade liberalization.

3.8 WORLD TRADE ORGANIZATION (WTO)

Please see: https://en.wikipedia.org/wiki/World_Trade_Organization

The WTO is a multi-government organization that supervises international trade. The WTO officially commenced on 1 January 1995 replacing the General Agreement on Tariffs and Trade (GATT) with 123 member nations. It is the largest international economic organization in the world. The WTO deals with international regulation of trade in goods, services and intellectual property between participating countries by providing guidelines for negotiating trade agreements and a dispute resolution process aimed at enforcing participants› responsibilities to WTO agreements. Most of the issues that the WTO focuses on are based on earlier trade negotiations, particularly, the Uruguay Round (1986–1994).

"The WTO is attempting to complete negotiations on the Doha Development Round, which was launched in 2001 with an explicit focus on developing countries. As of June 2012, the future of the Doha Round remained uncertain: the work programme lists 21 subjects in which the original deadline of 1 January 2005 was missed, and the round is still incomplete. The conflict between free trade on industrial goods and services but retention of protectionism on farm subsidies to domestic agricultural sector (requested by developed countries) and the substantiation of fair trade on agricultural products (requested by developing countries) remain the major obstacles."

3.9 A CONTRARIAN VIEW

Theories of international trade and the mutual benefits of trade to increase global welfare have not always gone unchallenged. To give readers a taste of the controversies we explore some of the views of Henry J. Bruton in his book '*On the Search for Well-Being*' (Ann Arbor, University of Michigan Press, 2001.

This book is swimming against the stream of globalization. Henry Bruton is a long-time development practitioner, and the purpose of the book is to explore the great moral issue of why this is a world in which some people have so much while millions of others spend most of their life near subsistence.

The early chapters establish Bruton's heterodox approach to development and trade. He finds little value in many of the orthodox trade theoretical tools. He has no place for 'steady-state growth' or isoquants or constrained optimization. His world is one of incomplete markets, misleading price signals and slow responses to incentives. Ignorance and uncertainty prevails. In such a world, rational choice gives considerable way to animal spirits, intuition and precedence. There is no equilibrium for the firm and the notion of general equilibrium for the economy as a whole is dispensed with.

Bruton instead adopts a more organic framework of analysis. At the macroeconomic level he follows a 'stylized facts' approach. He feels that the key facts of growth to be explained are that sustained growth requires productivity growth but that this historically has not penalized employment growth. Growth exhibits a rising capital/labour ratio, the capital/output ratio remains fairly constant, and real wages rise even with unemployment. Technology appears to be labour-augmenting while profit rates are volatile but show no clear tendency to fall. Savings matter for investment, but the latter is a necessary but not sufficient requirement for growth, and there is no robust independent relationship between any trade variable and growth.

There are three features that define Bruton's departure from orthodox trade and development policy. First, he does not include either the growth rate of GDP or GDP per capita as development indicators. His preferred indicators are: Is labour productivity growing? Is employment expanding in line with growth of the labour force, and is the employment meaningful and leading to skill and knowledge acquisition? Are the nation's institutions and values not being undermined by the growth process, and are community preferences and overall quality of life improving?

Productivity growth is the heart of growth for Bruton and it comes from localized search and learning activities. There is a need to encourage indigenous entrepreneurial talent but the religious and cultural constraints can be severe. There is often a mistrust of the powers of reason and logic. Bruton finds that the delayed development of many regions of the world was because the 'ideas of the Renaissance, the Reformation, the Enlightenment in Western Europe did not travel or emerge in other parts of the world' (p.122).

Productivity is enhanced if small-scale indigenous firms emerge and prosper and generate employment opportunities. 'The most important single means of achieving personal growth and maturity is through working' (p.25) as employment is a source of self-respect and community acceptance, as well as income. But it should be quality employment. It should stretch the mind and the spirit. Repetitive work does not lead to continued learning and productivity growth. Workers need exposure to new ideas and technology as 'one of the greatest costs of underdevelopment is the dreadful dullness (as well as low productivity) of the great majority of available jobs' (p.109). Here Bruton harks back to Aristotle and Plato and moral philosophy as to what constitutes the good life and a cohesive community. Working at a job that has little meaning or is degrading, in order to have leisure that is abused, or to buy products that contribute nothing to enriching the mind or body, do not lead to 'well-being'.

The second feature of his departure from orthodoxy is Bruton's uneasiness about opening up developing nations to foreign influences and globalisation. He claims that most imported technology has failed (p.138) and that knowledge to be productive must be home-grown in some fundamental sense. Similarly, developing countries should not imitate the life-style or consumption patterns of the West. Foreign training of locals is largely a waste (p.148). Foreign graduate programs lead to 'brain drain' and generate inappropriate preferences and expectations. Foreign advisors often cause more harm than good. There should be limits to the inflow of foreign investment. Bruton argues that the 'developing country is capable of achieving its own development, and it is not possible for foreign firms to do the task for them' (p.150). Foreign investment in search of cheap labour may solve an employment/poverty problem in the short run. It will not create a sustainable growth process for the long run. The examples of Korea and Japan are used to illustrate the argument that limited openness promotes economic development.

The final departure from orthodoxy is the converse of the second proposition, namely that to achieve sustained growth it has to be a genuinely indigenous development effort. It has to emerge from the society itself otherwise no overall 'well-being' results. The search for knowledge must be widespread and indigenous: 'people cannot borrow, cannot import,

development as I have defined it. Development must be indigenous, or it is not development' (p.122). Only an internally based growth process is consistent with community values and institutions. So how can local initiatives be encouraged and foreign influences controlled? Bruton believes that indigenous firms need to be protected generally via an undervalued exchange rate and specifically through government support of a local capital goods sector and a viable agricultural sector and through controls on foreign investment (p.180).

Chapter 8 outlines the advantages of an undervalued exchange rate that increases prices of imported goods and services as well as promoting exports. The author notes that Taiwan has run an undervalued exchange rate regime for the last 15 years. It is difficult to conceive of a consistently undervalued exchange rate, in a world of volatile capital flows and aggressive hedge funds, without capital controls and restrictions on foreign investment. This must be part of the package (p.166). Bruton says that the industrial countries may indeed permit the developing countries to maintain an undervalued currency as a form of international aid. They could then abolish development aid. This would all be for the better, says the author, as much international aid is wasted and counter-productive to the aims of genuine development. Even better, it would allow us to abolish the World Bank and the IMF (pp.176-77). Humanitarian aid, in the context of natural calamities, would still be needed.

This is a thought-provoking book that argues that too much openness to international transactions can be damaging to a developing countries 'well-being' and that the task is to generate an indigenously grounded growth process. In this process, we need to keep 'productivity growth and employment in the forefront of the story, with efficiency of the textbook kind in some back room' (p.185). Similarly, Bruton notes that trade plays only a secondary role in the development process. Commodity trade is not a substitute for internal productivity growth. Small-scale, local firms need protection from multinationals and imports to sustain a generally autonomous development effort. These local efforts are likely to respect social and cultural boundaries so that the growth generated does not violate basic cultural norms.

A country cannot import the basic conditions for growth. Replication and imitation of the West will not achieve well-being. Members of a society should have the right and the capacity to participate fully and equally in the life of the community and to determine its development path. Bruton hopes that this will lead to fundamental questions being asked about the sort of goods and services that are appropriate for a country, about the creative use of its citizen's time, and about strengthening the cohesiveness and cooperative nature of the community. For example, he feels that tourism is to a large extent detrimental to the development effort (p.167). Bruton also does not believe that there are savings or skill constraints to growth. He says that if these exist it means that the development path undertaken is not appropriate to the local environment. A little inflation, he claims, is also not necessarily harmful to growth.

There are many challenging themes here, with most diametrically opposed to mainstream trade and development thinking, and well worth pursuing by those unsettled by what has happened in the developing world and the economies in transition over the last few decades. We present these ideas here, not because we happen to agree with all of them, but to make the reader aware of the controversial issues at stake associated with global trade.

3.10 REFRENCES

Edwards, Sebastian. 1993. Openness, Trade Liberalization, and Growth in Developing Countries. Journal of Economic Literature 31 (September): 1358–1393

Husted, S. And Melvin, M., *International Economics*, 9th edition, Pearson 2013

Krugman, P. and Obstfeld, M., *International Economics: Theory and Policy*, 6th Edition, Addison Wesley, 2003.

Salvator, D., *International Economics*, 10th Edition, Wiley, 2010

Rodrik, Dani. 1999. The New Global Economy and Developing Countries: Making Openness Work. Baltimore: Johns Hopkins University Press

Watkins, Kevin, and Penny Fowler. 2003. Rigged Rules and Double Standards: Trade, Globalization, and the Fight Against Poverty. Oxford, U.K.: Oxfam.

4 GLOBAL FINANCIAL CRISES

Financial crises have occurred in the developing and developed economies. Since the great depression of 1930s, many of the financial crises have been experienced in the developed economies despite with well-organized and deep financial structures. However, in countries with less sophisticated financial systems the consequences of financial crises have been long-lived and severe. We might particularly mention the 1980s Latin American debt crisis and the Asian financial crisis (1997 – 1999). Notable recent financial crises in developed economies are the Subprime mortgage crises (2007 – 2009) and the European monetary union debt crises that commenced in mid 2000.

Common features of financial crises are currency and banking crises. These features were shared in all of the above - mentioned crises.

In an earlier study in this area, Kaminsky and Reinhart (1998) examined banking and currency crises in Latin American (LA), East Asian (EA) and Middle Eastern and European (MEE) countries 1975 – 1995. The authors argued that financial crises generally start when an economy enters a recession after a prolonged boom caused by by credit expansion and capital flows. This "over lending" cycle is reinforced by poor financial administration,

overvalued currency, weak exports and falling asset prices. Kaminsky and Reinhart (1998) argued that during the above - mentioned period, LA had 50 percent more financial crises than the other groups. To distinguish between regional differences, the article identified 15 economic indicators that show abnormal behaviour prior to the financial crises.

The indicators of over-lending cycles were; M2 (a measure of money supply) multiplier, the ratio of domestic credit to nominal GDP, the real interest rate on deposits and the ratio of lending to deposit interest rate. Increases in any of these variables may indicate approaching difficulties in the financial sector.

Other financial indicators included excess M1 balances and the ratio of M2 (in dollars) to foreign reserves of the central bank (in dollars). The current account indicators included exports, imports, terms of trade and the deviation of the real exchage rate from its trend. Lower exports, lower terms of trade, higher imports and real exchange rate appreciation may indicate future current account problems. The indicators of capital account were the foreign exchange reserves of the central bank and the interest rate differential between domestic and foreign interest rates. Future capital account problems are indicated by loosing reserves and a rising interest rate differential. Finally, falling output and stock market crashes indicate the beginning of a possible recession.

In their empirical work the interst rate differential, the deviation of the real exchange rate from the trend, and the excess money balances were measured in levels. All the other 12 indicators were measured by percentage change during the twelve months. To assess regional differences in banking and currency crises the authors examined volatility of 15 indicators prior to crises. The index of volatility was measured by mean absolute deviation from tranquil periods 18 months prior to the crises. For both currency and banking crises 10 of the 15 indicators indicated that regional difference between LA and EA and LA and MEE were significantly different from zero. The article also examined regional differences in fragility and severity of financial crises. For fragility, the article argued that the wider spread the crises the larger is the percentage of indicators showing abnormal behaviour in 24 months preceding the crises. They found that in the LA case, both in currency and banking crises, much larger percentage of indicators showed abnormal behaviour than the other two groups.

For severity of the currency crises, reserve losses and real depreciation were considered. For severity of the banking crises, the bailout cost relative to GDP was examined. For both currency and banking crises, the severity indexes were higher for LA countries in 1970 – 1994 and higher for EA counties in 1995 – 1997. The article also reported that general economic performances measured by inflation and growth were better for EA in 1986 – 1995 and better for LA countries in 1996.

Kaminsky and Reinhart (1998) is an important research contribution because of the introduction of indicators that give signals to banking and currency crises in advance of a major financial crises. Those indicators correctly indicated Asian crises and could have provided useful guidance to predict 2007 – 2008 subprime financial crises.

4.1 INDICATORS OF FINANCIAL INSTABILITY

Since the mid – 1980s, Latin American debt crises, Asian financial crises and sub-prime mortgage crises are notable financial instabilities. Financial crises are often followed by recession and economic hardships. Given the painful consequences of financial instability, it is important to monitor indicators that guide authorities to develop policies and institutions that improve resiliency of the economy towards shocks.

Following Kaminsky and Reihart (1998) regarding severity of the financial crises, Monadjemi and Lodewijks (2007) constructed the following index as an indicator of financial instability.

$$I = \frac{\Delta e}{e} - \frac{\partial e}{\partial r} \text{ x } \frac{\Delta r}{r} \quad (1)$$

In equation 1, I, e and r are the instability index, the exchange rate (price of foreign currency) and the international reserves respectively. In this instability index, the percentage change in e is positive and the percentage change in r is negative. The term $\frac{\partial e}{\partial r}$ is the ratio of the standard deviation of the exchange rate divided by the standard deviation of the reserves. This term is a weighting factor which is greater or less than 1 depending on the magnitude of the fluctuations of e and r. The larger the value of I then the larger is the severity of the crises. Eichengreen, Rose and Wyplosz (1995) suggested that periods of financial crises is identified when the index moves two standard deviations above or below the mean.

Following the above procedure, Monadjemi and Lodewijks (2007) constructed the index of instability for six countries that experienced major financial crises during 1970 to 2005. The results accurately indicated the timing of Asian crises in late 1990s, Australian currency crises in early 1980s, the Mexican crises in mid 1980s and the mid 1990s, and Argentina's crises in 1990s and the early 2000s. The authors also examined standard deviations of four macro economic variables; the current account, the exchange rate, the reserves and the interest rates for six selected countries during tranquil periods and financial crises. These four variables are the most sensitive variables to external shocks.

In countries with crises, except reserves in Indonesia, four variables became more volatile during periods of crises. The authors argue that the Australian and the Argentina's cases are contrary to the hypothesis because of special circumstances of deregulation of financial markets in Australia and the existence of a currency board in Argentina.

4.2 ASIAN FINANCIAL CRISES

See: https://www.thebalance.com/what-was-the-asian-financial-crisis-1978997

The Asian Financial Crisis commenced in July 1997 when Thailand's currency depreciated heavily. The crises affected several Asian countries, including South Korea, Thailand, Malaysia, Indonesia, Singapore and the Philippines. After experiencing the most impressive growth rates, the Asian "tiger economies" stock markets and currencies lost about 70% of their value.

The Asian Financial Crisis, like many other financial crises, began with a series of asset bubbles. Growth in the region's export economies led to high levels of foreign portfolio investment, which in turn led to rising real estate and stock market values and large public infrastructure projects - all financed by mainly borrowing from banks in domestic and foreign currency.

Prior to 1997, Asian economies experienced a rapid rate of economic growth. In 1996, the average annual growth rate of 5 Asian economies was 7 percent but declined to -8.1 percent in 1998. Before 1990s, Asian countries investments were mainly financed by domestic savings. In the 1990s, rapidly growing economies of these countries attracted substantial capital inflows from the advanced economies. Most of the foreign capitals were short term speculative funds in bank deposits and shares.

Foreign investors were happy to maintain their capital as long as their investment provided attractive returns and local currencies were appreciating. Unfortunately Asian tigers' prosperity did not last very long. The strength of Asian currencies caused their exports to fall, sudden reversal of foreign capital flows caused depreciation of the Thailand's currency and contagion caused capital outflow and depreciation of other currencies. Eventually, 5 Asian economies experienced negative growth of output. The following table taken from Krugman (2003) shows the average growth rates and the average current accounts of five Asian countries from the mid 1990s to early 2000s.

Year	1996	1997	1998	1999	2000	2001
Growth	7.00	4.5	-8.1	6.9	7.00	1.6
CA/GDP	-5.1	-2.7	10.5	7.6	5.1	3.9

Table 1 Growth Rates and Current Accounts of Asian Countries Five Asian countries are Thailand, South Korea, Philippines, Malaysia and Indonesia. Ca stands f or current account.

In Table 1 the negative growth rate was only experienced in 1998. The current account changed from deficits to continuous surpluses. Krugman (2003) argues that was not caused by larger exports but mainly as a result of lower imports due to the contraction of the Asian economies.

Krugman (2003) presents three weaknesses that contributed to the turbulences in Asian economies.

1. Low productivity. Most of the Asian countries' rapid growth was caused by the growth of inputs rather than productivity which is output per input. In other words, perspiration rather than inspiration.
2. Banking regulations. There were very little banking supervisions in the form of deposit guarantees, lending restrictions and capital adequacy which exist in advanced economies. Local and foreign residents were under the false impression that bank deposits are guaranteed by the government. Moreover, there was no restriction on borrowing in foreign currency.
3. Legal framework. The legal framework to cope with substantial capital inflow and companies in trouble did not exist in Asian economies. Moral hazards were wide spread in the financial sector and the industrial companies.
4. Fixed exchange Rate. All of the 5 Asian countries pegged their exchange rate to the US dollar which means that their currencies fluctuated in-line with fluctuation of the US dollar. This kind of exchange rate arrangement is incapable of insulating the economy against external shocks.

Most of the troubled Asian economies, except Malaysia, relied on IMF resources to recover provided that they regulate their economies in accordance to IMF conditions. Malaysia chose to impose capital control and remain on the fix exchange rate system.

Australia is an example of a country that was unaffected by the Asian crises despite sharp drop in its exports to Asian countries. The depreciation of the Australian dollar enabled exporters to redirect their exports to other destinations, mainly Latin America and Middle East, at a cheaper price. During the Asian financial crises the Australian total exports remained roughly unchanged.

4.3 SUBPRIME MORTGAGE CRISES (SMC)

The SMC in 2007 – 2009 was the biggest financial crises in recent periods. Its impact created a global recession which was the worst since the great depression of the1930s. Because of its intensity it is also known as the great financial crisis (GFC). The crises started in the United States as a result of substantial unsecured mortgages loans at the time of low interest rates and real estate boom. Pooled mortgages were used to back securities known as collateralised debt obligations (CDOs), which were sliced into tranches by degree of exposure to default. Investors bought the safer tranches because they trusted the triple-A credit ratings.

The high risk mortgages were packaged by the original mortgage lenders and were bought by investment banks in Europe and the United States. Because of higher risk associated with collateralized debt obligations (CDOs) the rate of return on them was attractive to investors. There was no problem as long as interest rates were low and borrowers were able to service their debts. However, the Federal Reserve Bank decided to raise interest rates. By June 2004, housing prices were at their peak. The Federal Reserve Board started raising interest rates to slow down rising real estate prices. The Federal Funds rate was raised six times, reaching 2.25 percent by December 2004.Eventually the rate was raised to 5.25 percent in June 2006. Subsequently in 2006, real estate prices fell and many mortgage borrowers failed to meet their obligations.

The risk was not limited only to mortgages. Different types of debt instruments were repackaged and sold as CDOs. As housing prices fell, many homeowners found they could no longer afford to maintain their living standard. Defaults on all kinds of debt started to appear. Holders of CDOs included lenders, hedge funds, corporations, pension funds and mutual funds. Many of the purchasers of CDOs were banks. As defaults started to rise, banks were unable to sell these CDOs, and so they had less money available to lend. Those banks with liquidity, feared defaults, and refused to lend to other banks. The financial crises start when interbank landing. collapses. By the end of 2007, the Federal Reserve Bank had to act as a lender of last resort. The crisis had become a viscous circle. Instead of lending easily, banks restricted landing, leading to further decline in real estate prices.

The US subprime mortgage crises became the global financial crises because CDOs and other toxic assets appeared in the balance sheets of several European financial institutions. The European governments rescued financial institutions by nationalizing them thereby providing confidence in the liabilities of the affected institutions. Northern Rock building society in UK and all of the financial institutions in Iceland were nationalized by their government. In the United States the first casualty was Lehman Brothers which was declared bankrupt in September 2008.

Bear Stearns was an investment bank that survived the Great Depression but was bailed out before the Great Recession. In 1923, it became one of the world's largest investment banks.

In April 2007, two of the Bear Stearns hedge funds owned 20 billion CDOs that started losing value in September 2006 when housing prices began falling. Bear Stearns was about to become the second victim of the mortgage crises if the Federal Reserve Bank did not intervene. The Fed lent up to $30 billion to Chase to purchase Bear for 1 dollar per share.. Without the Fed›s intervention, the failure of Bear Stearns could have spread to other over-leveraged investment banks.

Bear's situation created a panic among banks because they realized that no one knew where bad debt were held within the portfolio of the most prestigious financial institutions in the business. This suspicion caused banking liquidity crises where banks were unwilling to lend to each other.

Eventually the financial crises led to a global recession in 2008 that was the worst since the Great Depression of 1930s. Falling real estate prices, reduced bank lending and evaporation of confidence caused falling real GDP in most of the affected countries. Figure 1 shows growth rates of the world and the OECD countries, 1970 – 2017. For the first time in 2008, both growth rates reached negative values.

Some other studies blame rising oil prices for contributing to the Great Recession. The monthly average crude oil price reach 145 US dollar per barrel in July 2008. Hamilton (2011) argues that without the significant contribution of the oil price rise in 2008 the subsequent recession would not have occurred in the United States. On the other hand, Killian (2009) maintains that the effects of the oil price rise on the US economy would not have not occurred after the experiences of the early 1970s oil price shock. Furthermore, the effects of the oil price rise on inflation and unemployment in oil importing countries were different than that of the early 1970s. The oil price shock in the 1970s caused the aggregate supply curve in oil importing countries to shift toward the left leading to inflation and unemployment. The rising cost of production due to the oil price rise led to the leftward shift of the aggregate supply curve. However, the significant oil price rise in 2007 – 2008 coincided with the global financial crises and recession leading to a fall in aggregate demand offsetting the effects of oil price rise on prices.

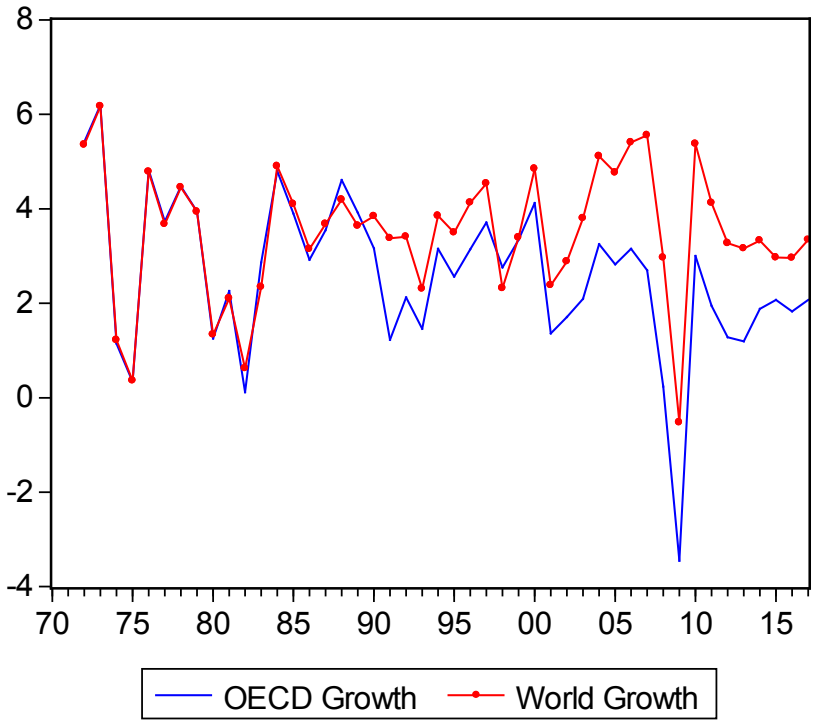


Figure 1 Growth Rates 1970 – 2017

4.4 EMERGING MARKETS FINANCIAL CRISES

In this section financial crises in Russia, Brazil and Argentine will be discussed.

The Russian financial crises started in the early 1990s after the transition from the communist regime to a capitalist system operating through a market economy. The main problem in transition was the lack of knowledge about the privatization of government enterprises and the legal framework for the operation and management of private companies. The capital market was non-existent and the government had to rely on printing money to finance their routine expenditure. During the period of transition the Russian economy suffered from high inflation and widespread corruption and unemployment. The following table shows inflation and the growth of output in Russia 1991 – 2000. Table 2 shows that the Russian economy suffered from high inflation and negative growth until 1997. At the same time the currency depreciated heavily and government debt rapidly rose, mainly as a result of not being able to collect taxes. Worried about the effects of Russian economic and financial instability on the global economy, the IMF credit in 1997 assisted the Russian economy which helped to show a small positive growth and lower inflation.

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Growth	-5.4	-19.4	-10.4	-11.6	-4.2	-3.4	0.9	-4.9	3.2	7.5
Inflation	92.7	1353	875	307	197	47.6	14.7	27.7	85.7	20.8

Table 2 Growth and Inflation in Russia 1991 - 2000
The data in this table are collected from Krugman (2003).

Brazilian crises commenced in 1999 when the currency depreciated heavily in response to Russian crises and continuous government debt. The government defended the currency by raising interest rates and selling foreign currency causing depletion of foreign reserves.

The IMF established a stabilization fund to prevent the effects of Brazilian crises on neighbouring countries and convincing the investors that the Brazilian fiscal policy was under control. The IMF assistance was not successful and the government devalued the currency by 8 percent and subsequently the currency was floated causing its value to fall by 40 percent. The Brazilian economy suffered from a short lived recession and inflation did not rise rapidly, Krugman (2003) argues that the Brazilian crises was short because unlike the Asian counties, Brazil did not borrow in foreign currency and their financial system remained stable.

Brazilian currency crises did not affect Argentina but Argentina's currency peg to US dollar caused problem at the time that the US dollar was appreciating. Argentina's peso remained strong while the economy suffered from high unemployment and chronic current account deficit. In 2001 Argentina had very high foreign debt. The government in late 2002 restricted residents' withdrawals from the bank and subsequently stopped repayments of foreign debts. Argentina attempted several exchange rate regime including a dual exchange rate and eventually the floating exchange rate which caused the peso to depreciate to 4 peso to one US dollar.

From 1991 to 2002, to control hyperinflation, Argentina had a fixed exchange rate based on currency board. Under a currency beard system the central bank should keep 100 percent foreign currency for every one unit of domestic currency. Under this system the central bank can expand the money supply if it holds enough foreign currency. The currency board system was effective to control inflation in Argentina but it created banking crises and shortage of goods in the market. The central bank was unable to unable to act as a lender of last resort because it had insufficient foreign currency reserves. At the same time insufficient liquidity in the banking system caused rationing of good in the markets. Faced with these problems and the fear of returning inflation, the currency board was suspended in 2002

4.5 REFERENCES

Hamilton, J. (2011), "Causes and Consequences of the Oil Shock of 2007-08", *Brooking Papers on Economic Activity,* Spring, pp. 215-261.
Kaminsky, L and Reinhart, C. (1998), "Financial Crises in Asia and Latin America: then and Now", *American Economic Review Papers and Proceedings*, May, pp. 444 -448.

Kilian, L. (2009), "Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in Crude Oil Market", *American Economic Review*, 93:3, pp. 1053-1069.
Krugman, P. and Obstfeld, M., *International Economics: Theory and Policy*, 8th Edition, Addison Wiesley, 2003.

Monadjemi, M. and Lodewijks, J., (2006), "Indicators of financial Instability", *Global Conference on Business & Economics 2006 Proceedings* Cambridge University, July.
https://www.thebalance.com/what-was-the-asian-financial-crisis-1978997

5 EUROPEAN MONETARY UNION AND DEBT CRISES

A monetary union (MU) consists of a group of countries that use a single currency with a central bank conducting a uniform monetary policy for the whole region. The European Monetary Union (EMU) is the most well-known and prominent monetary union in the world. The United States may also be a MU if each state or region is considered a separate monetary entity. The main difference between EMU and the United States is the political and fiscal union that exists in the latter but not in the former.

Since the Roman Empire, the creation of a united Europe has long been advocated by politicians, philosophers and religion leaders. During the twentieth century, the costs of two wars, both in terms of human and non-human resources and the fear of its reoccurrence added a stronger support for a united Europe. In 1946, Churchill proposed planning for the establishment of a 'united states' of Europe. Altiero Spinelli and Jean Monnet were the first two who actively participated in designing a united Europe. The primary planning for the integration and the union of the European countries were implemented by Robert Schuman and Jean Monnet. After the presentation of the plan, more counties expressed their willingness to join the European Community.

The first plan for the establishment of a monetary union was proposed by the European Community Committee in 1962, which was estimated to be completed in 9 years. However, because of the existence of the Bretton Woods fixed exchange rate system, very little progress was made for pursuing the 1962 plan for exchange rate stability. The Werner report was completed after the breakdown of the Bretton Woods system in early 1970s. The report suggested a three-stage process for establishment of the MU, including stability of the exchange rate within limits, price parity for the commodities produced in the union and the creation of the European central banking system, similar to the Federal Reserve System in the United States.

5.1 EARLIER DEVELOPMENTS

During the last years under the Bretton Woods system, in 1969, the European community commissioned Pierre Werner, the existing prime minister of Luxemburg, to develop a new plan on the establishment of EMU. The Werner's report recommended three stages for the establishment of EMU: initial limited fluctuation of the exchange rate, further limitation on the fluctuation of the exchange rate, elimination of price differences and establishment of the European central bank, almost similar to the Federal Reserve System in the United States.

The first recommendation of Werner's report was to stabilize fluctuations of the exchange rate in the snake system. In this system, the exchange rates were allowed to fluctuate by 2.25 percent above or below par values. The snake system collapsed when the European countries, in response to the oil price shock of 1970s, attempted to devalue their currencies outside of the limits. The European Monetary System (EMS) was established in 1979 with eight European members[3]. Each member country had an independent central bank which conducted monetary policy. The eight countries agreed to keep fluctuations of their exchange rate against the German mark within 2.25 percent. The system was successful in keeping the rates of inflation in member countries in line with the rate of inflation in Germany, the country with the lowest inflation in Europe. In other words, the Germany, being economically the strongest in the group, determined the direction of the monetary policy of the other seven countries. For example, if the German central bank lowered interest rates causing the Mark to depreciate, the others also had to conduct expansionary monetary policy to prevent appreciation of their currency against the Mark.

In Figure 1 the inflation differential of seven members of EMS with Germany is plotted. The differentials from the high levels in the 1980s reached almost zero (except Italy) in the early 1990s.

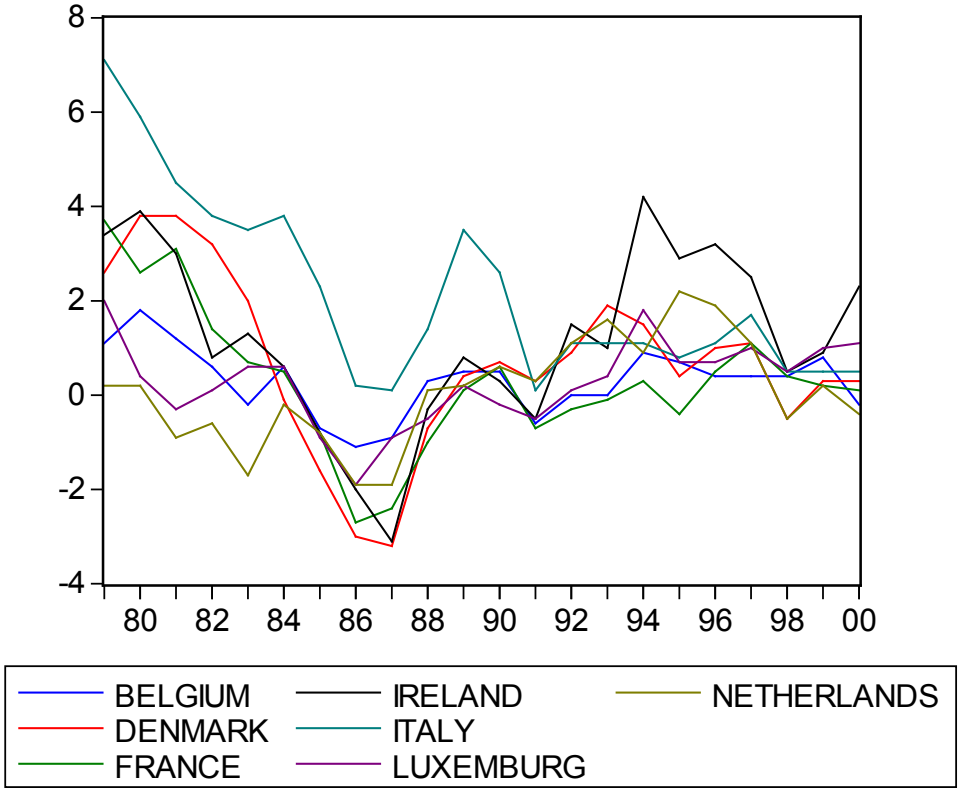


Figure 1 Inflation Differentials with Germany
Figure 1 was reproduced from Monadjemi and Lodewijks (2015)

UK joined the EMS in late the 1990s. EMS operated successfully until 1992. In 1992, the British economy was suffering from high unemployment but the Bank of England was unable to lower interest rates because of their exchange rate commitments with EMS. The speculators expected that UK would be forced to leave the EMS and as a result the British pound will depreciate heavily. Speculators sold ponds and when the UK left the EMS, they made a profit by purchasing pounds at a cheaper price. The exit of the UK and Italy in 1992 together with allowing 15 percent fluctuations against the Mark, practically led to the breakdown of the EMS fixed exchange rate system.

A popular information site,

(https://en.wikipedia.org/wiki/Economic_and_Monetary_Union_of_the_European_Union) states that:

"The Delors report of 1989 set out a plan to introduce the EMU in three stages and it included the creation of institutions like the European System of Central Banks (ESCB), which would become responsible for formulating and implementing monetary policy."

The three stages for the implementation of the EMU were the following:

Stage One:

On 1 July 1990, exchange controls are removed and capital movements are completely free in the European Economic Community.

The Treaty of Maastricht in 1992 establishes the completion of the EMU as a formal objective and sets the following economic convergence criteria, concerning the inflation rate, public finances, interest rates and exchange rate stability:

1. The maximum budget deficit of 3 percent of GDP.
2. The maximum government debt of 60 percent of GDP.
3. The inflation rate not by more than 1.5 percent of the average of the three lowest inflation countries in the union.
4. The long term interest rate not more than 3 percent of the average interest rate of the three lowest inflation rates in the union.

   The above criterions are requirements for gradual convergence to the EMU. A country cannot become a member unless it reaches the third stage of convergence. An important factor of the third stage is a minimum of two years in the European Exchange Rate Mechanism (EMS), where potential members' currencies have maintained limited deviation from their target rate against the euro.

Stage Two:

The European Monetary Institute is established prior to the establishment of the European Central Bank, for supporting monetary cooperation between the member states and their national banks and supervising creation of ECU banknotes.

On 16 December 1995, name of the new currency (the euro) and the duration of the transition periods are decided.

On 16–17 June 1997, the European Council decides to adopt the Stability and Growth Pact, designed to ensure budgetary discipline after introduction of the single currency, and a new exchange rate mechanism (ERM II) is set up to provide stability of the euro and the national currencies of countries that haven't yet joined the eurozone.

On 3 May 1998, at the European Council, the 11 initial countries that will participate in the third stage from 1 January 1999 are identified.

On 1 June 1998, the European Central Bank (ECB) begins operation, and on 31 December 1998, the conversion rates between the 11 participating national currencies and the euro are determined.

Stage Three

From the start of 1999, the euro is now the single currency within the EMU and a uniform monetary policy is conducted by the ECB. A three-year transition period is in effect before the introduction of actual currency, but legally there are no longer any national currencies. From 1992 to 1999 the European currencies lacked any system of fixed exchange rate and fluctuated widely. Eventually, the European Monetary Union (EMU) with 12 members was established and the single currency was introduced in 1999. The Masstricht Treaty set the following specific criteria for countries to join the EMU:

Country	Inflation %	Budget Deficit % of GDP	Public Debt % of GDP	Long Term Interest Rate %
Austria	1.1	2.3	64.7	5.6
Belgium	1.4	1.7	118.1	5.7
Denmark	1.9	-1.1	59.5	6.2
Finland	1.3	-0.3	53.6	5.9
France	1.2	2.9	58.1	5.5
Germany	1.4	2.5	61.2	5.6
Greece	5.2	2.2	107.7	9.8
Ireland	1.2	-1.1	59.5	6.2
Italy	1.8	2.5	118.1	6.7
Luxemburg	1.4	-1.0	7.1	5.6
Netherlands	1.8	1.6	70.0	5.5
Portugal	1.8	2.2	60.0	6.2
Spain	1.8	2.2	67.4	6.3
Sweden	1.9	0.5	74.1	6.5
United Kingdom	1.8	0.6	52.3	7.0
Convergence Criterion	2.7	3.0	60.0	7.8

Table 1: Economic indicators of Maastricht Treaty Convergence Criterion March 1998
Table 1 was reproduced from Monadjemi and Lodewijks (2015).

In Table 1 all of the listed countries, except Greece, satisfied inflation, budget deficit and interest rate criterion for convergence. However, in case of government debt only three counties were able to satisfy the criteria. Greece was the 12th member of the EMU which did not satisfy the convergence criterion but was admitted was later in 2001 on the basis of making satisfactory improvement for reaching the required values. There were 8 countries that did not satisfy the public debt requirement but were admitted by the European Commission ruling.

Below are the remaining members of the EMU which joined after the original 11 members:

On 1 January 2001, Greece joins the third stage of the EMU.

On 1 January 2002, the euro notes and coins are introduced.

On 1 January 2007, Slovenia joins the third stage of the EMU.

On 1 January 2008, Cyprus and Malta join the third stage of the EMU.

On 1 January 2009, Slovakia joins the third stage of the EMU.

On 1 January 2011, Estonia joins the third stage of the EMU.

On 1 January 2014, Latvia joins the third stage of the EMU.

On 1 January 2015, Lithuania joins the third stage of the EMU

5.2 THEORETICAL DISCUSSION

In a monetary union, a uniform monetary policy is conducted, and a single currency is circulated. There are costs and benefits associated with forming a monetary union. The benefits are lack of uncertainty about the exchange rate fluctuations and saving on transaction costs of currency conversion and hedging. The costs are the absence of an independent monetary policy for fine tuning the effects of economic shocks and the benefits of exchange rate movements to stabilize disturbances. To illustrate this point, suppose there is an adverse aggregate demand shock in the monetary union causing depreciation of the common currency against currencies of the non-members causing exports to become cheaper, the expansion of exports compensates for the fall in aggregate demand. These gains are high if there are high trade connections with non-members. Furthermore, within the union, prices fall in depressed areas causing exports to increase. The higher is the trade between members; the more gain is received in the depressed areas. If labour mobility is high, labour moves from the depressed regions to the more prosperous areas lowering unemployment in the depressed regions. Similar reasoning can be made for high capital mobility when capital moves away from the depressed region causing equality of the rate of return on capital.

The loss of conducting an independent monetary policy depends on the symmetry of the business cycles in the regions. The loss of an independent monetary policy may not be so high if business cycles of two regions are symmetric and the same monetary policy strategy is appropriate for both regions.

The theoretical analysis of the MU is based on the theory of the optimum currency area (OCA) that was first developed by Robert Mundell (1961). The OCA with its emphasis on symmetry of business cycles, mobility of the factors of production and the costs of converting currencies, is an important stepping ground for evaluation of costs and benefits of a country joining a monetary union. The creation of a monetary union for preventing volatility of the exchange rate can be beneficial when exports and imports between member countries are high, factors of production are mobile and the business cycles are symmetric. If these conditions are not met, the costs of moving from a floating exchange rate to a single currency exceed the benefits.

In Mundell's words, changes in the exchange rate caused by implementation of different monetary policies between Canada, and the United States will not be effective if different regions of each country experience asymmetric business cycles. For example, suppose west of Canada and the west of United States is in recession and the eastern parts of each country are in boom. The western parts and the eastern parts of two countries with symmetric business cycles can each form a separate monetary union and implement different monetary policy to confront economic shocks. The exchange rate between combined eastern and combined western monetary regions fluctuates while each region benefits from having a single currency. Accordingly, in Mundell's analysis there is an important role attached to the symmetry of the business cycles.

The loss of an independent monetary policy may not be so great if business cycles of member countries are symmetric. It is a standard practice to designate business cycles by inflation and output growth. Business cycles of two countries are symmetric if their growth and inflation are correlated. If business cycles are symmetric; a uniform monetary policy strategy can be applied to all of the member countries in the union. Monadjemi et al (2012) took Germany as a pivot country, and showed that business cycles of Germany and France and Germany and Italy have much higher coefficient of correlation than business cycles of Germany and Greece and Germany and Spain. This results implies that the same monetary policy is suitable for Germany, France and Italy but not for Germany, Spain and Greece.

5.3 MONETARY POLICY IN EMU

The Monetary policy in EMU is conducted by the European central Bank (ECB) which is located in Frankfort. Based on inflation targeting, the ECB sets the interest rate which is applicable to all of the member countries. Furthermore, the ECB doesn't act as the lender of last resort. In case of shortage of liquidity, an individual bank has to borrow from other banks in other countries in the union. The function of money printing is sole under the control of EMU. Individual central banks cannot print money because the central bank of countries with high inflation may circulate large quantity of single currency causing high inflation in the whole union.

Symmetry of business cycles is an essential requirement for successful implementation of monetary policy. If business cycles of member countries are asymmetric, a uniformly high or low rate of interest may be suitable for some members but may harm the others. Monadjemi and Lodewijks (2015) argue that for stabilizing their economy, being a member of EMU is similar to being in a "straight jacket". There are not many tools left for the individual central banks to stabilise business cycles. They cannot influence the interest rate, the exchange rate, and they cannot expand or contract the money supply.

5.4 FISCAL POLICY AND DEBT CRISES

Member countries in the EMU are fiscally independent. Based on economic condition, infrastructural expenditure and social services, each government prepares its own budget and finance budget deficits by borrowing from foreign banks within the union. The interest rates are set by the ECB. In table 1, of the 15 European countries, the budget deficit ratio of France is the highest. Belgium, Italy and Greece have the highest government debt ratios. Furthermore, countries such as Greece, Spain, Italy and Portugal who were accustomed to high interest rates were encouraged to borrow heavily when a low common interest rate was set by the ECB. This development was a major contributing factor to debt crises in the EMU periphery countries.

The debt crises in EMU peripheries started in the mid 2009 and were intensified by negative growth rates in the latter parts of the decade causing a sharp decline in tax revenue. Some countries like Greece and Portugal failed their international debt obligations. Dreger and Reimers (2013) suggested that as a result of 2007 – 2008 recession, government revenues declined and government expenditure to rescue troubled financial institutions rose in the affected counties. The rise in sovereign debt in several European countries such as Ireland, Spain, Italy, Greece and Portugal threatened the stability of the EMU.

Figure 2 shows that average sovereign debt in 2008 - 2010 as a percentage of GDP was higher in all of the 12 members of the EMU except Belgium, Finland and Spain. Part of this rise is due to governments attempting to rescue troubled financial institutions in the 2007 - 2008. In general, high government spending together with low economic growth and inflexible monetary policy have been responsible for the rising sovereign debt of the EMU periphery members such as Greece, Portugal, Spain and Italy.

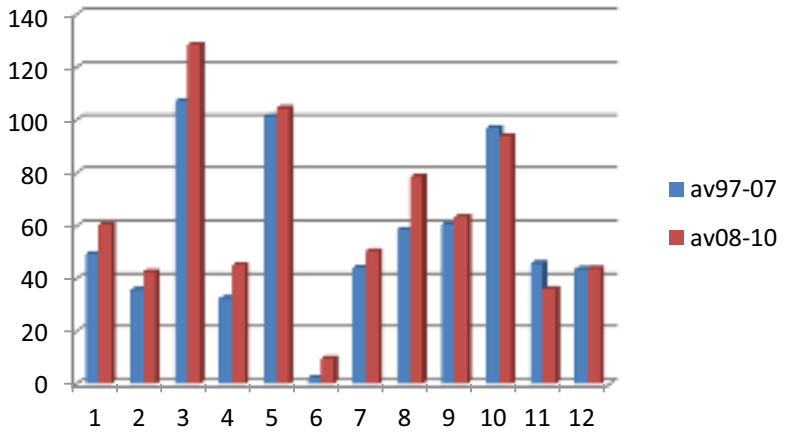


Figure 2: Average Government Debt Ratios in 12 EMU members
Figure 2 was reproduced from Monadjemi and Lodewijks (2014).
On the x axis numbers 1 to 12 refer to France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Austria. Belgium, Finland and Spain respectively

Growth rates of four EMU with large public debts are shown in Figure 3. Starting in 2009, during the great financial crises, all four countries experienced a significant fall in their growth rate with Greece showing largest negative growth followed by Portugal and Spain.

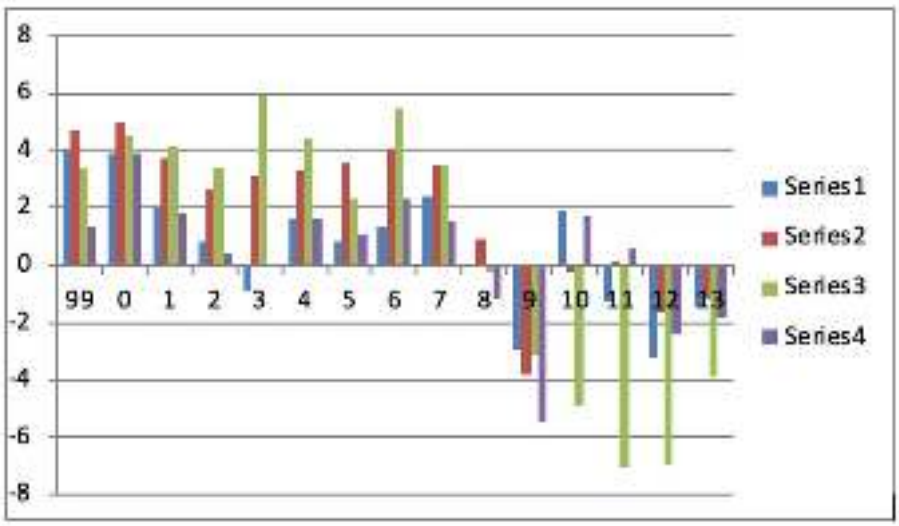


Figure 3: Growth Rates of 4 EMU Members.
The above graph was reproduced from Monadjemi and Lodewijks (2014). In Figure 3 Series1, 2, 3 and 4 are Portugal, Spain, Greece and Italy respectively. On the horizontal axis 0 to 13 refers to 2000 to 2013. The source of data is OECD main economic indicators.

Martin Feldstein (2011) argues that the problem of sovereign debt crises twelve year after creation of EMU was mainly caused by forcing a straitjacket(a uniform monetary policy and a single currency) on a group of heterogeneous countries; heterogeneity that includes "economic structure, fiscal tradition and social attitudes". Feldstein believes that the European Central Bank conducted monetary policy such that interests within the EMU remained low. This low rate was too low for countries such as Greece, Portugal, Ireland and Italy that were accustomed to higher rates of inflation and interest rates. As a result, governments and private sectors in these countries increased borrowing to meet their respective requirements. Originally, interest rates in southern Europe were high due to fear of devaluations and defaults. When those countries joined the EMU, they faced lower interest rates and this development encouraged them to borrow heavily causing housing bubbles, unit labour costs rose, manufacturing became uncompetitive and trade deficits widened. The eventual burst of the bubble led to high budget deficits, with the bank bailouts, causing sovereign debt problems. The sovereign debts were mainly kept by the European banks. The slow rate of growth in these countries, caused by a strong exchange rate and inability to exercise an easy monetary policy, reduced government revenues and prevented the governments of these countries to reduce their budget deficits.

5.5 GREECE DEBT CRISES

(https://www.investopedia.com/terms/e/european-sovereign-debt-crisis.asp) states that:

The European Sovereign Debt Crisis peaked in 2010 to 2012. In 2009, Greece revealed that its previous government wrongly reported its budget deficit, violating EU policy and causing fears of contagion to other countries and break-down of euro.

In 2010, lenders demanded higher **interest rates** from high debt states, coupled with low economic growth, made it more difficult for the affected countries to finance their budget deficits. Some of these countries increased taxes and reduced social expenditures to combat the crisis, which contributed to social unrest and lose of confidence in their governments, particularly in Greece. As a result of sovereign debt crisis, several countries such as Greece, Portugal, and Ireland faced downgrading their sovereign debt to junk bonds by international credit rating agencies.

"By May 2010. Greece received several bailouts from the EU and IMF over the following years in exchange for the adoption of EU-mandated austerity measures to cut public spending and a significant increase in taxes. The country experienced continued recession. These measures, along with the economic situation, caused unrest. In June 2015, Greece, with divided political and fiscal leadership, faced **sovereign default**." Subsequently, Greeks

voted against bailout and additional EU austerity. This development led to the expectation of Greece leaving the EMU. The possible re-introduction of Drachma may cause economic collapse or a small chance of recovery. The Greece economy is still unstable with 21% unemployment in 2017 and falling GDP as of 2016. Krugman (2009) argues that the creation of the euro was a big mistake because EMU's members never had the preconditions for establishment of a successful single currency. Considering current sovereign debts problem, should, for example, Greece leave the EMU? Greek exit from the euro - is still extremely unlikely. There is no legal mechanism with Greece can exit the EMU. Even if mechanisms existed, which countries should leave the union to keep it viable? Some argue that there are now two EMUs and it may be necessary to keep the Eurozone into two sub regions (those with efficient economies and effective economic management and the others without). Perhaps, Germany is economically so productive that it should be left alone because its standards of monetary and fiscal discipline cannot be exercised in the other countries in the union. Another alternative is the creation a fiscal union – an institution that sets taxes and government spending for the whole union – to complement the monetary union. With the loss of exchange rate control and an independent monetary policy, a fiscal union would prevent a country from exercising discretionary fiscal policy. It is unlikely that many countries agree to that loss of sovereignty.

For the time being European economic performances are satisfactory and the EMU's debt crises are stable.

The following passage is from: European Commission report February 7 2018
"Growth rates for the euro area and the EU beat expectations last year as the transition from economic recovery to expansion continues. The euro area and EU economies are both estimated to have grown by 2.4% in 2017, the fastest pace in a decade.

This robust performance is set to continue in 2018 and 2019 with growth of 2.3% and 2.0% respectively in both the euro area and EU.

Core inflation, which excludes volatile energy and unprocessed food prices, is expected to stay subdued as labour market slack recedes only slowly and wage pressures remain contained. Headline inflation will continue to reflect the significant influence of energy prices and is forecast to rise modestly. Inflation in the euro area reached 1.5% in 2017. It is forecast to remain at 1.5% in 2018 and to increase to 1.6% in 2019."

5.6 REFERENCES

Dreger, C. And Reimers, HE, (2013), "Does Euro Membership Affect the Relationship Between GDP Growth and Public Debt", Journal of Macroeconomics, 38, pp. 481-486.

Krugman, P. and Obstfeld, M. *International Economics: Theory and Policy*, 7th Edition, Pearson Addison Wesely, 2009.

Monadjemi, M., Yoon, KH, Lodewijks, J., (2012), "Success and Failure of a Monetary Union", *Online Journal of Social Science Research*, 1, 7, pp. 213–220.

Monadjemi, M. and Lodewijks (2014), J., "Sovereign Debt and Economic Growth in Euro Zone" , *International Research Journal in Applied Finance*, vol. V. Issue 12, December, pp. 1343 – 1352.
Monadjemi, M. and Lodewijks, J., "Monetary Union without a Political Union: Implication for the European Monetary Union", *International Journal of Business and Social Science,* (2015), 2, (8). pp.70 -79.
https://www.investopedia.com/terms/e/european-sovereign-debt-crisis.asp
https://en.wikipedia.org/wiki/Economic_and_Monetary_Union_of_the_European_Union

6 GREAT DEPRESSION AND GREAT RECESSION COMPARED. DOES HISTORY REPEAT ITSELF?

6.1 THE GREAT DEPRESSION 1929 - 1939

The Great Depression of 1930s occurred from 1929 to 1939, and was the longest and deepest economic downturn in history of the world. It started after the US stock market crash of October 1929, which caused the wealth of shareholders to fall by millions of dollars. Subsequently, over the next several years, consumer spending and investment declined sharply, causing severe falls in industrial production and employment as failing enterprises reduced employment. By 1933, when the Great Depression reached its lowest downturn, about 15 million Americans were unemployed and many banks had failed.

Throughout the 1920s, the U.S. economy had grown rapidly, and the nation's total wealth, from 1920 to 1929, more than doubled. Encouraged by the expansion of the economy, many people invested their savings in stocks. The share prices rose rapidly, reaching their peaks in August 1929.

Meanwhile, production had already declined and unemployment rose, making stocks over valued. Furthermore, with low wages, consumer spending declined; the agricultural sector of the US .economy was fighting to survive due to drought and food prices falling. Banks had a large portfolio of non-performing loans.

During the summer of 1929, the US economy entered a recession, as consumer spending fell and inventories started to pile up, causing lower production. However, share prices continued to rise, reaching a level that was not supported by companies' expected future earnings.

The US stock crashed on October 24, 1929, as "a record 12.9 million shares were traded that day, known as "Black Thursday." Five days later, on October 29 or "Black Tuesday," about 16 million shares were exchanged after second panic sale swept Wall Street.

As a result of the stock market crash, consumer confidence fell significantly and the downturn in spending and investment led factories and other businesses to slow down production and begin reducing employment. For those who remained employed, wages fell and their purchasing power decreased.

The inflexibility of the gold standard and the fixed exchange rate caused the spread of the American downturn to other countries in the world, particularly to Europe.

Despite encouragements from President Herbert Hoover and other authorities that the crisis would be over soon, the downturn continued to become worse during the next three years. By 1930, unemployment reached 4 million and increased to 6 million in 1931.

Meanwhile, the US industrial production had dropped by 50 percent. These developments affected Americans' living standard as "Bread lines, soup kitchens" and more and more numbers of homeless people became common features in towns. Farmers failed to harvest their crops, and were forced to leave them being destroyed in the farms while many people were starving in other areas.

In the fall of 1930, the first of banking panics started, as large numbers of depositors lost confidence in the solvency of the banking system and rushed to withdraw their banks deposits, causing banks to liquidate loans for supplementing their liquidity. Run on banks occurred in the United States again in the spring and fall of 1931 and in the fall of 1932, and in the beginning of 1933 thousands of banks were forced to close their doors.

In the face of this dire situation, Hoover's administration tried supporting failing banks and other institutions with government loans; the idea was that the banks in turn would loan to businesses, which would be able to hire back their employees.

Hoover, a Republican who had formerly served as U.S. secretary of commerce, believed that government should not directly intervene in the economy, and that it did not have the responsibility to create jobs or provide economic relief for its citizens.

In 1932 at the depth of the depression when 15 million people were unemployed, Franklin D. Roosevelt was elected as the President of the United States. At that time every State ordered the remaining solvent banks to remain closed. Roosevelt encouraged people to optimism through his famous statement "the only thing we have to fear is fear itself."

Roosevelt took immediate action to address the country's depressed economic activity by announcing a four-day "bank holiday" during which the Congress passed reform legislation and reopen those banks that were determined to remain.

During Roosevelt's first months in office, legislations were designed to stabilize industrial and agricultural production, create employment and stimulate the economy. Furthermore, Roosevelt aimed to improve the financial system by creating the Federal Deposit Insurance Corporation (FDIC) to protect bank deposits and the Securities and Exchange Commission (SEC) to control the stock market and prevent undesired speculative activity that caused the 1929 crash.

The recovery began in early 1933 and the economy continued to recover during the next three years when on average the real GDP grew by 9 percent per year. After a severe recession in 1937, the US economy continued to recover in 1938. The second contraction in 1937 offset most of the earlier gains in production and employment and caused the effects of the Great Depression to last until the end of the decade (see Figure 3 below).

The economic depressing effects of depression in Europe led to the rise of nationalism and Nazi regime in Germany. The Nazi regime occupied several counties in Europe and led to the war in Europe. In the United States, President Roosevelt decided to stand behind Britain and France against Germany. In 1941 United States entry into WWII caused significant expansion of industrial production and falling unemployment to the level before the depression.

6.2 THE GREAT RECESSION 2007 - 2009

Blanchard and Summers (2017) attempted to compare reactions of the US economy to macroeconomic stabilization policy implemented during the Great Depression (GD) and the Great Recession (GR). Both GD and GR started with financial shocks.

The GR was initially caused by large quantities of non-performing mortgages held by financial institutions in Europe and the United States. The crises became global when high risk mortgage loans were packaged together and passed to financial intermediaries throughout the world. The non performing assets caused a shortage of liquidity in many affected financial institutions. Bank lending was significantly reduced and the mortgage crises led to the GR, which was the biggest since the GD of 1930s.

Blanchard and Summers (2017) argued that in 2008 the US economy did not completely collapse as it did in 1933. However the recovery in the latter period was much slower than the former. This means that the growth rate of the US economy was much higher in the late 1930s than it was in the recovery after the 2008. The authors point out that the macro stimulation policies, fiscal and monetary, and bail out of financial institutions during the GR, were significantly higher to keep the unemployment much less than the 25 percent that was experienced in 1929.

Figure 1 and Figure 2 show US real GDP and the growth of real GDP. In figure 2 the growth of US real GDP fluctuated violently until the mid 1950s. These early fluctuations were mainly due to the effects of Great Depression and the WWII. The growth of the US real GDP experienced relative stability during the rest of the sample period. However, US growth rate was negative in the early 1980s and during the Great Recession in 2007 – 2009.

The decade of 1960s is known as the golden years when the US economy showed consistent steady growth.

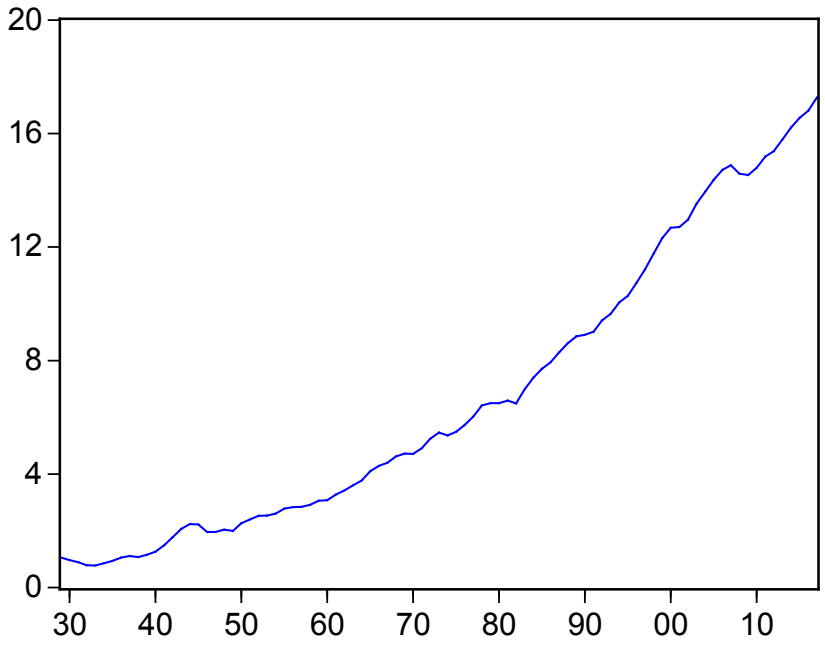


Figure 1 US Real GDP 1929 – 2017 (Trillions US Dollars)

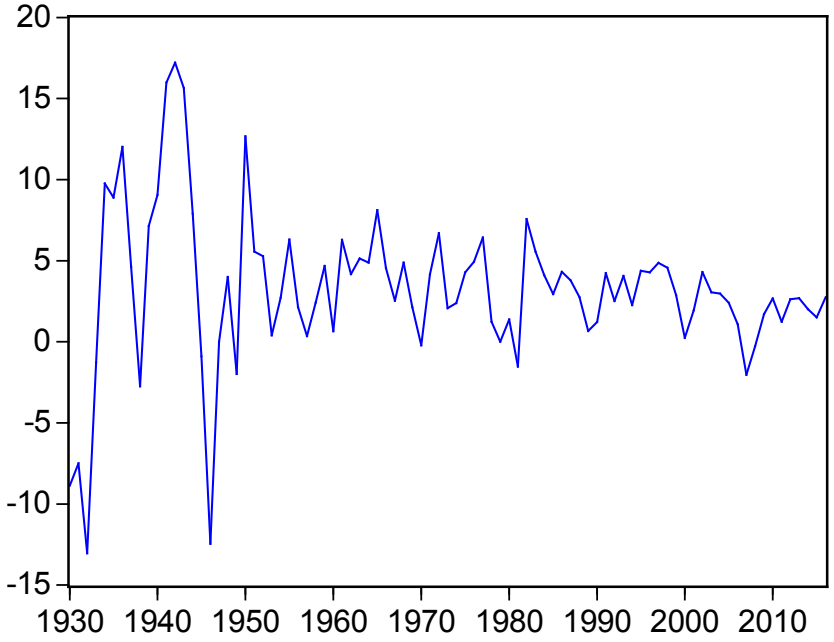


Figure 2 Growth of US Real GDP 1930 - 2016

A better comparison of GD and GR is shown in Figures 3 and 4. The growth of US output fluctuated much more widely in the earlier period, between -15 and +15 percent. In Figure 4 the Growth rate varied much less than the earlier period, between -2 and +2 percent within 12 years. The recovery in the latter period was quick but not significant to reduce the unemployment very quickly.

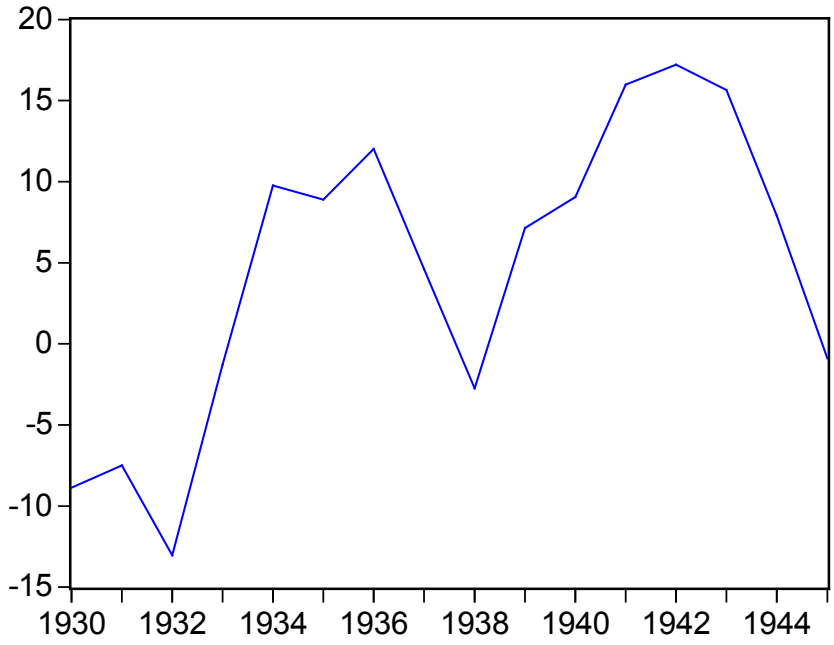


Figure 3 Growth of US Real GDP 1930 -1945

Figure 4 Growth of US Real GDP 2004 – 2016

Some argue that the recovery from 2008, would have been quicker if policy makers learnt from the 1930s and took radical and aggressive measures.
During the 1930, there were two recoveries from the GD. The first one began in 1933 when the gold abolished, and the second one in 1939 when industrial production rose as a result of preparation of WWII. A premature recovery leads to stagnation because crashes affect people's financial position as well as their expectations. Having experienced depressed economic activity, both in GD and GR, people become very careful about their expenditure. The policy makers to encourage people to spend. Leaving the gold standard system by increasing inflation, encouraged people to put their cash to use before its purchasing power is reduced. This was sufficient to start the recovery. The industrial production rose by 57 percent during March to July 1933.

During the GR 2008 the Federal Reserve was happy to keep 2 percent inflation targeting but was not willing to go beyond that level. That strategy was sufficient to prevent a complete collapse, similar to 1933, but not enough to maintain a quick sustained recovery. "At least not one that made up for all of the ground we had lost. That would have required a shock to the system like leaving gold had been in 1933. Something like saying that the Fed would let prices catch up to where they would have been if there hadn›t been a crash instead of raising rates at the first sign of inflationary pressure."

(seehttp://www.history.com/topics/great-depression)

The difference between 2008 and 1930s was that in 1939 the worst kind of public works program was implemented. It was called World War II. The fight with fascism made significantly large deficits to be acceptable, and, as a result the economy recovered strongly. However, in 2008 there was no war to force the government to spend a substantial amount of money.

"Think of it as a reverse Goldilocks economy. Things aren't desperate enough to force the government to do more, but they aren't good enough to put everyone to work. It might not be a great depression, but it is a long one." (see http://www.history.com/topics/great-depression)

Blanchard and Summers (2017) argue that recoveries from the GR and the GD crises suggest that, economies cannot stabilize automatically without government intervention. Without any intervention, the outcome of financial crisis would have been like the Great Depression. The authors do not suggest the Keynesian recommendations similar to 1960s and 1970s. The economic situation is different. The financial systems are more sophisticated and at a low rate of interest, implementation of monetary policy is difficult. They suggest the followings: First, a mix of aggressive monetary and fiscal policy. Second, conducting monetary policy should be designed to provide liquidity for the financial institutions.Third, a heavier use of fiscal policy should be exercised, without being concerned about debts. Finally, a more active regulation of financial institutions is required.

6.3 REFERENCES

Blanchard, O. and Summers, L. (2007) "Rethinking macro policy" conference at the Peterson Institute for International Economics, October pp. 1-25.

http://www.history.com/topics/great-depression

7 INTERNATIONAL MACROECONOMIC POLICY COORDINATION

Since the 1970s after the breakdown of the Bretton Woods fixed exchange rate system, the world has become more interdependent. As a result of globalization, capital mobility has risen significantly, and trade restrictions have gradually been removed. We will have to wait and see if the latest trade restrictions imposed by the US on aluminium and steel are long-lasting or lead to a trade war with reciprocal trade restrictions.

Salvatore (2009) lists the following international macroeconomic coordination that has been implemented during the post WWII period.

1. Bretton Woods arrangement in 1943 where representatives of 142 countries agreed on maintaining a fixed exchange rate and also establishment of IMF to supervise the system and provide financial support for member countries with balance of payments deficits.
2. In 1978, Germany attempted to use expansionary policy to increase imports and help the rest of the world to recover. Because of the fear of domestic inflation, this plan was later abandoned
3. Plaza accord, September 1985, a consortium of the G5 countries, including US, Germany, France, United Kingdom and Japan's central banks, together intervened in the foreign exchange market to stop excessive appreciation of US dollar. This policy coordination was successful.
4. Louvre Accord, February 1987, with limited success, US, Japan and Germany decided that the US dollar has fallen enough and set target zones for dollar/ yen and dollar/ mark exchange rates.

International macro policy coordination is necessary because monetary and fiscal policies conducted in one country (particularly large countries) influence economic and financial situations in other countries where the effects may not be desirable.

7.1 THEORETICAL DISCUSSION

The theoretical framework for the effects of monetary and fiscal policy in an open economy was developed by Robert Mundell (1963) and Marcus Fleming (1962) in two separate papers. This framework is known as the Mundell Fleming (MF) model. The MF model is based on IS-LM-BP curves. For derivation of the IS-LM curves see Monadjemi and Lodewijks (2015).

The BP curve shows all combinations of interest rate and aggregate output that generate zero balance of payment. On the BP curve as output rises, imports rise causing deficit in the current account. To offset the current account deficit, interest rates must rise to generate a surplus on the capital and financial account. According to this argument, the BP curve is positively sloped. The BP curve is shown in Figure 7-1.

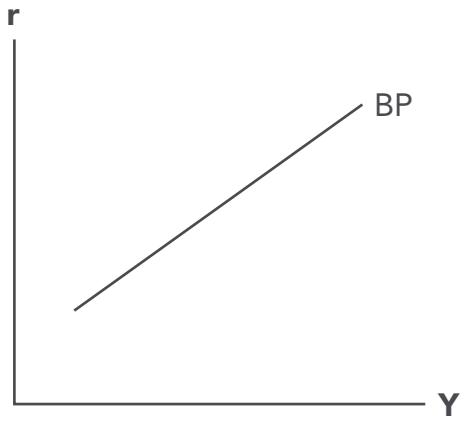


Figure 7-1 BP Curve

In Figure 7-1 r and Y are interest rate and aggregate income respectively. For simplicity the BP curve is drawn linear. In an open economy under perfect capital mobility, the BP curve becomes horizontal at the world rate of interest (it is assumed that there is only one rate of interest in the world). The effects of monetary and fiscal policy are simpler with a horizontal BP curve. The points above the BP curve show surplus in the balance of payments and points below it show deficits (this is left for the reader to explain).

The IS-LM-BP model is presented in Figure 7-2.

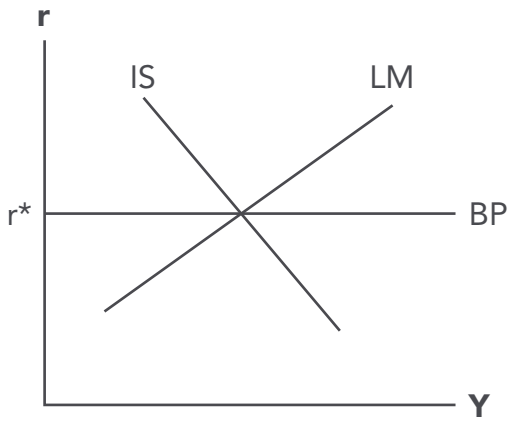


Figure 7-2 IS - LM – BP Curves

Mundell and Fleming discussed effects of macro stabilization policies under fixed and flexible exchange rates. In a fixed exchange rate regime the central bank keep the exchange rate fixed by purchasing or selling foreign currency. This intervention into the foreign exchange market affects the supply of money. Under a floating exchange rate system monetary and fiscal policy have no effect on domestic money supply.

The effects of fiscal and monetary policy under fixed exchange rate are presented in Figures 7 – 3 and 7 – 4.

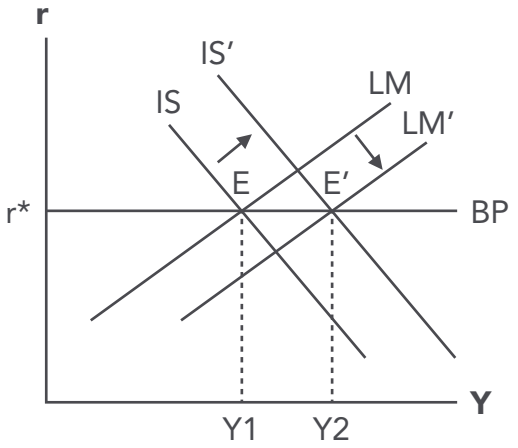


Figure 7-3 Fiscal Policy Fixed Exchange Rate

In Figure 7 – 3, the original equilibrium is at point E. An expansionary fiscal policy shifts the IS curve to IS' causing surplus in the balance of payments (a point above the BP curve). The surplus causes appreciation of local currency. The central bank attempts to keep the exchange rate fixed by purchasing foreign currency causing the LM curve to shift to LM'. Overall, the expansionary fiscal policy leaves a strong impact on aggregate output.

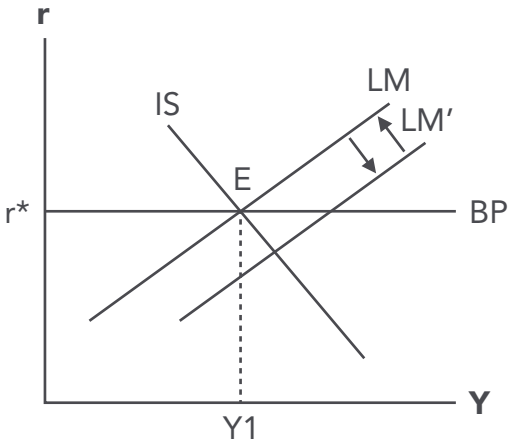


Figure 7-4 Monetary Policy Fixed Exchange Rate

In Figure 7 – 4 the effects of monetary policy on aggregate output under fixed exchange rate is neutral. An expansionary monetary policy shifts the LM curve to LM', causes deficit in the balance of payments and depreciation of domestic currency. To maintain the exchange rate fixed, the central bank sells foreign currency causing domestic money supply to fall and the LM curve moves back to its original position. Under a fixed exchange rate regime monetary policy is ineffective.

The effects of fiscal and monetary policy under a floating exchange rate are presented in Figures 7 – 5 and 7 – 6.

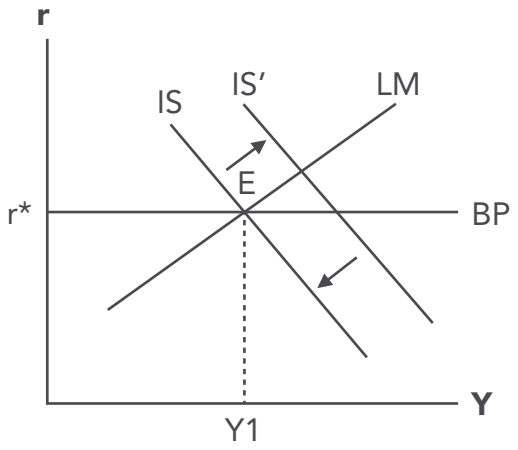


Figure 7-5 Fiscal Policy Floating Exchange Rate

In Figure 7 – 5 a fiscal expansion shifts the IS curve to the right, interest rates rise leading to capital inflow and appreciation of local currency. The trade balance deteriorates (if Marshal – Lerner condition holds)[5], causing the IS to move back. The fiscal policy is ineffective under a floating exchange rate regime.

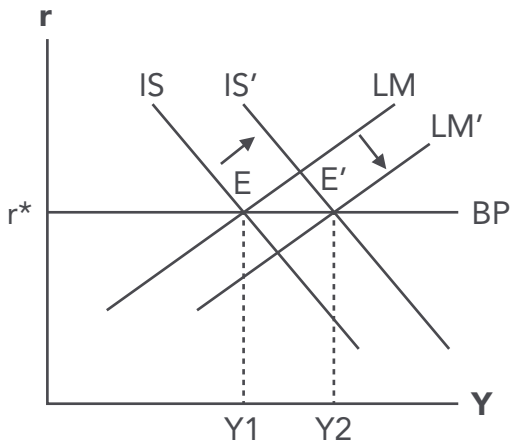


Figure 7-6 Monetary Policy Floating Exchange Rate

In Figure 7 – 6 the impact of a monetary expansion on aggregate output is highly effective. Initially a monetary expansion shifts the LM curve to LM'. Interest rates fall and capital outflow causes depreciation of the local currency. The depreciation of local currency improves the trade balance causing the IS curve to move also to the right. The above discussion assumes that stabilization policies are conducted in a small open economy where developments in that economy have no influence on the world interest rate.

When large economies such as United States, China, Japan and European Union conduct stabilization policies, their action, affect world's interest rate and exchange rates which in turn influences other countries' interest rates, exchange rates and economic activity. Most of the large economies have flexible exchange rate regimes (The Euro exchange rate is flexible against the currencies outside of the Euro zone).

Figure 7 – 7 shows the effects of a large country conducting an expansionary monetary policy on interest rate and aggregate output of a small open economy.

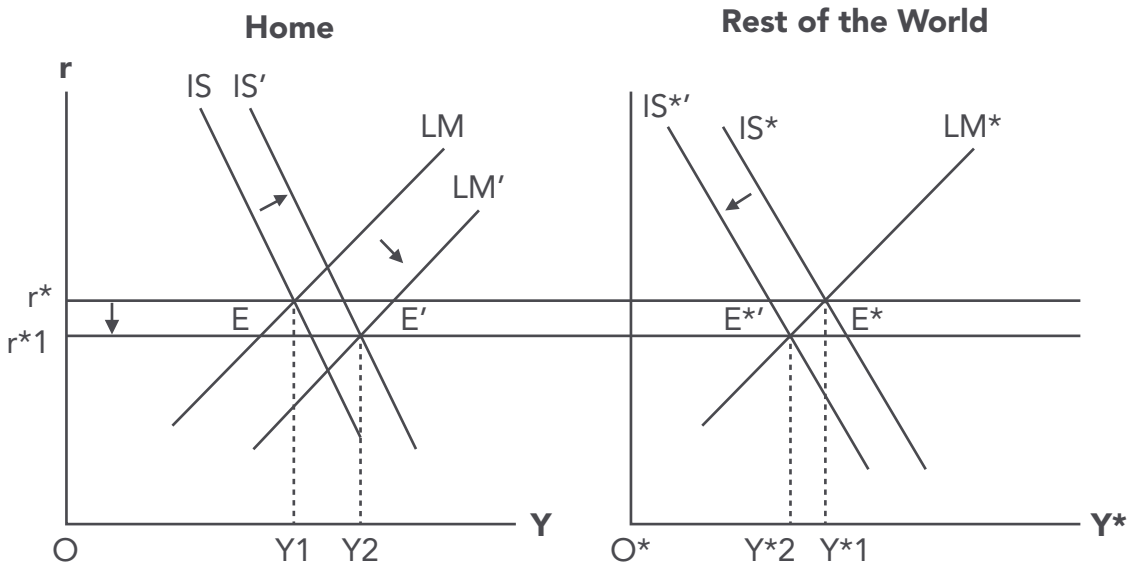


Figure 7–7 An Expansionary Monetary Policy Large Country

In Figure 7 – 7 Home is the large country which conducts an expansionary monetary policy. The left- hand side diagram is a representative of the rest of the world. Initially, both countries are in equilibrium at E and E* respectively. An expansionary monetary policy at home moves the LM curve to the right casing the world interest rate to fall to r*1. The fall in interest rate at home causes capital outflow, depreciation of home currency and an appreciation of foreign currency. At home, the trade balance improves moving the IS curve to IS'. In the rest of the world, the trade balance deteriorates and IS* moves to IS*1. Overall, an expansionary monetary policy in a large economy improves domestic economic activity but leaves a negative impact on the rest of the world.

In the long run, because of monetary expansion, in the large economy prices rise causing the real value of the money supply to fall. This development shifts the LM curve to a position between LM and LM' offsetting some the expansionary effect of monetary policy. The negative effect on the small economy will be moderated as the exchange rate in the large economy, to some extent appreciates.

The long run effect of a monetary expansion was discussed in Donbusch (1976), known as overshooting exchange rate.

Figure 7 – 7 shows that, without international policy coordination, stabilization policy exercised in a dominating country can produce undesirable effects on the other countries.

7.2 INTERNATIONAL MACRO POLICY COORDINATION

Successful implementation macroeconomic policy coordination is difficult because of the interpretation of policy outcomes. For example, US Federal Reserve Bank may interpret that a monetary expansion improves output and employment; whereas, the European Central Bank may think that the policy will create inflation. Another problem is to decide uniformly on the mix of macroeconomic Policy. Sachs and Larrien (1993) argue that some economists such as McKinnon (1988) and Williamson and Miller (1987) are critical of the flexible exchange rate and advocate a single currency and a single central bank for the entire industrial counties. A real world example of this proposal is the creation of the European Monetary Union (EMU) in 1992 (which was discussed in details in chapter 5).

Some studies such as Sachs and Larrien (1993) and Krugman and Obstfeld (2003) have treated policy coordination like prisoner's dilemma and have attempted to find a solution in the context of game theory. In a two country world, Krugman and Obstfeld show that two counties (Home and Foreign) will be better-off, (in terms of inflation and unemployment), if they both choose slightly tight monetary policy rather than very tight monetary policy. The objective of both countries is to minimize inflation at the lowest possible cost of unemployment. Both countries have to realize that their stabilization policy affects the other country through changes in the exchange rate. If they acted individually, each would be better-off by choosing a very tight monetary policy which reduces inflation at the cost of higher unemployment. However, this policy appreciates the currency of home country and depreciated the currency of foreign country which is inflationary.

For illustrative purpose, below Krugman Obstfeld (2003) payoff matrix is reproduced.

	Slightly tight	Very tight
Slightly tight	1H 1F	8/7F 0H
Very tight	0F 8/7H	5/6F 5/6H

Table 1 Payoff Matrix
The values in the above table are based on inflation and unemployment rates. The numbers are chosen randomly based on inflation an unemployment outcomes.

In the above table H stands for home and F stands for foreign. Initially assume that both countries act independently and the foreign country chooses slightly tight. In this position, home is better-off to choose very tight that provides 8/7. However, if foreign country chooses very tight policy, home country is still better-off to choose very tight policy that provides 5/6 instead of a 0 pay-off. Accordingly, home country chooses a very tight policy irrespective of what the foreign country chooses to do.

To coordinate policies each country should choose slightly tight policy which give payoffs of 1 and 1 for both countries. There must be a formal cooperation between two countries, to act interdependently by both choosing slightly tight monetary policy. Without cooperation each country will choose a highly tight policy reducing its inflation causing inflation in the other country.

7.3 ARE WE ALL KEYNESIANS AGAIN?

The theoretical discussion in this chapter is now supplemented with a policy focus. The context is the global financial crisis of a decade ago. *Keynesian stimulus packages in response to the Global Financial Crisis are seen by some as the return to favour of J.M. Keynes and Keynesian discretionary fiscal policy by all countries. In other words, a global coordinated macroeconomic policy response appears to have been adopted in response to the crisis. Let us examine this claim.*

More has been written about Keynes' *General Theory* than any other work in economics in the twentieth century. It has a reputation of being a difficult book to understand. Some of Keynes' greatest supporters were initially hostile in their reviews. The doyen of American economics, Paul Samuelson found the book so confusing it took him 12 to 18

months to begin to understand it, and then only when it was put in mathematical form. The reception accorded Keynes's *General Theory* was slow and not uncritical. The book did not immediately "rule the roost" among economists or policy-makers (Lodewijks 2009a, 2009b). In recent decades a new 'neoclassical synthesis' has emerged that was accepted by New Keynesians and New Classical economists alike. Robert Lucas played a pivotal role in synthesizing neoclassical economics and 'efficient markets' finance theory into a dynamic stochastic general equilibrium macroeconomic framework utilizing rational expectations and representative agent models. This modelling approach seemed to owe little to the key elements and ingredients to be found in *The General Theory*.

This cosy consensus was ruptured by the Global Financial Crisis that hit in 2007. Such a crisis could not be captured by the models of the new neoclassical synthesis. This is powerfully documented by Taylor (2011) and popularly in Paul Krugman's 2009 *New York Times* piece "How did economics get it so wrong?". Even a leading figure associated with the Chicago School, Richard Posner, acknowledged that 'Keynes is back' while Lord Skidelsky's 2009 book is titled "The Return of the Master". So are we all Keynesians again?

Policymakers responded to the Global Financial Crisis using strong largely Keynesian medicine: large doses of direct support to the financial system, low interest rates, vastly expanded central bank balance sheets and massive fiscal stimulus. The aggregate public debt of the advanced economies is projected to rise from 76% of GDP in 2007 to more than 100% in 2011. The Bank for International Settlements 80th Annual Report 2009/10 noted that:

> "Depending on the structure of their economies and financial systems, policymakers chose varying measures, including: guarantees of bank assets and liabilities aimed at averting potential bank runs; direct lending from fiscal authorities and central banks, as well as from international financial institutions, to allow rollover and prevent default; capital injections to ward off insolvency; nationalisations to allow failed institutions to continue to serve their customers; removal of low-quality loans from private sector balance sheets and support of prices of assets for which liquid markets had disappeared, and thereby ballooning of central bank balance sheets; and supervisors' public certification of the capital adequacy of large banks. A comprehensive list of the actions taken would include dozens of specific programmes in virtually every advanced economy and many emerging market economies as well. Unprecedented macroeconomic policies accompanied the large array of direct actions to support the financial system. The extremely accommodative monetary and fiscal policies put in place were a reaction to the consequences of the crisis. In the United States, Europe and Japan, public deficits are now in excess of 5% of GDP and policy rates are near zero".

The world economic outlook is still on a fragile knife-edge with vastly contrasting policy settings. Whereas in the United States the fiscal stimulus continues and interest rates remain unbelievably low, the situation in Europe is quite different. John H. Makin in the American Enterprise Institute for Public Policy Research Outlook Series in an article entitled "Liftoff or Cold Shower? The Economy in 2011" (http://www.aei.org/outlook/101015 Jan. 2011) notes that:

> "The European Central Bank and European Union have prescribed fiscal consolidation, higher taxes, and lower spending--in sum, the reverse of America's path ... In Europe ... the sovereign-debt crisis in southern Europe has re-intensified over the past several months. Ireland's solvency problems have been added to those of Greece. ... Of course, too much stringency, like too much dieting, is counterproductive. It means that painful efforts--in this case, spending cuts and tax increases--to cut budget deficits may actually increase them because such measures can sharply reduce growth, leading to a revenue collapse. (Ireland and Latvia are cases in point.) Europe's sovereign-debt problems will not go away in 2011, and uncertainties about how they will be resolved will continue to burden the global economy".

Some countries now seem to be back-tracking or adversely reacting to the side-effects of the Keynesian medicine. The common policy response was fiscal stimulus, expansion of liquidity and significant reductions in interest rates to ward off the Crisis. While some economies continue with more doses of this medicine others are concerned about unsustainable fiscal deficits and public debt and are moving back to contractionary fiscal policies and raising the possibilities of debt defaults and the renewal of inflationary expectations. Apparently these countries are short-term Keynesians at best (where short-term does not exceed three or more years) and quickly wish to return to that old-time religion of balanced budgets and conservative fiscal and monetary policy.

7.4 CHICAGO, THE GENERAL THEORY AND THE PITFALLS OF ACTIVIST STABILIZATION POLICY

Perhaps we can draw on some historical parallels here relating to Keynes' reception at the University of Chicago in the United States in the 1930s and 1940s to illuminate the contemporary policy discussions. We select the Economics Department at Chicago because in the post-war period it has had an enormous influence on the economics discipline reflected in the award of Nobel Prizes and in its prominence in the advances of various sub-disciplines of the field. One only has to mention names such as Friedman, Stigler, Lucas, Coase, Fogel, Heckman, Markowitz and Becker to appreciate its significance.

Keynes's *The Treatise on Money* was apparently well received in Chicago but *The General Theory* did not receive similar treatment. Frank Knight (1 May 1936) wrote to Oskar Morgenstern: 'What do you think of Keynes's book? I haven't got into it yet, but a couple of friends whom I consider pretty competent judges say outright that Keynes is losing his mind.' Three years later (8 November 1939) Knight wrote to Morgenstern:

> "I'm waiting expectantly to see what you will say about Hicks's. I put a class through it last spring, and am afraid it contributed something to my state of discouragement as to the state and prospects of our profession. I've never really 'gotten over' the shock I received from Keynes's, and even more the way it has been received by economists, particularly of the younger generation. If you can squeeze out the time and effort to give me any notion of what you are thinking on the general subject of 'what we might do to be saved,' I'll always be glad to hear from you. One reason I don't write letters more generally and promptly is the difficulty I find in thinking of anything to say that should not be suppressed rather than uttered!" (Lodewijks 2009c).

The most virulent critique of the Keynesians came from Henry Simons who came "to bury Hansen". Alvin Hansen's "Guide to Keynes" was the vehicle through which many American economists were introduced to Keynesian ideas. Simons felt that only with "rules of policy", rather than activist stabilization policy, could national interests be protected from special interests or intellectual discussion about general principles prevail.

The power and influence of special interests associated with the financial sector were convincingly demonstrated in a Keynote address to the 9th Biennial Pacific Rim Conference of the Western Economic Association in April 2011 by Edward J. Kane. A vast number of his papers on this topic can be found at https://www2.bc.edu/~kaneeb/. Kane argues that it pays multinational financial conglomerates and national champion banks to make themselves harder and harder to supervise. Financial firms seek relentlessly to outstrip the monitoring technology and the administrative focus that supervisory personnel use in controlling institutional risk-taking. Then when a financial crisis occurs the ad hoc crisis-resolution strategies adopted in crisis situations expose regulatory officials reluctance both to engage in advance planning for financial disaster and to make hard decisions as to which institutions do and do not deserve public assistance. Kane says that the root problem is how to design and manage national safety nets so that they do not deliver subsidies to firms when they expand their political clout, organizational complexity, and/or risk taking in clever ways. The tax-payer should not primarily bear the burden of compensating financial firms for their own excessive risk-exposure.

One of Simon's admirers, Milton Friedman, in 1948 assembled "A Monetary and Fiscal Framework for Economic Stability" that attempted to move macroeconomic discussion away from an excessive concentration on short-run cyclical fluctuations towards longer-term issues of efficiency and growth. Long-run objectives of efficiency and growth were to be given primary consideration. Friedman wanted to eliminate discretionary authority with respect to respect to monetary and fiscal policy and to rely on automatic-stabilizers to deal with any economic instability. Monetary rules and a balanced budget at a high level of employment would guarantee minimal discretionary behaviour by governments.

Perhaps the most thought-provoking and sympathetic reaction in the Chicago tradition to Keynesianism was provided by Jacob Viner in his 1939 Presidential Address to the American Economic Association entitled "The Short View and the Long in Economic Policy". The experience of the Great Depression had led a large number of economists to abandon traditional economic doctrine, said Viner, and young economists were

> "impatient or even violently hostile to the traditional corpus of economic theory, which they look upon as an instrument for the exercise of the tyranny of the dead mind over the living ... They observe with alarm the failure of our economy for ten successive years to give millions of men able to work and anxious to work the opportunity to earn their daily bread. And seeing the actual world so, they refuse to accept as useful for their purposes a type of economic theory which as they read it either ignores these evils or treats them as temporary, self-correcting aberrations or excrescences of what is basically a sound economic system " (pp.7-8).

Skip ahead seventy years and substitute the Global Financial Crisis for the Great Depression, and a dynamic stochastic general equilibrium macroeconomic framework utilizing rational expectations and representative agent models for classical economics, and these sentiments would not look out of place. Similarly, whereas Keynesianism was the new body of thinking to replace traditional economic theory as a response to the Great Depression so once again Keynesianism is seen as a source of salvation to deal with the Global Financial Crisis.

However, Viner noted that economists of his generation were trained to concentrate on long-run analysis, and when discussing policy would take the long-view and discount the more immediate effects of policy. Governments too were supposed to act according to long-term rules. Focussing on the short-view was "built on shifting sands". The old dogma of budget-balancing was a convenient rule of thumb protection against uncontrollable expenditure and continuous budget deficits as fiscal discipline would otherwise be sacrificed in acquiescing to powerful special interests. Viner did acknowledge that there were circumstances, in times of severe social strain, where it "would be wise to adopt a partial and temporary, but quick-working, solution in preference to a more complete and more lasting one which would yield its benefits only after considerable delay".

After the experiences of the Great Depression, Viner said we could not resurrect the earlier beliefs as if nothing had changed. He knew of no economist who advocated a full return to accepted economic doctrine or the old dogmas. Anyone who did would be making "a fool's paradise out of his private ivory tower". Viner adopted a more moderate position fearing that discarding too indiscriminately existing ideas might lead to new remedies proving worse than the diseases they hoped to conquer. The parallel seventy years later may be that while stochastic general equilibrium modelling may need very substantial revision and enrichment through immersion in behavioural finance variables, combined with the abandonment of efficient market finance theory, the policy agenda needs to be cautiously evaluated. Again there are concerns about the power of special interests turning rescue packages in their favour at the expense of the taxpayer while mountains of debt appear unsustainable and inconsistent with overall growth of the economy in the long-term.

7.5 THE PERILS OF FISCAL REMEDIES

Since their inception Keynesian ideas have clearly been more influential in academic circles than elsewhere. There was continuing resistance from government agencies and the public to Keynesian ideas, especially about budget deficits and rapid public expenditure expansion. The spread of Keynesian ideas was slow in government bureaucracies and senior officials were reluctant to accept the idea that the budgetary stance should be determined by the state of aggregate demand. There was resistance to any budget deficits, reflecting concerns that these deficits would adversely impact on public debt, the balance of payments and the value of the currency, inflation and business confidence.

Even in academia before the Crisis there was less concern about short-term fluctuations and more focus on medium term and long-run developments. Attention was placed on promoting economic growth and there was less interest in delicately fine-tuning the economy. Monetary policy had become the main stabilization tool. Fiscal policy had fallen by the wayside in terms of short term economic management and was being directed at longer term priorities. Unemployment was regarded as less of a macroeconomic problem and more of a microeconomic one, while inflationary targeting preoccupied Central Banks.

This policy stance was imposed on member countries of the Maastricht Treaty in Europe. The European union imposed severe limits on demand management policies in terms of: the size of budget deficit and ratio of public debt to total output, the freedom to alter interest rates, the necessity to achieve exchange rate and price stability, and there was a further prohibition on monetary financing. Note there was no mention of a full employment objective. Fiscal policy was basically in a straight-jacket and with the single currency there was no longer scope for independent monetary policy.

Before the Crisis, severe doubts were raised about the effectiveness of discretionary fiscal fine-tuning as a way of achieving cyclical smoothing. A 2002 report by the European Central Bank illustrates this apparent consensus. The report notes that discretionary policy performed poorly in the euro area from the mid-1970s to the mid-1990s: 'Discretionary fiscal policies are normally not suitable for short-term demand management … Past attempts to manage aggregate demand through discretionary fiscal policy-making – or fiscal fine-tuning – have been widespread but often counterproductive'. Budget deficits in downturns were not matched by surpluses in booms leading to a continuous build-up of public debt ratios. It proved politically easier to use expansionary rather than contractionary policies – it was always more popular to cut taxes than to raise them – so there was a bias for continuing deficits. Discretionary reaction by policy-makers proved inflexible, with long implementation lags, so that when policies finally had an affect, the economic circumstances had often changed. Fiscal policy then could become in effect a pro-cyclical measure, exacerbating instability, rather than a stabilizing element.

n policy circles prior to the Crisis we saw a major retreat from the use of discretionary policy for short-run stabilization purposes. Monetary policy has effectively been taken away from governments and left under the control of independent central banks. These central banks have pursued inflation targeting to rid the economy of an inflationary bias. Similarly, with respect to fiscal policy we have balanced budget propositions and stability pacts aimed at restricting the discretion that policymakers can have. This is intended to isolate fiscal decisions from special interests to avoid a deficit bias. Unless constrained, political and electoral systems are alleged to generate incentives to overuse discretionary fiscal policies.

7.6 CONCLUDING REMARKS

Will the aggressive use of discretionary fiscal policy in the form of substantial fiscal stimulus packages, of the order of five percent of GDP in advanced countries, to counter the Global Financial Crisis, lead to the return of Keynesian theory and policy, both in academia and macroeconomic policy-making? The history of the Keynesian episode suggests caution.

On the policy front we see economies winding back their fiscal deficits and making quite sharp cuts in government spending in a context where economies have not fully recovered. The International Monetary Fund's '*World Economic Outlook*' published in April 2011 is instructive. The publication can be found at: http://www.imf.org/external/pubs/ft/weo/2011/01/index.htm . The IMF says that:

> "In many advanced economies, output gaps are still large and are projected to close only gradually over the medium term, and unemployment rates remain stubbornly high. In the United States and the euro area, respectively, unemployment rates are close to 9 percent and 10 percent, and output gaps for 2010 are estimated at somewhat less than 5 percent and 3 percent of potential GDP. ... Quick reductions in these rates appear unlikely because output gaps are projected to close only gradually as fiscal policy is tightened and financial sector repair occurs over time .... Preserving or regaining fiscal credibility in the face of high public deficits and debt presents a major challenge for many advanced economies. Most of these economies are planning to tighten fiscal policy significantly in 2011 ... Furthermore, the short-term impact of the stimulus deployed in the United States on jobs and growth is likely to be low relative to its cost. ... Elsewhere, fiscal policy is projected to be appropriately contractionary".

So what the IMF is saying is that despite sizeable output gaps and high unemployment, fiscal policy should be more restrictive so that budget deficits and public debt levels are reduced and this is what is necessary to improve these economies. They also note that stimulus packages, at least in the United States, have not been cost effective. These sentiments are directly opposite to traditional Keynesian thinking. So at least for the IMF, and we assume similar sentiments prevail in various Central Banks, we see strong resistance to the return of Keynesian economics.

At a popular level there is often a deep suspicion of politicians and quick-fix government initiatives that may result in wasteful or even harmful and expensive government expenditures. Old Keynesian claims that even digging ditches and filling them back in boosts aggregate demand or that as a job creation measure, people could be employed filling bottles with old bank notes and then burying them, so that people could also be employed to dig them up, do not sit well with the general public. If government spending is to be used to stimulate an under-performing economy then there should be a reasonable expectation that the projects funded are worthwhile and socially productive and executed in a competent and cost-efficient manner.

At an academic level there is some hope that existing macroeconomic modelling strategies will be revised in the light of existing models that could neither predict nor explain financial crises. One might be hopeful that this will happen but there is that old saying

that "Science advances one funeral at a time" and it reminds us that existing researchers will not easily give up the theoretical frameworks and techniques that they have mastered at considerable cost and effort.

We leave the reader with two quotes from eminent macroeconomists:

> "If you were going to turn to only one economist to understand the problems facing the economy, there is little doubt that the economist would be John Maynard Keynes. Although Keynes died more than a half-century ago, his diagnosis of recessions and depressions remains the foundation of modern macroeconomics. His insights go a long way toward explaining the challenges we now confront . . .".
>
> – Gregory Mankiw, *The New York Times*, November 2008.

> "At research seminars, people don't take Keynesian theorising seriously anymore; the audience starts to whisper and giggle to one another." So declared Robert Lucas of the University of Chicago, writing in 1980. At the time, Lucas was arguably the world's most influential macroeconomist; the influence of John Maynard Keynes, the British economist whose theory of recessions dominated economic policy for a generation after the Second World War, seemed to be virtually at an end. But Keynes, it turns out, is having the last giggle. Lucas's "rational expectations" theory of booms and slumps has shown itself to be completely useless in the current world crisis. Not only does it offer no guide for action, but it more or less asserts that market economies cannot possibly experience the kind of problems they are, in fact, experiencing. Keynesian economics, on the other hand, which was created precisely to make sense of times like these, looks better than ever. But while Keynesianism is experiencing a revival, there are major questions about just what needs to be revived. Many economists agree that their field went off track, that in some important ways it lost touch with reality, and that a return to some of the ideas Keynes laid out more than 70 years ago is part of the cure for what ails us. But there is much less agreement about what, exactly, needs to change in the way we think about matters economic".
>
> – Paul Krugman, *The Observer*, Sunday 30 August 2009.

7.7 REFERENCES

Fleming, M. (1962), "Domestic Financial Policies Under Fixed and Floating Exchange Rates", *IMF Staff Papers*, vol. 9.

Krugman, P. and Obstfeld, M. *International Economics: Theory and Policy*, Sixth Edition, Pearson Education, 2003.

Lodewijks, John. 2009a. 'Keynesian Policies in Retrospect' *International Journal of Applied Economics and Econometrics* Vol 17. No 1 Jan-March pp 1-16.

Lodewijks, John. 2009b. 'Automatic and Discretionary Stabilizers' in K. Puttaswamaiah (ed.) *Milton Friedman: Nobel Monetary Economist*, ISLE Publishing, Chap.4 pp. 47-63.

Lodewijks, John & Robert Leeson. 2009c. "The Great Inflation of the 1970s: Evidence from the Archives" in R. Leeson (ed.) *American Power and Policy*, Palgrave Macmillan, Hampshire 2009 pp.91-104.

Krugman, Paul. 2009. 'How did economists get it so wrong?' *New York Times*, 2 September.

Monadjemi, M. and Lodewijks, J., *Monetary Policy in Open Economies*, Online
By Bookboon, August 2015.Posner, Richard A. 2009. "How I Became a Keynesian" *The New Republic*, September 23 http://www.tnr.com/article/how-i-became-keynesian

Sachs, G. and Larrian, P., *Macro Economics in the Global Economy*, Harvester Wheatsheaf, 1993.

Skidelsky, Robert. 2009. *Keynes: the Return of the Master*. Allen Lane, London.

Taylor, Lance. 2011. *Maynard's Revenge: The Collapse of Free Market Macroeconomics*, Harvard University Press, Cambridge MA.

Viner, Jacob. 1940. "The Short View and the Long in Economic Policy" *American Economic Review* 30.1 March pp.1-15.

8 OIL PRICE AND THE GLOBAL ECONOMY

The prices of natural resources have long been studied in the context of global macroeconomic performance. Historically, the price of gold has attracted the most interest and there are still heretics out there that believe many of our problems would disappear if we went back on the gold standard. In modern times, the price of oil has been a key explanatory factor for macroeconomic instability. This was particularly in the 1970s era of stagflation where the tripling and quadrupling of oil prices was seen as the main culprit in causing stagnation simultaneously with high inflation. In turn the flow of petro-dollars from the oil importers to the oil exporters caused all sorts of other repercussions on the global economy. In this chapter we focus specifically on oil.

8.1 1973 – 1980

Figure 1 shows that the average annual price of oil rose from 3.6 US dollars per barrel to a peak of almost 40 dollars in 1980. The oil price rise of 1970s created high inflation and unemployment in oil importing countries. In Figure 1, the average annual nominal price of oil rose from 3.6 US dollars per barrel in 1970 to 11 US dollars in1974. The 200 percent rise in oil prices in early 1970s caused stagflation (a combination of inflation and unemployment) in oil importing countries. The average annual inflation rate from 1973 to 1975 in US, UK, France and Japan was 8.8, 16.17, 10.5 and 12.23 respectively. The inflation rate for the same countries in 1972, respectively were 3.2, 7.1, 5.3 and 4.6. At same time growth and employment rates of these four countries were adversely affected.

Figure 2 shows, annual growth rates of US, OECD and the world 1970 – 2017. All of the three growth rates dropped significantly in the early 1970s. The rise in oil prices and falling growth rates led to stagflation, a word which was in the literature for the first time in the 1970s.

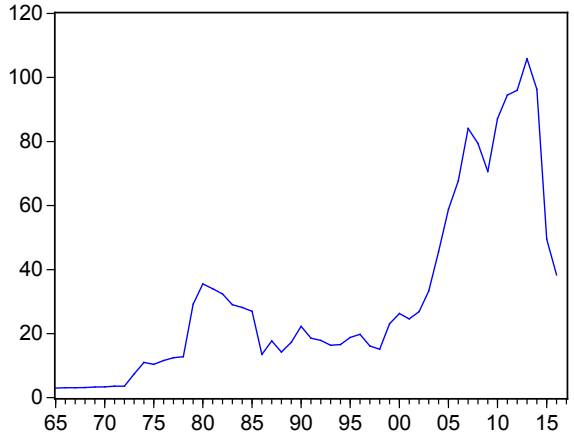


Figure 1 Average Annual Oil Price 1965 – 2017

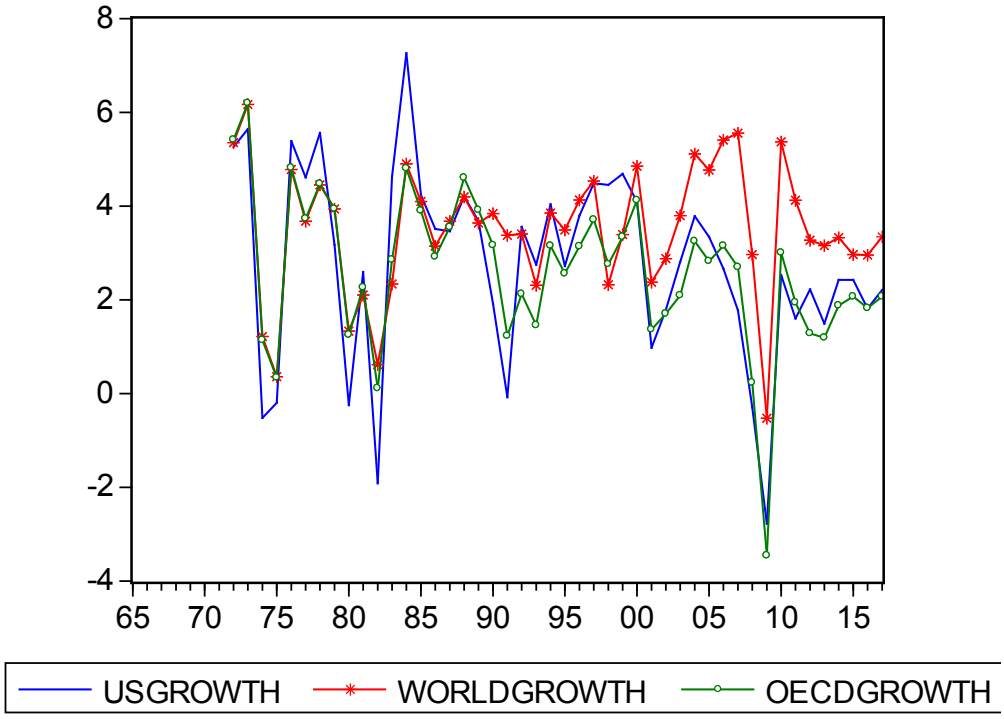


Figure 2 Growth Rates 1970 - 2017

8.2 1981 – 2004

Oil prices stabilized for the two decades following the upward rise of 1970s and early 1980s. In this period demand for oil weakened reducing the power of OPEC (Organization of Petroleum Exporting Countries)[8]. OPEC is a cartel which controls prices of 60 percent of World's oil supply. OPEC was powerful in the 1970s when the demand for oil was strong. When the demand weakened beginning in mid 1980s, members started undercutting their prices to expand their sales. This development reduced central price setting of the cartel.

8.3 2005 – 2008 RISING OIL PRICES

Oil prices started rising from 2005 and reached a peak of 140 US dollar per barrel in July 2008. Strong demand from India and China pushed the price to the highest level in the post-war period.

The oil prices are influenced by international demand and supply for oil as well as expectations. The demand for oil is a function of growth rates of oil importing countries and availability of oil substitutes. The supply of oil is influenced by the political instability in Middle East (35 percent of World's oil is produced in Middle East), world's rate of interest and transportation and insurance costs of transporting crude oil to importing countries.

Hamilton (2009) argued that "Whatever the cause; the oil price spike of 2007-2008 was by some measures the biggest in post-war, and the U.S. recession that began in December of 2007 were, likewise, the worst in post-war experience, though of course the financial crises rather than any oil-related disruptions were the leading contributing factor in that downturn contributed to the Great Recession". Furthermore, Hamilton (2009) maintains that "had there been no increase in oil prices between 2007:Q3 and 2008:Q2, the US economy would not have been in a recession over the period 2007:Q4 through 2008:Q3". However, Killian (2009) argues that the adverse effects of oil price rise on the global economy in the early 1970s no longer operate, and the Great Recession would have happened even if oil prices remained stable in 2007 - 2008.

Hooker (1996) agrees with Killian (2009) and maintains that are strong evidence to indicate that oil prices after 1973 do not Granger[9] cause several major macroeconomic variables in US. A few suggestions indicate that a linear symmetric relationship between oil price changes and macroeconomic variables is no longer valid. Oil price increases have a different impact than oil price declines. Hooker (1996) maintains that "The OPEC price increases do appear to have had significant impacts, while the effects of the price declines of the 1980s are smaller and harder to characterize." The empirical results in Monadjemi (2016) suggest that sharp rises in oil prices in 2008 and recent falls in price of oil are supportive

of the influence of world demand on energy prices. However, the effects of oil price rise in 2007 – 2008 on the global output are doubtful. Similar to Hooker (1996), Monadjemi (2016) suggested that since the early 1970s, the influence of political instability in Middle East on oil price, is not validated by time-series data.

8.4 WEAK OIL PRICE 2015 – 2016

Oil Prices have fallen from peak of 145 US dollars per barrel in July 2008 to $28 per barrel in January 2016. This dramatic fall is 81 percent in eight years, after stability in five years. Falling oil prices have negative impact on the economy of oil exporting counties such as Russia, Iran, Saudi, Kuwait, Iraq, Nigeria and Venezuela whereas it is beneficial to the oil importing countries like China, India, Japan and most of the Western European countries.

Three factors cause weaker oil prices; reduced demand because of weaker global economic activity, more efficiency, and substitution of other fuels for oil. The United States has managed to be the world's largest oil producer. Although US is not a net exporter of oil, it imports less, creating excess supply in the market. Finally, the Saudis and Gulf allies have not reduced their share of production to stop the price fall. These countries may reduce production sharply, but their refusal to do so is politically motivated since countries such as Iran and Russia will benefit from their action. With large foreign reserves and low cost of oil production (around $5-6 per barrel), Saudi Arabia can easily afford lower oil prices for an extended period. Falling oil price, have political implications for the oil- exporting countries. In most of these countries oil revenue is the source of financing their social welfare programs. Falling oil revenues causes larger budget deficits and curtailment of social welfare expenditure.

The International Energy Agency (IEA) in June 2016 report "Global oil stocks are still building" announced that global demand for oil will grow by 1.4 million barrels per day (bpd) this year to 96.1 million bpd, revising up last month's forecasts of a 1.3 million bpd rise. IEA said "the existence of very high oil stocks is a threat to the recent stability of oil prices."

The IEA argued that crude prices had dropped from an early June peak of above $52 dollars per barrel to $45-$50 range, which is in contrast to the sharp daily price falls at the beginning of this year. "Our underlying message that the market is heading to balance remains on track, but the modest fall back in oil prices in recent days to closer to $45/bpd is a reminder that the road ahead is far from smooth," the IEA concluded.

The OPEC predicted that the global supply glut would ease in 2016 and 2017, as non OPEC producers, particularly the United States, reduce production. OPEC also predicted a global demand growth rise in 2017 would let the market remove excess supply.

For 2017, the IEA forecast a 1.3-million barrel per day increase in demand to 97.4 million, mainly extra demand in non-OECD countries, in particular India and China.

The IEA forecast European oil consumption being impacted by the uncertainty of Britain's vote to exit the European Union. The agency also noted that the Middle East's market share of global oil production had increased to 35 percent, the highest since the late 1970s.

The IEA forecast that a "modest deceleration" in global oil demand growth was foreseen for 2017, however, easing to 1.3 million bpd taking average deliveries up to 97.4 million bpd. The majority of the projected upside in 2017 was attributable to non-OECD consumers, chiefly in Asia and especially India.

"In China, data for May suggests that year-on-year demand growth was only 130,000 bpd, part of a recent trend of smaller increases. For the U.S., estimated gasoline deliveries in April were up just 75,000 bpd up on the year earlier and 410.000 b/d below our expectations. The IEA maintains that the effects of Brexit will probably be more negative than positive for European oil demand. While demand growth looked uncertain, on the supply side, the IEA noted that non-OPEC production remained on course to fall further this year, by 900,000 bpd to 56.5 million bpd, before staging a modest recovery in 2017and rising 200,000 bpd. On the contrary the OPEC group keeps on producing at record rates. The IEA said OPEC crude oil output during June was at the highest level since July 2008, with production at 33.21 million bpd".

Finally, the IEA was cautious. The market is heading to remain in balance, but the decline in oil prices in recent periods to $45 per barrel indicates that the future of oil market will not be stable.

8.5 FUTURE OUT-LOOK

The 2018 report of International Agency "World Energy Out-look 2017" http://www.iea.org/weo2017/ argues that "In the New Policies Scenario, global energy needs rise more slowly than in the past but still expand by 30% between today and 2040. This is the equivalent of adding another China and India to today's global demand."

The report maintains that with a global economy growing on the average at 3.4% per year, and population that increases from 7.4 billion today to approximately more than 9 billion in 2040, and as urbanisation expands, that adds a city the size of Shanghai to the world's urban population in every four months, and these are the main factors that lead to the above projection.

The largest contribution to demand growth – almost 30% – comes from India, whose share of global energy use rises to 11% by 2040. Southeast Asia is another heavyweight in the global energy market, with demand rising at twice the growth of China. Overall, developing countries in Asia contribute to two-thirds of global energy growth, with the remaining coming mainly from the Middle East, Africa and Latin America.

China has started a new stage during its development and energy policy moving to services and emphasising consumption of electricity, natural gas and cleaner, high–efficiency and digital technologies.

Demand growth slowed markedly from an average of 8% per year from 2000 to 2012 to less than 2% per year since 2012, and in the New Policies Scenario it slows further to an average of 1% per year to 2040. Energy-efficiency regulation explains a large part of this slowdown. Without new efficiency measures, end-use consumption in 2040 would be 40% higher. Nonetheless, by 2040 per-capita energy consumption in China exceeds that of the European Union.

China's choices will play a huge role in determining global trends, and could spark a faster clean energy transition. The scale of China's clean energy deployment, technology exports and outward investment makes it a key determinant of momentum behind the low-carbon transition: one-third of the world's new wind power and solar PV are installed in China in the New Policies Scenario, and China also accounts for more than 40% of global investment in electric vehicles (EVs).

China passes the United States as the largest oil consumer roughly by 2030, and in 2040 its net imports reach 13 million barrels per day (mb/d). But severe fuel-efficiency measures mean that by 2040 China no longer remains the strong force behind global oil consumption. The growth of demand would be higher in India post-2025.

"A remarkable ability to unlock new resources cost-effectively pushes combined United States oil and gas output to a level 50% higher than any other country has ever managed; already a net exporter of gas, the US becomes a net exporter of oil in the late 2020s. In our projections, the eight mb/d rise in US tight oil output from 2010 to 2025 would match the highest sustained period of oil output growth by a single country in the history of oil markets. A 630 bcm increase in US shale gas production over the 15 years from 2008 would comfortably exceed the previous record for gas."

By the mid-2020s, the United States will become the world's largest liquefied natural gas (LNG) exporter and after a few years a net exporter of oil – still remaining a large importer of heavier crudes, but a major exporter of light crude and refined products.

With the United States supplying 80% of the increase in global oil to 2025 and causing near-term downward pressure on prices, the era of oil consumption still remains vital to the world's consumers.

Up until the mid-2020s demand growth remains stable, but slows significantly thereafter as higher efficiency and fuel switching bring down oil use for passenger vehicles.

Strong impetus from other sectors is sufficient to maintain oil demand on a rising path to 105 mb/d by 2040: oil use to produce petrochemicals is the most important source of growth, closely followed by rising consumption for trucks, for aviation and for shipping.

Whether these predictions are accurate or not the prices of natural resources will continue to fascinate global observers of the world economy while the supply of these resources continue to be a concern for those dedicated to a sustainable future.

8.6 REFERENCES

"World Energy Out-look 2017"http://www.iea.org/weo2017/

Hamilton, J. (2009), "Causes and Consequences of the Oil Shock of 2007-08", *Brooking Papers on Economic Activity,* Spring, pp. 215-261.

Hooker, M., (1996) "What Happened to Oil Price-Macroeconomy Relationship*?", Journal of Monetary Economics*, 32: 2, pp. 195 – 213.

International Energy Agency (IEA) "Global oil stock are still building", June (2016).

Kilian, L. (2009), "Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in Crude Oil Market", *American Economic Review*, 93:3, pp. 1053-1069.

Monadjemi, M. (2016), "Weak Oil Prices and the Global Economy", *Journal of Economics and Public Finance*, 2: 2, December, pp 353 – 359.

Monadjemi. M. (2018), "Oil Price and the World Economy: Four Decades after the Stagflation" *International Journal of Economic Commerce and Management*, (2018) vol. 6, issue 4, April.

9 POST FINANCIAL CRISES REFORMS

The global financial crises and the subsequent recession in 2007 – 2009 was the worst since the Great Depression of 1930s. Many of the European and American financial institutions were affected by the crises. The sub-prime mortgage crises started in the United States as a result of over lending a high-risk borrowers. When real estate prices collapsed, many borrowers were unable to fulfil their obligations. These insecure mortgages were packed together and were passed globally to banks, saving banks and insurance companies. The financial institutions that invested in toxic assets were faced with non-performing assets. These banks and saving banks experienced drastic shortage of liquidity and started reducing inter-bank loans as they were suspicious of which financial institutions were exposed to non performing assets. The reduction in bank loans led to fall in aggregate demand and the Great Recession (GR), the biggest recession in the post - war period in the affected countries. Many banks, saving banks and insurance companies in United States, UK, Ireland and Iceland experienced severe shortage of liquidity. Faced with falling output and employment, the central banks in the affected counties pumped liquidity into their financial systems driving the interest

rates down. Bearn Stearns (the oldest saving bank in the United States) was purchased by JP Morgan, Merrill Lynch was taken over by the Bank of America and Lehman Brothers was left to fail. In Iceland, all of the financial institutions were nationalized.

9.1 MONETARY POLICY AND BANKING REFORMS

As interest rates approached near zero, conducting monetary policy by setting the interest rate was no longer a useful option. Despite a zero rate of interest output and employment in the affected countries did not increase and remained low. The situation was similar to the liquidity trap which was introduced by the Keynes regarding the ineffectiveness of conventional monetary policy at the very low rate of interest. Japan's economy went through the same developments in the 1990s. With interest rates near zero the Bank of Japan conducted an unconventional approach to monetary policy.

The unconventional monetary policy is divided into two broad categories of asset purchases (AP) and forward guidance (FG).

AP is similar to the conventional open market operations where the central bank purchases or sells short term government securities. However, under AP the central bank attempts to reduce the long term rate of interest by purchasing long- term government bonds and mortgage-backed securities. Under the Quantitative easing (QE) the central bank prints money to purchase assets. Most of the central banks exercised QE during financial crises of 2007 - 2008.

The Economist (2013) argues that QE was effective in reducing the long term rate of interest in the affected countries. FG is related to the transparency of the future policies of the central bank. Through FG the Bank of Japan in the late 1990s, the Federal Reserve Bank and the Bank of England during the financial crises in 2008, attempted to persuade the markets, that as long as there is no fear of inflation, they will keep the rate of interest at zero levels.

The Economist (2013) argues that as a result of reducing short-term interest rates by QE, outputs in Britain and United increased by 2 – 3 percent.

https://en.wikipedia.org/wiki/Regulatory_responses_to_the_subprime_crisis states that:

U.S. Treasury Secretary Timothy Geithner's testimony before the US congress on October 2009 included the following five factors as important to effective reform:

1. "Expand the Federal Deposit Insurance Corporation (FDIC) bank resolution mechanism to include non-bank financial institutions;
2. Ensure that a firm is allowed to fail in an orderly way and not be "rescued";
3. Ensure taxpayers are not on the hook for any losses, by applying losses first to the firm's investors and including the creation of a pool funded by the largest financial institutions;
4. Apply appropriate checks and balances to the FDIC and Federal Reserve in this resolution process;
5. Require stronger capital and liquidity positions for financial firms and related regulatory authority."

The Dodd–Frank Wall Street Reform and Consumer Protection Act was signed into law by President Obama in July 2010, addressing each of the above issues to some degrees. Among other things, it established the Consumer Financial Protection Bureau(CFPB). Altogether, Americans now have a dedicated consumer financial protection watchdog, financial markets are more transparent, and the government is in a stronger position more to monitor risk, and assist firms whose failure could produce adverse effects on the whole financial system.

9.2 BASEL III

Non-depository banks such as investment banks and mortgage companies are not subject to the same capital reserve requirements that are imposed on depository banks. Several of the investment banks had limited capital reserves to support declines in mortgage-backed securities or provide resources for their credit default derivative insurance contracts. Nobel prize winner Joseph Stiglitz proposed that regulations be introduced to limit the extent of leverage permitted and not to permit companies to become "too big to fail", by dividing them into smaller units. He has also suggested reforming executive compensation, to make it less based on short-term performance; enhance consumer protection; and create a "regulatory review mechanism for new exotic types of financial instruments**."**

9.3 SHORT TERM SELLING RESTRICTIONS

UK regulators announced a temporary ban on short-selling of financial stocks on September 18, 2008. Short-selling is a method of profiting when a stock declines in value. When large, speculative short-sale bets accumulate against a stock or other financial asset, the price is forced to drive down significantly. Short sales were responsible for rapid declines in Lehman Brother's share price, before its bankruptcy. On September 19 the U.S. Securities and Exchange Commission (SEC) followed the UK ban and placed a temporary ban on short-selling stocks of financial institutions. Furthermore, the SEC allowed financial institutions

to buy back their shares. The halt of short-selling in the US continued until 11:59PM EDT on October 8. The action was based upon the view that short selling during the financial crisis depresses confidence in performance of financial institutions and damages their stability.

The US Treasury statement by Anthony Ray September 2013, "The Financial Crisis Five Years Later Response, Reform, and Progress" https://www.treasury.gov/connect/blog/Documents/FinancialCrisis5Yr_vFINAL.pdf, argues that, in Fall 2008, in the span of a few weeks, many of US largest financial institutions failed or were pressured to merge to prevent insolvency. Capital markets — necessary for providing consumers and businesses meet their required financing needs — were dramatically reducing the availability of credit, such as student, auto, and small business loans. The confidence in the stability of the US financial system was evaporated. Faced with this problem, the federal government stepped in quickly to reduce the panic.

The first series of measures, including broad-based guarantees of bank accounts, money market funds and liquidity by the Federal Reserve, were not sufficient to cure the problem. "Hence the Bush Administration proposed the law creating the Troubled Asset Relief Program (TARP)". That measure became a law on October 3, 2008. Some of the programs under TARP were successfully implemented by the Bush Administration. The Obama Administration continued these and added more measures, to maintain flow of credit to consumers and businesses, help homeowners avoid foreclosure, and prevent the breakdown of the American automotive industry, which is estimated to have saved about one million jobs.

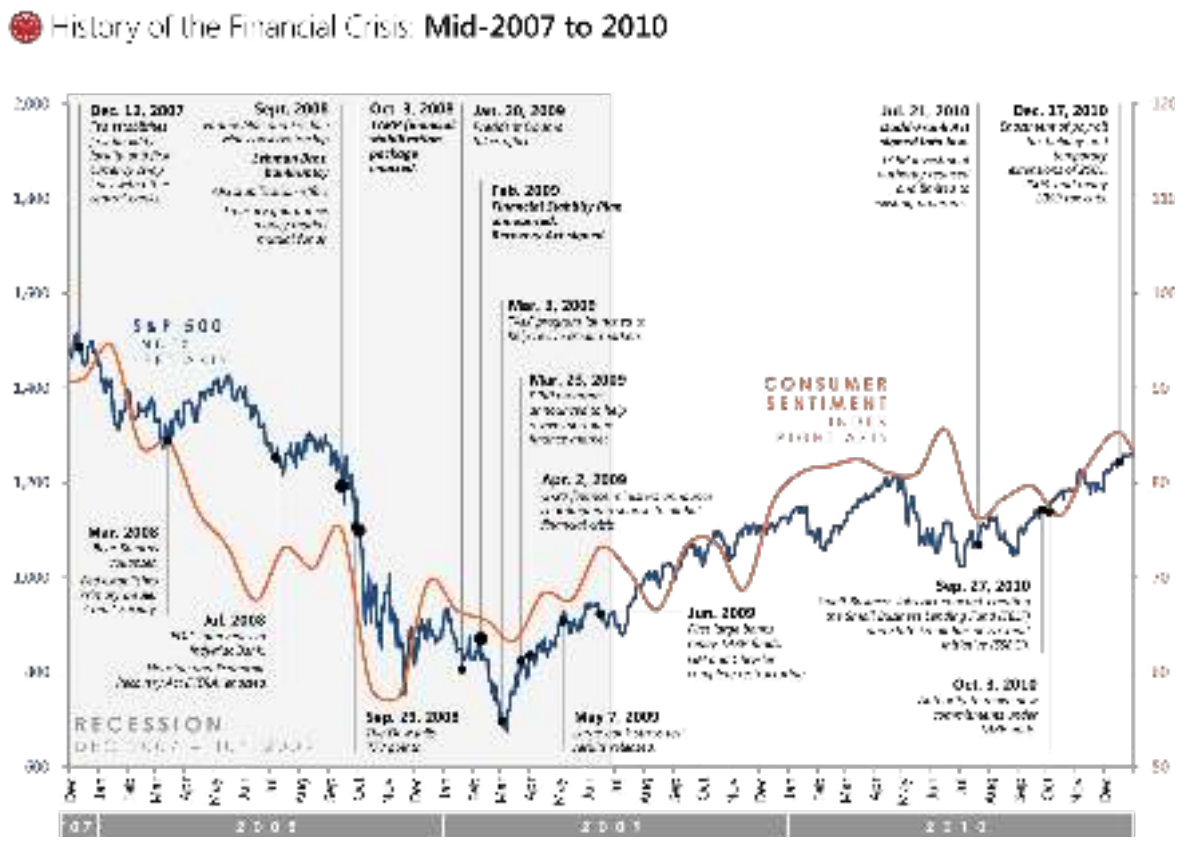


Figure 1 History of Financial Crises: Mid – 2007 to 2010
Source: https://www.treasury.gov/connect/blog/Documents/FinancialCrisis5Yr_vFINAL.pdf ,
Figure 1 show that S & P 500 share price index and consumer confidence both dipped in the latter parts of 2008 and did not recover until March 2009.

As the world approached the five-year anniversary of the peak of the financial crisis, the financial systems are safer, stronger, and more resilient to shocks than before the crises. There are still have more reforms required to repair the damage. However, without the governments' strong interventions, the financial and economic damage would have been worse and more costly.

9.4 EUROPEAN FINANCIAL REFORMS

Several financial reforms and regulations were introduced in the affected countries in Europe.

UK, Ireland and Iceland were the most affected countries in Europe. In UK, the Northern Rock Bank heavily invested in toxic assets and was the first financial institution that experienced a significant shortage of liquidity. In order to restore confidence in the stability of the financial system, the UK government nationalized the Northern Rock Bank.

The report of European Central Source: Bankhttps://www.ecb.europa.eu/press/key/date/2009/html/sp091016_1.en.html, noted the following:

The collapse of Lehman Brothers led to the most severe and synchronized economic downturn the world has experienced since the 1930s. Globally, Policy-makers responded quickly and decisively, taking extraordinary and unconventional steps to prevent further financial instability and economic disaster.

Europe faces similar challenges as the United States. However, there have been some differences in the responses of policy makers in the US and the euro area. The choice and design of policy measures are based on the institutional characteristics of the central banks, such as the degree of independence. They are also influenced by structural economic and financial features, like the extent of the importance of financial markets and commercial banks in providing credit for businesses and individuals.

"Between October 2008 and May 2009, the ECB lowered its main policy interest rate, the rate on the main refinancing operations, by 325 basis points. The current rate of 1% is the lowest since the launch of the euro in 1999, which is a reflection of rapidly receding inflationary pressures since the summer of 2008. This is in line with our primary objective at the ECB, to maintain price stability in the euro area in the medium term."

In addition to reducing of policy interest rate, the ECB has taken a number of steps to facilitate the smooth functioning operation of the inter-bank market in the euro area. These measures have encouraged the flow of credit individuals and businesses, which are more than what could be reached solely by interest rate reductions.

Despite the above-mentioned post financial crisis reforms, financial analysts are not convinced that further crises are not around the corner. The fragility of the financial sector, the speculative behaviour and the conflicts of interest and distorted incentive structures continue to present challenges for macroeconomic management.

A continual concern is the fragility of domestic financial markets and the need for stronger prudential supervision. Observers have noted that banks generally appear to take risks in excess of those taken by other firms, for example, US banks are ten times as highly geared as manufacturing companies. What stands out are the unexpectedly large adverse effects on real variables (output, employment and firm insolvency) that can occur when a fragile under-regulated financial sector with inadequate prudential supervision is exposed to volatile and large capital injections. Asset prices can exhibit bubble behaviour and crash quite precipitously and the contagion impacts on countries far from the source of the initial financial instability.

Increased doubts are being expressed about the conventional view of a low inflation strategy. Higher average inflation and higher nominal interest rates to start with, would have helped to lower interest rates more, thereby most likely reducing the decline in output and deterioration of fiscal positions in the aftermath of global crisis. This reservation against the low inflation strategy has been shared by leading economists such as Kenneth Rogoff, Greg Mankiw, Paul Krugman, and Brad DeLong.

Some observers are even suggesting that countries need to restore their policy sovereignty. This inevitably involves exiting the European Monetary Union and reinstating a fiat (non-convertible) currency, a flexible exchange rate regime and monetary independence. Whether such a radical strategy ensues, it does suggest quite clearly that a monetary union with a singular focus on inflation targeting can achieve inflation control but this is clearly not a sufficient condition for macroeconomic stabilization.

In a well-functioning market economy, markets are supposed to provide the incentives that lead individuals to do what is in society's interest. Financial markets have the responsibility of performing the essential societal functions of managing risk, allocating capital and mobilizing saving while keeping transaction costs low. Financial markets should allocate capital to its most productive use where the returns to society were highest. Unfortunately there have been episodes where financial markets have misallocated capital, engaged in excessive risk-taking and lending to those that could not repay, leading to a situation where private rewards were

unrelated to social returns. Indeed, banks can perform so poorly at credit assessment and mortgage design that they put the entire economy at risk. These episodes have imposed new challenges on central banks and on the operation of monetary policy. This chapter has outlined some of these challenges and some of the responses but it is a very fluid situation and we can expect far more unconventional monetary policy and prudential supervision of financial institutions in the future.

Our non-standard measures have come to be known as "enhanced credit support". They focus primarily on commercial banks, because in the Euro area banks are the main source of funding for households and businesses. Just as to give you a comparison to the US: in the euro area about 70% of the funding of corporations and households comes from banks; the equivalent share for the US is around 25%. So a well-functioning money market is essential for Europe's commercial banks and also for the ECB as the transmission of monetary policy to the economy starts here.

Since all of our non-standard measures are still in place at present, let briefly summarise their five building blocks:

First, the full accommodation of banks' liquidity requests at fixed interest rates;

Second, the expansion of the list of assets eligible as collateral;

Third, the lengthening of the maturities of our refinancing operations, up to 1 year;

Fourth, the provision of liquidity in foreign currencies, notably the US dollar;

and finally, outright purchases of euro-denominated covered bonds issued in the euro area.

The covered bond market is traditionally an important source of funding for banks in the euro area. This market segment suffered heavily from the financial crisis. With 60 billion euro, a volume significant enough to support market functioning but not so large as to dominate market developments. Still, compared with bond purchase programmes in some other major countries, the amount spent by the ECB in the context of its covered bond programme is fairly modest. However, this reflects the fact that the primary role of the ECB is to act as a catalyst for this market, not as a market maker.

The outright purchase of covered bonds is the only truly new element in our monetary policy framework. All other non-standard measures have been implemented by using the flexibility of our monetary policy framework. The implementation of our enhanced credit support has been achieved by adjustments in some parameters of the framework.

For example, before the crisis started the ECB already accepted private securities and asset-backed securities as collateral in our refinancing operations, with appropriate risk-control measures in place. Expansion of the list of eligible collateral was simply achieved by lowering the rating threshold from "A-" to "BBB-", with the exception of asset-backed securities.

9.5 REFERENCES

https://en.wikipedia.org/wiki/Regulatory_responses_to_the_subprime_crisis

https://www.treasury.gov/connect/blog/Documents/FinancialCrisis5Yr_vFINAL.pdf ,

Bankhttps://www.ecb.europa.eu/press/key/date/2009/html/sp091016_1.en.html

https://www.treasury.gov/connect/blog/Documents/FinancialCrisis5Yr_vFINAL.pdf ,

ENDNOTES

1 The coefficient of correlation shows the extent to which two time-series move in the same direction. The value of the coefficient of correlation varies between 0 and 1. The coefficient is equal to 1 when two series are perfectly correlated. The coefficient of correlation is negative when two series move in the opposite direction.

2 In this study changes in the degree of ICM using real interest parity condition was tested using Johansen's cointegration techniques. In Johansen's method the existence of cointegrating vectors implies that variables in the long run reach an equilibrium, the variance declines over time. No cointegrating vector means variables move apart over time

3 The original members of the EMS were Germany, France, Italy, Netherlands, Denmark, Luxemburg, Ireland and Belgium.

4 The following material has used the sources available on the web site http://www.history.com/topics/great-depression

5 Marshal – Lerner condition maintains that for a depreciation to improve the trade balance, the sum of the elasticities of export and import must be greater the unity,

6 The 12 original members of the EMU were Germany, France, Italy, Spain, Portugal, Finland, Ireland, Austria, Luxemburg, Greece, Netherlands and Belgium.

7 These seven additional counties are Cyprus, Malta, Estonia, Latvia, Lithuania, Slovakia and Slovenia.

8 Current members of OPEC are: Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. They were to become the Founder Members of the Organization. These countries were later joined by Qatar (1961), Indonesia (1962), Libya (1962), the United Arab Emirates (1967), Algeria (1969), Nigeria (1971), Ecuador (1973), Gabon (1975), Angola (2007) and Equatorial Guinea (2017).

9 The Granger Causality test examines the cause and effect's relationship between two time-series data.