

Czech University of Life Sciences Prague
Faculty of Economics and Management
Department of Economics



Diploma Thesis

Foreign exchange market
and bank interventions

Alexander Dildin

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Alexander Dildin

Business Administration

Thesis title

Foreign exchange market and bank interventions

Objectives of thesis

The aim of the thesis is the evaluation of bank interventions in the foreign exchange market

In accordance with the intended purpose, it is necessary to solve following tasks:

- To determine which currencies and how are affected by bank interventions
- To characterize these interventions
- Evaluate these interventions using fundamental and technical analysis

Methodology

Literature review is done using methods of synthesis, abstraction, extraction, deduction and induction. Data is obtained using methods of data mining. Analysis is done using methods of both fundamental and technical analysis such as moving averages, oscillators, determinants of market etc.

The proposed extent of the thesis

60 pages

Keywords

forex, foreign exchange market, forex instruments and mechanisms, forex rates

Recommended information sources

Lien, K. (2006). Day Trading the Currency Market. Hoboken, New Jersey, USA: John Wiley & Sons, Inc.

Luca, C. (2007). Trading in the Global Currency Markets. New-York: Penguin Group.

Schwager, J. D. (2012). Market Wizards, Updated: Interviews With Top Traders. Hoboken, New Jersey: John Wiley & Sons, Inc.

Tharp, V. (2007). Trade Your Way to Financial Freedom. New-York: McGraw-Hill.

Expected date of thesis defence

2015/16 SS – FEM

The Diploma Thesis Supervisor

Ing. Petr Procházka, Ph.D., MSc

Supervising department

Department of Economics

Electronic approval: 20. 11. 2015

prof. Ing. Miroslav Svatoš, CSc.

Head of department

Electronic approval: 20. 11. 2015

Ing. Martin Pelikán, Ph.D.

Dean

Prague on 22. 03. 2016

Declaration

I declare that I have worked on my diploma thesis titled " Foreign exchange market and bank interventions" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 11.04.2016

Acknowledgement

I would like to thank my supervisor Ing. Petr Procházka, MSc, Ph. D. for his patience, helpfulness and valuable advices. I also would like to thank Ing. Andrej Mende for his support and practical help during diploma thesis writing. This thesis would not have been possible without the guidance and advice from my groupmates who study with me at the Czech University of Life Sciences on the Master in Business Administration program.

Devizový trh a bankovní intervence

Souhrn

Cílem této diplomové práce je oceňování bankovních intervencí na devizovém trhu. Jinými slovy, najít a ocenit případy na devizovém trhu, kdy určitá míra měny ovlivňovala činnost centrální banky.

Práce je rozdělena na 2 části. Za prvé, teoretická část, která stanoví základní pojmy o devizovém trhu a způsoby vlivu na směnečný kurz ze strany centrálních bank, významnost devizového trhu a směnečného kurzu. Zvažování účastníci na devizovém trhu a terminologie bylo použité v praktické části práce.

Druhá část obsahuje praktické příklady činnosti banků a charakterizuje je při pomoci fundamentální a technické analýzy. Cílem této části je, za prvé, zjistit dnešní vliv intervencí banků na trhu Forex, a za druhé, porovnat je mezi sebou a ocenit význam intervence pro devizový trh.

Klíčová slova: Forex, devizový trh, forexovy nástroje a mechanismy, forexový kurz, intervence centrální banky

Foreign exchange market and bank interventions

Summary

The goal of this master thesis is evaluation of bank interventions in the foreign exchange market. In other words, to find and evaluate cases in the history of the foreign exchange market when a particular currency rate was affected by the actions of the Central Bank of one or another country.

The thesis is divided into two parts. Firstly, the theoretical section introduces and defines the basic terms about the foreign exchange market and mechanisms of influence on the currency exchange rate by Central Banks, the importance and the meaning of the foreign exchange market and the currency exchange rate in particular. Market participants and the terminology that was considered in first part are used in the analysis in second part of the work.

The second, the practical section provides practical examples of Bank interventions and characterize them by the evaluation of these interventions using fundamental and technical analysis. The aim of this section is firstly to find out whether today's Bank interventions into the Forex market are significant, secondly to compare them between each other and at third to evaluate impact from these interventions on currency pairs and whole foreign exchange market.

Keywords: forex, foreign exchange market, forex instruments and mechanisms, forex rates, central bank intervention

Table of Contents

Table of Contents	8
List of Figures	10
List of Abbreviations	12
1. INTRODUCTION	13
2. THESIS OBJECTIVES AND METHODOLOGY	15
2.1 Objectives	15
2.2 Methodology	15
3. LITERATURE REVIEW	16
3.1 Forex	16
3.2 Exchange rate	17
3.2.1 Exchange rate - definition	17
3.2.3 Factors affecting the exchange rate	20
3.3 Currency interventions of the Central Banks	25
3.3.1 Currency interventions - definition	25
3.3.2 The purpose of foreign exchange intervention	25
3.3.3 The mechanism of currency interventions	26
3.3.4 Types of foreign exchange intervention	26
3.3.6 The effectiveness of foreign exchange intervention	28
3.3.7 The volume of currency interventions	29
3.3.8 Point of attention when foreign exchange interventions	29
3.4 The impact of intervention on foreign exchange markets	29
3.5 Foreign exchange intervention as a source of profit	32
4. ANALYTICAL PART	34
4.1 Currency interventions by the Swiss National Bank	34
4.1.1 Intervention in 2011	34

4.1.2 Swiss franc against the Euro 2013	43
4.2 Currency interventions by the Bank of Japan	45
4.2.1 Unusual currency intervention	45
4.2.2 Verbal currency intervention by the Bank of Japan.....	50
4.3 Currency intervention by the U.S. federal reserve.....	51
4.4 The actions of the Russian Central Bank during the devaluation of the ruble in the years 2014-2015.....	55
5. RESULTS	61
6. CONCLUSION.....	64
7. REFERENCES	65
Books, Magazines and Articles.....	65
Online sources.....	66

List of Figures

Figure 1. The dynamics of the U.S. dollar against the currency of Switzerland (on the weekly chart the pair Dollar/Franc).....	35
Figure 2. The rate of the Euro against the franc (the weekly chart for the currency pair EURCHF).	35
Figure 3. The rate of the Euro against the franc (the weekly chart for the currency pair EURCHF).	36
Figure 4. Dynamics of the dollar of Australia against the franc (weekly chart of AUDCHF pair).....	37
Figure 5. Dynamics of national currency exchange rate Canada against the currencies of Switzerland (the weekly chart of CADCHF pair).....	37
Figure 6. Dynamics of the franc against the Japanese yen (weekly chart the pair CHFJPY). ..	38
Figure 7. The daily chart the currency pair USDCHF.	40
Figure 8. The 4-hour chart of the currency pair US Dollar/Swiss franc.....	40
Figure 9. Hourly chart on the currency pair Dollar/Franc.	41
Figure 10. 30-minute chart on the currency pair US Dollar/Swiss franc.....	42
Figure 11. 15-minute chart on the currency pair USDCHF.....	42
Figure 12. 15-minute chart on the currency pair USDCHF.....	43
Figure 13. The rate of the Euro against the Franc. Daily chart.....	44
Figure 14. Dynamics of the dollar of the United States of America against the Japanese yen. 5-minute chart on the currency pair Dollar/Yen.	46
Figure 15. The dollar against the yen stood in a narrow band within 75 minutes. 1-minute chart on the currency pair Dollar/Yen.	46
Figure 16. The dollar against the yen stood in a narrow band within 75 minutes. 1-minute chart on the currency pair Dollar/Yen.	47
Figure 17. Dynamics of the rate of United States dollar against the Japanese yen during the currency interventions. 15-minute chart on the currency pair Dollar/Yen.	47
Figure 18. Dynamics of the rate of United States dollar against the Japanese yen during the currency interventions. 15-minute chart on the currency pair Dollar/Yen.	48
Figure 19. The dynamics of the U.S. dollar against the Japanese yen during the currency interventions. The hourly chart for the currency pair USDJPY.....	48
Figure 20. Dynamics of the rate of United States dollar against the currencies of Japan during the currency interventions. The 4-hour chart of the currency pair USDJPY.....	49

Figure 21. Dynamics of the dollar of the United States of America against the Japanese yen during the currency interventions. On the daily chart the currency pair USDJPY.....	49
Figure 22. Dynamics of USDJPY after the announcement of the decision of the Bank of Japan 04.04.2013 the hourly chart.	50
Figure 23. Dynamics of EURJPY after the announcement of the decision of the Bank of Japan 04.04.2013 the hourly chart.	51
Figure 24. The rate of the Euro against the United States dollar. 15-minute chart.	52
Figure 25. Dynamics of Australian national currency exchange rate against the dollar of the United States of America. 15-minute chart.....	52
Figure 26. Dynamics of exchange rate of New Zealand currency against the US dollar. 15-minute chart.	53
Figure 27. The dynamics of the pound sterling against the United States dollar. 15-minute chart.	53
Figure 28. Dynamics of the dollar of the United States of America against the franc. 15-minute chart.....	54
Figure 29. The dynamics of the U.S. dollar against the commodity currencies CAD. 15-minute chart.....	54
Figure 30. Dynamics of the rate of United States dollar against the currencies of Japan. 15-minute chart.	55
Figure 31. Russian ruble against U.S. Dollar in December 2015.	56
Figure 32. Dynamics of intervention of the Central Bank of the Russian Federation (in dollars), data are aggregated at monthly time intervals.	57
Figure 33. Dynamics of intervention of the Central Bank of the Russian Federation (in dollars), data are aggregated in daily intervals.....	58
Figure 34. Dynamics of prices of swaps and trading volume (in dollars) in the swap tools USD_TODTOM. data aggregated at daily intervals.....	60

List of Abbreviations

AUD - Australian Dollar

CAD - Canadian Dollar

CB - Central Bank

CET - Central European Time

CHF - Swiss Franc

ECB - European Central Bank

ETF - Exchange-Traded Fund

EUR - European Union Currency

FOREX - foreign exchange market

FRS - Federal Reserve System of United States banks

FX - foreign exchange market

GBP - Great British Pound

GDP - Gross Domestic Product

GMT - Greenwich Mean Time

JPY - Japanese Yen

LIBOR - London Interbank Offered Rate

NASDAQ - National Association of Securities Dealers Automated Quotations

NYSE - New York Stock Exchange

NZD - New Zealand Dollar

OTC - over-the-counter

REPO - repurchase agreement

USD - United States Dollar

1. INTRODUCTION

"Foreign exchange market" or "Forex/FX" a common name around the world for exchange and trade currency institutions. Forex – OTC market, i.e. the transactions on it are made outside of regulated exchanges and clearing houses. Dealers and Forex market-makers are worldwide around the clock communicate with each other using phones, Internet and Fax connection and thus create a united market (McDermott-Fox, M, 2013).

Over the past few years, currency has become one of the most popular financial instruments. Any other market would not record an increase in trade by 57% in three years. By the end of 2013 was a published study of the Forex market, that held every three years by the Bank for international settlements for Central banks. According to it, foreign exchange trading increased to an average of \$5.3 trillion a day. To put this into perspective, this averages means \$220 billion per hour. The foreign exchange market is largely made up of institutional investors, corporations, governments, commercial banks, central banks, as well as currency speculators. By some estimates, this is approximately 40 times the volume of trade on NYSE and NASDAQ combined. This surge in activity can be attributed to several factors, but the most interesting is the fact that the initial increase in trading volume on the Forex practically coincided with the emergence of individual investors opportunities to buy and sell currency via electronic platforms (Reuters, 2016; Dailyfx.com, 2016).

Main volume of transactions on the foreign exchange market accounts are on banks. Forex is also called interbank market. In the Forex market banks are divided into Central (Reserve) and commercial. The last ones' act as intermediaries between the Central banks and the counterparties of the foreign exchange market. The Central banks on the Forex market does not carry out speculative operations, their main task is to regulate monetary policy.

The main functions of Central banks — the issue of national currency, monetary regulation, the control of credit organizations, banking and the storage of the state reserves and the refinancing of commercial banks. All these actions of Central Bank has a direct impact on Forex, resulting in a change in exchange rates. In this case, the Central Banks in the Forex does not earn, theirs task is to maintain a stable rate of national currency and maintenance necessary for the development of the economy of liquidity in the system. Central banks on Forex can have both a direct and indirect impact (Lien, 2013).

In this thesis work was carried out a comprehensive study of the theoretical components of the currency market, in detail: the principles of work of Forex, laws of functioning and fundamental concepts related to this topic. Special attention was paid to the description of all

market participants of their importance and influence on overall trends. Among market players was highlighted such group as the Central Banks, were examined their functions and a large variety of using tools.

Practical part research based on fundamental analysis of cases where influence by the Central Banks on the Forex market was exceptional or resources spent on the changing market conditions have been extraordinary. Summarizing, it can be said that the most obvious examples from the world practice of interventions were dissected. It should be noted that the selection was made based on the need to consider a greater variety of tools. Thus were detailed analyzed actions of Swiss, Japanese, American and Russian Central Banks.

In the Results section received data from the practical researched were compared and evaluated according to different evaluation criteria, the key of which is the long-term effectiveness of Bank intervention. After a comparative analysis in the results part the final outcome is summarized in the Conclusion chapter. In last chapter are presented the main findings of the study in accordance with the previously presented theoretical framework.

2. THESIS OBJECTIVES AND METHODOLOGY

2.1 Objectives

The aim of the thesis is the evaluation of bank interventions in the foreign exchange market. In accordance with the intended purpose, it is necessary to solve following tasks. The first task is to determine cases, when the Central Bank or Reserve Bank affect the exchange rate, the identification of specific cases in the world economy, to identify the conditions and prerequisites for intervention. The second task is to characterize these interventions, mechanisms of actions and patterns of use. The third task is to evaluate these interventions, to estimate the resources spent in accordance with the received result using fundamental and technical analysis

2.2 Methodology

Literature review was conducted using methods of synthesis, induction, deduction and extraction. In the theoretical part were presented all the terms and definitions relevant to the theme of work and used later in the practical part of the diploma. Starting from the basics of functioning of the Forex market, current situations, mechanisms operating within the market and mechanisms of interaction with the environment, ending the parsing of the notion of intervention in all the possible modifications.

In the practical part presents a qualitative comparative study based on technical data were also used methods of both fundamental and technical analysis such as moving averages, oscillators, determinants of market. The range of the data is from January 1, 2007 until December 31, 2015.

Numeric data were collected from various sources after which they were analyzed and evaluated the tools for comparative evaluation of the currency pairs and statistically analyzed using apps of news resources concentrated around the foreign exchange market. For the evaluation of the obtained data was also used Microsoft Excel. The results were used to explain a particular occurrence. For clarity, the paper presents graphs reflecting the most important, significant, non-trivial and meaningful analysis results.

3. LITERATURE REVIEW

3.1 Forex

Forex - foreign exchange market - the market where one currency is traded for another. This is one of the biggest markets in the world.

Some of the participants in this market are simply seeking to exchange foreign currency on their own, or vice versa. Such participants include, for example, transnational corporations, which must pay wages and other costs in some countries, selling goods to others. However, a large portion of the market consists of currency speculators, who profit from movements in exchange rates, as well as speculators profit when the stock price movements. Currency traders can take advantage of even small fluctuations in exchange rates (Lien, 2013).

In the currency market there are quite a few insider information. Exchange rate fluctuations are typically caused by actual monetary flows as well as expectations of changes of global macroeconomic conditions. Significant news in this area highlights public. At least theoretically, everyone in the world receives the same news at the same time (Jagerson and Hansen, 2011).

Currencies are traded one for another. Each pair of currencies thus constitutes a single instrument and is usually denoted by XXX/YYY, where XXX and YYY is the three-letter currency codes according to ISO 4217. Quote of the form XXX/YYY denotes the price of one unit of currency XXX in units of currency YYY. For example, "EUR/USD = 1,2045" — price of the Euro expressed in US dollars, 1 Euro = 1,2045 of US dollar.

Unlike stock and futures exchanges, the foreign exchange market — indeed an interbank, over-the-counter market (OTC), which means no single universal exchange for trading certain currency pairs. The foreign exchange market operates 24 hours a day during the working week — private traders trade with Forex brokers, brokers with banks and banks trading among themselves. If the Asian session ends, the European session begins, and then American. So all world currencies can be continually in the process of active trading. Traders can react to news when they appear, instead of waiting for the market to open, as it happens with many other financial instruments (Lien, 2013).

3.2 Exchange rate

3.2.1 Exchange rate - definition

Exchange rate — the price (quote) of the currency of one country expressed in the currency of the other country, precious metals, securities.

The concept of "exchange" is associated with such characteristics as convertibility. The degree of convertibility of the currency is determined by the mechanism of state regulation of foreign exchange transactions. The currency is called convertible if the country of that currency to residents and non-residents do not apply any restrictions on foreign-exchange transactions and non-convertible, if the country of that currency unit have statutory restrictions almost all types of operations with it. The partially convertible currency is considered to be in the countries where there are restrictions on some kinds of exchange transactions or for some participants of these operations. Freedom of currency conversion should be based on the economic stability of the country, that is legislative solution to the exchange is insufficient confidence in the currency and evaluation of the economic viability of the country. Thus, convertibility is the ability of a currency to freely exchange into other currencies and returning to the national currency in the foreign exchange markets (Tharp, 2007).

Convertible currencies in the course of the currency parity. However, exchange rates are almost never the same with their currency parity. In terms of international trade and other external economic operations the ratio of receipts and payments in foreign currency and, accordingly, the demand and supply of foreign exchange is not in equilibrium. The active balance of payments foreign exchange rates on the currency market of the country are falling, and the rate of national monetary unit increases. The reverse occurs when the country has a passive balance of payments. Because of it in most countries, together with rigid official exchange rate of the national currency also exists free. According to the official parity calculations are carried out for the national Central banks and other monetary institutions across countries and with international organizations. The settlements between individuals and organizations are carried out on free rate (Aizenman & Glick, 2009).

Fixing the exchange rate is carried out according to the gold parity (guaranteed gold contents of national monetary unit), or by international treaty. Under the classical gold standard, that is, when free exchange of currencies for gold at the Central Bank, the exchange rate is set in proportion to its gold content.

In varying degrees, the government sets of the official exchange rates are regularly published in special bulletins (Lien, 2013).

Fixation of the national currency in foreign currency is called the financial quote. Taken to distinguish between direct and inverse (indirect) quotation. Direct quotation is the price of foreign currency, prevailing on the national market. It shows the number of the currency-meter exchange per unit of the quoted currency. Reverse (indirect) quotation reflects the number of units of the quoted currency per unit of currency-meter. The exchange rate of one currency against another can be determined also through a third currency. In this case, it is called the cross rate. The need for quotes arises in cases where the volume of direct exchange transactions between two currencies is relatively small and, therefore, does not add up sufficiently representative direct quotations. In addition, even in the presence of reliable direct quotations, the calculation of the cross rate may give slightly different value of course. When monitoring the level of the exchange rate is fixed with two courses:

- The course of the seller (ask, under which the Bank sells foreign currency);
- The course of the buyer (bid, under which the Bank buys the currency).

They are different, because exchange transactions are treated as means for profit. The difference between these two prices is spread. In many countries, the Central Bank determines the exchange rates of foreign currencies the results of trading on the foreign exchange market using direct quotes (Aizenman & Glick, 2009).

3.2.2 Types of exchange rate

The exchange rate can be classified on various grounds; under which it has multiple differentiation:

By way of fixing, distinguish flexible, floating, fixed exchange rate. According to the method of calculating the highlight parity and the actual exchange rate. By type of transaction, the exchange rate is divided into the course of forward transactions, spot transactions. In relation to the parties to the transaction the currency exchange rate is differentiated on the buying rate, selling rate, average exchange rate, cross rate; inflation distinguish real and nominal exchange rate.

Floating exchange rate is an exchange rate, freely changing under the influence of supply and demand.

Flexible exchange rate provides the link between changes in the market rate with the dynamics of the exchange rate of other countries or currencies and may extend beyond the

limits established by international agreement ("Forex Market Size: A Traders Advantage", 2016).

Fixed – the officially determined ratio between the national currencies, based on legislatively determined currency parities; implies the consolidation of the content of national currency units directly in gold or in convertible currency, with strict restriction of fluctuations of market exchange rates within 1%.

Parity – the settlement rate in international payment transactions, based on the parity of currencies.

The actual course, covers transactions of sale and purchase.

The rate of term transactions is the foreign exchange rate used for currency operations for a period.

The spot rate trades by market prices on a cash deal.

The rate of purchase (the buyer) is the price that willing to pay customers.

The course of sale (seller) – the lowest price at which a buyer is willing to make a deal.

Average rate is the arithmetic mean between the rates of purchase and sale.

Cross rate – the ratio between two currencies, calculated on the basis of exchange rate of these currencies against a third currency mainly against the US dollar.

There are basic foreign exchange rate regimes: free float; managed float; the system of fixed rates; target zones; hybrid systems (Basu, 2012).

So, in the system of free floating exchange rate is influenced by market demand and market supply. Foreign exchange market closest to the market model of perfect competition: number of participants both on the demand side and the supply side is huge, any information transmitted in the system and instantly available to all market participants, distorting the role of the Central banks is insignificant and impermanent (Klein and Shambaugh, 2010).

In the system of managing floating, except a supply and demand, on the value of the exchange rate has a strong influence Central banks and other temporal distortions.

An example of a fixed exchange rate system can serve as the Bretton woods monetary system of 1944 to 1971 It courses of all currencies were fixed to the dollar with a fluctuation limit of +/-1%. The dollar in turn was tied to gold: \$ 35. USA = 1 Troy ounce of gold.

A system of target zones develops the idea of fixed exchange rates, through sets the lower and upper bounds of the course. This system is called currency corridor. An example would be the mode of operation of the currencies of the countries participating in the European monetary system.

Finally, a hybrid currency system combines any of the above mentioned exchange-rate regimes (Jagerson & Hansen, 2011).

3.2.3 Factors affecting the exchange rate

A system of target zones develops the idea of fixed exchange rates, but this sets the lower and upper bounds of the course. This system is called currency corridor. An example would be the mode of operation of the currencies of the countries participating in the European monetary system (Lien, 2013).

- a) The trade balance of the state. That is, the ratio of export and import operations. The export of goods and services the country receives foreign exchange earnings, while imports from the country, on the contrary, out of foreign currency. Therefore, if the trade balance is negative, biased towards imports (the country imports more than it exports), it always puts pressure on the national currency, its exchange rate decreases, since the country has a deficit of foreign currency. Conversely, when the trade balance is positive, shifted to the party of export (the country exports more than it imports); the rate of the national currency always strengthens as the foreign currency in the country in abundance. However, the positive trade balance is not always good, especially if it balances (the difference between exports and imports) is very high. The overvalued currency of the country is as bad as understated, and maybe even worse. Indeed, in this case increasing the cost of goods, and they become less competitive in foreign markets. In such a situation the country's Central Bank, takes actions aimed not at the strengthening of, but at the depreciation of the national currency. The trade balance is one of the key factors influencing the exchange rate. Ideally, the trade balance of the country should be close to zero (i.e. exports should be approximately equal to imports) – in this case the exchange rate will be the most stable (Jagerson & Hansen, 2011).
- b) Macroeconomic indicators of the country. Such as inflation, unemployment, gross domestic product, etc. In each country are calculated important indicators, but the main one is always similar. All these data characterize their directions of development of the state's economy and have an impact on the exchange rate. For example, high inflation and unemployment always has a negative impact on the

national currency exchange rate, and output growth – on the contrary, supports and strengthens the national currency.

The exchange rate is influenced by both actual and forecast figures, and especially sudden changes of courses can be seen in the transition out of the measure if the actual value coincided with the forecast.

c) The policy of the Central Bank of the country. This factor is also one of the fundamental. Here it is necessary to consider several courses of action pursued by the Central banks of the States, which have a strong influence on the exchange rate.

- The issue of money. In most cases, the issue stimulates the depreciation of the national currency, because the money supply grows, which means that the value of money falls. But not always: thus, for example, the Federal Reserve system of the USA is almost “without ceasing” is printing new dollars, and they still continue to be the strongest world currency, because there is properly apply other instruments of monetary regulation, restraining the inflation of the dollar (Jagerson & Hansen, 2011).
- Foreign exchange intervention. When the Central Bank needs to strengthen or to weaken the national currency, it conducts currency interventions, i.e., sells or buys on the interbank currency market of the country a large consignment of foreign currency with low or high rate, thereby reducing or increasing its cost. All these happens at the expense of currency reserves of the state, therefore, more foreign exchange reserves of the country - more opportunities for the Central Bank to adjust the exchange rate.

Currency intervention, usually have temporary effect. For permanent strengthening or weakening of the exchange rate will require the impacts of other factors (Basu, 2012).

- Discount rate. Another regulator of the Central Bank – the discount rate or the refinancing rate – the percentage rate at which the Central Bank may issue loans to commercial banks. The lower it is, the more affordable loans, the more loans issued to the economy, the production of goods and services, and hence, the more stable the exchange rate of

the national currency. Practice shows that the countries with the lowest interest rates have the strongest currency in the world (Klein & Shambaugh, 2010).

- Operations with debt obligations. If the Central Bank wants to increase the exchange rate of the national currency, he produces and sells to legal entities and individuals to meet its debt obligations (i.e. bonds of the state, internal loan or Treasury bonds) – securities assuming a fixed income and opportunity to capitalize on the growth of their value. Thus, they withdraw the money supply of the national currency, it becomes less so, its value increases. The yield of such bonds is in direct proportion to how much money the Central Bank plans to collect, and their reliability is guaranteed by the state.

When it is needed to reduce the exchange rate of the national currency, the Central Bank, on the contrary, begins to buy up their obligations, increasing their cost, thereby increasing money supply.

Many of the policy tools of Central banks can influence the exchange rate, even if they don't actually apply, and are so-called “verbal”, that is, voiced only. For example, the Central Bank declares that it intends to conduct a large currency intervention, traders on the markets in expectation of strengthening of the national currency, start buying more and grows in a natural way, even without actually carrying out the intervention (Chutasripanich & Yetman, 2015).

The Central Bank is the body in the state, which is charged with maintaining a stable exchange rate of the national currency, therefore, always has in stock a number of effective levers that applies as necessary and possible.

- Repo auctions. REPO (repurchase agreement) is a transaction in which securities are sold and concurrently is the agreement about them return repurchase at a predetermined price. Reverse repo the purchase of securities with an obligation to sell back.

Thus, the contract is a REPO consists of two transactions: cash transaction of securities today plus the forward contract for the same assets in the future.

From an economic perspective, a REPO is analogous to the lending of securities. In this case the REPO contract removes part of the procedures associated with the use of collateral, such as auctioning in the case of nonpayment of debt, because the rights to the securities already transferred to the lender on the first part of the transaction. The difference in price between buying and selling is a payment for the use of resources is similar to interest payments.

Repos are used by Central Banks to maintain the liquidity of commercial banks. For these purposes, the Bank defines a REPO as "the sale (purchase) of securities with obligation of repurchase (sale) after a certain period at a predetermined price". On the official website of the Central Bank publishes a list of securities that can be used for this kind of operations, as well as the date and outcome of the auctions.

In addition, repos are used in stock trading for broker clients could open a short position, i.e. selling those securities which they do not have in stock. For this bond borrowing through the REPO and selling. After closing the position (repurchase of securities), they are returned to the former owner (typically, the brokerage company), and, thus, closes the second part of the REPO transaction.

Similarly, it is possible to increase the amount of investment in stocks. Suppose an investor buys securities of the Issuer. After that, he sells them in the REPO – at the time. The proceeds again invested in securities of. And if the price grows, the investor earns additional profit. After a certain period, the position on additional purchased securities closes and the money is completed, a REPO transaction is securities bought back ("Understanding repos and the repo markets", 2016).

- d) Large investment projects and foreign trade contracts. Speaking of what determines the exchange rate, it should be noted and, so to speak, future plans of the state that are directly or indirectly related to the inflow or outflow of foreign exchange. Such projects can have an impact on the trade balance, and this is the main factor influencing the exchange rate.

The implementation of major investment projects can be planned as outflow and inflow of currency, large export contracts involve the inflow of foreign exchange

earnings, and imports its outflow. If it is planned (for example, contracts already signed and approved), no further action can affect the exchange rate (Lien, 2013).

- e) Public confidence in the national currency. The extent to which the public trusts their local currency, greatly affects the exchange rate. If people prefer to keep their savings in foreign currency, then, there is always an increased demand, which will have a negative impact on the rate of the national currency. And this demand, if it exists, is very difficult to stop. Even if the Central Bank starts to apply their regulators, for example, restrict the sale of foreign currency, imposes additional fees from these operations, prohibits foreign currency deposits, etc., it often has the opposite effect: starts black currency market, where it sold still more among the people starts to panic, monetary hype, which leads to sharp jumps of the exchange rate.

During the panic always occurs when banks do not sell currency (even with large commissions), to hold a foreign currency position that promotes the black market and inflate the exchange rate to unimaginable limits. All probably occasionally observed a similar situation.

Creating excessive demand for foreign currency, people do provoke its growth. Preferences of the population and panic are very important factors influencing the exchange rate. In some situations, they are even the only! (i.e., other serious preconditions for the growth rate of foreign currency no, but he is growing exclusively because of the panic). As a result, it always leads to the same rapid collapse of the course, and all those who bought the currency on the brink of panic, are in loss.

- f) Currency speculation. Often, the major players in the interbank (or even global) currency market especially “rocking” the exchange rate for the purpose of obtaining speculative earnings. Seeing such a thing in the process can intervene, the Central Bank, imposing certain sanctions on these participants, but this situation is not uncommon, and all who trade on the exchange, probably more than once actually saw her. The so-called “currency swings” can have a big impact on the exchange rate, but it will be short-lived (Klein & Shambaugh, 2010).
- g) Force majeure circumstances. And finally, speaking about the factors affecting the exchange rate force majeure cannot be mentioned. For example, war, serious protest movement, mass strikes, terrorist attacks, etc., also always have a major

impact on the currency of the country in which it occurs. This effect may be short-lived if the circumstance is resolved quickly, and prolonged if it continues for a long time, or led to irreversible consequences in the economy and the financial sector, requires a long recovery. For example, you probably still remember, when on 11 September 2001 in the U.S. there was a major terrorist attack, the dollar exchange rate worldwide fell sharply. However, this decline was short-lived (Devereux and Engel, 2002).

In previous paragraph the main factors influencing the exchange rate only briefly listed, but this information is enough to navigate in currency pricing.

3.3 Currency interventions of the Central Banks

3.3.1 Currency interventions - definition

Currency intervention is one of the instruments of monetary policy of the Central Bank of any state aimed at curbing unwanted falling or strengthening of the national currency, which the Central Bank buys or sell on the open market in large quantities of foreign currency for national, thereby strengthening or down its course.

Central Bank interventions in the foreign exchange market are carried out through the use of foreign exchange reserves: The Central Bank sells or buys the currency, the value of which wants to have an impact (Lien, 2013).

3.3.2 The purpose of foreign exchange intervention

It is not true that the Central Bank conducts foreign exchange interventions only with the purpose of strengthening the national currency. Actually it can be attributed only to developing countries, where national currency devalues mainly. In the world there are countries the opposite problem where may be experienced: the national currency is excessively strengthened, for export-oriented States are always bad. And then the Central Bank conducts foreign exchange intervention to the contrary, to lower the rate of the national currency. For example, such measures in recent years occasionally resorted to the Bank of Japan and Switzerland (Basu & Varoudakis, 2016).

In the world there are also cases when the Central Banks of different countries simultaneously conducted foreign exchange intervention to support the currency of any one

country. For example, this occurred when it was necessary to support the economy of Japan after the earthquake in 2011. When it was necessary to knock down the high yen, and joint efforts for this were done by the Bank of Japan, European Central Bank and the U.S. Federal Reserve (Lien, 2013).

Thus, the main objective of foreign exchange intervention is a change in the value of the national currency, and it can be as towards strengthening and side attenuation. In some cases, interventions are held for the purpose of stabilization policy to stop the decline or strengthening of the national currency (Lien, 2013).

3.3.3 The mechanism of currency interventions

The mechanism of foreign exchange intervention is quite simple. If the Central Bank should strengthen the national currency against foreign – he sells a large batch of foreign currency, thereby undercutting its value. If the exchange rate of the national currency needed to weaken, the Central Bank, by contrast, buys a large batch of foreign currency for national, thereby increasing the rate of foreign currency and reducing the value of the national currency (Pilbeam et al., 2015).

3.3.4 Types of foreign exchange intervention

- a) Verbal intervention. Very often it happens that the Central Bank actually carries out the intervention, and only spreads rumors that he was going to spend it. In some cases, verbal intervention may exert their effect: the currency market participants will adjust their actions with regard to possible intervention, and this will affect the exchange rate in the desired direction (Basu & Varoudakis, 2016).
- b) Real intervention. This is already a direct part of the Central Bank in money market operations with the employment of its financial resources. The actual intervention is also, in turn, can be of two types:
 - A direct intervention. In this case, the Central Bank openly enters the market and performs operations on their behalf, notifying in the official news.
 - Covert intervention. Here the Central Bank acts through agents – commercial banks, without making a show of conducting interventions. Foreign exchange intervention is concealed, as a rule, have a more severe

impact on the market, which is caused by the effect of surprise: traders do not understand what is going on, why the rate starts to change dramatically and psychologically make the operations in the right direction. So to hidden interventions by the Central Bank resorted more often, although then, later, information about the participation of the regulator usually is becoming available (Klein & Shambaugh, 2010).

- c) Concerted intervention. Joint intervention of Central banks - the phenomenon rare on the market and therefore somehow attracts the attention of financial market participants. In a situation when, for any reason, the rate of the national currency becomes too volatile, or deviates strongly from comfortable for the country's values, the country's Central Bank enters the market and adjusts the situation by making foreign exchange interventions. If this is not enough, help can come from colleagues of other countries – in this case joint intervention should be recognized. Concerted intervention involves the concerted action of several countries aimed at increasing or decreasing the exchange rate of any currency by using its reserves.

The success of this intervention depends on the scope (number of involved countries), or from the depths (the cost of the intervention in dollars). Concerted intervention could also be verbal, where officials from several countries together to Express concern about growing declining currency (Pilbeam et al., 2015).

- d) Sterilized intervention. When a Central Bank sterilizes intervention, compensating for these actions by means of monetary policy (open market transactions or changes in the discount rate). When the U.S. Federal reserve was selling dollars for euros to boost the currency on 22 September 2000, it had intended to compensate for the monetary contraction in the US financial markets that would allow them to leave monetary policy unchanged. If the FRS does not sterilize the intervention by reducing the money supply, the market would appear additional inflows that would have an expansive effect on the monetary policy and reduce interest rates. Thus, the sale of dollars for euros with the FRS successfully supported the Euro for some time, while the market impact of short-term capital has remained minimal.

The Central banks usually sterilize the intervention, so as not to jeopardize its domestic monetary policy, increasing (or decreasing) the rate of its currency.

Intervention in the foreign exchange market is carried out without sterilization (or partially sterilized) when action in the foreign exchange market is consistent with monetary and exchange rate policy.

An example of the great intervention on "Agreement, the five countries of the West about the foreign exchange interventions" in September 1985, when members of the Big Seven have United to curb the strong growth of the dollar by selling it against other currencies. This event was a successful, as it was accompanied by appropriate monetary policy in each country. Japan raised short term interest rates by 200 basis points and the rate on three-month Euro – yen reached to 8.25%, making Japanese deposits more attractive than the dollar. Another example of unsterilized intervention is the "Louvre agreement" in 1987, when members of the Big Seven joined together to stop the decline of the dollar. In this case, the FRS has taken a series of increased interest rates by 300 basis points, bringing the rate to 9.25% by September (Devereux and Engel, 2002).

3.3.5 Classification of interventions on the Forex market by the direction

- a) Intervention against the market is an event whose goal is the return rate to the previous level, that is, against the trends that have emerged in the market. Quite often it fails.
- b) Intervention with an action which the change direction of course following the trend that has been on the market (Pilbeam et al., 2015).

3.3.6 The effectiveness of foreign exchange intervention

Central Bank intervention in the foreign exchange market is quite a strong tool to regulate the exchange rate that the Central Bank, usually used in extreme cases. Therefore, on the one hand, their effectiveness can be considered one of the maximum among all the other tools of monetary policy the Central Bank. But, on the other hand, when these “edge cases” occur, it means that the devaluation or excessive strengthening of the national currency are already serious systemic nature, and therefore sometimes the situation can't change even intervention. Thus, the reserve Fund can actually be wasted (Pilbeam et al., 2015).

In any case, if the Central Bank began to conduct foreign exchange intervention, especially when it comes to large volume of interventions – this means that the situation with

the national currency is critical. But the efficiency of interventions depends on the overall policy of the Central Bank and from other fundamental factors affecting the exchange rate

In any case, should be understanding that foreign exchange intervention the Central Bank may hold only for some time until foreign exchange reserves allocated to them will be spent on these operations. If during this period will not occur desirable changes in the exchange rate, it may change in an undesirable direction even stronger (Pilbeam et al., 2015).

3.3.7 The volume of currency interventions

There is great importance of the volumes of currency interventions. Sometimes the Central Bank may hold a small, even imperceptible at first glance intervention, which, however, have a stabilizing effect. In other cases, intervention may be very large, leading to change of the exchange rate, for example, 200-300 points.

The Central Bank determines the optimal volume of FX interventions on the basis of its monetary policy. It is clear that large-scale intervention is always more effective, but, on the other hand, they lead to a substantial drain on the reserves of the state, and the effect they have on the rate of the national currency may be short term: after some time, it returns to previous position (Chutasripanich & Yetman, 2015).

3.3.8 Point of attention when foreign exchange interventions

As noted, often hidden CB conducts intervention, not announcing their conduct and through agent banks. In this case (as, however, and the direct action controller), the conduct of foreign exchange intervention can be seen on the chart of currency pairs, including the national currency of the state.

If there is a clear trend of the movement of the national currency in a certain direction, and then suddenly the course was carried apparent reason begins abruptly, in a short period of time to move in the opposite direction – with a huge more likely to say that the Central Bank intervened (Chutasripanich & Yetman, 2015).

3.4 The impact of intervention on foreign exchange markets

Intervention in the foreign exchange market is the purchase or sale of Central Bank foreign currency with the purpose of partial or full control over the exchange rate of the

country. Central banks of almost all countries in the world with different frequency exercise interventions in the foreign exchange market, regardless of exchange rate regime.

In the case of a fixed exchange rate the Central Bank is obliged to intervene to keep the exchange rate within the range (at that level) that have been installed. In the case of floating exchange rate regime, the Central Bank uses intervention to achieve macroeconomic stabilization through manipulation of the foreign exchange rate.

Ways to achieve macroeconomic stabilization through effects on the exchange rate in different countries and at different periods of history in one country can be diametrically opposed:

- a) In some countries the Central Bank is trying to weaken the domestic currency through an active buy on the foreign exchange market. The most striking example is Japan, where the main concern of the monetary authorities is competitive exports Japanese firms.
- b) In other countries the Central Bank is attempting to strengthen the domestic currency, considering that a strong domestic currency, the prosperity of domestic consumers who pay for imported goods, lower the price. In this case, the Central Bank must sell foreign currency in the market (Pilbeam et al., 2015).

Foreign exchange intervention by the Central Bank conducts its foreign currency reserves. It is known that operations with gold and foreign currency reserves lead to fluctuations in the monetary base of the country: the purchase of foreign currency by the Central Bank leads to an expansion of the monetary base, the sale of foreign currency leads to the contraction of the monetary base in the country. The connection of such money and foreign exchange markets is estimated ambiguously:

- a) From one side this Association enhances the effect of the actions of the Central Bank. For example, if the active Central Bank purchases of foreign currency extra money entering the economy, are beginning to push the interest rate down, which leads to an outflow of part of capital abroad (if possible). The result is additional pressure on the appreciation of the foreign currency, which was achieved by the Central Bank through their actions.
- b) On the other hand, extra money can get to real markets, which will put pressure on prices, leading to the intensification of the inflationary process. Foreign exchange market could create problems in the money market. For example, Russia was faced with this nuisance in 2000-2003.

Before talking about the factors determining successful intervention in the currency market, it is important to define what is "success". So, the Central Bank, which spent about \$5 billion (intervention average) and managed to raise its currency by 2% against other major currencies within 30 minutes, had a successful intervention. However, even if the currency loses some of the gained points in the next two sessions, the Bank's ability to "move" the market provides the Bank with a certain degree of confidence in next time, when verbal intervention will be applied (Carstens, 2013).

The magnitude of the intervention is usually proportional to the resultant movement of the currency. Central banks have substantial foreign exchange reserves (usually in dollars), as a rule, play a Central role in foreign exchange interventions.

The success of the intervention in the foreign exchange market is based on the correct timing of its implementation. The higher the degree of spontaneity of the interventions, the more chances to catch the traders by surprise because of the large influx of orders. On the contrary, when intervention is expected, with the shock easier to handle.

The factor "time" has worked more effectively is best done at a time when the currency is already moving in the desired direction. A huge volume of trading in the Forex market (\$1.5 trillion. a day) just outshine any intervention in the amount of \$3-5 billion Thus, Central Banks should avoid intervention against the market trend, waiting for more convenient moment. As a rule, fertile ground is being prepared with the help of verbal interventions, which sets the tone for a more fruitful outcome.

Sterilization occurs when the Central Banks include monetary policy measures to compensate for their actions in the foreign exchange market. Unsterilized intervention would lead to long-lasting changes in the exchange rate, because their influence is not limited to the actions of the Central Bank in the foreign exchange markets. Thus, sterilized intervention is much less impacted by exchange rates than ordinary unsterilized.

Exchange rates affect the welfare of consumers and firms; the level of exchange rates is the subject of special attention of the creators of the economy. So from time to time, Central banks carried out currency intervention. There are various ways of stabilizing the economy by influencing the exchange rate: the purchase or sale of foreign currency, and this, in turn, is foreign exchange intervention on currency markets (Pilbeam et al., 2015).

3.5 Foreign exchange intervention as a source of profit

In recent years, attention is attracted by an interesting motif of interventions: profit from foreign exchange transactions. Previously, experts believed that the Central Banks losing money on intervention. Now it was discovered that they receive significant revenues, especially under floating exchange rates. However, none of the Central banks that responded to questions, noted the yield as a motive for foreign exchange interventions. However, in private conversations of the person responsible for operations on the open market, referred to as the yield on the intervention criterion of its success (Chutasripanich & Yetman, 2015).

The Reserve Bank of Australia believe that profitable intervention stabilizes the exchange rate. M. Freedman was the first to argue that stabilizing speculation is equivalent to profitable speculation. If speculators buy (sell) a currency when its exchange rate below (above) the equilibrium level, they push the rate to equilibrium and simultaneously receive income from its operations. However, on a practical level the relationship between income and stabilizing intervention looks questionable. Such masters, as a member of the Board of governors of the U.S. Federal reserve S.Salant and former head of the US Treasury L. Summers called the hypothesis of the intervention of the revenue an absurd idea.

To summarize, it should be emphasized that the Central Banks receive significant revenues from foreign exchange interventions, and this yield can be one of the criteria for their success (Tharp, 2007).

3.6 Technical characteristics of interventions

Let me consider some technical characteristics of foreign exchange intervention, in which the heads of Central banks don't like to shed some light.

- a) Frequency interference in the market. The variation in the frequency of use of foreign exchange interventions during the year is very large. The Central banks present it in the market from 0.5% to 40% of the days in a year. Here the arithmetic mean is not meaningful, since the sample was skewed. Apparently, the monetary authorities intervene too often (Jongen, Wolff, Zwinkels & Verschoor, n.d.).
- b) Sterilization. Unfortunately, there is no clear picture on the issue of sterilization of interventions. Those who never resorts to sterilization, there are 30% and those who always reach 40%. 30% of Central banks resort to unsterilized intervention only occasionally.

- c) Counterparty. When conducting operations on the currency market Central banks prefer large national commercial banks as partners on deals. Further, in decreasing order of preference are followed by large foreign commercial and investment banks.
- d) Market intervention. Intervention is almost always carried out on the spot market. Monetary authorities sometimes overlook the forward market and very rarely in the futures (Jongen, Wolff, Zwinkels & Verschoor, n.d.).
- e) Dealing. The most popular method among Central banks traders is direct dealing by phone. Less popular direct dealing with the use of electronic means of communication. Quite a few CB traders appreciate electronic brokerage.
- f) Indirect interventions. 24% of respondents use indirect methods of intervention in the market. Most Central Banks practice change regulatory rules for commercial banks on foreign currency positions and psychological pressure on the foreign exchange market. Indirect methods are in Vogue mainly among the monetary authorities of developing countries with a partially convertible currency (Pilbeam et al., 2015).
- g) The time of the intervention. Most transactions take place within one working day. However, almost half of Central banks sometimes makes intervention even before the official start of trading and half after the auction. The reserve Bank of Australia publicly states when he intends to pursue an intervention outside the normal working day.
- h) The duration of the effect. Finally, the most important question: how successful is intervention, and does it make sense to use them? Report of the Working group for the study of foreign exchange intervention, established with President Ronald Reagan (the so-called Group of Jorgensen), clearly spoke out against any intervention. Later opinion on intervention has changed, and studies 1999-2001 speak in favor of intervention in the market (Tharp, 2007).

4. ANALYTICAL PART

The Analytical part discusses significant examples of Bank interventions happened in the last 10 years. The study examines the characteristics of intervention in each individual case. Analyzes key factors such as interventions rearmost, the tools, the timing of the intervention, the duration and the effectiveness of the intervention. Performance evaluation is performed through currency pairs graphs, but rather by assessing the changes in the exchange rates.

4.1 Currency interventions by the Swiss National Bank

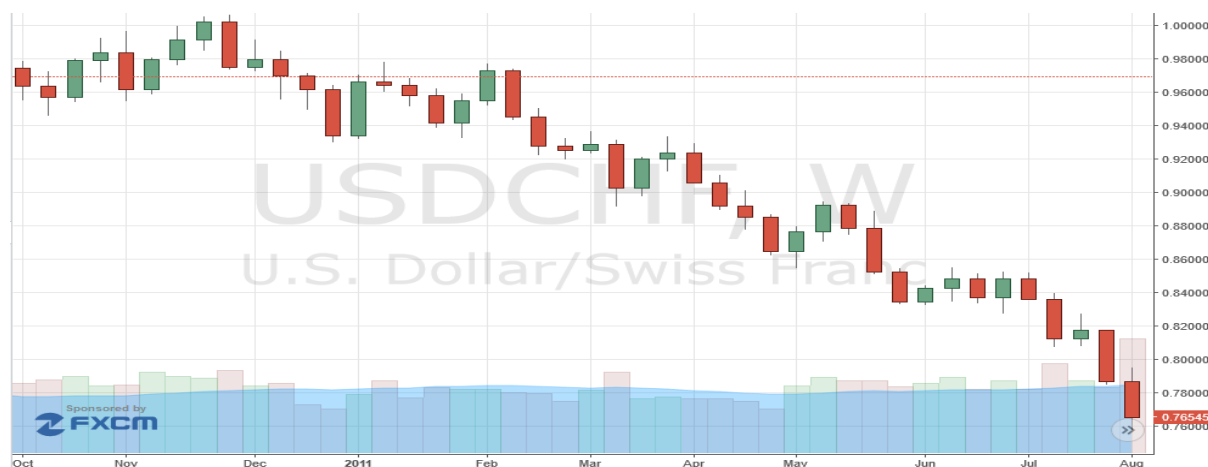
The national Swiss currency has a floating exchange rate. From time to time the Central Bank intervenes in monetary policy to prevent appreciation. The Swiss franc was considered one of the most stable and "smooth" currency. Thus, for the Forex market the Swiss franc remains one of the major currencies, the interest of which is caused, on the one hand, by the traditional strong country's economy, especially in the banking sector, and possible speculation on the actions of the Central Bank in the open market on the other hand. Although recent developments have changed the attitude to the currency. The Swiss Central Bank was forced to make significant interventions to keep the franc within the given monetary policy brackets. This section lists and discussed two major attempts by the SNB to influence the Forex market.

4.1.1 Intervention in 2011

In years before 2011 the currency market had a general tendency to strengthen the currency of Switzerland against key currencies such as the United States dollar, EU currencies, pound sterling, Australian and Canadian dollar and the currency of Japan.

However, there are existing regularities. For instance, it can be seen on the currency pair USD/CHF. The global maximum of the USD/CHF was reached in October 2000 at the level of 1.8309. Since that period formed a longer-term downtrend in the U.S. dollar against the Swiss currency. August 9, 2011, the dollar against the Swiss currency has reached a global minimum at the level of 0.7067. The fall of United States dollar, and accordingly the growth rate of the Swiss currency (CHF) during the 11-year period amounted 11242 points, or 61.4 %, which is more than 2 times. The General picture of the line of the dollar of the United States of America against the franc for the last year and the bottom is clearly visible in the graph below ("History of SNB Interventions SNB&CHF Gold&FX", 2016).

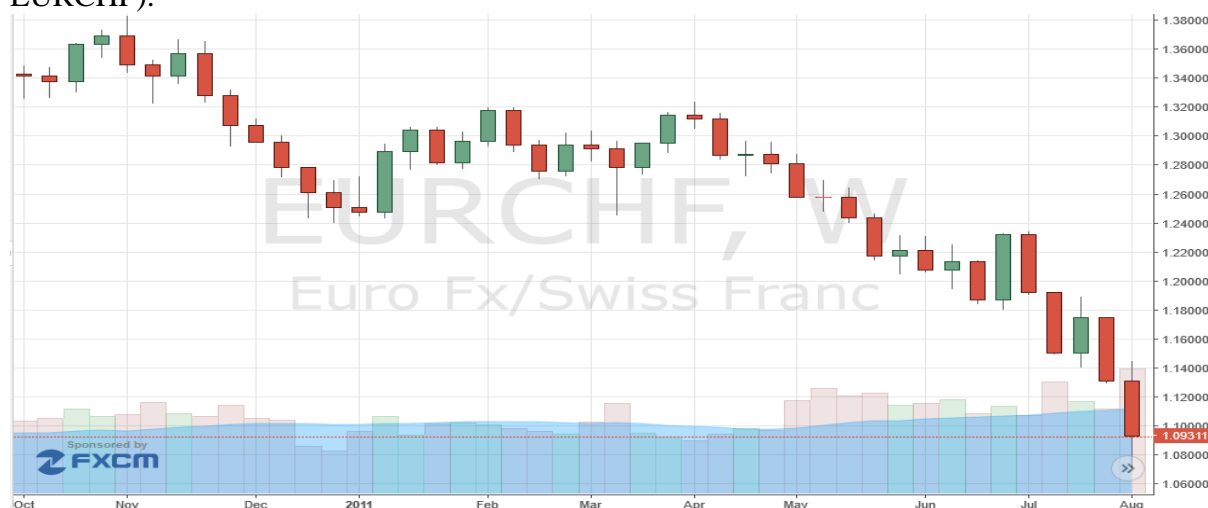
Figure 1. The dynamics of the U.S. dollar against the currency of Switzerland (on the weekly chart the pair Dollar/Franc).



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2015.

Currency pair EURCHF. The downward trend of the Euro against the Swiss currency started to form after reaching the currency pair EURCHF local high of 1.6828 in October 2007. Nearly 4 years, the Swiss franc rose against the Euro on 6760 points, or 40.2 %, reaching 9 August 2011 global low of 1.0068 (EURCHF), a penny from the currency parity. The overall picture of the dynamics of the price against the Swiss currency (CHF) illustrated in the Figure 2.

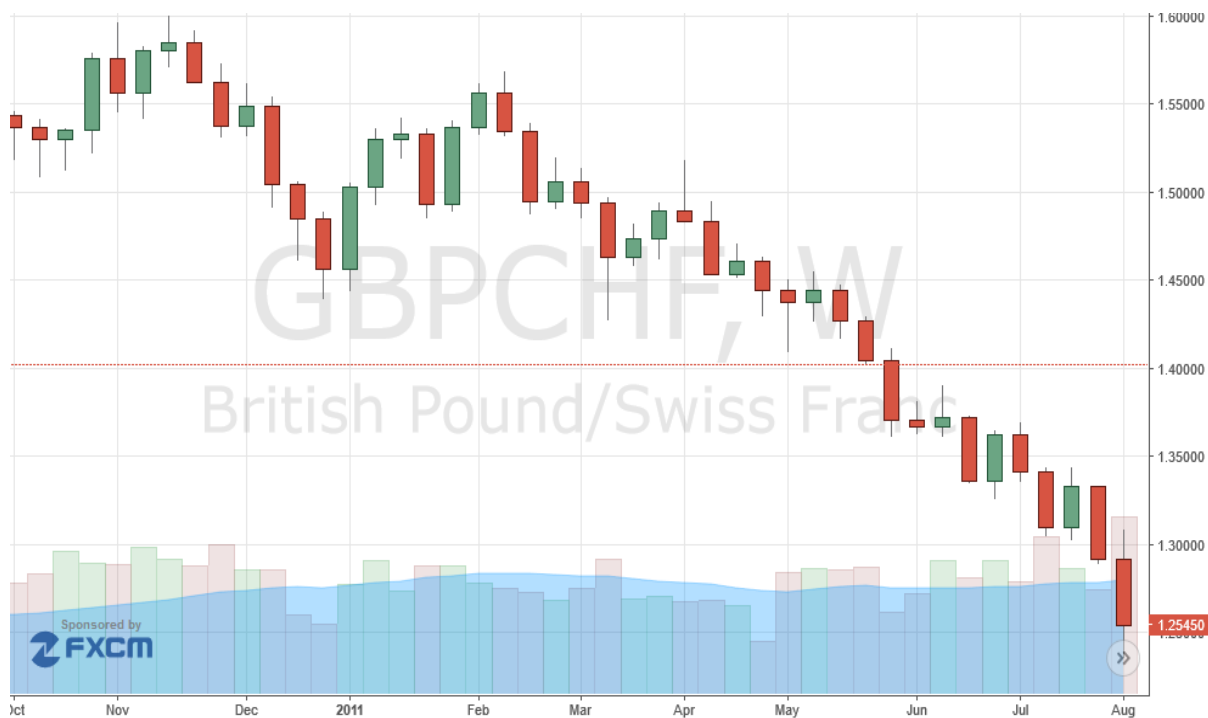
Figure 2. The rate of the Euro against the franc (the weekly chart for the currency pair EURCHF).



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2015.

GBPCHF currency pair. The downward trend in the rate of the British pound to the Swiss currency has started its journey after reaching the currency pair GBPCHF local high of 2.4964 in July 2007. For four years the pound has depreciated against the Swiss currency (CHF) at 13503 points, or 54.1 % (more than in 2 times), reaching 9 August 2011 global low of 1.1461. The dynamics of the pound sterling against the Franc for the last year is in the Figure 3.

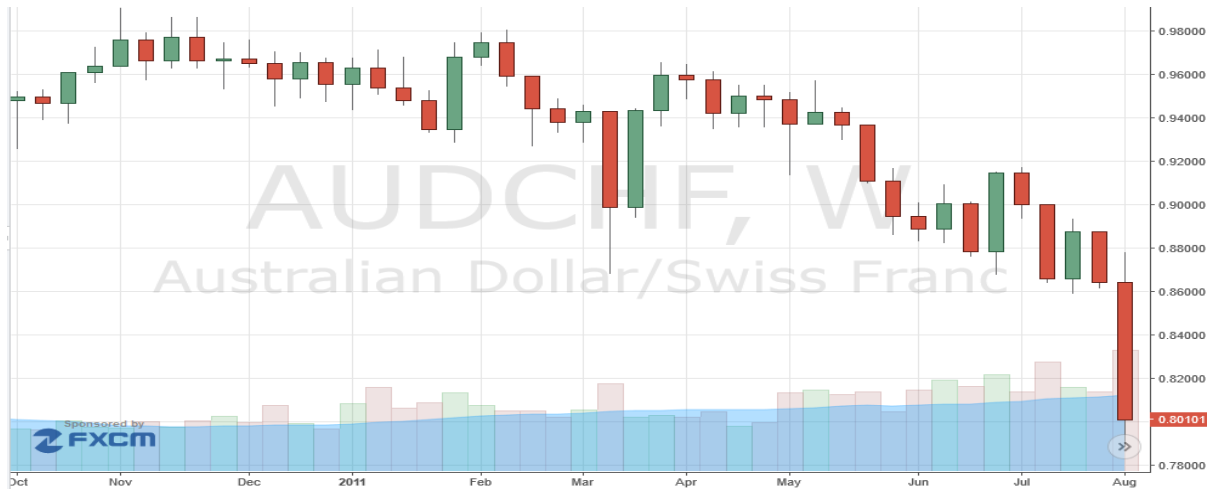
Figure 3. The rate of the Euro against the franc (the weekly chart for the currency pair EURCHF).



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2015.

The currency pair AUDCHF. The downward trend in the rate of the Australian national currency against the Swiss currency originates in May 2010 after reaching a currency pair AUDCHF local maximum at the 1.0149 level. Not much more than a year the Australian dollar has depreciated against the currency of Switzerland 3009 points or 29.6 %, reaching 9 August 2011 local minimum at the level of 0.7140. The overall picture of the dynamics of the AUD exchange rate against the Swiss currency (CHF) illustrated in the graph below.

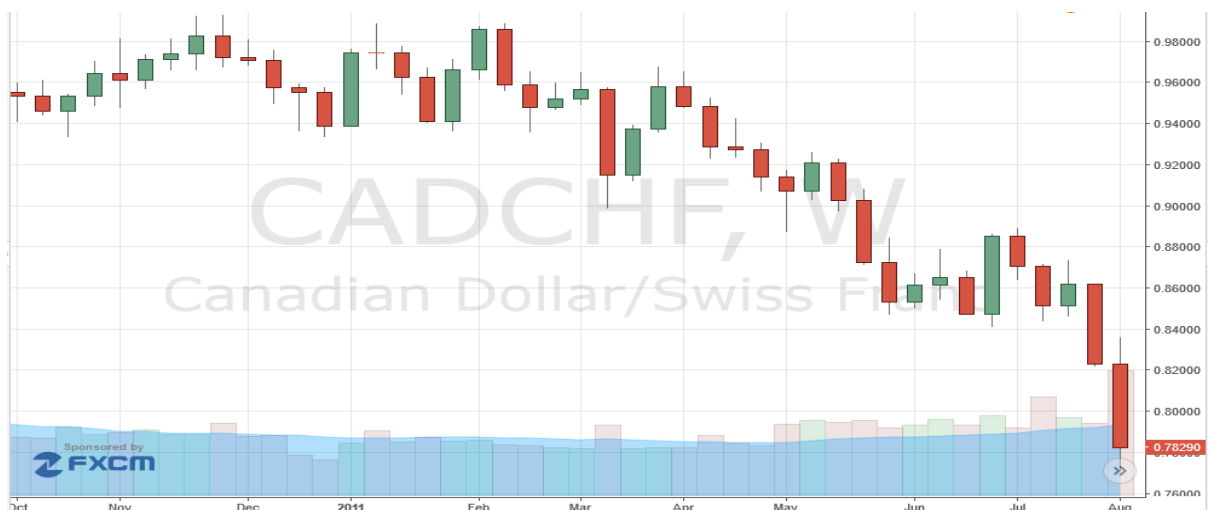
Figure 4. Dynamics of the dollar of Australia against the franc (weekly chart of AUDCHF pair).



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2015.

CADCHF currency pair. The downward trend in the dollar exchange rate of Canada to the Swiss currency has started its journey after reaching the currency pair CADCHF local maximum on the 1.1153 level in June 2010. Not much more than a year the Canadian dollar has depreciated against the Swiss currency (CHF) to 4044 points, or 36.3 %, reaching at 9th August 2011 the global minimum at the level of 0.7109. The exchange rate of the Canadian national currency against the Franc for the last year is in the Figure 5 below.

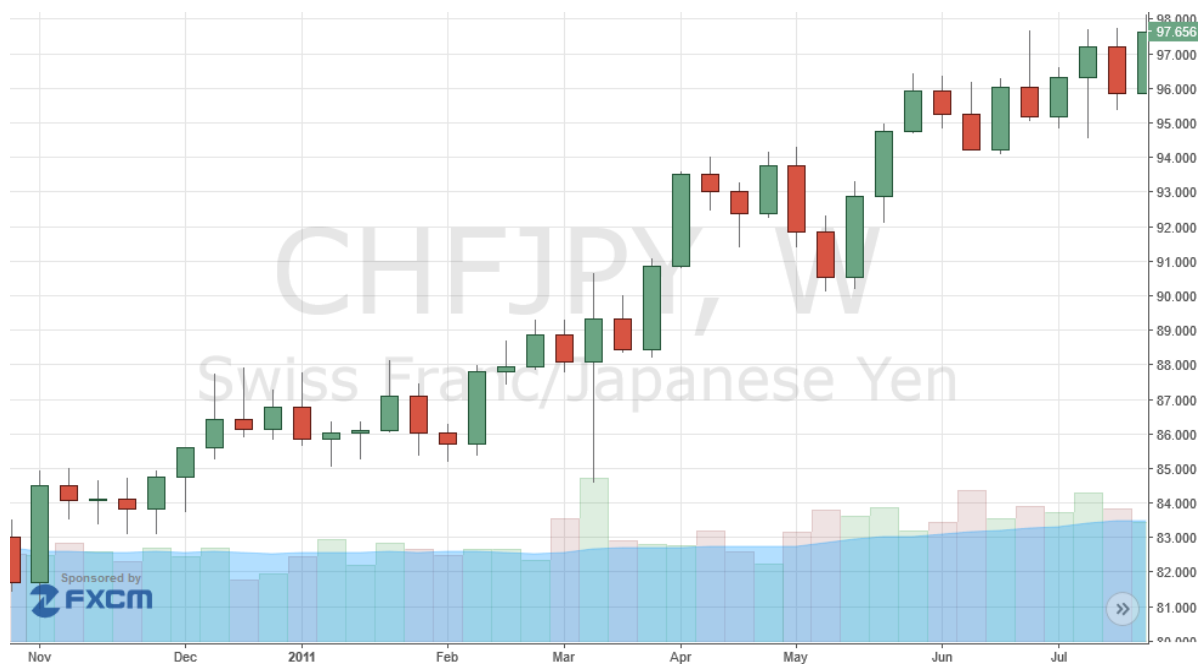
Figure 5. Dynamics of national currency exchange rate Canada against the currencies of Switzerland (the weekly chart of CADCHF pair).



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2015.

The currency pair CHFJPY. The upward trend of the exchange rate of the Swiss currency to the currency of Japan began to form after reaching the currency pair CHFJPY local minimum at the level of 76.38 in May 2010. Not much more than a year the Swiss franc has surged against the Japanese yen at 3230 points, or 42.3 %, reaching 9 August 2011 a local maximum at the level of 108.68 (pair CHFJPY). The overall picture of the dynamics of the Swiss currency (CHF) against the currency of Japan is shown in the Figure 6.

Figure 6. Dynamics of the franc against the Japanese yen (weekly chart the pair CHFJPY).



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2015.

This is interesting, how events unfolded after the rapid strengthening exchange rate of the Swiss against the other key currencies of the Forex market. The first step of the Swiss National Bank to curb the appreciation of the Swiss franc was the reduction of range three-month interbank LIBOR rates from 0 to 0.75 % to 0 – 0.25 %. Then, the Swiss National Bank on August 10, 2011 began to carry out a deliberate policy to weaken the currency in response to the unbridled growth of the single currency, increasing the offer of the Swiss currency (CHF) in the Forex market from 80 billion to 120 billion francs. But already at 17 August the limit was increased to 200 billion Francs.

These measures to weaken the franc have affected until August 30, after which the franc began to strengthen again until September 6 – day of aggressive foreign exchange intervention carried out by the Swiss National Bank against all key currencies in the international currency

market Forex. In a press release the Swiss National Bank on 6 September 2011 it was said that 1.2 Swiss Franc for Euro is the minimum level, which will be performed the contract on the exchange. In Bank emphasize that this rate can hold out long: if necessary, the Swiss franc will weaken even more.

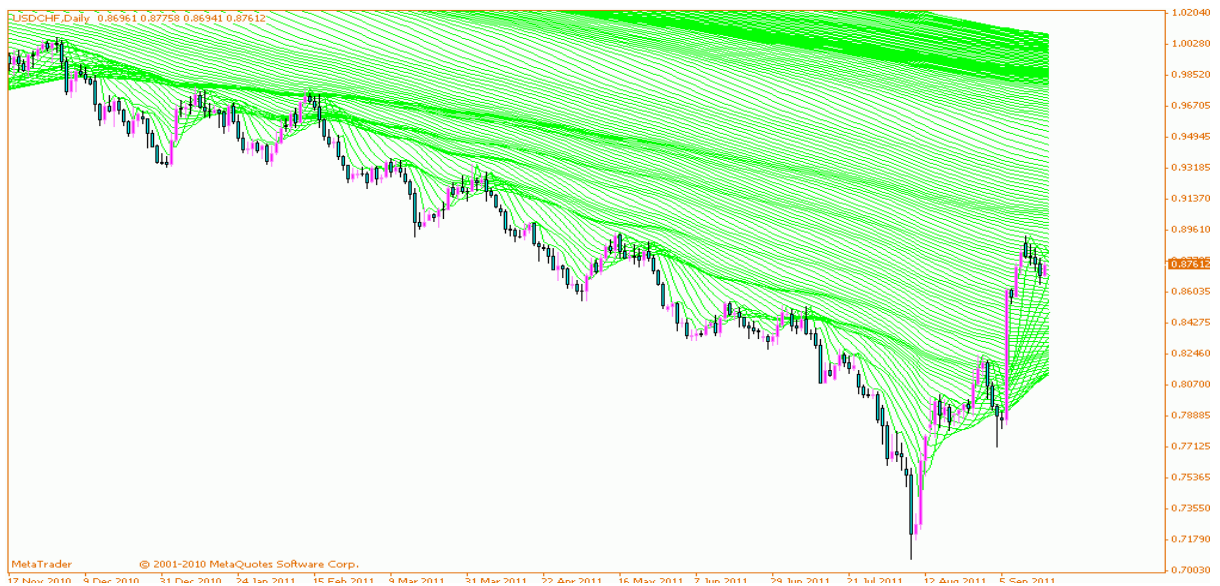
So, here are six charts on the currency pair Dollar - Swiss franc, namely: daily, 4-hour, -hour, 30-minute, 15-minute and 5-minute where possible to see the dynamics of the exchange rate of United States dollar to the currency of Switzerland after reaching the global (historical) low of 9 August 2011 on the level 0.7067 Swiss francs per one dollar of the United States of America. Each schedule attached trend technical indicator Diffusion by the MetaTrader application with the same parameters for all graphs are presented below.

This indicator help to test on the chart with a which time interval will be received signal of deal (by market players) on the currency pair Dollar / franc during currency interventions by the national Bank of Switzerland on 6 September 2011.

A strong buy signal will be the opening of the candle following the candle that came from the diffusion of the field from the bottom up. A strong sell signal will be the opening of the candle following the candle that came from the diffusion of the field from top to bottom. In this example, the concession will be open each full contract (lot) per trade signal. All open positions will be closed at the end of the trading session on 6 August 2011. These are the conditions of the experiment under which is possible to see what happened. On the daily chart on the currency pair Dollar / Swiss franc shows that on August 11, after measures taken by the national Bank of Switzerland, dollar of the United States of America against the Swiss currency reversed in the opposite direction. The strengthening of the dollar lasted until 30 August.

From 31 August to 5 September, there has been a four-day decline (pullback). On 6 September the Swiss National Bank holds a massive currency intervention. As a result of the events rate of the Swiss currency (CHF) against the dollar of the United States of America from August 10 to September 16, 2011 (28 sessions) was devalued by 1694 points, or 24 %. On the daily chart it is clearly seen that the plugs (the value of the currency pair Dollar/Franc) entered the field of diffusion (colored green in color) from the bottom up. The buy signal for market players on the daily chart has not been received. The parameters of the daily candle from 06.09.2011: Open = 0.7869; High = 0.8625; Low = 0.7839; Close = 0.8616 ("History of SNB Interventions SNB&CHF Gold&FX", 2016).

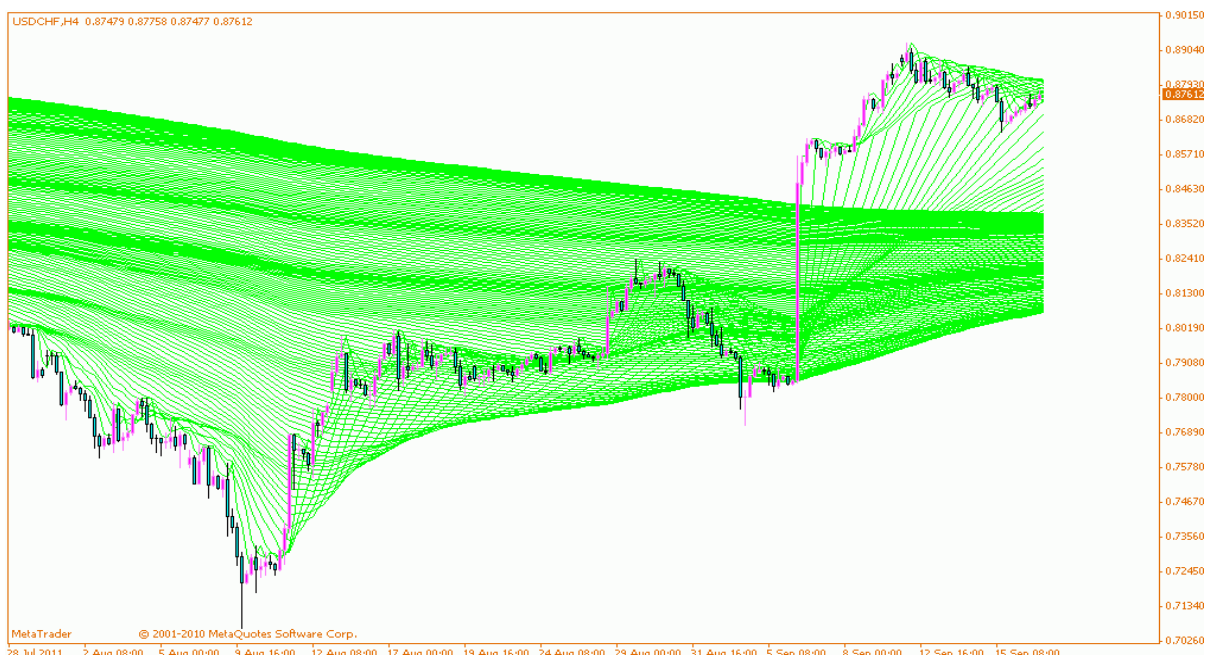
Figure 7. The daily chart the currency pair USDCHF.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

On 4-hour chart long purple candle literally flashed diffusion field as a result of currency interventions of the national Bank of Switzerland. At the opening of next candle at 12:00 (CET) at the level of 0.8481 received buy signal. If the reference point of a trend reversal be considered August 10, the signal can be considered belated, but nevertheless it was received.

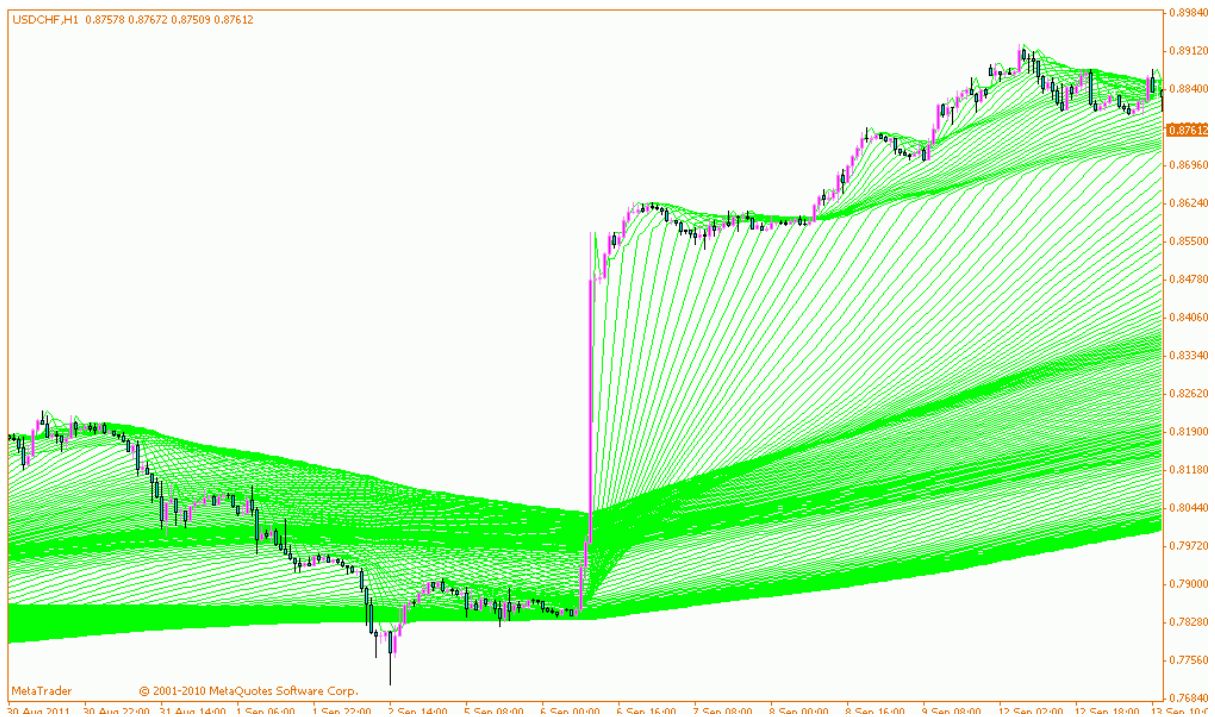
Figure 8. The 4-hour chart of the currency pair US Dollar/Swiss franc.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

On the hourly chart clearly seen the beginning of currency intervention - 8:00 am Central European time (CET - 2 hours from GMT). Two of the first long purple candle are unable to pass through the diffusion field, and the third, the longest candle jumped out of the field from the bottom up. At the opening of next candle at 11:00 CET on the 0.8478 level signal to buy.

Figure 9. Hourly chart on the currency pair Dollar/Franc.

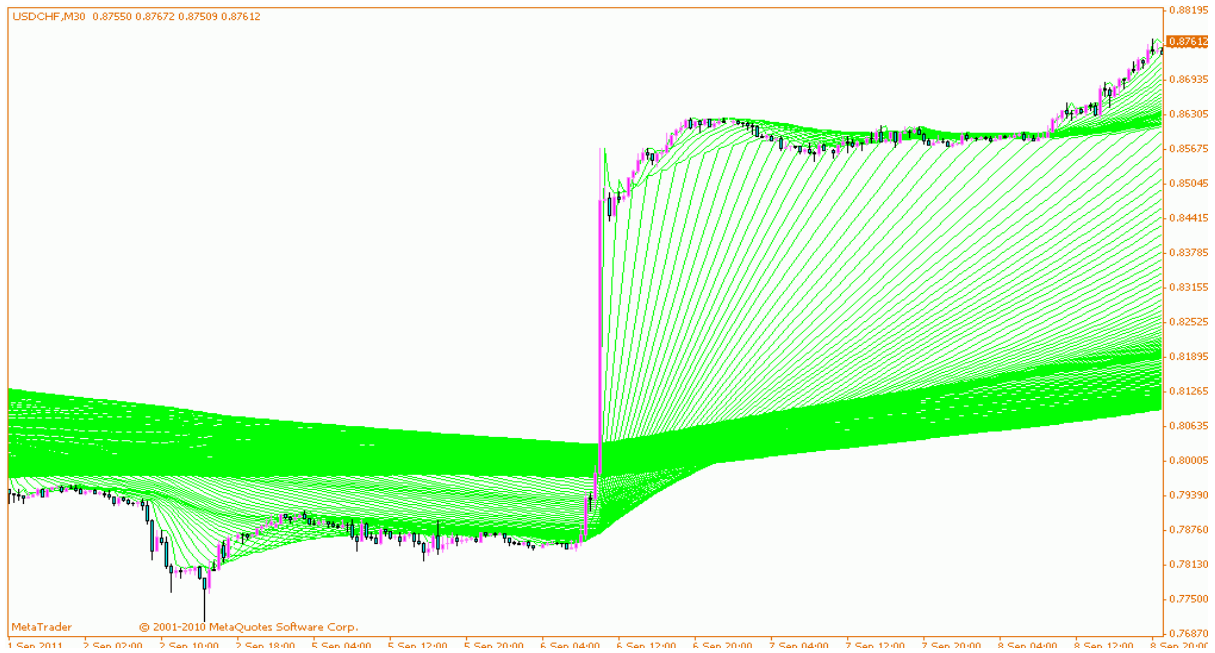


Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

On this graphs importance of such market signs for buy and sale is becoming visible. Exactly these signals create the preconditions for trends. That are determine strategies and actions of all market players not only speculators. But it should be noticed that despite of a relatively small market size that covered by speculators their market decisions often set the directive, because other market players perceive them as a professional benchmark and copy theirs action in the FX market. But should not be confused analytical copy from mere repetition. In this case were described the first version. Thus it becomes important to the behavior of speculators in the market and therefore, in this example, signals to buy or sell are considered as the affecting on the handlebars of the market.

On the 30-minute chart buy signal arrives at the opening of the candle at 10:30 CET, at the level of 0.8474.

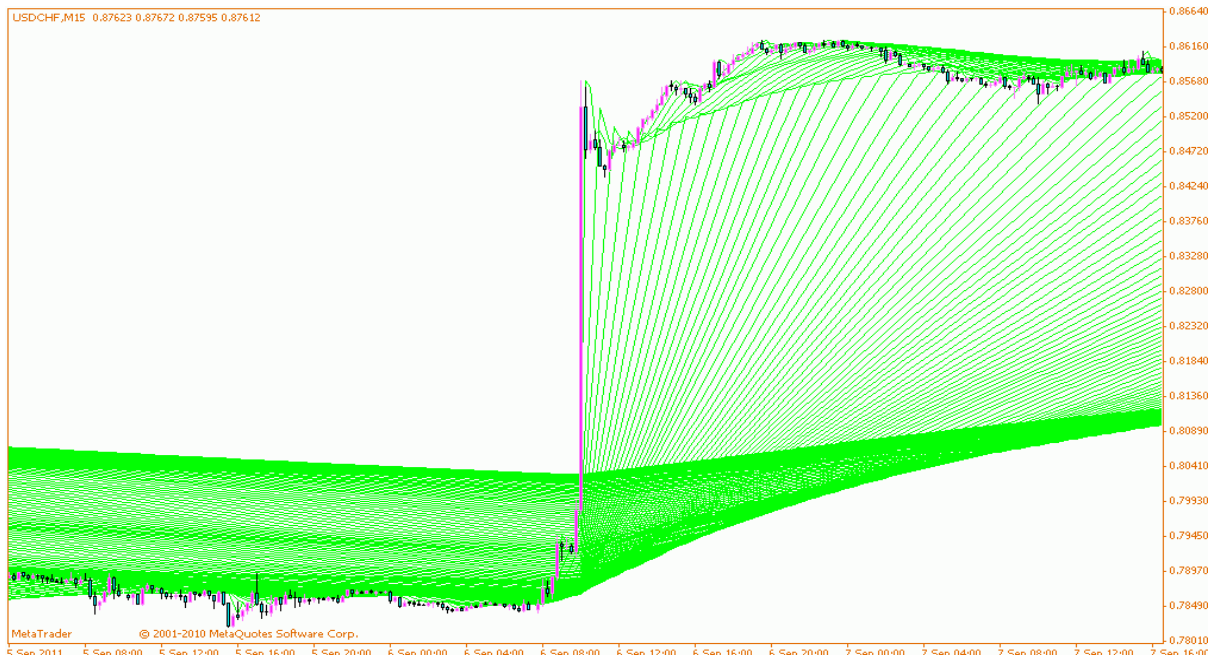
Figure 10. 30-minute chart on the currency pair US Dollar/Swiss franc.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

On 15-minute chart the signal to buy the currency pair USD franc arrives 10:15 CET at the level of 0.8560.

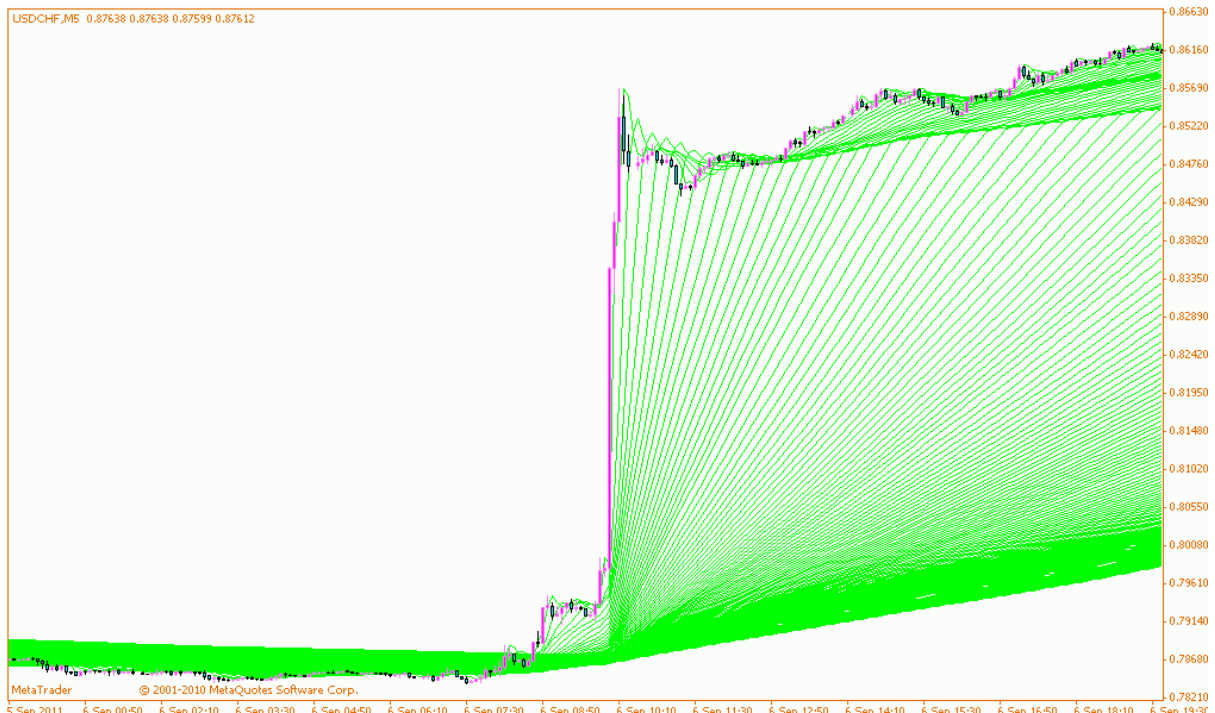
Figure 11. 15-minute chart on the currency pair USDCHF.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

The most interesting from the point of view of currency speculation is viewed on the 5-minute chart on the currency pair Dollar-Swiss franc. The diffusion field has been passed up from the bottom of the candle, which opened at 8:40 Central European time. At the opening 5-min candle at 8:45 p.m. CET, at the level of 0.7889 received an unambiguous, clear signal to buy the pair Dollar/franc, which allowed to take in profit almost the entire range of the day.

Figure 12. 15-minute chart on the currency pair USDCHF.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

August 6, 2011 during the currency interventions by the national Bank of Switzerland, 5 deals were made to buy the pair Dollar Franc. Using a trading strategy based on the value of the currency pair Dollar Swiss franc through the diffusion field from the bottom up or top down and an agreement to exit from it, the overall result for the trading session could be 1198 points.

4.1.2 Swiss franc against the Euro 2013

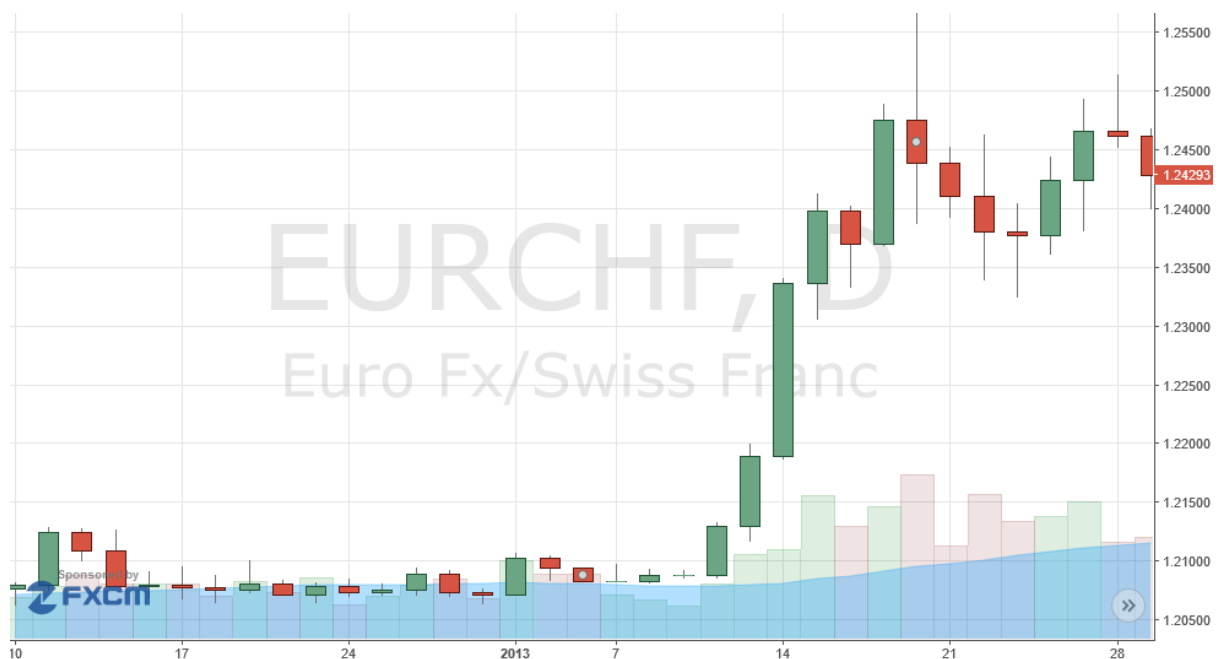
In July 2012, the Swiss National Bank has achieved its goal - kept the Euro against the currencies of Switzerland at the level not below 1.2 Swiss franc per 1 Euro. Six months passed and the target level for the Swiss currency was maintained. The trading range for Euro/France from 1,2002 to 1,2017 was held from April 5 to September 4, 2012. On the 5th of September it has been broken up and shifted to levels 1, 2027 - 1,2184 the Swiss currency to the Euro. This range lasted until 9 January 2013. 10 January 2013 Euro began a strong ascent on 18

January and reached a local maximum at level 1, 2573. The market immediately began to spread rumors that the Swiss National Bank could raise the minimum limit for the Euro exchange rate against the Swiss currency (CHF) at \$ 1.25.

So the news Agency Dow Johns has informed that at Rabobank believe that the Swiss National Bank may raise the ceiling for Euro/Swiss franc now, when she confidently began to move away from the limit of 1.20 set by the Central Bank, and has reached 20-month high 1,2573. "As you might expect, taking into account this change, many doubt whether the Swiss National Bank to consider enhancing the limit for the pair EUR/CHF to 1.25. Swiss trade unions have actively expressed their support for raising the limit" - notice to Rabobank. "We agree with this view and think that the further movement of the pair to 1.25 could persuade the Swiss National Bank to use this as an opportunity to increase the level limit", - added at Rabobank.

Here is a view of history and the daily chart for the currency pair EURCHF

Figure 13. The rate of the Euro against the Franc. Daily chart.



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2016.

The graph shows that over the past eight trading sessions, the Euro against the currencies of Switzerland grew by 488 points with 1,2085 to 1,2573 or by 4.0%.

4.2 Currency interventions by the Bank of Japan

It's no secret that the Japanese Central Bank is one of the most actively involved in money market operations. This is because over the last thirty years (not counting 2011) the Japanese trade balance has consistently been positive — the economy is developed in the framework of the export-oriented model. The predominance of exports leads to a permanent pressure on the exchange rate of the yen towards strengthening. Japanese authorities are not interested in excessively high exchange rate of the national currency, the strengthening yen undermined the attractiveness of Japanese goods and reduces the revenues of exporters. To prevent this, the Bank of Japan forced to enter the foreign exchange market, buying foreign currency (primarily US dollar) per yen. Thus, the national currency keeps strengthening, and the yen market, needed foreign importers to pay for goods produced by Japanese companies. In following examples were considered illustrative examples of Japanese interventions and made conclusions about their impact on the market

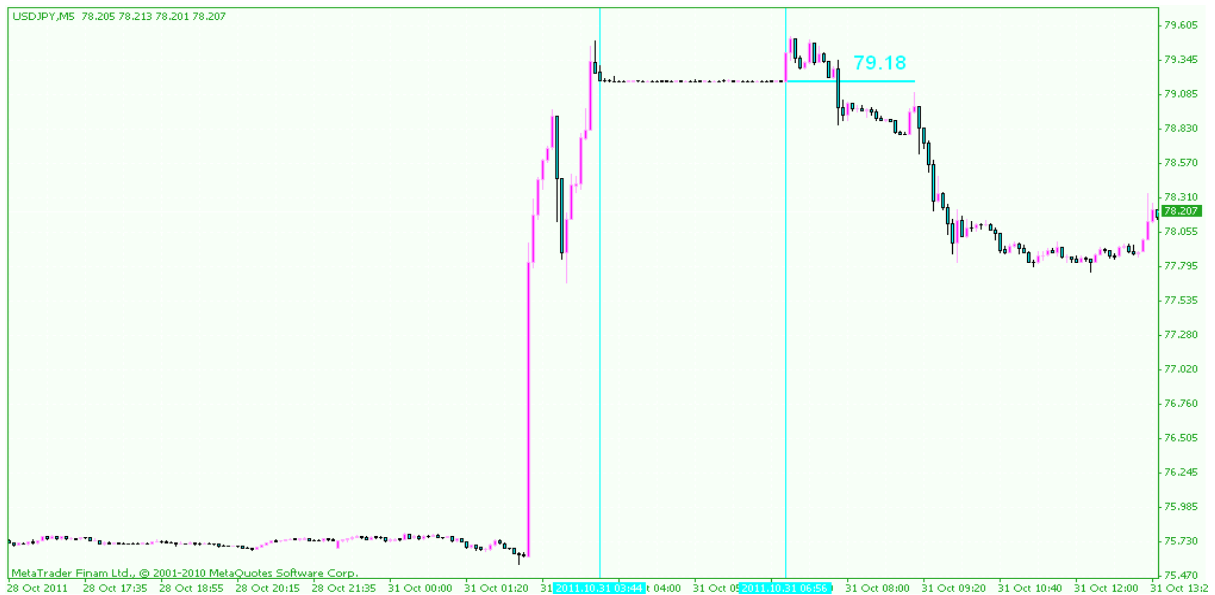
4.2.1 Unusual currency intervention

October 31, 2011 at 4:45 am GMT the Bank of Japan holds second for the last three months of currency intervention on the international Forex market. The last time the Bank of Japan had carried out currency intervention in August 2011.

Before this intervention on the international Forex market the events developed as follows. The U.S. dollar relative to the Japanese currency reached a historic low level 75,56 yen per dollar. This fact happened 15 minutes before the beginning of currency intervention, which began, as noted above at 1:45 London time from level 75,61 yen to the dollar and continued for 30 minutes (Five 5-minute candles). Level 78,97 JPY is facing strong resistance for the dollar and rolled back within 10 minutes to level 77,67 yen per dollar. The Bank of Japan made another attempt to weaken the yen have driven the dollar against the yen to the level of 79,49 ("History of Bank of Japan Interventions -SNBCHF.COM", 2016).

But then began with dynamics of the rate of United States dollar against the yen something unusual. This is well illustrated in the graph below.

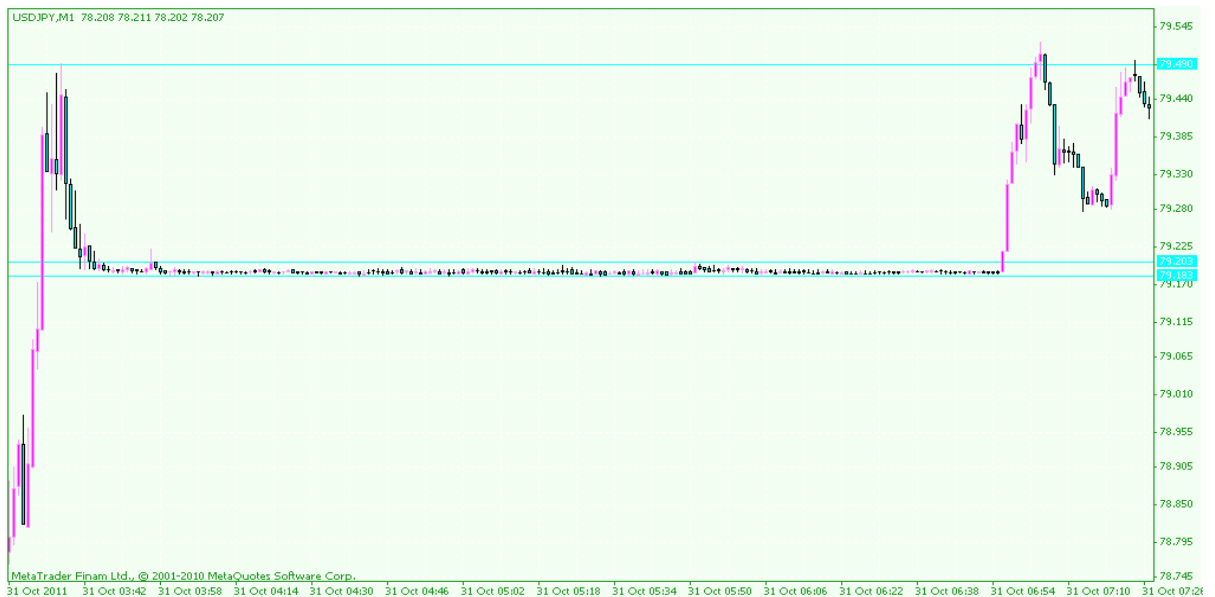
Figure 14. Dynamics of the dollar of the United States of America against the Japanese yen. 5-minute chart on the currency pair Dollar/Yen.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

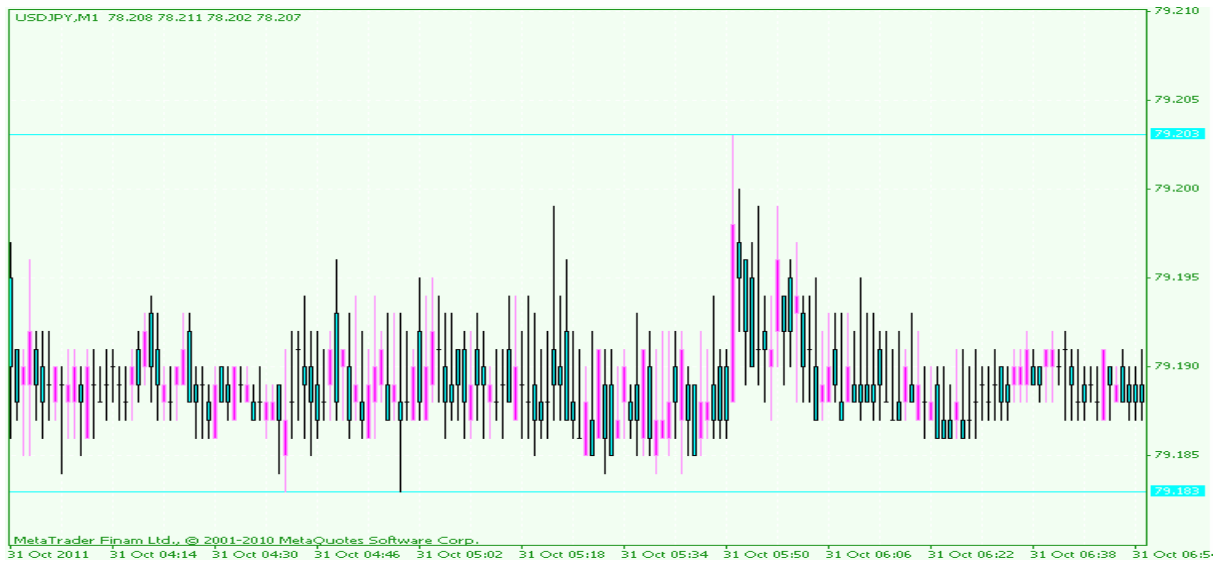
Starting from 2:40 to 3:55 GMT, the dollar stood in a very narrow range 79,183 – 79,203, for a total of 2 points (20 pips). Convulsive state of the dollar against the yen can be viewed in the following graphs.

Figure 15. The dollar against the yen stood in a narrow band within 75 minutes. 1-minute chart on the currency pair Dollar/Yen.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

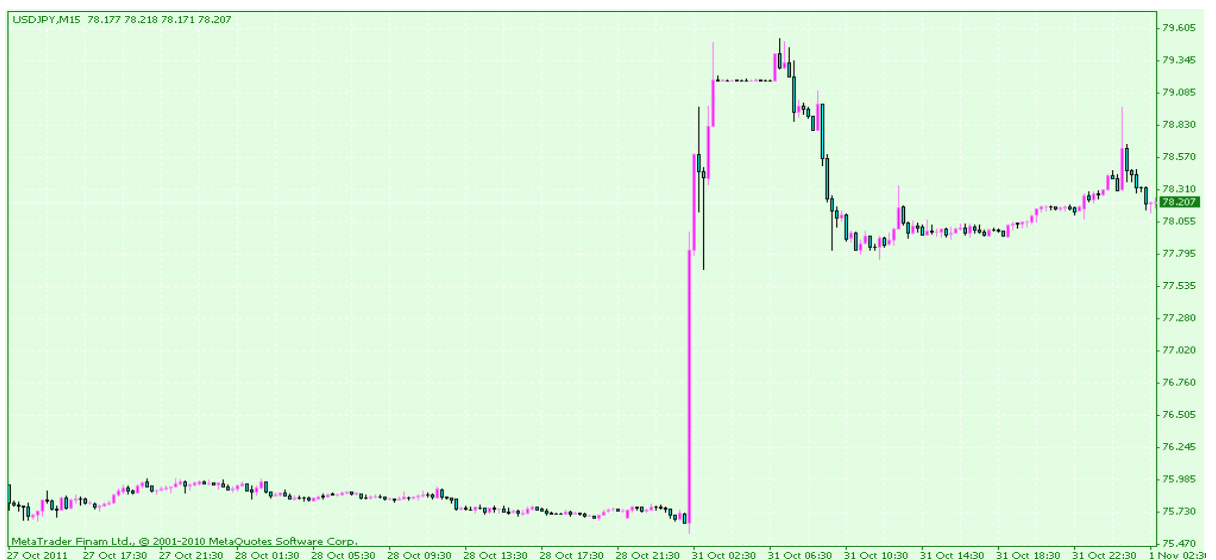
Figure 16. The dollar against the yen stood in a narrow band within 75 minutes. 1-minute chart on the currency pair Dollar/Yen.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Otherwise nothing unusual during the currency interventions by the Bank of Japan on 31 October 2011 wasn't noted. After 75 minutes of the flailing dollar exchange rate to yen has grown by about 30 points to the level of 79,52 yen for one dollar. Below are graphs of the U.S. dollar against the currencies of Japan with other time intervals during the currency interventions by the Bank of Japan on 31 October 2011.

Figure 17. Dynamics of the rate of United States dollar against the Japanese yen during the currency interventions. 15-minute chart on the currency pair Dollar/Yen.



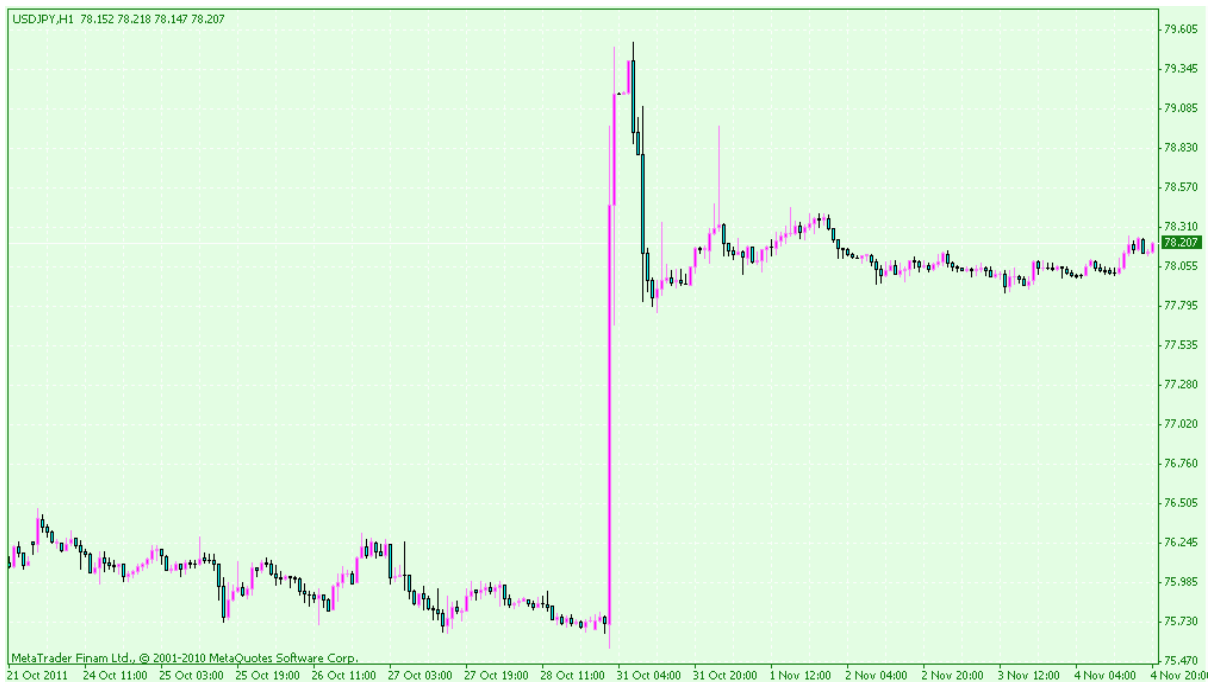
Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Figure 18. Dynamics of the rate of United States dollar against the Japanese yen during the currency interventions. 15-minute chart on the currency pair Dollar/Yen.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Figure 19. The dynamics of the U.S. dollar against the Japanese yen during the currency interventions. The hourly chart for the currency pair USDJPY.



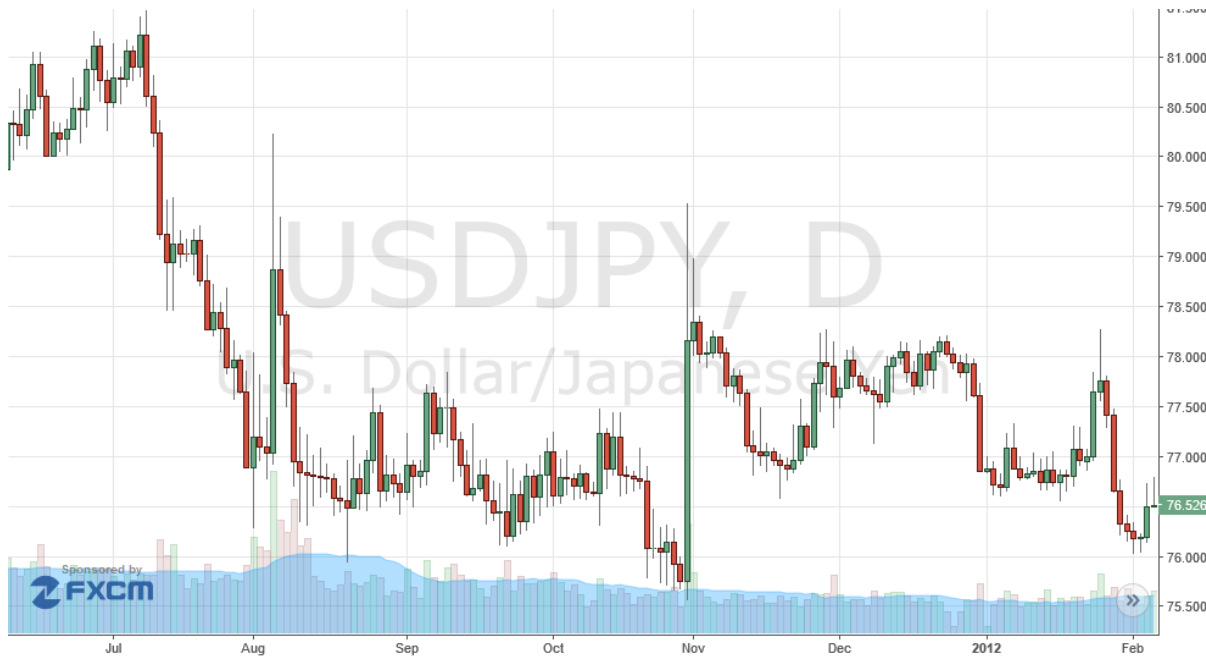
Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Figure 20. Dynamics of the rate of United States dollar against the currencies of Japan during the currency interventions. The 4-hour chart of the currency pair USDJPY.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Figure 21. Dynamics of the dollar of the United States of America against the Japanese yen during the currency interventions. On the daily chart the currency pair USDJPY.



Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2016.

Thus, for some 1 hour and 20 minutes Bank of Japan devalued the yen against the U.S. dollar on 388 points or 5.1% in favor of their exporters-producers, spending on this operation at least 4 - 5 trillion. Yen in public debt over 200% of GDP.

4.2.2 Verbal currency intervention by the Bank of Japan

April 4, 2013 at exactly 6:00 GMT began a sharp decline of the yen against key currencies on the Forex market after the results were announced the Bank of Japan meeting. In particular, it was decided "to buy long-term government bonds of Japan in the amount of 7 trillion yen monthly, and to exercise control over the monetary base." Monetary base under the new policy with an annual increase of 60 - 70 trillion yen. The monetary base, which amounted at the end is of 2012 to 138 trillion. It was planned to increase to 200 trillion at the end of 2013 and 270 trillion yen at end of 2014.

The Bank of Japan also said that will increase within purchases the average maturity of Japanese government securities with 3 to 7 years, and will also expand purchases of ETFs to 2.5 trillion yen by the end of this year and to 3.5 trillion yen by the end of next year. The Bank of Japan is also expanding purchases of Japanese securities investment funds real estate (J-REIT) to 140 billion Yen this year to 170 billion Yen next year. Currency pair USD JPY began to rise from the level of 92,85 yen per U.S. dollar and has updated a local maximum at the level 95,67. The dollar's rise against barter was about 280 points, or 3,03 %. The dynamics of the pair USD-JPY can be seen in the below chart ("Bank of Japan", 2016).

Figure 22. Dynamics of USDJPY after the announcement of the decision of the Bank of Japan 04.04.2013 the hourly chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

The currency pair EUR-JPY started to grow from the level 119,31 yen and the Euro has updated a local maximum at the level of 122,68. The growth of the Euro against the Japanese yen amounted to 337 points, or 2,83%. The dynamics of the pair EUR/JPY is in the below chart.

Figure 23. Dynamics of EURJPY after the announcement of the decision of the Bank of Japan 04.04.2013 the hourly chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

4.3 Currency intervention by the U.S. federal reserve

On 30 November 2011, six major Central banks announced coordinated action to provide liquidity to support the global financial system. The message is that the Federal reserve reduces the cost of existing dollar swaps in the framework of agreements with the Central Bank of Europe, the Central Bank of the UK, the Bank of Japan and Swiss National Bank by 50 basis points, has caused a sharp increase in courses of key currencies against the us dollar.

EURUSD currency pair increased from the low of the day 1,3259 level to the high level 1,3532 (2,28%).

Figure 24. The rate of the Euro against the United States dollar. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

AUDUSD rose from 0,9975 to 1,0327 (an increase of 352 points, or 3.52 %).

As it can be noticed all the graphs below, in independence of the currency in opposition represent a similar picture. A similar effect associated with foreign exchange interventions in dollars because dollar is world's reserve currency used by the vast majority of governments. This means that it provides liquidity for other currencies, so changes in the supply of dollars in the Forex market leads to changes in the exchange rate of other currencies. The same mechanism works in the opposite direction, albeit with a lesser correlation.

Figure 25. Dynamics of Australian national currency exchange rate against the dollar of the United States of America. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

NZDUSD rose from 0,7575 to 0,7821 (an increase of 246 points, or 3.25%).

Figure 26. Dynamics of exchange rate of New Zealand currency against the US dollar. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

GBPUSD rose from 1,5524 to 1,5778 (an increase of 254 points, or 1,64%)

The ECB said that the plan aims at reducing tensions on the market of credit for households and companies. This decision and action would most benefit the Central Bank of Europe, which constantly borrows U.S. dollars from the Federal reserve of the United States, and then lends to troubled banks in the Eurozone in an attempt to increase liquidity. The ECB was the largest creditor of the Federal reserve system of the United States of America in last months through emergency credit lines and tried to stabilize the banking sector of the region, which hurts the debt crisis.

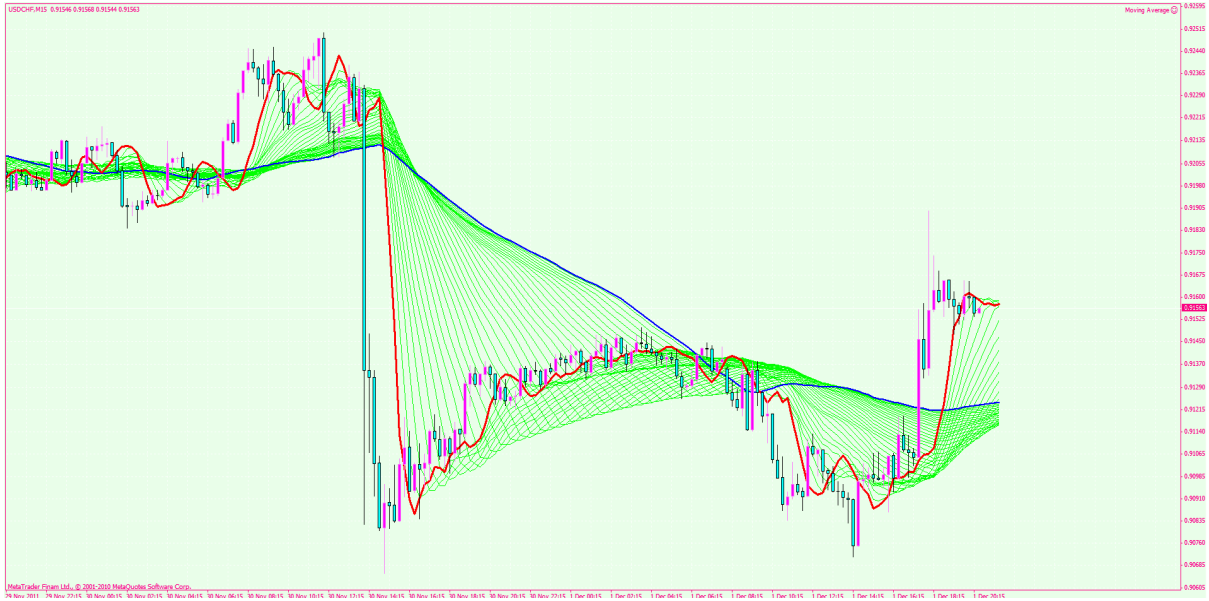
Figure 27. The dynamics of the pound sterling against the United States dollar. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Currency pair Dollar-Swiss franc declined from 0,9248 to 0,9065 (a decline of 183 points, or 1,98%).

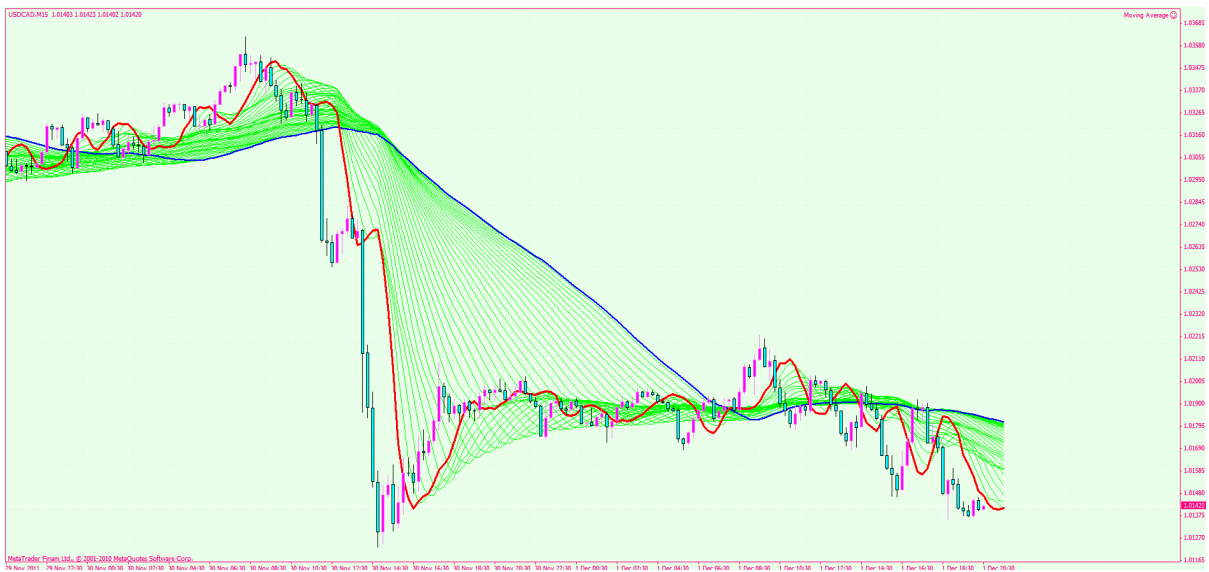
Figure 28. Dynamics of the dollar of the United States of America against the franc. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Currency pair USDCAD fell from 1,0348 to 1,0122 (a decline of 226 points, or 2,18%).

Figure 29. The dynamics of the U.S. dollar against the commodity currencies CAD. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

Currency pair Dollar-Yen dropped from 78,15 to 77,28 (a decline of 87 points or 1,11%).

Figure 30. Dynamics of the rate of United States dollar against the currencies of Japan. 15-minute chart.



Own processing, source: software MetaTrader 4 by MetaQuotes Software Corp., 2016.

This measure gave at least a temporary respite from concerns about the liquidity crunch that had engulfed financial markets in 2011. These actions are also a signal that the authorities are trying to stabilize the problems in the short term, trying at the same time to develop a long-term solution for withdrawal from the Eurozone debt crisis, analysts say. In addition, the sharp rise of the Euro against the dollar was provoked by closing of short positions by protective stops, open the players to seek a further decline of the Euro against the dollar of the United States of America.

The fall of the dollar was observed against all other currencies, as investors and players preferred him to all other currencies, but also stocks and commodities. Even such currencies as the yen, considered a safe-haven currency, climbed against the dollar.

4.4 The actions of the Russian Central Bank during the devaluation of the ruble in the years 2014-1015.

On 15 and 16 December there was a sharp fall of the Russian national currency. The dollar has risen about 38 percent from 58 rubles at the opening of trading on December 15 to

80 rubles on December 16. By the close of trading on December 17, the dollar fell back to 60 rubles.

Figure 31. Russian ruble against U.S. Dollar in December 2015.

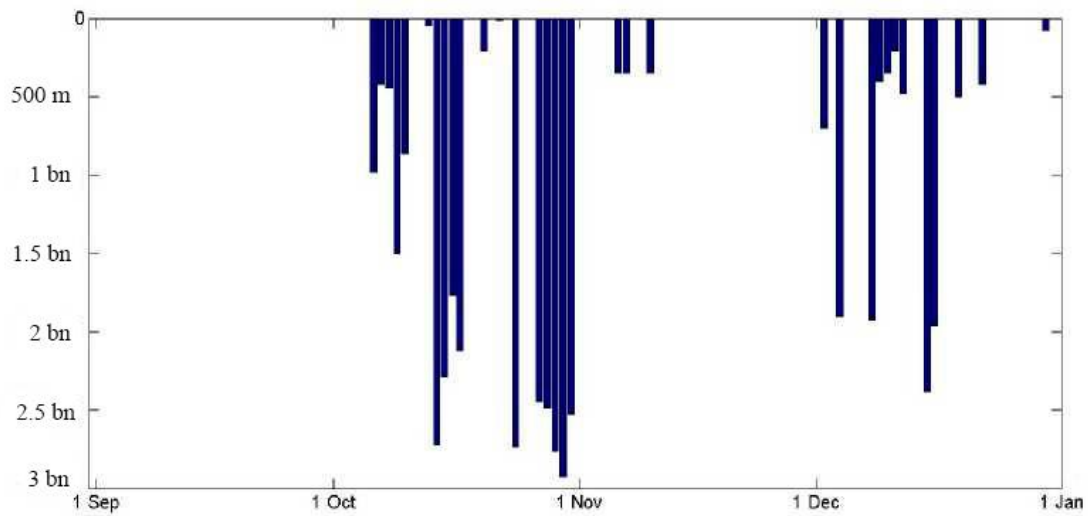


Own processing, source: Trading View Stock Charts & Forex Charts, <https://www.tradingview.com/chart/>, 2016.

A feature of the crisis was the speed with which collapsed the national currency, and its short duration. The crisis demonstrated the fragility of financial trading systems of the Russian Federation. The consequences of the crisis are a significant increase in the confidence of financial market participants and investors in the financial system and regulators, as well as to increased anxiety among the population.

The Bank of Russia actively reacted to events, and generally acted according to the context of the situation, giving the market a large number of dollar liquidity. This has contributed already to the end of the 17th of December to relieve the stress on the market dollar liquidity and to eliminate the imbalance that was created in the system from 12 to 15 December. In other reaction of the Russian Bank currency crisis could be even more disastrous and far more durable.

Figure 32. Dynamics of intervention of the Central Bank of the Russian Federation (in dollars), data are aggregated at monthly time intervals.



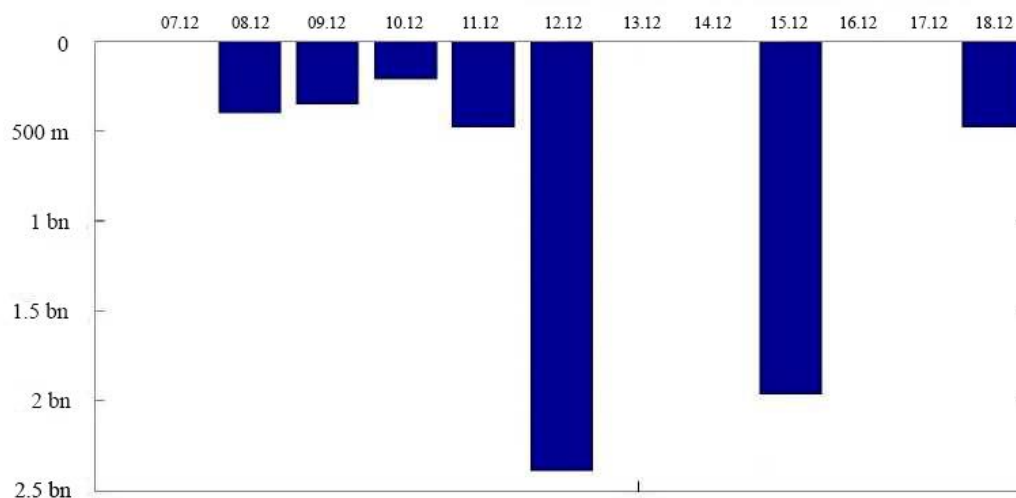
Own chart, data from The Central Bank of the Russian Federation, http://www.cbr.ru/Eng/hd_base/?PrId=mrrf_m, 2016.

The basic steps of Bank of Russia are listed below.

First, the CBR interventions on the domestic foreign exchange market. The graph above shows the intervention in the months from September to December. The graph below shows the intervention within two weeks from Monday 8 December to Friday 19 December. On Friday 12 December, actual sales of foreign currency on the domestic foreign exchange market amounted to \$2,383 billion on Monday 15 December, actual sales of foreign currency on the domestic foreign exchange market amounted to \$1,961 billion. Thus, on 12 and 15 December, the Central Bank provided the market through its intervention about \$4,334 billion.

Secondly, on the night of 15 December, the Central Bank announced the raise of the key rate to 6.5 percent from 10.5 % to 17 %. A significant and unexpected increase in rate (mechanically) with a commensurate depreciation of the dollar. The dollar fell by about the same percentage from 65 to 60 rubles. The rate increase is typically used for suspending a weakening currency and reduce inflation; at the same time, high interest rates may negatively affect economic growth ("Bank of Russia", 2016).

Figure 33. Dynamics of intervention of the Central Bank of the Russian Federation (in dollars), data are aggregated in daily intervals.



Own chart, data from The Central Bank of the Russian Federation, http://www.cbr.ru/Eng/hd_base/?PrId=mrrf_m, 2016.

Thirdly, the Central Bank held a number of currency REPO (repurchase agreement) auctions, which allowed banks to attract large amounts of foreign currency. The participants in the currency auctions REPO could transfer to the Central Bank as collateral 151 Eurobond and other securities included in the Lombard list of the Central Bank, including bonds company “Rosneft” shortly before they were included in the list:

- a) On Monday 15 December, the Central Bank held a REPO auction in foreign currency, on which banks attracted about \$4,829 billion (from the limit of \$10 billion) for a period of 364 days from the date of disbursement December 17, 2014. The weighted average rate amounted to 1,1162% per annum, the cut-off rate - 1,1013% per annum.
- b) Monday 15 December was held a REPO auction in foreign currency for a period of 28 days with a limit of \$1.5 billion from the date of execution of the first part 17 of December. Banks attracted \$1.5 billion at a rate of 2,9699%.
- c) December 16 was also held a REPO auction in foreign currency for a period of 6 days with a limit of \$2.0 billion from the date of execution of the first part 18 of December. Banks attracted \$0,732 billion at a rate of 1,5361%.

The Bank of Russia also had the opportunity conducted foreign exchange swaps, introduced in September 2014, which allow banks to buy dollars for rubles with the obligation of return sale through a fixed time and at specific rates. The limit on the volume of transactions

with settlement terms today/tomorrow was \$1 billion, with the timing tomorrow/day after tomorrow — \$2 billion. But on the website of the Bank of Russia there are no information on any significant transactions in these instruments.

Total, by 17 December, the Central Bank has provided to the market through foreign exchange auctions repurchase an additional \$6,329 billion of foreign currency. It was a kind of bridge loan dollar liquidity provided by the Bank to the market, which do not have time to work a huge dollars buying deal. If also to take into account \$4,334 billion of interventions on 12 and 15 December, it turns out that the Bank of Russia provided to the market as a whole about \$11 billion.

The REPO auctions in foreign currency have been effective in the tool, which allowed the campaign to inject dollar liquidity into the system and smooth out the imbalances.

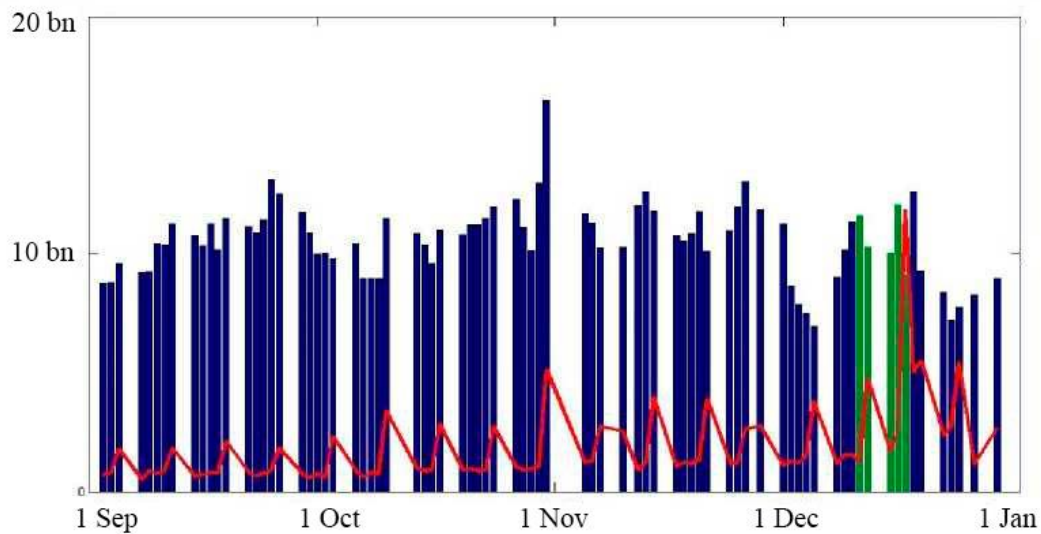
Timely action by the Bank of Russia in this situation has helped to prevent panic among the population, which is particularly sensitive to drastic changes of the ruble because of its bitter experience from the 90-ies.

According to the rules of trading on the currency market of the Moscow exchange there is no procedure for suspension of trading in large fluctuations in the exchange rate. The authority to suspend trading on the exchange is only from the Central Bank, which has not exercised that authority during the currency crisis.

According to the rules, suspend or discontinue trading on the Moscow stock Exchange "in the event of circumstances that violate or infringe upon the normal order of bidding, which, in particular, are: technical failures in the work of the bidding process (including failures in the software); attempt to gain unauthorized access to the bidding process; malfunctions of communication systems, power; force majeure events; the inability to proper functioning of the Clearing center and/or other organizations whose activities affect the ability of bidding." Suspension of trading possible due to the actual impossibility of tendering or by decision of the Exchange.

Thus the foreign exchange market does not exist the possibility of automatic suspension of trading at too high a rate change. The only thing that can make Moscow Exchange in conditions of high volatility is to change the values of the boundaries of the price band and the rates of providing in the foreign exchange market instruments, which was done several times during sharp fluctuations in mid-December.

Figure 34. Dynamics of prices of swaps and trading volume (in dollars) in the swap tools USD_TODTOM. data aggregated at daily intervals.



Own chart, data from The Central Bank of the Russian Federation, http://www.cbr.ru/Eng/hd_base/?PrId=mrrf_m, 2016.

Boundaries of the price corridor limit set deflection rate values indicated by the bidders in the bids, the magnitude of the Central rate (the upper and lower bounds of the price band). Applications of participants for the course, outside the established price band, the trading system will not be accepted. The existing mechanisms for calculating the price bands have been ineffective methods to prevent sharp fluctuations of the exchange rate.

If on the Moscow Exchange there was a better design of the system of suspension of trading, it is likely that the surge in the dollar to 80 rubles per dollar in the afternoon on December 16 could have been avoided. By 16 December the dollar liquidity on the exchange was exhausted, and most of the new dollar liquidity provided by the Bank of Russia, is not yet available. Despite the very high dollar exchange rate, the majority of participants of the market was not foreign exchange that they could sell at this rate and make a profit. Those who have this possibility was not done so quickly decide. Therefore, in the glass almost absent orders to sell dollars, and even small order to buy dollars could dramatically change the dollar. Moreover, the chart above shows that at the beginning of Tuesday were filled with large transactions, which undoubtedly affected the value of the course.

5. RESULTS

Of course, it should be noted that the best examples were considered, but nevertheless - this examples are taken from real practice of foreign exchange market history, it is very significant. However, this should be taking into account that currency interventions on the Forex market are rare, but have a significant impact on all market players, forcing them to calculate the possible intervention and to include them in strategies and risks.

In all cases that it is hard to underestimated the importance of the Central Bank actions. Despite the unity of the international currency market in attempts to influence from one particular Central Bank it can be noted that changes in the situation on the FX market affect the currency segment of the relevant Central Bank. Even if speech is about one of the six reserve currencies. It can be noticed from the examples in analytical part, especially in Swiss and Japanese cases. Of course from this list should be excluded the Euro and the U.S. dollar. But there are still no examples in Forex history in last 10 years about significant interventions from ECB (last took place in year 2000), that give us some space for assumptions about possible scenarios if that happens. Against the dollar, these predictions even more difficult according with the status of this currency and unlimited emission by the U.S. Federal reserve. In connection with this fact in the thesis, relatively little attention was paid to the US Dollar, against the currency mechanisms of FX market interaction are significantly different from the rest.

In order not to exaggerate the value of foreign exchange interventions it should be noted that only one third of the world currencies are in a floating mode, which means only the Central banks of these countries can be carried out foreign exchange intervention reaction which will depend on the market mechanisms than by regulatory policies of the state. Even though directly on the Forex market instruments exposure by the state do not exist and are contrary to the principles of the market.

It should to be said that were not reviewed the joint interventions of several Central banks. Such isolated cases have occurred, but their mechanics is very different from normal and are not covered in the scope of this work. It should be noted that the probability of a strong impact from similar interventions is much higher.

Let's go back to the disassembled examples and take a look at first instance of Swiss National Bank intervention, it does not change the tendency but detained her. In turn, this gave market players the time to reassess risk and adjust currency plans. This intervention can't be

evaluated as successful or not, because there is no information about expectations of the Central Bank on their actions but its influence is visible and have value to foreign exchange market.

In the second case with Japanese Central Bank influence on the FX market was much more significant. Not only the orientation delay can be discussed, but also the change of trend at 5%. That is a unique result if do not take into account the number of involved resources. And then again as history has shown these measures gave only short-term results, although longer than in the previous example.

If the previous example was just successful, next intervention is considered the best example of the impact of interventions on the currency market, meaning verbal intervention by Japanese Bank. Special attention should be paid to the fact that this is just verbal intervention and did not require too many resources on the primary stage. The reason for this success in my opinion is in time of action. Upon notification of the Central Bank the market was in a stable position and had clearly contra-directional trends. Expectation of the players about the decision of the Central Bank increased trend as well. So it has to be said that whatever was the decision of the Central Bank at that time - it would inevitably have caused a development of trend.

In the example of the Russian Central Bank was considered much more comprehensive approach to intervention. It can be assessed as successful, but here an important role is played by the trends against which CB made intervention. These trends were attributable to the performance of specific larger foreign currency bids against the ruble – other words for sale of the ruble. That's why sharply countertrend Central Bank's measures had the effect. Special attention should be given to a tool, such as REPO.

The REPO auctions in foreign currency are an effective tool that allows to quickly inject dollar liquidity into the system and smooth out the imbalances. These mechanisms should be given particular attention, in particular the analysis of the optimal schedule of auctions, their design, and the composition of financial instruments that can be used as collateral.

There are possible doubts regarding the results of the analytics in last example. Since analytics was held at the end of 2015 and now the exchange rate has changed significantly. Note, however, were considered cases in which the prevailing economic factors of influence. Clearly it is impossible to full isolate political and other factors of influence, but samples can be chosen with minimization of that influence. And that was done in the practical part of the work.

According to the analysis three direct channel can be distinguished through which Central Bank intervention has a direct impact on the exchange rate. The first is the change of the ratio

of the flows of supply and demand in the foreign exchange market. Intervention conducted through this channel will be a success only if it is a large amount compared with daily turnover on the foreign exchange market. The second is the change in the money supply relative to private sector demand for money, which can lead to changes in the medium-term trend in the currency market. Intervention conducted through this channel, will be effective only provided that its volume is comparable to the value of the money balances in the national banking system. Third - change the supply of domestic bonds, which in turn converts the ratio of supply and demand in the money market and thus affect the trend of the currency market. For the success of such investments requires that its volume was comparable to monetary circulation in the domestic government bond market. Thus, note: for the success of the interventions conducted through direct channels, it requires a significant amount of funds.

It can also be selected two indirect channel affecting the foreign exchange market. First, the Central Bank uses intervention as a warning signal about the change of monetary policy; the second is when intervention is used as a warning signal to the market that the exchange rate is too much has deviated from its equilibrium value from the point of view of the state. In these moments the market may be overbought and the Central Bank with the benefit uses the element of surprise, changing the trend of the currency market. However, even small amounts of intervention can have on the market a huge impact in this instance.

Intervention needs to change the ratio of supply and demand in the domestic market. It is unlikely to have a positive result, if the Central Bank's operations limited to the buying and selling of national currencies. If the Central Bank is concerned at the excessive depreciation of the national currency, to reverse the currency trend it should operate in three markets simultaneously: on currency - sell foreign currency against national; money - to borrow the domestic currency to tightening liquidity, which in turn would force market participants to sell foreign currency against national; and in the market of state bonds to carry out additional borrowing for a short-term increase in domestic interest rates and therefore attract the domestic market of foreign capital, which is associated with an increased rate of the national currency.

When established throughout the world financial situation, analyzed measures are temporary, and as shown by previous currency interventions by the Central Banks has introduced a temporary effect. The next cases cannot be the exception. Moreover, pumping the global financial system is no secure unit in the money supply will lead to unpredictable disastrous consequences for the entire world economy. Till time "H" have to wait quite a bit, let's say, 10 to 13 years.

6. CONCLUSION

The Forex is very complex market with big number of players on it and Central Banks are really important players on this market. Theirs influence on the market is undeniable as shown by this work. Can it be said that the Central banks are setting the pace for market trends? Basing the answer on the analysis - answer is rather no than yes. And the reason for that is the huge number of factors influencing the formation of the exchange rate, from the weather to the change of the political leader. Of course these factors are not such individually significant but together they are creating trend directions on the market, that are stronger than the Bank interventions directed against them.

According to the work performed all currencies considered in the practical part exposed to the effects of interventions in one way or another. The degree of influence of the intervention on the overall market and the exchange rate more dependent on the well-chosen moment and the situation on the market than resources spent on its implementation. The example of the Japanese Central Bank can be clearly observed, when verbal intervention had tangible success.

The possibility of official intervention in the free market is justified by the fact that the exchange rate is so important price for the economy that it should be regulated. The success of foreign exchange interventions depends on the intensity and timeliness.

Often the intervention may not have long-term impact on the currency market, it should apply for other short term purposes. One such example is that the intervention gives extra time for both the politicians and market participants. The market additional time needed for revaluation of its fundamental and technical terms. Politicians need it for in-depth analysis of the economic situation and revaluation policy.

Let's try to summarize all of the above. Central Bank intervention helps to bring down a sudden wave of crisis and gives the state a time cushion that is necessary for the revision of monetary and fiscal policy. Large currency transactions conducted through the open market, lead to immediate change of national currency rate, but at the same time they increase the risk. On the basis of studied materials, it can be stated unequivocally that the most successful are planned interventions that do not contradict to the trends in the Forex market. Such intervention is designed for long-term prospects and include measures for several years ahead. These measures contain comprehensive approach including the purchase or sale of foreign or national currency, REPO auctions, verbal elements, bond activity, etc.

7. REFERENCES

Books, Magazines and Articles

Aizenman, J., & Glick, R. (2009). Sterilization, Monetary Policy, and Global Financial Integration. *Review Of International Economics*, 17(4), 777-801.
<http://dx.doi.org/10.1111/j.1467-9396.2009.00848.x>

Basu, K. (2012). How to devalue exchange rates, without building up reserves: Strategic theory for central banking. *Economics Letters*, 117(3), 758-761.
<http://dx.doi.org/10.1016/j.econlet.2011.12.069>

Basu, K., & Varoudakis, A. (2016). How to move the exchange rate if you must: the diverse practice of foreign exchange intervention by central banks and a proposal for doing it better. *World Bank Policy Research, Working Paper 6460*.

Chutasripanich, N., & Yetman, J. (2015). Foreign exchange intervention: strategies and effectiveness. *BIS Working Papers, No 499*.

Devereux, M., & Engel, C. (2002). *Exchange rate pass-through, exchange rate volatility, and exchange rate disconnect*. Cambridge, MA.: National Bureau of Economic Research.

Engel, C. (2011). Currency Misalignments and Optimal Monetary Policy: A Reexamination. *American Economic Review*, 101(6), 2796-2822.
<http://dx.doi.org/10.1257/aer.101.6.2796>

International Monetary Fund,. (2011). Foreign Exchange Intervention: A Shield Against Appreciation Winds?. *IMF Working Papers*, 11(165), 1.
<http://dx.doi.org/10.5089/9781462301218.001>

Jagerson, J., & Hansen, S. (2011). *All about Forex trading*. New York: McGraw-Hill.

Jongen, R., Wolff, C., Zwinkels, R., & Verschoor, W. Chartists, Fundamentalists, and Dispersion in the Foreign Exchange Market. *SSRN Electronic Journal*.
<http://dx.doi.org/10.2139/ssrn.1359220>

Kadochnikov, P. (2004). Exchange-rate and monetary policies in Russia. *Problems Of Economic Transition, May 2004/Vol. 47, No 1*.

Klein, M., & Shambaugh, J. (2010). *Exchange rate regimes in the modern era*. Cambridge, Mass.: MIT Press.

Lien, K. (2013). *Lien on forex trading*. [Place of publication not identified]: John Wiley & Sons Inc.

Market volatility and foreign exchange intervention in EMEs: what has changed?. (2013). *Bank For International Settlements, BIS Papers no 73*.

Menkhoff, L. (2010). High-frequency analysis of foreign exchange interventions: what do we learn?. *Journal Of Economic Surveys*, 24(1), 85-112. <http://dx.doi.org/10.1111/j.1467-6419.2009.00582.x>

Montoro, C., & Ortiz, M. (2013). Foreign exchange intervention and monetary policy design: a market microstructure analysis.

Pilbeam, K., Bris, A., Alcidi, C., Barslund, M., De Groen, W., & Gros, D. (2015). Currency Interventions: Effective Policy Tool or Shortsighted Gamble?. *Intereconomics*, 50(2), 64-81. <http://dx.doi.org/10.1007/s10272-015-0528-0>

Reserve Bank of Australia,. (2011). Foreign exchange market intervention, Bulletin.

Reserve Bank of New Zealand,. (2012). Currency intervention: the profitability of some recent international experiences. Wellington.

Spronk, R., Verschoor, W., & Zwinkels, R. (2013). Carry trade and foreign exchange rate puzzles. *European Economic Review*, 60, 17-31. <http://dx.doi.org/10.1016/j.eurocorev.2013.01.007>

Subbarao, D. (2013). Central Banking in Emerging Economies Emerging Challenges. *Speech At The European Economics And Financial Centre, London, July 17*.

Tharp, V. (2007). *Trade your way to financial freedom*. New York: McGraw-Hill.

Understanding repos and the repo markets. (2016). *Euroclear, March 2009*.

Online sources

Bank of Japan. (2016). *Boj.or.jp*. Retrieved 9 February 2016, from <https://www.boj.or.jp/en/>

Bank of Russia. (2016). *Cbr.ru*. Retrieved 11 February 2016, from <http://www.cbr.ru/eng/>

Carstens, A. (2013). *The quest for successful policy responses to sovereign crises*. *bis.org*. Retrieved 18 January 2016, from <http://www.bis.org/review/r130205g.pdf>

CBR shows how not to intervene - FT.com. (2014). *Financial Times*. Retrieved 2 March 2016, from <http://www.ft.com/intl/cms/s/0/f2b0385c-8836-11e4-ac67-00144feabdc0.html#axzz42SS6KSG8>

FOREX. (2009). *Tradeforexgreat.blogspot.cz*. Retrieved 10 November 2015, from <http://tradeforexgreat.blogspot.cz/>

Forex Market Size: A Traders Advantage. (2016). *Dailyfx.com*. Retrieved 6 January 2016, from https://www.dailyfx.com/forex/education/trading_tips/daily_trading_lesson/2014/01/24/FX_Market_Size.html

History of Bank of Japan Interventions -SNBCHF.COM. (2015). *SNB&CHF Gold&FX*. Retrieved 10 March 2016, from <https://snbchf.com/monetary-fiscal-policy/history-boj-interventions/>

History of SNB Interventions SNB&CHF Gold&FX. (2014). *SNB&CHF Gold&FX*. Retrieved 10 March 2016, from <https://snbchf.com/chf/2014-chf/financial-crisis-snb-interventions/>

McDermott-Fox, M. (2013). *Mahifx Infographic: The \$5.3 Trillion Forex Market Explained.* *Prnewswire.com*. Retrieved 8 November 2015, from <http://www.prnewswire.com/news-releases/mahifx-infographic-the-53-trillion-forex-market-explained-229134291.html>

Swiss National Bank (SNB) - The Swiss National Bank conducts Switzerland's monetary policy as an independent central bank. (2016). *Snb.ch*. Retrieved 5 January 2016, from <https://www.snb.ch/en/>

TABLE-Global FX volume reaches \$5.3 trillion a day in 2013 -BIS. (2013). *Reuters*. Retrieved 17 December 2016, from <http://www.reuters.com/article/bis-survey-volumes-idUSL6N0GZ34R20130905>