

**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

Faculty of Economics and Management

*Department of Economics*



Bachelor Thesis

**FOREIGN EXCHANGE ANALYSIS  
CLASH OF GLOBAL CURRENCIES**

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**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

Department of Economics  
Faculty of Economics and Management

# **BACHELOR THESIS ASSIGNMENT**

Sinecký Jan

Agricultural Economics and Management

Thesis title

**Foreign Exchange Analysis: Clash of Global Currencies**

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### **Objectives of thesis**

Main goal of the thesis is to evaluate position of main global currencies and their clash. This is achieved by comparing foreign exchange reserves of main central banks, evaluating their monetary policies and determining main factors contributing to current and future dominance in the global foreign exchange market.

### **Methodology**

Comparative analysis, quantitative and qualitative analysis of data, fundamental and technical analysis of main currency pairs.

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M Wolf (2010) How to fight the currency wars with stubborn China  
- Financial Times

Huang Y (2010) A currency war the US cannot win. VoxEU.org

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## **Declaration**

I declare that I have worked on my bachelor thesis “Foreign Exchange Analysis: Clash of Global Currencies” by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any third person.

In Prague .....

.....  
Jan Sinecký

## **Acknowledgement**

I would like to thank to Ing. Petr Procházka, Msc. Ph.D. for his support, supervision and assistance during assessment of my bachelor thesis.

Author: Jan Sinecký

FOREIGN EXCHANGE ANALYSIS:  
CLASH OF GLOBAL CURRENCIES

ANALÝZA TRHU CIZÍCH MĚN:

STŘET SVĚTOVÝCH MĚN

## **Summary**

This bachelor thesis focuses on main global currencies and their clash. For the analysis the author chooses four representatives of this group: USD, GBP, JPY and EUR, that are also known as reserve currencies. The Chinese Yuan is also analyzed, due to its potential to become a member of this prestigious group and also due to large economic growth of China in recent years. The thesis is divided into theoretical and practical part. First chapter is dedicated to literature review for better understanding of the subject and depicts the development of main global currencies, their positions and their clash, as well called currency war. Second chapter is analytical. It is divided to three main parts. In the first part, the analysis of foreign exchange reserves is provided. The second part evaluates the direct interventions of main central banks and shows its temporary impact on the trend of exchange rate. The last part is dedicated to the correlation analysis among various currency pairs that shows the degree of their mutual relationship. The brief evaluation provides overall view of some aspects of this currencies clash and may help governments and policy makers in respective countries to better target forex markets and propose more effective policy responses to actions of their counterparties.

**Keywords:** USD, JPY, EUR, GBP, Yuan, monetary policy, foreign exchange market, central bank

## **Souhrn**

Tato bakalářská práce se zaměřuje na hlavní světové měny a jejich střet. Pro analýzu autor zvolil čtyři zástupce této skupiny: Americký dolar, Britskou libru, Japonský yen a Euro. Tyto jsou také známy pod pojmem rezervní měny. Vzhledem k potenciálu zařadit se do této prestužní skupiny, a díky síle čínské ekonomiky v posledních letech, byl analyzován také Čínský yuan. Práce je rozdělena na teoretickou a praktickou část. První kapitola je věnována literární rešerši. Pomáhá lépe porozumět problematice a líčí vývoj hlavních světových měn, jejich pozice, a střet, který je rovněž znám pod pojmem měnová válka. Druhá kapitola se zabývá analýzou. Je rozdělena do tří hlavních částí. První se zabývá rozborem státních rezerv cizích měn. Druhá část vyhodnocuje přímé intervence světových centrálních bank a ukazuje jejich vliv na vývoj měnových kurzů. Poslední část se věnuje rozboru korelace mezi různými měnovými páry která ukazuje jak jsou na sobě tyto páry vzájemně závislé. Stručné vyhodnocení poskytuje celkový pohled na některé aspekty tohoto měnového střetu a může pomoci vládám a politickým činitelům jednotlivých zemí lépe zhodnotit trh cizích měn a navrhnout efektivnější politiku vůči jednání jejich protistran.

**Klíčová slova:** USD, JPY, EUR, GBP, Yuan, měnová politika, trh cizích měn, centrální banka



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# **1 INTRODUCTION**

The thesis is focused on the strict analytical diversification of currencies according to their local, transboundary or worldwide applicability. It relates to the extreme clash of reserve currencies (USD, EUR, JPY, GBP) which positions are seriously endangered. Current global economy and financial crisis strongly affected their credibility and reliability. This is an opportunity for Chinese Yuan, which is waiting for the takeover of pivotal role.

## **2 OBJECTIVE AND METHODOLOGY**

### **2.1 Objectives**

Main objective is to evaluate the clash of major currencies in current foreign exchange market and monetary system. In order to fulfill this goal, the subsequent objectives are set. These include evaluation of evolution of foreign exchange reserves, assessment of central bank intervention and appraisal of correlation among the major currencies. Achieving these goals may help to explain current tense situation in the forex market where almost all governments try to devalue their currencies in order to maintain or achieve competitiveness and stop economic downturn, respectively accelerate economic growth.

### **2.2 Methodology**

Literature that must be studied is analyzed using the methods of synthesis, induction and deduction. Following the literature review, the main goals are achieved using methods of quantitative data analysis, trend analysis of data, technical analysis of forex data including methods of simple moving average and Bollinger bands and finally correlation method in order to determine level of relationship among analyzed currencies.

## **3 LITERATURE REVIEW**

### **3.1 Reserve currencies in comparison to other currencies**

The statute of reserve currency is not the question of conferment of the title. To this position it is getting by long process. From the historical point of view there was only one reserve currency-the British pound, which was truly reputable by the whole world. The reason was simple- constantly expanding British possessions on all continents and stability of British pound on World stock exchange.

The US dollar as a reserve currency became successful after the World War II., mainly due to geopolitical changes in arrangement of British imperium, which became a poorer relative of United States. In the struggle for the primary position of reserve currency, the US dollar celebrated victory. [1]

Since the seventies of the 20<sup>th</sup> century, the reserve currency for Asian continent became Japanese Yen. Its growing power and stability ensure the entrance to World stock exchange and a privilege of the title 3<sup>rd</sup> reserve currency.

Without any proof of prosperity and strength, the EUR is becoming the 4<sup>th</sup> reserve currency. The reason is obvious. All the currencies of the founding “twelve” were internationally negotiable without any internal or cross-border regulations. At the time of the establishment of euro as one and only legal tender for citizens of 12 founding states, there were discussed the two “pillars” of perfectly functioning national currencies- German Mark and French Frank, which are the guarantee of solidity of newly created European currency. It is well known, that there was only one pillar. The German Mark had the dominant position not only in Europe, but also in the whole world. The target of Euro was to cope with the US dollar and consequently to replace its position. [4]

### **3.2 Other currencies**

The term “other currencies” needs to be more specified. It is important to distinguish national currencies internationally negotiable, which are just qualitatively lower class in comparison to reserve currencies. Also these currencies are part of monetary reserves in almost all states. Its holding by central banks is given by speculative intentions of these banks.

The next group is internationally non-tradable currencies, so called internal. These are usually usable only in the state for which were issued. The typical examples of internal currencies were the currencies of the states of Eastern block, started with Soviet Ruble. Import and export of the currencies of these states was practically forbidden.

Still persisting typical internal currency is Chinese Yuan. It is, and is always was, the most guarded currency of communism regimes. This is the currency which dreams about position of reserve currency no.1. [4]

The next group from the suborder other currencies are the non-tradable marginal currencies. It is a relatively huge group, consists of island currencies, colonial currencies or currencies of emerging state units. These are basically non-transferable coupons for goods and services in states, for which these were issued. Its utilization out of defined territory is impracticable.

### **3.3 Historical positions of GBP, USD, JPY and EUR**

Historically first reserve currency was the British Pound. Since second half of 19<sup>th</sup> century The Great Britain was the only world's navy and merchant superpower. Besides, it was most advanced industrial center of the world. The standard of living in the land of Queen Victoria was biggest on the world, London was the financial center of the world and Bank of England, established in 1694 on Threadneedle Street, was a solid guard of the stable currency. It is important to say, that the payment instruments in the whole world were coins. The highest nominal value represented by gold coins, other (lower) categories made from silver, cuprum etc... Generally were the coins sorted on coins made from yellow metal, white metal and colored metal. All monetary systems of today's world accept these sorts of metal spectrum till today. Euro coins are typical example. [4]

Although it seemed that coinage of silver will dominate, it was pushed out by the gold till the end of 19<sup>th</sup> century. We can find the reason in England. In 1717, when the legendary physicist Isaac Newton was in charge to set the value ratio between silver and gold. In the former system, the basic division 1GBP to 20 shillings, he found out the precise calculation of 21 silver shillings to 1 British Pound. That marked the birth of 1 gold guinea, getting out of classical division in British monetary system. For Brits it became a basic unit for trade

of silver coins for golden coins. The superiority of Great Britain caused that countries, which wanted to ensure their share on world market, had to switch to golden standard. Since 1868 till the beginning of World War I, the rest of prosperous countries in Europe and USA used the monetary system of gold. Since then the destiny of the golden standard was not in the hands of Great Britain anymore. [6]

The worldwide confidence, that the Great Britain gained during more than one hundred years, was weakened, not destroyed though. The connection of GBP to golden standard ended. Since 1914 was not possible to change first emission of paper bills back to precious metal. It lasted until 1925, when minister of finances Winston Churchill made a biggest mistake of his life. He decided to connect GBP to gold as it was in the old times. This proud, nationalist decision led to overvaluation of pound against US dollar exchange rate, increasing of interest rates and flow of gold especially to New York. In 1931 the connection of the pound to golden standard was definitely terminated.

### **3.4 The unexpected birth of a new world currency – USD**

November 1918, end of World War I. Over 2 million American soldiers stay in Europe as an anti-German help. The USD stays in Europe together with them. The soldiers returned back to USA soon, but the magical power of the dollar did not leave its position. Before the war the American dollar was an unknown commodity to Europe. Even though the trust in British pound has survived, the Bank of England was considerably exhausted after war. American banks transferred 12 billion dollars to the Bank of England as a subsidy for financing the war. Germany was marked as a main culprit of starting the war. It had been affected by reparations that could not be financed by them, so United States had provided loans. Not just to Germany, but to all states which had been affected by war circumstances. There were a lot of talks about dollar shine over Europe, but it had not been shining for a long time. On Thursday, 24<sup>th</sup> October 1929, the exchange rates in New York stock market had collapsed. This was the end of golden twenties. The New York Stock Exchange crash presaged the global crisis which affected all the monetary systems. The only currency which got out of the ruins in thirties was American dollar. It was in a time when America did not consider itself as a global superpower. It became a superpower during and after World War II. [1]



### **3.4.1 Bretton Woods monetary system**

New Hampshire, July 1944. Economists and financiers from 44 countries have a meeting to decide a new financial arrangement of the world after war. The scheme was clear: to avoid the golden standard from twenties and to preclude a creation of next global crisis. Proposal of John Maynard Keynes, the most famous economist of these days, to create a new reserve currency called Bancor, failed. The deputy of American minister of finances, H.D. White knew about powerful position of dollar. Why to create a new reserve currency, when there already is a global currency with international range for new international monetary system? After three-week negotiations the USD became a new main reserve currency of the planet. Due to rise of exchange rate was the price of dollar connected to gold in the ratio of 35USD to 1 troy ounce (31,1g). Foreign central banks were allowed to exchange the claims against America for gold. [4]

### **3.4.2 Major events affecting the position of USD as the reserve currency**

By the early sixties, it seemed that the Bretton Woods golden standard is perfect, as well as the State treasury of USA. The war in Vietnam strongly affected the emission politics of Federal Reserve System (FED). The resources that helped to raise the military power concurrently undermined the stability of the currency. That came in the most inconvenient time. Due to huge amount of hurriedly-printed dollars, the American inflation increased to the historically highest level.

The confidence in USD has been compromised, as well as gold reserves in Fort Knox. The most of the gold went to European states, which utilized the option to trade the surplus of USD for American gold. Paradoxically, the biggest part of the gold went to Germany, which in 1956 had more gold than Banque de France. This situation had been fixed immediately by the new president of France, Charles de Gaulle. He decided that Banque de France had to use the possibility of purchasing gold, that was given by Bretton Woods contracts. The Banque de France used this opportunity completely, and by permanent draining of gold reserves from Fort Knox was partly responsible for the disruption of value base of the USD, which was still covered by gold in these days.

By the early seventies was clear that Bretton Woods monetary system and the bound of USD to gold are history. President Nixon in his television speech, in August 1971, announced that the era of covering of the American currency by gold ended forever.[1]

Two years later Washington released the exchange rate of USD against other currencies. Both of these decisions caused that the pillar of world economy collapsed. The paper bills of USD had been emitting by multiplication without any boundaries. During 10 years had dollar lost 90% of its original value against gold.

At the turn of the millennium the U.S. administration rescued failing of financial institutions by capital injections. There was an emergency program, which pumped into economy of USA over 780 billions of USD. In 2010 was the deficit of U.S. economy about 1,5 trillion USD. However, the total public debt is 14 trillion USD. The budget plan of Congressional Budget Office is assuming that until 2020 the debt will rise by 1 trillion USD annually.

The keeping of status “reliable reserve currency” for U.S. dollar does not seem hopefully. Japanese Yen is in decline. EUR is struggling for survival. The only certainty has a gold commodity- the commodity with permanent value. If the Chinese Yuan can take the position of USD is not the question of present. At first, the conditions for international acceptance of the Chinese currency have to be created. To unfreeze capital movements, to free the opportunity of purchasing Chinese currency by foreign subjects, including the states and central banks and to make the exchange rate of Yuan freely floating. [4]

### **3.5 New aspirant for the title “Global Reserve Currency”-Chinese Yuan**

Asian continent, until recently, in terms of industry, commerce and finance was presented by Japan. Economical boom of china in recent years is fascinating. It became the 4<sup>th</sup> biggest economy in the world. That sharp rise started during the nineties. Within 10 years, China’s economy has doubled. Germany is the third largest economy in the world, after USA and Japan. In comparison with the rate of economic growth of China, it would need a half century for such a jump. Forecasts, that China will become an economic leader on the turn of 21<sup>st</sup> century, can be taken as the real. [7]

In 2008, China owned 2 trillion USD in foreign exchange reserves. Purchases of U.S. government bonds essentially finance the American deficit. Limit these purchases by

China would cause considerable difficulties to USA. U.S. Secretary of State Hillary Clinton, during her official visit to Beijing in 2009, was assured by the Chinese government that the enormous foreign exchange reserves in dollars China does not intend to use as a political weapon. However, the way how will China use these, will affect the global economy, financial markets and the fate of USD in its uncertain position of the most important global reserve currency. China is aware of the same position of Japan in eighties and nineties. Japan in these days owned the largest foreign exchange reserves in USD and the largest amount of U.S. bonds. However, any Japanese attempt to move dollar values to other currencies led to depreciation of USD. For China this means, that any attempt to sell it would cause a panic in the financial markets. On the contrary, the following foreign exchange reserves held in dollars pushing China to greater economic and political power on the world stage. Enormous debt of the United States is indeed danger for China, but the USA and China are at each other dependent in many aspects. [5]

### **3.5.1 China's position in global economic and financial crisis**

China was hit by global crisis certainly less than other countries. Its export markets slowed down dramatically. In real estates markets prices have fallen. China has a surplus state budget, surplus in balance of payments on current account and negligible debt (according to data from 2009). The Chinese are incredibly frugal. Despite their minimal salaries in comparison to developed world (every second Chinese earn less than 2 dollars a day) Chinese households save 40% of their income. In 2009, China's foreign exchange reserves portfolio increased from 2 trillion in 2008 an additional 700 billion USD. In 2009, China and the Association of Southeast Asian Nations concluded an agreement that created the largest free trade area in the world. China is also using its diplomatic role in developing countries (Angola, Sudan, Kazakhstan), where conveniently gets the necessary raw materials. Even in a time of global financial crisis China is helping to other countries and making key investments to natural resources, while the west-block countries are not capable of this during the crisis. Its strategic investment is for example a security of future oil supplies from Russia and Venezuela. As a result of crisis, US-China relations have become the most important bilateral relationship of the two superpowers. Hillary Clinton at the same official visit said: "China despite its economic growth is not an adversary of USA".

The U.S. government could initiate China's entry into the group of highly industrialized states G8 and expand its position in the International Monetary Fund (IMF). In return, China could substantially increase its capital quota in IMF. [5]

China's financial system is isolated from the world and therefore relatively protected from external speculation. It is called "Beijing capitalist-communist model", which strengthens its global position, even though its priorities has primarily internal character. China is on a good track to become the financial superpower No.1. United states without the help of China's central bank have not a chance to manage its deficit and finance a package to support economic growth in the amount of 800 billion USD. The largest Chinese banks deposed their competitors from Wall Street from the top of the pyramid of leading commercial banks. For example Industrial and Commercial Bank of China is taking care of 3.2 million companies and 190 million private clients. Together with China Construction Bank literally jumped over stars from Wall Street.

In 2009, China launched the Infrastructure Modernization Program. The private consumption is massively supported. In 2009, the Chinese economy value growth approached 8%. That was less than in previous years, but the forecast for 2009 surpassed though. The decrease in exports between 2008 and 2009 in the United States and Europe meant a lost of job for more than 25 million workers. Work stopped in 75.000 companies producing electronics and white goods. [5]

In 2010, China has increased the demand for required reserves in banks. It was the first step in tightening of monetary policy to prevent inflation. Stabilization of loan growth while maintaining the pro-growth policies. China reacted to global crisis by relaxation of monetary policy. In 2009 there was already a sharp increase in the volume of loans, which raised concerns about an increase in the volume of non-performing loans. The share of loans with a problematic return was reduced to 1.3%. In 2005 the share of "bad loans" was 8.61%. The Chinese central bank's monetary policy is accountable to the government. This attitude of the Chinese Central Bank commented Belgian candidate for the European Commissioner for Trade Karel de Gucht. He said that China should revalue the Yuan due to trade flows between the European Union and China. Comments to the Yuan exchange rate against China are a permanent matter of many global institutions. By linking the Chinese Yuan to the dollar they maintain their currency exchange rate undervalued and in-

creasing the trade imbalance in their favor. Way out of this situation see Franklin Allen, of Pennsylvania University, exclusively in the abolition of the Yuan as a currency with internal deformation to the currency convertible, so it help open the way for a reserve currency possibilities. The analysts of Pioneer Investments comment the situation of Chinese financial markets in 2010 as an affordable, thanks to low interest rates and the growth of internal consumer demand. However, if the demand would decrease, the economic growth will stagnate. But If the growth would be too strong, it would increase inflationary pressures, which would lead to higher interest rates and tightening of monetary policy. [4]

China is taking the first steps towards the internationalization of its currency. The importance of Yuan for world trade grows. China's central bank allows Chinese companies permission to charge both imports and exports in Yuan. There were involved 67.000 enterprises in this project. For trade with Asian countries the Chinese currency was allowed to be used from mid-2009. In 2010, the volume of these transactions accounted in Yuan amounted to 506 billion. Chinese companies have been allowed to bypass the dollar, reduce transaction costs and minimize foreign exchange risk. In contrast, foreign companies' access to Chinese currency is still limited. Hong Kong is becoming an intermediary for trading in the Chinese currency for foreigners.

Beijing has entered into agreements with eight foreign central banks to supply themselves with Yuan for their domestic markets (Argentina, Belarus, Hong Kong, Indonesia, Malaysia, Singapore, South Korea and Iceland). China is willing to enter into negotiations with other central banks, which would help the Yuan to enter the "Hall of Fame" of reserve currencies

Petr Procházka from Czech National Bank analyzes the global imbalances based on the results of the sixth International Symposium in Paris, in the context of the French Presidency of the G20. The symposium was attended by top representatives of central banks, finance ministers and personalities from the academic field. The main point was to analyze the causes of imbalances between China and USA. United states' deficit on the current account balance and high public deficit has a direct mirror image of the Chinese current account surplus and accumulation of foreign exchange reserves that China immediately invests in securities issued by U.S. government. The inherent problem of imbalance lies in the different access of the population of the two superpowers to the degree of savings and

life on the debt. While in the U.S. people have no savings and live exclusively on debt, in China the opposite is true. The absence of a social safety net in China leads to the highest household savings in case of job loss, illness and old age.

For both sides this resulted the opposite mix of measures. For United States focused and sustained increase in the saving rate of households and reduce of the government deficit. For China - building social safety nets and capital markets, together with a reduction in the savings rate.

The exchange rates at the Symposium for academic delegates expressed professor Nouriel Roubini in his paper entitled "Asymmetrical World". For asymmetric he marked the un-conformity of the developed countries to countries that are still developing. Rates of major reserve currencies are floating (floating Rates) and rates in developing countries are hanging on them. The dominant, but weakening, reserve currency USD faces the risk of materialization. The increase in imbalances can lead to the fall of the dollar. He pointed out the asymmetry among CONSUMERS of first and last instance (USA, UK, Spain, Ireland, Greece, Portugal, the Baltics and other countries living on debt) and MANUFACTURERS first and last instance (China, Asian countries, Germany, Japan, with high rates of savings and reserves). The deep global asymmetry and asymmetry within the Eurozone over the last 10 years, has become untenable. The crisis created by the bursting bubble in the U.S. housing market has spilled over into the balance sheets of banks and following massive nationalization of private debt, continues in debts of governments of marginal, peripheral countries. Rescue packages of IMF solve nothing and only the real solution irrationally postponing. Drastic cuts in public finances and a decline in private consumption over the wage cuts will not bring the necessary recovery. [5]

The vice-governor of Chinese Central Bank, Xiaolian Hu, presented the Chinese view of the problems associated with the dominance of the dollar in the international monetary system. She criticized the policies of central banks with major reserve currencies. Although the holding of the reserve currency is lead by internal policy of individual central banks without defined responsibilities of holding reserve currency status, their thesaurization affects the whole world in both supply and demand. To avoid the imbalances is necessary to reach the change in higher diversification of reserve currencies, create rules of uniform policy and achieve greater stability among major currencies.

An important teammate of China is South Korea. South Korea's central bank has decided to invest 300 billion USD to assets in Yuan. Korea asked Beijing about buying Chinese stocks and bonds as a result of China's efforts to internationalize the domestic interior currency. Another reason of the South Korean central bank is trying to diversify its foreign exchange reserves caused by fears of growing U.S. deficit. South Korea's central bank was in April 2011 the seventh largest holder of dollar reserves (307 billion USD) [3]

Chinese banks report the record profits, high capital adequacy and negligible proportion of bad loans. The main causes of the the reduction in the efficiency of the financial sector in China are substandard loans granted to national banks under non-market conditions, government preferences of the selected sectors, indirect subsidizing of the investment loans through the low-interest bank deposits of households. Chinese statistics and analysis of investment loans diverts attention from the real issues. Estimates of unoccupied housing units are 65 million (data from 2011). Full transparency is not in the interests of developers and representatives of parastatal banks. For investment volume in China is mainly non-standard political influence in the provision of loans. Financing of projects of lenders under improper, unusually favorable conditions. The Chinese government real investment loans hides behind the scenes. If there is a slowdown in the Chinese economy, there is a decrease in demand for imported raw materials and other Chinese imports. This slows down the world economy, and the mood on the financial markets will lose the temporary optimism. Positive role could play a future decline in the raw material prices, which rapidly increased at the time of the investment boom. The percentage decline in home construction alleviates suddenly caused labor shortages in the field. Loans to the local governments in development projects were sanctified by guarantee of central government. At the same time the volume of unsold real estates of 20 largest developers increased from 2010 till 2011 for the entire half (worth 50 billion USD). [4]

### **3.5.2 Does China aim to the top?**

China is in preparation for the next reduce of economic growth. Falling exports can jeopardize the employment and social stability. Prime Minister Wen Jiabao announced a 7.5% growth target for 2012. He emphasized the need to increase the domestic consumption as a catalyst for growth. While Chinese exports in 2010 compared to 2009 increased by 22.5%, in 2012 is reduced by half. Thanks to debt crisis in Europe. The consumer prices for goods

and food will increase by 4%. The state budget deficit will rise to 800 billion Yuan. There will be changes in the wage policy. It is necessary to reduce the gap in incomes between the poor and the rich layers. Prefer primarily an increase in the wages in the country. Since 1980 till 2012 over 600 million of Chinese has come out of the poverty. Till 2030 there could be an annual income per 1 inhabitant increased from USD 5.000 to USD 16.000, thus more than 300%. Although the rate of growth will slow down (for the year 2013, the forecast is of 6.6%), China will change itself from the middle-income country to the country with high incomes by the 2030. It would surpass the United States and return to the top of the world economy, where China was 300 years from the 16<sup>th</sup> to the 19<sup>th</sup> century. [5]

### **3.6 The stability full of uncertainties**

Year 2020 could be for China and the rest of the world historical turning point. China's economy could become the world's largest, and its currency could be poised to the prominent position of reserve currencies. In the meantime of 2012-2020 many things can happen: Bursting of the housing bubble, retreat of the USD as a reserve currency of smaller countries, the transition to gold and commodities, currency turbulences in Europe, the collapse or the preservation of the Eurozone, preservation of the Euro.

If the Chinese currency could become a reserve currency, it must first be globally used as currency for trade and investment. In cashless payments Yuan passed within two years (2010-2012) from the 35<sup>th</sup> to 14<sup>th</sup> place as a global reporting currency. Although the obtained sequence looks surprisingly, the share of Yuan in global payment system is only 0.45%. That means that it has a little less than the Danish Krone and a little more than the South African Rand. Euro has a market share of 43%, USD has 31%.

For the Chinese government - representatives of the Communist Party in Beijing and the Chinese financial sector in the hands of the state this means a single thing: to free Yuan for a wide international acceptance, in the second phase to make it freely convertible, authorize the purchase of the Chinese assets to foreign entities, free the capital movements, establish a bond fund for foreign investors with headquarters in Hong Kong. [6]



### 3.7 EURO

At first, let's look to the backstage and find the reason of birth of common European currency. It is important to emphasize, that this wasn't the first attempt of revolutionary financial solution in Europe. The first experiment called Latin's Monetary Union that was established due to initiative of France in 1865. They were incensed by expansivity of the British Pound together with persistent, secular dispute of France and England in supranational ways. The members of Latin Union were Switzerland, Belgium and Italy, together with founder member, France. Just because of the enlargement was invited strongly economically weak Greece. It is not possible to not mention the deuce of the same script of contemporary EU, which accepted the Greece as a last member state literally „in a last minute“. The Latin union had been wasting away for 49 years, up to its collapse in 1914. The reason of its weak vitality and collapse was different national interests, breaking of primary common enactments and financial lack of discipline in demands of drawing from the united budget.

The next European try, which appeared to be more durable, was creation of Scandinavian Monetary Union, which was in function 59 years, from 1872 to 1931. It consists of economically strong Sweden as a founding member, than Norway with Denmark were invited. Similar national economy, cultural and political rallying gave a hope for durable success of this union. In fact, it worked only for first 20 years. The disparity of phases of national economics and lately difference of political structures of these 3 states did not have to lead to anything other than to the decay. [3]

The history should brought an enlightenment. In this case it was with an imperative taste. The both named European attempts failed due to the lack of discipline and especially on the lack of united political will of the participating members. They were in a function as long as the contract was for all members profitable equally.

Although the propagators, followed by creators of contemporary EU know very well an unchangeability of the problem of national structures and rivalry, different political orientation at all, variability of the levels of the national economics, as well as expected problems with the budget, they go for a new attempt of much larger project based on well functional national economics of the strong states in EHS (ES). Especially Germany and

France are called as basic pillars of new European arrangement and recently raised common European currency. The irony of those pillars (and the aim of many jokes) is ingrained aversion between French and Germans. [7]

As a positive historical moment in area of financial sphere, the Europeans, as well as Germans, remind success of German emperor Wilhelm I. together with prime-minister Prince Bismarck. Due to their common strict decision was in 1871 united 22 German principalities and 3 separate towns to one geographic and economical complex-Germany. It was also the end of 126 mints, which made different coins from the expansive metals as well as from usual metals for states of Europe of these days. This coins were also used on territory of previous Germany. It's important to say that Germany as a state department did not have its own currency. Just in 1871 the German Mark was enacted as an official currency for whole Germany.

Through this historical moment I'm returning to the date 1.1.2002 of starting of the cash Euro, when for Germans and other 11 nations-members of EU-were their currencies withdrawn from circulation. The power of the German Mark lost not only Germans but the whole Europe. On said in these days „A German is not more German without his Mark“. From this date he had not got his proud of national prosperity together with the guarantee of certainty that his nation won't become an unimportant member of the EU. [2]

### **3.7.1 The birth of EURO**

The idea of united Europe in 21.century with common Europe currency has its enthusiasts adherents like the opponents. To characterize the preparing phases of introducing of Euro should be separately extensive description. Let's point out the main movements, orders, statues, regulations of the creators. Of course, not whole information was for public. Some of these were marked as a unadvisable for public. For example the fact that one of important conditions for the success of Euro is an increase of the unemployment in EU. It was emphasized that all members have to interdict themselves to defense the rise of unemployment. Up to mid-1998 could critical voices to Euro from the experts of economy, finances and politicians, loosely penetrate by the censorship. Till 1999 was clear that this warning signals have to be silenced. This whole period was characterized as a „must to

want it“. The public could have known only the positive information. There was quiet about expecting problems.

The Euro is not political implement. It is currency without political identity. It would become only in case of absolutely unity of the political and economical targets of all members in EU included the new ones which were accepted the EU membership lately. That vision displace creators to the territory of sci-fi.

Let's add more, that the citizens of Euro Zone consider the Euro as a currency which supplies only their national currencies and is used only as a substitute cash form for merchandise and services. We are not far from true when we say that Euro can be compared to some buying chips, due to its „impersonal appearance“.[2]

The European governments could used in the case of disagreement or opposition to this project to commit an intrigues and a „white lies“ on their own nations. The publicity motto was: „Who has clear mind, he must want Euro at all costs“, smacked by fanaticism. It was comparable with everlasting one from the period of totality system: „With USSR forever and never else“, which was used in a time when the fall of communism was unarrest able. It was ordered that each country of EU must agree with the united currency. [4]

Jacques Delors indicated Europe as non-able one object to identify. Much of politicians criticized the moral depression of Europe in which combine the ability of responsible functionaries forget on political power of national currencies, together with a consciousness of the nations, that just through there annolation they lose something important. The states attempt at a „public happiness“ interchange market's mechanism, called as a construction without political identity.

Pronunciation of a referendum separately in the membership of EU to agree with united common currency was unthinkable. It should be a danger for whole project. These governments which were aware of their own weakness had not other way out than use the tricks on their nations.

The first Maastricht's Conference offered to Europe a hazardous project. The second one offered only fatalism. There is no appearance of any European future to which could the helpless European nations trust in. To the system of institutions leads EU likes to the Central Bank which is an authority quite independent will not be able to turn on them directly.

### **3.7.2 ECB and Central Budget**

The common budget is very low and can't leave control of a recession in separate states. The budget's policy has no the real audit and strictness to follow it. The possibility of permanent increasing of common budget would affect at first the pillars of EU. It's impossible suppose that the citizens of a prospering states will support with enthusiasm the states which does not prosper. From the view of Maastricht's agreements matter's in their infringe and opening substitute ways for further states of EU. In a common monetary system is not possible to use a standard implement of a devaluation when a currency which is losing, for example for a state „A“ goes down meanwhile the overflow one of the state „B“ goes up in a rate . To devalue common currency regarding to the nations which lag behind is not possible. Final solution should be withdrawn from the membership. But it should be a little problem, because the conditions to enter the EU are a principal agreement well quoted. Also in which of them to continue. But how to go out is not solved at all. [4]

Public finances in each country of EU are under enactment called also as „pact of stability“. Each country of EU is obliged to observe it. In the case of infringe it, mention state receive a special warning in the form of reasonable rebuke fro highest authority- Council of EU. The higher degree if financial Sanction. Of course it is in the case of overdraw the national budget quite unprecedented.

Real solution should be creation of Central Government with necessity of Federalization. Any citizen in Eurozone will not be agreeing with this decision. It is possible that to this forcible solution the voter will not be invited. As regards to this matter without a referendum, then the resistance inside EU will be increasing.

The number of the seats in the parliament of Europe depends on the number of citizens in separate countries. The representatives of the small nations would be outvoted.

An idea of political unification is shifted aside to an empire of a dreams. The optimists claim that among the nations of EU will become to the agreement. An outlook of 350million of Europeans to some agreement is not appeasement for them. Nowadays, nobody of Europeans was born without national consciousness and will be willing to die for it. [2]

### **3.7.3 Is EURO really a stable European currency?**

EU is rated as a sclerotic bureaucratic machinery, which is defending its configuration, which across its institutions, which are overregulated, full of corruption, with many no democratically named operating authorities. Lots of thousands of the normative acts created a complicated system, against which is not possible to appeal directly. It is a long time ago when the laws, acts, enactments, statues over 30.000 of pages in which aren't conversant neither judges nor the citizens of EU. Each of the citizens of nations should study 5000 pages from these before they were called to the vote for enter to ECU and EEU.

Is it possible that in contemporary problems of ECU we can say „Pride before the fall?!“ The year 2010 for Germany as a basic pillar of Union was the record one of indebtedness. Owing to rescue packets to non prospering Mediterranean region, the state's debt grew up to 1791 billion Euro, which means 21.882 Euro on a head. The Germans are most affected by the damage for their exceptional economical situation. It's due to say that they feel up today by the financial injections in East Germany after amalgamate to national unit of Germany after 1990.

Will be Euro the third world's currency together with USD and JPY? Let's leave Japanese Yen in Asian markets. Individual character as a real world's currency for which are measured all values and efforts of people generally is the American dollar. The currency with which is not necessary to become acquaint with it, or direct anybody to the fact that it exists. American dollar is a coded information of the international business and of permanent validity. Even for these, which never saw it. Over that fact on the sunny side is not so long. It took this place not before the beat of English pound, which was there much longer in an era of colonial glory of a British imperium.

### **3.7.4 Measures to save the Euro**

One of the measures to stabilize the euro has been an increase in the ECB Regulation on capital adequacy of all systemically important banks in the EU by 9% by mid-2012. At the same time they had to write off a half of the assets they had at the Greek bonds. So it was decided on EU anti-crisis summit in autumn 2011. For the increase, there were recommended three basic steps. Obtain the capital from own resources, exemplary by selling of

additional shares. If the first step is insufficient, the recapitalization by governments enters. This was a step to the possible unwillingness of governments, rising of budget deficit financing and bruise of the confidence in the financial situation of the state. In countries where the governments would be overwhelmed by this step, there should step on a rescue fund The European Financial Stability Facility. It is important to say, that this fund did not bring the relief. It turned out that the chance of investing in the EFSF bonds from Brazil, Japan, Russia and China were politely chilled. Another alternative solution was to reduce the assets, for example loans, as well as the sale of subsidiaries. According to the European Banking Authority was necessary to obtain 106.45 billion EUR for the recapitalization. At a time when banks built this capital buffer, there could not be paid the dividends and bonuses. Greece debt forgiveness was set to 50%. Although this seemed encouraging, it was actually only 28% due to entire debt of Greece. Chancellor Merkel commented on the given situation: "There is not better alternative. What began as an American real estate crisis now caught up Eurozone countries." With some irony it is possible to say that for problems, in which Europe is, are due to capital excesses on Wall Street and not because of politicians of certain states of EU who made overflowing debts. The existing solutions of politicians rather indicate helplessness, short-term reactions, lack of long term vision of nonexistent leaders. It is the highest time to understand that the debt as the main cause of the problem can not solve a long period of other debts. The unofficial system of credit institutions and the real estates price bubble in China is bursting at the seams. In Europe, the imbalance caused by faulty construction of a single currency for several states, which is limping on its fiscal and monetary leg, which moves off-axis and monetization of debts of the southern wing outside the basic agreed rules.

The preparation of a financial transaction tax in the EU was expressed by the best known analysts in the Czech Republic Markéta Šiktařová, founder and chief of Next Finance along with her partner Vladimír Pikora, chief economist at Next Finance. Europe is desperate and looking for resources. The European Commission has decided to find a victim. Financial institutions must suffer for the situation. However, if the institutions have a forte, then it is the resistance against suffering. Sweden decided for a tax on financial transaction 30 years ago. As soon as it was introduced, it was immediately canceled due to the reduced volume of trading in bonds by 80% and 90% in derivatives. [5]

### **3.8 Huge nations have huge currencies**

Reserve currency of the world must have supporting attributes. Stable and strong economy, appropriate diplomatic, political and military relations with foreign countries, the ability to provide long-term political stability, internal and external, the ability to influence world events.

The condition of the economy, which is shattered by crisis, lies in two distinct causes. In the EU, the borrowers are unable to fulfill their obligations as between China and the U.S. there is a fear that there will not be paid by high quality money. Therefore the more of acute problems came together. On the one side of the world the overindebtedness of USA that is being solved by quantitative easing of currency, on the other side doubts about the sustainability of the Euro as a currency at all. [4]

### **3.9 Interventions of central banks**

There is expansion of currency wars. The causes must be sought in the monetary policy of central banks decisions. Absolute independence of the central banks on governments and their political decision is a proclaimed dream. Exchange rates play in the central bank's decisions crucial role. For the behavior of central banks the verbal intervention index in the range of scale from 0-10 was created. The lowest value corresponds to a mere declaration and the highest to explicit formulation of monetary policy with the aim to achieve a certain exchange rate. In the next time, governments will much more affect the central bank's monetary policy decisions mainly due to weakening of currencies. More and more they will be seen as an alternative to the internal monetary policy. From month to month there is possible to observe exchange rates controlled by government. Most of central banks are trying to weaken their currencies to gain advantages in global trade and correcting structural deficits in their countries. Previously, the exchange rates were influenced by interest rates expectations based on the cyclical prospects. Today, in the advanced industrial countries, interest rates are almost at zero point. The central banks of the U.S., Great Britain and the Euro zone pushed its basic interest rate in view of the economic crisis on record low levels. On the other hand, the low rates make investment in USD, GBP and Euros unattractive, which make exchange rates depreciated. In contrast, large, emerging economies like China and Brazil, but also developed countries like Japan or Switzerland, so take measures

to stop the devaluation of their currencies. This makes its products abroad more expensive, reduces the competitiveness and hampers the export. [7]



## 4 ANALYTICAL PART

In the analytical section, the clash of currencies is analyzed using three different aspects. Firstly, foreign Exchange reserves accumulation is studied. Secondly, interventions of central banks are analyzed showing their immediate impacts for the market. Finally, correlation analysis provides insight into success or existence of currency dominance.

**Table 1: Current situation of Foreign exchange reserves**

<b>Country ranking</b>	<b>Foreign exchange reserves (millions of \$US)</b>
<b>People's Republic of China</b>	<b>3312000</b>
<b>Japan</b>	<b>1268000</b>
<b>Eurozone</b>	<b>933000</b>
Saudi Arabia	627000
Russia	538000
<b>Switzerland</b>	<b>531000</b>
Republic of China (Taiwan)	403000
Brazil	373000
Republic of Korea	326000
Hong Kong	300000
India	295000
Singapore	259000
Germany	251000
Algeria	191000
France	185000
Italy	182000
Thailand	182000
Mexico	168000
<b>United States</b>	<b>150000</b>
Malaysia	140000
<b>United Kingdom</b>	<b>134000</b>
Libya	130000

*Source: IMF (2013), CIA worldbook (2012)*

From the currencies analyzed in the literature review, it is important to evaluate positions of the following countries. The most traded currency is USD, the official currency of the United States. United States have the lowest level foreign Exchange reserves which means in this case particularly EUR and JPY. From this table, it is obvious that it ranks in the lower 10 countries while at the same time it has approximately twenty times lower currency reserves than China.

Furthermore, Japan holds currently the second largest foreign currency reserves, however, it is about one third of the largest foreign Exchange holder China. AS it was mentioned in theoretical part, China owns a majority of US bonds and USD, as shows the table above.

#### **4.1 ANALYSIS OF FOREIGN EXCHANGE RESERVES**

In the next section evolution of foreign Exchange in the analyzed countries is provided. The first country that may try to influence foreign Exchange market is China.

##### **4.1.1 The foreign exchange reserves of China**

**Table 2: Foreign exchange reserves of China**

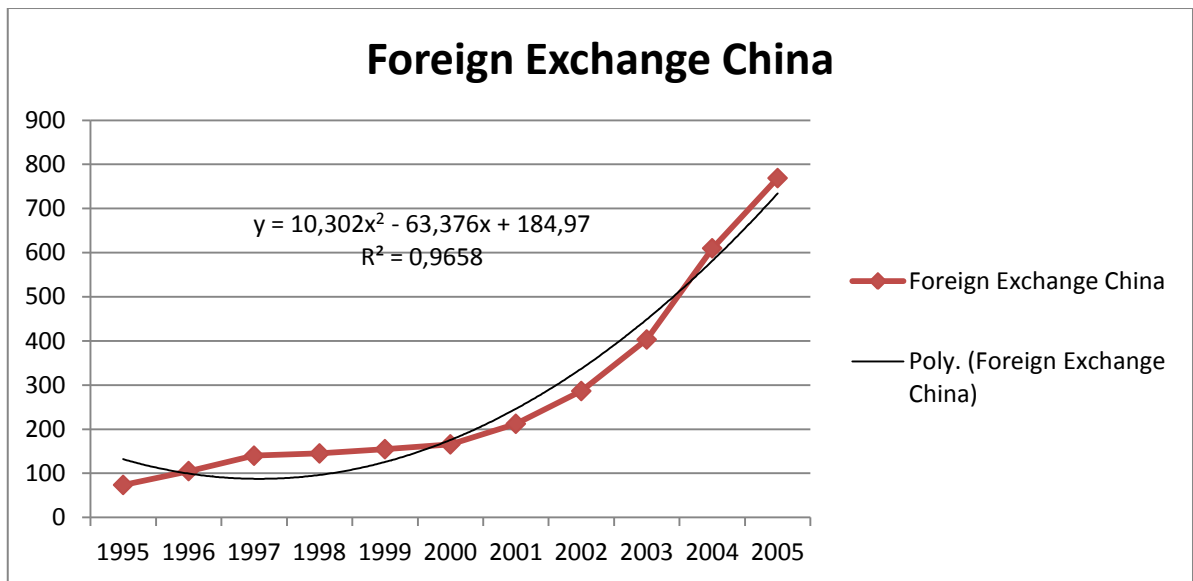
<b>Year</b>	<b>Foreign Exchange Reserves China \$US billions</b>	<b>Rate of change</b>
1995	73,6	-
1996	105	29,9047619
1997	139,9	24,94639028
1998	145	3,517241379
1999	154,7	6,270200388
2000	165,6	6,582125604
2001	212,2	21,9604147
2002	286,4	25,90782123
2003	403,2	28,96825397
2004	609,9	33,89080177
2005	769	20,68920676

*Source: data from ECB, own calculation*

The table above shows not only the total foreign Exchange reserves, but also rate of change in their accumulation. It is obvious that the rate has been declining from 1996 to 1998 while since then it has been growing at an unprecedented rate maximized in 2004 at 33%.

The foreign exchange reserves of China are also graphed in the following figure.

**Figure 1: Foreign exchange reserves of China**



*Source: data from ECB, own calculation*

The polynomial trend is picking up a decline that has been described above as well as the growth that has followed.

It can be described by the equation:

$$y = 10,302x^2 - 63,376x + 184,97$$

While it described the data with the coefficient of determination of 0.97 implying that the fit is almost perfect.

Given the total amount of reserves in 2012 from the table 1 it can be implied that the rate of accumulation has even accelerated yielding the foreign exchange reserves in 2012 of more than 3 trillion \$USD.

#### 4.1.2 The foreign exchange reserves of Euro zone

It the next table 3 and figure 2, the foreign exchange reserves of Euro zone are analyzed.

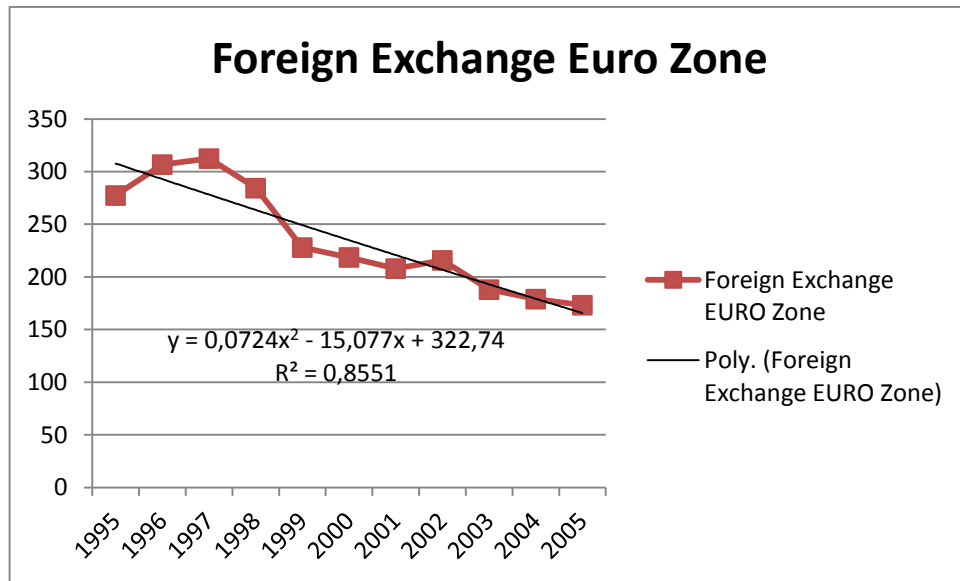
**Table 3: Foreign exchange reserves of Euro zone**

<b>Year</b>	<b>Foreign Exchange Euro Zone \$US billions</b>	<b>Rate of change</b>
1995	277,4	-
1996	306,8	9,582790091
1997	312,5	1,824
1998	284,4	-9,88045007
1999	228	-24,73684211
2000	218,6	-4,300091491
2001	208	-5,096153846
2002	215,8	3,614457831
2003	188	-14,78723404
2004	179	-5,027932961
2005	173,2	-3,348729792

*Source: data from ECB, own calculation*

Here, the differences from the Chinese reserves are appealing. While in China the foreign exchange reserves are constantly growing while the rate of growth has also an increasing tendency, the foreign exchange reserves of Euro zone are not only growing at a lower rate for the first three years but also they are going down absolutely with the largest drop being observed for the year 1994. This is also showed graphically on the following figure 2. However, from the TABLE 3 that shows the status of foreign exchange in 2012, it is obvious that this trend has stopped and has been reversed by the accumulation of reserves with the absolute value has more than quadrupled between 2005 and 2012.

Figure 2: Foreign exchange reserves of Euro zone



Source: data from ECB, own calculation

This has clear implications for the monetary policies that can be triggered by the ECB as it does have significantly less means for interventions into the foreign exchange market in order to appreciate the currency. But as was already mentioned in the literature review this is rarely the case for the period following 2010 when governments try to artificially lower the exchange rate of their domestic currency also known as currency wars.

It can also be described by the equation:

$$y = 0,0724x^2 - 15,077x + 322,74$$

And the coefficient of determination of 0,85 which shows that there is a slight deflection.

### 4.1.3 The foreign exchange reserves of Japan

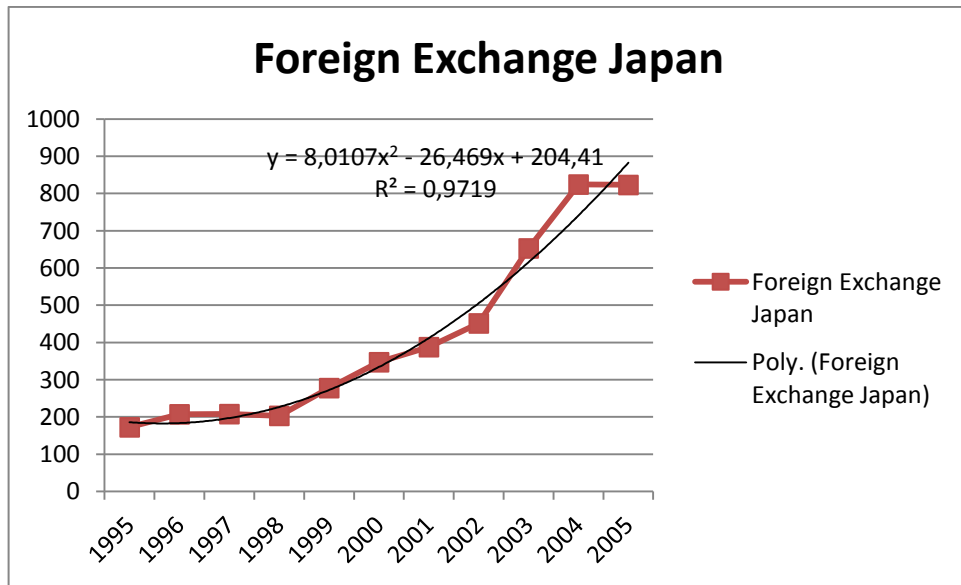
Table 4: Foreign exchange reserves of Japan

Year	Foreign Exchange Japan \$US billions	Rate of change
1995	172,4	-
1996	207,3	16,8355041
1997	207,9	0,288600289
1998	203,2	-2,312992126
1999	277,7	26,8275117
2000	347,2	20,01728111
2001	387,7	10,44622131
2002	451,4	14,11165264
2003	652,8	30,85171569
2004	824,3	20,80553197
2005	823,1	-0,145790305

*Source: data from ECB, own calculation*

The foreign exchange reserves of Japan were fluently accumulating, as shows the table above and the figure below. There was a stagnation in 2005, when the huge raise of reserves accumulation stopped. Since 1995 till 2004 the foreign exchange reserves had increased its value by almost 500%. The biggest rate accumulation was noticed in 2003, when the rate was maximized by 30%.

Figure 3: Foreign exchange



Source: data from ECB, own calculation

This can be also seen in the graph that shows a clear upward trend for accumulation of foreign exchange reserves in Japan but for the last period (2005). From the table 1 it is clear that the trend has slowed down as in 2012 the foreign exchange reserves are below \$1 trillion which is relatively close to US \$823 billion for 2005.

It can also be described by the equation:

$$y = 8,0107x^2 - 26,469x + 204,41$$

The data were described with the coefficient of determination of 0.97 implying that the fit is almost perfect as well as in the case of China.

#### 4.1.4 The foreign exchange reserves of Great Britain

In the Table 5 below, foreign exchange reserves of Great Britain are presented.

Table 5: Foreign exchange reserves of Great Britain

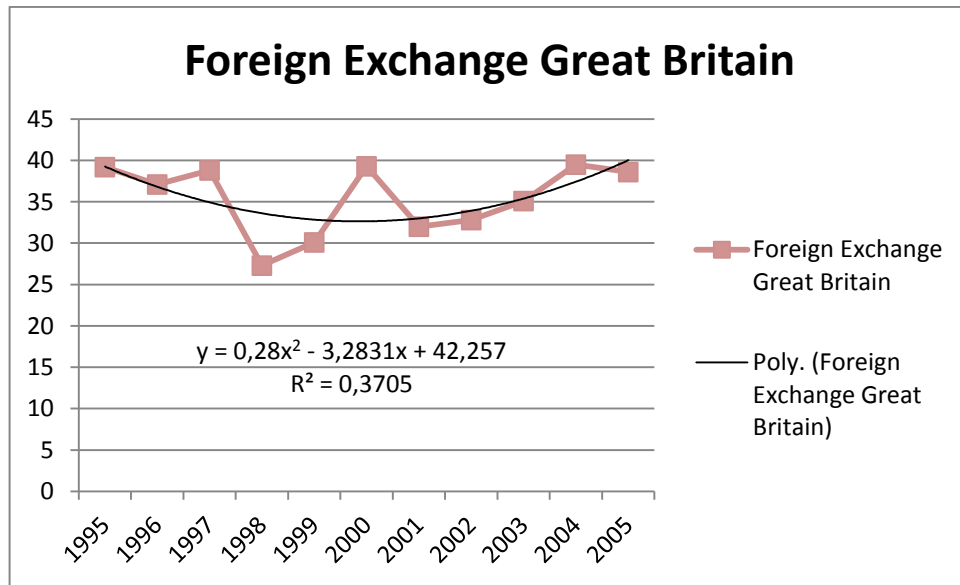
Year	Foreign Exchange GBP	Rate of change
1995	39,2	-
1996	37,1	-5,660377358
1997	38,8	4,381443299
1998	27,3	-42,12454212
1999	30,1	9,302325581
2000	39,3	23,40966921
2001	32	-22,8125
2002	32,8	2,43902439
2003	35,1	6,552706553
2004	39,5	11,13924051
2005	38,6	-2,331606218

*Source: data from ECB, own calculation*

It is obvious that Great Britain is the weakest member among analyzed countries. In measured periods the amount of foreign exchange reserves did not exceed the value of 40 trillion \$ USD. However, since 2005 the accumulation have been increasing, therefore in 2012 according to the recent ranking Great Britain holds approximately 134 trillion \$USD.



Figure 4: Foreign exchange reserves of Great Britain



Source: data from ECB, own calculation

The graph shows pretty constant accumulation of foreign exchange reserves with the polynomial trend of  $y = 0.28x^2 - 3.283x + 42.25$  with relatively low coefficient of determination and this functional form does not seem to be suitable for the available data.

#### 4.1.5 The foreign exchange reserves of USA

In the Table 5 below, foreign exchange reserves of Great Britain are presented.

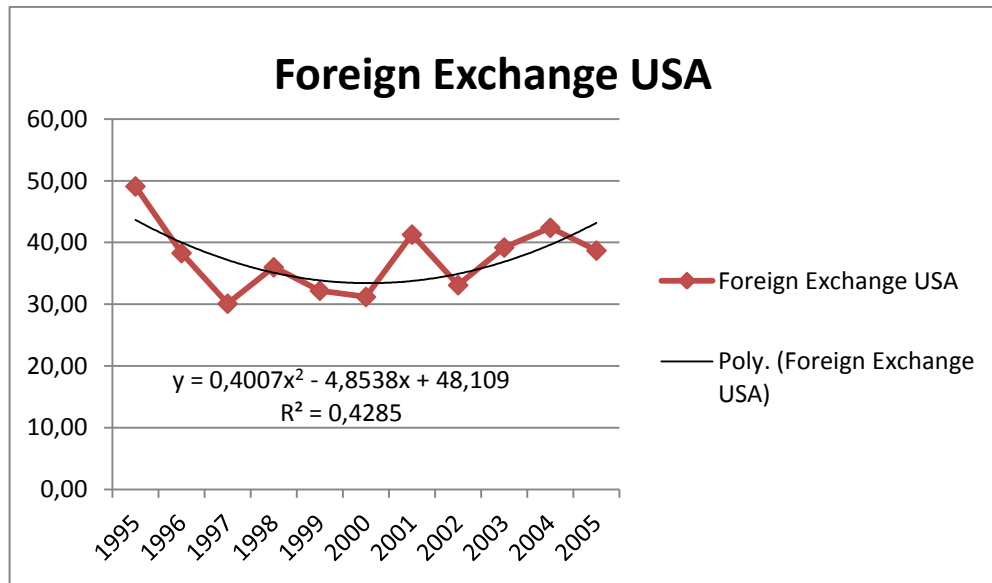
**Table 6: Foreign exchange reserves of USA**

<b>Foreign Exchange Reserves USA</b>	<b>Year</b>	<b>Rate of change</b>
49,10	1995	-
38,30	1996	-28,19843342
30,10	1997	-27,24252492
36,00	1998	16,38888889
32,20	1999	-11,80124224
31,20	2000	-3,205128205
41,30	2001	24,45520581
33,10	2002	-24,7734139
39,20	2003	15,56122449
42,40	2004	7,547169811
38,70	2005	-9,560723514

*Source: data from ECB, own calculation*

From the table below there is possible to see that the foreign exchange reserves in the US are similar as in Great Britain. From 1996 till 2005 the accumulation of reserves was practically was practically zero. However, the accumulation since 2005 till 2012 was noticeable, according to the actual foreign exchange reserves.

Figure 5 Foreign exchange reserves USA



Source: data from ECB, own calculation

The graph shows almost constant accumulation of foreign exchange reserves with the polynomial trend of  $y = 0,4007x^2 - 4,8538x + 48,109$  with relatively low coefficient of determination and this functional form does not seem to be suitable for the available data.

#### SUMMARY OF THIS SECTION

This section can be summarized as follows. The trend in the accumulation of foreign Exchange reserves between 1995 and 2005 is different for different countries, however, some similarities may be observed. Firstly, accumulation of foreign Exchange in US and UK is on a very similar level. In China, Euro zone and Japan the accumulation since 1995 is obviously upward, therefore these superpowers belong to the top of the foreign exchange reserves ranking.

Finally, it is important to mention that the effects of accumulation of foreign Exchange reserves plays a diminishing role in the clash of currencies as it gives little ability to depreciate (devalue) Exchange rate of own currency which is done by 1) direct intervention (selling own currency); 2) policies of quantitative easing; 3) announcements against speculators. However, from the long-term perspective, high accumulation of foreign Exchange

reserves may provide a competitive advantage for governments and their respective central banks.

## 4.2 Analysis of bank intervention

In the following sections both successful and unsuccessful bank intervention are analyzed for each of the analyzed countries (USA, Euro zone, Great Britain, Japan, China)

### 4.2.1 US Federal reserves intervention

Federal Reserve System in the role of the emission institute together with Federal Reserve Bank of NY and US Treasury started with intervention of exchange rate recently. During 8 various days in 1995 and only twice since August 1995 until December 2006. The last one is shown on the figure below. It is obvious that the intervention was lead by selling of USD paper bills, therefore currencies of countries which were bound to USD were affected by the depreciation of their exchange rate, including the JPY as the figure shows.

Figure 6: Intervention of Federal Reserve System



Source: [google.com/finance](http://google.com/finance), own processing

### **4.2.2 ECB intervention**

In the figure below the intervention of ECB from the February 2013 is shown. The exchange rate of Euro was strongly appreciating against the dollar. However, the value of the exchange rate of EUR against USD should be a temporary matter according to results of interventions made by ECB in last few years. The development of exchange rate relationship between USD and EUR is dependent on possible further free emissions of American bills from decision of FED, printed against the will of US government.

As this is the most recent case of central bank intervention, it is analyzed more thoroughly. Several technical indicators are used to analyze the movement of EURUSD exchange rate for this period. Firstly, moving averages are deployed. This is an indicator that is frequently used in technical analysis showing the average value of a security's price over a set period. Moving averages are generally used to measure momentum and define areas of possible support and resistance. The moving average used in its simple form as SMA 20 and SMA5 does not provide for the analyzed timeframe any significant signal even though before the intervention, the fast moving average is getting almost to the slow moving average. INVESTOPEDIA The crossover from 1.3445 to 1.3490 can be interpreted as the tendency for euro to appreciate against the US dollar with the peak showing a long shadow thus meaning a clear bullish signal. After that the EURO depreciates to new low of 1.3428 and continues to do so until reaching a bottom at 1.3323 most likely following the successful intervention of ECB.

Figure 7: Appreciation of EUR against USD during the ECB intervention



Source: Investing.com, own processing

Other indicator used for the analysis, are the Bollinger bands. The Bollinger bands is a band plotted by two standard deviations away from a simple moving average, developed by famous technical trader John Bollinger. Because standard deviation is a measure of volatility, Bollinger Bands adjust themselves to the market conditions. When the markets become more volatile, the bands widen (move further away from the average), and during less volatile periods, the bands contract (move closer to the average). The tightening of the bands is often used by technical traders as an early indication that the volatility is about to increase sharply.

Preceding the intervention. This signal does not give any clues to the future movement of EURUSD. It is wide and following the intervention the price oscillates in between.

**Figure 8: Effectiveness of the ECB intervention**



*Source: Investing.com, own processing*

After the intervention on February 20, the exchange rate seems to recover and so, it can be concluded that the impact was not long-term effective. This is apparent from all technical indicators. Bollinger bands are starting to contract by the end of February 19 while it goes apart thus leaving low certainty to the future movement of the exchange rate. However, this is signaling that a change is about to happen in the market.

In terms of the moving averages, by the end of the observed period, the fast moving SMA5 is again making a crossover with SMA20 thus showing a signal for EUR to ap-

preciate despite the previous intervention of ECB. This is indicating that the intervention may not have worked in the longer time period while giving a short break to EUR appreciation tendency.

### **4.2.3 GBP intervention**

In the graph below, verbal intervention of ECB President Mario Draghi is analyzed using the main tools of technical analysis of moving average and Bollinger bands. The Figure shows evolution of EURGBP exchange rate for the period when the ECB president proclaimed that pulled off quite a feat at [Thursday's] ECB press conference. He managed to talk down the euro while talking up the euro zone.

First, the graph showing the Bollinger bands is presented. In this Figure the relative inactivity preceding the President's statement is obvious while as the announcement is made, Bollinger bands go wide apart showing relative instability in the market



Figure 9: Bollinger bands of EUR/USD



Source: Investing.com, own processing

In the second graph, moving average analysis is conducted using again SMA5 and SMA20 thus reflecting short-run and long-run trends in the market.

Figure 10: Moving average analysis of EUR/USD



Source: Investing.com, own processing

Surprisingly, this graph shows that closely preceding the announcement of Mario Draghi, the fast moving average crosses the slow moving average and thus indicates a sell signal. Nonetheless, the announcement does not endure for a long period of time. After stabilizing at 0.846, the EUR appreciates and very quickly reaches the pre-announcement levels of 0.87. This can be explained by expectations of traders who may have assumed that the announcement may be realized by some of the ECB tools.

#### 4.2.4 JPY intervention

The Japanese yen has been appreciating against US dollar and many other currencies for the period of three years. From the end of June 2007 to the middle of September 2010, the yen appreciated from ¥100 = \$0.81 to ¥100 = \$1.20 (a 48% appreciation). Over the same period the yen exchange rate index rose from 113.2 to 172.3 (a 51% appreciation). The rising yen has been impeding Japan's recovery as it has made its exports more expensive, while, at the same time, making imports cheaper and thus making it harder for domestic firms to compete.

Until 14 September 2010, the Japanese Yen was freely floating. But on 15 September, the Japanese central bank decided to intervene by selling yen and buying dollars and other stable currencies. This has, however, not worked as expected as yen has not depreciated immediately but more or less its depreciation has been lagged by some day. Speculators, nonetheless determined that the Japanese Central Bank is willing to fight in order to keep yen low.

Figure 11: Japanese Central Bank intervention



Source: google.com/finance, own processing

### 4.2.5 YUAN intervention

No data are available for bank interventions. However, in 2005, the Yuan was pegged at \$0.12 (\$1 = ¥8.28). In July 2005 the peg was relaxed and the Yuan has appreciated. By mid-December 2010, the Yuan was trading at \$0.15 (\$1 = ¥6.66) – a 25% appreciation since 2005. In real terms the appreciation has been greater. Chinese inflation is above US inflation. Latest figures for Chinese inflation show consumer prices rising by an annual rate of 5.1%. This compares with 1.2% in the USA. This makes the real appreciation greater.

## 4.3 Correlation analysis

The last analytical section deals with correlation analysis of individual major pairs that may inflict to what degree relationships among individual currency pairs exist and hence point us whether an action of individual central bank can have impact upon all other markets of related currencies.

### 4.3.1 How Correlation Coefficients are calculated

The correlation coefficient for two exchange rates is calculated using the following formula for the period of last 52 weeks

$$\text{Correlation Coefficient} = \frac{SS_{xy}}{\sqrt{SS_{xx}SS_{yy}}}$$

Where:

$$SS_{xy} = \sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})$$

$$SS_{xx} = \sum_{i=1}^n (x_i - \bar{x})^2$$

$$SS_{yy} = \sum_{i=1}^n (y_i - \bar{y})^2$$

The following tables represent the **correlation between the various parities of the foreign exchange market.**

The correlation coefficient highlights the similarity of the movements between two parities.

If the correlation is high (above 80) and positive then the currencies move in the same way.

If the correlation is high (above 80) and negative then the currencies move in the opposite way.

If the correlation is low (below 60) then the currencies don't move in the same way.

#### 4.3.2 Weekly correlation for the last one year

**Table 7: Correlation analysis of individual major pairs**

	EUR/GBP	EUR/JPY	EUR/USD	GBP/USD	USD/CNY	USD/JPY
EUR/GBP	100	87.4	24	-82.6	5.2	92.9
EUR/JPY	87.4	100	59.5	-50.1	-7.4	85.6
EUR/USD	24	59.5	100	34.8	-23.8	9.3
GBP/USD	-82.6	-50.1	34.8	100	-18.6	-84.5
USD/CNY	5.2	-7.4	-23.8	-18.6	100	5.2
USD/JPY	92.9	85.6	9.3	-84.5	5.2	100

*Source: own calculation*

The levels of correlation are as follows: highest correlation exists between USD/JPY (92.9). In terms of influence of Chinese policy that can be observed for USD/CNY the largest influence is exercised upon EUR/USD (-23.8).

List of positive correlation ranking

92.9 (USD/JPY-EUR/GBP)

87.4 (EUR/JPY-EUR/GBP)

85.6 (USD/JPY-EUR/JPY)

59.5 (EUR/USD-EUR/JPY)

34.8 (GBP/USD-EUR/USD)

24 (EUR/USD-EUR/GBP)

9.3 (USD/JPY-EUR/USD)

5.2 (USD/JPY-USD/CNY)

List of negative correlation ranking

-84.5 (GBP/USD-USD/JPY)

-82.6 (GBP/USD-EUR/GBP)

-50.1 (EUR/JPY-GBP/USD)

-23.8 (USD/CNY-EUR/USD)

-18.6 (GBP/USD-USD/CNY)

-7.4 (USD/CNY-EUR/JPY)

## 5 CONCLUSIONS

In this thesis, evaluation of main global currencies clash is provided.

The results of this thesis provide interesting and important insight into the position of global currencies. Analysis of foreign exchange reserves shows dominant position of China that has accumulated over the last 20 years more than 3200 billions \$. The second largest foreign exchange can be attributed to Japan that has however only one third. The rate of accumulation is confirming this trend with China clearly leading and accelerating accumulation of foreign exchange reserves. The position of US and UK seems to be on a similar level both in terms of rate of change and total reserves that account in 2012 for roughly \$150 billion US.

The analysis of direct central bank intervention shows that the interventions have an impact that is, however, relatively quickly offset by the ongoing previous trend. The analysis shows that the intervention may be in some cases preceded by technical signals in the same direction as shows the example of intervention of ECB against GBP. Furthermore, the interventions may be a defining element in further development of currency exchange rate as shows the example of expectations of traders for the ECB to step in and bring into practice so far only verbally proclaimed intentions.

The correlation analysis in the last section of practical part of this bachelor thesis shows levels of correlation among major global currencies. This has important implications as actions of one country (respectively its government or central bank) may have different effect upon the highly and lowly correlated currencies. So, for example, actions related to EUR/USD have relatively largest impact upon USD/JPY while USD/JPY has little significance upon USD/CNY.

The study of currencies clash as introduced in this thesis, demonstrated by the three particular assessments does not aspire to wholesome and full analysis of this phenomenon. Nonetheless, this brief evaluation provides insightful view of some aspects of this currencies clash and may help governments and policy makers in respective countries to better target forex markets and propose more effective policy responses to actions of their counterparties.

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