

## **MARKET CAPITALIZATION AND FACTORS OF ITS DETERMINATION – THE CASE OF REPUBLIC OF MACEDONIA**

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**ABSTRACT:** *The development of the capital market considered thru the market capitalization coefficient (in total amount and in percentage changes) in relation with the GDP of the Republic of Macedonia is the subject of research of this paper. The analysis identifies and explains the factor of capital market development. The focus of the paper is to determine the effects of different factors on the capital market development in the Republic of Macedonia. For these purpose a multivariate linear regression is conducted using the data from 1997-2013. The analysis indicates that the capital market in the Republic of Macedonia is small and underdeveloped. Therefore the economic growth factors taken into consideration for the research have not shown considerable impact on the capital market due to its underdevelopment.*

**KEY WORDS:** *capital market, market capitalization, Calderon-Rossell model, regression, Republic of Macedonia*

**JEL CLASSIFICATION:** *P340, G10, O16, C3.*

### **1. INTRODUCTION**

Financial market is one of the most important subsystems of the economic system and has considerable impact on economic and social process. Strength and

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performance of the country's financial sector is an indicator of the strength and performance of the overall economy. One of the characteristics of the developed economies is developed capital markets. In the past decade the most economically developed countries in the Eastern and Central Europe, and also the Western Balkans countries, have implemented reforms in the financial sector, in terms of restructuring and privatization of public companies and establishment or development of capital market. These reforms have caused positive displacement and budgeted over growth of the capital market in those countries.

The capital market in Republic of Macedonia has been an essential aspect of economic transition process in the market economy. Maintaining low inflation rate and stable exchange rate of the national currency in the transition period created macroeconomic stability in the country which had positive impact on the development of the capital market. Also, in the recent years, a lot of measures that have positive impact for development of banking and financial sector were introduced and implemented in Republic of Macedonia. Stable financial sector is the main reason for further introducing of reforming measures that tend to have positive effect on the development on the capital market.

Macedonian financial system is characterized with dominant banking sector and other financial market segments that are still in the process of development. Banks cover most of the financial system in the Republic of Macedonia (87,5% of the financial sectors are banks and saving houses, followed by the two segments that have great potential for further growth, pension funds and insurance companies. (Financial Stability Report for the Republic of Macedonia in 2014, NBRM, 2015, p.77) So, the most important financial institutions in Republic of Macedonia are considered to be banks, insurance companies, leasing companies and brokerage houses. The liberalization of capital market and prior reforms have enabled an increase of the market capitalization of the capital market in the Republic of Macedonia. Further development of capital market is expected to improve the mobilization of local resources and to promote a more efficient use of capital, but also providing or attracting foreign direct investments.

This paper considers the development of the capital market in the Republic of Macedonia with the attempt for estimating the impact of factors that have influence on its development. The development of the Macedonian Stock Exchange is considered thru market capitalization coefficient (market capitalization as a percentage of GDP). Economic development of the country is important factor and precondition for capital market development.

First of all this paper analyses market capitalization of the Macedonian Stock Exchange considering the trend of the capitalization of stock and bounds. Theoretical approach about the development of the capital market and the determination of the factors is the basis for determining their impact for the development of the capital market in the Republic of Macedonia. Therefore, the main goal of the research is to evaluate the influence of economic growth, development of the financial sector, macroeconomic stability, gross investments and gross savings on capital market development in the Republic of Macedonia.

The assessment of the relationship among dependent and independent variables of the capital market development in the Republic of Macedonia is conducted by using multiple linear regression analysis, including the annual data for the period 1997-2012 year. The base theoretical model for setting the statistical model for empirical analysis is the Calderon-Rossell behavioral structural model. The calculations of statistical parameters are obtained by software package XLSTAT 2015.

## **2. THE MARKET CAPITALIZATION AS AN INDICATOR OF THE STATE OF THE MACEDONIAN CAPITAL MARKET**

The size and development of the capital market is usually reflected by market capitalization to gross domestic product. Market capitalization is the value at which investors value certain company on a particular day. In addition is showing market capitalization, the capitalization of shares and bonds in the total amount and as a percentage for the Macedonian capital market (MSE) for the period 2005-2015 (Table 1).

**Table 1. Market capitalization (in total amount and as percentage change) for period 2005-2015**

Year	Shares		Bonds		Total	
	Market capitalization	%	Market capitalization	%	Market capitalization	%
2005	50,425,546,869	52.16	23,972,382,237	12.66	74,397,929,106	36.71
2006	86,482,150,528	71.50	22,436,317,815	-6.41	108,918,468,343	46.40
2007	288,765,400,791	233.90	20,309,065,558	-9.48	309,074,466,349	183.77
2008	106,290,316,076	-63.2	18,212,904,677	-10.32	124,503,220,753	-59.7
2009	122,080,076,689	14.86	14,883,330,348	-18.28	136,963,407,038	10.01
2010	122,577,939,865	0.41	12,511,677,891	-15.93	135,089,617,756	-1.37
2011	119,041,270,716	-2.89	8,563,567,068	-31.56	127,640,837,784	-5.54
2012	113,016,985,122	-5.06	7,353,535,935	-14.13	120,370,521,057	-5.67
2013	102,718,163,286	-9.11	6,616,404,276	-10.02	109,334,567,562	-9.17
2014	105,370,997,921	2.58	5,680,322,013	-14.15	111,051,319,934	1.57
2015	102,850,635,856	-2.39	4,881,457,420	-14.06	107,732,093,276	-2.99

*Source: Annual Report of the MSE for: 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and Annual statistical bulletin of the MSE for 2015*

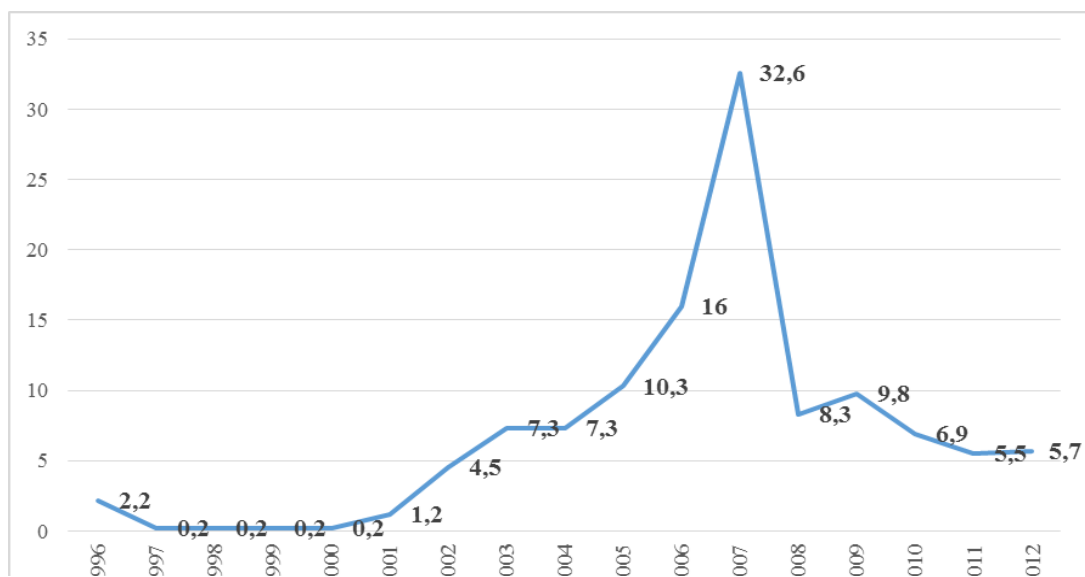
From the Table 1 it may be noted that from 2005 to 2007, steadily increasing the total market capitalization. This increase is due to the economic and financial boom in Macedonia, which was typical of those years. However, this is primarily due to increased market capitalization of shares. Bonds in 2006

and 2007 declined as a result of the due installments of the bonds, and the early redemption of continuous government bonds and the bond for rehabilitation of Stopanska Banka, which occurred in 2007.

After 2007 when the total market capitalization reached its maximum value, the next time it is in permanent decline, as a result of reduced market capitalization in the stocks and in bonds.

In the analysis of market capitalization of shares milestone in 2013 was the introduction of the new market sub-segment of the official market of the stock market - the mandatory listing, which caused significant changes in the movements of the market capitalization of listed companies. Unlike the slight decline in the market capitalization of listed companies in the first few months of the year after the introduction of mandatory listing came to the enormous increase in the market capitalization of listed companies at the end of the first half of the year. This trend continued following 2014, when the market capitalization of shares noted a slight increase, but market capitalization of bonds decreased by 14.15% compared to last year, although the number of listed government bonds remained the same, making the total market capitalization increased only by 1.57%.

For the analysis of the development of the capital market, market capitalization as a percentage of GDP is a more relevant indicator. In Chart 1 are given the values of this indicator, but relating to the shares for a period 1996 - 2012.



Source: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/countries/MK?display=default> (accessed on 12.2.2016)

**Figure 1. Market capitalization as a percentage of gdp (1996-2012)**

Indicator of market capitalization as a percentage of GDP in the years presented, shows large oscillations. So in 1997, 1998 and 1999 was 0.2% of GDP, but then

market capitalization increased. This is primarily a result of reforms were undertaken in this period in the country for development of the stock exchange, and the presence of two investment funds in the second pillar and the stable macroeconomic situation in the analyzed period. During this period, several major sales that are realized on the Macedonian Stock Exchange with the privatization of state enterprises.

Especially significant in the 2006 was privatization of ESM and the entry of EVN Macedonia as part of the EVN Group in the distribution and supply of electricity in the country. The market capitalization as% of real GDP in the country as already stated the highest value reached in 2007. High ratio of market capitalization in 2007 is also related to the high economic growth rate in the same year.

During the global economic and financial crisis, particularly since of 2008, the market capitalization as an indicator of the size of the capital market has seen a sharp decline. This analysis confirms the findings of the previous analysis of market capitalization taken as absolute value.

### **3. DATA, METHODOLOGY AND RESULTS FROM THE EMPIRICAL ANALYSIS**

A lot of studies analyses capital market development. It is very important to determinate the factors and there influence of the capital market. Every study takes in consideration different aspect of the analysis. It depends of the stage of the country development and economic characteristic. Therefore, the most of the studies are made considering the development of the capital markets in the developed economies. Following the examples of these studies more and more researchers from the developing countries are encouraged to analyse the factor of determination of the capital markets in their countries.

The majority of the studies that observe the determinant of the capital market development, especially in the emerging economies, draw a common conclusion that the banking sector has dominant influence on the capital market development. In most of the studies the size, the level of development and scope of the banking sector have positive and significant impact on the capital market development. (Yartey, Kemboi J.K.,Tarus, D.K.). But, in the literature there are evidence that the development of the banking sector, the activities of the Central Bank and other financial institutions interacted negatively with market capitalization which implies that the activities of those institutions deterred the development of the capital market ( Idowu, A., Babatunde, M.A 2012).

In the study of Yartey, (Yartey, C.A. 2008) the author exams macroeconomic and institutional indicator as determinant of the capital market development, using a panel data of 42 emerging economies for the period 1990 to 2004. The findings from this paper are that macroeconomic factors such as income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity are important determinants of capital market development in emerging market countries. The results also show that political risk, law and order, and bureaucratic quality are important determinants of capital market development because they enhance the viability of external finance.

The capital market development in Republic of Macedonia and the factors that affect it have been the subject of research in the several studies (Hadzi-Mishev R , 2011, Eliskovski M. 2012). The both studies use multivariate regression that estimates the impact of the several factors for the development of the Macedonian Stock Exchange. In the study of Hadzi-Mishev, the results of empirical analyses confirm the positive relation between the value of MBI-10 index and the level of industrial production and money supply and the negative impact of interest rates and inflation. In the study of Eliskovski M. (2012) the influencing factor of the development of the Macedonia Stock Exchange that are evaluate indicate that the gross investment and macroeconomic stability have a major impact on the size of the capital market.

In this paper the estimation of the development of the Macedonia Stock Exchange are made with multivariate linear regressions which determine and measures the influence of the several factors. The regressions are conducted using data from the World Bank for the period 1997-2012. In the analysis of the indicator market capitalization as a percentage of GDP is taken more time series for greater relevance of this indicator in the regression model.

The calculations of statistical parameters are obtained using the software package XLSTAT 2015.

The regression takes into consideration the market capitalization as dependent variable that is the indicator of the size of the Macedonia capital market, expressed as a percentage of GDP. Independent variables that explain the depended variable taken into consideration in this model are:

- Y - Market capitalization (as % of GDP)
- $X_1$  – Gross savings (as % of GDP)
- $X_2$  – Deposit interest rate
- $X_3$  - Inflation Rate (Consumer Price Index)
- $X_4$  - GDP growth;
- $\beta_0$  – Free article;

The model is transformed into lin-log linear model and the mathematical equitation has the following expression:

$$\ln Y = \beta_0 + \beta_1 \ln(X_1) + \beta_2 \ln(X_2) + \beta_3 \ln(X_3) + \beta_4 \ln(X_4) \quad (1)$$

The estimation of the parameters of statistical analysis in the model is done using the method of least squares. Significant assumption that is considered in the interpretation of the regression parameters are multicollinearity, heteroscedasticity and autocorrelation statistical errors.

The method of least squares shows that  $R^2 = 0,873$  which is considered an acceptable criterion for correctness of the model. The diagram of distribution of residuals shows no presence of heteroscedasticity. (Annex number 1). The equation has the following form:

$$\ln Y = 18,13 - 1,61 \ln(X_1) - 5,77 \ln(X_2) + 0,080 \ln(X_3) - 0,66 \ln(X_4) \quad (2)$$

**Table 2. Results from the regression**

Independent variables - X	(1)
X <sub>1</sub> – Gross savings (as % of GDP)	-1,612 (-1,306)*
X <sub>2</sub> – Deposit interest rate	-5,769 (-6,259)***
X <sub>3</sub> - Inflation Rate (Consumer Price Index)	0,080 (0,338)
X <sub>4</sub> - GDP growth	-0,663 (-1,111)*
Number of observations (n)	16
$R^2$	0,873
Adjusted $R^2$	0,801
Durbin - Watson	1,669

\*-10% level of confidence; \*\* - 5% level of confidence and \*\*\* - 1% level of confidence  
Source: own calculations using the software package XLSTAT, 2015

The evaluation of the model by the method of least squares  $R^2$  shows that about 87 % (0,873) of the variation in the dependent variable can be explained by variations of all independent variables included in the model. They have successfully determined the relative dependence of capital market development in the Republic of Macedonia. The results from the criteria for evaluation of the model, correlation matrix, and test for the multicollinearity and the estimated value for the parameters are presented in the annex number 2.

The variables considered in the regression analysis passed the p-test for  $p < 5\%$  with the exception of the variable which presents the inflation rate, thus it can be deducted that there isn't any degree of randomization in the link between the four variables and that the bond between them is consistent. Also the regression model between passed the F-test for F-4.93, where the critical value of the F-test was determined to 3.35. The significance of the F-test is 1.59% for F-test significance critical value 5% and thus the bond between the four variables can be determined as significant.

All the data presented above showed that there is a significant link between the variables taken into consideration which present the economic development and the capital market development in Republic of Macedonia. This is obvious because the economic growth determinates can directly influence on the development of the capital market. The regression analysis showed that there is a significance link between the variables of economic development and the development of the Macedonia Stock Exchange. Conclusion is confirmed with the consideration that the regression has passed the t-test, for t-test critical value 0.96 and t-test success probability -0.96 to + 0.96.

Gross savings variable, realizes inverse relation with the dependent variable, with the high statistical significance (-1,306). Therefore, the level of gross savings in the country as a percent of real GDP is of particular importance for capital market

development in the Republic of Macedonia. However the relation is with the reverse impact, which means that every increase of the gross savings in the Republic of Macedonia doesn't contribute to the capitalization of the stock market. This is due to the small amount of the transactions that take place on the Macedonia Stock Exchange. It discourages the entities that are interested for investing in financial instrument on the capital market.

They rather channel the savings in the banking sector in the form of deposits or in insurance companies and investment funds to diversify the possible risk. This result is not unfamiliar for the emerging economies. The same conclusion was found in the study of the Idowu and Babatunde, (Idowu, A., Babatunde, M.A. 2012) which analyzes the effect of the financial reforms on capital market development in Nigeria. The main conclusion about the effect of gross saving on the capital market development in the Republic of Macedonia is that they are very important. Therefore, financial reforms should be toward development of financial instrument that will be more attractive for entities and it will encourage entities to invest their savings into the stock market, rather than in deposits in the banks.

Another unexpected result is the statistical parameters that reflect the influence of the economic growth. The statistical parameters show statistically significant impact on market capitalization (-1,111) with the 10 % significance level of confidence, but with negative sign. This means that the trend of the economic growth does not follow the trend line of the market capitalization and stock traded value in the Macedonian Stock Exchange. Appropriate explanation is that the economic growth in the Republic of Macedonia must be sustainable and continuous to reach every sector of the economy, especially the financial sector. The similar result was received in the study of Eliskovski M. (2012). Therefore, it is absurd to conclude that economic growth has negative and opposite impact on capital market development in the Republic of Macedonia. This can lead to the conclusion that real economic growth in the Republic of Macedonia is not sufficient for capital market development.

The most important factor with the 1% of statistical evidence is the variable that presents the deposit interest rate. The result from the regression is -6,259, confirm the theoretical statement that deposit interest rate is in inversed relation with the indicators of capital market. So, the 1 % percent increase of the deposit interest rate, decrease the market capitalization of the Macedonia Stock Exchange for 6 (percentage point). The higher deposit rates adversely effect on the interest of economic entities to invest in the capital market. With the higher deposit rates investors could reach higher profit with less risk. This will lead to mobilizing the available assets in the bank in the form of deposits, rather than in stocks, bonds and other financial instruments.

The main goals of the Macedonia Stock Exchange is to develop new financial instruments and follow the world trends in stock exchange operations to attract more subjects to participate in the stock market. The most significant role for the liquidity of the capital market have the banking sector in the Republic of Macedonia. It is necessary to have more active role in the stock market. The banks in Macedonia should create attractive products with competitive prices that will encourage companies to participate in the stock market.



Inflation rate that was considered as independent variable in the statistical model did not evident statistical significance for the market capitalization in the Republic of Macedonia.

#### **4. CONCLUSION**

Capital market and its development are often subject of the economic research. The most instigated are the analyses of the factors that determinate capital development and especially the estimation of the influence of each factors on capital development. This paper analyses the capital market in Republic of Macedonia. Market capitalization indicates the size and development of the capital market relative to GDP.

Considering the data for market capitalization of the Macedonian Stock Exchange in GDP for the period 1996-2012 it is obvious that it is very small capital market with huge oscillation of the market capitalization share of GDP. So, the years 1997, 1998 and 1999 the share was 0.2% of GDP, that it has trend of increase in the years after. The greatest value, the peak was in 2007 and it is 32.6% of GDP. High coefficient of the market capitalization in 2007 is related to the high growth rate in the same year. After that, the trend of the market capitalization of the Macedonian Stock Exchange was declined and in 2012 is 5.7% of GDP.

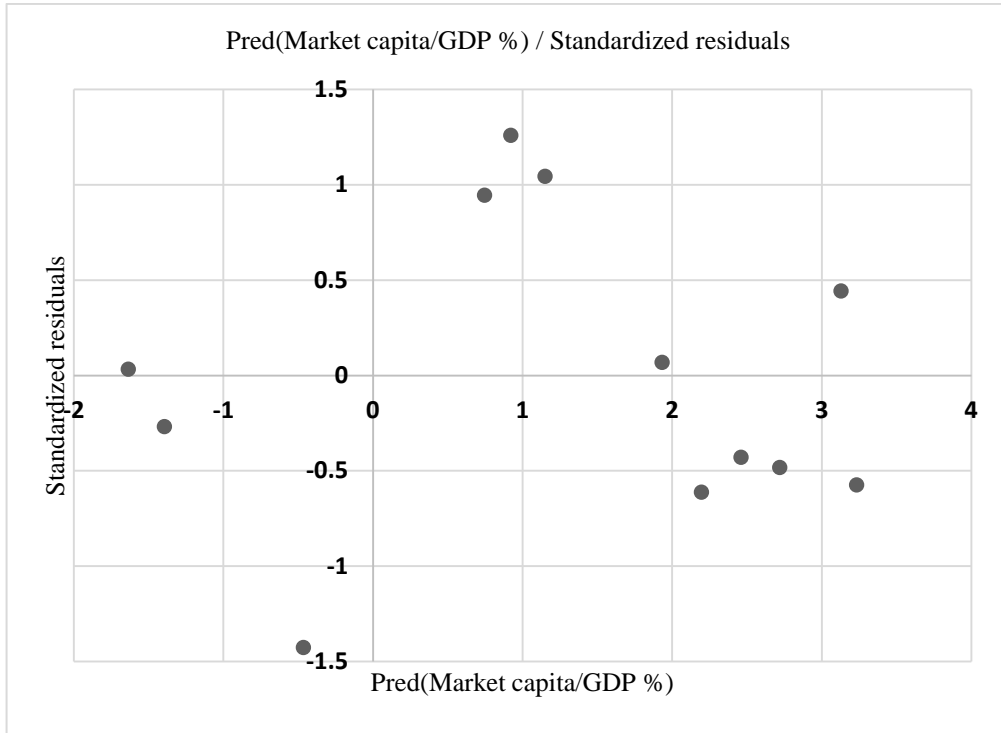
In this paper the regression analysis was conducted introducing and measuring the impact of series of variables on the capital market in Republic of Macedonia. The independent variables chosen for the purpose of the research are closely connected and/or influence the economic development as well. Independent variables taken into consideration for the research in this paper are: GDP growth of the country, deposits interest rate, inflation and gross savings as a percentage of the GDP. The purpose of these variables taken into consideration is to determine and explain the dependent variable that represents the development of the stock market in the case of this research market capitalization as a percentage of GDP.

The research showed that the variables can explain and have impact on the development of Macedonian capital market. However the link between the variables and their effect on the capital market development in Republic of Macedonia differ from some previous findings in this area. This is mainly due to the small and unsustainable economic development of the country, seen by the difference in the trend lines of the GDP and market capitalization growth. Other factors complement this statement such as underdeveloped capital market, dominating banking sector, insufficient offer of products on the stock market etc.

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Annex 1



Source: own calculations XLSTAT 2015

Figure 1. Test for heteroskedasticity of residual versus predicted values of the dependent variable Y

## Annex 2

Table 1. Criteria for evaluation of the model

DF	7,0000
R <sup>2</sup>	0,8734
Adjusted R <sup>2</sup>	0,8011
MSE	0,6435
RMSE	0,8022
DW	1,6695

Source: own calculations XLSTAT 2015

Table 2. Correlation matrix

Variables	Gross savings/% of GDP	Deposits interest rate	Inflation consumer price index	GDP Growth	Market capita/GDP %
Gross savings/% of GDP	<b>1,0000</b>	-0,3988	0,2488	0,3467	0,1822
Deposits interest rate	-0,3988	<b>1,0000</b>	-0,0473	-0,6019	-0,9013
Inflation consumer price index	0,2488	-0,0473	<b>1,0000</b>	0,0922	0,0316
GDP Growth	0,3467	-0,6019	0,0922	<b>1,0000</b>	0,4034
Market capita/GDP %	0,1822	-0,9013	0,0316	0,4034	<b>1,0000</b>

Source: own calculations XLSTAT 2015

Table 3. Multicollinearity statistics

Statistic	Gross savings/% of GDP	Deposits interest rate	Inflation consumer price index	GDP Growth
Tolerance	0,7746	0,5934	0,9330	0,6229
VIF	1,2909	1,6851	1,0718	1,6054

Source: own calculations XLSTAT 2015

Table 4. Model parameters

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Intercept	18,1305	4,5398	3,9936	0,0052	7,3881	28,8728
Gross savings/% of GDP	-1,6117	1,2342	-1,3059	0,2328	-4,5321	1,3086
Deposits interest rate	-5,7690	0,9217	-6,2590	0,0004	-7,9500	-3,5880
Inflation consumer price index	0,0797	0,2360	0,3379	0,7454	-0,4787	0,6382
GDP Growth	-0,6630	0,5965	-1,1114	0,3031	-2,0746	0,7486

Source: own calculations XLSTAT 2015