THE IMPACT OF THE EXPONENTIALLY RISING ECONOMIC GROWTH OF CHINA IN THE EU

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Abstract

Four decades have passed since the EU and China established diplomatic relations in 1975, and now became mutually indispensable economic partners, presenting both an opportunity and challenge. During that time, after the first market reforms were introduced in 1978, China has transitioned from a predominantly agricultural to industrial and service-oriented economy. On 11 December 2001, China also became the 143rd member of the WTO. The aim of this research is to quantitatively compare the US, EU and Chinese GDP from 1995 to 2014, the US and Chinese outward FDI from 1995 to 2013, and the EU 28 Total Imports from and Exports to the US and China between 2002 to 2014, and analyse the impact of the exponentially rising Chinese investments in the European Union (EU). We have found that while the US economy experienced a regression in general, and exhibited outward FDI exponential decrease in particular, the Chinese outward FDI sustained an exponential growth. Our analysis has shown that the now weakened US dollar and diminished US economic and industrial power, along with the US designed and archaic post World War II European institutions, vitiated by the recent US Economic Recession, which has swept along the EU and all other US dependent foreign economies globally, are and will continue to experience the primary impact of the exponentially rising economic investment of China in the EU. Furthermore, we have found that the Chinese economic growth has been affecting both the EU identity and policies. Yet, its full effect is waiting to be realized. The Chinese investment in the EU is estimated to peak during the next decade, when China will become by far the foremost economic partner of the EU. This crossroad may be reached as soon as in few years' time and contribute towards the EU – Asian regional stabilization. In the changing context of the Sino – EU - US relations, due to the exponentially growing economic prosperity and rising global influence of China, the EU international institutions and socio-political structures will re-emerge with the once forgotten access to the 21st Century Silk Road Economic Belt, "The Silk Road II", between China and the EU in the foreseeable future.

Keywords: P.R. China, European Union (EU), United States (US), Sino-EU Relations, Global Recession, GDP, Foreign Direct Investment (FDI), Export, Import, Bilateral Investment Treaty (BIT), Protectionism, Belt and Road Initiative (OBOR), Silk Road Economic Belt (丝绸之路经济带), 21st Century Maritime Silk Route Economic Belt" (21 世纪海上丝绸之路).

1 LITERATURE REVIEW

During the past 70 years, the United States (US) has enjoyed its economic, political and military dominance over Europe. This dominance commenced with the post-World War II (WWII) US Marshall Plan which was one of the first elements of European integration that erased trade barriers and set up the Western European national and international institutions. This dominance continued with the post-Cold War integration of the former Eastern Europe into the EU, created through the Maastricht Treaty. At that time, the end of the Cold War also concluded the bipolar world super-power competition between the United States and Soviet Union and marked the commencement of a new multilateral economic cooperation and globalization. This environment of globally changing economic relations and fresh market opportunities, combined with the well-established technological, scientific and economic foundations of the EU provided China, after it emerged

from a rural agricultural economy to industrial and service-oriented economy, with the needed platform to become the new economic power.

Despite being an emerging market, China's influence on the global economy and financial markets is continuously rising. In the last decade, it has contributed more than 30% to global economic growth. China's massive accumulation of foreign currency reserves has brought new opportunities, especially in the aftermath of the sovereign debt crisis in the EU, where the Chinese market became a positive contributor to economic growth. Primarily, China has become a welcomed EU investor, and secondarily, it has positioned the EU as an economic counterbalance to the US (McDonnell 2014). With many EU major companies on the brink of shutdown, China provided the growth market for European exports. The inflection of Chinese investment comes at a time of deep structural crisis in Europe. This crisis and related privatization offers opportunities for Chinese investors to establish themselves in the EU, as recent investments in Greece and Portugal illustrate.

The European Commission considers the EU – China economic relations as a pillar to the EU security in the post-Cold War and Globalization era, when the definition of security, historically associated with military threats, has been replaced with that of an economic stability. The EU economic stability is directly affected by China's steady and environmentally sustainable economic growth (Casarini 2006). Thus, the EU now defines its security as 'the long-term ability to protect its relative welfare position by ensuring access to resources and production capability, securing market outlets and maintaining macroeconomic stability' (Commission of the European Communities 1993). Therefore, China's global economic integration became of a strategic importance to the EU.

The Sino-EU economic relations have been built on the basis of mutual interests, by promoting non-discriminatory, multilateral commercial practices (Kim 2011). The main driver of cooperation between the EU and China are prospects of mutual economic benefit, interdependence and economic complementarity. Whilst the EU provided China with capital and technology, China became a source of cheap labour and low priced goods to the EU. This division of labour was at the basis of a solid and fast developing economic and trade relationship. Bilateral trade in goods has gone from €4 billion in 1978 to €395 billion in 2010. Three decades ago, China and the EU traded almost nothing. Now they form the second-largest economic cooperation in the world. In a relatively short time, the Chinese and EU economies have become highly interdependent. Currently, China is the world's largest economy and the EU second largest trading partner. The EU has been China's top trading partner for 10 years. (O'Hara 2010, Geeraerts 2013, Beijing 2014). However, bilateral trade in services only amounts to 1/10 of total trade in goods, and the EU exports of services only amount to 20% of EU exports of goods. As a result, the EU has a large trade deficit with China. Investment flows also show vast untapped potential, especially when taking into account the sizes of both the EU and Chinese economies. This inequality may be reduced in the near future, as China is currently broadening its market access to the service sector and further opening up the manufacturing sector to foreign investment. Also, China is promoting its infrastructure investment and construction along the 'New Silk Road Economic Belt' and the '21st Century Maritime Silk Road' (KPMG 2015). The EU-China trade has increased dramatically in recent years, and shall remain stable for years to come (O'Hara 2010).

2 INTRODUCTION

2.1 The US, EU and Chinese GDP from 1995 to 2014

GDP is considered the broadest indicator of economic output and growth and represents the market value of all goods and services produced by the relevant economy during the period measured, including personal consumption, government purchases, private inventories, paid-in construction costs and the foreign trade balance. Generally, 2.5-3.5% annual growth in real GDP is the desirable range for a well-functioning economy. During the last decade, Chinese GDP has been rising 7% to 13% quarterly. If this trend continues, or even if the Chinese GDP growth slows down from the highest average of 13% to the lowest average of 7%, we believe that the Chinese GDP is going to be the largest in the world, outgrowing both the EU-28 and US in the foreseeable future, which in turn will drive up the Chinese foreign investments, impacting both regional and global economies in general, and the EU economic growth in particular.

2.2 The US and Chinese outward FDI from 1995 to 2013

FDI is a key driver of global economic growth, and indeed of globalization. FDI is an important source of development financing, and contributes to productivity gains by providing new investment, better technology, management expertise and export markets. There has been increasing reliance on the market forces and private sector as the engine of economic growth. In the neoclassical growth model, FDI promotes economic growth by increasing the volume of investment and its efficiency (Sahoo 2006). Over the past three decades,

the flow of FDI worldwide has generally outpaced growth in global GDP and in exports. FDI outflows open access to foreign markets and promote deeper integration into global supply and value chains, making an economy's firms more efficient and competitive. Considering the economic benefits and importance of FDI for promoting economic growth, the EU continues to formulate changes in national policies to attract more FDI, especially as means of recovery from the global recession. Recently, China has become a major source of OFDI. Although both the US and EU OFDI is much greater than that of China, the US and EU OFDI have exhibited great vacillations in the past, while the Chinese OFDI has been growing steadily over time. If this trend continues for the next decade, China may soon hold the largest share of OFDI in the world.

2.3 The EU 28 Total Imports from and Exports to the US and China between 2002 to 2014

Both imports and exports are vital to the overall success of any national economy. They are indicators of the economic development, market attractiveness and stability, and consequent competitive advantage. Imports are key components of the process of globalization and homogenization of consumption and production. For import financing, country must rely on exports, foreign currency reserves, FDI, foreign credit and foreign aid. The amount of imports is proportional to the GDP, exchange rates, the forces of demand and supply, inflation differences and economic integration between the trading countries.

The first variable on which imports exert an impact is the trade balance, the difference between exports and imports. If imports displace or completely substitute domestic production, this production eventually dies off. Imports also exert a powerful influence on price and quality of domestic products, acting as a brake for inflation, challenge for managers and producers, and supply for domestic downstream productions. Imports are sometimes taxed with extra tariffs and duties, thus contributing to national revenue, its activities and expenditure. However, if prohibitively high tariffs and duties are imposed permanently, domestic producers tend to stop adopting new technologies and more efficient organization models, and sometimes withdraw from the global economic competition altogether. Furthermore, protectionist policies, even when they temporarily improve trade balance and profits of domestic firms, provoke retaliation, and should be substituted by approaches that take systemic views of the relevant interdependence between the relevant national economies. In the long-term, imports tend to be cyclical and grow faster than GDP. In general, during a recession, an "inversion" takes place and imports fall, becoming the largest positive contributor to growth of income. Consequently, trade balance improves and may drive the recovery process.

The IS–LM (investment saving [IS] liquidity preference & money supply [LM]) model, or Hicks–Hansen model, a macroeconomics tool that demonstrates the relationship between interest rates and real output in the goods and services market and the money market, considers the real exchange rate and GDP as determinants of imports. Our model, based on the existing Hicks–Hansen model, considers the FDI and GDP. We have analysed the following variables, the US, EU and Chinese GDP from 1995 to 2014, and the US and Chinese outward FDI from 1995 to 2013, and based on these, the EU-28 Imports from and Exports to the US and China between 1995 and 2014. We believe that the exponentially rising Chinese investments in the European Union (EU) will contribute toward the EU economic recovery from its financial crisis and establishment of strong and stable EU – China economic relations.

3 METHODS

The data on The US, EU and Chinese GDP from 1995 to 2014 and on The US and Chinese outward FDI from 1995 to 2013 were obtained from the UNCTAD annual data reports, as of 31 December each year. The data on The EU 28 Total Imports from and Exports to the US and China from 2002 to 2014 were obtained from the EUROSTAT annual data reports, as of 31 December each year. We plotted the obtained data and employed the customary regression analysis for the US, EU and Chinese GDP from 2015 to 2014 (Fig. 1 and 2, and Table 1), the US and Chinese outward FDI from 2014 to 2013 (Fig. 3 and 4), and the EU 28 Total Imports from and Exports to the US and China from 2015 to 2014 (Fig. 5, and Table 4). The US, EU and Chinese GDP from 2015 to 2014 comparisons among the groups for each variable were done using analysis of variance - ANOVA (Table 2), and the Fisher's Exact Test (Table 3). The EU 28 Total Imports from and Exports to the US and China (Table 4) includes the 90%, 95% and 99% Confidence Intervals. A measure of the linear dependence between two variables, EU-28 Total Import from China & EU-28 Total Import from the US, EU-28 Total Export to China & EU-28 Total Export from the US, EU-28 Total Import from China & EU-28 Total Export to China, and EU-28 Total Import from the US & EU-28 Total Export from the US, respectively, was made using the Pearson product-moment correlation coefficient. Also, comparisons among the groups for each variable were done using analysis of variance ANOVA (Table 6). Finally, Fisher's Exact Test was carried out and the significance of the deviation from the null hypothesis (P-Value) was calculated (Table 7). Included are Correlation Coefficients (r) and Histograms for the EU 28 Total Imports from and Exports to the US and China (Fig. 6), and Box Plot (Linear) for the EU-28 Total Imports and Exports Value [€] with China

and US 2002-2014 (Fig. 1) and Mean with 1-σ error bars for the EU-28 Total Imports and Exports Value [€] with China and US 2002-2014 (Fig. 2).

4 RESULTS

4.1 The US, EU and Chinese GDP from 1995 to 2025

FIGURE 1. The GDP [USD Billion] of China EU -28 and US, 1995-2030 Exponential Forecast
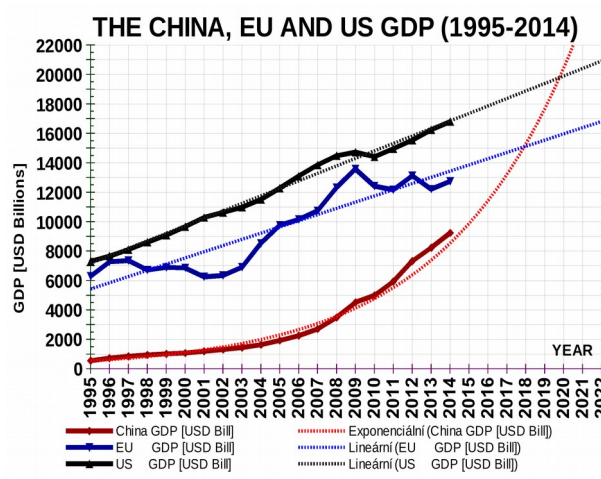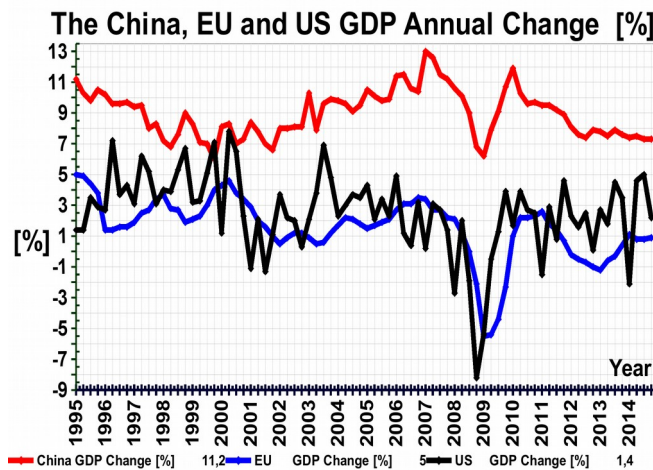

FIGURE 2. The GDP Annual Change [%], China, EU-28 and US, 1995-2014

The GDP of China, EU-28 and US growth [USD Billion] **(Fig. 1)** was plotted. The GDP growth of the EU-28 and US was matched with the best fit linear functions, and the GDP growth of China was matched with an exponential model function. Also, the GDP Annual Change [%] **(Fig. 2)** was plotted.

Source: Own Calculation, Processed in SPSS, 2015. Data Source: UNCTAD, 2015.

US GDP (1995-2014)	USD [Billion]	EU GDP (1995-2014)	USD [Billion]	CHINA GDP (1995-2014)	USD [Billion]
Minimum:	7308,7	Minimum:	6253,08	Minimum:	559
Maximum:	16800	Maximum:	13581,63	Maximum:	9240,27
Range:	9491,3	Range:	7328,55	Range:	8681,27
Count:	20	Count:	20	Count:	20
Sum:	240229,1	Sum:	188663,2	Sum:	61426,27
Mean:	12010	Mean:	9433,2	Mean:	3071
Median:	11890	Median:	9146,8	Median:	1785
Standard Deviation:	3026	Standard Deviation:	2741,2	Standard Deviation:	2710
Variance:	9156000	Variance:	7514400	Variance:	7345000
Mid Range:	12054,35	Mid Range:	9917,355	Mid Range:	4899,635
Quartiles:	Q1 --> 9377.4 Q2 --> 11894.6 Q3 --> 14600.3	Quartiles:	Q1 --> 6877.27 Q2 --> 9146.755 Q3 --> 12266.115	Quartiles:	Q1 --> 1050 Q2 --> 1785 Q3 --> 4755
Interquartile Range (IQR):	5222,9	Interquartile Range (IQR):	5388,845	Interquartile Range (IQR):	3705
Sum of Squares:	174000000	Sum of Squares:	142770000	Sum of Squares:	139600000
Mean Absolute Deviation:	2627	Mean Absolute Deviation:	2490,3	Mean Absolute Deviation:	2222
Root Mean Square (RMS):	12370	Root Mean Square (RMS):	9804,2	Root Mean Square (RMS):	4051
Std Error of Mean:	676,6	Std Error of Mean:	612,96	Std Error of Mean:	606
Skew ness:	-0,03965	Skewness:	0,18308	Skewness:	1,046
Kurtosis:	1,598	Kurtosis:	1,2893	Kurtosis:	2,682
Coefficient of Variation:	0,2519	Coefficient of Variation:	0,2906	Coefficient of Variation:	0,8824
Relative St. Deviation:	25,19%	Relative St. Deviation:	29,06%	Relative St. Deviation:	88,24%
99% confidence interval:	10267 ≤ x ≤ 13753	99% confidence interval:	7854 ≤ x ≤ 11012	99% confidence interval:	1510 ≤ x ≤ 4632
95% confidence interval:	10684 ≤ x ≤ 13336	95% confidence interval:	8232 ≤ x ≤ 10635	95% confidence interval:	1883 ≤ x ≤ 4259
90% confidence interval:	10897 ≤ x ≤ 13123	90% confidence interval:	8425 ≤ x ≤ 10441	90% confidence interval:	2074 ≤ x ≤ 4068

TABLE 1. Descriptive Statistical Analysis for the GDP of China, EU-28 and US (1995-2014)

Using UNCTAD, our experimental sample consisted of twenty sets of data (***N=20***) for each variable, the GDP of China, EU-28 and US, respectively, from 1995 to 2014. The ***Mean*** for China GDP was USD 3071 [billions], but the ***Median*** was USD 1785 [billions]. This Mean is almost 1.7 times larger than the Median, because of the unusually steep rise in the GDP of China. The ***Mean*** for EU GDP was USD 9433 [billions], and the ***Median*** was USD 9147 [billions]. The ***Mean*** for US GDP was USD 12010 [billions], and the ***Median*** was USD 12054 [billions]. The ***Standard Deviation*** is the determination of the data spread out from the mean, and for China GDP was 2710, for the EU GDP 2741, and for the US GDP 3026.

Source of Varriation	Sums of Squares (SS)	(df)	Means of Squares (MS)	F - Value
Between	846,821,387.20	2	423,410,693.60	52.893
Within (Error)	456,284,115.36	57	8,004,984.48	
Total	1,303,105,502.56	59		

TABLE 2. ANOVA for the GDP of EU, China and US (1995-2014)

	Value
P-value (F = 52.893)	<0.0001
Critical value (α = 0.05)	3.16
P(F <= 52.893)	1
P(F >= 52.893)	<0.0001
Hence, Ho is REJECTED.	

TABLE 3. The Fisher's Exact Test for the GDP of EU, China and US (1995-2014)

The F ratio is the ratio of two mean square values. Our F ratio is not close to one, and the null hypothesis (Ho) is rejected. Furthermore, the P-value ≤ α: The differences between the means are **statistically significant.** The p-value is less than the significance level, the group means are not equal, and the null hypothesis (Ho) is rejected.

4.2 The US and Chinese outward FDI from 1995 to 2013

The Chinese and US OFDI [% of the world] between 1995 and 2013 **(Fig. 3)** and the Chinese, US and EU-28 OFDI [USD millions in current prices] between 1995 and 2013 **(Fig. 4)** were plotted.
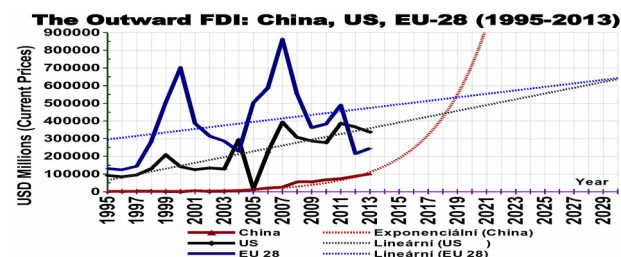

FIGURE 3. The OFDI [percentage of the world] China and US, 1995 – 2013

FIGURE 4. The OFDI [USD 2013 Millions in prices] of China, US and EU 28, 1995 - 2013

Source: Own Calculation, Processed in SPSS, 2015. Data Source UNCTAD

4.3 The EU 28 Total Imports from and Exports to the US and China between 2002 to 2014
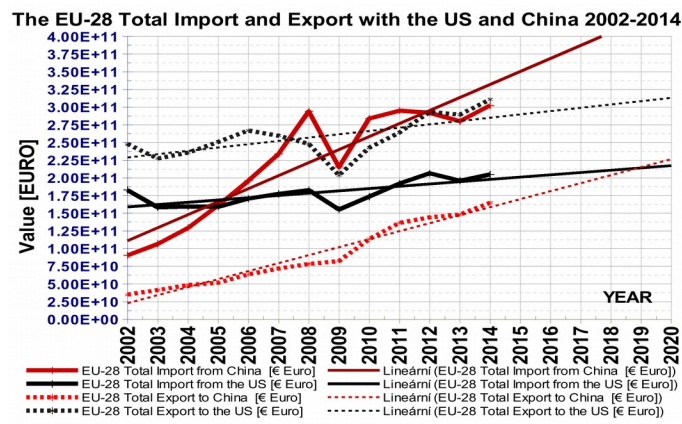

FIGURE 5. The EU-28 Total Value [€] of Imports and Exports with China and US 2002-2014
Source: Own Calculation, Processed in SPSS, 2015. EUROSTAT Data.

The **EU-28 Total Value [€] of Imports and Exports with China and US 2002-2020** was plotted **(Fig. 5)**.

Using EUROSTAT, our experimental sample consisted of thirteen sets of data (**N=13**) for each variable, the **EU-28 Total Import from China [€ Euro]**, the **EU-28 Total Import from the US [€ Euro]**, the **EU-28 Total Export to China [€ Euro]**, and the **EU-28 Total Export to China [€ Euro]**, respectively, from 2002 to 2014 **(Table 4)**.

The *Mean* for the **EU-28 Total Import from China** was **€ 2.22e11**, with *Standard Deviation* **7.80e10**. The *Average Absolute Deviation from Median* = 6.528E+10. The data is consistent with a *Normal Distribution*: P = 0.50, where the normal distribution has Mean = 2.16370E+11 and Stdev = 9.028e10. Also, the data is consistent with a *Log Normal Distribution*: P = 0.57, where the log normal distribution has Geometric Mean= 1.97953E+11 and multiplicative Stdev = 1.68. The *95% Confidence Interval* for the actual *Mean* is **1.7442E+11 thru 2.6856E+11**.

The *Mean* for the **EU-28 Total Import from the US** was **€ 1.78e11**, with *Standard Deviation* **1.77e10**. *The Average Absolute Deviation from Median* = 1.462E+10. The data is consistent with a *Normal Distribution*: P = 0.94, where the normal distribution has Mean = 1.79180E+11 and Stdev = 1.973E+10. Also, the data is consistent with a *Log Normal Distribution*: P = 0.94, where the log normal distribution has Geometric Mean = 1.78074E+11 and multiplicative Stdev = 1.12. The *95% Confidence Interval* for the actual Mean is **1.6759E+11 thru 1.8918E+11**.

The *Mean* for the **EU-28 Total Export to China** was **€ 9.08e10**, with *Standard Deviation* **4.51e10**. The *Average Absolute Deviation from Median* = 3.663E+10. The data is consistent with a *Normal Distribution*: P = 0.59, where the normal distribution has Mean = 9.35423E+10 and Stdev = 4.909E+10. Also, the data is consistent with a *Log Normal Distribution*: P = 0.98, where the log normal distribution has Geometric Mean = 7.96467E+10 and multiplicative Stdev = 1.80. The *95% Confidence Interval* for the actual Mean is **6.3477E+10 thru 1.1789E+11**.

The *Mean* for the **EU-28 Total Export to China** was **€ 2.57e11**, with *Standard Deviation* **2.89e10**. The *Average Absolute Deviation from Median* = 2.138E+10. The data is consistent with a *Normal Distribution*: P= 0.84, where the normal distribution has Mean = 2.57798E+11 and Stdev = 3.490E+10. Also, the data is consistent with a *Log Normal Distribution*: P = 0.92, where the log normal distribution has Geometric Mean = 2.55588E+11 and multiplicative Stdev= 1.15. The *95% Confidence Interval* for actual Mean is **2.3961E+11 thru 2.7439E+11**.

EU-28 Total Import from China [€ Euro]	
Minimum:	90418918639
Maximum:	302446537272
Range:	212027618633
Count:	13
Sum:	2879823750140
Mean:	221524903856.92
Median:	233862918324
Standard Deviation:	77978520722.922
Variance:	6.0806496941352E+21
Mid Range:	196432727955.5
Quartiles:	Q1 --> 145105229529
	Q2 --> 233862918324
	Q3 --> 292060859358
Interquartile Range (IQR):	146955629829
Sum of Squares:	7.2967796329623E+22
Mean Absolute Deviation:	66288701358.698
Root Mean Square (RMS):	233850786696.97
Std Error of Mean:	21627350373.179
Skewness:	-0.47322177676312
Kurtosis:	1.5962781143966
Coefficient of Variation:	0.35200792039746
Relative St. Deviation:	35.2%

EU-28 Total Import from the US [€ Euro]	
Minimum:	155250462946
Maximum:	206530662466
Range:	51280199520
Count:	13
Sum:	2319281453596
Mean:	178406265661.23
Median:	177414306360
Standard Deviation:	17732771561.473
Variance:	3.1445118725139E+20
Mid Range:	180890562706
Quartiles:	Q1 --> 159420537042
	Q2 --> 177414306360
	Q3 --> 191973711871
Interquartile Range (IQR):	32553174829
Sum of Squares:	3.7734142470167E+21
Mean Absolute Deviation:	14591793812.556
Root Mean Square (RMS):	179217907201.18
Std Error of Mean:	4918185932.3832
Skewness:	0.2154584690943
Kurtosis:	1.6538745400386
Coefficient of Variation:	0.09939545282084
Relative St. Deviation:	9.94%

Source: Own Calculation, Processed in SPSS, 2015.

EU-28 Total Export to China [€ Euro]	
Minimum:	35101603926
Maximum:	164732735268
Range:	129631131342
Count:	13
Sum:	1179909216488
Mean:	90762247422.154
Median:	78300529491
Standard Deviation:	45076150321.502
Variance:	2.0318593278066E+21
Mid Range:	99917169597
Quartiles:	Q1 --> 50064649439
	Q2 --> 78300529491
	Q3 --> 136414758418
Interquartile Range (IQR):	86350108979
Sum of Squares:	2.438231193368E+22
Mean Absolute Deviation:	38946147854.959
Root Mean Square (RMS):	100565143133.98
Std Error of Mean:	12501874714.207
Skewness:	0.36071750302223
Kurtosis:	1.519751497283
Coefficient of Variation:	0.4966398651616
Relative St. Deviation:	49.7%

EU-28 Total Export to the US [€ Euro]	
Minimum:	203756094483
Maximum:	310878806342
Range:	107122711859
Count:	13
Sum:	3340705405261
Mean:	256977338866.23
Median:	250821005899
Standard Deviation:	28858694871.05
Variance:	8.3282426966035E+20
Mid Range:	257317450412.5
Quartiles:	Q1 --> 239170300051.5
	Q2 --> 250821005899
	Q3 --> 267033901715
Interquartile Range (IQR):	27863601663.5
Sum of Squares:	9.9938912359242E+21
Mean Absolute Deviation:	21907187876.556
Root Mean Square (RMS):	258468786423.18
Std Error of Mean:	8003961853.8876
Skewness:	0.17009779032623
Kurtosis:	2.4438158296621
Coefficient of Variation:	0.11230054369141
Relative St. Deviation:	11.2%

TABLE 4. Descriptive Statistical Analysis for the EU-28 Total Imports and Exports Value [€] with China and US (2002-2014)

Source: Own Calculation, Processed in SPSS, 2015.

Pearson Correlation Coefficient

	Value	
EU-28 Total Import from China [€ Euro] / EU-28 Total Import from the US [€ Euro]	0.15	Low Positive Correlation
EU-28 Total Export to China [€ Euro] / EU-28 Total Export to the US [€ Euro]	0.71	High Positive Correlation
EU-28 Total Import from China [€ Euro] / EU-28 Total Export to China [€ Euro]	0.87	High Positive Correlation
EU-28 Total Import from the US [€ Euro] / EU-28 Total Export to the US [€ Euro]	0.87	High Positive Correlation

TABLE 5. Pearson Correlation Coefficient

ANOVA: Source of Variation	Sums of Squares (SS)	(df)	Means of Squares (MS)	F - Value
Between	2.0052E+23	3	6.6839E+22	28.87
Within (Error)	1.1112E+23	48	2.3149E+21	
Total	3.1163E+23	51		

TABLE 6. ANOVA for the EU-28 Total   Imports and Exports Value [€] with China and the US (2002-14)

Source: Own Calculation, Processed in SPSS, 2015

	Value
P-value (F = 28.87)	<0.0001
Critical value ($\alpha = 0.05$)	2.8
P(F <= 28.87)	1
P(F >= 28.87)	<0.0001
Hence, Ho is REJECTED.	

TABLE 7. The Fisher's Exact Test for the EU-28 Total Imports and Exports Value [€] with China and the US (2002-2014)

The F ratio is the ratio of two mean square values. Our F ratio is not close to one, and the null hypothesis (Ho) is rejected. Furthermore, the P-value ≤ α: The differences between the means are **statistically significant.** The p-value is less than the significance level, the group means are not equal, and the null hypothesis (Ho) is rejected.
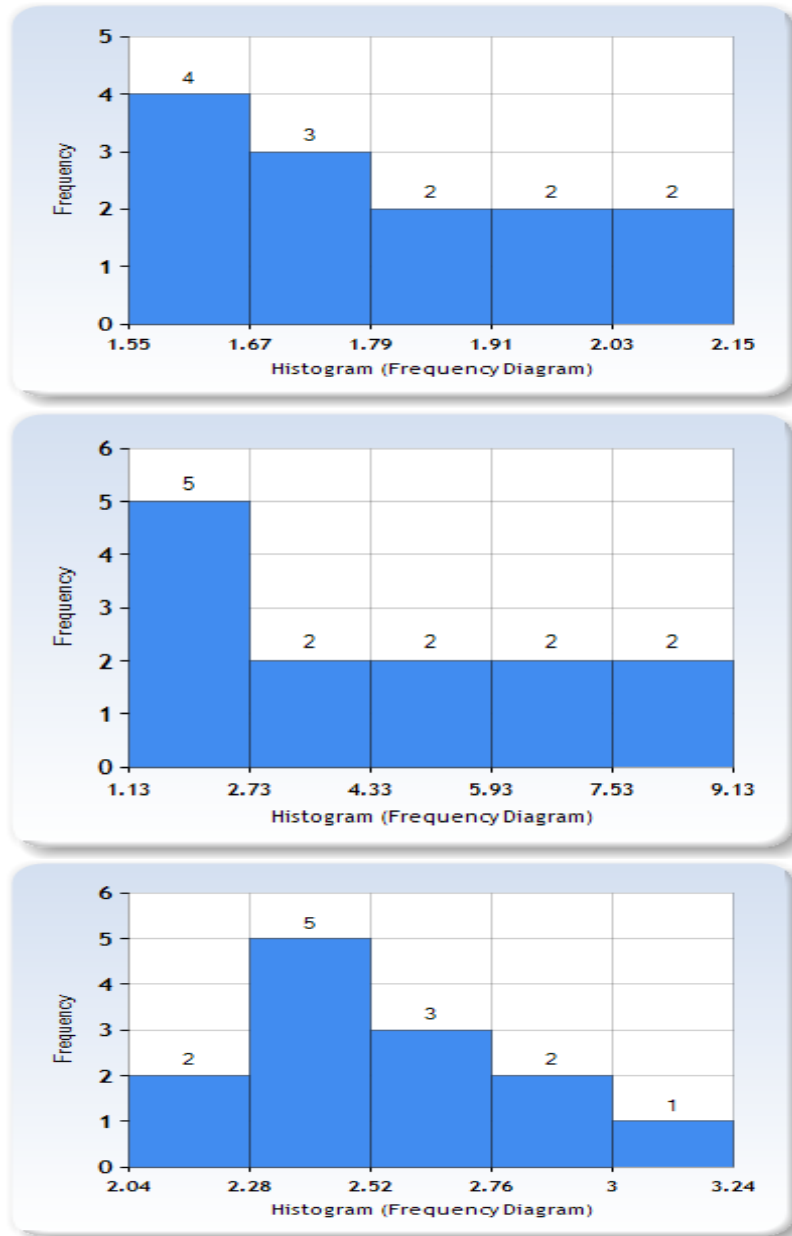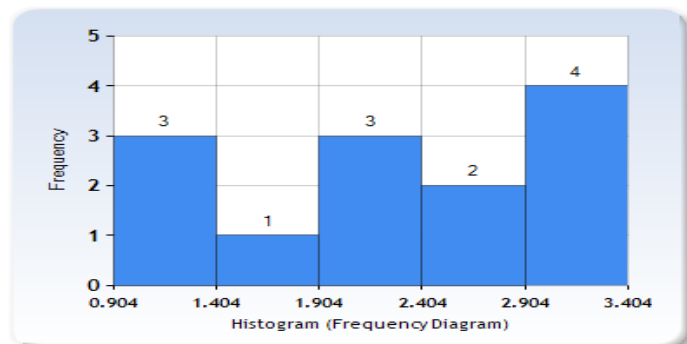

FIGURE 6. The EU-28 Total Import and Export [€] from the US and China

Histogram: EU-28 Total Import [€] from China		
Lowest Score	9.04	The histogram exhibits 3 peaks, corresponding to the rise of the EU-28 total imports from China. Also, the histogram is right-skewed, indicating that the EU-28 total imports value from China is rising.
Highest Score	3.02	
Total Number of Scores	13	
Number of Distinct Scores	13	
Lowest Class Value	9.04	
Highest Class Value	3.02	
Number of Classes	5	
Class Range	0.5	
Correlation Coefficient (r)	**0.919**	

Histogram: EU-28 Total Import [€] from the US		
Lowest Score	1.55	The histogram is left-skewed, indicating that most of the EU-28 total imports from the US are relatively only slightly rising in total value.
Highest Score	2.07	
Total Number of Scores	13	
Number of Distinct Scores	12	
Lowest Class Value	1.55	
Highest Class Value	2.14	
Number of Classes	5	
Class Range	0.12	
Correlation Coefficient (r)	**0.708**	

Histogram: EU-28 Total Export [€] to China		
Lowest Score	1.13	The histogram's first column peaks, indicating that most data were found between the 1.13e10 and 2.73e10 range. The remaining columns are smaller and of the same size, showing a uniform increase in the EU-28 total exports value to China.
Highest Score	8.24	
Total Number of Scores	13	
Number of Distinct Scores	13	
Lowest Class Value	1.13	
Highest Class Value	9.12	
Number of Classes	5	
Class Range	1.6	
Correlation Coefficient (r)	**-0.477**	

Histogram: EU-28 Total Export [€] to the US		
Lowest Score	2.04	The histogram's second column peaks and indicates that most data ranged between 2.28e11 and 2.52e11. Also, the histogram is left-skewed, indicating that most of the total exports to the EU-28 US are relatively only slightly rising in total value.
Highest Score	3.11	
Total Number of Scores	13	
Number of Distinct Scores	12	
Lowest Class Value	2.04	
Highest Class Value	3.23	
Number of Classes	5	
Class Range	0.24	
Correlation Coefficient (r)	**0.633**	

5 DISCUSSION

5.1 The US, EU and Chinese GDP from 1995 to 2014

China's GDP consists of three broad sectors; the primary industry (agriculture), secondary industry (construction and manufacturing) and tertiary industry (the service sector). Primary industry accounted for 10% of GDP, while secondary industry accounted for 44% and tertiary industry 46% in 2013. Our quantitative analysis of the GDP for China, EU and US between 1995 and 2014 showed an overall upward trend for all three economies. Chinese GDP showed the most dramatic growth, followed by the US and EU GDP. China's economy, after experiencing double-digit growth for decades, is beginning to mature now. Since 2008, the average quarterly GDP growth remains at over 8%. Our research analysis suggests that the Chinese GDP may outgrow the EU GDP around the year of 2019, and the US GDP around the year of 2021. This is consistent with the findings of the world leading economic experts. For example, The Economist projects China will overtake the US in 2019 (The Economist 2010). Pricewaterhouse Coopers (PwC) conclude China's GDP will overtake the US before 2020 (Hawksworth 2010) (Hawksworth & Tiwari, 2011). The Standard Chartered Bank predicts China will overtake the US by 2020 and that by 2030 its economy will be twice the size of the US (Adam 2010).

5.2 The US and Chinese Outward FDI from 1995 to 2013

Historically, China has been one of the major recipients of foreign direct investment, and, until recently, only a minor contributor to global investment flows. Inward FDI was a critical aspect of China's post 1978 growth reforms, but few Chinese firms went abroad during the 1980's to 1990's (Hanemann et al. 2012). Instead, China's priority was to attract foreign investment in order to acquire funds, technology and management skills. The introductory formal policy reference to the Go-Global strategy occurred in the Chinese Communist Party Central Committee (CCPCC) Opinion on the Formulation of the 10th National Economic and Social Development Five Year Plan adopted on 11 December 2000. This was the first formal call for the implementation of the Go-Global Policy. As a result, the concept was subsequently included in the 10th Five Year Plan. After its inclusion in the 11th Five Year Plan, the policy became a part of the annual economic

development plans passed by the National People's Congress (Freeman 2008).

By the 2005, Chinese demand sent global commodity import prices soaring and state-owned enterprises ventured abroad to buy stakes in extractive projects to increase supply security and profits. This push for natural resource investments boosted Chinese total outward FDI from less than USD $1 billion in 2000 to more than USD $20 billion in 2006, and more than USD $50 billion in 2008. A clear surge in Chinese OFDI was seen from 2008 onwards, when the targets were innovation technology firms of the EU. During this period, the economic and financial power of the Chinese MNCs and business enterprises noticeably increased and they bought a large number of overseas assets. A sizable part of Chinese OFDI was made in the form of cross border M&A. During the global financial crisis, Chinese companies accelerated their purchase of distressed foreign assets globally. This is reflected by the peak in 2008 (Figure 4). This propelled China to the status of a major outbound investor economy, as Chinese annual OFDI flows began recording large annual increases. In terms of OFDI flows, China also outperformed some of the high income economies like Canada, France, Germany, and the United Kingdom. In 2010, China was already the world's fifth largest exporter of OFDI. China achieved another record high in 2013 with over USD $101 billion. As China is rapidly integrating with the global economy, its outward FDI has increased by nearly 300% between 1990 and 2010. We estimated that if China follows this pattern, it may outpace both the US and EU as early as 2019, and ship abroad over USD $1 trillion in FDI by 2021.

Our quantitative analysis of the OFDI [% of the world] for China between 1995 and 2013 showed a steady rise, while the US OFDI reflected a downward trend. The first veritable upswing in the Chinese OFDI flows occurred after 2003. We have determined that the Chinese OFDI [% of the world] may overcome the US OFDI around the year of 2019. The OFDI [USD millions in current prices] exponential forecast for China, the US and EU, between 1995 and 2013, showed increase for all three. Considerable rise has been noted for China, outpacing both the US and EU. We estimated that China becomes the largest shareholder of OFDI in the world by 2019. This is consistent with other major economic studies, such as the IMF, WTO and UNCTAD. The Belgian – Chinese Chamber of Commerce in Brussels has predicted that the Chinese OFDI may surpass the US in 2022.

5.3 The EU 28 Total Imports from and Exports to the US and China between 2002 to 2014

The EU-28 international trade in goods with the rest of the world (the sum of extra-EU exports and imports) was valued at € 3419 billion (€ 3 419 000 million) in 2013. In 2014, the United States and China continued to be the two main trading partners of the EU. Trends observed over recent years are however very different for these top trading partners of the EU. The share of the US in EU total trade in goods recorded an important and almost continuous fall, from 24% in 2002 to 15% in 2014. In contrast, the share of China has doubled, rising from 7% in 2002 to 14% in 2014 (EUROSTAT).

Trade between the EU and China has increased from about €100 billion to almost €400 billion between 2000 and 2010. The EU open market has been a large contributor to China's export-led growth, whereas the EU has also benefited from the growth of the Chinese market. Our quantitative analysis of the EU-28 Total Value [€] of Imports and Exports with China and US between 2002-2020 (Figure 5) showed the greatest increase for the EU-28 Total Import from China, and a steady increase for the EU-28 Total Export to China. A slight increase has been noted for the EU-28 Total Export to China, and the smallest increase for the EU-28 Total Import from the US.

5.3.1 The EU-28 Total Export [€] to China

With the EU recession, China has indeed become the growth market for European exporters. In 2002, the EU has exported goods and services to China worth some €35 billion, and in 2010 the value has risen to €113 billion. In 2014, it has reached €165 billion, making China the fastest growing market for European exports. We estimated that the EU-28 Total Export to China might be about €200 billion in 2015, and €300 billion in 2018, at which point, the EU total export to China may exceed the EU total export to the US.

5.3.2 The EU-28 Total Import [€] from China

At the same time the EU trade deficit with China has risen and become the biggest deficit factor of the EU external trade. China's trade to the EU-28 grew very fast in the past decade. In 2005, the EU total imports value of €161 billion from China outweighed the total imports value of €159 billion from the US (Figure 5). In 2008, the EU total imports value from China came close to €300 billion, and in 2014, it exceeded this mark. We reckoned that the EU-28 Total Import from China may be about €450 billion in 2016, and will keep rising by about €50 billion each year, between 2016 and 2020.

Perhaps one of the most authoritative reports, confirming our research findings, is that of the World Bank, in partnership with China's Development Research Centre of the State Council (DRC), which has forecast about USD $450 billion trade surplus in 2020, based on the assumption of a steady reform, no major shock and GDP growth of 9% - 7% during 2010 – 2020. This report stated that, "China will be on the verge of becoming the world's largest economy in this time frame."

5.4 The Impact of the Economic Growth of China

5.4.1 The EU Economy

FDI: Chinese Foreign Direct Investment present in the EU has risen dramatically since 2009. Foreign direct investment increased the welfare of both producers and consumers. Firms were able to explore new markets and operate more efficiently across borders, reducing production costs, increasing the scale of their economies and promoting specialization. Foreign direct investment allowed for prices that are more advantageous for those looking to divest assets, due to a bigger and more competitive pool of bidders. For consumers, foreign investment increased choices, lowered prices and introduced innovation. We estimate that through 2020 Chinese firms will put to work $1-2 trillion in FDI, the EU could get more than $250 billion, or $20-30 billion annually. This investment yields the same benefits as FDI from other countries: fresh capital, jobs, taxes and innovation spill overs. Chinese firms already employ more than 100 000 people and these figures are expected to further increase (Hanemann 2012, Zhang et al. 2013 and Zhang 2014).

New capital: Due to the Global Economic Recession, OFDI from traditional investors has fallen off severely (global FDI flows almost halved from a peak of $2.3 trillion in 2007 to $1.3 trillion in 2010), but Chinese OFDI grew rapidly. We have projected $1-2 trillion in global OFDI from China over 2015-2020, based on an extrapolation of historical outbound investment growth for other nations, China's current position, and its expected GDP performance. If Europe maintains an average intake of global FDI flows around 25%, then it may gain a cumulative $250-500 billion in new Chinese M&A and greenfield investment between now and 2020. We expect these figures to rise further, given the mutually beneficial complementarity between China's needs and EU workforce. Even if either the Chinese global average in OFDI becomes lower and the EU fails to attract new global flows, our estimate still remains at least at about $20-30 billion.

Employment: By injecting capital into the EU economy via new or existing greenfield projects, Chinese investment generated employment, promoted understanding through a diversified workforce and collaboration between different cultures. While mergers created fewer new jobs, as employment remained the same or shrunk in the case of restructuring and integration, Chinese acquisitions preserved jobs for firms that were about to close, or led to a job growth after being expanded by the Chinese investment.

Consumer welfare: Chinese firms have delivered European consumer welfare in the form of lower prices, product diversity and selection, and faster innovation cycles. These gains extended beyond traditional goods to product segments that require more active presence in consumer markets, and especially to services. Further removal of cross-border obstacles would reduce trade costs, provide better access to foreign markets and assure fair economic competition and balance, both for China and the EU (Anagnostou et al. 2013).

Shareholder value: Greater investment interest from China increased competition for assets, and thus raised prices for EU sellers. While more efficient pricing is always desirable, this is especially important as Europe has been undergoing its broad debt restructuring.

5.4.2 The Sino-EU Relations

When Chinese and European trade relations have begun in 1975, trade volume between China and the EU (then known as the European Economic Community) reached $2.4 billion. In 2014, the European Commission data recorded more than $615 billion worth of goods traded between the EU and China—equivalent to $1.68 billion every day. This marked a 9.9 percent year-on-year increase. Chinese investment provided the EU with more opportunities to engage China on bilateral and multilateral levels, besides only helping to build Chinese political and economic influence in the EU and allowing the diversification of Chinese currency holdings, which, until recent times, were USD dominated. When the EU opened its door to Chinese investment, it also encouraged China to keep its door open to EU investment. China is a critical export market for many EU firms, especially these with high value-added products. With private consumption in China projected to grow by $5-10 trillion over the decade, China will soon overtake the US as the world's largest consumer market.

China accounts for less than 5% of European investments abroad, whereas FDI from China represents less than 3% of the total FDI inflows into the EU, despite the fact that total value of trade flows of goods and

services between the EU and China now exceeding about €1 billion every day. Yet, Chinese investments have provided the EU with more opportunities to engage China on a bilateral and multilateral level, and both the EU and China hope that with a comprehensive Bilateral Investment Treaty (BIT), together with the domestic economic reforms in China, and the EU efforts to overcome the financial crisis, may alleviate the clear discrepancy between the levels of trade and investment and will give a new impetus to the existent mutually beneficial cooperation. This new BIT should improve the legal certainty for investors in the host country, expand the existing standards of protection of investment, reduce barriers for investors when investing in the host country, and increase the flow of FDI. Also, the BIT should introduce international dispute-settlement mechanism to enforce its rules and resolve disputes brought by either party. For the next decade of Sino-EU relations, both countries would benefit by accelerating their bilateral trade agenda, focus more on a substance instead of form, and elevate their economic and trade relations to maximize their mutual benefits and satisfaction.

5.4.3 The Sino-EU Trade Disputes

* *Protectionism*

The current Sino-EU Relations are governed by the Trade and Cooperation Agreement, and despite the close and mutually beneficial investment integration between the EU and China, overt and covert threats of protectionist initiatives have been noted on both sides (Erixon et al. 2009). For example, in 2013, the International Chamber of Commerce has condemned both the EU and China for protectionist measures and escalation of trade tensions, when the EU imposed anti-dumping duties on the imports of solar panels from China, and in response, China imposed anti-dumping and anti-subsidy duties on solar-grade poly-silicon imports from the EU.

Tariffs: The EU has been imposing substantial Tariff Rates on many agricultural products, increasing their prices, and therefore the income of domestic farmers. Also, the EU has employed Escalated Tariffs. The WTO has reported that the average tariff for processed foods was more than twice as for unprocessed foods in the EU.

Dumping and Export Quotas: In cases of Dumping, the WTO does allow for the imposition of tariffs, to prevent flooding of markets with cheap foreign imports that put domestic companies out of business. For example, a well-known dispute occurred between the EU and China over textile imports into the EU, called "The Bra Wars ", because the domestic European manufactures were losing out to the Chinese imported cheaper goods. Eventually, China has agreed, in exchange for the release of 80 million items held in the EU ports, that only half of these be deducted from its Export Quotas for 2006. Since China has entered the WTO, it has been one the most frequent targets as well as initiators of dumping charges.

The Red Tape: Some EU nations employ another protectionist measure, 'The Red Tape', which is more difficult to identify than prohibitive tariff rates. By increasing already high administrative costs, and stringent EU standards set by the private sector in the area of certification and traceability, it is more difficult for China to export certain goods and services to the EU.

Government Subsidies: Both the EU and China have been criticized for unfair competitive advantage by providing Government Subsidies to some of their industry sectors. The EU has directed its government subsidies to its airline industries, and China to its car industries.

Arms Embargo: Since 1989, in response to the Tiananmen Square, the EU has commenced and maintained, under the pressure of the US and Japan, an Arms Embargo against China. The EU High Representative and the President of China have both agreed that the current EU arms embargo against China is a major impediment for developing stronger EU-China cooperation.

* *China's Market Economy Status*

When China joined the WTO in 2001, the US and EU refused to acknowledge that China was a market economy. They stated that China's domestic prices were set by the Chinese Government, not the forces of supply and demand, and formulated Article 15 of China's Protocol of Accession to the WTO, that allowed WTO members to disregard Chinese prices and costs in anti-dumping cases, and instead base the calculation of dumping margins using external benchmarks. The comparison of Chinese export prices with surrogate prices and costs, rather than Chinese prices and costs, led to much higher dumping margins, which imposed large tariffs and countless anti-dumping charges against China.

The Article 15(a)(ii) of the Protocol (WTO 2001) states: "The importing WTO Member may use a methodology that is not based on a strict comparison with domestic prices or costs in China if the producers under investigation cannot clearly show that market economy conditions prevail." The WTO Accession

Agreement, set to expire in 15 years after China joined the WTO, on 12 December 2016, will end these protectionist measures. Article 15(d) reads: "In any event, the provisions of sub-paragraph (a)(ii) shall expire 15 years after the date of accession."

China argues that this sentence requires all countries to automatically accord China market economy status on December 11, 2016, 15 years after China's accession. This would no longer permit the WTO members to use surrogate costs and prices in anti-dumping cases against China. The US and EU could attempt to claim contrary to that. Nonetheless, since the US is eager to establish formal trade agreements with China, and the EU and China are negotiating a bilateral investment treaty, the US and EU continued refusal to recognize China as a market economy may be increasingly difficult to sustain.

5.4.4 The EU Identity in the Context of the Sino-EU Relationship and Economic Policy

Identity became a subject of study of foreign policies and international relations from the 1990s. China's rise and mounting influence will not only affect EU future objectives and positions in the global distribution of forces, but may also constitute a challenge to Europe's very identity (Geeraerts 2013). The fragmented EU nations, especially those with weak economies, instead of unifying their national policies to the established EU standards, have been competing between each other in attracting the greatest share of Chinese investments for their own national economic benefit, and sometime, even their individual local community's enrichment, therefore giving China another bargaining advantage over the EU, in regards to its choice of investments. If the EU nations remain unable to normalize its institutional policies to the Chinese flow of investments, the EU nations will continue losing its future negotiating power vis à vis China. Only an EU with a well-functioning economy, political stability, and clear vision for the future will be able to attract foreign investors that contribute to the EU long-term prosperity.

5.4.5 The Economic Prosperity and Regional Stability along the Silk Route II

Economic prosperity leads to conflict resolution and regional stability. Throughout history, conflicts have been less likely between countries with high mutual FDI. Cross-border ownership of assets has stabilized international relations, as engagement deepened beyond mere facilitation of goods and services. Countries with a significant FDI stock abroad have a greater interest in political stability in recipient countries. The economic integration of the formerly Western and Eastern Europe is a prime example.

Also, the current construction of the 21st Century Land Silk Route II (丝绸之路经济带) and the Maritime Silk Route II Economic Belt (21 世纪海上丝绸之路), modelled on the ancient Silk Route that connected the Han dynasty's capital of Xian through Persia to Europe more than 2,100 years ago, has a significant geopolitical impact, such as the potential collapse of the US economic dominance through the US Dollar and preponderance of trade in local currencies. The Shanghai Cooperation Organization and the Asian Infrastructure Investment Bank (AIIB) already rivals the World Bank and the Asian Development Bank. Moreover, the Maritime Silk Route II may end the EU centuries old monopoly on international shipping. These two Silk Routes combined encompass a territory of 4.4 billion people or 63% of the world's population, and the aggregate wealth of the countries involved totals $2.1 trillion or 29% of the world's GDP.

5.5 Limitations of Our Research

Since the exponential surge of the Chinese economic investment in the EU is a relatively recent phenomenon, our study includes only analytic but not quantitative forecasts. We recommend that our analysis is considered in the context of other relevant forecasts and expert opinions, of which some of these have been mentioned in our Introduction and Discussion sections. Also, our analysis of the Chinese FDI has been limited because of the numerical discrepancies found between the reports of MOFCOM, EU and world institutions.

5.6 Recommendation for Further Study

During our research, we have not encountered scholarly analysis of the economic impact of China's Market Economy Status in the near future, nor we have found any evaluation of the EU – China unified BIT agreement benefits, that are important both for the EU recovery from its financial crisis and the China's market establishment as a global economic power in the next decade. Since these topics have far reaching regional and global implications, we recommend them for further research considerations.

6 CONCLUSION

The EU and China have now become mutually indispensable partners whose relations are based on mutual commercial interests. Our analysis supports the view that Chinese investments in the EU will continue to rise. This surge represents both opportunities and challenges for the EU. The combination of the US

commenced global recession, the massive accumulation of currency reserves, and the sovereign debt crisis in the EU has been projecting China as a potential rescuer. At the same time, this massive Chinese investment is modifying EU institutional processes, integration and identity as well as transatlantic relations and global power redistribution. To make this transition process advantageous and prosperous, the EU needs to abandon its economic strife between own national members and develop a well-established and legally predictable policies with integrated and stable economy. This would not only diminish the EU unfounded but existing fears of strong Chinese economy swallowing the fragmented EU national industries, but would also attract other foreign investors and contribute to the EU long-term prosperity. Still, a complete analysis of the impact of the Exponentially Rising Economic Growth of China in the EU is difficult to decisively establish because of the novelty of this phenomenon, and the fact that its full potential is still waiting to be fully realized during the next decade, when China becomes by far the foremost single economic partner of the EU. What transpires today, however, is the changing dynamic of the Sino – EU - US relations, in the aftermath of the US originated global recession and the weakened US dollar, the EU sovereign debt crisis, and the exponentially growing economic prosperity and rising global influence of China. These global forces now continue to transform the EU transatlantic relations, from which the EU international institutions and socio-political structures have once risen and recently fallen, and now are re-emerging, both figuratively and literally, with the EU newly found access to "The Silk Road", the Silk Road Economic Belt, connecting the EU to China for the 21st century and beyond.

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