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THE RELATIONSHIP BETWEEN THE CHANGE IN DOLLAR PRICES AND STOCK PRICES

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DOLAR FİYATLARINDAKİ DEĞİŞİM İLE HİSSE SENEDİ FİYATLARI ARASINDAKİ İLİŞKİ

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ABSTRACT

The major aim of the present study is to investigate the relationship between stock prices and Euro/dollar parity, and industrial index prices, in four different countries, which are Turkey, USA, Germany and France, and in three different time periods determined by a global crisis situation. First, the extant literature on stock prices, Euro/dollar parity and industrial index prices have been investigated. Then, the background and the macroeconomic conditions in these four different markets have been analyzed. Then, the regression analyses have been conducted for each country and each time period situation (pre-crisis period, crisis period, post-crisis period) having stock prices and Euro/dollar parity as independent variables and industry index prices as the dependent variable. Results indicated that euro dollar rate significantly predict industry price indexes for pre-crisis period, crisis period and post-crisis period, for all of the four countries. It has also been found that crisis situation increases industrial indexes in Turkey, while it decreases industrial indexes for USA and France. For Germany, industrial indexes were not affected from the crisis situation. This may be explained by the fact that in Turkey, crisis situation is tried to be compensated by increasing prices, meanwhile in USA and Germany have different reflections which resulted in increasing industrial index prices. On the other hand, in France, the industrial index prices have not changed due to the crisis. The findings are especially important as they also capture the location and time period based change and as they reflect how a global crisis situation might affect the relationship between these indices.

Key words: stock prices, industry index prices, Euro/dollar parity, crisis, investments

ÖZET

Bu çalışmanın temel amacı, hisse senedi fiyatları ile Euro/dolar paritesi ve sanayi endeks fiyatları arasındaki ilişkiyi küresel kriz öncesi, kriz ve kriz sonrası olmak üzere üç farklı zaman diliminde ve Türkiye, ABD, Almanya ve Fransa olmak üzere dört farklı ülkede incelemektir. Öncelikle, hisse senedi fiyatları, Euro / dolar paritesi ve endüstriyel endeks fiyatları ile ilgili mevcut literatür incelenmiştir. Ardından, bu dört farklı üşledeki ekonomik arka plan ve makroekonomik koşullar analiz edilmiştir Daha sonrasında ise, bağımsız değişken olarak hisse senedi fiyatları ve Euro/dolar paritesi, bağımlı değişken olarak sanayi endeksi fiyatları seçilmek üzere, her bir ülke ve her dönem (kriz öncesi dönem, kriz dönemi, kriz sorası dönem) için regresyon analizleri yapılmıştır. Sonuçlar, Euro/dolar kurunun dört ülkenin tamamı için kriz öncesi dönem, kriz dönemi ve kriz sonrası dönem endüstri fiyat endekslerini önemli ölçüde belirlediğini göstermiştir. Kriz durumunun Türkiye'de sanayi endeks fiyatlarını artırdığı, ABD ve Fransa için de sanayi endeks fiyatlarını düşürdüğü tespit edilmiştir. Almanya için endüstriyel endeksler kriz durumundan etkilenmemiştir. Bu durum, Türkiye'de kriz durumunun fiyatlar artırılarak telafi edilmeye çalışılması, ABD ve Almanya'da ise kriz durumunun farklı yansımalarının olması ve bunun sonucunda sanayi endeks fiyatlarının artmasıyla açıklanabilir. Fransa'da ise kriz nedeniyle sanayi endeks fiyatlarının değişmediği gözlenmiştir. Bulgular, lokasyon ve zaman bazlı değişimi de yakaladığı ve küresel bir kriz durumunun bu endeksler arasındaki ilişkiyi nasıl etkileyebileceğini yansıttığı için özellikle önemlidir.

Anahtar kelimeler: hisse senedi fiyatları, endüstri endeks fiyatları, Euro / dolar paritesi, kriz, yatırımlar

1.INTRODUCTION

Exchange rates are the most important indicator that affects economic activities in all world markets. In fact, an unstable course of a country's currency leads to a negative course of economic activities in the relevant country or other countries that do business with that country's currency, and consequently economic instability.

Foreign exchange markets, which have important functions such as transferring the purchasing power of a national currency to another money, providing loans to commercial and industrial investments, and protecting parties against exchange differences at different times in different markets, are highly effective in the development of world trade and rational distribution of capital in the international arena. plays a role. If borrowing is made in a different currency, it can be avoided from the exchange rate risk by performing the necessary derivative transactions in return.

Foreign exchange management, which is defined as the most profitable and efficient balancing of foreign currency assets and liabilities, is an important factor for companies. Changing the exchange rate affects firms as well as macro economies. In case the foreign currencies change value against the national currency or the national currency against the foreign pcurrency due to the receivables or debts of the companies trading international goods and services, there is a risk of loss or profit. Likewise, losses arising from currency risk can negatively affect the costs of companies and therefore the prices of companies. On the contrary, companies that manage their foreign currency in the best way and benefit from exchange rate fluctuations are more successful. In this case, the competitiveness of companies is also affected This effect is sometimes positive and sometimes negative. Firms should use various financial instruments to avoid currency risk. Thus, they can minimize the

exchange rate loss that will occur in their balance sheets. And, as an important recommendation, if companies borrow in currency in terms of their income, they will avoid exchange rate risk.

It is worth notation that the main purpose of the companies is to maximize the present value of the companies in terms of shareholders. Achieving this basis is possible by maximizing the market value of the company's existing stocks. In determining the market value, it is important to calculate the stock returns of the companies. In this regard, the stock returns of firms change according to the nature of the exchange risk they face.

Today, it is possible to say that the interaction between capital markets and money markets is increasing day by day in the financial system. Fluctuations in the exchange rates of countries, stock market index or other macroeconomic variables cause significant effects on capital movements and foreign trade. For example, narrowing or political instability adversely affects the stock market in an economy, followed by the emergence of international institutional investors on the capital market and hence an upward movement in the exchange rate and the country leads to oppression. The public authorities should stimulate economic growth, it eliminates this should remove pressure on the exchange rate and capital markets should make it attractive to investors.

With the elimination of obstacles to international trade and financial integrations, foreign trade of countries has become very sensitive to the changes in the nominal and real effective exchange rates. Nominal effective exchange rate (NEDK) is the average of the bilateral nominal exchange rates selected by considering a certain criterion using an appropriate weighting method. The real effective exchange rate index (REDKE) is the correction of NEDK with relative price or cost differences between countries. REDKE contains information about relative price or cost development between countries and is therefore considered as one of the

important macroeconomic indicators used in evaluating the competitiveness of economies (Saygılı et al., 2010: 2). An increase in the real effective exchange rate shows that TL has appreciated in real terms, in other words, the price of Turkish goods in terms of foreign goods has increased. REDK is an important indicator in that it contains more information about the country's economy and the country's foreign competitiveness.

The major aim of this study is to investigate the relationship between euro/dollar parity and stock prices, in three different countries and also in three different time periods distinguished by a major financial crisis, with the motivation of capturing the location and time based differences in this relationship. As REDKE rises, TL will appreciate in real terms as domestic prices will become more expensive than international prices. With the appreciation of TL against foreign currencies, both domestic and foreign investors will want to invest in stock markets. With the increase in demand for stocks, there will be increases in the stock market index (Savaş ve Can, 2011: 336). Stock markets are considered as the barometer of a country's economy. Therefore, determining the relationships between macroeconomic variables and stock market indices is very important for policy makers and market participants. Industrial shares constitute an important part of the Turkish stock market. The BIST Industrial Index, which was created to track these industrial shares, provides market participants with an idea about the collective change in the stock prices of companies operating in the industry sector over time.

There are many studies investigating the relationship between exchange rates and stock markets. There are studies that argue that exchange rates affect stock prices and that there is a long-term relationship between them, as well as studies that argue that there is no relationship. Therefore, it is not possible to mention a consensus among the previous studies on this subject.

The second chapter of the present study discussed the extant literature on the association between the euro/dollar parity and stock market, in Turkey, USA, Germany and France, throughout the history, and also the effect of global financial crisis on euro/dollar parity. Meanwhile, third chapter introduces the data that has been used, the research model and the methodology of the present data analysis. In the fourth chapter, the implications of the findings, both for literature, stock market and business have been discussed. In the final chapter, an overview of the study and the conclusions that are drawn from the study are explained.

2. LITERATURE REVİEW

2.1 THE EFFECT OF THE EURO/DOLLAR PARITY ON THE STOCK MARKET IN TURKEY

Several major studies investigate the relationship between exchange rates and stock market indices in Turkey. Kasman (2003) investigates the relationship between BIST 100 Index, Borsa Istanbul sector indices (financial, industrial and service sector index) and USD / TL at the rate of daily data taking into account the long-term relationship between the variables with the Johansen cointegration approach, and he found that there is only a Granger causality relationship from USD / TL exchange rate to the BIST industry index. Yılmaz, Güngör and Kaya (2006), on the other hand, found the existence of a long-term relationship between stock prices and BIST 100 Index, CPI, money supply, interest rate, exchange rate, foreign trade balance and industrial production index variables in the period 1990-2003. 1990) examined by cointegration test. They identified a mutual Granger causality between the BIST 100 Index and the exchange rate and M1 market supply variables. Pekkaya and Bayramoğlu (2008) investigated causality relationships using the daily data of USD /

TL exchange rate, BIST 100 and S&P 500 Index for the period of 1990-2007. From the BIST 100 and S&P 500 Indices to the USD / TL exchange rate, they also determined a bidirectional Granger causality relationship between the BIST 100 Index and the USD / TL exchange rate. Türsoy, Günsel and Rjoub (2008) analyzed the effects of 13 macroeconomic variables on 11 portfolios obtained from 174 stocks that constitute the BIST Industrial Index within the framework of the Arbitrage Pricing Theory, using monthly data from 2001-2005. According to the results of the study, it has been determined that macroeconomic variables affect the returns of the portfolios at different levels and 6 portfolios containing industrial shares are particularly affected by the exchange rate.

İpekten and Aksu (2009) investigated the short and long-term effects of changes in the Dow Jones Industrial Index (DJIA), the Dollar / TL exchange rate, interest rate and gold prices on the BIST 100 Index. They concluded that DJIA's Dollar / TL exchange rate has a statistically significant effect on the BIST 100 Index in both the short and long term. Aydemir and Demirhan (2009) investigated whether there was a causal relationship between Borsa İstanbul services, finance, industry and technology indices and the Dollar / TL exchange rate in the period of 2001-2008. They found strong evidence that a negative causality from exchange rate to all indices was valid, a positive causality from the services, finance and industry indices to the Dollar / TL exchange rate, and from the technology index to the Dollar / TL exchange rate. Turan (2011) analyzed the relationship between BIST 100 Index, USD and CPI for the period of 1986-2008 using the Vector Error Correction (VEC) method and causality tests. They concluded that there is a negative long-term relationship between the BIST 100 Index and the US Dollar, and a positive and long-term relationship between the BIST 100 Index and the CPI. It also found that the Granger causality relationship from the US Dollar rate and from the CPI to the BIST 100 Index is valid.

In the research that has been made for 1998-2008 period on the Real Effective Exchange Rate Index (REER) and the Industrial Production Index (CPS), the impact of variability on Turkey's textile exports has been investigated, using the method by Johansen and Juselius (1990), and a cointegration relationship has been determined between REER and textile and ready-to-wear exports (Önder & Hatırlı, 2010). They first used the Error Correction Model (VECM) to find the approximation speed of the variables towards the long-term equilibrium value and then the Granger Causality test to determine the direction of the relationship between the variables. It was concluded that the uncertainty increase in REER had a negative effect on textile exports and a one-way causality relationship between REER and textile exports, and a two-way causality relationship between CPS and REER. Another striking result of this study is that a 1% uncertainty in REER reduces textile exports by 18.52%.

Savaş and Can (2011), using the monthly average closing values in the period of 2000-2009, investigated the relationship between BIST 100 Index and Euro - Dollar (EURUSD) Parity and Rifle-based Real Effective Exchange Rate Index (TUFE-REER) with Multiple Linear Regression and Granger Causality Test. They analyzed. Accordingly, it has been determined that EUR / USD Parity and TUFE-REER announced the 77.5% of the change in BIST 100 Index, positively affecting the stock market index, and the most important variable affecting the BIST 100 Index was TUFE-REER. According to the results of the Granger causality test, it was determined that the change in the value of TUFE-REER one month ago did not affect the BIST 100 Index, but a change in the BIST 100 Index affected the value of the TUFE-REER one month ago.

When the results of some studies that examine the relationship between exchange rates and stock prices and fall within the scope of the study are evaluated in general, it is not possible to talk about a full consensus on this matter. The main reasons for such a result may be the selected country or countries, analysis method, data set and the differences between periods that are examined. Some stocks may

react more slowly to the exchange rate, these stocks may be affected more slowly and may have lagged effects. In the second case, it is expected that the adaptation will be slower. foreign investment in Turkey, following the increase in interest rate is accelerating. Incoming capital causes the appreciation of the exchange rate. As the Turkish Lira gains value, the demand for domestic currency instruments increases. Stock prices also increase in this process.

Although there are many studies in the literature trying to measure the relationship and interaction of BIST Industry Index with other variables, no study specifically focused on the global crisis period between 2008-2009 and investigate this period as separating it into three sub-periods, such as pre-crisis, crisis and post-crisis periods, to better capture the effect of the crisis.

2.2 THE EFFECT OF THE EURO/DOLLAR PARITY ON THE STOCK MARKET IN USA

The first of the pioneering studies investigating the relationship between exchange rates and stock prices was done by Frank and Young (1972) and found that there was no significant relationship between the variables. Later, Aggarwall (1981), using the regression analysis, revealed that there was a positive relationship between the US stock prices and the US dollar in the period 1974-1978, and this relationship had a stronger effect in the short term than in the long run. Giovannini and Jorion (1987), on the other hand, investigated the existence of the relationship between American stock prices and exchange rates and reached similar results with the study of Aggarwal (1981). Contrary to previous studies, Soenen and Hennigar (1988) found that using the monthly stock prices and effective exchange rates in the period 1980–1986, a strong and statistically significant negative relationship was valid between the value of the US Dollar and stock prices.

2.3 THE EFFECT OF THE EURO/DOLLAR PARITY ON THE STOCK MARKET IN GERMANY

Ayaydın and Dağlı (2012) examined macroeconomic variables affecting stock returns in emerging markets and reached the conclusion that S&P 500 index positively affected all markets, exchange rate, 1998 Asian crisis and 2008 global financial crisis variables. Gupta and Modise (2013) analyzed macroeconomic variables that affected the stock market returns in South Africa in the period 1990-1996 and 1997-2010 with regression analysis. Accordingly, they concluded that interest rate, labor, inflation, money supply, industrial production, global oil production and crude oil prices significantly affect the stock market returns. Büberökü (2013) questioned the relationship between stock prices and exchange rates in some developed and developing countries with co-integration and Granger causality, and found a one-way causality relationship from stock prices to exchange rates in Canada and Switzerland. Also, no causality relationship has been found in Japan, Germany, England and Australia. Singapore and has identified a unidirectional causal relationship to stock prices and the exchange rate is in South Korea, Turkey has coincided with a true causal relationship to the exchange rates of the stock price.

According to Paramati and Gupta (2013), who examined the relationship between exchange rate, interest rate and stock market return with the VAR model and Granger causality in India in the period 1992-2011, there is a two-way causal relationship between exchange rate and interest rate. In addition, a one-way causality relationship has been determined from exchange rate and interest rate to stock exchange return. According to Moore and Wang (2014), who analyzed the relationship between real exchange rate and stock market return by using DCC model in developed and developing Asian countries, there is a negative relationship between

variables. In addition, there is a dynamic relationship between the two variables and the current account balances of these countries.

Dominguez and Tesar (2001) discussed the firm-industry-market returns and exchange rates of eight countries, including Chile, France, Germany, Italy, Japan, the Netherlands, Thailand and the UK, between the period 1980 and 1999. They stated that the relationship between the exchange rate and the stock price can be seen more clearly than the relationship between the exchange rate and profitability, and they examined this relationship with the "Capital Asset Pricing Model". According to the model, it is emphasized that market returns have a systematic effect on firm return. Even if the β1 coefficient indicating the currency risk is equal to 0, it does not mean that the risk does not exist, but on the contrary, it means that the exchange rate risk is the same as the market risk. One of the most important results of the study is that company and sector risks can be at different levels and directions (Dominguez and Tesar, 2001: 4-5).

Contrary to these examples, which demonstrate that the efficient markets hypothesis is not valid in the markets they are examining, Plíhal (2016) investigated the causal relationship between the German stock index (DAX) and the industrial production, money supply, inflation, interest rate, exchange rate and trade balance. As a result of the analysis, no causality towards stock prices was determined from any of the macroeconomic variables. This situation demonstrated the validity of the efficient markets hypothesis for the German stock market.

Plíhal (2016) analyzed the relationship between DAX index and industrial production, money supply, inflation, interest rate, exchange rate and trade balance with Toda-Yamamoto (1995) causality test in order to test the effective markets hypothesis in the German stock market. As a result of the study covering the period of January 1999-September 2015, one-sided causality was determined from stock prices to industrial production and interest rates, and bilateral causality between

money supply and stock prices. No causality towards stock prices was determined from any of the macroeconomic variables included in the analysis. This result demonstrated the validity of the effective markets hypothesis for the German stock market. On the other hand, a significant part of the research on stock markets in the literature is based on the concept of effective market hypothesis (Fama, 1970). This hypothesis argues that changes in stock prices cannot be predicted with the information disclosed to the public. Although many studies in the literature have obtained opposite results from this hypothesis, the change in the TIMEX index cannot be predicted by any macroeconomic variables in the model and the index can predict the change in industrial production. (Recently, similar results were found in a study by Plihal (2016) for the German DAX index). Thus, it was concluded that the relationship between TIMEX 79 index and macroeconomic variables was compatible with the efficient markets hypothesis in the analysis period.

2.4 THE EFFECT OF THE EURO/DOLLAR PARITY ON THE STOCK MARKET IN FRANCE

Bartram and Bodnar (2012) analyzed the effects of exchange rate risks on stock market returns in 37 developed and developing countries with panel data analysis methods and reached the conclusion that stock market returns are more sensitive to exchange rate risk in developing countries than in developed countries. In addition, the effect affects the cash flow and discount rates of the companies operating in the stock market. Chkili et al. (2012) analyzed the relationship between stock exchange returns and exchange rates with GARCH models from January 1999 when the transition to Euro was announced in Germany, France and the UK. According to this; In all countries, two-way causality relationship was determined between variables. In France and Germany, there is a strong interaction between the variables.

Bruno and Lupi (2003) attempted to estimate industrial production at the European Monetary Union level, using data compiled from the economic trend surveys of the three major countries (France, Germany and Italy) in the European Monetary Union. For this purpose, the variables in the production trend, the level of orders, the level of export orders, the stocks of finished goods, the expectations regarding production and the sales prices, obtained from the economic trend surveys conducted in France and Germany, are integrated into a single variable with the dynamic factor model. Later, a vector autoregression (VAR) model, consisting of the economic indicator derived from the industrial production index and trend data, was established to estimate the industrial production indices of Germany and France. It was seen that the estimates produced gave reliable results 6 months ahead for France and 3 months ahead for Germany. A different approach, the method explained by Bruno and Lupi (2001), was used to estimate the industrial production index of Italy. In this method, the estimates are derived from the three-variable VAR model; the variables used are the industrial production index logarithm, the economic trend survey production expectations, and the logarithm of the amount of goods transported by train. Estimates from three countries have been estimated by a general unobserved components model, which also covers the production indices of EU member countries outside these countries, and the industrial production index at the European Monetary Union level.

2.5 THE EFFECT OF GLOBAL FINANCIAL CRISES ON EURO/DOLLAR PARITY

1999 represents an important turning point in the European integration process. The Union started the only coin application they named as Euro with this date. It was unprecedented for the Euro to be put into use and gradually the removal of national currencies and their replacement by the Euro, and the transfer of the

powers of the member states to the national authority to a higher authority. The basket currency, which originally emerged as the European Account Unit and consisting of a certain composition of the national currencies of the member countries, was replaced by the European currency (ECU) in December 1978 by the Council's decision. The European Monetary Cooperation Fund (1973) was in charge of the management of the European Currency. Member states invested some of their gold reserves in the fund, while receiving ECUs. Although the ECU was a common means of payment, it did not have banknote and coin forms (Gandolfo, 1987: 380-393). The European Monetary Cooperation Fund was replaced by the European Monetary Institute in 1994 and was tasked with making the necessary preparations during the transition to monetary policy. The Delors Report has envisaged three phases for switching to single money (Europeaon Comission, 2010: 1). During these three phases, the European Central Banks system was to be established by establishing the European Central Bank in order to coordinate between the central banks of the member states, which will provide economic and financial harmony. At the final stage, the use of the euro would begin and as of July 1, 2002, it would completely replace the national currencies. Masricht Criteria would be implemented to ensure Monetary Union. According to these criteria, each member country; it would maintain price stability within itself, realize fiscal discipline, stabilize its national currency, and finally stabilize interest rates (Bankue de France, 2005).

European Union member countries have achieved these criteria to a certain extent and reached monetary union within the envisaged period. The Euro, which emerged as an alternative strong reserve currency against the US Dollar in the first half of the 2000s, also faced some internal and external weaknesses. The first was that the new countries included in the euro zone during the enlargement of the European Union could not fully meet the conditions for the monetary union. In addition, many of the member states' debts increased over time and started to have financial discipline problems. As the European Union decision mechanisms work

slowly, it has been slow to develop policies against the developments in international markets. As a matter of fact, the slow functioning of the decision-making process had an impact on the difficulties in the euro area in the face of the global crisis that started in 2008 and whose effects are still continuing.

The mortgage crisis, which started in the USA in 2008, spread to the whole world in a short time, and affected the national economies. Countries with large amounts of dollars in their reserves have attempted to replace their American dollars with Euros. Soon, with their quick decisions, the American Central Bank and the American economy management relieved the negative effects of the crisis on the dollar to a certain extent. EU money management, which was delayed in taking the necessary precautions when the negative weather turned towards the Eurozone, was insufficient to defend the Euro due to the large debts of the member countries (European Economy, 2009).

Due to the impact of the global crisis, debt problems have emerged in some countries, including the eurozone, especially Ireland, Greece and Portugal. The EU, which faces the debt crisis added to the global crisis, is not expected to recover in the short term.

The economic objectives of the European Union process can be summarized as the creation of a common economic area and the use of a single common currency. To achieve this, common customs, fiscal and monetary policies had to be created and implemented smoothly and flawlessly. This was tried to be achieved with Maastricht Criteria. Some success has been achieved in common customs policies. Monetary policy with monetary union was taken under the authority of the European Central Bank. Fiscal and tax policy implementations remained under the authority of governments. Harmonization on this issue would be at the initiative of the governments. This was the soft belly of the merger process. Governments created their fiscal policies to serve their political goals. They moved away from the fiscal

discipline with the confidence of the European Union process. Although budget deficits and increasing debt burdens were not felt much in the years after the EU accession, they surfaced with the 2008 global crisis. Thus, it was observed that the European Union bodies could not control the governments and policies adequately, could not establish strong control mechanisms and the governments could hide their current situation (Welfens, 2010).

Another problem encountered during the merger process was the interregional development differences. European Union funds were created to overcome development differences. The difference would be closed by making these funds available to underdeveloped regions within the Union. However, the EU funds have not been large enough to compensate for development disparities since they were established. They became completely inadequate with new joins to the Union. Existing uses could not be transferred to sectors that increase the commercial competitiveness of less developed regions. Thus, development differences between regions could not be eliminated (Halpin, Sophister)

Most of the countries that joined the European Union afterwards were not in a level to compete in the manufacturing industry with the founders of the union such as Germany, the Netherlands and France. The manufacturing industry of other countries of the union started to decline in the face of highly competitive countries, especially Germany, and these countries started to give a trade deficit (Bagus, 2010). In many European Union countries, the debt crisis entered under these conditions.

Causes of the crisis; It can be summarized as the wrong allocation of resources, loss of competition and the inability to see these negativities due to the economic recovery that started with the participation in Euro. (Dadush, 2010)

Interest rates fell in countries that joined the euro before the crisis. The borrowing opportunities of these countries have become easier. In these conditions, domestic demand increased rapidly. Current imbalances and increasing private debt

accompanied the increase in demand in GIIPS (Greece, Ireland, Italy, Portugal, Spain) countries. Increasing demand led to an increase in the prices of wages and all assets, especially non-trade assets and services. The increase in service prices was around 1.5% on an annual basis in GIIPS countries, while it was around 0.5% in Northern European Countries (Austria, Belgium, France, Germany and the Netherlands). Between 1997 and 2007, 4% of GDP shifted from industrial sectors to financial services, real estate and trade. However, this rate is 2% in Northern European Countries in the same period. Public spending per capita increased by 75% between 1997-2007. In northern European countries, public spending growth per person remained at 34%. The economic and institutional domination of the Northern European Countries was reinforced in these countries (Dadush, 2010).

Competition inequalities remained not only within the Eurozone. Countries with high competitiveness, especially Germany, also lost competition against the outside world. Unit labor costs increased compared to countries such as the USA, Japan and China outside the euro area. Eurozone countries regressed in export markets against these countries. The appreciation of the euro contributed to the loss of competition (Bayoumi, Harmsen, Turunen, 2011).

Germany gained a competitive advantage with the transition to the Euro within the European Union. Its exports increased rapidly and became one of the leading exporting countries in the world. In this period, labor and production costs rised in Germany as well as in all EU countries. However, real exchange rates became in favor of Germany because the increase in Germany was lower than other countries (European Economy, 2009).

As the informal economy was large in Greece at the beginning of the euro, tax revenues were low. While it had the lowest performance of the Euro zone in the increase of National Income, it reached the highest level in the region in terms of inflation rates. The borrowing cost of Greece was at the highest level for these

reasons. Between 2000 and 2008, inflation rates fell slightly above 3% during the Euro harmonization process. Macroeconomic conditions improved and foreign capital inflow increased. In 1995, net capital inflow rised from 5% of GDP to 100% by 2008. Imports, which increased in line with the increase in domestic demand, rised the current account deficit. While the current account deficit was 3.7% in 1997, it rised to 14.4%. Increasing demand enhanced prices and employment costs and reduced the competitiveness of Greece. Since 1997, consumer prices have increased by 47%, well above the Euro average of 27%. Since 2000, per capita employment compensation increased by 80%, well above the Euro average of 23%. The real exchange rate increase forecast of the IMF in Greece is around 20-30%. Loss of competition is evident in these conditions (Dadush, 2010).

With the advent of the crisis, growth reversed and debt stock increased with budget deficits. National income increased by 2% in 2008, decreased by 2% in 2009, parallel public revenues decreased and budget deficit rised from 7.7% in 2008 to 13.6% in 2009. Borrowing rised from 96% of GDP in 2007 to 116% in 2009 (Nelson et al).

During the transition to the euro, Portugal was one of the fastest growing countries in the EU, with 4% growth. Interest rates in Portugal fell to 6% during the Euro harmonization process. Loose fiscal policies and low interest rates increased consumption spending. Fixed capital investments enhanced. The construction industry has grown. While the current account deficit was zero in 1995, it increased to 2000 and reached 9%. However, production did not increase at the same rate (Pioneer Perspectives, 2011).

Portugal's household consumption growth remained below Spain, Greece and Ireland, which increased by 1.5% to 3–5% between 2001-2008. However, GDP growth was also lower at 0.8%. Wage increases in Portugal were 6% annually between 1995 and 2002, twice the EU average. Depending on the unit labor cost, real

exchange rates appreciated by 12% in this period. While domestic demand increased, there was a loss of competition in export sectors. Foreign direct capital inflow decreased and fell below the EU average (Dadush, 2010).

Ireland has based its continuous growth since the 1990s on its development in the construction industry. Increasing welfare and demand for the construction sector have swelled housing prices to a large extent. With the advent of the 2008 global crisis, housing prices dropped by 50–60%, causing Ireland to be dragged into the crisis. The financial structures of the banks, which had to restructure their housing loans, have deteriorated. The government transferred a $ 45 billion resource to improve the banks' financial situation. This situation increased the government's budget deficits. With the impact of the crisis, the economy began to contract and tax revenues began to fall. The decrease in tax revenues further tightened the budget, increasing uncertainty in Ireland (Honohan, 2009).

After Italy entered the Euro, it started to lose competition. Italy has lost its competition against Germany in the last ten years and therefore has declined in export markets. Unit labor cost is quite close to Greece, which has increased by 32% between 2000 and 2009, increasing by 34%. Between 1996 and 2004, while productivity decreased by 1% annually, it increased by 1% in Germany. Structural problems such as rigidity and dual structure in the labor market, small business structures, corrosive and intense regulations, insufficient public services, telecommunications, transportation and energy lack of competition in basic service sectors have been factors that led the economy to uncertainty. When high public debts are added to the slowly growing GDP, there is a potential crisis for Italy. The ratio of public debts to GDP is 115%, interest rates are 4%, and Italy's interest payments are 4.5% of GDP, which is equivalent to the education budget (Rovelli, 2010).

Due to the crisis in Greece, the fluctuations in the negative weather and interest rates in the Eurozone have made Italy, which has a narrow economic demand

and a fragile economic structure, difficult, but did not affect other countries in the Euro Area as much as Italy. (Bryson, 2011).

High budget deficits in borrowing countries increased borrowing requirement and high debt stocks increased vulnerability in euro area countries. Concerns have rised that GIIPS countries can convert their debts, and credit ratings from non-Italy have been reduced by credit rating agencies. This situation rised borrowing costs. Credit default swaps (CDS) of GIIPS countries have increased and these countries have faced borrowing difficulties from international markets. Greece, Ireland and Portugal received assistance from the IMF and the EU (Dadush, 2011).

Banks purchased large amounts of bonds to provide public financing. Since they had difficulty in finding non-deposit resources, funding costs increased and they had to turn to the Central Bank resources to a large extent. Low interest rates reduced profit rates and caused the financial structures of banks within the capital constraint to deteriorate. The high short-term debt of banks is another factor that increases fragility. Central Banks expanded their balance sheet by taking the papers of the Euro Area countries. As a result of the monetary expansion, it increased interest rates slightly (25 basis points) against the risk of inflation in April 2011. When the US and Japanese central banks lowered their interest rates in the same period, this time the Euro zone faced the problem of appreciation of the euro against the dollar and the yen. This posed the risk of slowing down growth, which is essential for getting out of the crisis. Thus, it has become difficult for the EU central bank to suppress the increase in inflation by raising interest rates (Dadush, 2011).

Despite the crisis in the euro area, there is no indication that any country will leave the monetary union. The cost of staying in the Monetary Union seems to be less than leaving. A country willing to leave will reprint national currency, and the bank will face huge costs for compliance in all areas of economic life, including financial systems. Considering that there is a three-year preparation period for the transition to

the euro, the dimensions of the transition costs can be estimated. In addition, due to the depreciation of the national currency in the country leaving the Euro and other risks caused by the departure, capital outflows and resource shortages will increase the costs. (The Economist, 2010: 1) On the contrary, Denmark, Sweden and Hungary, which are outside the euro zone, continue their tendency to enter. Because if they enter the euro zone, business transactions in the same currency will continue, so no exchange rate changes will occur. The crisis significantly affects Eastern European countries and undermines their ability to meet the conditions for entry into monetary union. However, these entry trends will continue (Eichengreen: 1–2).

European countries, which are outside the European Monetary Union, are also in great trouble in the crisis. Most of the liabilities of the Central Banks are in Euros. They can find the Euro they need for their liabilities by increasing the interest rates in the market conditions or by making swap agreements. These countries are limited to investors who will panic even with the slightest rumor and cause capital outflow. For example, the European Central Bank (ECB) and the American Central Bank (FED) lowered interest rates, while Denmark, using its national currency, could not cut interest rates due to capital outflow concerns. Countries whose national currencies are not used in foreign markets as well as their own domestic market have little choice other than being included in Euro (Eichengreen: 1–2).

It is seen that the recovery period from the euro zone will be long. This will cause instability and volatility in financial markets. The Euro will remain weak for a while against other currencies (Oliver, 2011). In order to get out of the crisis as soon as possible and to achieve a good economic performance, the following measures should be taken:

Countries that have faced a debt crisis within the European Union should focus on local demand for economic recovery and demands from developing countries. In this way, when they meet the local demand, their dependence on foreign

countries will decrease, and foreign currency inflows will be provided to the country as they meet the demands from other countries.

Be careful in macroeconomic policies. Fiscal discipline should be ensured and a determined attitude should be pursued. In particular, Greece, Ireland and Portugal should introduce a dense fiscal discipline policy, while Italy and Spain should implement a relatively soft fiscal discipline (Oliver, 2011).

Debt restructuring should be made and debt should spread over a reasonable term. Otherwise, the crisis in Greece, which constitutes the weakest link in the debt crisis, may threaten the rest of the EU with the spillover effect (Sibert, 2011).

In order to eliminate the decrease in competitiveness, measures to decrease the unit labor cost should be taken. Labor costs have been above labor productivity for some time in the European Union. In the pre-crisis period, wage increases especially in Greece and Portugal were above the productivity increases (Felipe, Kumar, 2011).

The orientation of resources to the automobile, financial services and construction sectors caused public financial structures to deteriorate. Countermeasures should be taken and the manufacturing sector should be revived (Bagus, 2010).

Effective mechanisms must be established in order to ensure fiscal discipline in the euro area and to carry out common fiscal policies. “Stability and Growth Pact” was adopted in order to ensure fiscal discipline within the Union (Glossary, SGP: 1). With the last statement made by the European Union, it was stated that the decision of the member countries to have their budgets approved by the EU Commission. (Europa Press Releases, 2010).

The European Union has attempted to take some measures against the debt crisis it is experiencing in itself. These measures are; It can be grouped as elimination

of debt problems, increasing the competitiveness of member states and the European Union, strengthening economic governance within the European Union.

Euro zone countries, together with members of the issued bonds to guarantee the borrowing costs of countries. Thus, they reduced the risk and reduced borrowing costs. In addition, they tried to overcome the payment difficulties of the member countries with the funds they established.

The first established fund is the Balance of Payments Fund. It is aimed to create financing opportunities against the payment difficulties of EU member countries outside the euro zone. The way this fund works is that the country that will use the funds issue bonds with the guarantee of the member countries (Council of the European Union, 2002).

Secondly, the Credit Pool mechanism was created. This system is a one-time debt pool created for the use of Greece. It is a pool of 110 billion Euros, of which 80 billion Euros are financed by the EU and 30 billion Euros by the IMF (European Comission, 2011).

Third, the European Financial Stability Mechanism was created. This mechanism has been created to be used in case EU member countries experience financial difficulties as a result of natural disasters and external factors beyond the control of the member state. However, this mechanism has been used in crises such as Greece and Ireland, which have a certain influence on external factors but also under the intense influence of internal factors. In this system, loans are obtained from markets on behalf of the EU and made available to member countries. With this mechanism, the requirement to implement a strict macroeconomic stabilization program accepted by EU bodies is used for resource use. This mechanism was created temporarily. In 2013 this will be replaced by the European Stability Mechanism (Europe Press Releases, 2010).

Fourth, the European Financial Stability Fund was established in 2010. The purpose of the fund is to provide temporary financing support to Euro Area countries with debt problems, thereby maintaining the financial stability of the monetary union. The fund's way of working is to provide loans to member countries through bonds placed under the common guarantee of the Eurozone countries (Council Of The European Union, 2010). The European Financial Stability Fund is also a temporary fund like the European Financial Stability Mechanism and will be replaced by the European Stability Mechanism in 2013.

Fifth, it was decided to establish the European Stability Mechanism in 2010. This mechanism will be operational in 2013 and will have a continuous institutional structure. The previous ones were temporarily established to provide financial support to Union member countries such as Greece and Ireland, which have debt problems (Council Of The European Union, 2011). As a condition to benefit from the mechanism, the principle of strict implementation of economic adjustment programs has been introduced. The European Stability Mechanism, which will provide loans in slices, can buy bonds of member states in distress for support, if necessary.

In order to increase the competitiveness of the countries of the Euro Zone, the Euro Competition Pact was established. It was proposed by Germany and France on February 4, 2011 as the Competition Pact. The proposal introduced strict control over price competition, financial structure, R&D and Education expenditures to measure the competitiveness of member countries. In addition, it proposed a program to be implemented by member states. According to the program; wage and salary increases will be indexed to price increases, diploma and professional qualifications will be mutually recognized, employee mobility will be ensured, convergence in corporate tax practices and pension systems will be harmonized, debt warning mechanisms will be placed in the constitutional framework and national crisis management systems will be established for banks (BBC, 2011).

When the criticism of the program content was received by the member countries, the program content was somewhat softened and it became the Euro Competition Pact. The provisions for harmonization of taxes and indexing of wages to prices have been removed from the program (European Union, 2011). In the member countries with the program; It is aimed to increase competitiveness, increase employment, increase the sustainability of public finances, strengthen financial stability.

In order to strengthen economic governance, two structures have been established under the name of "Strengthening Economic Governance Task Force", "European Period" and the strategy named "Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth" has been adopted. These three initiatives aimed at ensuring fiscal discipline, harmonization of fiscal policies, and creating common solutions to problems such as employment, environment, education, science and technology, growth and development**.**

3. DATA AND METHODOLOGY

The relationship between stock and dollar prices has been investigated by the correlation analysis, using euro/dollar parity and granger causality tests have been applied. Hence, the study has a quantitative structure.

Correlation analysis has been conducted between stock and dollar prices for each country. Additionally, means for stock and dollar prices in different countries have been compared by ANOVA. All tests have been conducted using SPSS program. SPSS is a widely used program for statistical analysis in social sciences. It is also used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations, data miners and others. The original SPSS manual (Nie, Bent & Hull, 1970) was described as one of the

"most influential books in sociology" that allowed ordinary researchers to do their own statistical analysis. In addition to statistical analysis, data management (case selection, file reshaping, generation of derived data) and data documentation (stored in a metadata dictionary data file) are features of the basic software.

In statistics, ordinary least squares (OLS), a species to estimate the unknown parameters in a linear regression model is linear least squares method. OLS, a series of image according to the least squares principle the parameters of the linear function of the explanatory variables: the dependent variables observed in the data set (the value of the observed variable) minimize the total content of the difference between the predicted who square minimized. with the linear function. The least squares method provides the general rationale for inserting the best fit line between examined data points. Sometimes referred to as "linear" or "ordinary", the most common application of this method aims to create a straight line that minimizes the sum of squares of errors produced by the results of the associated equations. as the square of residuals resulting from differences in observed value and the expected value according to this model. This method of regression analysis begins with a set of data points to be plotted on an x and y axis chart. Using the least squares method, an analyst will produce the best fit line describing the potential relationship between independent and dependent variables. In regression analysis, dependent variables are shown on the vertical y-axis, while independent variables are shown on the horizontal x-axis. These assignments will form the equation for the best fit line determined from the least squares method. Unlike a linear problem, the nonlinear least squares problem has no closed solution and is usually solved by iteration. The discovery of the least squares method is attributed to Carl Friedrich Gauss, who discovered the method in 1795.

Statistical and econometric, an increased Dickey-Fuller test (ADF) tests the null hypothesis that the presence of a time series of a unit root sample. The alternative hypothesis, test varies depending on which version is used, but generally the trend-

stagnation or stasis. It is an augmented version of Dickey-Fuller test for larger and more complex time series models. The augmented Dickey-Fuller (ADF) statistic used in the test is a negative number. Whatever the downside, the rejection of the unit root hypothesis that a certain level of trust is so strong.

3.1 DATA

In the scope of the study, investigations have been made separately for each country. The comparisons have been made between the period before the global crisis, the period of global crisis and the period after the global crisis, separately for USA, Turkey, Germany and France. In that manner, three separate models have been estimated for each country.

BIST (Turkey, Istanbul) database has been used for Turkey's data, DAX (Germany) database has been used for Germany's data, Dow Jones(USA) database has been used for USA, and CAC (France) database has been used for France's euro/dollar parity data. To better capture the changes, daily data has been used. Time interval for the global crisis has been chosen as the time period between March, 2008 and July, 2009. Three years before that period, which corresponds to the time interval between March, 2005 and February, 2008 has been chosen as the pre-crisis period. Three years after the global crisis period, which corresponds to the time period between August, 2009 and July, 2012 has been chosen as the post-crisis period. Data has been received from "Trading Economics" website, where country-based daily stock market data and industrial index prices might be downloaded.

The frequency of data is kept both at daily level, as the results from daily data are more precise and can better capture the dynamics between exchange rates and stock prices indices (Agrawalet al., 2010).

The graphs for euro dollar parity and stock indices for pre-crisis, crisis and post-crisis periods are illustrated in the graphs below.

Figure 1 Pre-crisis period Euro/Dollar parity

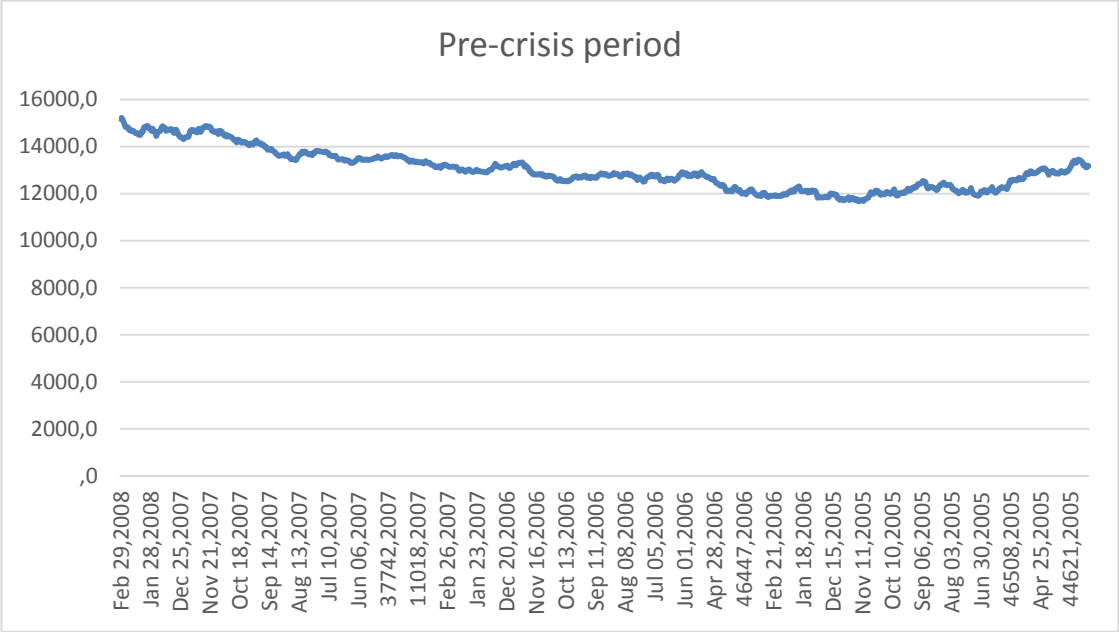


Figure 2 Crisis period Euro/dollar parity

Figure 3 Post-crisis period Euro/dollar parity

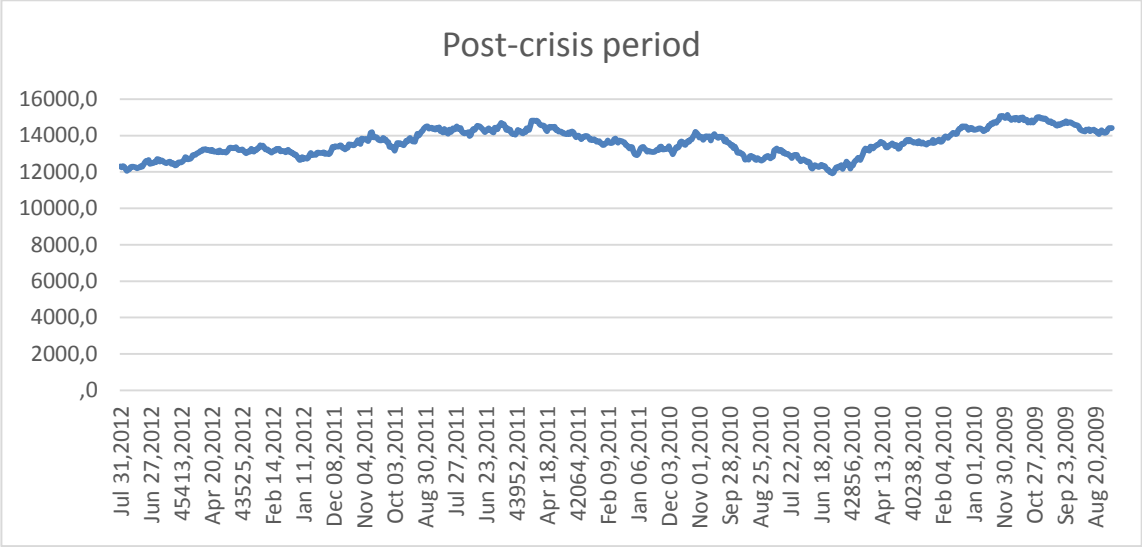


Figure 4 Pre-crisis period in Turkey

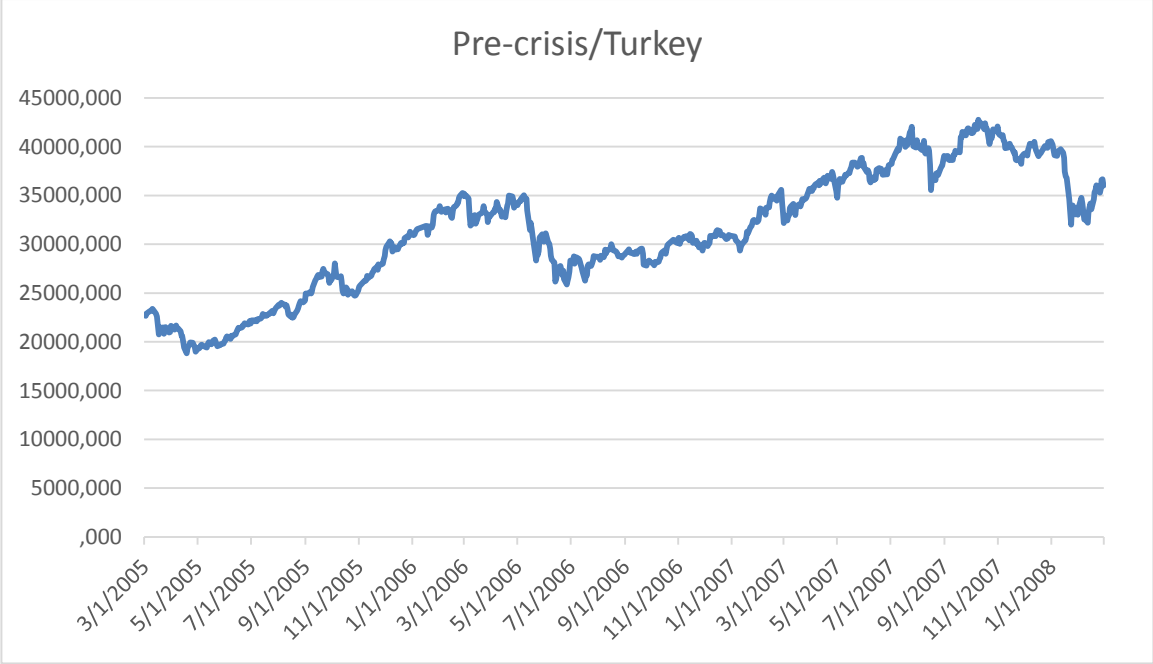


Figure 5 Crisis period in Turkey

Figure 6 Post-crisis period in Turkey

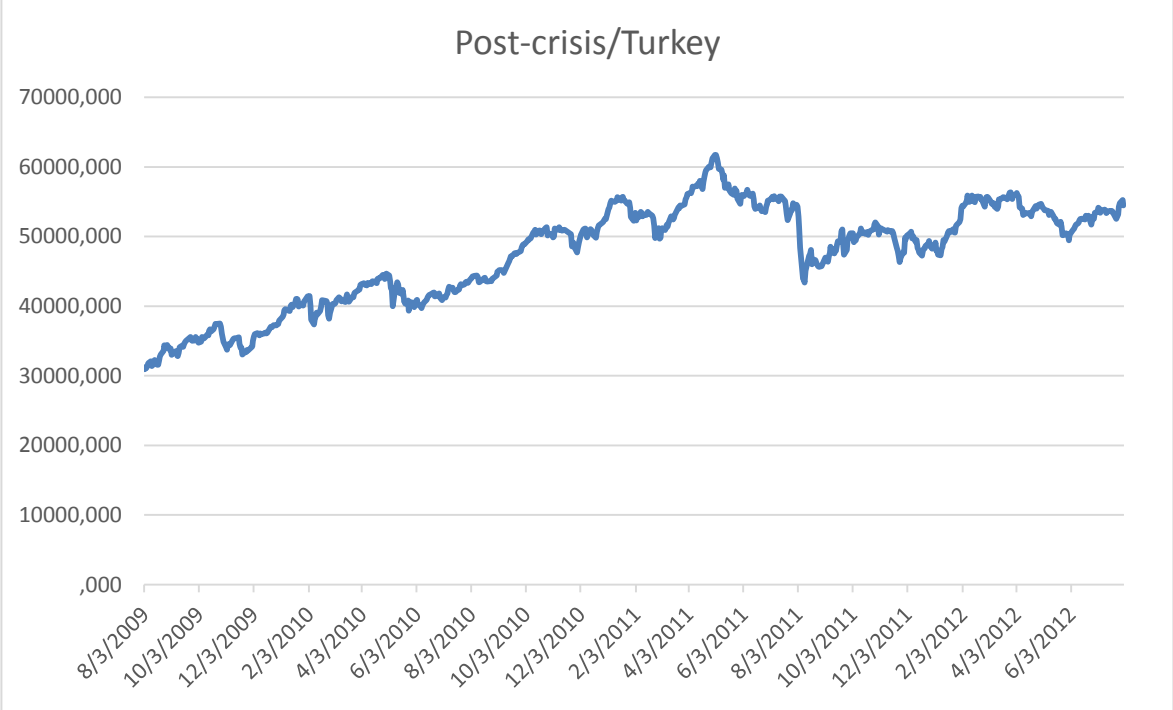


Figure 7 Pre-crisis period in USA

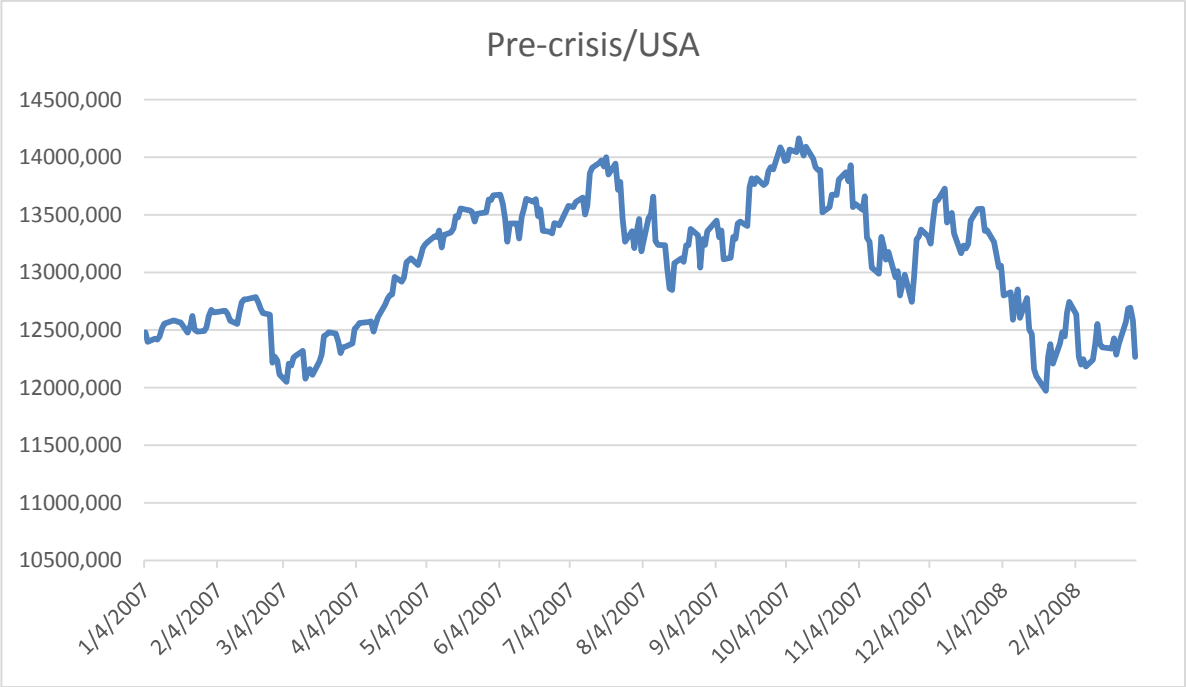


Figure 8 Crisis period in USA

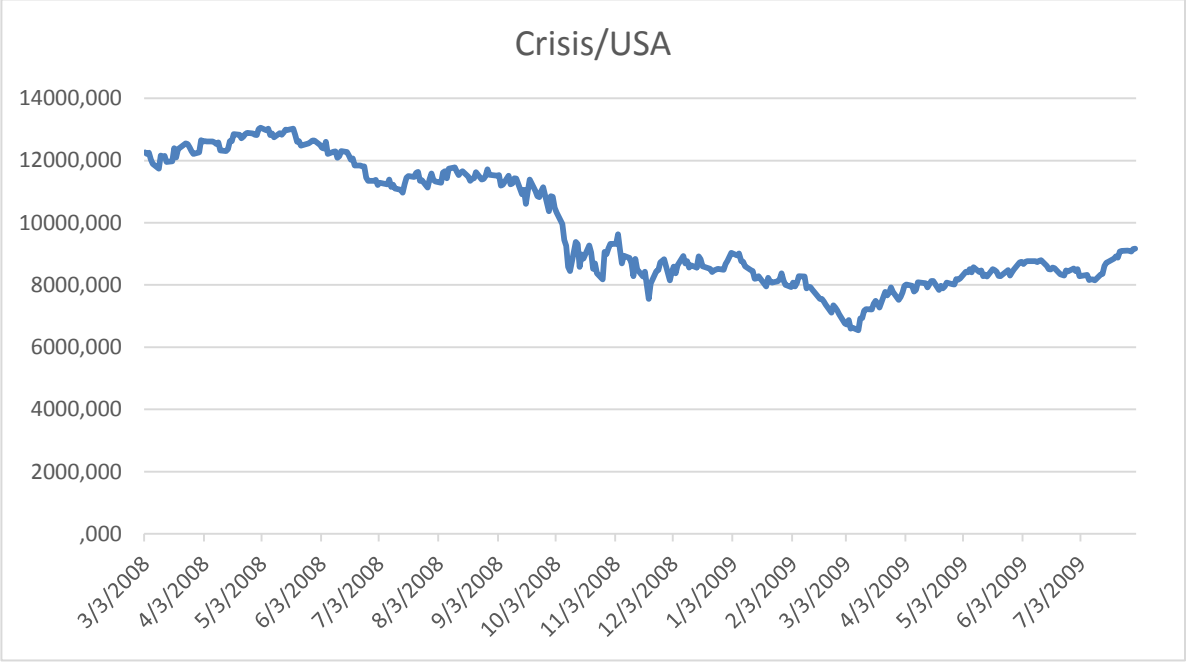


Figure 9 Post-crisis period in USA

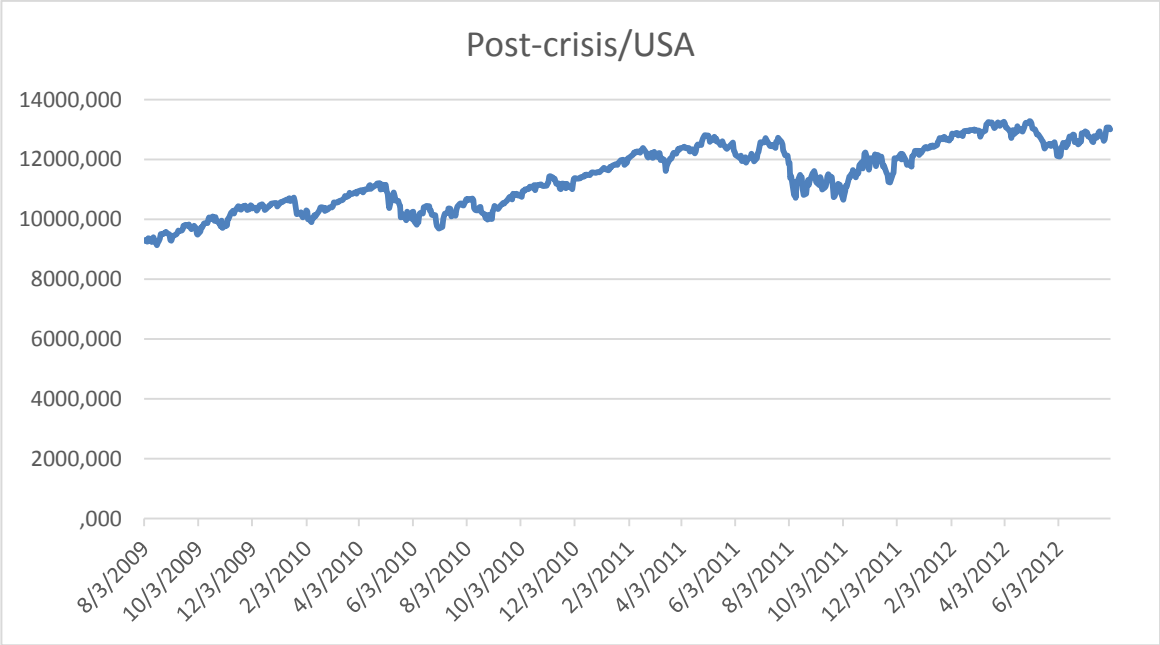


Figure 10 Pre-crisis period in Germany

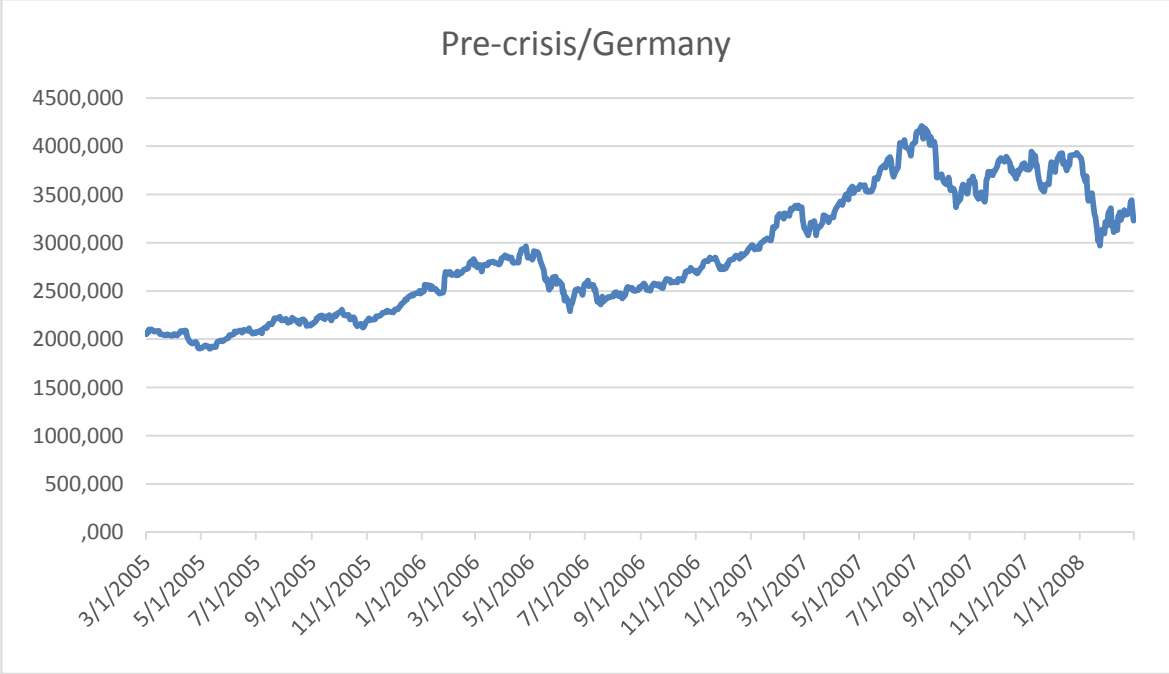


Figure 11 Crisis period in Germany

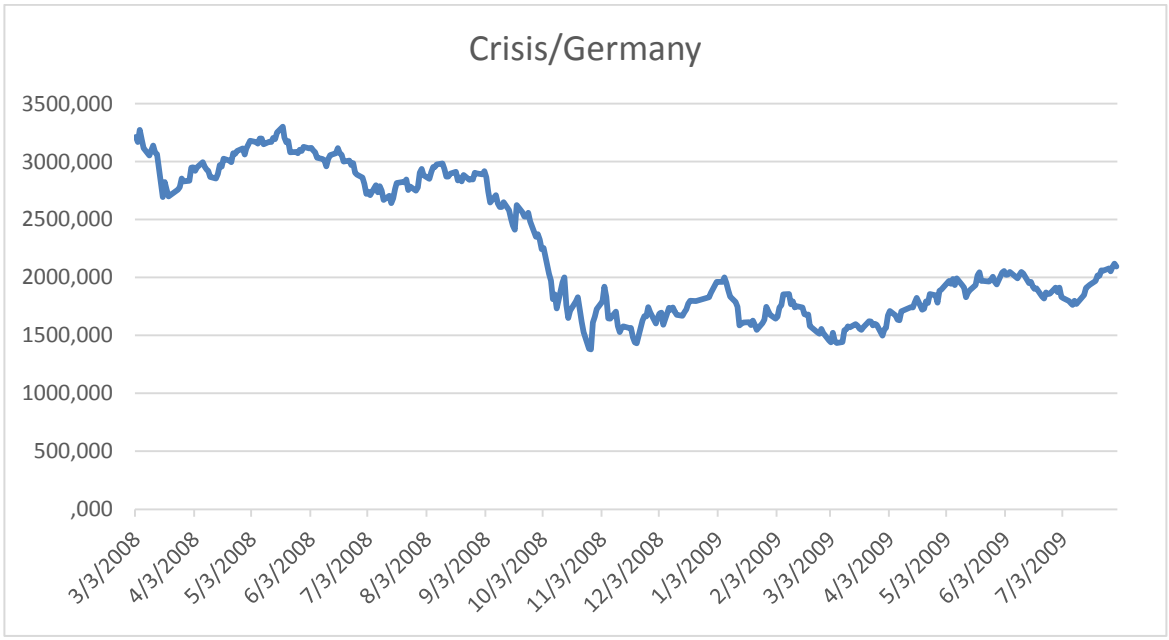


Figure 12 Post-crisis period in Germany

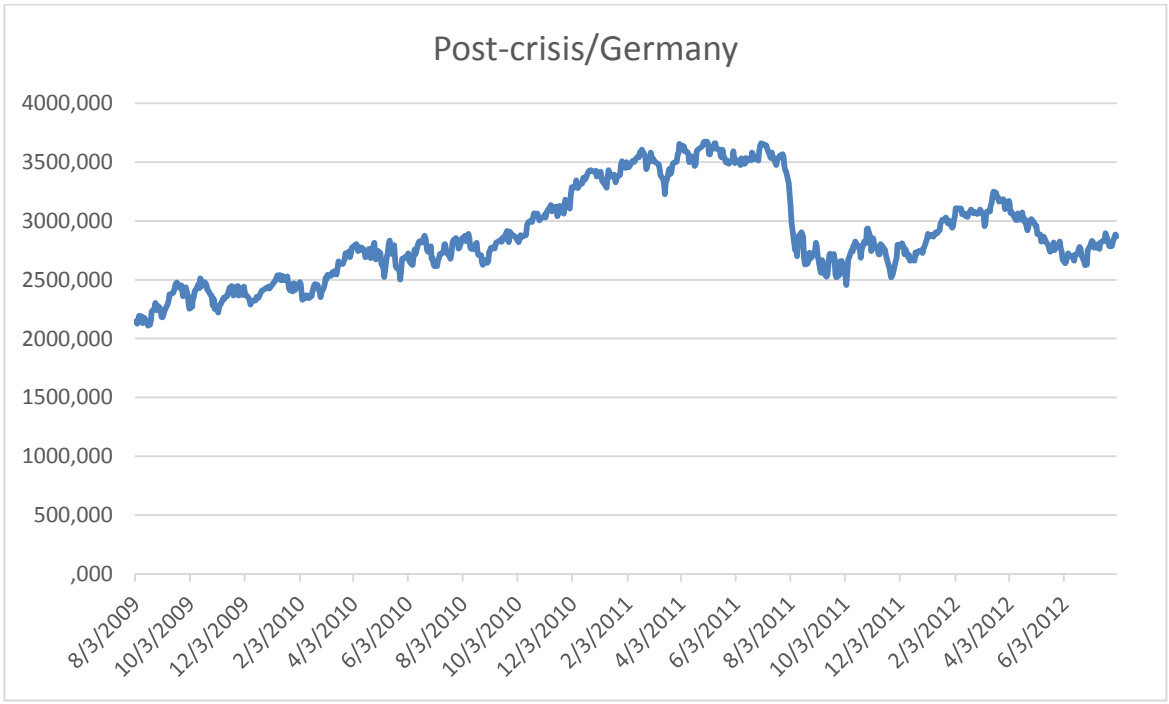


Figure 13 Pre-crisis period in France

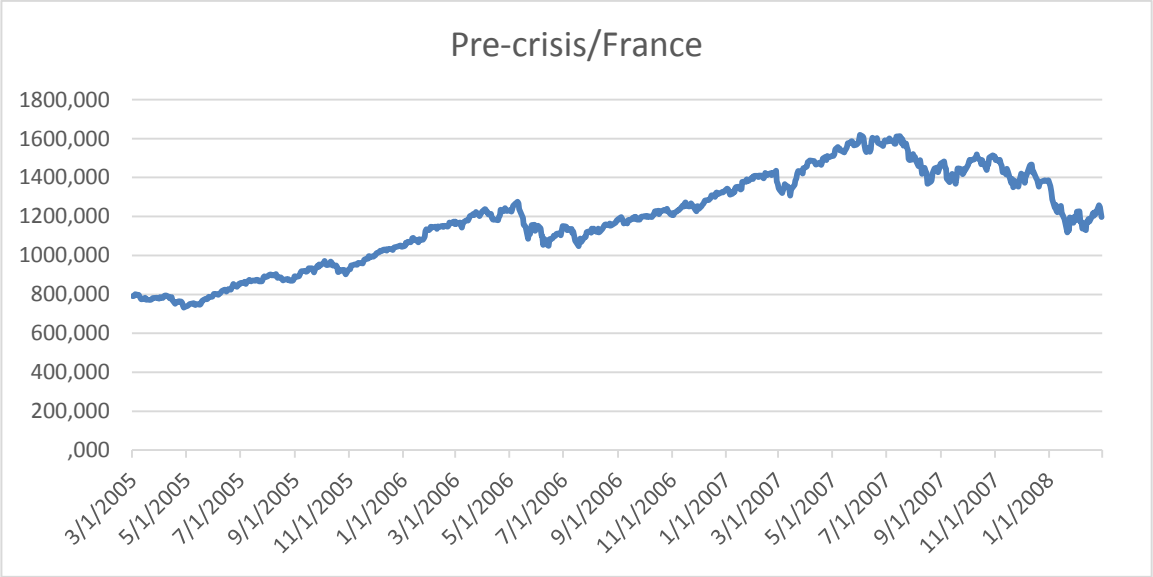


Figure 14 Crisis period in France

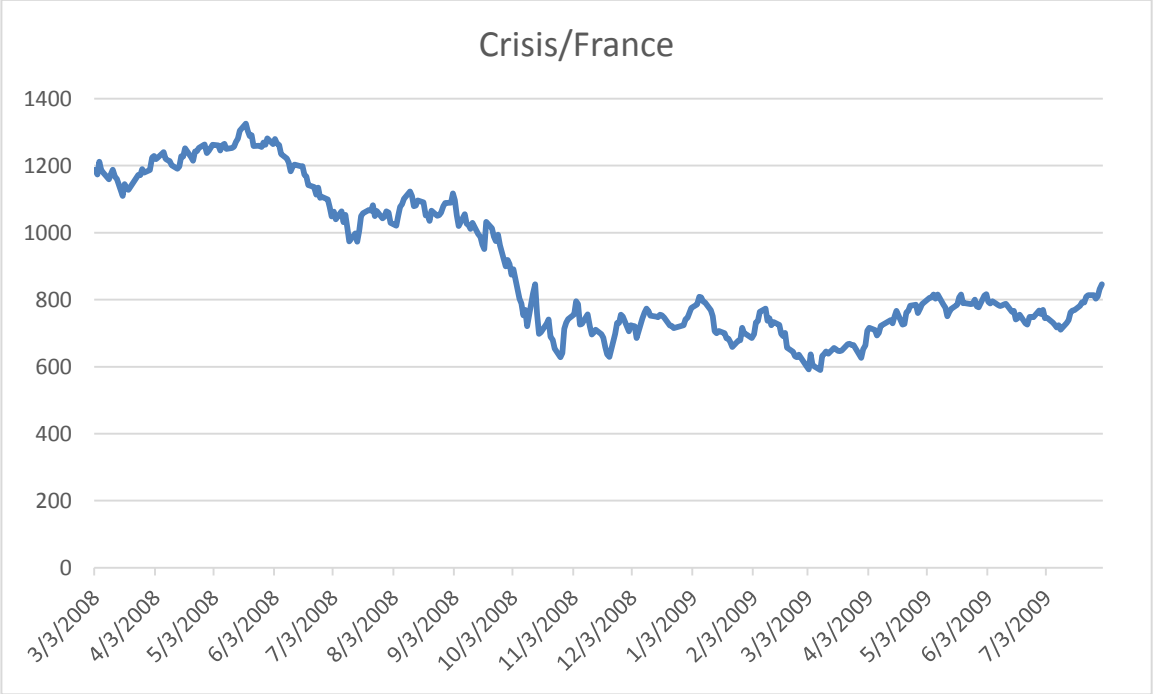
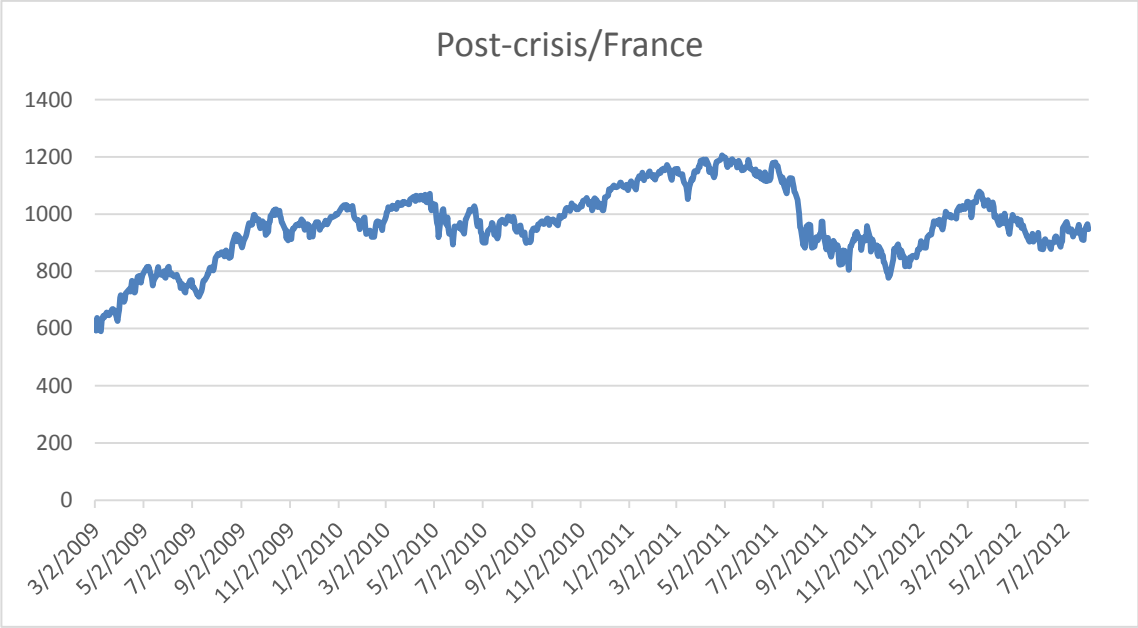


Figure 15 Post-crisis period in France



As the daily data has been used, only the daily control variables have been added to the model. As the dependent variable is the industry index, stock index variable has been added to the model as the control variable. Here, stationarity of the data should be measured to see whether mean, variance and autocorrelation are stationary. If the data is stationary, this means that the variance is stable and the future trend of the data is predictable. If a data series is not stationary initially, at the base level, then the first difference stationary is measured, to see whether series of change from one time to the other is stationary. Based on analyses, all time series were found to be stationary at the first difference, showing that initial data pattern is not predictable but daily change is predictable. Analysis results may be found in the table below.

Table 1 Stationarity for pre-crisis period

Time series	Level	First Difference

	t-statistic	p-value	t-statistic	p-value
Pre-Crisis Period Euro/Dollar Parity	-1,499	0,533	-17,823	0,000***
Pre-Crisis Period Stock Price in USA	-1,751	0,404	-17,908	0,000***
Pre-Crisis Period Industrial Index in USA	-2,134	0,231	-19,075	0,000***
Pre-Crisis Period Stock Price in Germany	-0,125	0,945	-18,295	0,000***
Pre-Crisis Period Industrial Index in Germany	-0,582	0,872	-27,158	0,000***
Pre-Crisis Period Stock Price in France	-0,468	0,895	-30,656	0,000***
Pre-Crisis Period Industrial Index in France	-0,097	0,948	-29,350	0,000***
Pre-Crisis Period Stock Price in	-0,814	0,814	-27,431	0,000***

Turkey				
Pre-Crisis Period Industrial Index in Turkey	-0,746	0,833	-26,490	0,000***

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

None of the pre-crisis period variables are stationary at the base level, but they all become stationary at the first difference.

Table 2 Stationarity for crisis period

Time series	Level		First Difference	
	t-statistic	p-value	t-statistic	p-value
Pre-Crisis Period Euro/Dollar Parity	-1,499	0,533	-17,823	0,000***
Pre-Crisis Period Stock Price in USA	-1,751	0,404	-17,908	0,000***
Pre-Crisis Period Industrial Index in USA	-2,134	0,231	-19,075	0,000***
Pre-Crisis Period Stock Price in Germany	-0,125	0,945	-18,295	0,000***

Pre-Crisis Period Industrial Index in Germany	-0,582	0,872	-27,158	0,000***
Pre-Crisis Period Stock Price in France	-0,468	0,895	-30,656	0,000***
Pre-Crisis Period Industrial Index in France	-0,097	0,948	-29,350	0,000***
Pre-Crisis Period Stock Price in Turkey	-0,814	0,814	-27,431	0,000***

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

Here, it may be seen that none of the crisis period variables are stationary at the base level, but they all become stationary at the first difference. When the analysis has been repeated by the first difference data, it may be seen that the daa became stationary.

Table 3 Stationarity for post-crisis period

Time series	Level		First Difference	
	t-statistic	p-value	t-statistic	p-value

Post-Crisis Period Euro/Dollar Parity	-1,889	0,337	-27,832	0,000***
Post-Crisis Period Stock Price in USA	-1,115	0,711	-28,715	0,000***
Post-Crisis Period Industrial Index in USA	-1,269	0,645	-29,307	0,000***
Post-Crisis Period Stock Price in Germany	-1,838	0,362	-25,344	0,000***
Post-Crisis Period Industrial Index in Germany	-0,981	0,761	-25,717	0,000***
Post-Crisis Period Stock Price in France	-2,243	0,191	-26,701	0,000***
Post-Crisis Period Industrial Index in France	-2,301	0,171	-27,143	0,000***
Post-Crisis Period Stock Price in Turkey	-1,349	0,607	-26,813	0,000***
Post-Crisis Period Industrial Index in Turkey	-0,467	0,894	-24,278	0,000***

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

Finally, it may be seen that none of the post-crisis period variables are stationary at the base level, but they all become stationary at the first difference. When the analysis has been repeated by the first difference data, it may be seen that the daa became stationary.

3.2 RESEARCH MODEL

Present study tests the hypothesis concerning the stock market and exchange rate in four different markets. The hypothesis to be tested is;

H1: Euro/dollar fluctuations significantly predict changes in industrial index during the pre-crisis period.

H2: Euro/dollar fluctuations significantly predict changes in industrial index during the crisis period.

H3: Euro/dollar fluctuations significantly predict changes in industrial index during the post-crisis period.

These three hypotheses are tested for four different countries and for four industrial indexes, which are Turkey and BIST index, USA and Dow Jones index, Germany and DAX index, and France and CAC index. Therefore, three separate models were constructed for each country.

To test H1, H2 and H3, linear regression models have been constructed, using SPSS software, and it was tested whether daily changes in Euro/Dollar parity significantly predict daily fluctuations in industrial indexes, when it is controlled for daily stock market indexes.

Research models may be found below. This model has been replicated for each time period and each country.

$$\text{Industry Index}_t = \beta_0 + \beta_1 \text{EuroDollar}_t + \beta_2 ln\text{Stock Index}_t + \varepsilon_t \quad (1)$$

In this model, the coefficient of EuroDollar variable indicates the increase in industrial index by one unit change in euro dollar parity, when it is controlled for stock market indexes. EuroDollar variable is same for each country, while stock and industrial indexes differ for each country (BIST index for Turkey, Dow Jones index for USA, DAX index for Germany, and CAC index for France. T indicates days. Model equation (1) has run three times for each country, one between March 2005 and March 2008 (i.e., pre-crisis period) , one between March 2008 and July 2009 (i.e., global crisis period) and one between July 2009 and July 2012 (i.e., post-crisis period).

4. RESULTS AND DISCUSSION

4.1 INDUSTRIAL INDEXES AND EURO DOLLAR PARITY FOR TURKEY

For Turkey, Euro/dollar fluctuations significantly predict changes in industrial index during the pre-crisis period and there is a positive relationship between them ($p < .001$).

Table 4 Euro/Dollar fluctuations and industrial index in pre-crisis period in Turkey

Model		B	Std. Error	R-squared	P-value
	(Constant)	143,72	619,396	0,975	0,817

	Pre_Stock_Price	0,682	0,006	0,000	0,000***
	Pre_Euro_Dollar	2912,32	586,535	0,000	0,000***

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

For Turkey, Euro/dollar fluctuations significantly predict changes in industrial index during the crisis period and there is a positive relationship between them ($p < .001$).

Table 5 Euro/Dollar fluctuations and industrial index in crisis period in Turkey

Model		B	Std. Error	R-squared	P-value
	(Constant)	-21443,000	1216,240	0,956	0,000***
	Crisis_Stock_Price	0,716	0,020	0,000	0,000***
	Crirsis_Euro_Dollar	17375,200	1199,390	0,000	0,000***
a. Dependent Variable: crisis_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

Finally, for Turkey, Euro/dollar fluctuations significantly predict changes in industrial index during the post-crisis period and there is a positive relationship between stock prices and industrial index, while there is a negative relationship between Euro/dollar and industrial index ($p < .001$).

Table 6 Euro/Dollar fluctuations and industrial index in post-crisis period in Turkey

Model	B	Std. Error	R- squared	P-value

	(Constant)	2358,750	3412,230	0,660	0,490
	Post_Stock_Price	0,911	0,025	0,000	0,000***
	Post_Euro_Dollar	-5795,200	2100,000	0,000	0,006***
a. Dependent Variable: post_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

When the industrial indexes for pre- and post- crisis periods are compared for Turkey, it might be seen that there exists a significant change (p <.001) and industrial index prices are higher for the post-crisis period. There is a positive relationship between stock prices and industrial index in all of the three periods, while there is a negative relationship between Euro/dollar parity and industrial index in post-crisis period. This means that, after the crisis, the increases in Euro/dollar parity, in other words as the euro increases over dollar, the industry index prices start to decrease.

4.2 INDUSTRIAL INDEXES AND EURO DOLLAR PARITY FOR USA

For USA, Euro/dollar fluctuations significantly predict changes in industrial index during the pre-crisis period and there is a positive relationship between stock prices and industrial index, while there is a negative relationship between Euro/dollar and industrial index (p < .001).

Table 7 Euro/Dollar fluctuations and industrial index in pre-crisis period in USA

Model		B	Std. Error	R- squared	P-value
	(Constant)	9270,900	340,619	0,802	0,000***

	pre_Stock_Price	4,271	0,126	0,000	0,000***
	pre_Euro_Dollar	-3186,000	274,849	0,000	0,000***
a. Dependent Variable: post_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

For USA, Euro/dollar fluctuations also significantly predict changes in industrial index during the crisis period and there is a positive relationship between them ($p < .001$).

Table 8 Euro/Dollar fluctuations and industrial index in crisis period in USA

Model		B	Std. Error	R- squared	P-value
	(Constant)	-2593,000	628,968	0,887	0,000***
	crisis_Stock_Price	4,715	0,241	0,000	0,000***
	crisis_Euro_Dollar	3677,700	658,166	0,000	0,000***
a. Dependent Variable: crisis_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

For USA, Euro/dollar fluctuations also significantly predict changes in industrial index during the post-crisis period and there is a positive relationship between them ($p < .001$). Here, there exists a positive relationship between stock prices and industrial index in all of the three periods, while there is a negative relationship between Euro/dollar parity and industrial index in pre-crisis period,

different from the case in Turkey. So, in USA, the increases in euro over dollar cause the industry index prices to decrease before the crisis, but this relationship is inversed together with the crisis.

Table 9 Euro/Dollar fluctuations and industrial index in post-crisis period in USA

Model		B	Std. Error	R- squared	P-value
	(Constant)	2902,710	194,696	0,953	0,000
	post_Stock_Price	3,470	0,029	0,000	0,000
	post_Euro_Dollar	749,509	121,384	0,000	0,000
a. Dependent Variable: Post_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

When the industrial indexes for pre- and post- crisis periods are compared for USA, it might be seen that there exists a significant change (p <.001) and industrial index prices are higher for the pre-crisis period.

4.3 INDUSTRIAL INDEXES AND EURO DOLLAR PARITY FOR GERMANY

For Germany, Euro/dollar fluctuations also significantly predict changes in industrial index during the pre-crisis period and there is a positive relationship between them (p < .001).

Table 10 Euro/Dollar fluctuations and industrial index in pre-crisis period in Germany

Model		B	Std. Error	R- squared	P-value
	(Constant)	-519,570	74,370	0,970	0,000***
	pre_Stock_Price	0,521	0,006	0,000	0,000***
	pre_Euro_Dollar	128,970	76,562	0,000	0,000***
a. Dependent Variable: Pre_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

For Germany, Euro/dollar fluctuations also significantly predict changes in industrial index during the crisis period and there is a positive relationship between them ($p < .001$).

Table 11 Euro/Dollar fluctuations and industrial index in crisis period in Germany

Model		B	Std. Error	R- squared	P-value
	(Constant)	-1431,600	142,959	0,944	0,000
	crisis_Stock_Price	0,504	0,017	0,000	0,000
	crisis_Euro_Dollar	672,009	154,968	0,000	0,000
a. Dependent Variable: Crisis_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

For Germany, for the post-crisis period, Euro/dollar fluctuations also significantly predict changes in industrial index and there is a positive relationship between them ($p < .001$).

Table 12 Euro/Dollar fluctuations and industrial index in post-crisis period in Germany

Model		B	Std. Error	R- squared	P-value
	(Constant)	-1373,000	98,090	0,897	0,000***
	post_Stock_Price	0,627	0,008	0,000	0,000***
	post_Euro_Dollar	217,415	61,711	0,000	0,000***
a. Dependent Variable: Post_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

When the industrial indexes for pre- and post- crisis periods are compared for Germany, it might be seen that there does not exist a significant change (p =.328). There is a positive relationship between stock prices and industrial index and also between Euro/dollar parity and industrial index in all of the three periods. In other words, for Germany, the crisis situation did not affect the direction of the relationship between stock prices and industrial index, and between Euro/dollar parity and industrial index.

4.4 INDUSTRIAL INDEXES AND EURO DOLLAR PARITY FOR FRANCE

For France, Euro/dollar fluctuations significantly predict changes in industrial index during the pre-crisis period and there is a positive relationship between them ($p < .001$).

Table 13 Euro/Dollar fluctuations and industrial index in pre-crisis period in France

Model		B	Std. Error	R- squared	P-value
	(Constant)	-1097,200	19,109	0,979	0,000***
	pre_Stock_Price	0,379	0,003	0,000	0,000***
	pre_Euro_Dollar	273,193	18,157	0,000	0,000***
a. Dependent Variable: Pre_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

For France, Euro/dollar fluctuations also significantly predict changes in industrial index during the crisis period and there is a positive relationship between them ($p < .001$).

Table 14 Euro/Dollar fluctuations and industrial index in crisis period in France

Model		B	Std. Error	R- squared	P-value
	(Constant)	-411,590	28,007	0,981	0,000***
	crisis_Stock_Price	0,239	0,004	0,000	0,000***
	crisis_Euro_Dollar	294,752	28,523	0,000	0,000***
a. Dependent Variable: Crisis_Industrial_Index					

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

Lastly, for France, Euro/dollar fluctuations also significantly predict changes in industrial index during the post-crisis period and there is a positive relationship between stock prices and industrial index, while there is a negative relationship between Euro/dollar and industrial index ($p < .001$). As a result, the industry index stock can say that there is an inverse relationship between price.

Table 15 Euro/Dollar fluctuations and industrial index in post-crisis period in France

Model		B	Std. Error	R- squared	P-value
	(Constant)	310,899	38,366	0,616	0,000***
	post_Stock_Price	0,221	0,007	0,000	0,000***
	post_Euro_Dollar	-81,922	31,136	0,000	0,000***

a. Dependent Variable: Post_Industrial_Index

Note: '***', '**' and '*' indicate significance at 1%, 5% and 10%, respectively.

When the industrial indexes for pre- and post- crisis periods are compared for France, it might be seen that there exists a significant change (p <.001) and industrial index prices are higher for the pre-crisis period. For France, there is a positive relationship between stock prices and industrial index in all of the three periods, while there is a negative relationship between Euro/dollar parity and industrial index in post-crisis period. Stated otherwise, after the crisis, the increases in Euro/dollar parity, in other words as the Euro increases the industry index prices start to decrease.

4.5 IMPLICATIONS FOR THE LITERATURE

As a result of the analysis, for all of the four countries which are Turkey, USA, Germany and France, it is found out that euro dollar rate significantly predict industry price indexes for pre-crisis period, crisis period and post-crisis period. From there, it may be claimed that the association between euro/dollar parity and industrial index holds in every period regardless of the economic crisis, and regardless of the macroeconomic situation of the specific country, euro/dollar parity changes predict industry price changes. Because, as the euro / dollar parity changes, the cost of the products and thus the prices of the sector change. However, it might be claimed that the crisis situation itself might have an effect on industry price indexes.

Here, it has been found that crisis situation increases industrial indexes in Turkey, while it decreases industrial indexes for USA and France. For Germany, industrial indexes were not affected from the crisis situation. This may be explained by the fact that in Turkey, crisis situation is tried to be compensated by increasing prices, meanwhile in USA and Germany have different reflections which resulted in

increasing industrial index prices. On the other hand, in France, the industrial index prices have not changed due to the crisis.

4.6 IMPLICATIONS FOR BUSINESS LIFE

These results show that companies should carefully investigate the crisis situations and closely follow the indicators and signs before the crisis occurs. Companies should plan in advance what to do in crisis situations. Companies monitor the indicators and show the necessity of taking necessary measures before a crisis occurs. Since the euro / dollar parity has an important relationship with industrial index prices, the euro / dollar parity should also be closely monitored by companies as a preliminary sign of the crisis. It should also be noted that crisis situations have global effects, as all four countries are affected by a similar model. Companies should both analyze what the global effects might be and take necessary actions by analyzing the crisis period on a national basis.

5. CONCLUSION

In the scope of the study, investigations have been made separately for the relationship between stock prices and Euro/dollar parity, and industrial index prices, in four different countries and in three different time periods determined by a global crisis situation. The findings are particularly important here as they capture the change based on location and time period and reflect how a global crisis situation might affect the relationship between these indices.

Results indicated that for all of the four countries which are Turkey, USA, Germany and France, it is found out that euro dollar rate significantly predict industry price indexes for pre-crisis period, crisis period and post-crisis period. From

there, it may be claimed that the association between euro/dollar parity and industrial index holds in every period regardless of the economic crisis, and regardless of the macroeconomic situation of the specific country, euro/dollar parity changes predict industry price changes. However, it might be claimed that the crisis situation itself might have an effect on industry price indexes.

Here, it has been found that crisis situation increases industrial indexes in Turkey, while it decreases industrial indexes for USA and France. For Germany, industrial indexes were not affected from the crisis situation. This may be explained by the fact that in Turkey, crisis situation is tried to be compensated by increasing prices, meanwhile in USA and Germany have different reflections which resulted in increasing industrial index prices. On the other hand, in France, the industrial index prices have not changed due to the crisis.

To conclude, it may be claimed that the relationship between industrial indexes and global euro/dollar parity held for all of the countries having different demographics and different macroeconomic situation, even wh en it is controlled for stock prices. In addition, the fact that the analyses are made on a daily basis increases the reliability of the association between euro/dollar parity and industrial indexes, as any slightest change might better be captured on a daily basis.

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