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ARE EUROPEAN INDUSTRIAL CHAMPIONS A MANDATORY REQUIREMENT TO FACE GLOBAL COMPETITION?

An empirical analysis of the Automotive and Tech industries.

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A zia Mariassunta, che ha sempre
fatto il tifo per me.
Adesso ci siamo noi, accanto a te,
a darti la forza per una rapida guarigione.

Table of Contents

INTRODUCTION *5*

1. INDUSTRIAL CHAMPIONS: GLOBAL COMPARISON *6*

1.1. European Champion: Definition **6**

1.2. European competitive position in the market **8**

1.3. Sectorial Analysis **16**

1.4. Industrial Policies **20**

1.5. Competition Policies **25**

1.6. Insights **27**

2. EFFECTIVENESS OF M&A AND CROSS BORDER M&A ACQUISITIONS *29*

2.1. Reasons supporting M&A Operations **29**

2.2. Value Creation of M&A operations **30**

2.3. Reasons supporting Cross-border M&A operations **32**

2.4. Europe: cross-border M&A trends. **35**

3. AUTOMOTIVE AND ICT SECTORS FOCUS: OVERVIEW, AND CONSOLIDATION DYNAMICS *38*

3.1. Automotive Sector. **38**

3.2. Business cases of Market Consolidation in the Automotive Sector **42**

3.2.1. Daimler Benz – Chrysler 43

3.2.2. Renault-Nissan 44

3.2.3. FCA-PSA 46

3.3. ICT Sector focus **48**

3.3.1. Development of a Favorable Environment: the Key for Success. 51

3.4. Automotive and ICT sectors comparison **53**

CONCLUSIONS *55*

ABSTRACT *57*

REFERENCES *64*

WEB REFERENCES *67*

INTRODUCTION

This dissertation investigates about the so called European Industrial Champions, in the attempt to understand if these companies are a mandatory requirement to face global competition.

In the first chapter, I defined what the term “European Industrial Champion” meant, thereafter I performed a geographical comparison among the other world economies to represent how the top companies were distributed worldwide.

Since this preliminary analysis it is clear that United States are the most representative Country, therefore the following pages are intended to investigate the reasons of such a mismatch between Europe and United States. I started from Industrial Policies and Competition Policies, identifying the responsible events of the misalignment.

In the second chapter I analyzed benefits and drawbacks that M&A operations would have involved, and the applicability of the “American model” to European companies.

This study was conducted reconsidering several academic researches, often contrasting, that allowed me to shape the characteristics and conditions a company should have in order to ensure a value added in the consolidation and those under which a takeover should be prevented. For the sake of completeness, the study initially focused on operations undertaken among companies within national boundaries, thereafter I switch my attention to include benefits and threatens of cross-border operations.

Eventually I looked at takeover trends of the last years.

This last point led me, in the third chapter, to delve into Automotive and ICT (information and communication technology) consolidation and growth dynamics. The first one is indeed a European specialization showing strong leader companies and the second one instead displays the United States as the undisputed benchmark of the industry. This comparison prompted interesting considerations that proved to be mandatory to answer the key question of this dissertation.

1. INDUSTRIAL CHAMPIONS: GLOBAL COMPARISON

1.1. European Champion: Definition

As the dissertation title suggests, the final question we would like to answer is whether European Industrial Champions are a mandatory requirement to face global competition.
This analysis starts from a comparison of European competitive position, against the whole market, to understand the distribution of leading companies around the globe and to represent a snapshot of the market as it is today. This first comparison will be useful to guide my analysis.

To do so I started following the path traced by Elisabeth Bublitz, Michael Leisinger and Nele Yang in the Paper titled "Europe's Search for Superstar Firms: The Puzzle of European Champions". The first challenge to overcome is to define what "European Champion" means; either because there is not an official definition to distinguish what is European and what is just National, either because I need a criterion to define a company as "*Champion"*. The aforementioned article helps me with the first differentiation:

> National champions are firms that belong to an international 'Champions League', meaning they are part of a group of leading firms. However, there should be leeway in the identification of these groups by using industrial, technological or other focus areas.
>
> European champions are national champions whose headquarters and subsidiaries as well as their respective business operations are located in more than one EU Member State and who carry out work of importance to the value chain.[1]

The second part of the classification is even more hard to interpret, because there is not any consensus on what the word "*Champion*" indicates.
It could be referred to Sales, Assets Value, Book Value or R&D for example, and every time we change that variable, we get a different result, therefore a new ranking.

[1] Bublitz E., Leisinger M., Nele Yang, 2019. "*Europe's Search for Superstar Firms: The Puzzle of European Champions.*", ZBW – Leibniz Information Centre for Economics.

A second definition we may look at, is reported in the Paper published by the European Commission members: Emmanuelle Maincent and Lluis Navarro:

> The notion of "industrial champions" is highly controversial and should be treated with care. A clear definition of its meaning has not been provided by any of its advocates. Does the concept refer to large companies? If so, the EU presumably would not have enough large firms in its industrial structure, and policymakers should promote the emergence of companies with a critical size. Or does it refer to successful companies whatever their size? In this case attention should be focused on the search for excellence in one or a few firms in every sector, with a view to ensuring there are some "winners". Finally, does it mean a competitive position in strategic sectors? This would imply that there are crucial sectors in which the EU must be represented and be successful. The role of the public authorities would be to promote their development if the market alone does not manage to. Clearly, the term has been used to cover a variety of concepts. The lack of a common definition gives rise to different theories and different policy implications.[2]

Setting a criterion to identify those champions is important in order to find the variable that mostly incorporates all the others; it is represented by the value that the open market gives to the company, so as long as Investors are rational enough, market capitalization is the best indicator, and it should be able to incorporate all the other variables in analyst's value assessments. This is the starting point of my analysis. After that I will compare the obtained results with other financial metrics in order to add consistency to the model.

[2] Maincent. E., Navarro L., 2006. "*A Policy for Industrial Champions: from picking winners to fostering excellence and the growth of firms*", European Commission.

1.2. European competitive position in the market

I started my analysis with the top 100 companies of the "2019 EU Industrial R&D Investment Scoreboard" list.

The reason why I chose this ranking is because I needed a large dataset in order to perform analysis with multiple indicators. This list contains data from 2500 worldwide companies as well as key financial indicators. Nevertheless, I had to compromise with the fact that for a lot of Chinese companies and some other countries, there is not any financial data. However, considering my intention to focus on US and EU companies, it is an acceptable compromise.

The list is updated at financial data of 2019, because the global pandemic of 2020 shocked the market in unpredictable ways, so using data of 2020 would have complicated the study with misleading assumptions about pandemic-biased shocks and long-term movements. I excluded financial institutions from the list because the consolidation process is already at an advanced stage and it would have misled the analysis if not investigated independently.

I have not included UK companies in the list of Europeans, because after Brexit it wouldn't be a proper choice, but they are part of the "RoW" (rest of the world) group.

Ranking	Company	Region	Market cap (€million)
1	APPLE	US	960205,7
2	MICROSOFT	US	752288,6
3	FACEBOOK	US	370134,7
4	TENCENT	China	360934,5
5	ALPHABET	US	321574,1
6	JOHNSON & JOHNSON	US	315581,0
7	EXXON MOBIL	US	296440,5
8	SAMSUNG ELECTRONICS	RoW	243461,3
9	NESTLE	RoW	221082,8
10	PFIZER	US	212571,8
11	AT&T	US	202574,8
12	CHEVRON	US	198241,6
13	INTEL	US	195031,1
14	CISCO SYSTEMS	US	190718,4
15	TAIWAN SEMICONDUCTOR	RoW	188641,9
16	NOVARTIS	RoW	181838,1
17	PROCTER & GAMBLE	US	180328,1
18	TOYOTA MOTOR	RoW	178191,5
19	ALIBABA GROUP HOLDING	China	173559,5
20	BOEING	US	171996,2
21	ORACLE	US	168912,2
22	MERCK US	US	159315,9
23	ROCHE	RoW	150048,6
24	NVIDIA	US	149042,2
25	TOTAL	EU	143627,4
26	DOWDUPONT	US	141324,2
27	NETFLIX	US	139833,1
28	PEPSICO	US	138356,4
29	ANHEUSER-BUSCH INBEV	EU	136560,0
30	ABBVIE	US	126934,3
31	SAP	EU	126806,2
32	BP	EU	121262,7
33	IBM	US	116770,5
34	L'OREAL	EU	115806,6
35	MEDTRONIC PUBLIC LIMITED	EU	113714,2
36	AMGEN	US	112953,2
37	ADOBE	US	112690,8

Ranking	Company	Region	Market cap (€million)
51	SIEMENS	EU	95149,0
52	BAT	EU	94646,6
53	SANOFI	EU	92226,3
54	UNITED TECHNOLOGIES	US	92028,1
55	SOFTBANK	RoW	89336,2
56	QUALCOMM	US	88160,5
57	SAUDI BASIC INDUSTRIES	RoW	88034,9
58	BRISTOL-MYERS SQUIBB	US	86437,8
59	GLAXOSMITHKLINE	EU	85820,1
60	GILEAD SCIENCES	US	85739,6
61	THERMO FISHER SCIENTIFIC	US	84112,3
62	CHINA PETROLEUM & CHEMICAL	China	83298,2
63	AIRBUS	EU	82489,2
64	NTT	RoW	81774,0
65	ASTRAZENECA	EU	81395,1
66	NOVO NORDISK	EU	80643,3
67	LOCKHEED MARTIN	US	79691,4
68	BROADCOM	US	79089,3
69	SCHLUMBERGER	US	76350,1
70	ASML HOLDING	EU	75067,4
71	BAYER	EU	74697,4
72	CONOCOPHILLIPS	US	74526,3
73	DIAGEO	EU	73372,6
74	BASF	EU	73248,7
75	EQUINOR	RoW	72175,1
76	CATERPILLAR	US	72071,7
77	CNOOC	China	69087,1
78	CHRISTIAN DIOR	EU	67004,4
79	DEUTSCHE TELEKOM	EU	66184,3
80	SONY	RoW	63498,1
81	CSL	RoW	63389,6
82	DANAHER	US	63277,4
83	BIOGEN IDEC	US	62190,4
84	KRAFT HEINZ COMPANY	US	62048,5
85	BECTON DICKINSON	US	61352,5
86	KEYENCE	RoW	60265,1
87	DAIMLER	EU	59600,6

38	3M	US	108059,8
39	PHILIP MORRIS INTERNATIONAL	US	105747,1
40	ROYAL DUTCH SHELL	EU	105504,6
41	HONEYWELL	US	103161,2
42	ABBOTT LABORATORIES	US	102409,3
43	SALESFORCE.COM	US	100902,1
44	TATA CONSULTANCY SERVICES	RoW	99566,1
45	ACCENTURE	EU	99525,3
46	ELI LILLY	US	99097,6
47	RELIANCE INDUSTRIES	RoW	98416,2
48	GENERAL ELECTRIC	US	98220,5
49	ALTRIA	US	96349,7
50	TEXAS INSTRUMENTS	US	95436,4
88	KDDI	RoW	58680,9
89	ENI	EU	58074,3
90	CELGENE	US	58019,7
91	UNILEVER	EU	57975,3
92	ALLERGAN	EU	56833,9
93	AUTOMATIC DATA PROCESSING	US	56147,3
94	INTUITIVE SURGICAL	US	55632,0
95	STRYKER	US	55340,8
96	MONDELEZ	US	54717,4
97	BAIDU	China	54622,2
98	CANADIAN NATIONAL RAILWAY	RoW	54553,8
99	MICRON TECHNOLOGY	US	53199,3
100	RIO TINTO	EU	52923,1

Table 1 [3]

[3] Hernandez Guevara H., Grassano N., et Al (2019), "*The 2019 EU Industrial R&D Investment Scoreboard*", European Commission.

Once reported the list of the 100 most valuable companies by market capitalization, I plotted it in a chart that shows the United States leading the market with 52 companies out of 100, followed by EU, with 26, and China with 5 companies.

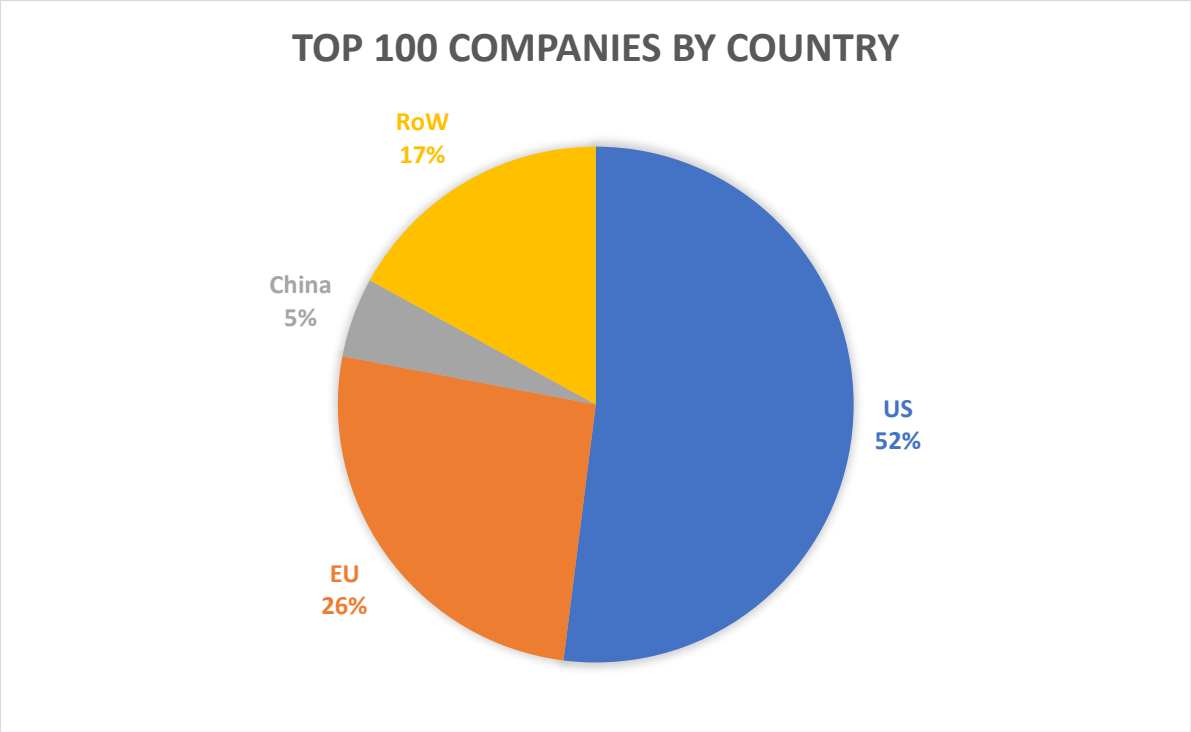

Chart 1

As I anticipated before, precautions must be taken while observing this distribution. The list doesn't take into account that US financial markets are way stronger than European and Chinese ones.

A considerable number of European big companies is not listed, so they do not show in the ranking. This is a proved fact; a study conducted by ESGB highlights that capital markets are not developed as they are in US; instead, bank loans are still the preferred financing source of European companies.

As a matter of fact, the ratio of capital market financing, divided by the sum of banking financing and capital market financing, stands at 69% in US, and 66% in the UK, whilst most European countries are below the 50% threshold.

Italy and Spain hit the lowest point respectively with just 33% and 27% of market financing, but even Germany stands at 43%, well below US average. Additional evidence is provided, in the same study, by the ratio of stock market capitalization to bank credit, which is equal to 2 for US and about 1 for Europe.[4]

A second disadvantage is related to the reliability of the provided data, when it comes to China. Huawei is the n°1 Chinese telecommunications equipment and consumer electronics company, and it is not included in this Top 100 ranking, listed above, due to the lack of key financial info.

Chart 2

As a second part of the analysis, I organized the TOP 100 companies by market capitalization, and summarized the market value of the single companies belonging to the same region.

Chart 2 represents how the total market value generated by the TOP 100 companies is distributed by region.

[4] ESGB, (2015), "*Financial Systems in Europe and in the US: Structural Differences where Banks remain the main source of Finance for Companies*".

The results confirm and underline the leading competitive position of US Top firms, but they also display the weakness of European companies.

The piece of the European cake is smaller when accounting for the market value of the firms listed, compared to *Chart 1* representing just the number of companies independently from their size.

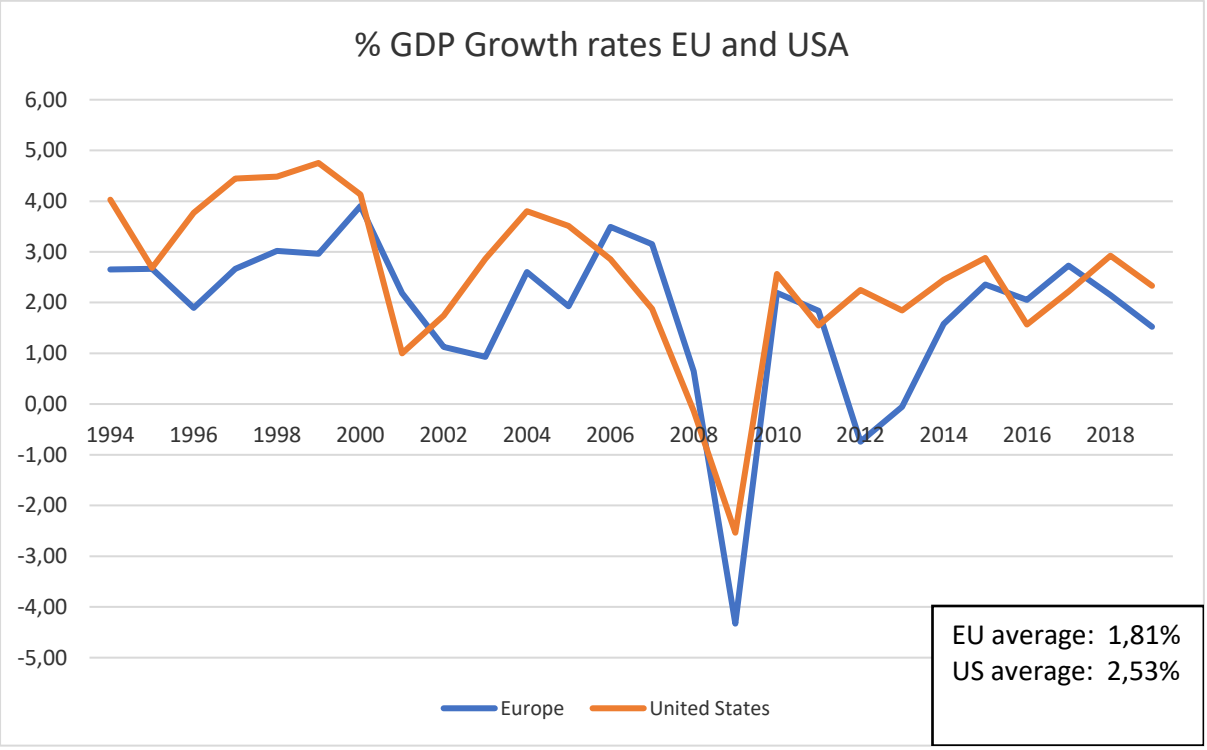

Chart 3

Looking at China, standing out behind EU in this ranking, another variable comes to mind: growth rate. Chinese economic landscape is beyond the scope of this study; in fact, the aim is to identify why conspicuous differences exist among similar economies. Although China is one of the fastest growing world economies, it is correct to represent it as a developing country. It's impossible to say if, or when this rise will stop; analysts project a 5% average growth rate in 2020-2029, scaling back to a range of 4.2% - 3.3% for the following two decades, decelerating to 2.9% in 2050 [5].

In the next pages I will focus on Europe in order to understand if relevant divergences exist with US and to eventually find their roots.

[5] Qu D., Shu C., (2020) "*China's Growth Rate Seen Decelerating to 2.9% in 2050*", Bloomberg.

Looking at the chart derived from the World Bank national accounts data[6], and OECD

national accounts data, we can observe the average GDP growth rates starting from 1994 to 2019 both for Europe and United States. The chart reported, shows the GDP growth rate for the two regions starting from 1994 to 2019. The average GDP growth rate for the all period in exam, is equal to 1.81% in Europe and 2.53% in US, and there are mainly three intervals in which the distance between the two lines is significant; they are worth to be individually examined.

The first period to analyze is 1995 – 2000 which is strongly linked to the period 2000-2005, so for the sake of clarity I will review them together.

An interesting Paper about this subject was published by Robert Inklaar, Marcel P. Timmer and Bart van Ark, titled "Mind the Gap! International comparison of productivity in services and goods production." In this research they noted that, in the period in exam, for the first time since World War II labor productivity growth in most countries of the European Union had fallen behind the U.S. for a considerable length of time. It happened that whereas average annual labor productivity growth in US accelerated from 1.2% in the period 1987-1995, to 2.3% during 1995-2005; EU-15 countries experienced in the same period a decline in productivity growth from 2.2% to 1.4%. The reasons of the US acceleration in the abovementioned period have been extensively studied by the literature. They are closely related with the role of information and communication technology (ICT), that had an impact on growth because of a surge in investments, strong productivity contribution from ICT-producing industries and a more productive use of ICT in the rest of the economy.[7]

There is less agreement within the literature about the reasons behind the slower productivity growth rates in Europe. The productivity levels achieved in Europe by the ICT investments didn't have the same results of US investments, but what academics didn't understand are the reasons behind this slow productivity growth in Europe.

[6] World Bank national accounts data, and OECD National Accounts data files, at: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=XC-US

[7] Inklaar R., Timmer M. P., and Van Ark B. (2006), "*Mind the gap! International comparisons of productivity in services and goods production*", OECD Workshop on Productivity Analysis and Measurement, Bern.

Professors Bogumiła Mucha-Leszko and Katarzyna Twarowska in a Paper titled "The Europen Economy as a Global Economic Power" essentially agree with the concept expressed above and they provide a set of reasons that, in their opinion, originated the gap existing by two decades.

> […] 1) development of ICT technologies; 2) structural changes in the economy, especially the growing role of the services sector in GDP and employment; 3) the effects of the Single European Market and the GATT Uruguay Round; 4) macroeconomic policy aimed at fulfilling the treaty criteria of the Economic and Monetary Union; 5) introduction of the euro and the effects of the common monetary policy in countries with high and low inflation rates; 6) bursting of the Internet bubble on the New York stock exchange (2001) and later the real estate bubble, financial, economic and public debt crisis (2008). The aforementioned factors point out the changing conditions for economic activity and growth. They were favorable in the years 1994–2000, mainly due to the rapid technological progress, and the center for computer, semiconductor and software production was in the United States. Investment in the ICT sector didn't become a European specialty (with the exception of Finland, Sweden and the United Kingdom) and beginning in the mid-1990s the technological gap between the US and the EU began to grow, proof of which was a decrease in the rate of growth of labor productivity, TFP, and GDP […] [8].

The vertical drop observable in *Chart 3* for European GDP growth rate in 2012, is due to the Sovereign Debt Crisis. As observed by Lane P. R. in his research titled "The European Sovereign Debt crisis" European peripherical countries experienced a strong credit boom in the years just before 2012; it happened because joining euro zone meant, for peripherical countries, that internal banks could raise funds from international sources in their new home currency (euro), rather than borrowing in a foreign one. It was a big opportunity, because they didn't need to rely in exchange rates stability anymore.

A linked phenomenon was the increase in account imbalance triggered by the abovementioned variable. Portugal, Greece, and Spain hugely increased their amount of deficit, conversely Germany ran very large external surplus. The overall Euro area account

[8] Mucha-Leszko B., Twarowska K., (2016), "*The European Union As A Global Economic Power.*" University in Lublin, Faculty of Economics.

balance in those years were nearly equal to zero. It happened because essentially there was a transfer of money from capital-abundant high-income countries to capital-scarce low-income regions.[9]

The problem of this capital transfer emerged because it was linked to the slowdown in productivity growth mentioned before; so, the capital invested didn't have the expected return. After the 2008 crisis investors repatriated capitals to home markets, affecting the same countries that relied on external funds, and this was the start of the 2012 crisis, triggering the highlighted gap in the chart.

1.3. Sectorial Analysis

In light of the studies referenced above, productivity imbalance played a major role in the GDP growth gap developed between US and EU countries. I will empirically conduct a sectorial analysis to see if there is evidence of the gap, and to check the distribution and weight of each sector within the two economies. To do so, I used the whole ranking composed by the 2500 companies of the 2019 EU Industrial R&D Investment Scoreboard list, as before, excluding the financial sector and focusing only on EU and US companies. What emerged is the following:

[9] Lane P. R., (2012) "*The Sovereign Debt Crisis*", Journal of Economic Perspectives.

Table 2

Industry	Count of Company	Sum of Market cap (€million)	Average of Market cap one-year growth (%)	Sum of Employees
Pharmaceuticals & Biotechnology	205	1.881.494,26 €	63,94%	647672
Software & Computer Services	134	2.824.012,89 €	65,68%	1398684
Technology Hardware & Equipment	86	2.298.201,23 €	17,03%	1083342
Health Care Equipment & Services	48	638.367,17 €	57,48%	570496
Electronic & Electrical Equipment	44	440.346,09 €	20,91%	866285
Industrial Engineering	34	365.272,53 €	15,17%	681331
Chemicals	28	350.065,42 €	13,01%	345191
Automobiles & Parts	21	187.410,32 €	3,19%	946841
Aerospace & Defence	17	494.999,00 €	32,69%	794712
General Industrials	16	396.363,94 €	13,73%	721106
Food Producers	11	244.595,28 €	-2,04%	400420
Household Goods & Home Construction	11	257.752,99 €	-12,00%	373067
Leisure Goods	9	28.187,96 €	10,03%	72090
Personal Goods	8	129.141,57 €	18,52%	251600
Media	8	44.177,61 €	18,21%	18366
Support Services	7	95.560,57 €	39,58%	92804
Mobile Telecommunications	7	15.043,67 €	13,67%	28715
General Retailers	5	179.155,28 €	75,60%	27938
Construction & Materials	4	43.091,67 €	1,68%	92650
Oil Equipment, Services & Distribution	3	108.930,55 €	6,86%	175000
Oil & Gas Producers	3	569.208,45 €	25,62%	130400
Fixed Line Telecommunications	3	204.699,23 €	38,63%	269507
Beverages	2	166.009,78 €	43,69%	292500
Tobacco	2	202.096,82 €	-21,32%	85700
Alternative Energy	2	6.672,26 €	52,55%	8137
Real Estate Investment & Services	1	2.430,33 €	24,84%	4336
Travel & Leisure	1	2.419,37 €	-11,99%	9700
Industrial Metals & Mining	1	9.439,76 €	-3,78%	43000
Gas, Water & Multiutilities	1	11.908,10 €	22,33%	17000
Grand Total	**722**	**12.197.054,11 €**	**41,77%**	**10448590**

The number of US companies contained in the ranking is 722, the 59% of which operates in either Pharmaceuticals & Biotechnology, Software & Computer Services or Technology Hardware & Equipment sectors; the second column was obtained summing up the market value of each company in that industry. This classification is important to understand what industries drive the US market. It also allows to observe that the combination of companies contained in the first three industries accounts for the 57% of the total market value, with respect to the sectors listed in Table 3. Besides two of the three Top sectors are strongly ICT related industries. The importance of Software & Computer Services and Technology Hardware & Equipment sectors, finds confirms in employment data: 2.482.026 employees are related to those industries, which means that considering a civilian labor force in November 2019 equal to 164,347 million people (*U.S. Bureau of Labor Statistics),* the 220 TOP companies of ICT industries recorded in Table 3, are equal in numbers to the 1,5% of the United States total workforce. Clearly most of the companies in the list does not only operate in U.S., but the majority of employees does, so it gives an idea of the labor force these companies are able to satisfy.

I conducted the same investigation for European companies obtaining the following results:

Table 4

Industry	Count of Industry	Sum of Market cap (€million)	Average of Market cap one-year growth (%)	Sum of Employees
Pharmaceuticals & Biotechnology	65	698.317 €	43,30%	688933
Oil & Gas Producers	8	500.992 €	28,85%	375311
Automobiles & Parts	23	350.097 €	-0,95%	2691777
Software & Computer Services	30	322.902 €	22,77%	499951
Chemicals	18	321.824 €	18,04%	521088
Industrial Engineering	45	293.075 €	10,28%	1049408
Personal Goods	8	278.417 €	15,88%	364556
Electronic & Electrical Equipment	30	277.469 €	8,70%	979052
Aerospace & Defence	14	251.654 €	15,28%	554267
Health Care Equipment & Services	14	240.962 €	33,37%	608638
Technology Hardware & Equipment	25	235.799 €	6,24%	427811
Beverages	2	209.933 €	-8,80%	200753
Fixed Line Telecommunications	6	180.142 €	-19,29%	663794
Electricity	6	167.337 €	20,65%	301671
Food Producers	9	137.412 €	2,98%	327375
Support Services	6	127.579 €	40,70%	528213
Household Goods & Home Construction	9	106.249 €	-7,39%	241697
Construction & Materials	10	99.144 €	4,71%	600294
Tobacco	1	94.647 €	-22,96%	56710
General Industrials	10	85.086 €	3,13%	301218
Industrial Transportation	4	84.420 €	14,39%	701675
Mining	3	83.320 €	-3,49%	117277
Gas, Water & Multiutilities	6	75.523 €	-16,75%	538775
Industrial Metals & Mining	8	63.805 €	6,04%	510166
Media	7	61.313 €	-1,62%	139732
Food & Drug Retailers	3	41.345 €	108,74%	489082
Travel & Leisure	5	27.590 €	4,21%	159990
Forestry & Paper	2	27.538 €	48,58%	45107
General Retailers	7	25.068 €	-34,95%	342414
Oil Equipment, Services & Distribution	3	20.863 €	466,16%	55071
Alternative Energy	3	14.285 €	-20,68%	33967
Mobile Telecommunications	2	9.494 €	-28,86%	15210
Leisure Goods	3	8.841 €	65,05%	11333
Grand Total	**395**	**5.522.444 €**	**19,31%**	**15142316**

As anticipated in *Chart 2*, as well as the total number of companies in this ranking is lower for Europe, this figure is not able to represent the European economic landscape, because of a considerable number of non-listed companies, that do not show in this sample. However, I will use Table 4 to understand the European sectorial distribution. In this table there is not the clear-cut distinction we found in the U.S. among the first three leading industries and the rest of the economy. Besides, excluded the Pharmaceutical and Biotechnology industry, the major two sectors sorted by market value diverge by those we found in Table 3. What is most important to point out is that in this case the most valuable industries are not ICT related.

The results obtained in the last Tables, are quite significant, and they report a completely different story. They allow us to easily see the Top Pillars sectors of the US economy; and even if European data is somewhat biased, the difference in the two distributions is divergent enough to deserve more scrutiny; it is clear that there is a different strategical or political approach that determined the deviation in the two regions. Reason why in the next paragraph I will try to find the determinants of the abovementioned situation.

1.4. Industrial Policies

This paragraph is intended to look to potential differences in industrial policy choices among US and EU that led the US to achieve such a supremacy in the fast-growing sectors leaving Europe way behind; therefore, I will look for European Industrial Policies, to understand the potential benefit of this different approach on short and long-term goals. To do so I employed, among other sources, an important study of the ECIPE (European Centre for International Political Economy) published in 2012 by Geoffrey Owens titled “Industrial Policy in Europe since the Second World War: What has been learnt?”. This document starting from the post-war situation, chronologically describes the events and choices that influenced the following decades. It is reasonable to think that some conditioning events happened before 1960, but it is my opinion that it would result in too dispersive and less meaningful research.

In this Paper, Industrial policies are defined as:

> The measures taken by governments to bring about industrial outcomes different from those that would result if markets were allowed free rein. These measures may be horizontal in character, affecting all firms, or specific to particular sectors or companies.[10]

It is important to start underlying that in 1960s EU was not consolidated, adjustments in the economy were mostly decided by national governments, so it makes it reasonable to analyze every country individually.
At an aggregate level, however, some common thread linked the European countries. Since the 1960s there have been several attempts by governments to reduce the already existing technological and productivity gap with USA, mostly in high technology industries such as aerospace and electronics. At the same time there was a growing concern about textile and shipbuilding sectors, threatened by low-wage countries. Surely UK and France were the most active for what concern industrial policies. France had a very long tradition of industrial policies and the governments of 1960s and 1970s followed that journey (the so called "Colbertist" approach).

Western Germany instead was in a completely different situation after the war and adopted other industrial policies. The democratic party that won the elections in 1949 was committed to the ordo-liberalism principles, implying a belief in free market, a vigorous competition policy and a limited intervention for government.

In the US during the same period the National Science Foundation was established to support the funding of basic scientific research through which training of scientists and engineers were promoted and encouraged. After World War II the Department of Defense systematically financed R&D in electronic systems, engines and aircraft; this department was also committed in the USA program of supremacy in semiconductor, jet passenger

[10] Owen G. (2012), "*Industrial Policy in Europe since the Second World War: What Has Been Learnt?",* European Centre for International Political Economy.

production, and computers. The same programs later became a NASA commitment and were pursued as a key objective of the US industrial policy.[11]

The first tangible progress towards a common European view was made in 1970 in the Prest committee, on the form of the so-called COST (European Cooperation in the Field of Scientific and Technical Research) through which governments, together with the Commission, funded a number of collaborative research projects, most of which failed, especially because larger countries wished to exploit the eventual benefits of technological cooperation without paying the political costs necessary to do it.

In the meantime, one of the first Commission documents was published: the Colonna Memorandum of 1970. The Commission in this Paper reported concerns about the surge of US investment in high technology industries and warned that EU owned firms, in the long run, could find themselves limited to traditional, low technological activities, because the way in which the Common Market was established, mostly allowed benefits just to consumer goods producers. Since 1970 the document refers to the fact that the creation of cross-border European companies was mandatory in order to compete on a level playing field with United States.[12]

An important lesson from European industrial policy in 1960s and 1970s is that policy makers tended to overestimate the risks and costs of market failure and underestimate those of a government failure. Another mistaken assumption at that time was the belief that certain technologies were more likely to be acquired under a centralized direction than through competitive capital markets. [13]

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[11] Richard R. Nelson (1984), "*High-technology policies, a five-nation comparison*", American Enterprise Institute.

[12] Conseil des Communautés européenne, Mémorandum de la Commission du 20.03.1970 concernant la politique industrielle de la Communauté ("Plan Colonna").

[13] Owen G., (2012), "*INDUSTRIAL POLICY IN EUROPE SINCE THE SECOND WORLD WAR: What Has Been Learnt?",* Department of Management, London School of Economics.

> […] Part of the explanation for the American lead in computers and semiconductors was that in the early post-war years, when these industries were in their formative stage, US manufacturers benefited from a large demand arising from military and space exploration programmes. In civil aerospace, the size of the US market, and the existence of numerous competing airlines, gave US manufacturers an advantage that was not available to their European counterparts. No less important were supportive policies and institutions, including a financial system that gave start-up and early-stage firms ready access to capital. Another factor was the willingness of the Federal government and its agencies, including the military, to encourage new entrants, instead of relying on large, established companies as their European counterparts generally did. […] In general, the US government did not try to plan and coordinate broad civilian technologies, and where it did so the results were disappointing. Where mistakes were made, the US was usually quick to acknowledge them [14].

The 1980s saw some initiatives at European level, intended to strengthen industrial performance. The first project was called ESPRIT (European Strategic Programme for Research in Information Technologies), the second one is the Single Market Programme, intended to create a single European market without barriers among countries. Few years later those initiatives were followed by some other programmes (RACE and BRITE) all of them included in the first macro-European commission plan called the Framework Programme. These initiatives paved the way for the Single European Act, known as "Mrs Thatcher's baby", in 1986. It was the most important step towards European economic integration since the Treaty of Rome. Included in this Act there were nearly 300 measures addressing more freedom in the market. One of the biggest successes for single market programme came in mobile telephony. Until that moment mobile telephone network was completely fragmented by national standards and rules, and the technology didn't allow to consolidate the market to build a European network. EU Commission for the next generation phones secured the agreement of member states to establish a European-wide standard known as GSM, which allowed providers and companies operating in this industry to compete at European level. The market creating idea behind this project was a springboard to create a global champion

[14] Ibid.

like NOKIA, showing to the European countries the potential of the barrier-free market both on the offer and demand side. This act also allowed for the creation of global champions like Airbus, thanks to the reimbursable loan programme for aircrafts which break the monopoly of Boing.

Notwithstanding the improvements in the competitive position of Europe against the rest of the world determined by the abovementioned projects, there were two grounds for concerns: the first one was the widening productivity gap between US and Europe, the second one was the accelerating transfer of manufacturing capacity to China and other emerging markets. Developed countries saw the rise of emerging countries in manufacturing sector, but they also assumed that they would have retained a sizeable market share, determined by high value added, knowledge intensive goods, which China would have been unable to match. This was a wrong assumption, but when European countries realized it, it was too late to face the situation, because in the period 1988-1998 China became the world's larger producer and exporter of textiles, cotton and toys.

Rural enterprises had a huge expansion, delivering to the country an increasing industrial output of nearly 28% per year.[15]

So, what are the conclusions drawn from the arguments read above? The technological gap between US and EU exists since the early days in which this industry was developing. US invested a lot of capitals in R&D, pushed by the ambition to become the leader among military powers. In the United States there was a government procurement market, large enough to make domestic companies compete. There wasn't a will to create a National Champion, but the intention to create a productive market in order to run the market industry itself. The European attempts had been much weaker, constantly focused on catching up US, not supported by strong projects. In favor of EU, should be said that single countries alone didn't have the same economic power to support similar huge investments; and it is important to remind that after war (and until 1990) Germany's defensive expenditure capacity was constrained. It is arguable that together they would have had power enough to face US competition, but these countries were under different flags for centuries, and some of them

[15] Ibid.

is a global power. To effectively cooperate, it would have been necessary to share classified information and pool resources together. Along the last decade investment have been more credible, and results have been accomplished, however the cumulated gap is significant and still, much work must be done.

1.5. Competition Policies

The regulations governing Competition Policy in Europe are:

- TFEU: Art. 101 to 109 on Internal market and competition, Art. 37, 106 and 345 for public companies; Art. 14, 59, 93, 106, 107, 108 and 114 for public services of general economic interest.
- Protocol n.27 on the internal market and competition, Protocol n.26 on services of general interest.
- The Merger Regulation and relative implementing rules.
- Article 36 of the Charter of Fundamental Rights.

The goal of the competition rules set by the EU Commission is to preserve the proper functioning of the EU Internal Market. For this purpose, the Treaty on the Functioning of the European Union (TFEU) contains the rules intended to prevent restrictions and distortions within the Internal Market. Specifically, the EU Commission does so, by prohibiting anti-competitive deals among firms, and abuse of market positioning by leading companies, which would negatively affect market balance between Member States. A dominant position is not by itself a violation of competition right; those firms that find themselves in a dominant position are allowed to freely compete on merit like any other company. Nonetheless a dominant position holds the responsibility to ensure that its behavior does not threaten competition. It means that it is possible that the same attitude or behavior engaged by a non-dominant firm wouldn't be considered illicit. Art.102 TFUE provides a non-exhaustive list of examples of improper practices. [16]

[16] (2017), "Fact Sheet on the European Union: Language Policy", European Journal of Language Policy.

There is not a legal definition of "dominant position", but it essentially consists in the position of economic power held by a company, such that it allows that company to obstacle the persistence of an effective competition on the market, and to adopt independent behaviors with respect to its clients, competitors and consumers (*Hoffmann-La Roche, 1979*).

Under regulation (CE) n.139/2004, EU Commission must be notified when M&A activity involves considerable size deals such that they exceed the relevant threshold. The M&A process is directly monitored by the EU Commission, and it can be prevented if the agreement implies a considerable reduction in competition. Furthermore, States aid to companies or products are restricted in case a risk of competition distortion is perceived.

Below the thresholds, National Competition Authorities are responsible to supervise the deals.

After a preliminary analysis about the impact that the consolidation might have on competition, the Commission can either approve, reject the deal, or alternatively suggest conditions or constraints that would allow the undertaking to be approved by the Commission.[17]

Switching the attention on United States, Competition Policy is mainly regulated by two agencies: Antitrust Division of the Department of Justice and the Federal Trade Commission. Courts, by the way, play a crucial role as they are the ultimate authorities. As explained in a 1998 OECD document titled "United States - The role of competition policy in regulatory reform", despite the strong support to the competition concept in US political culture, a univocal, widely accepted, statement of purpose for competition policy does not exist. The first national law in this area are the 1887 Interstate Commerce Act and the 1890 Sherman Act. The intention behind these regulations was to fight cartels and improper monopolistic practices. Subsequent laws as the Robinson-Patman Act of 1936 addressing price discriminating behaviors and Kefauver Act of 1950 about mergers, seems to answer to different problems, like unfair practices of competitors, and control of industrial concentration. There is no doubt that the lack of a univocal law reflects the fact that the purposes can be multiple, changing and sometimes conflicting. US competition policy is the

[17] Ibid.

result of the combined effects of all the laws, politics and institutions that protect, promote and prevent market competition. The fundamental competition policy arises from federal statutes, but the content is determined by a process of common law in which courts are the highest authorities. Judges are often asked to weight the numerous objectives derived by the different legal commands.[18]

1.6. Insights

In conclusion, from the documents referenced above emerges how European Commission has committed itself into drawing a competition policy set of rules such that regulations were indisputable and able to catch the great majority of individual cases. The common market was born with the intention to break down trade barriers among western European countries, so the competition policy reflects this intent, ensuring a desirable degree of fairness among companies across Nations. The role of competition policies in United States looks quite confusing and often unclear. Reading the articles of the Sherman Act several concepts are coherent with EU Commission rules; in particular Section 1 of the Sherman Act prohibits agreements that could obstacle trade, Section 2 prohibits dangerous monopolizations. But in practice, in several circumstances the final decision over mergers and acquisitions must rely on the authority's judgement, because of the conflicting rules arising by different legislative documents.

In light of this substantial differences existing among EU and US competition policies, it is legitimate to think that European companies could be disadvantaged in the consolidation of "European Champions", with respect to the United States; in particular because as I anticipated before certain rules set by the EU Commission apply differently depending on the size of the deal.

On that purpose it is important to mention an empirical analysis conducted in 2019 by Mathew Heim and Catarina Midões, to prove if a discrimination against "European champions" was sustained by empirical evidence. They found out that the number of European Top companies (by market cap) involved in a phase 2 merger investigation since the

[18] Wise M., (1998), "*United States – The role of Competition Policy in Regulatory Reforms*", OECD

Council Regulation entered into force (2005) was equal to 41; and that 36 of these transactions were allowed after phase 2, just 5 were prohibited; this proportion is similar for deals that wouldn't have created "champions" companies, so the conclusion emerged from this analysis is that there is not a discriminative attitude against the development of European Champions. The only discrepancy is in terms of remedies; market cap champions are usually more likely to see remedies imposed by the EU Commission than "non-market-cap champions" [19].

In light of the previous analysis, emerged that differences among US and EU exists, and they had mostly been generated in the postwar period. Successful strategic industrial policies projects in United States pushed the region to become the leader in the fast-growing ICT industry. The Silicon Valley itself was born around 1939, when William Hewlett and Dave Packard founded Hewlett-Packard in Palo Alto; during World War II they were financed by the government in the development of radars and artillery technology. A considerable number of military investments in those years flowed to technology companies. During the Cold War, as reminded by the book of O'Mara, huge capitals were intended to finance scientific research with particular focus to the electronic industry, including computers, transistors and digital technology. Universities benefited of these positive cash flows as well, especially Stanford University, placed in the hearth of the Silicon Valley, acted as the leading actor in the training of the workforce of the new industry.[20]

Competition policies played a marginal role, because M&A operations were just the consequence of the environment that had been created through the previous investments.
In fact, as emerged from the previously mentioned empirical research of Heim and Midões, there is no evidence of unfavorable treatment in competition policies.
At this point the question that inevitably comes to mind is: Is it really a good strategy, to look at the benchmark of the United States companies, and try to obtain similar global champions, through cross-border M&A operation among European companies, or it would be preferable to find the strategy that would improve European position in a most efficient way?

[19] Heim M., Midões C. (2019), "*European champion-ships: industrial champions and competition policy*"

[20] O'Mara M., (2019), "*The Code: Silicon Valley and the Remaking of America*", Penguin Press.

To answer this question, it is important to understand the pros and cons of M&A operations, and the way in which they bring value to both the buy and sell-side of the transaction.
In the next chapter I would review how the literature faced this argument in order to understand if the creation of European Industrial Champions would benefit the European economy.

2. EFFECTIVENESS OF M&A AND CROSS BORDER M&A ACQUISITIONS

2.1. Reasons supporting M&A Operations

According to a financial research conducted in 2018 the main reasons behind the choice to undertake a consolidation with other companies can be: business diversification, synergies improvement, growth opportunities, horizontal or vertical integration (*Almazur B., Arize A.C. et al.*).

Horizontal acquisition transactions are those in which the buy-side company acquires a target firm that operates at the same level of business, it usually is a competitor, but this is not a determining condition. The intention behind these transactions is the market share increase of the new combined business, reduction of cost inefficiencies and exploitation of economies of scale. If the two combining companies do not operate in the same line of business the consolidation should aim to diversification purposes through the spread of operations in multiple businesses.

Vertical acquisitions consist in the combination of companies operating in the same industry, but at different stages of the production; essentially the acquisition of a supplier company is considered to be a vertical acquisition. The expected advantages are the control of the primary source of costs, and the increase in efficiency determined by the faster and more precise information flow between the holding and the acquired company, meaning a synergy enhance.

A heated debate among academics exists around synergies. Synergies are defined as: the interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects (*Oxford Languages).* During the CFA Institute Equity Research and Valuation Conference 2018, Aswalth Damodaran referenced a study by KPMG indicating that in half of the 9000 mergers analyzed there was no evidence of synergy, and in about one third, there was evidence of reverse synergies.[21]

2.2. Value Creation of M&A operations

In practice the value created by an M&A operation is not that straightforward to calculate as theoretically anticipated. There are multiple studies that demonstrate the effectiveness of M&A activity and as many studies underlying the opposite. In this regard I would mention a few studies that will be helpful to understand why such a disagreement exists in the literature. The first I want to mention is a Paper by Reinhard Meckl and Falk Röhrle, whereby multiple empirical studies about the ability of M&A to create value have been analyzed. In this Paper emerges that the calculation of value created by these operations is ambiguous, because different results emerge depending on the way the analysis is conducted.[22] Consensus comes from a 2017 study conducted by Chalençon and Colovic. In this research the authors explain that typically, analysts compare the market share prices before and after the deal is announced, using short term investor reactions as a measure to indicate the value of the operation.

A measure to evaluate the difference between expected returns and real returns over a set period of time is the Cumulated Abnormal Return (CAR), which is widely employed as a valuation metric, but it is a short-term measure for the valuation of the market appetite of the operation.[23]

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[21] McCaffrey P. (2018), "Aswath Damodaran on Acquisitions: Just Say No", CFA Institute.

[22] Meckl R., Röhrle F., (2016), "*Do M&A Deals Create or Destroy Value? A Meta-Analysis*", University of Bayreuth, Bayreuth, Germany

[23] Chalençon L., Colovic A., et Al, (2017), "*Reputation, E-Reputation, and Value-Creation of Mergers and Acquisitions*".

It is not a proper measure to study the impact that the acquisition would have in the long run. In order to address this shortcoming, a study by McKinsey analyzed the excess shareholders return of the 1000 world's top non-banking companies that in the last decade completed more than 15000 deals. In this analysis they found that larger long-term returns depended on the specific industry in which the deal was performed. In particular, for what relates small operations, no matter the industry, the success depends on the ability of the buy-side, but in large deals industry structure plays a fundamental role in the long-term success of the acquisition.

It also emerged that for all the decade in exam, 75% of the companies that remained in the Top 500 worldwide companies, and 91% of those who stayed in the Top 100, used M&A strategies to sustain growth; coherently with the information above, most of the acquisitions belonged to the "small deal" category. In addition, the only companies that had, on average, negative excess returns, were those that had undertaken large deals, especially when these operations were related to fast growing industries. On average, companies in slower growing, mature industries, successfully completed large deals experiencing a long-term excess return. [24]

Documents gathered by the literature are quite discordant regarding the efficacy of M&A activity in the long run, and due to the different methodological analysis, most of the research is difficult to compare. However, the study conducted by McKinsey that measures the long run results instead of using short term measures suggests that M&A activity can be a value creation tool if tailored strategies are adopted relatively to specific sectors, and it can be used as an important asset to grow, when a firm achieves a considerable size. So, the risk of failure in M&A operations is high, but the evidence emerged in these studies, proves that positive long-term excess returns arise when big deals are pursued in mature, slow growing industries, as well as, smaller start-up acquisitions, within the fast-growing industry.

[24] Rehm W., Uhlaner R., and West A. (2012), "*Taking a longer-term look at M&A value creation*", McKinsey & Company.

2.3. Reasons supporting Cross-border M&A operations

> Firms engage in cross-border M&A activity for several reasons: among them, to strengthen their market position, expand their businesses, seek useful resources such as complementary intangible assets or realise efficiency gains by restructuring their businesses on a global basis. (UNCTAD, 1998).

Following the notions contained in a study conducted by Nam-Hoon Kang and Sara Johansson, there are five macro factors triggering cross-border deals: macroeconomic, industry and firm level, technological and government related factors.

Macroeconomic factor:

Long lasting growth levels in specific countries, increase the amount of capital available, and the same capital could be used for outbound investments. At the same time the persistent growth rates, enhance the appetite for inbound foreign investments. Conversely, slower economic growth rates tend to be an obstacle to cross-border M&A operations.

Industry factor:

Cross-border deals are concentrated in those sectors that experience the major global competition, excess capacity (automotive), falling in commodity prices (petroleum) or rapid technological change (banking). In these cases, the triggering condition is a protective restructuring, intended to improve international efficiency and competitiveness.

Firm factor:

Firms that have developed a firm specific competitive advantage in their home market are encouraged to exploit that same know how in multiple locations and businesses in a non-rivalry manner.

Technology-related factor:

The increase in R&D costs together with the uncertainty of future technological changes, have pushed many firms to co-operate in order to fund research expenditure

for new product development. This is probably the main driving force behind most of the pharmaceutical M&A cross-border operations.

Government-related factors:

In the last two decades, liberalization of capital movements across countries, together with national incentives encouraged foreign investments. It is the specific case of certain Asian countries like Korea or China.[25]

The literature behind the reasons to undertake cross-border deals is wide, most of the authors came up with similar discovering as those of Nam-Hoon and Johansson, some other research is able to add new details. Agency theory suggests that the key driver of cross border M&A operations is the misalignment between management and shareholders' interests, implying that these operations destroy value.[26] Other empirical studies like Dunchin and Schmidt in 2013 support this view.[27] Goel and Thakor, (2010) argue that late mergers within the same acquisition wave are pushed by the management's self-interest and are thereby value destroying, because good targets don't last until the end of the merger wave.

Another more recent study made by Deloitte, tried to investigate the reasons of Cross-Border M&A deals with a different approach. It is important to mention because the authors conducted a survey of 500 executives across regions and industries, asking insights about the reasons why they decided to undertake cross-border deals. Differently from the previous studies this is not an academic perspective. It represents the managerial priorities, when it comes to M&A operations. As can be seen in the chart, the importance given to the research of favorable regulatory environment, including tax structuring is a significant variable for cross border operations.

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[25] Nam-Hoon K., Johansson S., (2000) "*Cross-Border Mergers and Acquisitions: Their Role in Industrial Globalisation*", OECD Science

[26] Jensen M. C., (1986) "*Agency cost of free cash flow, corporate finance, and takeover.*", American Economic Review.

[27] Duchin R., Schmidt B., (2013) "*Riding the merger wave: uncertainty, reduced monitoring and bad acquisitions.*" J. Financial Economics.

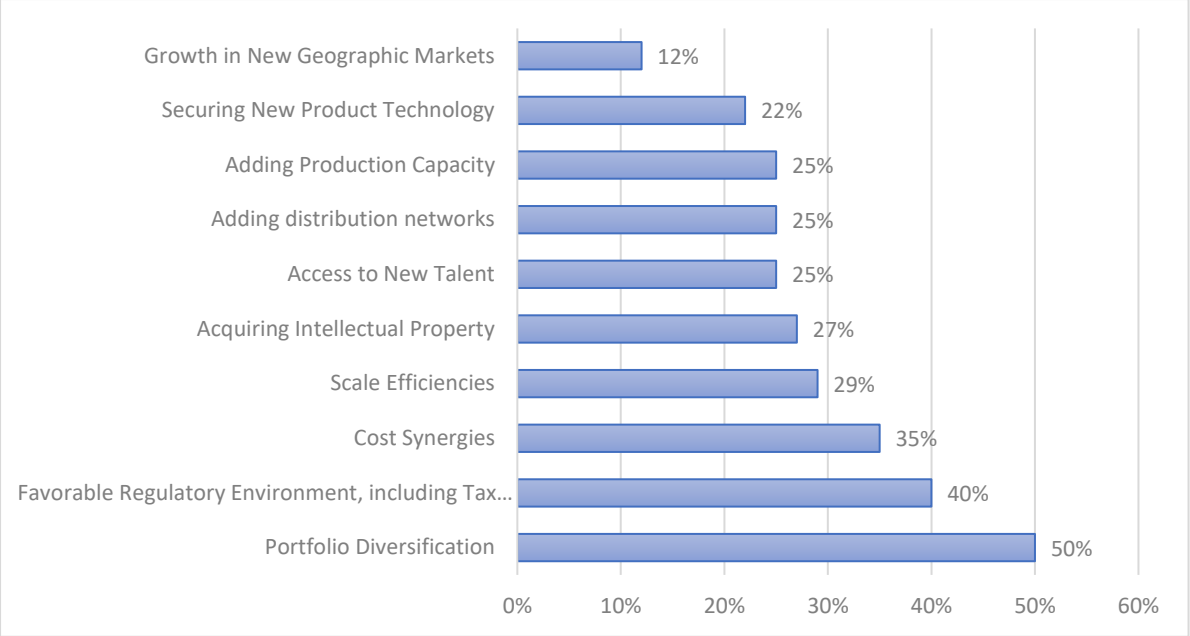

Chart 5 [28]

The intuition prompted by the last study is also confirmed by a recent research conducted in the University of Texas, that documented an outstanding cross-border M&A deal value within European, so called, "tax heavens"; a value that is unjustifiable by economic fundamentals.[29]

[28] M&A Insitute (2017), *"Cross-border M&A. Springboard to Global Growth",* Deloitte.

[29] Meier J.M., Smith J., (2020), "*Tax Avoidance through Cross-Border Mergers and Acquisitions*", Univestity of Texas, Dallas.

2.4. Europe: cross-border M&A trends.

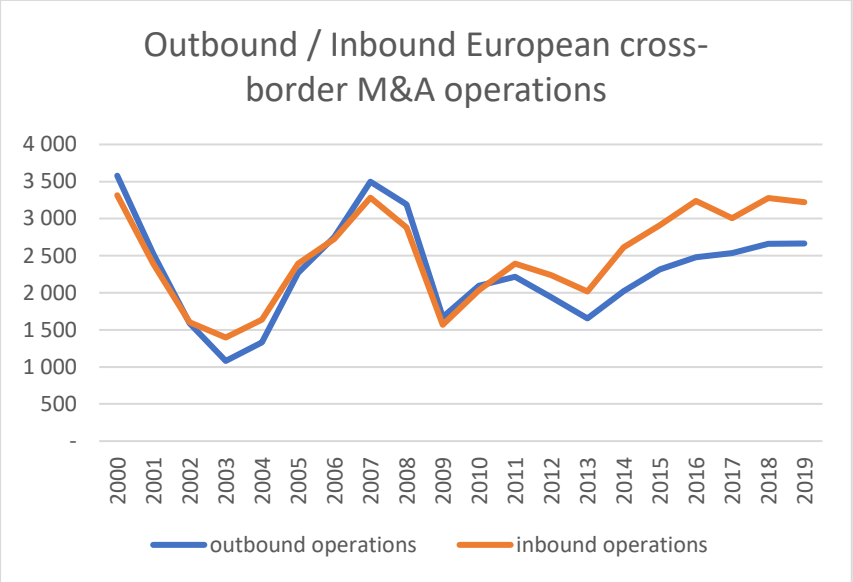

Chart 5

In the last two decades, we experienced a continuous and stable growth in M&A activity, the first macro-wave of 2004-2007 was stopped by the financial crisis of 2008 both in terms of volumes and value of deals. In absolute terms, this stop is accounted for cross-border operations as well, but globally, they represented the value of the 50% of the total M&A operations concluded that year, which was higher than that of the year before (45%). Europe, in 2007 registered the most intense activity in cross border M&A (aggregated value of inbound and outbound transactions), with a total of 6073 operations completed[30], and a cash value of 555bn[31] for a total drop of -48% from 2007. "Domestic" operations (Europe to Europe) stayed in line with those realized in the previous years and accounted for 53% on the total number of concluded deals in 2008.[32]

[30] All values and numbers referring to cross-border M&As are presented on a net basis. Net cross-border M&As are calculated considering sales of companies in a host economy to foreign MNEs. It excludes sales of foreign affiliates (already owned by foreign MNEs) to other foreign MNEs. Divestments (sales of foreign affiliates to domestic firms) are subtracted from the value (number).

[31] UNCTAD, Cross border M&A Database (www.unctad.org/fdistatistics)

[32] http://www.finanzastraordinaria.it/index.php/articoli/376-andamento-mercato-maa

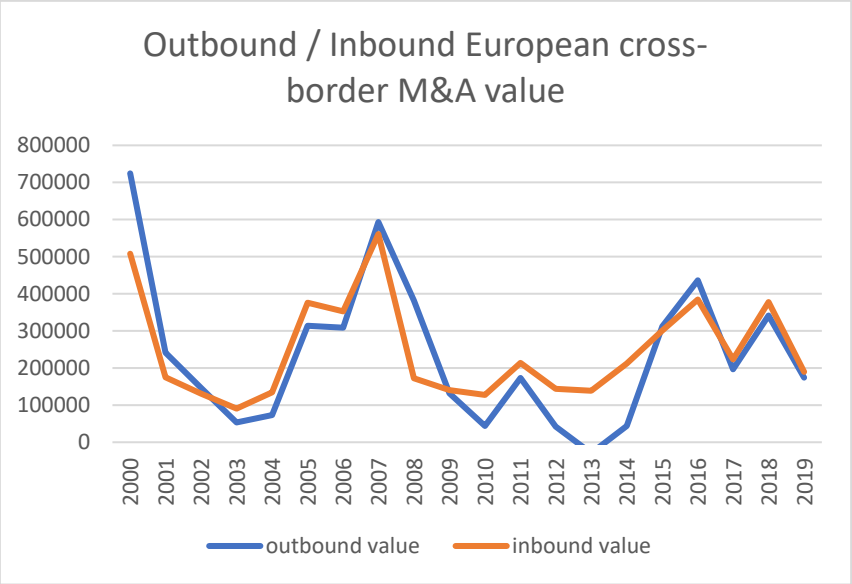

Chart 6

Looking to *Chart 6*, the second cross border M&A wave in Europe started in 2014, raising to the peak of 821bn in 2016 corresponding to more than 31% of the year's total M&A deal value. From 2010 to 2015 the combined annual growth rate in cross-border M&A operations was equal to 30%, accounting for a total deals value of 2.5tn.[33]

The devaluation of Euro combined with stringent US tax law could be the primary source of such increase in inbound M&A operations from US companies in the last wave.

I conducted a second analysis in order to understand the industries, and specific sectors within industries, in which cross-border M&A operations have been completed. The reason why I worked on it, is to find consistent evidence of the above referenced literature.

It is clear from *Chart 7* that the industry where cross border M&A acquisitions played a leading role is that of Services, which includes Information and communication technology (ICT).

[33] Ibid.

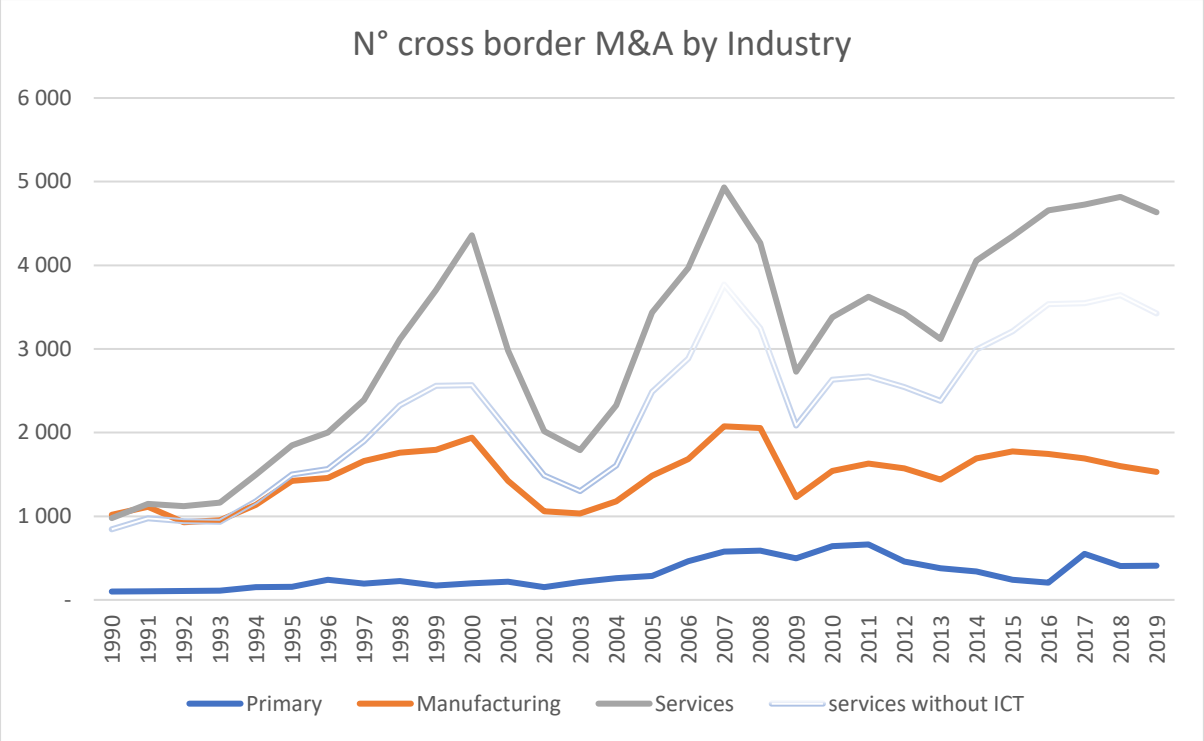

Chart 7

This last topic will be one of the two key points in the next chapter, in this regard, the intention is to understand the rationale and consolidation benefit arising from these operations. It is surprising that the literature explaining the logics behind transactions in this industry is not exhaustive and often discording; so, I will review the research to find the common thread among theories and delineate this phenomenon. I am also going to focus on the Manufacturing industry, because if ICT is excluded from the equation, the trendline of Services scales back, emphasizing ICT as the primary driver of cross-border M&A operations in the industry, and also that Manufacturing should be taken into account when analyzing cross-border M&A trends. Even more so if Automotive sector is part of the Manufacturing industry and many European leading companies operating here engaged at least one consolidation operation, often resulting in a new European Champion.

3. AUTOMOTIVE AND ICT SECTORS FOCUS: OVERVIEW, AND CONSOLIDATION DYNAMICS.

3.1. Automotive Sector.

The automotive sector represents a huge asset for European economy, accounting for total revenues of $264.3 billion in 2018, and a compounded annual growth rate of 2.7% in the last five years. Data includes also UK that, until this year, accounted for total European Sales, and was the fourth leading country in Automotive sector, with a market share equal to 7.7%. The other main leading countries are Germany, Spain and France with respectively 28.9%, 12.7% and 12% of total market share. Italy places in 6th position confirming its key contribution to the European Automotive Sector with a market share of 6.1%.

The production volume in Europe hit the maximum point in 2017 with 21.6 million units sold, but before the Covid pandemic the growth forecasts were favorable, estimating a new record for 2023 both related to volumes and sector evaluation, respectively of 24.6 million units sold, for a market value of $294.3 billion.[34]

Between 2017 and 2018 a major negative shock of -2.6% was registered in the Automotive market value. German industry was delayed because of negative macroeconomic variables, like the reduction on average annual salaries between 2015 and 2017, and a deceleration on Chinese economy that is the main importer from the German car industry, contributing to around 9% of the total export.

UK as well as Germany has slowed down in the same period, because of a decrease in business confidence linked with a weakening in export markets.

Looking to microeconomic dynamics regulating this market, rivalry is strengthened by the big historical operators existing in the market. The likelihood of new companies entering the market, as it is today, is low because of high entry barriers, like huge amount of initial capital required. Key inputs of the production are metals, along with technical components usually acquired by other companies. These products are often outsourced to other firms instead of

[34] Analysis based on MarketLine Industry profile (2019), “Automotive Manufacturing in Europe”.

being produced in-house. This choice involves crucial implications, because outsourcing production implies cost reduction, with the shortcoming of standardized products being delivered to the market.
So, it doesn't come as a surprise that the standardization process reduced supply power, leading market demand in the automotive sector to be highly price driven.

An escape to the above discussed system is one in which the manufacturer finds a way to produce in-house distinctive technical products at comparable market prices or securing the supply of these products.
It can be done in few ways; the first one was discussed in the second chapter and consists in the vertical acquisition of the supplier; in such way the manufacturer can benefit of the exclusivity of a particular range of products.
The second category are Cluster models, like those adopted by the car manufacturer Toyota and peculiar of Japanese and other Asian countries.
The first definition of Cluster was given by M.E. Porter, who was one of the first researchers that studied this phenomenon:

> Clusters are geographic concentrations of interconnected companies, specialized suppliers and service providers, firms in related industries, and associated institutions in particular fields that compete but also cooperate. Such clusters are a striking feature of virtually every economy, especially those of more economically advanced areas [35].

In his review Porter shows the different kinds of clusters existing in Asian but also European countries, focusing on the *company town cluster* adopted by Toyota. Indeed, Toyota City is really considered to be a town consisting of multiple satellite firms around the mass-production plant of Toyota itself. Within the city all the companies work or at least interact at different stages of the production; 80% of the 410.000 inhabitant of Toyota city work within a company of the Cluster.[36] The synergies and economies of scale in this business model are

[35] M.E. Porter, (1998), "*On Competition*", A Harvard Business Review Book.

[36] B. Skulska, A.H. Jankowiak, (2011), "Faces of Competitiveness in Asia Pacific", Wrocław University of Economics, Wrocław.

conceivable; Toyota exports this business model even when outsources production facilities in other countries, promoting the development of small cluster zones; examples are Chinese and Polish Toyota plants.

In his research Porter reported that clusters may arise in those areas in which the following features exist:

- there is a large concentration of small- and medium-sized enterprises;
- small- and medium-sized companies from the territory are relatively homogeneous and belong to the same market segment;
- between businesses there is a strong and lasting relationships of different nature;
- companies existing in the system have access to business and non-business services;
- there is a common culture, especially industrial culture a characteristic for the region type of product, production technology, type of contacts between economic operators [37].

Many of these features are typical of the European environment, but even if there are several cluster areas spread around the European territory, it didn't become a business model specialty as it did in some Asian countries. Presumably the Brand strength of European car makers didn't make it necessary to apply this model to reduce prices further. Even if European cars were priced at a premium with respect to the global industry, they were also perceived as superior quality automotive. Cultural reasons as well play a crucial role in the way in which companies interact and create links together.

Until now, the Automotive Sector, as many mature industries, has constantly evolved without experiencing a real shock or impact by technology. Cars are improved in terms of efficiency, consumption, and even infotainment systems, but they all played a marginal role, they didn't have a revolutionary impact in the automotive market.

Perhaps the time has arrived with electric cars. This new conception of sustainable mobility breaks down some of the entry barriers mentioned earlier in this chapter, it offers opportunities for companies operating in other sectors as well as new established firms.

Such a shock in the automotive sector may switch priorities of market demand. To some extent it would be considerable as a new market, governed by different rules, so the existing European industrial leaders could struggle in the attempt to preserve their market share.

[37] Ibid.

Some of the M&A operations experienced in recent years, in conjunction with the failed trials, testify the efforts to improve synergies and efficiency by creating sizeable companies able to compete globally.

During the last year Tesla Motors showed that a generational change in the automotive sector has just started, supported by impressive market confidence that since the last months of 2020 makes Elon Musk's company value, greater than the next top six car companies combined, with just 500.000 units sold against the 8.000.000 units sold of Toyota that stands just behind Tesla. Undoubtedly, the impressive implicit growth rate estimated for the market valuation could be reasonable only if, as anticipated, it is perceived as a revolutionary product by the market. Even though many financial analysts as well as J.P. Morgan affirm that Tesla shares are dramatically overvalued (*Bloomberg*), the arguments in favor of a revolution in the automotive sector still hold. Tech giants like Apple and Google make no secret about the intention to join the market with driverless technologies. Tesla Motors itself has already implemented most of these features. The company's website displays as follows:

> All new Tesla cars come standard with advanced hardware capable of providing Autopilot features today, and full self-driving capabilities in the future—through software updates designed to improve functionality over time.
> Tesla's Autopilot AI team drives the future of autonomy of current and new generations of vehicles [….] [38].

European car manufacturers, on the other hand, perceived that change of course since 2015, when in April an important document was published by FCA Group, in which efficiency problems, fixable through consolidation and common to most car manufacturers, have been analyzed.

The first argument relates the limited profitability of the automotive sector, which in the previous years has always been lower than the cost of capital expected by the market. Notwithstanding the average increase of R&D expense of 12% per year, the regulatory challenges (tighten emission regulations, security standards increase) together with

[38] Tesla.com

customer-driven expectations (infotainment services, connectivity and driverless technology) drained up most of the incremental capital. Indeed, as I mentioned before, customer loyalty tends to be low especially when it comes to switch to another of the top OEMs (Original Equipment Manufacturer): FCA, Ford, General Motors, Honda, Hyundai, Kia, Nissan, PSA, Renault, Toyota, Volkswagen; or Premium OEMs: BMW, Daimler Cars.

The following analysis in the document, compares KPIs with the other sectors in the manufacturing industry, like the time after which a value equal to the Enterprise Value of the investing company should be completely reinvested in R&D in order to stay competitive, and the average EBIT margin; in both cases Automotive sector places at the bottom of the list.

A strategy employed to face these undesirable ratios, was the standardization of the vehicles architecture, throughout partnerships and joint ventures among different brands; however the consequent impact of this choice proved to be lower than expected, because the higher source of costs didn't derive by those components for which partnerships were put in place, but the mutual trust and respect among companies was not enough to allow them to share projects with significant know-how and value added. Breaking down product development costs, the value of savings deriving by the commonization of components across diverse brands, would correspond on average to 2 billion per vehicle developed. This estimation has been calculated excluding exterior design cost reductions that would induce unwelcome standardization.

3.2. Business cases of Market Consolidation in the Automotive Sector

As anticipated in the previous section, M&A operations have historically played a key role for growth ambitions of companies in the Automotive Sector.

Until 1970s European contribution in this market was significantly low, consisting of relatively small firms, geographically limited to the home country, and not able to compete on a Global scale; this is also true for almost all countries in the world except for USA which was the only country hosting manufacturing giants like General Motors and Ford.

1970s are a milestone in the automotive sector, they are reminded because of the double effect of new restrictive regulatory improvements that were imposed, like the Clean Air Act

Amendment[39], and the oil crisis that pushed up the fuel price. This situation disadvantaged high engine capacity vehicles typical of USA on behalf of European and Japanese more efficient cars.

On 1980s overcapacity in the market start pushing companies in the automotive sector towards consolidation operations in order to reduce production costs. This scenario leaded to the cross border mega-deals of the 1990s, that created most of the Giant Industrial Champions that I am going to analyze further in the next section.

3.2.1. Daimler Benz – Chrysler

The deal was signed on 6 January 1998 in London, and it came as a surprise, both for investors and employees that were not informed of the news until the final agreement.

The ambition of this merger was that to create a global leader in the automotive sector, capable of diversify sales among European and US markets, as well as preserve their competitive position in the long run. The deal value, corresponding to US$36 bn is the biggest M&A operation on automotive sector until then, making Daimler-Chrysler the 5th car manufacturer in the world by volume of units sold and market value, behind General Motors, Ford, Toyota and Volkswagen. In the first days after the announcement the market is confident, rising the share value of the combined business to 17.8%. However, after a positive after-market euphoria, analysts started casting doubts about the long run performance of the new created Group.

One of the uncertainties was related to the fact that the two companies were very distant from a cultural, strategic and sectorial perspective.

Starting from the cultural standpoint, Professor John Brock, from University of Miami, defines Daimler Benz approach as precise, hierarchical, and meticulous, for what relates Chrysler instead, he said that they use a more entrepreneurial, less detail oriented, and creative approach, making the company less risk averse and far too unpredictable. Millions were spent

[39] D. Gerard, L. B. Lave, (2005), "Implementing technology-forcing policies: The 1970 Clean Air Act Amendments and the introduction of advanced automotive emissions controls in the United States", Center for the Study and Improvement of Regulation, Carnegie Mellon University, Pittsburgh, USA

in the post-merger phase for cultural diversity inclusion projects in trying to reduce that distance, but they didn't have any practical benefit.[40]

Looking from a strategical and sectorial point of view it is important to highlight two slides of the coin: 70% of Chrysler's revenues arise from Jeep, Van and Pickup sales, while Daimler-Benz is an Elite Brand, that produces medium-high profile Sedans and city cars as Smart, which was already part of the Daimler-Benz Group at the time of the deal. On the one hand the acquisition would allow for a wider portfolio of car segments, on the other hand it makes it hard to create valuable synergies. It becomes impossible to standardize components, that would have implied a considerable reduction in production costs, moreover it becomes impossible to centralize the Headquarter and the other Plants, that would have allowed for significant facilities savings. The two companies have peculiarities and identity features that are necessary to maintain a leading market share position within their customers, but that at the same time prevent them to develop in the counterpart's foreign market.

Because of these limits, by 2001 the combined value of the business dropped to approximatively the value of Daimler before the merger. Chrysler's profits dropped from 531 million in 2000, to a loss of 2.2bn of 2001, fluctuating these results until 2005, when the CEO Jürgen Schrempp retired after he lost shareholders support.
His successor Dieter Zetsche immediately confessed that a breakup between the two companies was upcoming; he next reduced the participation of Daimler in Chrysler, after that, the company was sold to the private equity fund Cerberus for $7.4bn, around a fifth of the acquisition value of nine years before.

3.2.2. Renault-Nissan

The second M&A operation I chose to analyze is that leading to the creation of the Alliance Renault-Nissan. My choice about this business case is determined by the fact that it is a huge success in the automotive business, obtained not by a classic merger operation, but with an

[40] D. Meiremgaliyev, S. Ravanparast et Al, (2014), "*Daimler – Chrysler case study*".

alliance. Even if the relationship is not strictly equal under a legal and formal standpoint, exchange relations and synergies created inside the group are not just "hot air", as they were in the Daimler-Chrysler business case, where the CEO Jürgen Shrempp itself declared, some years after the demerger, that the definition of "merger of equals" was never intentioned to be a concrete objective; it was instead a strategy set up to ease the communication with American people, who otherwise would have never accepted the situation.[41]

The Alliance was born on 27 March 1999, after a period of financial stress experienced by the Japanese company. In 2001 Renault-Nissan became the third automotive group in the world, just behind General Motors and Volkswagen AG, defending the position in the following years. The Alliance was realized in two steps. On first instance Renault bought 36.4% of Nissan stocks, refinancing the company with €5 bn, and afterwards buying an additional 15% stake of non-voting right shares, obtaining *de facto* the control of Nissan Motors. For these reasons, even though the two companies keep a strong identity footprint, analysts tend to consider the operation an acquisition of Nissan operated by Renault.[42]

As it is today, the Group is composed by Renault, Nissan Motors, Mitsubishi, Alpine, Dacia, Renault-Samsung, Lada, Infiniti, Venucia, Datsun, with a 50-50 equally distributed ownership of the Alliance by Renault and Nissan.

Synergies in the group are really strong, distributed on every production stage: Engeneering, Manufacturing&Supply, Chain Management, Purchasing and Human Resources and R&D, all led by a common centralized direction, headed by an Alliance Executive Vice President[43]. Harmonization and standardization of platforms and powertrains is total in every territorially subsidiary, pushing the total value of synergies, calculated as the savings arising by them, was calculated to be equal to €5 bn in 2017, and constantly growing.

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[41] (2006), "*DaimlerChrysler merger A Fiasco*", ABC News, at: https://abcnews.go.com/WNT/story?id=131280&page=1

[42] "*Renault-Nissan.Mitsubishi Alliance*", at: https://amp.googl-info.com/5862192/1/renault-nissan-mitsubishi-alliance.html#article

[43] "*RENAULT-NISSAN ALLIANCE ANNUAL SYNERGIES RISE 16% TO €5 BILLION*", at: https://www.alliance-2022.com/news/renault-nissan-alliance-annual-synergies-rise-16-to-e5-billion/

Renault- Nissan -Mitsubishi Alliance is the case in point in total contrast with Daimler-Chrysler; the reasons determining the success of the former represent the shortcoming of the latter. Indeed, Renault and Nissan market segment is quite similar, making it possible to benefit of standardization at every level of the production, as described in the previously mentioned paper "Confessions of a Capital Junkie": strong and unique identity design among the two brands, and sharing of productive equipment and infrastructures, together with centralized strategic long term plans were the key of this cross-border success.

3.2.3. FCA-PSA

The third group that is worth to be mentioned, is the recent consolidation between FCA and PSA groups. Beyond the striking importance of the deal, making it the 4th group in the automotive sector worldwide, the reason of this choice is that it is by definition the most important of the European Champions, one to which in case of success could encourage other companies towards future consolidation operations and the establishment of new industrial entities able to compete globally.

The group called Stellantis, head officed in Netherlands is equally owned at 50% by PSA and 50% by FCA, shareholders of PSA have received 1742 new listed shares of Stellantis for every previously owned stock of PSA, and FCA shareholders received 1 new share for every stock owned in FCA.
The operation is intended to create "a Leader for a New Era in Sustainable Mobility [44]"; the reasons behind the merger are synergies improvement and internationalization of sales, exploiting a significative market presence of FCA in the US market, which even before the merger was well positioned at the 4th place by sales volumes.

[44] FCAgroup.com, at:
https://www.fcagroup.com/en-US/media_center/fca_press_release/2019/november/Pages/groupe_psa_and_fca_plan_to_join_forces_to_build_a_world_leader_for_a_new_era_in_sustainable_mobility.aspx?adobe_mc_ref=&adobe_mc_ref=

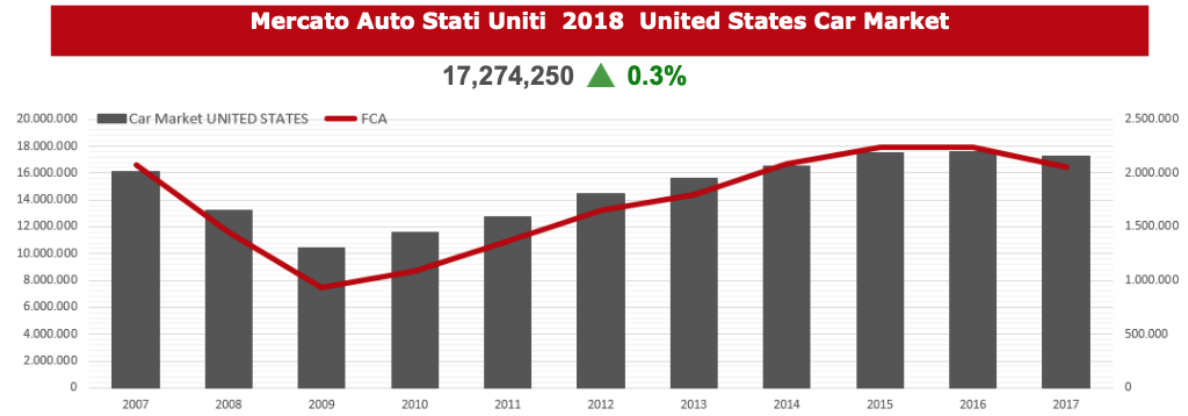

Chart 8 Source: https://www.carsitaly.net/fiat-car-sales_unitedstates.htm

Efficiency and key performance indexes, along with financial position of FCA and PSA in the last years bodes well for a positive post-merger phase.

Internal analysts of the group predict synergies to be worth around €5 bn, obtained following a strategy similar to that employed by the previously studied Renault-Nissan-Mitsubishi Alliance, which implies powertrain and platforms standardization, and the implementation of a common R&D plan.

The vehicles portfolio of Stellantis is going to be broad, in order to satisfy a wide market share, especially in the Utility section where is intended to strengthen its leadership position, currently challenged with Toyota and Volkswagen.

Stellantis portfolio is particularly suited to fulfil sustainable mobility requirements of potential customers, embracing electrification, connectivity and driverless technologies.

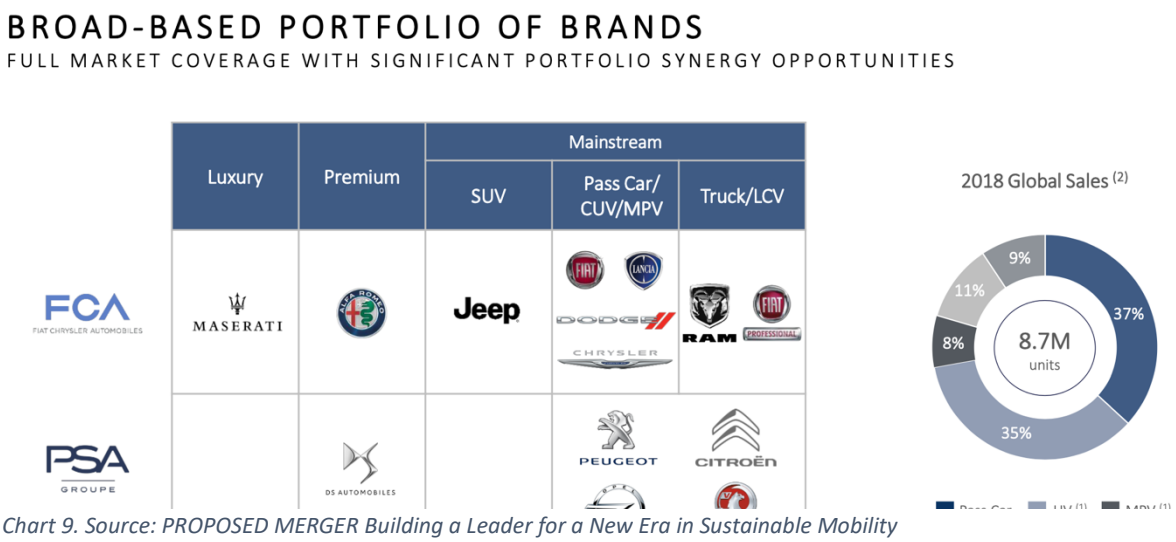

Chart 9. Source: PROPOSED MERGER Building a Leader for a New Era in Sustainable Mobility

Since electric cars sector is skyrocketing Stellantis is well established, providing for 29 vehicles available, and the intention to issue 10 new models by the end of the current year. Official presentations, made very few references to Luxury and Premium segment, currently dominated by German brands.

3.3. ICT Sector focus

ICT Technologies are defined as:

> Diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the Internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile, satellite, visio/video-conferencing, etc.).[45]

Broadly speaking ICT includes a variety of subcategories and services dealing with management, collection, manipulation and utilization of digital information, including services that exploit them to implement existing businesses.

I several referred to this sector in the previous chapters, because it was clear since the first analysis that it was the root of the growth rate spread between Europe and US.

In recent years several studies were published analyzing the spread in productivity rates among the two regions, but none that I found was able to explain the reasons of such a mismatch.

McGunckin and Van Ark (2001) suggest that structural barriers in the labor and goods market may have delayed the ICT sectorial development in Europe. Not least the job supply itself, intended as the number of working hours that European employees are willing to spend at work.[46] According to an article of Ben Steverman (Bloomberg) job supply in Europe is lower

[45] Definition of UNESCO Institute for Statistics, at : http://uis.unesco.org/en/glossary-term/information-and-communication-technologies-ict

[46] B. V. Ark, R. Inklaar, R. H. McGukin (2003), "*ICT and productivity in Europe and the United States Where do the differences come from?",* University of Groningen, Netherlands.

than the US counterparty by 1 hour a day on average. This evidence shifts the focus from work productivity, to just a quantitative measure, showing a more intuitive scenario.
The reason why European employees are willing to spend few hours at work, according to a research of Lee Ohanian and Andrea Raffo, depends by the higher taxation that frustrates the incentives given by an increased number of hours worked.[47]
Another study conducted by Dora Gicheva from University of North Carolina at Greensboro shows that the labor force in the United States works more than it should, because it is aware that the effort will be rewarded, in most cases by a promotion, implying a significative improvement in the economic condition of the employee.[48]
However regulatory imbalances about hiring and firing in the two regions are crucial variables to account for.

Today geographical segmentation of ICT sees United States dominating the map with a market share of 34.3%, against the 26.6% of European Union. This data becomes even more significative analyzing the European market alone. Indeed, 18.5% of European market share is related to UK, that is no more a European country. The centralization is such that it makes it difficult to refer to a European ICT sector.

The market value of ICT in Europe increased by 10% in 2019, a growth rate above that of US (7.8%). As far as ICT sector suffered minor losses than most of the other sectors, it wouldn't be correct to evaluate 2020's data because it would result as a rough measure, non-representative of the last years positive trend, that before pandemic was estimated to grow with a CAGR of 7.6% in the five years 2020-2025.

Market dynamics are completely different to the Automotive sector, so growth strategies employed by tech companies, should as well be of different nature.

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[47] L. E. Ohanian, A. Raffo (2011), "*Aggregate Hours worked in OECD Countries: New Measurement and Implications for Business Cycles*", National Bureau of Economic Research, Cambridge

[48] D. Gicheva, (2010), "*Working Long Hours and Early Career Outcomes in the High-End Labor Market",* University of North Carolina at Greensboro, Department of Economics.

The number of leading players is considerable, competition in fierce and entry barriers in the market are virtually none. Furthermore, as mentioned above, growth rates are high, therefore the big challenge is to stay competitive.

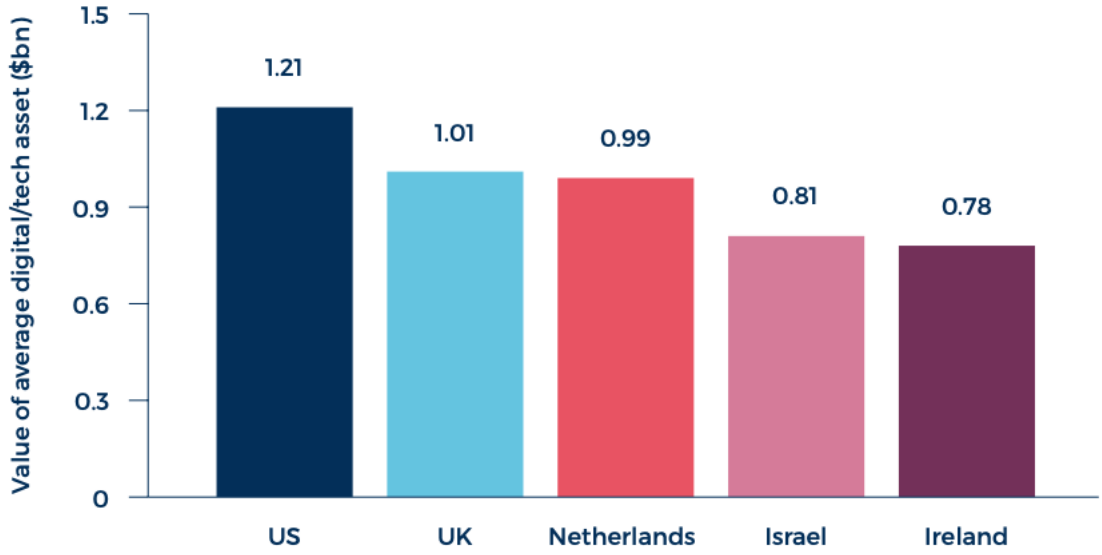

Chart 10[49]

A research conducted by Freshfields, one of the major multinational law firms based in London, highlights the countries with the greatest value of digital economy, and gives its explanation. Universities of US and UK, are those able to attract the largest number of international students, enabling a favorable environment of spreading ideas, as well as the development of global networks.[50]

Data published by UNESCO reveal as US and UK are able to welcome 1.4 million international students per year.[51] Another important evidence to add, is given by a study of PitchBook, by which between 2006 and 2018 Stanford University, University of California, Berkeley and MIT have actively prompted the development of 2846 companies, raising capital for a total value of 70bn.

Scaling back the numbers, the same is true for University of Cambridge in UK that directly sustained the establishment of start-ups for a value of 1.3bn.

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[49] "*The world of digital M&A*", Freshfields Bruckhaus Deringer.

[50] Ibid.

[51] http://data.uis.unesco.org

Switching to Israel, the attention is for its 4.2% annual R&D investment as a percentage of GDP, placing this country at the first place in the world. Israel is also the leading country in the world for number of researchers per capita.
I already mentioned the plausible reasons why Netherlands and Ireland appear in the chart, and this research confirms what previously said; it is undeniably that tax benefit policies ruling foreign capital, play the starring role for the capital in-flow in these two regions.[52]

3.3.1. Development of a Favorable Environment: the Key for Success.

Looking at the growth strategies in ICT sector, especially in US, M&A operations are often the preferred solution. "Growth by buying" allows bigger companies to obtain needed technologies buying smaller companies that already developed it and combining the acquired firm within the holding. Several tech start-ups grow with the medium-term goal to be acquired by a bigger group. Tech giants like Apple, Google, Facebook and Amazon yearly acquire dozens of smaller hi-tech firms in order to sustain their growth.
Without undertaking a consolidation, start-up companies find it difficult to grow above a physiologic limit imposed by capital needs; reason why the ICT industry in Europe is highly fragmented.
On the merger side, among companies of similar size, the driving reason pushing consolidation, focus on cost reductions, like license cost sharing, server and network management costs, resembling the previously reviewed dynamics of synergies improvement.

Considering the arguments referenced in the previous chapters, a comparison between US and EU scenario would be inappropriate. Just to make an example: Microsoft successfully completed 5 of the 30 most important deals in the ICT sector [53], Google completed 245 deals since the day it was founded [54]. The most sensational European successes instead, are

[52] "*The world of digital M&A*", Freshfields Bruckhaus Deringer.

[53] (2017), "*La rivoluzione digitale alla base dell'ondata di fusioni e acquisizioni nelle imprese dell'informatica&communication technology*", Il Giornale della Finanza.

[54] Crunchbase.com, at
https://www.crunchbase.com/search/acquisitions/field/organizations/num_acquisitions/google

represented by start-up companies that grew up to leadership positions without undertaking any acquisitions, if not some very little deals.

The most famous example is Spotify, headquartered in Stockholm, in 2008 started its revolutionary service in Music industry, that in the previous years was experiencing huge revenue losses because of piracy. The only way to fight piracy, as told by Daniel Ek, co-founder of Spotify, was to create a service that was better than those offered by piracy, and at the same time was rewarding for Artists [55].

Spotify was born as a start-up, and today it is worth around $60 bn, making it the worldwide leader of the industry.

However, in spite of exceptions, London is the European Tech capital with the larger volume and value of start-ups established. Although it is not properly European anymore, until last year it was, therefore it is interesting to research what caused such a striking mismatch against the rest of Europe.

UK approach is strongly linked to that followed by US in the years before, being able to create a spawning ground to the development of innovative start-ups. Just to mention a few examples, Mindspace, LABS, Runway East, WeWork, The Wing, Hucletree, Workspace and Work.Life are relevant coworking centers spread around the city.

Moreover, TechHub is a community offering freely accessible working spaces together with financing and supporting activity to new developing start-ups. More than half of the community is characterized by foreign founders and offers its own program, TechHub Accelerate intended to promote the cultural diversity of the local community, providing fundings, free offices, visibility and support.

Google for Startups as well promotes a program offering mentorship and a free digital toolkit for early-stage start-ups in London. Finally, I previously mentioned Universities that play a key role promoting internal hubs as the K-20 program of the King's College[56].

[55] (2018), "How Spotify came to be worth billions", BBC, at: https://www.bbc.com/news/newsbeat-43240886

[56]Davide Casalini, "*Le 5 startup city regine in Europa: policy e numeri degli ecosistemi europei*", Startup Italia, at: https://startupitalia.eu/116192-20191014-le-5-startup-city-regine-in-europa-policy-e-numeri-degli-ecosistemi-europei

3.4. Automotive and ICT sectors comparison

It is my opinion that M&A is propaedeutic to growth for companies in mature markets lying above significant size thresholds; in the Automotive sector this strategy makes sense in order to optimize production efficiency.

Most of the US Tech giants already achieved a considerable size threshold, so the acquisition of innovative start-ups is crucial to keep improving, but in their early stage their growth was boosted by the Silicon Valley's challenging environment that allowed for the creation of an entrepreneurial mentality, putting worldwide bright talents in contact and exploiting considerable funds provided by Universities and the so called "*Angel Investors* [57] ", only after that, the acquisition phase took place.

For what relates elder Tech companies, like Microsoft, Dell and IBM the key role was played by the aforementioned investments of the post-war years.

Switching to the European context, the vast majority of Tech companies have not achieved this threshold yet, so undertaking such an investment would be too expensive and risky at this stage.

Market concentration in the Automotive sector is maximum, the logics behind it are those of an oligopolistic market, so the production is concentrated within few manufacturers that have got the power to influence the price. The resulting price is such that it is high enough to allow for extra-profit, but not enough to encourage the huge investments needed for new manufacturers to jump in the market. This kind of market structure creates natural financial barriers to entry that secure the market share of the existing competitors.[58] Excluding the new opportunities offered by electrification and driverless technologies, like those exploited by Tesla, for which it is difficult to make predictions, the only way to expand the owned market share is to acquire one of the competitors, absorbing its percentage share.

[57] An angel investor (also known as a private investor, seed investor or angel funder) is a high-net-worth individual who provides financial backing for small startups or entrepreneurs, typically in exchange for ownership equity in the company. (Investopedia.com)

[58] B. Douglas Bernheim, M. D. Whinston, (2019), "*Microeconomia*", McGraw-Hill Education

The ICT sector, if we exclude TechGiants, is perfectly competitive, and barriers to entry are virtually null, however traditional economic theory is difficult to implement if we consider ICT as a single sector. Indeed, ICT includes a variety of sub-sectors, linked to the traditional ones, that through digitalization reinvented the business implementing connection and data sharing. Spotify revolutionized the traditional music sector, but the value added is the networking service, applied to the traditional music sector, facilitating the content fruition to the customers.

Deliveroo, one of the most valuable start-ups in the European sector, provide a food&delivery service, so even if they are both in the macro-category of ICT, it would be a mistake to consider them as competitors.

It is my opinion that the M&A stage will be reached in a second moment, when these micro-sectors would have achieved a critical saturation in the market that would justify the extra investment of an M&A operation. Currently within the European ICT industry it wouldn't be an effective strategy to achieve growth.

CONCLUSIONS

Approaching the final chapter of this Thesis, I can now answer the question asked in the title: are European Industrial Champions a mandatory requirement to face global competition?
The answer is blatantly yes. Industrial Champions are able to create workplaces, enjoy market confidence and most importantly they are able to absorb revenue losses during crisis because of their diversification. US Giants proved that globalization get continents closer than they are in the map, therefore a winning product or service, as observed by the previously mentioned Nam-Hoon and Johansson, can quickly capture foreign markets gaining dominant positions that can prevent local competitors to join the business. Amazon is a striking example: the idea of e-commerce is straightforward to be copied by potential rival companies, but the competitive advantage and the confidence gained by the market is such that it makes it difficult to develop a parallel business.
Along this thesis I discussed the reasons arising the US-EU spread in growth rates, showing how the after-war years proved to be crucial for the spread evolution of the following years. Several tailored industrial policies, together with vast amounts of capital invested in R&D, caused an acceleration in United States' growth rate. Europe was not able to achieve similar results because of smaller capital available, less effective industrial policies and a lower productivity in ICT investments.
I further analyzed competition policies to understand if American rules played a role, promoting the consolidation of industrial groups, or if European Union in order to preserve a competitive market within the countries depressed the consolidation process. The results emerged show remarkable diversity among the two legal systems, but I found no scientific evidence proving that this variable negatively influenced the creation of European Industrial Champions.
What I could observe instead is that ICT sector in US reported more acquisitions because the related companies growing at higher rates and achieving considerable size, started the consolidation phase before, in order to improve efficiency and to acquire further know-how. In Europe the market is still fragmented, companies in ICT sector are smaller and with limited investment capacities, so the takeover phase would be too risky and often inappropriate at this stage.

In the next step I investigated the alternatives for Europe to develop a productive environment in order to cope with United States on this front. To give a more precise answer it is necessary to take a step back. Because of the takeovers that took place in the last decades, the automotive sector in Europe is now very strong and dominated by European leading companies. However, because growth rates are relatively low, and groups sufficiently consolidated, little space is left for further strengthening. Most of the effort should be focused on the ICT industry, where United States are the undisputable leaders of the market. The excessive power in this sector, characterized by such high growth rates, can be interpreted as a threat to the sectors in which Europe is strong. The automotive sector itself, as underlined in Tesla's case, promises a revolution that, if not yet begun, is imminent. In this regard, it is essential for Europe to be ready for the challenge. Indeed, the firm's size and the Brands reputation is such that a huge investment in this sense would be justified and could further strengthen what is the leading market in the European territory. On the contrary, waiting and enjoying the current advantage Status would allow for the development of a parallel sector that in the long term, could prove successful. For ICT industry, these arguments are especially true, because Europe is still in a start-up phase. The entrepreneurial environment of the Silicon Valley area played a key role in the establishment of innovative companies capable of capturing global financial markets. This peculiarity, observed in the United Kingdom as well, led me to investigate the common thread that could justify this correspondence.

In both countries, the presence of a very high profile university system, aimed at promoting an international environment and capable of investing resources in its talents, providing the means to implement the most innovative projects, proved to be a winning one. Most of the other European countries have preserved, so far, a more scholastic and traditional teaching mode, less focused on supporting the entrepreneurship of their own students.

Therefore, in order for Europe to maintain its undisputed position of importance among the economic powers, it is essential to invest concretely and locally in the ideas and resourcefulness of young talents, through the strengthening of a university system aimed at developing a proactive, international and entrepreneurial environment.

ABSTRACT

As the dissertation title suggests, the final question we would like to answer is whether European Industrial Champions are a mandatory requirement to face global competition.

This analysis starts from a comparison of European competitive position, against the whole market, to understand the distribution of leading companies around the globe and to represent a snapshot of the market as it is today.

I set a criterion to identify those champions in order to find the variable that mostly incorporates all the others; that variable is represented by the value that the open market gives to the companies, so as long as Investors are rational enough, market capitalization is the best indicator, and it should be able to incorporate all the other variables in analyst's value assessments. This is the starting point of my analysis. After that I compared the obtained results with other financial metrics in order to add consistency to the model.

I listed the top 100 companies of the "2019 EU Industrial R&D Investment Scoreboard" list in order to have a large dataset to perform analysis with multiple indicators. This list contains data from 2500 worldwide companies as well as key financial indicators. Nevertheless, I had to compromise with the fact that for a lot of Chinese companies and some other countries, there is not any financial data. However, considering my intention to focus on US and EU companies, it is an acceptable compromise.

Once reported the list of the 100 most valuable companies by market capitalization, I plotted it in a chart that shows the United States leading the market with 52 companies out of 100, followed by EU, with 26, and China with 5 companies.

As I anticipated before, precautions must be taken while observing this distribution. The list doesn't take into account that US financial markets are way stronger than European and Chinese ones.

As a second part of the analysis, I organized the TOP 100 companies by market capitalization, and summarized the market value of the single companies belonging to the same region.

The results confirm and underline the leading competitive position of US Top firms, but they also display the weakness of European companies.

Starting from this point, I focused on Europe in order to understand if relevant divergences exist with US and to eventually find their roots.

Using World Bank, and OECD national accounts data, I reported in a chart the GDP growth rate for the two regions starting from 1994 to 2019. The average GDP growth rate for the all period in exam, is equal to 1.81% in Europe and 2.53% in US.

Studying several Academic research, I found insights capable to explain this situation. For the first time since World War II labor productivity growth in most countries of the European Union had fallen behind the U.S. for a considerable length of time. It happened that whereas average annual labor productivity growth in US accelerated from 1.2% in the period 1987-1995, to 2.3% during 1995-2005; EU-15 countries experienced in the same period a decline in productivity growth from 2.2% to 1.4%.

The reasons of the US acceleration are closely related with the role of information and communication technology (ICT), that had an impact on growth because of a surge in investments, strong productivity contribution from ICT-producing industries and a more productive use of ICT in the rest of the economy. The productivity levels achieved in Europe by the ICT investments instead didn't have the same results as US investments.

By 2012, a second drop in European GDP growth rates was experienced, due to the Sovereign Debt Crisis.

In light of the findings about the productivity imbalance, I performed a sectorial analysis for United States and Europe, to understand which sectors were mostly responsible for the gap. The findings are that in US market, two of the three sectors driving the economy are strongly ICT related industries; the combination of companies contained in the first three industries accounts for the 57% of the total market value of the ranking.

Conducting the same investigation in the European market emerged that the major two sectors sorted by market value diverge by those we found for US. What is most important to point out is that in this case the most valuable industries in Europe are slow growing industries, not related to ICT. The difference in the two distributions is divergent enough to deserve more scrutiny under the strategical and political standpoints. Reason why I continued the investigation starting from the post-war situation, chronologically describing the events and choices that influenced the following decades.

This study led me to the conclusion that the technological gap between US and EU exists since the early days in which this industry was developing. US invested a lot of capitals in R&D, pushed by the ambition to become the leader among military powers. In the United States there was a government procurement market, large enough to make domestic companies

compete. There wasn't a will to create a National Champion, but the intention to create a productive market able to strengthen companies. The European attempts had been much weaker, constantly focused on catching up US, not supported by strong projects. In favor of EU, should be said that single countries alone didn't have the same economic power to support similar huge investments; it is important to remind that after war (and until 1990) Germany's defensive expenditure capacity was constrained, and military investments in US played a key role for the development of new technologies. It is arguable that European countries together would have had power enough to face US competition, but these countries were under different flags for centuries, and some of them is a global power. To effectively cooperate, it would have been necessary to share classified information and pool resources together.

Along the last decade investment have been more credible, and results have been accomplished, however the cumulated gap is significant and still, much work must be done.

I further analyzed competition policies to understand if American rules played a role, promoting the consolidation of industrial groups, or if European Union in order to preserve a competitive market within the countries depressed the consolidation process. The results emerged show remarkable diversity among the two legal systems, but I found no scientific evidence able to prove that this variable negatively influenced the creation of European Industrial Champions.

At this point the question that inevitably comes to mind is: Is it really a good strategy, to look at the benchmark of the United States companies, and try to obtain similar global champions, through cross-border M&A operation among European companies, or it would be preferable to find the strategy that would improve European position in a most efficient way?

To answer this question, it is important to understand the pros and cons of M&A operations, and the way in which they bring value to both the buy and sell-side of the transaction.

In the second chapter I reviewed how the literature faced this argument in order to understand if the creation of European Industrial Champions would have benefitted the European economy.

Documents gathered by the literature are quite discordant regarding the efficacy of M&A activity in the long run, and due to the different methodological analysis, most of the research is difficult to compare. However, the study conducted by McKinsey that measures the long run results instead of using short term measures suggests that M&A activity can be a value

creation tool if tailored strategies are adopted relatively to specific sectors, and it can be used as an important asset to grow, when a firm achieves a considerable size. So, the risk of failure in M&A operations is high, but the evidence emerged in these studies, proves that positive long-term excess returns arise when big deals are pursued in mature, slow growing industries, as well as, smaller start-up acquisitions, within the fast-growing industry.

For what relates cross-border M&A operations I analyzed industries, and specific sectors within industries, in which cross-border M&A operations were undertaken.

The results show how the industry where cross border M&A acquisitions played a leading role is that of Services, which includes Information and communication technology (ICT). Besides results are somewhat biased by the large US acquisition in this sector, underestimating the importance of cross-border M&A in manufacturing industries like Automotive, and many European leading companies engaged at least one consolidation operation, often resulting in a new European Champion.

I individually studied Automotive and ICT sectors, in the third chapter, in order to understand the different rationale and consolidation dynamics.

M&A operations have historically played a key role for growth ambitions of companies in the Automotive Sector, until 1970s European contribution in this market was significantly low, consisting of relatively small firms, geographically limited to the home country, not able to compete on a Global scale; this is also true for almost all countries in the world except for USA which was the only country hosting manufacturing giants like General Motors and Ford.

1970s are a milestone in the automotive sector, they are reminded because of the double effect of new restrictive regulatory improvements that were imposed, like the Clean Air Act Amendment, and the oil crisis that pushed up the fuel price. This situation disadvantaged high engine capacity vehicles typical of USA on behalf of European and Japanese more efficient cars.

On 1980s overcapacity in the market start pushing companies in the automotive sector towards consolidation operations in order to reduce production costs. This scenario led to the cross border mega-deals of the 1990s, that created most of the Giant Industrial Champions that still rule the market.

Looking to microeconomic dynamics regulating this market, rivalry is strengthened by the big historical operators existing in the market. The likelihood of new companies entering the market, as it is today, is low because of high entry barriers, like huge amount of initial capital

required. Key inputs of the production are metals, along with technical components usually acquired by other companies. These products are often outsourced to other firms instead of being produced in-house. This choice involves crucial implications, because outsourcing production implies cost reduction, with the shortcoming of standardized products being delivered to the market.

So, it doesn't come as a surprise that the standardization process reduced supply power, leading market demand in the automotive sector to be highly price driven.

Until now, the Automotive Sector, as many mature industries, has constantly evolved without experiencing a real shock or impact by technology. Cars are improved in terms of efficiency, consumption, and even infotainment systems, but they all played a marginal role, they didn't have a revolutionary impact in the automotive market.

Perhaps the time has come with electric cars. The new conception of sustainable mobility breaks down some of the entry barriers, it offers opportunities for companies operating in other sectors as well as new established firms.

Such a shock in the automotive sector may switch priorities of market demand. To some extent it would be considerable as a new market, governed by different rules, so the existing European industrial leaders could struggle in the attempt to preserve their market share.

Tesla Motors is the striking evidence of this new industry able to mix the traditional manufacturing industry with the new digital technology, offering a brand-new product, able to capture the market attention.

In the last section of the dissertation, I studied the ICT sector, trying to understand the way it has evolved in US and Europe.

Looking at the growth strategies in ICT sector, especially in US, M&A operations are often the preferred solution. "Growth by buying" allows bigger companies to obtain needed technologies buying smaller companies that already developed it and combining the acquired firm within the holding. Several tech start-ups grow with the medium-term goal to be acquired by a bigger group. Tech giants like Apple, Google, Facebook and Amazon yearly acquire dozens of smaller hi-tech firms in order to sustain their growth.

Without undertaking a consolidation, start-up companies find it difficult to grow above a physiologic limit imposed by capital needs; reason why the ICT industry in Europe is highly fragmented.

On the merger side, among companies of similar size, the driving reason pushing consolidation, focus on cost reductions, like license cost sharing, server and network management costs, resembling the previously reviewed dynamics of synergies improvement. Considering the extraordinary gap existing among the two territories, a comparison between US and EU scenario would be inappropriate. It is my opinion that M&A is propaedeutic to growth for companies in mature markets lying above significant size thresholds, independently from the sector in which they operate. If it is true that Automotive sector is now a mature worldwide, for ICT a distinction should be done between Europe and US.

Most of the US Tech giants already achieved a considerable size threshold, so the acquisition of innovative start-ups is crucial to keep improving, but in their early stage their growth was boosted by the Silicon Valley's challenging environment that allowed for the creation of an entrepreneurial mentality, putting worldwide bright talents in contact and exploiting considerable funds provided by Universities and the so called "*Angel Investors* ", only after that, the acquisition phase took place.

Switching to the European context, the vast majority of Tech companies have not achieved this threshold yet, so undertaking such an investment would be too expensive and risky at this stage. It is my opinion that the M&A stage will be reached in a second moment, when these micro-sectors would have achieved a critical saturation in the market that would justify the extra investment of an M&A operation. Currently within the European ICT industry it wouldn't be an effective strategy to achieve growth.

In conclusion the best European strategy to pursue, in order to improve the ICT sector, is that of strengthening a university system aimed at promoting an international environment and capable of investing resources in its talents, providing the means to implement the most innovative projects it is essential to invest concretely and locally in the ideas and resourcefulness of young talents, through the strengthening of a university system aimed at developing a proactive, international and entrepreneurial environment.

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