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Competitive and collaborative strategies in game theory. The M&A as a form of collaboration: the Stellantis case.

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To my father,
my brother,
and my mother.

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INTRODUCTION

I have always been fascinated by how game theory could be applied to modern business strategies. In this paper I would like to analyze the advantages of collaborative strategies between two firms operating in the same market, firstly by analyzing business strategies from a theoretical point of view, i.e., following game theory.

In this way a definition of strategy and competitive environment will be presented, and then a brief theoretical - hence non-mathematical - analysis of game theory will be provided. A description of non-cooperative games will be presented, that are those on which scholars have concentrated most since the 1940s. Later, still in the first chapter, I will deal with two new models that are being developed: cooperative games and coopetition. The first term refers to all those situations in which players have the possibility to make binding agreements about the strategies to be adopted. Coopetition, on the other hand, refers to a mixed strategy, i.e., a situation in which a company both competes and cooperates with another company in the same market. In this way they are able to increase profits and reduce costs, leading to a higher market efficiency than mere competition. To support this assumption, an analysis of the well-known *prisoner's dilemma* will be provided, i.e., a non-cooperative game in which two individuals choose a suboptimal strategy to remain in equilibrium, which is the best situation in case of lack of information regarding the opponent's strategy.

In the second chapter, instead, different co-operation strategies between firms will be analyzed, and I will take the M&A strategy as an example of major co-operation with a competitor. In M&A strategy, in fact, and, in particular, in horizontal M&A strategy, two firms that previously competed in the same market now decide to merge to create a larger firm: the goal is sharing their knowledge and resources and creating cost advantages and synergies in order to reduce the gap with other firms and to be more competitive in the industry, providing a more efficient service to the consumer. It will then be analyzed the different reasons that lead two firms to collaborate, the different M&A operations possible between two firms, the strategic advantages of such a strategy, and then the consequences at both the firm and the market level.

The aim of the paper is to provide an efficient view of the M&A transaction between two firms from a game theory perspective. Thus, the aim is not to analyze the M&A "game" from the point of view of the purchase price of a company, i.e., game theoretic models in M&A pricing, but rather the game of whether two firms cooperate or not.

At the end, in the last chapter, I will analyze a very recent practical case of collaboration between two firms: the merger between FCA and PSA in Stellantis. The collaboration between these firms was total: in fact, they decided to merge the two companies to form a unique larger and more competitive one. Therefore, an analysis of the automotive sector will first be provided, and then a detailed study of the reasons that led the two multinationals to merge and, above all, the consequences of this merger will be carried out. The experimental analysis will then present an estimate of the possible benefits of such an operation. In order to make this estimation, which is always carried out from a strategic point of view, I will make use of the precedents of M&A operations (also in the automotive sector), and of the opinion of experts, who played key roles in the success of this merger, and whom I had the honor of interviewing to provide the most accurate analysis possible. Firstly, I had the opportunity to obtain information from a former senior executive and board member of PSA, who prefers to remain anonymous due to contractual reasons. Then I had the pleasure to have a conversation with a current senior executive of Stellantis, formerly in FCA, who, given his current position within the company prefers not to disclose his name. At the end I have contacted a "IlSole24Ore" journalist, Dr. Marigia Mangano, expert in the automotive sector, and the Managing Director Italy of Credit Swisse and professor in M&A and Investment Banking at LUISS, Andrea Donzelli, to talk about the strategic aspect of the M&A.

CHAPTER I

THE GAME THEORY

1.1) The competitive environment of a company

Several factors influence the strategies of a firm operating in a market. The competitive environment is one of the aspects that most affects the decision-making process. The competitive environment consists of the actors and conditions that most closely influence and are influenced by the strategic and operational behavior of an enterprise. A company's environment consists of its internal environment (i.e., its resources) and its external environment. The company therefore defines its strategy considering the internal and external conditions in which it finds itself. Strategy is the definition of long-term goals and objectives, the implementation of policies and the allocation of corporate resources (Alfred Chandler, 1962). Strategy is therefore how a company achieves its objectives. Strategy assists corporate management by improving the quality of decision making, facilitating internal co-ordination, and leading the company to focus on long-term as well as short-term objectives. Strategic analysis primarily serves to understand the problems related to the performance of a company, and then to be able to provide alternatives and solutions to these problems. In the decision-making process, an individual has to understand what decisions the rivals are likely to make and how they are likely to respond to the individual's actions.

In defining its strategy, an organization must consider both the internal and the external environment. By internal environment, we mean the set of procedures and the way activities are carried out in the organization, as well as the resources available to the company itself. Porter (1985) provided a tool to analyze this environment, which is the value chain, through which it is possible to provide an overview of the competitive advantage of a company. However, the company is also an open system, so it is important to analyze the external environment as well, because it affects its results, and it is therefore essential to consider it when creating strategy. External environmental factors can be analyzed through the PESTEL analysis, which consists of a political, environmental, social, technological, economic, and legal analysis of the market in which a company operates. However, a tool is also needed to study the competitive forces that can influence company's operations.

Porter himself has therefore developed a tool that can provide a detailed analysis of the external environment of a company: the so-called Porter 5 competitive forces.
Dealing with competition is at the heart of strategy creation. Competitive forces go much beyond the established fighters in a specific business, and they are founded in the basic economics of that industry. Customers, suppliers, potential entrants, and substitute items are all rivals who, depending on the industry, may be more or less active. Whatever their combined power, the corporate strategist's purpose is to position the firm in the industry where it can best protect itself against these forces or influence them in its favor. The strategy must dive beneath the surface and examine each source.

Porter's five forces are variables which, in addition to influencing the behavior of the company and its results in the short term, outline the framework within which it orients its long-term development: they therefore influence corporate strategy. In the conceptual perspective developed by Porter, the understanding of competitive forces is the starting point for outlining corporate strategy, which is considered as the elaboration of a convenient positioning in the sector with respect to the way in which the competitive forces that characterize it are configured. Porter's five forces model is a tool that allows companies to determine a lasting competitive advantage in the economic environment in which they operate, starting from an understanding of the structure of the sector, its profitability and profitability. In this model, theorized by Porter in "*How competitive forces shape strategy*", five factors are identified which, through the study of competitive intensity within an industry, determine which elements give rise to long-term profitability and attractiveness in the market. The five forces include direct competition, threat of new entrants, substitute products, increased bargaining power of customers and increased bargaining power of suppliers.
Direct competition is known as a form of horizontal competition between firms operating in the same industry and offering the same type of product in the market. Several factors determine the intensity of this force, such as:

- the level of concentration of firms operating in this sector;
- the structural differences that allow them to escape a logic of competition based only on price;
- the lack of differentiation of supply or switching costs, which lock in buyers and protect a competitor from incursions by another into its customers;
- the fixed costs are high, or the product is perishable;
- the production capacity;

- the growth of the sector is slow.

Moreover, the barriers to exit are considerable. Exit obstacles, such as highly specialized assets or management loyalties to a certain firm, keep organizations competitive even if their returns on investment are low or even negative: the higher the barriers, the higher the competition.

The profits of a firm always depend on the performance of its competitors, so an analysis of the strategies of the other players involved in the sector is necessary. Companies therefore focus on beating the competition, thus gaining what is known as 'competitive advantage'. A firm acquires a competitive advantage when it enjoys an edge over its competitors in attracting buyers and dealing with competitive forces. A strategy can provide a competitive advantage when the enterprise acquires distinctive strategic elements compared to competitors in attracting customers in the long run. All paths to competitive advantage involve offering buyers a value superior to that offered by rivals, which can be translated into a better product at a lower price, a superior product that justifies a higher price, or an extremely convenient offer with an attractive combination of price, quality, features, service, and other attributes.

Competitive advantage is therefore defined as that which forms the basis of the superior performance recorded by the company, usually in terms of profitability, compared to the average of its direct competitors in the reference sector, over a medium to long term period. A fundamental condition for the acquisition of competitive advantage is the ability of the company to put in place a strategy for the acquisition and development of resources that is different from that of its competitors. However, competition erodes competitive advantage after it has been developed. The pace with which a competitive advantage is eroded is determined by competitors' capacity to challenge it through imitation or innovation. Because imitation is the most direct type of competition, obstacles to imitation must exist to sustain competitive advantage over time.

Competitive strategy is limited to defining the pattern of action that will enable the enterprise to compete effectively in the marketplace: the objectives and resources used to satisfy customers, strategies in response to the actions of rivals, reactions to contingent market conditions and initiatives to strengthen the market position. Competitive strategy is a long-term action plan of a company, which is directed to gain competitive advantage over its rivals after evaluating their strengths, weaknesses, opportunities, and threats in the industry and compare it with your own. However, as today's market is an open system, where companies have to be flexible and able to interact with their stakeholders, it is important to develop a strategy that is able to go beyond profit

in order to contribute to the growth of the internal and external community of the company to better satisfy the customer.

1.2) Game theory

From the competitive analysis of a firm, we can also define game theory based on the competition of players. Game theory is a proper tool for defining the analysis of a firm's strategy, as it analyzes decision-making situations in which gains depend not only on one's own actions, but also on those of others. It therefore studies the strategic interaction between rational agents. The importance of competitive analysis in understanding a firm's strategy is thus highlighted. In this context, business strategy corresponds to the rational action of a player as a reaction to the strategy of the other players, deduced from rationality hypotheses or through inductive generalization from other experiences, thus outlining the strategic plan.

Game theory finds applications in various situations, including economic ones, such as competition, collusion, organization between firms, bargaining, economic policy, etc. In all the different markets, firms interact with each other. Game theory is used in business for simulating competitive behaviors among economic agents. Companies may be involved in decision making such as whether to retire existing products or develop new ones, to decrease pricing in comparison to the competition, or to implement new marketing strategies. These interactions may sometimes be competitive, sometimes collaborative. However, in both cases, so-called interdependencies arise, as the behavior of one player also has consequences for the other players in the market. Strategic settings are defined as interdependent circumstances in which a person must consider how those around him select their actions while deciding how to act. A rational player, therefore, develops conjectures about the strategies of others to predict the consequences that may affect him, so as to develop an optimal plan of action that guarantees his best outcome under the circumstances.

Since the beginning of the 20th century, several scholars have theorized different situations to refer to "games" between two parties, including Ernest Zermelo and Emile Borel. Games are defined as all those situations in which two or more individuals are involved in some strategic interaction. However, John von Neumann was the first scholar to develop a general theory to define the different strategic situations that can arise between players: game theory. In 1944 von Neumann and

Oskar Morgenstern published *Theory of Games and Economic Behavior.* The aim of their theory was to identify the solution of a game, i.e., the combination of optimal strategies that should be adopted by each of the players. However, their approach of evaluating behavior was extremely limited in that it could only be applied to a narrow class of strategic circumstances. With the work of John Nash, instead, who distinguished between "non-cooperative" and "cooperative" theoretical models, game theory could be applied in real and in a wide variety of circumstances. The difference between the two types of games lies in whether or not it is possible to enter into binding agreements regarding the strategies to be adopted before the game. If it is possible to enter into such agreements then the games will be cooperative; if, on the other hand, this option is not possible due to the circumstances (e.g., lack of communication) and rules of the game, then the game will be non-cooperative.

Game theory, thus, can help to explain how strategic factors affect the outcome of socioeconomic interactions. Games are, thus, mathematic descriptions of strategic settings, analyzing the different interdependencies that can arise in competing in the same market. The science of strategy is game theory, which studies the best decision-making of independent and competing agents in a strategic environment. Real-world scenarios for circumstances like pricing competition and product releases (among others) may be written out and their consequences predicted using game theory. The game, which serves as a model of an interacting scenario among rational participants, is at the center of game theory. The key to understand game theory is that one player's payout is dependent on the other player's strategy. According to game theory, each participant's actions and choices influence the result. We can use game theory to assist identify the most likely outcomes in any event with two or more players and known payments or measurable effects.

In addition to the normal form, represented by a matrix, it is also possible to provide a graphical representation of the different games. The extensive form, shown in the shape of a "tree", makes it possible to analyze the strategic interaction between the different players. With the extensive form it is also possible to represent the information possessed by the players, describing their knowledge or lack of knowledge of where they are in the game. The goal is to apply game theory to real-life situations to comprehend the many outcomes that businesses might encounter when competing in the same market.

In providing a linear analysis of game theory, it is important to define some often-used terms:

- A game is defined as the set of circumstances that depends on the choices and actions implemented by the players.
- Players are the decision makers within the game.

- A strategy is defined as a complete contingent plan of action for a player in the game: it describes what he does. A player's strategy thus represents what he will do with each information set.
- The node of the tree represents places where something happens in the game.
- The branches represent actions that different players can choose.
- The dashed line represents the player's lack of information about where he is in the game. It connects the decision nodes of an information set. A player, therefore, when he has to make a decision, he cannot be able to indicate which choice the other player has made. The player learns about his choice only after it is made.
- A payoff is the payout a player receives as soon as the game reaches a particular outcome.
- An information set is the information available at a certain point in the game.
- A belief is an assessment about what strategy the other player wants to act.
- A strategy profile is a group of strategies, one for each player.
- A best response is the strategy that brings the player the highest payoff considering his belief.

A perfect information game is one in which all the information sets are singletons, i.e., in which all the players are aware of everything that has occurred before in the game. An imperfect information game is one in which there are two or more decision nodes and at least one player does not know the behavior of the other(s) at one or more of his or her decision nodes. All participants are rational, i.e., individuals who want to maximize their utility and have complete knowledge of the game, its rules, and its consequence. Possible consequences are not only known advance, but they are also unchangeable. Although a game's number of participants is theoretically unlimited, most games are played with only two players. Each player assigns certain preferences, which represent the utility derived from the possible outcomes of the game. This utility turns out to be the payoff of that outcome, such that a rational agent will tend to maximize that payoff.

The game theory aims to represent the behavior of the players in two phases: in the first phase the game will be described, defining the rules and the preferences of the players according to the expected outcomes; the second phase concerns the solution of the game, that is the equilibrium created by the strategies of the players.

1.3) Non-cooperative games

In real life, many markets are composed of a few numbers of firms, and competition between them is defined by strategic considerations: each firm makes decisions (pricing, output, advertising, production, internationalization etc.) while considering or speculating on the behavior of the others. As a result, under an oligopoly, competition may be seen as a non-cooperative game in which the businesses are the players. The term *non-cooperative game theory* refers to a paradigm that treats strategic scenarios as games in the traditional sense. Because the name *game* connotes a scenario in which two or more opponents compete for something, games naturally imply interdependence because one person's best conduct is based on what he or she expects the others to do. Non-cooperative game theory is concerned with how rational economic actors interact with one another to realize their own objectives. The *theory of non-cooperative games* investigates and analyzes conflicts between business entities, i.e., circumstances in which each economic agent's payoffs are dependent not only on his or her own actions but also on the actions of other players. This theory can help to analyze and comprehend multi-personal economic issues with strategic interdependency.

In this class of games, players cannot enter into binding agreements (or communicate), regardless of whether their objectives are conflicting or common and thus may have an interest in agreeing. The strategic game is the most popular non-cooperative game, in which only potential strategies and outcomes that arise from a combination of choices are presented. *Rock-Paper-Scissors* is a simple example of a non-cooperative game in real life. In non-cooperative games, players are incentivized to increase their own gain, often at the expense of the other player's gain.
We also usually connect games with a set of rules that the players must respect. Non-cooperative game theory differs from other models for analyzing strategy in one important way: all of the agents' actions are treated as individual acts in the non-cooperative framework. An individual action is one that a person takes on his or her own, without regard for the other individuals in the strategic context. As a result, it is correct to argue that non-cooperative theories are concerned with individual decision-making in strategic situations. The best option a player can make is based on what he or she believes the other players will do in the game. To create solution concepts, predictions about the outcomes of games, we must examine how individual players make decisions in the face of *strategic uncertainty* (without knowing what other players will do). One issue with non-cooperative theory is that its methods are frequently difficult to apply in real-world situations. Creating a basic model necessitates leaving a significant amount of strategic interaction

unexplained. The objective of non-cooperative games is to understand, analyze and predict the behavior of the opponent.

Each player aims to maximize his or her profit function by selecting an appropriate strategy based on his or her knowledge of the strategy space and profit functions of other players, but with no knowledge of rivals' present strategy. As a result, each player must speculate about his or her opponent's strategy. A *Nash equilibrium* is a required condition or minimal need for a non-cooperative solution to be a realistic forecast of rational player behavior.

1.4) *Nash equilibrium*

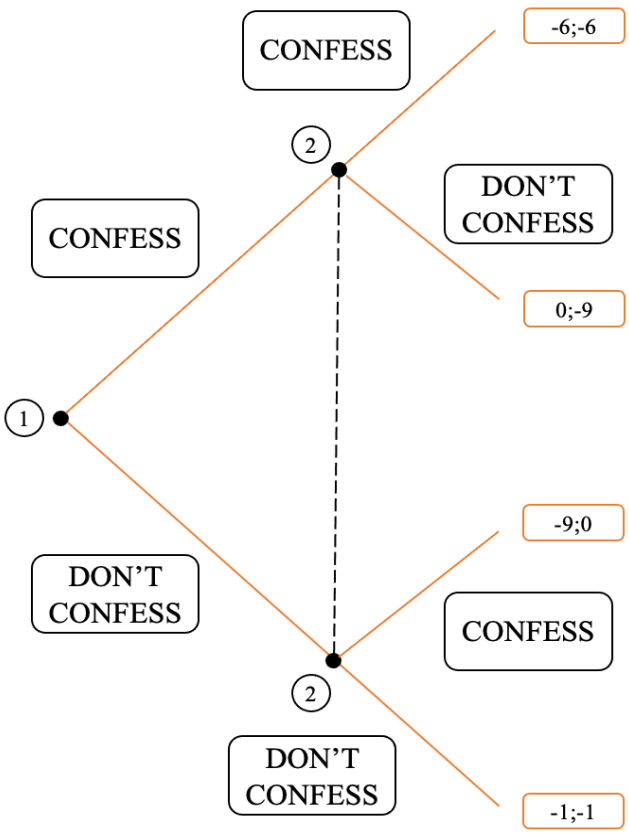
The aim of classical game theory is to identify, based on appropriate choice principles, the optimal strategy of each player in each possible game. An example of an optimal strategy for a player is the dominant strategy. A strategy is said to be dominant if, irrespective of the opponent's strategy, this action leads to the highest payoff. In this case, optimal strategy is determined without worrying about the actions of other players. However, the optimal strategy of a player without a dominant strategy will depend on what the other players do. Indeed, in the case where a player does not have a dominant strategy available, the solution of the game will be found through *Nash equilibrium*. Such an equilibrium is the simplest solution for a non-cooperative game.
When within a strategy profile, considering a two-player game, both strategies of the two players are best responses to each other, then there will be a *Nash equilibrium*. In the different situations that games create, there may be several *Nash equilibria*, as different may be the best responses of the players to the strategies of the opponents, while other games may not even have one. However, if one expands the possibilities for a player to choose strategies based on a probabilistic concept, associating each probability distribution with expected utilities, then every game will always have at least one *Nash equilibrium* (even if with a mixed strategy). There are substantial individual incentives to select dominant strategies regardless of what the opposing player does when dominant strategies exist. As a result, opponents are almost certain to select dominating strategy. With a *Nash equilibrium*, your best option is usually determined by what you expect your competitor to do. *Nash equilibrium* is, thus, a state in which no actor can enhance their payoff by altering their actions unilaterally. It's also known as "no regrets", in the sense that after a decision is taken, the player will have no regrets about the effects of that action. *Nash equilibria*, on the other

hand, do not always imply strategies that the participants as a whole favor, leading to a payoff different to the Pareto efficiency. For example, as we will see, in the *prisoners' dilemma*, the sole *Nash equilibrium* is inefficient, because both parties would be better off if they acted differently.

1.5) The *prisoners' dilemma*

Competing within the same market may not be the right and most cost-effective strategy that two firms can adopt in the long run to maximize their profits. The *prisoners' dilemma* is a well-known and widespread example that illustrates the difference in payoff if players decide to cooperate rather than compete. It is a scenario in which individual decision-makers are always tempted to make choices that result in a less-than-ideal outcome for the group as a whole. In fact, the first "tension" theorized in game theory is the clash between individual and group incentives. The following figure helps to understand the scenario.

Figure 1. The prisoners' dilemma



Source: personal elaboration based on Benmammar, 2004

The game is formulated as follows: two criminals (i.e., the players) are caught by the authorities for a bank crime. However, the authorities have no clear evidence to imprison both players, so they offer them a deal, as they have to convince at least one of them to confess. The players are put in separate rooms, neither of them able to know which strategy the other wants to implement. Each player has to choose, independently and without the possibility of communication, whether to collaborate with the other player or betray him. Thus, there are two strategies players can implement: cooperate with or defect and betray the partner. If they cooperate and keep silent, the authorities will be able to prosecute them on a lesser charge that will result in one year in prison for each of them. If one confesses and the other does not really, the one who testifies will be released, while the other will be sentenced to nine years. On the other hand, if both confess to the crime by betraying the other player, both will go to prison for six years. The game is a representation of how players have an incentive to betray the other, regardless of the strategy they may think the other will implement. If the second player decides to betray the accomplice, the first player will be imprisoned for six years if he admits the crime, otherwise he will have to spend nine years by remaining silent and denying the crime. Furthermore, if the second player decides to cooperate with the accomplice by remaining silent, the first player will only serve one year in jail if he does not betray his partner or go free by confessing to the crime. In this situation, the players have one dominant strategy: confessing to the robbery. It is convenient for each player to betray the partner, since in the first case he would be jailed for six years (instead of nine); in the second case, he would be free (instead of serving a one-year sentence). Both criminals can reduce their overall jail sentence by cooperating and remaining silent (2 years total), but the incentives they face individually will always lead them to defect, resulting in a total jail period of 12 years for the two of them. Thus, in this game the strategy profile (*Don't Confess*, *Don't Confess*) is Pareto efficient, since one cannot improve the condition of one subject without worsening the condition of another. However, the *Nash equilibrium* that is created (*Confess*, *Confess*) is because the players, individually, are inclined to betray the accomplice (best response), not being aware of the other's strategy. Although defection dominates cooperation, and is thus the solution of the game, the latter guarantees better results for both players. Each prisoner faces a dilemma: on one hand, he knows that the only rational strategy is to confess, but on the other hand, he realizes that keeping silent would be beneficial to both. Figure 1 gives a representation of the extended form of the *prisoners' dilemma*: player 1 has to choose whether to cooperate or defect, while player 2 has to make his decision (to confess or not to confess) without knowing what decision 1 has made (the dashed line expresses the lack of information of where player 2 is). The payoffs are in negative form since going to jail implies a negative utility for the two players.

The prisoners' dilemma exemplifies one of the most significant conflicts in strategic settings: the conflict between individual and group goals. The players understand that choosing *Cooperate* rather than *Defect* is in their best interests as a group. Each person, on the other hand, has a personal motivation to choose *Defect* and confess the crime. Individual incentives win because players choose their tactics concurrently and independently. Individual incentives that are too strong might lead to group losses. As a result, both parties are in a worse position than they would have been if they had worked together in the decision-making process.

The *prisoner's dilemma* theory also has several representations in the economic world: taking, for example, an oligopolistic market, the participating firms would have an incentive to reduce production to decrease the supply and so to increase the price. However, firms in such a market prefer to compete and increase output to make more sales.
Despite possibly negative individual incentives, people have devised a variety of strategies for overcoming prisoner's dilemmas and choosing superior group results. Before playing a game, if individuals can communicate, they may decide what strategies they would use and even agree on how the game will be conducted. As a result, communication can help to minimize strategic uncertainty, which consists in the possibility that players' beliefs about the strategies undertaken by others are wrong, by aligning beliefs with actual action.

1.6) Repeated *prisoner's dilemma*

In many strategic scenarios, competitors will encounter repeatedly. Many businesses interact with the same rivals and stakeholders over long periods. More equilibria are feasible when interaction is foreseen to occur repeatedly. There is more to consider with repeated interaction than the short-term payoffs. The decision-maker must also consider the benefits of creating a long-term cooperative partnership. If the long-run gains from cooperating are greater than the short-run gains from not cooperating (assuming the other firm does), it is easier for the firms to recognize whether cooperation has occurred, and the repeated relationship is longer, while the cooperative outcome increases. As a result, repetition encourages collaboration. When a group of rivals interacts often, a wider range of options is usually suitable. When an interaction is expected to be repeated over time or across markets, some sort of cooperation is more likely.

In repeated games, the players implement the *Tit-for-Tat Strategy*, characterized by an individual who responds in kind to an opponent's previous play, cooperating with cooperative opponents and retaliating against uncooperative ones. *Iterated prisoner's dilemma* is a game in which two players play *prisoner's dilemma* many times in a row, remembering their opponent's past actions and changing their strategy appropriately. It emphasizes the importance of human collaboration and trust. If the game has been played precisely *n* times and both players are aware of this, defecting in all rounds is the best option. The *Nash equilibrium* is achieved defecting constantly: it is preferable to defect on the final turn because the opponent will not be able to retaliate afterwards. As a result, both will deviate on the last turn. As a result, the player may as well defect on the second-to-last turn, knowing that the opponent would defect on the last turn regardless of what is done, and so on. The entire number *n* of rounds must be unknown to the participants for cooperation to arise amongst game theoretic rational players. In this situation, "always defect" may not be the most effective strategy. In a repeated game, *prisoner's dilemma* can have cooperative outcome. The best strategy in *iterated prisoner's dilemma* games is to collaborate and play a socially optimal strategy rather than the Nash strategy of the stage game. In this case, both players would go to jail for one year. Punishing players who depart from this cooperative strategy is an important component of indefinitely repeated game designs. Playing a strategy that results in lower payout for both players for the rest of the game might be the trigger strategy. Rather than deciding socially, a player may choose to act selfishly to enhance their personal benefit. In that way, the player who defects would have an outcome of 0, while the other player would go to jail for 9 years. However, in the next game, also the second player would defect, moving away from the social optimal strategy, leading both players to a payoff of 6 years of jail each, instead of 1 year each as it was previously, when the two players were collaborating. In this way, each player is discouraged from moving from the collaborative solution.

1.7) Cooperative games

Players in a game do not necessarily need to have conflicting interests, but may pursue a common goal, at least for the duration of the game, so it is possible that some of them may tend to associate to improve their outcome. Games in which individuals share the same order of preference are called cooperative games, in which the interests of the two players coincide. They can then plan a group strategy to maximize the expected payoff. The concepts used to analyze behavior in models with

joint actions are different from those used in purely non-cooperative situations; this alternative approach is known as *cooperative game theory*, where parties negotiate their relationships. The object of the investigation is thus the coalition formed between players, who then redistribute the maximum payoff obtained as a result of a coordinated strategy (which must be greater than the payoff each player would obtain individually). Thus, the focus of the analysis of cooperative games is the bargaining power of the different players, together with the role each player plays within the coalition. The *Shapley value*, which will be discussed later, is the most widely used tool for distributing the value obtained from a cooperative game among the participants of the coalition. Indeed, in cooperative games, unlike competitive ones, the main goal is not to predict the strategy of the other players, but the payoffs resulting from the common strategies. The players can join to improve their own performance. There must be the opportunity to stipulate agreements (for example, there must not be antitrust regulations or communication barriers) and there must be the ability to enforce such agreements, in the sense that all the players must follow the respect the rules. There are two subclasses to be distinguished:

- in cooperative games without side payments (NTU-Games), players receive a monetary reward;
- in cooperative games with lateral payments (TU-Games), players in a group can repeat the victory in any way they like.

Considering games with side payments, the two players are able to choose the highest joint value for both, and then divide the resulting payoff. In this way they can develop a common, non-individualistic strategy leading to an efficient outcome. As we have seen above, if the two criminals in the *prisoner's dilemma* had the opportunity to cooperate, the optimal solution would have been not to confess, thus going to prison for only one year each, instead of six.

A cooperative game helps to simplify the analysis by moving away from the rigid non-cooperative game theory paradigm that treats all decisions as individual ones. When the payoffs are known, cooperative game theory examines how coalitions, or cooperative organizations, interact. It is a game in which players join coalitions rather than competing individually, and it raises concerns about how groups develop and how payoffs are distributed among participants. Instead of describing the different actions a player can develop in a negotiation situation, sometimes it is easier to merely conceive of the negotiation's result as a collaborative action.

Contracting, alliances, and partnerships do more than just reducing strategic uncertainty (recall that one obstacle of non-cooperative game theory was the strategic uncertainty, that could be minimized

by collaboration). They also help in the resolution of the other two strategic tensions: inefficient coordination and a mismatch of individual and collective objectives. Deliberate contraction, in particular, allows players to avoid inefficient coordination. Contracts can also reduce conflicts between groups and individual incentives to the degree that the presence of third parties affects the game players have to play. In other words, contracts can assist align incentives.
If the deal makes us both better off, we may argue that the coalition adds value. The set of efficient outcomes (we call an outcome efficient if there is no alternative result that makes one player better off without making another player worse off) that maximize the players' joint worth is always the same whenever there is transferable utility. The surplus of an agreement is the difference between the contract's joint value and the contract's joint value in case the players had not reached an agreement.

In cooperative games, particularly with side payments, the problem of payout sharing arises. If a player's added value (that is the value generated by all players in the vertical chain minus the value created by all players except the one in question) exceeds his or her added value, the other players would be better off eliminating that person from the game. There are two types of solutions: set solutions, which involve several allocations, and point solutions, which determine only one allocation. In the first case, one idea for determining individual winnings could be to solve a subgame restricted to the players of each coalition, or to split the winnings equally, ignoring the contribution of individual players. This would result in less effort on the part of the participants, thus leading to a lower payoff. In the second case, on the other hand, as far as point solutions are concerned, power values and indices are often used, i.e., solutions linked to the contribution that individual players make to the coalitions and therefore aimed at identifying the "value" or "power" of each player within the coalitions themselves. The most widely used is the *Shapley value* (1953): this is based on the value that each player is able to add to possible coalitions, i.e., on his marginal contribution. The *Shapley Value* assigns a unique allocation (among the participants) of a total surplus created by the coalition of all players to each cooperative game. The *Shapley value* is defined by a set of desired characteristics. A group of participants collaborates and gains a monetary profit as a result of their efforts. Shapley theorized a value to assume an ultimate distribution of created surplus among the participants, given that certain players contribute more to the coalition than others or have differing bargaining power. The idea is to forecast the relative importance of each player to the total collaboration, and the portion of the total payoff he or she can expect as a reward from the coalition. If all the coalition's players participate, the *Shapley value* is one way to

allocate the entire profits to them. It is a "fair" distribution since it presents some characteristics. The properties of the *Shapley Value* are:

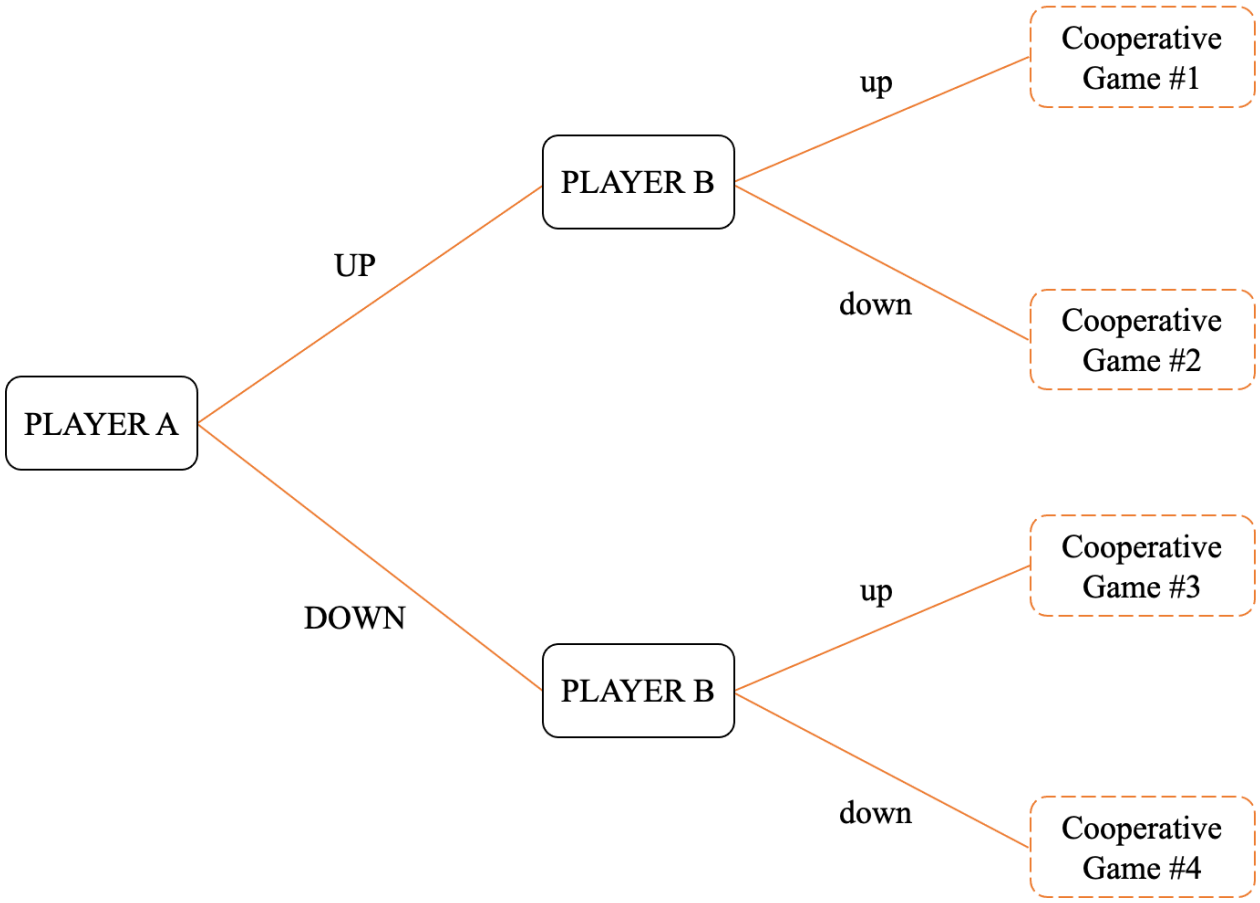
- *efficiency*, the coalition's value is equal to the total of all agents' Shapley values, thus all gains are divided among the agents. Each player receives at least as much as he would have received if he had not participated in the coalition;
- *anonymity*, renaming players differently does not change the reward allocation;
- *symmetry*, players with the same marginal contribution receive the same reward (equal treatment of equals rule);
- *additivity*, if we combine two games, described by two functions, the reward distributed will be the reward from the first plus the reward from the second;
- *null player*, a player with zero marginal contribution will receive zero reward.

1.8) Biform games

Business strategy has used both non-cooperative and cooperative game theory. A *biform game* is a hybrid game model meant to simulate scenarios in which participants have the option of playing one of many business games. In general, a biform game is a non-cooperative game with cooperative games as the outcomes rather than payoffs. In a biform game, participants pick strategies concurrently, similar to a non-cooperative game. As a result, analyzing a biform game necessitates the definition of each player's preferences for various cooperative games.

The non-cooperative model is useful for evaluating corporate strategic decisions, such as whether to join a market, internationalization, outsourcing, what brand to develop, how much capacity to install, the budget to dedicate to R&D. The cooperative model can help answer the fundamental issue of how much influence different players (the stakeholders) have in a particular situation. No player is granted *a priori* price-setting authority in a cooperative game, and all participants are active negotiators. A two-stage game is referred to as a biform game. The first stage is non-cooperative and describes the participants' strategic movements, i.e., how they develop their core capabilities. These strategies have no payoffs as a result. Instead, each strategy profile made in the first stage leads to a cooperative game in the second level. This creates the competitive environment that the participants established in the first step. The second stage's analysis shows the payoffs of the players and indicates how much value each participant will be able to acquire.

Figure 2. An extensive representation of a biform game



Source: personal elaboration based on Brandenburger, 2006

1.9) *Coopetition*

Nowadays, the competitive environment between different firms is becoming increasingly complicated, with the development of dynamics that entail both the need for competitive strategies towards other firms and collaborative strategies to be more competitive in the market, towards other firms, suppliers and consumers. Each of the dyadic interactions in most strategic partnerships is neither purely competitive nor strictly cooperative: they are both competitive and cooperative at the same time. Typically, they are given by a combination of private and common interests between the partners (Gulati, *et al.*, 2000).

Brandenburger and Nalebuff (1996) coined the word *coopetition* in strategy research. *Coopetition* is a term used in management literature to describe a hybrid behavior that combines competition with cooperation. This concept is used to describe the strategic interplay of *coopetitors*, which embodies

the sum of suppliers, customers, and complementors (Afuah, 2000). This term refers to a strategic game of interaction that simulates the whole "interplay domain" in identifying company interdependence. Often, the advantages of co-operating firms are of an informative and economic nature. The former concerns advantages in fast-learning, new technologies, R&D, and information flows, while the latter is achieved through reduced business aggressiveness, reduced competition, suboptimal rent seeking, as well as profit and fund-sharing agreements.

However, recent economic theory has shifted the focus towards collaborative strategies between firms. The way people think about business has shifted dramatically, resulting in a network of strategic interdependence among companies pursuing similar goals and reaping reciprocal advantages. The market becomes a system of interactive and ongoing interactions in which businesses gradually deepen their reciprocal commitments and realize a process of mutual adaptation and collaborative value creation, rather than an atomistic structure focused on immediate transaction (Borg, 1991).

The interdependence of businesses is built on a positive-sum game. Whether value creation is a collaborative process involving two or more partners, or partners participate in a cooperative game with the objective of gaining mutual advantages, the more effective one partner is, the greater the benefits for the other, and vice versa. The importance of collaborative value generation necessitates a mutual dependency game structure, which acts as a powerful antidote to the risk of opportunistic conduct (motivated by the maximization of economic self-interest and occasioned loss of the other partners).

Both value creation and value sharing occur in the coopetitive perspective, resulting in a partial convergent interest structure in which both competitive and cooperative concerns are tightly interconnected. They give birth to a new type of strategic interdependence among companies, the coopetitive value generation system. It highlights the presence of uncertainty related to the competitive pressures of businesses' interdependence, given that it is unknown *ex ante* to what extent one partner would gain from cooperation in comparison to the other.

Firms' interdependence is a source of economic value production as well as a location for economic value sharing in this context, and it is based on a variable-positive-sum game that may result in mutual but not necessarily fair advantages to the partners due to numerous competing forces.

By integrating competition and collaboration, value is created. The two opposing behaviors are seen as a part of a complex strategy environment where both play a key role and interact at the same time and space structure in the context of a coopetitive system where the behavior of two or more firms

is jointly analyzed as they are part of a variable-positive-sum game structure. Rather of incentivizing value appropriation or rent-seeking conduct, coopetition encourages value creation and supports entrepreneurial action (Rumelt, 1987). Following the thesis of Dagnino and Padula (2002), even if a coopetition approach adds more value to the companies engaged in a short period of time than a standard competitive structure, this differential value may be only a small percentage of what is obtained through pure competition. Moreover, given that coopetition is a variable-positive-sum game structure, this coopetitive differential strategic value in comparison to a pure competitive framework may accrue to only one of the two individuals engaged, posing an equality challenge in balancing the collected payoff.

We have analyzed how the coopetition strategy is able to solve some of the conflicts typical of non-cooperative games. However, taking into consideration different collaborative strategies with competitors, including partnerships, alliances, and joint ventures, it is possible to see that these may not always have the incentive to function in the most efficient way. The circumstances might produce “distortions” in which self-interested conduct weakens the purpose of shared production. The distortion in the interaction between the two parties in the partnership game comes from each partner's failure to “internalize” completely the worth of his work. A partner understands that if he tries to increase the firm's profit by one, he will only get half of it. As a result, he is less willing to put up effort. The firm suffers because of the partner's failure to share the benefits of his effort with the rest of the company. In the next chapter, we will analyze some of the possible strategies of collaboration between competing firms, highlighting how these can lead to a better outcome than mere competition.

CHAPTER II

COLLABORATIVE STRATEGIES BETWEEN COMPETING COMPANIES

2.1) The collaborative strategies

Something is changing in the relationship between firms and the marketplace; firms alone can no longer meet the increasingly evolving needs of customers. Recently, many companies have abandoned the idea of remaining independent to develop mutually dependent relationships and meet goals they could not achieve alone. There has been a significant increase in the formation of co-operative relationships by small and large companies alike, taking advantage of the benefits of collaboration. Collaborative relationships between competitors well explain the concept illustrated earlier by game theory: coopetition. Firms that compete in one market but enter into cooperative agreements are those that cooperate to gain a competitive advantage over other firms but continue to compete in the same or other markets (depending on the type of agreement formalized). Different sources of competitive advantage are explored by businesses. Some of them are solely focused on internal expansion, either through greenfield investments (foreign direct investments) or the expansion of existing facilities. Other companies choose external development methods such as interfirm collaboration (joint ventures and alliances), as well as mergers and acquisitions. The second approach, which is particularly characteristic of multinational businesses, is considered as the quickest way for a firm to expand. In other words, the M&A strategy is the only one that can ensure a full and faithful collaboration between two firms.

As we highlighted before, a cooperative strategy is a planning method in which two or more companies collaborate to accomplish a common goal. Several firms use cooperative strategies to increase profits by collaborating with other companies that may no longer be competitors. Firms that lack specific competences, expertise, competitiveness, or resources can greatly benefit from a cooperative strategy since it allows them to obtain these competences through partnerships with companies that have complementary capabilities or assets. It may also make new markets more accessible, as well as provide possibilities for an improving access to capital, mutual synergy and learning. The collaboration might also help cut costs, improve supply chains, decrease competition, increase resources, knowledge, skills, assets, and generate other synergies. Suppliers, customers,

unrelated firms, or even competitors may collaborate. In most cases, this cooperation takes the shape of a strategic partnership or alliance. Collaboration allows companies to pool their resources (rather than duplicating them), learn from one another's strengths, and solve their own weaknesses. Firms that establish cooperative agreements, on the other hand, take on risks such as losing control of operations, losing trade secrets to competitors, and perhaps being exploited by partners (Ketchen, *et al*., 2004).

There are different stages of collaboration between companies. These collaboration strategies depend on the degree of commitment between two firms. The strategies of two competitors who decide to collaborate may be implemented in different ways and for different purposes. Depending on these two decisions, two firms may collaborate through strategic alliances (or partnerships), joint ventures or M&A operations.
The first two strategies involve a partial level of integration. Strategic alliances are in turn subdivided into non-equity or equity partnerships according to the type of agreement that the two companies sign. In the first case, the level of commitment is lower, as the agreement is contractual or even informal, while in the second case the level of commitment is higher, because one or more companies hold minority stakes in the other participants in the agreement. The joint venture strategy, on the other hand, implies the creation of a third, independent company by the two companies that decide to collaborate. It is a shared equity firm in which all participants contribute the same amount of capital. This implies that this independent new company shares resources, capabilities, and risks to gain a competitive advantage. Such collaborative strategies are therefore positioned in the middle between the internal growth of a company (organic) and the faster, but riskier external growth carried out through M&As.

The intensity of the partners' mutual dependence decreases progressively as the object of cooperation shifts from core to non-core activities. Indeed, if the partners' contributions do not substantially influence the economic results of the counterparties, the degree of mutual dependence is rather weak. In case of high risk of opportunism and low measurability of performance, the use of equity forms of cooperation (such as, for instance, joint ventures or equity alliances) represents the best solution to prevent opportunistic behavior. On the contrary, in the hypothesis of low risk of opportunistic behavior and high measurability of performance, the governance of relations is entrusted to the spontaneous adherence to shared norms of behavior that guarantee the fairness of exchanges.

As mentioned above, the objective of collaboration between firms is to obtain competitive advantages, which can be translated into:

- the acquisition of market shares;
- the acquisition of technologies, process innovations and know-how;
- the sharing of investment risk (especially in high-tech and capital-intensive sectors), since the development of new technologies requires large investments and may not be profitable.

In fact, the possibility of sharing the risk through the sharing of activities represents one of the benefits sought in aggregation, especially when the activities to be carried out in a coordinated manner are characterized by a high level of risk due to the innovative content of the project to be developed, the shortness of product life cycles, the instability of the sector due to technological discontinuity or regulatory interventions, and the characteristics of the customers (Depperu, 1996).

In most cases, as we stated before, the M&A's primary aim is therefore to obtain rare resources and skills that the company alone would not be able to obtain. The importance of resources as a creator of competitive advantage is the basis of the *Resource based view theory*. Porter's competitive approach states the necessity of obtaining a competitive advantage, which is distinctive from competitors. The *resource-based view* is an economic approach that places the company's resources, tangible and intangible, as necessary competencies for achieving that competitive advantage. Recently, an increasingly common practice for obtaining distinctive competencies and capabilities is the use of collaborative strategies and in particular M&A. In a dynamic and globalized marketplace, the need for M&A is also seen in gathering the necessary resources: exploiting opportunities for sharing resources and transferring capabilities, for example intellectual capital, for the evolution of the enterprise. The resource-based approach considers resources as the main foundation for the evolution of the firm, understanding as a resource everything that for the organization that owns and uses it can be considered a strength or weakness. The definition of the strategic orientation must be based on the distinctive resources and competences that the enterprise has. The essential function of strategy is, therefore, to identify the best ways of acquiring and integrating resources, and thus to establish the path for the development of distinctive competencies. The strategic issue concerns, firstly, the creation of a wealth of distinctive resources and skills and, secondly, the ability to maximize their competitive potential.

Distinctive capabilities are those activities that an organization is able to perform better than its competitors. Distinctive capability derives from the ability to integrate effectively and efficiently the external conditions, the characteristics of the organization and the purpose and values embodied in

it. Hamit and Schoemaker introduced the concept of strategic assets to define the set of resources and competences specific to the firm, which are scarce and appropriated, difficult to acquire on the market and to imitate, and which confer a competitive advantage on the firm that possesses them. Prahalad and Hamel have taken up the idea of distinctive competences, using the term core competences, on which the firm bases the search for its position of advantage.

2.2) Strategic alliances

In several sectors, companies now choose to establish partnerships and alliances to complement their strategic initiatives and become more competitive in national and international markets. There are two competitive challenges that companies face today due to dynamic and open markets:

- the growth in size (dimensional growth), which translates into the need to explore different geographical markets;
- the race for new opportunities of technological progress, with the creation of strengths and business capabilities to compete successfully in the sectors and markets of the future.

The modern economy, thus, has led companies to face new economic and competitive problems: the need for minimum company size, as the competition that characterizes the modern economy imposes on companies the need to size themselves in such a way as to guarantee a lower incidence of fixed costs in the production of goods and services; constant product innovation by means of structures dedicated to research and development and the availability of sufficient means to be able to access important orders that require large initial investments; greater flexibility in a dynamic and global environment. Vertical organizations, functionally hierarchical, have in some cases proved ineffective, whereas more flexible structures, characterized by horizontal links and interactions between companies, have ensured a more satisfactory performance. The main advantage of a co-operative arrangement, in contrast to the isolated and self-sufficient vertical organizational model, is to pool the knowledge of each aggregated player. Learning by interaction allows not only to improve processes and products according to an incremental logic but also to acquire competences to innovate them. The learning by doing component based on experimentation and imitation of successful cases tends to be replaced by learning processes that are identified with the ability to employ resources in combination, which produce, thanks to this synergy, innovation. Collaboration agreements can help a company lower its costs and/or gain access to desired skills and

competencies. The underlying motivation for companies to start collaborative relationships is the realization that they cannot develop all the skills needed to compete successfully in-house.

Integration between two companies may lead to the definitive loss of autonomy of the members and the birth of a new structure, whose activity is carried out under the unitary direction of a single figure. In this case, defined as concentration, the companies may merge into a single legal entity whose financial, equity and, more generally, production capacities are given by the sum of the capacities of each member company, but with the beneficial effects of economies of scale and synergies. As a viable alternative to the merger strategy, business practice has developed various forms of collaboration between companies that allow an integration of their activities through cooperation agreements which, however, do not affect the autonomy of the parties and still allow the creation of an aggregation capable of reaching an optimal size. Thus, companies decide to cooperate with each other by coordinating their activities to create synergies capable of ensuring greater competitiveness and a sufficient degree of dynamism, without giving up their autonomy. A strategic alliance is a formal agreement between two or more independent enterprises that establishes a strategically relevant collaboration for the realization of different objectives, through the sharing of resources, the sharing of risks and a certain mutual dependence. Such objectives may relate to the creation or maintenance of core capabilities, to competitive advantages, to hold back a competitive threat, to exploit market opportunities. In order to achieve these objectives, alliances may involve also joint marketing activities, joint research and development of new products or technologies.

A strategic alliance then occurs when two rivals or businesses in the same industry collaborate to strengthen a core business strategy, gain a competitive advantage, and prevent competitors from entering a market. It enables firms to do more as a group than they could on their own. It is a practical representation of the coopetition theory.
In several sectors, companies seek to establish strategic alliances in order to integrate their strategies to face competition and consumer demands both at national and international level. Integration between several firms becomes the main way to enable them to jointly offer competitive goods and services.

Strategic alliances are a valuable source of resources, learning, and, as a result, improved core competencies. As a strategy, managers must make rational decisions to acquire certain competencies to have all of the capabilities necessary for success. Businesses seek strategic

partnerships and seek to utilize the competencies of their partner firms. Coordination with alliance partners, on the other hand, is difficult; each member has its own reporting system and metrics, and each offers its own viewpoint on what it wants to give to the alliance and what it wants to get out of it.

Strategic partnerships can have a vertical or horizontal structure. Vertical value chain partnerships occur when partners are active in separate levels of the value chain, whereas horizontal value chain partnerships occur when players are participating in the same level. Due to the increasing specialization in certain fields of production and the value chain, it is possible that a company loses focus on other areas of production process, which are equally important to provide the customer with a competitive product. In fact, such specialization leads to shortcomings in the operational areas upstream and downstream of their own production chain and forces individual companies to seek support and cooperation from other companies that in turn specialize in the areas uncovered. From an organizational point of view, entrusting whole or part of the processes to specialized partners allows, on the one hand, to free up technical, human, and financial resources to be employed in activities that can contribute to enhancing core competencies, on the other hand, to recover efficiency in less critical processes for management, on the development of which the company cannot or does not intend to invest.

In the other hand, to perform commercial activities such as product creation, advertising, or distribution, a horizontal strategic alliance might be created. Horizontal strategic partnerships between firms in an industry will lead to future improvements in manufacturing quality, technology development and exporting. However, the coordination issues and dangers inherent in coalitions are amplified in horizontal partnerships, thus high levels of commitment or performance cannot be assumed.

Companies compete both within and outside of their alliances, even as they try to cooperate. As a cooperative strategy entails significant risks, including poor contract development, misinterpretations of partner firms, competencies, lack of foresight of partners to make complementary resources available, being taken hostage by specific investments associated with the alliance or the partner, and misunderstanding of a partner's strategic intent. To achieve synergy, a company's operational and service divisions must be aligned with one another. Companies cannot achieve alignment around alliances without a clear understanding of the strategy.

The different types of alliance can be:

- non-equity, i.e., contractual, or simply informal collaborative;
- equity, i.e., where one or more companies hold minority shares in the other participants in the agreement.

- Non-equity

A non-equity strategic alliance is a sort of collaboration in which two or more firms form a contractual relationship in which each company agrees to share its resources and knowledge to gain a competitive advantage. In this scenario, collaboration isn't completely equal since each firm will only share the resources that are most convenient for them, which might result in one company losing more than the others.

- Equity

When one firm buys stock in another (partial acquisition) or when each company buys stock in the other (cross-equity transactions), it's called an equity strategic alliance. They build stronger ties with the partner, it involves more risks, but requires more trust and commitment by both parties. In this way, the advantages of a correct and respectful behavior of both parties within the alliance is more ensured that in the non-equity alliances.

In addition to the advantages of collaborative strategies mentioned above, strategic alliances have the benefits of presenting a low initial level of investment, potential local economies advantages and access to local knowledge (if the objective would be to enter other geographical markets), meet better customers' needs. The disadvantages, however, include a low level of trust, incentives and commitment, a relatively low profit potential, lack of control over the delegated operation and difficulties in transferring tacit knowledge.

An alliance does not result in the formation of a new merged entity. Each alliance member keeps its own identity while opting to battle against competitors as a cohesive corporate force. Because partnerships are negotiable, cooperative, and simpler to walk away from than acquisitions, they are less risky. They bring together two companies with similar objectives but distinct skills to collaborate on specific initiatives that benefit both. Strategic partnerships will last as long as the parties are committed to concerted effort, mutual learning, and tight collaboration. The stability of a strategic alliance depends on the quality of collaboration between the partners, their ability to

respond to change by adapting to the evolution of the internal and external environment, and their willingness to renegotiate the agreement if circumstances require it. However, governance is the most commonly mismanaged and under-addressed aspect of alliance formation. The most difficult aspect of alliance governance is addressing the numerous rights, privileges, and duties that must be handled to create a viable, long-term organization.

2.3) Joint Ventures

A joint venture is a cooperative arrangement in which two or more organizations work together to create a new company. A joint venture's participants share decision-making authority, operational control, and any profits earned by the enterprise. When there could be some key advantage in collaborating with another company (shared risk, size of investment, international expansion, etc.) sufficient to justify the extra effort required to create a joint venture, firms form joint ventures rather than undertake the opportunity themselves. When two or more companies want to share their unique strengths, synergies, and skills in particular geographical regions or business tasks, but don't want to lose their individual identities, a joint venture is the best choice. Parties to a joint venture transfer their technical knowledge and expertise while continuing to run their individual businesses in this new organization. This new business is then treated as a separate legal entity. The forming firms put their money and resources, such as know-how, into the venture. These new companies can be created for a limited period, such as for a specific project or a long-term commercial partnership, with control, revenues, and risks shared based on their capital commitment. As a result, it necessitates sophisticated governance systems as well as a substantial time investment from senior management.

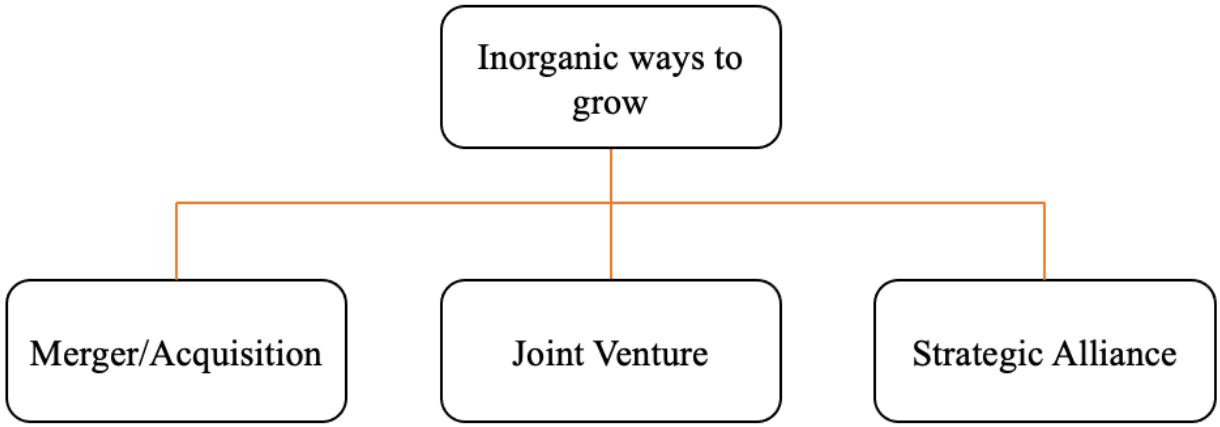
Joint ventures aim at reducing risk, while strategic alliances focus on maximizing reward. When it comes to management, a joint venture has bilateral management. On the contrary, delegated management can be found in a strategic alliance. The contractual agreement must exist in the case of a joint venture while the strategic alliance may be expressly stated or implied between the entities involved.

Such an operation lies in between the other two strategic alliances and the M&A strategy: both partners contribute equally to the profits and costs of the third company, the level of risk is limited

to the investment in the third company as the core business is legally independent, the initial investment is often higher than in a partnership but lower than in an acquisition, both partners have performance incentives, higher control over the operations. However, disadvantages may arise in the possibility of losing proprietary knowledge, one partner may sell its share of the third-party firm to others, potential conflicts between partners and neither of the two original firms has complete control over the operations.

An alliance can also gain several benefits from equity ownership (both with equity alliances and joint ventures): cooperation, coordination, and exclusivity, i.e., those benefits derived from relationships based on specific investments, knowledge sharing and exclusion of competitors from the resources made available to the partner. The higher the importance of these resources, the higher the level of exclusivity required, so the stronger the partnership should be.

Figure 3. Inorganic ways to grow



Source: personal elaboration based on HuConsultancy, 2010

2.4) From alliances to M&A strategies

In the light of the possible information asymmetries, the different bargaining power of the parties involved and the risks that can undermine the relationship (violations of industrial secrets, speculative behavior) and generate costs, the only truly effective coordination mode to govern the transactional interdependence generated by the two companies, but also in business networks, is certainly trust, i.e., the expectation of predictable, correct, and cooperative behavior. Only the

element of trust makes it possible to transform collaboration between competing companies into a competitive advantage. Trust is the result of a cost-benefit analysis, whereby operators choose whether to behave in a cooperative or opportunistic way on the basis of a calculation of economic convenience and, consequently, trust depends on the evaluation of the incentives underlying the cooperative relationship: opportunistic behavior is likely to occur when the remuneration mechanisms within the framework of the collaboration are less satisfactory than those obtainable by adopting behavior not in line with those defined by the agreements. Through the joint development of activities and/or innovation projects, one of the partners may use the knowledge acquired during a cooperative relationship to replace the counterparty at a later point in time and propose itself on the market as its main competitor.

In addition, the interests of individual partners may become more important than the common interests of the group, leading the partner to terminate the cooperation earlier than foreseen in the agreements. Such an early termination is usually caused by the application of new knowledge in other contexts with more advantageous economic incentives.

At the end, opportunistic behavior may manifest itself in participating in the development of the new knowledge not to the full extent of one's capabilities with the intention, however, of obtaining the same benefits as more committed partners.
Divergent goals and different motivations for cooperation, which have the relevant effects of maximum participation of one partner and low commitment of another to the common project, undermine the degree of trust in the relationship and thus the very stability of the network.
The divergence of the partners' objectives depends primarily on the comparison of the joint and individual benefits resulting from the cooperation.
With M&A (unlike with others) there is a relationship of full trust with the other company, so that even tacit knowledge can be disclosed.

Some issues may arise in the coopetitive approach: when trust grows in a cooperative environment, the partners' control procedures are sensibly diminished, which may result in an incentive for one or more partners to behave opportunistically. When mutual dependency is unbalanced, the more vulnerable partner runs the danger of being held back by his peers. This sort of competitive pressure is caused by the alliance's limited relative scope (Khanna, 1998; Khanna, *et al*., 1998) and the partners' unequal learning speed (Hamel, 1991).

The competitive pressure arising from this *"*learning race*"* is connected to the fact that the fastest learner may opt to stop the cooperative partnership once he has met his personal learning objectives, without considering the other participants' desire to continue the relationship. In other cases, the partners may find themselves in a race to discover or exploit as much as possible about each other's assets before leaving the partnership. When the private gains that might accrue to any of the partners after learning from the other partner surpass the alliance's common benefits, such learning races are likely to occur (Gulati, *et al*., 2000).
When there is an unequal learning rate and a small relative scope, the faster learner has a stronger motivation to leave the partnership before his counterpart has realized the full benefits of the alliance.

In addition, the increased costs resulting from the need to control the partner's actions may incur costs, the so-called *transaction costs*, (Coase and Williamson) that undermine the benefits of collaborative arrangements. If a company notices that the partner is not making as much effort as it should and is therefore behaving opportunistically to take advantage of the joint strategy without contributing its own input and resources, the company is forced to invest in monitoring the work of the other company and incentivizing it to comply with the agreement.

2.5) Mergers and Acquisitions

The forms of collaboration analyzed above are distinguished from the forms of concentration that are realized through the merger of several companies into a single legal entity or through the creation of a corporate group, in which the task of managing the group is entrusted to one of them. In these cases, the undertakings create a permanent organizational model, in which the internal links are not based on contractual agreements but are realized by means of the subordination of the members to a single person who runs the group as a whole, with the consequent loss of independence of the member undertakings.

A merger occurs when two firms join forces to establish a new entity. Shareholders of the two businesses must consent to the merger, at which point they swap their shares for shares in the new company. Mergers often involve firms of comparable size and as a result, the merged firm is under equal management, and neither one corporation dominates the other. If they are not, however, one

firm is usually the dominant partner. The smaller business, especially if it has a greater market value, may undertake mergers and acquisitions. While mergers are less common than acquisitions, they are frequently favored due to tax benefits and the avoidance of an acquisition premium (for starting businesses). The resulting firm is usually controlled by the management of both organizations. As a result of mergers, a new organization is formed from two or more organizations of similar scale, with all resources pooled.

Acquisitions, on the other hand, relate to the process of one firm purchasing another. In this case, the buying firm incorporates the acquired firm into its own operations. Acquisitions can be made to eliminate rivalry by absorbing a competitor or to extend the corporate portfolio by keeping the acquired firm as a separate entity under the overall corporate administration. This entails the acquiring firm (the acquirer) making an offer for the other business's shares (the acquiree or target company). Acquisitions can be “friendly”, meaning they are supported by the target company's board of directors, or “unfriendly”, meaning they are opposed by the target company's board of directors, in which case they are referred to as hostile takeovers. Acquisitions have three major functions: they can be used as a market entry strategy, a business portfolio growth tool, or a competitive defensive mechanism.

Shareholders returns and accounting profits are the two major performance indicators that empirical studies use to determine if an M&A strategy has been effective.
Regarding the former, merger and acquisition announcements result in a slight increase in the stock market value. These findings relate only to short-term stock market responses to merger announcements and reflect investors’ expectations rather than actual outcomes, that require several years to be realized.
Regarding the latter, instead, in order to track the actual performance of mergers and acquisitions we need to observe the post-merger performance over several years and compare it with the performance of the firms before the merger. The problem here is to separate the effects of the merger from the multitude of other factors that influence the performance of firms over time.

For an M&A transaction to be successful, it is necessary for both companies to align their strategies, to form a plan so that the structures, resources, employees, and management of both companies cooperate and adapt to the new organizational structure. A pre-merger analysis is therefore necessary to understand in detail whether the target company is the perfect partner to undertake a given strategy and a post-merger analysis to ensure that the integration takes place in the best and

most efficient way. These two documents are called *pre-merger planning* and *post-merger planning*.

- *Pre-merger planning*

Most mergers and acquisitions have bad performance outcomes, which suggests that M&A choices should be founded on a deep understanding of the firms' goals and how the proposed M&A would contribute to that strategy. An accurate and realistic evaluation of the potential effects of the merger or acquisition must be made afterwards. Cost savings from horizontal acquisitions may be identified and quantified. It's harder to find other sources of synergy (such as revenue increase and innovation advantages). Acquiring firms, in general, overestimate the benefits of mergers and acquisitions. Although 60% of mergers met their cost objectives, a quarter of them underestimated cost reductions by at least 25%, while 70% of mergers overestimated revenue synergies (McKinsey, 2004).

- *Post-merger planning*

Because of the difficulties in managing post-merger integration, even the most perfectly planned mergers and acquisitions might fail. Where the potential advantages of mergers and acquisitions are considerable, it appears that the costs and dangers of integration are also great. Managing acquisitions is a rare and difficult organizational skill that must be learned directly and via experience. Acquisition performance increases over time, but not immediately. In the end, effective mergers and acquisitions need the combination of pre-acquisition planning and post-acquisition integration. As a result, the major failing was proceeding with the purchase without a thorough assessment of the post-merger management difficulties. The objective is to figure out if the proposed acquisition would achieve the desired result, and whether the acquired business's resources and procedures are compatible with those of the acquiring firm. An acquisition may help a company rethink its business model, which is one of the most significant roles it can play.

Companies that apply the same commitment, consistency, and professionalism to M&A as they do to other important disciplines, in our experience, are more successful. This necessitates the development of four often-overlooked organizational capabilities:

- conceptually participating in M&A, i.e., creating coordinated business plans;
- controlling the acquirer reputation (creating the value proposition providing real mentorship and distinctive capabilities);

- validating the strategic vision. Companies should supplement traditional financial due diligence with strategic due diligence, which tests the deal's conceptual rationale: assets, capabilities, and relationships that make a buyer the best owner of a specific target company should be explicitly confirmed during strategic diligence;
- managing synergy objectives across the M&A life cycle. The ability to handle M&A in this way transforms it from a tactical need centered on risk management to a strategic competence that provides a competitive advantage that others will find difficult to match (McKinsey, 2013).

2.5.1) M&A motives

1. Managerial motives

   Managerial incentives, both financial and psychological, are more closely linked to a company's size than its profitability. Acquisition is clearly the quickest method to expand. Corporate imitation is another factor that drives impulsive mergers and acquisitions.

2. Financially motivated mergers and acquisitions

   Mergers and acquisitions can produce value for shareholders merely by exploiting stock market misalignments or taking advantage of tax advantages. Stock market values are impacted by psychological variables, including how risk and opportunity are viewed, resulting in businesses being under-valued or over-valued. As a result of better access to information than that accessible on the stock market, or greater analysis of widely available information, it is possible to find and acquire undervalued firms. Acquisitions can help a firm save money on taxes. Because of the worth of its tax credits to the purchaser, an underperforming firm may be an appealing acquisition candidate. A corporation can also migrate to a low-tax jurisdiction by acquiring another company. As a result, the absorbing company's loss carry-forwards can be used to lower the acquiring company's total tax burden. Furthermore, having surplus cash may allow the buyer to lower the tax base and therefore reduce its tax burden, in addition to giving a financial incentive to carry out M&A transactions. To create value, an acquirer might decrease his or her cost of capital by altering a company's capital structure. In a leveraged buyout, a company (or a division of a

company) is acquired with the use of debt. Since debt is cheaper than equity, such acquisitions can produce value.

3. Strategically motivated mergers

   The ability of mergers and acquisitions to enhance the underlying earnings of the firms involved is the primary source of value creation. Different types of mergers and acquisitions may be identified based on the major sources of such value creation:

- horizontal mergers, which can boost profits by combining organizations that compete in the same market, resulting in cost savings and greater market power;
- geographic scope mergers, which are the most common way for corporations to enter international markets. The purchase enables a firm to efficiently achieve minimum threshold in a foreign market and overcome "foreign liabilities", such as a lack of brand recognition, local knowledge, local relationships, and distribution problems;
- vertical mergers, that imply the purchase of a supplier or a customer. Mergers between manufacturers and distributors result in lower transaction costs and more effective supply chain coordination;
- conglomerate mergers, i.e., mergers for diversification. Acquisition is the most common way for businesses to diversify. The alternative, which is the diversification via the establishment of new firms, is too expensive and costly for most businesses. While in-house innovation-based companies can effectively generate new businesses, considerable diversifications are rarely the result of such start-ups. Instead, acquisitions enable businesses to swiftly build a significant presence in a new industry.

All these M&A categories may have the primary objective of acquiring the resources and skills of the target firm, not necessarily the business of the target company itself. Unique resources and skills are those that are not easily transferrable and replicable and that are critical to organizational success. It may be necessary to acquire such resources and capabilities. Small, start-up enterprises are frequently acquired by existing corporations in technology-based sectors to obtain skills in developing technological areas. Acquisition may shorten the tortuous process of internal development of a new organizational capability, but it poses major risks. To begin with, acquisitions are expensive. In addition to the acquisition premium that has to be paid, the targeted capability comes with a mass of additional resources and capabilities that are surplus to requirements of the acquiring company. More importantly, once the acquisition has been made, the acquiring company

must find a way to integrate the acquiree's capabilities with its own. At the end of the chapter, we will analyze more in depth all pros and cons of M&A against strategic alliances.

Figure 4. Representation of M&A's reasons and advantages

<table>
<tr><th>Motivations</th><th>Kind of merger</th><th>Objective</th><th>Advantages</th><th>Synergy</th></tr>
<tr><td rowspan="2">Managerial reasons</td><td></td><td>Size growth</td><td>- Value creation on the stock exchange
- Dealing with overcapacity</td><td rowspan="5">Operating (cost reduction or revenue increase)</td></tr>
<tr><td></td><td>Increase market power</td><td>Both towards suppliers and customers (M&A can lead to oligopoly and monopoly)</td></tr>
<tr><td rowspan="3">Strategic and economic reasons</td><td rowspan="1">Horizontal/vertical or conglomerate merger</td><td>Increase in market share</td><td>- Entering new geographic markets and customer segments (key customer acquisitions can also be possible)
- Improving your image
- Acquisition of recognized brands</td></tr>
<tr><td rowspan="2">Horizontal merger</td><td>Cost advantages</td><td>- Economies of scale
- Learning economies
- Technology and production processes</td></tr>
<tr><td>Technologies</td><td>Makes the product innovative and more competitive</td></tr>
<tr><td></td><td>Vertical merger</td><td>Coordination with the</td><td>Reduced transaction costs and increased supply chain</td><td></td></tr>
</table>

		upstream or downstream supply chain	efficiency	
	Conglomerate merger	Diversification	- Economies of scope - Complementary resources	
Financial reasons		Tax advantages	- Acquisition of tax credits - Favorable jurisdiction - Loss carryforwards	Fiscal
		Speculation	Advantageous prices during negotiation	Financial
		Excess liquidity	Reduction of the taxable amount	
		Reducing the cost of capital and debt	- Better capital structure and cash flow - Increased reputation towards credit institutions - Best financial leverage	
		Finding investments	New shareholders who can contribute risk capital	

Source: personal elaboration

2.5.2) Horizontal mergers: the sources of cost advantage

Horizontal mergers involve the combination of two or more competing firms to form a new entity operating in the same market as the original firms. This type of merger thus involves two or more

firms that, as far as their buyers are concerned, produce substitute products. These companies are in fact direct competitors, since they operate in the same market, offer the same type of products and serve the same customer segment.

Mergers which *"create or strengthen a dominant position as a result of which the effective degree of competition in the common market or in a part of it would be significantly impaired"* (Merger Regulation, EU 4064/89) should be prohibited.

Thus, there is a reduction in costs by eliminating unnecessary duplication and improving the flow of information in the merged organizations, after a well-managed post-merger plan, and a creation of a legal cartel by coordinating activities in a single profit-maximizing enterprise.

The cost drivers are the main factors of a firm's unit costs (cost per unit of production) in comparison to its competitors. The relative relevance of these many cost drivers varies by industry, by company within an industry, and by different activities within a company.

1. Economies of scale

   These have resulted in big businesses dominating most manufacturing industries. They arise when the number of inputs used in a manufacturing process is proportionately increased, resulting in reduced unit costs. The lowest efficient plant size is where most scale economies are exploited (MEPS). There are three main sources of scale economies:

   - relationships between technical inputs and outputs. Increases in output may not always necessitate corresponding increases in input;
   - many resources and activities are "lumpy," meaning they are not available in tiny amounts. As a result, they provide economies of scale by allowing businesses to spread the expenses of these products across higher volumes of output. Market leaders in R&D, new product development, and advertising have substantially lower expenses as a proportion of revenues than their smaller competitors;
   - specialization. As the scope of the operation grows, more task specialization is possible. Breaking down the manufacturing process into separate jobs done by specialized employees using specialized equipment is known as mass production. Learning is aided by division of work.

2. Economies of Learning

   These are based on the know-how gained through experience. The primary distinction between this and economies of scale or scope is that it is not connected to production levels in the same way: it is based on being a qualified specialist in a certain subject,

rather than creating a larger cumulative amount of the same product. There are several ways in which this knowledge advantages in cost reduction:

- by increasing manufacturing efficiency and decreasing waste;
- by increasing R&D synergies and productivity;
- by improving management to assist coordinate and balance the many activities;
- by speeding up the production process.

When learning is measured solely in terms of labor productivity, the data is analyzed using a learning curve. When learning is applied to the entire company and all its operations, an experience curve is used to analyze it.

3. Economies of scope

   The term "economies of scope" refers to savings resulting from the joint production of different products or the pursuit of different objectives with the same production factors (same resources, equipment, know-how).

4. Technology and Design of Process

   Improved processes might result in significant cost savings. New process technologies generally need system-wide modifications in job design, employee incentives, product design, organizational structure, and management controls in order to maximize their full benefits. Companies in the automotive industry pay particular attention to process technology, as downsizing this can lead to faster, more efficient, and lower cost production.

We have therefore analyzed that cost reduction resulting from the strategic motivation behind an M&A (not to forget, among others, the cost advantages resulting from the tax and financial benefits - lower cost of debt). However, such cost reductions are possible thanks to the interaction of the resources, tangible and intangible, made available by the two companies, creating interdependencies that add value to these resources. Such interdependencies are called synergies.

2.6) Synergies

It is important to study what is the potential for interactions between the two businesses that can enhance the competitive advantage for both of them. A synergy occurs when the value of two firms merged into one is greater than the sum of the values of the two firms taken individually:

$$V(AB) > V(A) + V(B)$$

Synergies may arise, in particular, from the sharing of resources (and thus the elimination of duplication) and from the complementarity of specialized resources, the combined use of which increases their usefulness and value.
The opportunity to exploit synergies is a typical and necessary condition for mergers and acquisitions and explains why the price paid to acquire a company is normally higher (sometimes by a lot) than its pre-acquisition value.
The valuation of synergies in the hypothesis of a merger can be carried out using the discounted cash flow method: the merged company is valued and compared with the sum of the values of the two pre-existing companies. The difference obtained can be called the value of synergies.
Achieving synergies means obtaining an effect resulting from the joint action of several factors, which is different from the simple sum of the factors themselves. Such effects can be positive, if the effectiveness of the actions resulting from the combination of the factors is enhanced or negative, if the result of the joint action (M&A) of the different factors is less than the simple sum of them.

Taking advantage of economies of scope does not always imply centralizing resources and skills at the company level. There is a lot of room for firms to pool their resources and transfer capabilities. Firms can create connections and linkages between divisions, business units and businesses, called synergies, to exploit an advantage given the common usage of resources. These connections, according to Porter, are a strong way for business strategy to generate shareholder value. Corporate strategy is not based anymore just on portfolio management: increasingly efficient capital markets limit the ability of a multi-business organization to build value merely by allocating money (Porter, 1987). The economist emphasizes the need of doing a thorough examination of the prospects for knowledge transfer and activity sharing. Porter recommends a rigorous examination of the value chains of various firms in order to discover similarities in activities, resources, and skills in order to identify true synergies. According to Porter, there are two forms of synergy:

- *transferring skills*, business divisions can share organizational skills. Creating value through sharing capabilities necessitates the development of channels for transferring these skills through people exchange and best practice transfer;
- *sharing resources and activities*. Intangible resources, such as brands and proprietary technologies, are most likely to be shared, but may also be shared physical resources, such as plant, buildings, and financing. A comprehensive comparison of the value chains of different firms may be used to assess the compatibility of comparable operations and their potential for combination, which can lead to opportunities for sharing activities. R&D, purchasing, distribution, and sales are all activities that are frequently shared among businesses.

There can be different types of synergies, depending on the resources that increase their value:

- *operating synergies*, which occur most frequently in the case of transactions between parties that operate in activities that are closely linked, technologically, in terms of production or market. Operating synergies can be traced back, on one hand, to differentiation factors, aimed at improving image, after-sales service, production quality and the expansion of the range of services or products, thus exploiting the interdependencies between complementary resources; on the other hand, to cost factors, related to economies of scale and scope (reduction of unit costs).

  A company thus possesses resources that increase its value when combined with the resources of another company. In horizontal mergers, synergies arise from economies of scale (reduction in unit costs) or increased market power (higher profitability of sales); in vertical mergers, synergies can be generated by more complete control of the supply chain.
- *financial synergies*, which relate to cost advantages concerning debt and equity. Diversification also reduces the risk of insolvency, which translates into greater debt capacity or lower debt costs and thus greater economic value produced by the company. Diversification thus reduces the variability of results by diversifying into other sectors. Other financial synergies arise from the use of liquidity: those with surplus cash and few growth opportunities may be induced to incorporate companies with little cash and good investment opportunities, or the reverse. Finally, the resulting company has a greater borrowing capacity and better use of leverage, as well as greater bargaining power *vis-à-vis* credit institutions and banks.

- *tax synergies*, on the other hand, relate to the advantages of being able to change tax jurisdictions, to the possibility of deducting any losses of the acquired company from profits generated in subsequent years, and to the possibility in some cases of taking advantage of increased depreciation, which in turn represents deductible costs.

The method for calculating operational cost synergies is developed in three steps:

- the calculation of the value of the individual companies involved, ignoring the potential effect of synergies, both in estimating future cash flows and in calculating the weighted average cost of capital (WACC), which is used for discounting;
- the calculation of the total value of the company resulting from the combination and deriving from the simple sum of the amounts obtained in the previous point;
- the calculation of the value of the resulting company, considering the effect on cash flows from operational impacts, such as reducing the cost of sales due to economies of scale or increasing the growth rate of turnover due to greater price control (Calori, 2007).

To calculate the other two types of synergies it is necessary to perform the same procedure for financial cash flows.

2.7) Alliances or M&A?

As it becomes more difficult for businesses to generate and sustain growth, they have turned to mergers and acquisitions to improve sales, earnings, and stock prices. Many M&A and alliances strategies fail. A few purchases may succeed, but on average, acquisitions either destroy or add little value to owners, and partnerships generally produce relatively little money for shareholders. The most important reason why the failure is that a solid and designed post-merger plan is made. Moreover, often the management of a company does not take into account all the variables necessary to decide whether it is better to form an alliance or to merge with a competitor. Firms then take over companies they should have partnered with and form alliances with companies they should have purchased, resulting in a jumble of acquisitions and alliances. Firms frequently utilize M&A to gain scale or save costs, and partnerships to expand into new markets, consumer segments, and geographies.

As Dyer, *et al*., (2004) have highlighted, before choosing on a collaboration option, managers must consider three sets of factors: the resources and synergies they target, the marketplace in which they compete, and their collaborative skills. Of course, if a company wants to grow, it must acquire the capacity to execute both acquisitions and alliances. Knowing when to utilize whatever approach may provide a bigger competitive advantage than knowing how to execute it.
The authors differ synergies in three other categories: modular, sequential, and reciprocal. Modular synergies are those created by managing resources independently and pool only the results for greater profits: non-equity alliances are the best strategies to seek this kind of synergy. Sequential synergies require the union of the resources of both companies, since one passes the semi-finished product to the other company who completes it with his own resources. Companies must customize resources to some degree if handovers across them are to be efficient. Then partners need lot of commitment and should sign strict contracts that they closely monitor or engage into equity-based coalitions. In order to exploit reciprocal synergies, companies have to work closely, basing on a process of knowledge-sharing, customizing resources and structures, trusting the partner at all. In this way, M&A is the best collaborating option.

Another aspect to consider is that M&A is an irreversible process with high transaction costs. Companies' growth goals may change in today's dynamic environment, and they may be looking for an alliance where the unwinding work, if necessary, can be done without substantial additional costs or time.
Companies in industries that are undergoing big technical or business transitions are forming partnerships to mitigate the risks that come with uncertainty. In circumstances when the future growth of an industry is very unknown, alliances might be a means to pool resources and investigate new market prospects without committing too much money until the sector's future shape is evident.

The decision between alliances or M&A depends also on the nature of the resources: in fact, more the uniqueness of a resource, more the commitment is needed. If the collaborative strategy involves rare resources, know-how or innovative processes, as also redundant resources, M&A are preferred. Finally, it is important to highlight the need for M&A in mature industries to address the problem of overcapacity. As will be analyzed in more detail in the third chapter regarding the automotive sector, companies operating in overcapacity can incur various costs and losses, so acquiring or merging with a competitor that has not yet reached its maximum capacity can be an efficient strategy to solve this problem.

CHAPTER III

THE AUTOMOTIVE INDUSTRY AND THE STELLANTIS MERGER

3.1) The evolution of the automobile's needs

In terms of history, traditions, crises and developments, profits and income generated, number of employees, alliances and competition, the automotive sector is one of the most interesting and complex manufacturing industries of the last century. The car is the end product of technology, innovation, design, market research, entrepreneurial and planning skills, evolution of materials and production processes. The car industry is the economic engine for several countries: it has been the basis of social classification, from luxury good to industrial product, it has marked the transition from primary to industrial sector, it has been the seat of the proletariat and of social revolts, and still today it is the seat of environmental struggles, of differentiation between luxury and standardization. In recent years, the car has become a commodity, but one for which consumers are increasingly demanding. In fact, consumers' needs are mainly directed towards environmentally sustainable, safe, technological, and low-cost products. This has led manufacturers to look for strategies that will enable them to create an efficient model - hence the relocation of production to countries with low labor costs - and technology, towards the creation of hybrid and electric cars. In order to achieve such cost advantages and up-to-date, cutting-edge innovation, companies have for some years been implementing collaborative strategies between competitors to meet customer needs.

Although the last three years have seen a decline in the automotive sector, it is well known that the industry has been growing in the last decade, especially since the demand for vehicles is closely linked to the performance of the economy in a country. In 2018 and 2019, the automobile sector struggled with slowing economic activity, increased competition, a recession in BRIC countries, and stricter lending standards, all of which limited worldwide demand. Then came the final shot of COVID-19 lockdowns in the first half of 2020, which sent vehicle sales falling to new lows. However, the car sector is rebounding at a faster-than-expected rate, thanks in large part to a consumer preference favoring personal mobility over public and shared transportation and to governments' incentives.

3.2) The automotive sector

The industry's inclination to consolidation has already been acknowledged. The production of automotive is concentrated in the hands of a few extremely large companies in each of the major manufacturing countries, and small independent producers have almost vanished. The source of this tendency is mass production, which entails a significant investment in equipment and technology and is thus only possible for huge companies. Once the approach is implemented, the consequent economies of scale provide the large business with a significant competitive advantage, assuming that the market can absorb the quantity of cars required to justify the investment.
The vehicles involved in the automotive industry are divided into two categories: passenger cars and commercial vehicles. Passenger cars include SUVs, sedans, coupes, and small cars, while commercial vehicles include light trucks, buses, and big transport trucks. The primary reasons boosting global demand for automobiles include urbanization, rising per capita income, and an increase in demand for vehicles in tier 2 and tier 3 cities. Additionally, the growing quality of living, the availability of credit, and the developing component aftermarket are projected to boost the automobile sector forward. To meet the growing demand for technologically sophisticated cars, major automotive OEMs across the world are actively investing in research and development efforts for innovative products.

The automotive industry is considered one of the most important for the national economies of the most important and developed countries as it includes not only car manufacturers, but also a wide variety of companies whose core business is related to manufacturing, design, distribution, marketing, OEM (original equipment manufacturers), high-tech companies of vehicle parts. For example, approximately 11million vehicles were produced in the US in 2019, accounting for 12% of global production. However, it is one of the most important sectors of the national economy, accounting for around 3% of national GDP. In Europe, however, 14.6 million workers are in the auto industry (directly and indirectly), accounting for 6.7% of all EU jobs, the industry is responsible for €398.4 billion of tax revenue for governments across key European markets, and the turnover generated represents more than 8% of the EU's GDP (ACEA, 2021). Over 75% of automotive components nowadays originate from companies like Bosch, Denso, Continental, and Magna. The fundamental competencies of automakers are mostly in the development and communication of the overall brand image, the creation of vehicle designs that reflect this image, the development of the production idea, and final assembly. Most of the work is delegated to their

suppliers. According to industry analysts, these component suppliers are responsible for two-thirds of key innovations. Suppliers such as Bosch, Denso, Magna, ZF, Continental, or Hella commercialized ABS and airbags, distance detectors, automated gearboxes, LED systems, and many other key innovations. Automakers and suppliers are being driven to collaborate to create new technologies to meet with more severe emissions and performance standards (Wanke, 2021).

Over the last decade, motor vehicle sales have risen from almost 75 million in 2010, up 26% from the previous year's negative peak in 2009, to 96 million in 2017, up 28% or 21 million new vehicles, then the market fell to 95.8 million in 2018 and 91.5 million in 2019, of which 67 million are passenger cars. Over the decade, 45% of the contribution to the increase in demand (16.4 million) came from the BRIC countries, 51% from the traditional markets of Western Europe, USA/Canada and Japan and 4% from the rest of the world (AIFA, 2020). From a negative peak in 2009, when there were 61.6 million vehicles, world production recovered immediately the following year, with a growth of 26%. It then increased steadily to reach a record level of 98 million in 2017. In 2018, there was an initial 1% drop, followed by a more marked 5.2% drop in 2019. Asia produces 53.4% of global car production, Europe 23.6%, North America 18.2%, South America 3.6% and Africa 1.2%. Of the 67 million cars produced in 2019, 60.6% are now produced in Asia, including 32% in China and 12.5% in Japan. After the Asian continent, the largest production area is the European Union, with 23.7% of global car production, despite a 5.4% drop in volumes in 2019 as a result of demand weakened by the economic slowdown. Germany is the leading manufacturing country in Europe and third in the world: in 2019, German manufacturers produced more than 16 million cars worldwide (around 5 million within the country), 24% of global car production.

Figure 5. Number of vehicles produced per segment 2010-2019

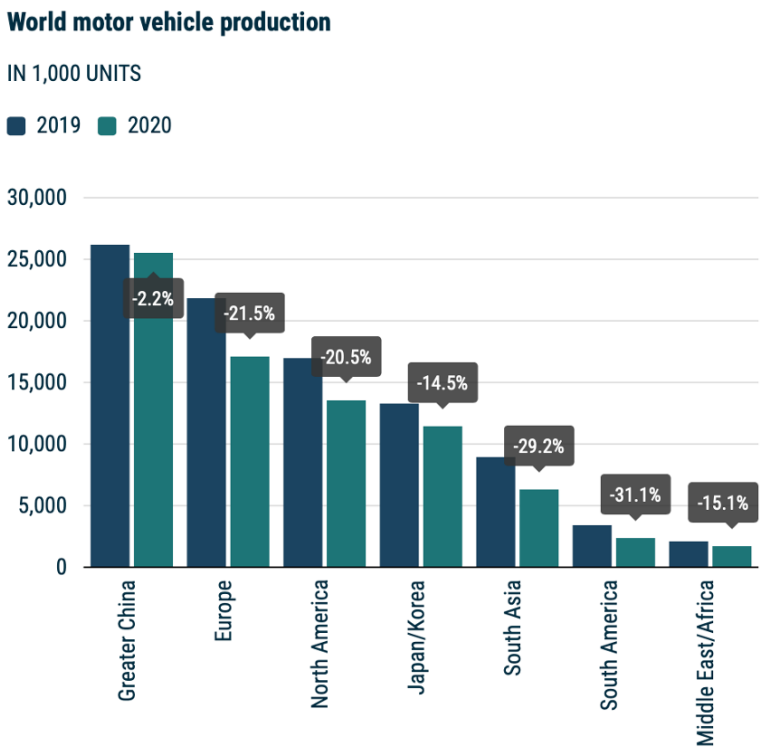
unità - units

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Autovetture / Cars (A)	58.361.216	60.021.188	63.252.301	65.686.262	67.773.223	68.725.172	72.300.999	73.519.186	71.382.929	66.716.532
Veicoli commerciali leggeri / Light commercial vehicles (B) *	14.780.872	15.621.002	16.968.691	17.465.564	17.981.012	18.609.433	19.134.679	19.696.956	20.891.648	20.583.649
Totale autoveicoli leggeri / Total light vehicles (A+B)	**73.142.088**	**75.642.190**	**80.220.992**	**83.151.826**	**85.754.235**	**87.334.605**	**91.435.678**	**93.216.142**	**92.274.577**	**87.300.181**
Autocarri / Trucks (C)	4.194.516	4.206.602	3.943.404	4.108.803	3.991.280	3.645.311	3.750.207	4.448.482	4.609.957	4.494.045
Bus /Buses (D) **	360.011	368.329	367.994	360.752	335.121	337.279	358.425	335.891	311.509	302.650
Totale veicoli industriali / Total Trucks & Buses (C+D)	**4.554.527**	**4.574.931**	**4.311.398**	**4.469.555**	**4.326.401**	**3.982.590**	**4.108.632**	**4.784.373**	**4.921.466**	**4.796.695**
Totale veicoli comm. e industriali / Total commercial vehicles (B+C+D)	**19.335.399**	**20.195.933**	**21.280.089**	**21.935.119**	**22.307.413**	**22.592.023**	**23.243.311**	**24.481.329**	**25.813.114**	**25.380.344**
Totale autoveicoli / Total motor vehicles (A+B+C+D)	**77.696.615**	**80.217.121**	**84.532.390**	**87.621.381**	**90.080.636**	**91.317.195**	**95.544.310**	**98.000.515**	**97.196.043**	**92.096.876**

Source: OICA, 2020

In order to support a market that is essential for the economy of many developed countries, but also mature and one of the hardest hits by the Coronavirus epidemic, governments have decided to boost the automotive industry through government subsidies, especially for new hybrid and electric vehicles. To promote the resilience of the manufacturing sector and enable recovery, countries have adopted instruments to stimulate demand, through incentive schemes to encourage the purchase of new vehicles, favoring electric mobility and the scrapping of older vehicles. In 2020, the automotive industry experienced the greatest crisis in its history, with a 16% drop in the number of cars produced (around 78 million) and a 12% drop in sales. Europe, which together accounts for around 23% of global production, recorded an average drop of more than 21%. All major producing countries recorded a sharp decline of between 11% and almost 40%. However, given the increase in sales at the end of 2020 and in the first half of 2021, scholars believe that pre-COVID-19 levels can be reached by the end of 2023, with a growth rate of 8% per year (Forbes, 2021).

Figure 6. World motor vehicle production



Source: IHS MARKIT, 2021

As of 2019, the largest automotive group was Volkswagen, which, with its core brands of Audi, Volkswagen, Lamborghini, Porsche, Seat and Skoda, held around 12% of the market, while Toyota,

in second place, held 11.6%. This was followed by the Renault group allied with Nissan and Mitsubishi, with a market share of 11%. In projection, the Stellantis group, fourth, held 8.5% (Car Industry Analysis, 2020). In 2020, Toyota overtook Volkswagen as the biggest carmaker in terms of the number of vehicles produced. The decline in sales in Europe due to the Coronavirus pandemic, where Volkswagen is most active, certainly contributed to this result, while the USA and Asia, where Toyota has a larger market share, saw a smaller decline. Toyota closed 2020 at around 9.528 million vehicles, 11.3% less than the previous year. But more than VW: for a drop of 15.2%, they stopped at 9.305 million. Behind them, the French-Japanese alliance of Renault-Nissan-Mitsubishi, with 7.8 million vehicles sold and a sharp drop from the 10.16 million sold in 2019. The duel at the top between Toyota and Volkswagen is therefore destined to last. On the horizon of global scenarios, the challenge for third place should be considered, given that it will be played out by the Renault-Nissan alliance and the new automotive group, Stellantis, the result of the merger between PSA and FCA, which has been operating officially on the market since the beginning of January. In fact, the Stellantis group, analyzing the 2019 data and taking the sum of the cars produced by PSA and FCA as a simple value, would be in fourth place. In 2020, however, the COVID-19 crisis has significantly contracted the production of the two carmakers, so that the new group would be in sixth place with 6.210 million vehicles produced, behind even GM and Hyundai. Most of Stellantis' decline in 2020 was due to PSA, which contracted by 27% but still delivered 2.52 million cars, or 41% of the new group's total in 2020. FCA's volume fell 18% with a total of 3.68 million units sold. FCA's performance was in line with the market average and the large groups, especially strong in the US market. However, as mentioned above, this value is a simple summation of the results produced by the two companies taken separately. The merger could lead to different results, thanks to the exploitation of synergies and market shares in different geographical areas.

Figure 7. Number of vehicles produced per region

migliaia di unità	2007 anno record pre-crisi	2009 picco negativo crisi	2018	2019	var% 19/09	var% 19/18	sh% 2009	sh% 2019
MONDO	73.084	61.656	97.196	92.097	49,4	-5,2	100,0	100,0
EUROPA	22.852	17.058	22.677	21.748	27,5	-4,1	27,7	23,6
UE	19.725	15.290	19.157	18.271	19,5	-4,6	24,8	19,8
UE15	*16.691*	*12.243*	*14.809*	*13.896*	*13,5*	*-6,2*	*19,9*	*15,1*
UE NUOVI	*3.034*	*3.047*	*4.348*	*4.375*	*43,6*	*0,6*	*4,9*	*4,8*
RUSSIA	1.660	725	1.769	1.720	137,2	-2,8	1,2	1,9
TURCHIA	1.099	870	1.550	1.461	68,0	-5,7	1,4	1,6
ALTRI EUROPA	367	173	201	296	71,0	47,5	0,3	0,3
NORD AMERICA	15.426	8.762	17.424	16.779	91,5	-3,7	14,2	18,2
Canada	*2.579*	*1.491*	*2.026*	*1.917*	*28,5*	*-5,4*	*2,4*	*2,1*
Messico	*2.095*	*1.561*	*4.101*	*3.989*	*155,5*	*-2,7*	*2,5*	*4,3*
USA	*10.752*	*5.710*	*11.298*	*10.874*	*90,4*	*-3,8*	*9,3*	*11,8*
SUD AMERICA	3.547	3.663	3.377	3.279	-10,5	-2,9	5,9	3,6
Argentina	*545*	*513*	*467*	*315*	*-38,6*	*-32,5*	0,8	0,3
Brasile	*2.825*	*3.076*	*2.881*	*2.945*	*-4,3*	*2,2*	5,0	3,2
ASIA-OCEANIA	30.715	31.760	52.594	49.162	54,8	-6,5	51,5	53,4
Cina	*8.882*	*13.791*	*27.809*	*25.721*	*86,5*	*-7,5*	22,4	27,9
Giappone	*11.596*	*7.934*	*9.730*	*9.684*	*22,1*	*-0,5*	12,9	10,5
India	*2.254*	*2.642*	*5.174*	*4.516*	*70,9*	*-12,7*	4,3	4,9
Sud Corea	*4.086*	*3.513*	*4.029*	*3.951*	*12,5*	*-1,9*	5,7	4,3
Thailandia	*1.287*	*999*	*2.160*	*2.005*	*100,7*	*-7,2*	1,6	2,2
Iran	*997*	*1.394*	*1.126*	*780*	*-44,0*	*-30,7*	2,3	0,8
AFRICA	545	413	1.123	1.128	173,0	0,4	0,7	1,2
BRIC	15.622	20.234	37.633	34.901	72,5	-7,3	32,8	37,9

Source: ANFIA – OICA, 2021

Competitiveness in the sector is also intensified by the high fixed costs associated with assembly and low replacement costs when changing from one model to another.

In recent times, companies in the sector have been facing globalization to be competitive in the global car market. As a result, many historic brands have joined together to achieve economies of scale or have been acquired by larger groups.

Relationships between companies, both horizontally and along the production chain, have often had unexpected consequences. The main reason that leads to market concentration is economic and strategic, as it allows expansion into previously unattainable markets or the acquisition and enrichment of new knowledge and skills in certain segments. In addition, the opportunity to use the same components on different cars or the possibility of using the plants of one brand without setting up new ones, lead to advantageous economies of scale, and through standardization, costs are reduced. The future scenario will be characterized by a few large manufacturers because only a company of a certain size will be able to survive and compete with global competition. The destiny

of the automotive sector will be characterized by agreements between car manufacturers, but also by mergers that will increase the concentration of the sector.

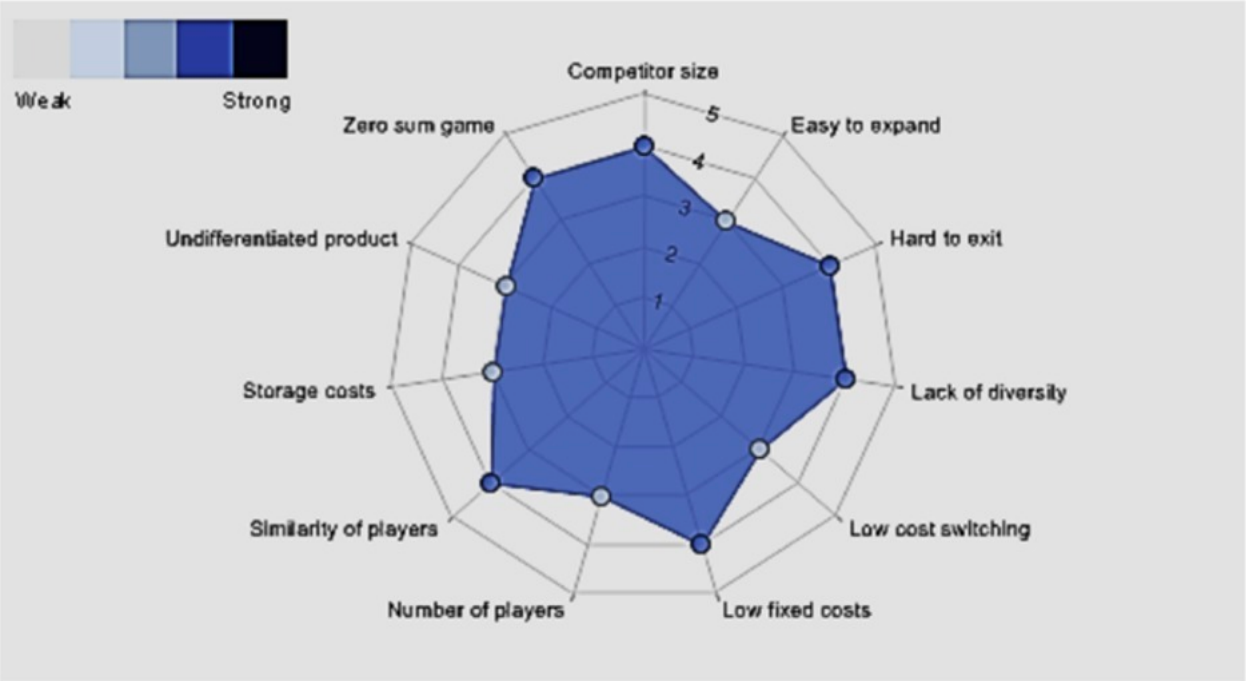
3.3) Porter's Five Forces in the automotive industry

It is important to analyze the competitive environment in which a carmaker, such as Stellantis, operates to examine possible strategies in more detail. We can therefore use the tool theorized by Porter to carry out an accurate analysis of the automotive sector.

1) Competitive rivalry (internal competition)

Although there are many opportunities for the creation of innovative products, the automotive market is still dominated by a few large companies. However, these companies compete aggressively in the market with different brands and products to gain market shares in different national markets. Moreover, the high exit barriers in the industry tend to make companies that would rather close their business, compete. Price, design, quality, technology, consumer safety, and a variety of other factors all play a role in how brands compete. Overall, the car industry is a highly competitive force. To increase sales and client base, automakers are investing more in research and development, digitization, marketing, and total consumer experience. The degree of competition among top companies is high, whether in the premium category or in the compact vehicle sector and SUVs. Low product differentiation promotes competition. Stellantis will therefore have to compete with other automotive groups, either larger (VW) or with more technologically advanced products (Toyota). In this case, competitors are able to offer more innovative products at a lower price. The aim of the merger was therefore to increase size, improve production capacity, strengthen two already strong brands, such as FCA and PSA, and invest heavily in R&D: in this way, the two companies, by merging, can maximize their competitive advantages and exploit them exponentially.

Figure 8. The drivers of internal competition in the automotive industry in Europe (2014)



Source: Marketline, 2014

The chart shows the core drivers for the internal competition in the automotive industry in Europe. The main factors influencing the vehicle market are the size of competitors, barriers to exit, increasing product standardization and a similarity of the few existing car manufacturers in the market, which target the same segment.

2) Low threat of new entrants

The industry has significant barriers to entry and exit, which invites fewer and fewer companies to enter the market, both because of the investment needed to create the product and brand, to create economies of scale, to innovate, to deal with suppliers and distributors, and because of the costs needed to exit the industry itself, which is characterized by high sunk costs. For an automobile company to succeed, it must have access to resources such as technology and cash. Furthermore, given the economic importance of the automotive industry and the need for car manufacturers for capital and employment, companies in this sector are often put under pressure to keep underperforming divisions open. Finally, cars and commercial vehicles are very branded products, so a new entrant has a more difficult time with reputation and customer loyalty. In addition to

having to invest heavily in economies of scale, plants and supplier relationships, a potential entrant needs a highly innovative product to enter the automotive industry, as Tesla has done.

3) Low threat of substitutes

As explained above, the car has gone from being a luxury and social status product to a product necessary for many people's lives. They allow flexibility and efficiency compared to public transport, low cost compared to trains and planes, while greater comfort, safety and longer distances compared to bicycles.

4) Moderate Bargaining Power of Customers

Although switching costs are not present in this market, a vehicle is a rarely purchased product with a long lifetime, so a customer does not tend to change brands frequently. Moreover, the low threat of substitutes does not allow the individual customer to have viable alternatives. However, the advent of globalization and the increasing sharing of personal ideas about products have led manufacturing companies to focus on the demands of customers who, by joining forces, are increasingly asking the market for low-carbon, environmentally friendly, price and safety-conscious products.

5) Moderate Bargaining Power of suppliers

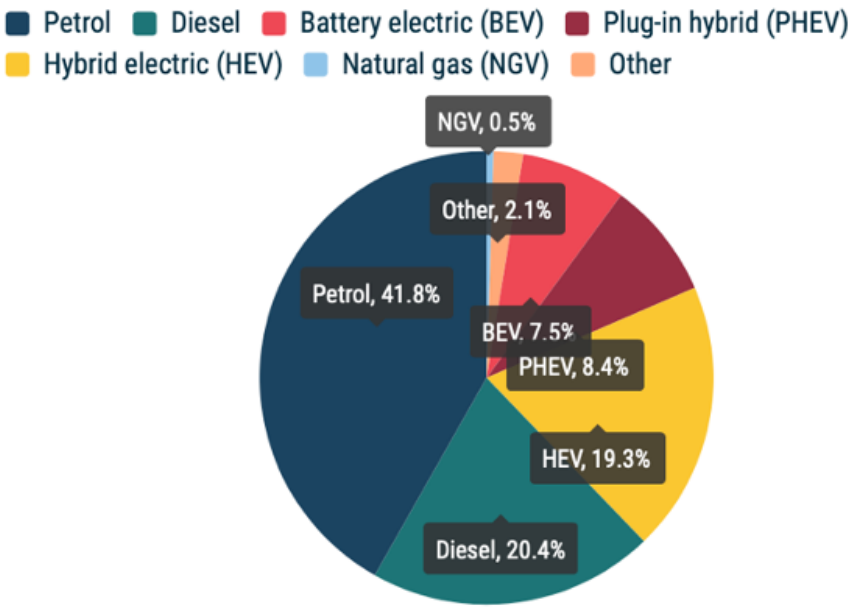
Due to the importance of some specific car components for the technological realization of a product, many automotive companies enter into agreements with the suppliers of these components. Hence, it is difficult for component suppliers to change car manufacturers. While certain innovative products need the use of particular raw materials, technological hardware, and software, the majority of the fundamental materials are easily accessible. Due to the vast number of suppliers, automotive manufacturers have a cheap switching cost. Furthermore, suppliers often receive a little profit per unit in high volumes, and the automotive company may be one of their most important clients, which suppliers are afraid of losing. Crucial in the automotive industry is the ability to attract investment. For this reason, relationships with credit suppliers, including banks, investment funds and credit institutions, are very important to develop a competitive product. The highly capital-intensive industry has companies with a higher-than-normal debt-to-equity ratio (D/E), i.e., the ability of a company to meet its obligations, indicating that companies prefer to be financed by investors and not by equity.

3.4) Major trends in the automotive industry

The automobile industry is expected to develop because of the strict requirements to decrease CO2 emissions. Consumers are becoming increasingly conscious of the environmental impact of automobile emissions. As a result, electric cars are given more consideration than traditional automobiles. Government incentives, such as tax breaks, to encourage the use of electric cars have been actively evaluated. The second quarter of 2021 clearly showed the new trend that is developing worldwide, also as a result of government incentives: the development of electric and hybrid cars. There are currently three main types of alternatively powered vehicles compared to diesel and petrol: electric, hybrid and plug-in hybrid vehicles. Battery electric vehicles are powered exclusively by electricity stored in the battery, recharged through an external source. Hybrid vehicles have an internal combustion engine (like diesel and petrol vehicles) and an electric engine: the battery of the electric engine is powered by both the combustion engine and the braking energy recovery system. In hybrid vehicles there is no plug for recharging, only the petrol filler. The electric engine is therefore an aid to the combustion engine, not a substitute for it. Finally, plug-in hybrid vehicles have a larger battery that is recharged by an external energy source (as well as benefiting from regenerative braking) and can travel as a 'pure' electric or as a hybrid: when travelling as an electric, energy comes only from the battery, and when the battery charge is depleted, the combustion engine, which can be powered by petrol or diesel, automatically starts up. This type of vehicle therefore has both an external battery charging plug and a petrol filler neck.
As regards the latest trends, according to a study conducted by ACEA - Driving mobility for Europe (European Automobile Manufacturers' Association), which represents the major automotive groups in Europe, including BMW, Ford, Renault, Hyundai, Stellantis, VW, the production of electric vehicles in the European Union continued to rise in the second quarter of 2021. Battery electric vehicles increased their market share from 3.5 % in the second quarter of 2020 to 7.5 % this year, while plug-in hybrids accounted for 8.4 % of all new vehicles sold. Hybrid car registrations grew significantly over this three-month period, accounting for 19.3% of all EU vehicle registrations. At the same time, traditional fuel types (petrol and diesel) lost market share, accounting for 62.2 % of new car sales. Registrations of battery electric vehicles (BEVs) increased by 231.6% in the second quarter of this year, reaching 210,298 vehicles. The second quarter of 2021 was even better for plug-in hybrid electric cars (PHEVs), with registrations rising by 255.8% to 235,730 units. With 21,647 plug-in cars registered in the second quarter, a rise of 659.3% year over year, Italy was once

again among the fastest-growing markets. Hybrid electric vehicles (HEVs) remained the dominant alternatively powered vehicle type in the EU during Q2, with 541,162 units sold (ACEA, 2021).

Figure 9. Automotive market share per vehicle power supply (Q2 2021)



Source: ACEA - European Automobile Manufacturers' Association, 2021

On the electric side, Tesla became the world's leading manufacturer in 2019: it sold 367,000 cars worldwide (including 300,000 Model 3s, a third of which were delivered in Europe), up 50% on the previous year. The followers are Chinese brands: BYD (219,000 cars), BAIC and SAIC. It made little sense for traditional automakers to go all-in on electric cars when BEVs and PHEVs accounted for only 2.4% and 3.5% of the European market in FY18 and FY19, respectively, and less than 2% of the US market. Those percentages have since risen, as expected, even though the COVID-19 epidemic and government incentive measures aimed at encouraging zero-emission cars have accelerated the EV growth vector (Société Generale, 2021). The automobile industry is Europe's greatest private contributor to innovation, investing €62 billion in R&D each year, accounting for 33% of overall EU investment (ACEA, 2021).

3.4.1) The consolidation trend

Costs might be prohibitively high for automakers that want to develop their own products, skills, or technology. Today the vehicle's demand is still based on internal combustion cars and trucks, despite the fact that the automotive industry's future may be built on a transition to electric powertrains and autonomous cars with shared ownership opportunities. For that reason, several OEMs' R&D costs have effectively more than doubled in the previous few years. Partnerships between automotive companies that want to share the responsibility of product and capability development are becoming more common. Joint ventures and strategic partnerships are frequent forms of these agreements. Companies are increasingly seeking to M&A to assist fill in the gaps and gain immediate access to the technology they require, in addition to in-house development. Full mergers (the greatest degree of partnership) are expected to continue to be utilized to build larger firms with stronger balance sheets that can better deal with capital investment requirements, according to an internal Deloitte-UK report released in 2021.

The main trend of the new millennium in the automotive industry is consolidation. All car manufacturers are forming collaboration agreements, partnerships, strategic equity and non-equity alliances and M&As to obtain different benefits, such as bringing in new resources and know-how, penetrating new markets, having different suppliers and distributors, obtaining the latest technology and exploiting other car manufacturers' facilities, copying the production line, standardizing the product and achieving cost savings.

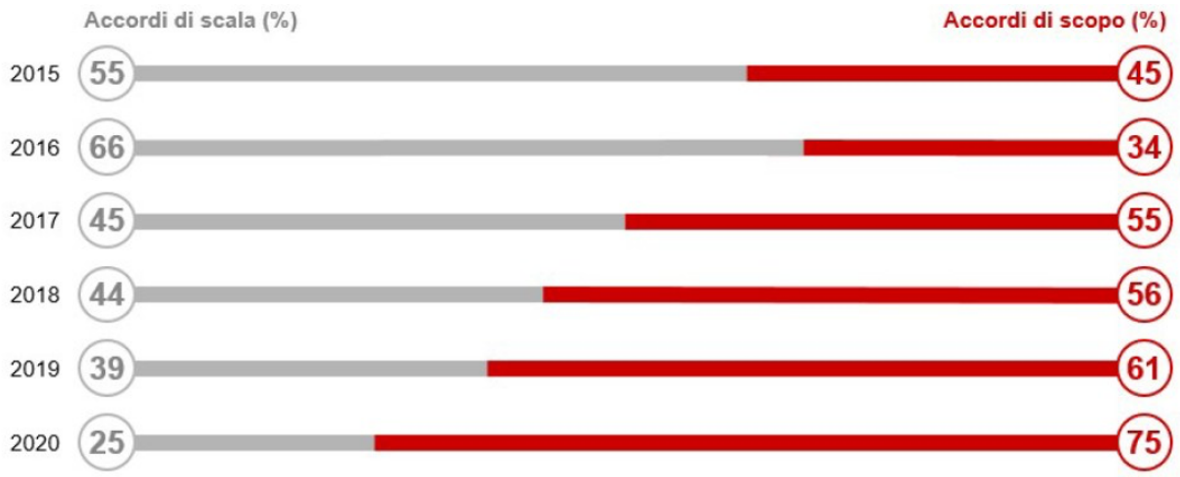
Various collaborations have been implemented for different reasons. With the aim of gaining market share in the international area, GM and Daewoo operate in Korea and Asia, while PSA and Dongfeng in the Chinese market. For the development of technology, instead, Foxconn-Stellantis are present in China to produce electric cars, Renault-Nissan made joint projects (Smart forfour and Renault Twingo) with DaimlerMercedes, while Daimler-Geely and Renault-Geely are collaborating for the production of electric cars. Among the Equity Alliances, mention should be made of Renault-Nissan-Mitsubishi: created in 1999 between Renault and Nissan and expanded in 2016 with the entry of Mitsubishi Motors, it sees a delicate structure of cross-shareholdings. The Alliance is a company with its registered office in Amsterdam; the Renault group owns 40% of the shares, Nissan another 40% and Mitsubishi 20%. In addition, Nissan owns 15% of the shares in Renault and 34% in Mitsubishi. In turn, Renault owns 43.4% of Nissan's shares. It is the third largest group in the world before the establishment of Stellantis. From an industrial point of view, the sharing of platforms and engines is crucial. In the last year, the strategic plan has changed, abandoning the

view of absolute volumes, and moving instead towards production rationalization (a model will be developed by a group and transported to others), geography (Renault in Europe, South America and North Africa, Nissan in Japan, North America and China, Mitsubishi in the rest of Asia) and technology (Nissan autonomous driving, Renault connected cars and electric platforms, Mitsubishi medium and large plug-in hybrid vehicles). Other strategic alliance with equity sharing is Toyota with Suzuki and Subaru for sharing hybrid and electric platforms, engines, investments on autonomous driving. Non-equity alliances include Ford-VW with two objectives: commercial vehicles and electric mobility, plus research into autonomous driving. Among the joint ventures, Toyota and BMW are developing a sports car and hydrogen-powered cars.

Past mergers that only lasted a few years due to poor pre- and post-integration planning include DaimlerChrysler, Fiat-GM and BMW-Rover. Mergers that were only idealized but never materialized included Volvo-Renault (skipped because the agreements were too favorable to the French state) and FCA-Renault. Recently, the automotive M&A sector from 2015 to 2019 grew from $32 billion to $75 billion. The number of transactions carried out by strategic investors (those with a volume of more than 100 million) grew by 40% and the value by 50%, with an average of 1.4 billion per deal. In 2019, in the automotive sector, there were 54 transactions above USD 100 million, while in 2020, after a sudden drop (especially in the second quarter, with only 6 transactions), there were 35 transactions, for a total volume of USD 25.8 billion for the whole year. M&A activity is mainly driven by component manufacturers. Their share of the total number of deals ranges from 45% in China to 73% in the Americas. Only in China car manufacturers have a share comparable to that of component manufacturers. However, it is noteworthy that the focus of M&A in the automotive sector between both automakers and suppliers has changed. Whereas in 2016, two-thirds of M&A deals were aimed at achieving economies of scale, in 2019 it was only 39%. On the other hand, M&As aimed at increasing economies of scope are on the rise, accounting for 61% in 2019 and even 75% in 2020 (Bain&Company, 2021). Manufacturers, in particular, are using the leverage of scope acquisitions to expand and acquire additional skills. This trend confirms how important it is becoming to acquire new skills and enter new areas of business. Companies are reacting to the profound changes taking place in the mobility sector: customer centricity, autonomous/assisted driving, connectivity, electrification, shared mobility.

Well-established car manufacturers are now collaborating with Silicon Valley giants, European companies are collaborating with Chinese “climbers”, and billion-dollar companies are collaborating with start-ups. Even collaboration between competitors is no longer taboo, driven by the need to achieve economies of scale and share research and development expenses and the associated strategic risks.

Figure 10. M&A aims' trends



Source: Bain&Company, 2021

This is demonstrated by the history of one of the largest and most historic automotive groups in history: FIAT. The company was founded in 1899 and later became a worldwide holding company. From the post-war economic boom until the 1980s, FIAT was the largest car manufacturer in Europe, and the third largest in the world behind General Motors Co. and Ford Motor Company. In the new millennium Fiat starts some strategic alliances with other groups, mainly to overcome the crisis period by entering new markets. It began a partnership with GM in 2000, which ended five years later with a significant economic loss for both brands. In 2009, the Group acquired 20% of Chrysler, which was in deep crisis following the difficulties encountered in the United States in those years. In 2014, Chrysler Group became a subsidiary of Fiat, which changed its name to FCA after acquiring the entire US shareholding. At this moment, Fiat penetrates the North American market and is the seventh largest car manufacturer in the world. However, CEO Sergio Marchionne still considers the Italian-American company to be small compared to other large automotive groups and believes that "*the consolidation process is absolutely inevitable*" (2015). He tried to take over Opel without success, then attempted a merger with GM, but failed. He then decided to launch a takeover bid, but FCA, in debt, did not have $60 billion to acquire the Detroit-based company. Marchionne was a leader who brought Fiat back among the world's leading carmakers, but he always favored the American market over the European one. His successor, Michael Manley, on the other hand, immediately sought a partner in Europe. In May 2019, the perfect candidate seemed to be Renault, with whom he would form the third largest automotive group by cars produced. A merger plan was presented, which envisaged the creation of a new company, based in Amsterdam,

with 50% held by FCA shareholders, the other 50% by Renault partners (including Nissan and the French government, both with 15% stake of the French manufacturer). The initial project did not include Nissan-Mitsubishi, of which Renault is a 43% shareholder, but has always rejected a full merger with the French). However, if the entire Renault-Nissan-Mitsubishi group had participated in the merger, the world's largest car group would have been born, with around 15 million cars produced per year, against 10 million made by Toyota and VW). However, both the French government and its partner Nissan were opposed to the merger and FCA withdrew its offer, despite appearing to have already agreed. In October of the same year, FCA began negotiations with PSA, the French group that owns the Peugeot, Citroen, DS, Opel and Vauxhall brands. The merger would not take place until January 2021, with the birth of Stellantis, the world's fourth largest automotive group.

3.5) The Stellantis birth

For ten years FCA has been looking for a partner with whom to build an automotive group capable of competing with the size and innovation of VW and Toyota. At the same time, however, John Elkann, chairman of the Italian-American company, wanted to maintain a strong position in the new group, so FCA had to first strengthen itself on the world stage and clear its debts. Once these objectives had been achieved, it was possible to negotiate on an equal footing with other competitors. After GM's rejection, considered the perfect partner for production and geographic expansion, Marchionne decided to negotiate with VW, which was only interested in Alfa Romeo, with Geely, the Asian partner for expansion in China, and finally with Peugeot, with whom FCA had created a joint venture for commercial vehicles years ago. However, Peugeot acquired Opel and Marchionne rejected the possibility of a merger on the grounds that the new PSA group was too dependent on the European economy. The CEO considered the European market to be too competitive, mature and saturated, while he saw opportunities for expansion in the Asian and American markets. Meanwhile, FCA is forging technological alliances, first with Google, then with Intel-BMW for the development of autonomous driving.

"*Consolidation will be a problem for my successor*," Marchionne had said. And so, the new CEO of FCA, Mike Manley manages to enter into a merger agreement with the PSA group on 31 October 2019. The consolidation will result in an industry leader with the management, expertise, resources, and scale to capitalize on the possibilities provided by the new era of sustainable mobility. The

Combined Group will have a well-balanced and lucrative worldwide presence, with a highly complementary and iconic brand portfolio spanning all important vehicle categories, from luxury, premium, and mainstream passenger cars to SUVs and light commercial vehicles.

"*We are making money in the Americas; we are making money in Europe. We have the technologies, we have the products, we have the people, we have the execution capability. So, I think the starting point of the Stellantis Group is a point of confidence, a point of a strong foundation to do great things in the future*" stated the Stellantis CEO Carlos Tavares on the 19th of January 2021. Regarding the mission that the CEO of the new company wants to highlight, emphasis is placed on volume growth, production efficiency and above all innovation, to create a new, unique and efficient product for the consumer.

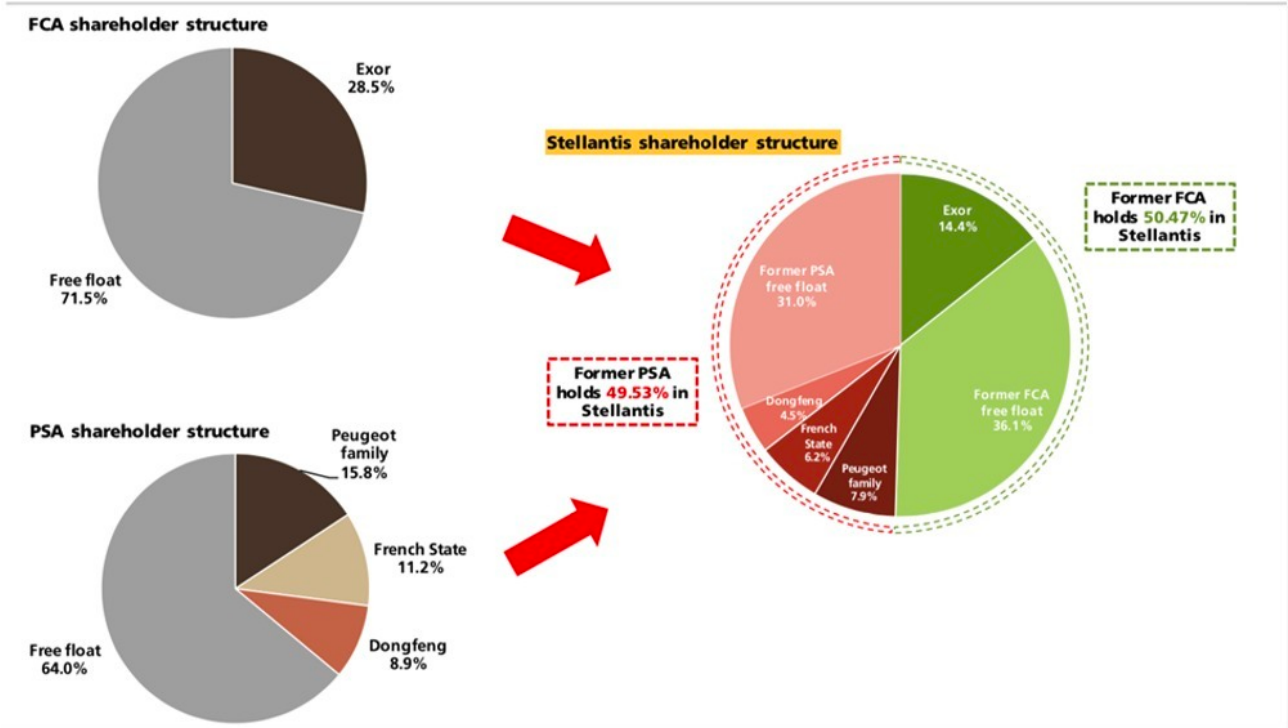
"*We believe that Stellantis needs to be great rather than big. We want to gain scale, of course, to make sure that we use this scale to develop innovation. We use this scale as a lever to be more disruptive and that we use this scale to do things that some other companies could not do. It's important that we understand that the purpose is not to be big. The purpose is to be great at what we do*" (Tavares, 2021).

One advantage for FCA and PSA is that the two groups complement each other geographically: the former is stronger in America, the latter in Europe and China. Investments and research into electric cars and sustainable mobility will also flow into the new company. Under the October 2019 agreements, FCA was to pay its shareholders dividends of €5.5 billion, PSA the entire stake in Comau, while potential synergies were valued at €3.7 billion and the costs of exploiting them at €2.8 billion. However, due to COVID-19, the two companies preferred to pay out only part of the dividend and the Faurecia stake instead, to maintain more liquidity for the new group. Synergies were also revalued at €5 billion, with costs amounting to €4 billion, but management promised to make these operations more efficient. The group takes the name Stellantis, with birth on 16 January 2021, listed on the Milan, Paris and NY stock exchanges, but headquartered in the Netherlands. As of 2019, the group represents the fourth largest global force in the automotive market, with losses however in 2020 mainly due to the contraction of the European market, in which PSA has greater interests. In fact, while FCA suffered a sales contraction of 18% in 2020 (in line with the market trend of the other large groups -14%), PSA sold 27% less of units. In terms of yearly unit sales, the merger produces the world's fourth-largest OEM (8.04m vehicles in FY19). Combined revenues would reach close to €170 billion, with recurring operating profit above €12 billion.

Being a 50-50 merger, the corporate structure is also balanced, with John Elkann becoming president of Stellantis, Tavares the CEO and Mike Manley being responsible for operations in the Americas. FCA distributed extraordinary merger dividends to its shareholders of €2.9 billion, 7%

stake sale in Faurecia by PSA. These transactions were the pre-requisite for a 50-50 merger. After the closing of the merger, Stellantis will distribute the remaining Faurecia (39%) and Comau shares to its shareholder base. The CEO, Tavares, announced at the time of the merger that this collaboration would generate a value of €25 billion.

Figure 11. Stellantis' shareholder structure



Source: UBS, 2021

Fourteen are the brands belonging to the new Italo-American-French Group. FCA brings Abarth, Alfa Romeo, Fiat, Fiat Professional (commercial vehicles), Lancia, Maserati, Chrysler, Dodge, Jeep and RAM. PSA brings the Peugeot, Citroen, DS, Opel, and Vauxhall brands. Stellantis also owns 50 plants, with different production capacities depending on the plants themselves: in 2020 FCA plants operate on average at 55% of capacity in Europe and PSA plants at 68%, while in North America, FCA plants operate on average at 75% (LMC Automotive Ltd, 2021).

Figure 12. FCA and PSA production by region

Europe		North America	
FCA	1,267,157	FCA	2,431,813
PSA	3,151,823	PSA	0
Total	**4,418,980**	**Total**	**2,431,813**
Greater China		**South America**	
FCA	65,678	FCA	554,328
PSA	112,227	PSA	65,186
Total	**177,905**	**Total**	**619,514**

Source: J. P. Morgan, 2021

3.6) The merger's benefits

The world's largest financial services companies believe that Stellantis' profits are expected to reach 2019 levels (of around $165-170 billion) by the end of 2023. However, the company's financial structure is stronger, with increased liquidity, more tangible and intangible assets, increased R&D investment, and reduced debt. In addition, the synergies created in both revenue and cost allow the company to maintain a lasting competitive advantage, as well as steady growth in both units produced and profits. Analysts, including HSBC, JPMorgan, Société Generale and UBS, have been particularly positive about the merger between FCA and Stellantis. The market, in fact, did not welcome the imminent merger between the two large automotive groups with any particular fluctuation. As the share price of both FCA and PSA from the time of the announcement (October 2019) to the merger (January 2021) has been in line with the performance of the automotive industry, analysts assume that the market has not given strong consideration to the synergies and value potentially created by the deal (HSBC, 2021). The main benefits arising from the merger involve the exploitation of synergies, the geographic and technologic complementarity of the two companies, followed by an analytic integration plan managed and run by the new CEO Tavares.

In 2019, FCA's sales are driven mostly by NAFTA, EMEA, and Latin America (56%, 28%, and 14% of total shipments, respectively), with the 2019 shipping level only being recovered by 2023e. This means that by the year 2022e, sales will be about 10% lower than they were in 2019. Despite this, revenue projections for 2022 are only expected to be 2% lower than those for 2019. This is because of the increased revenues per unit, reduced costs, interdependencies exploited and the

development of further businesses (such as, the financial services or the development of innovative products).

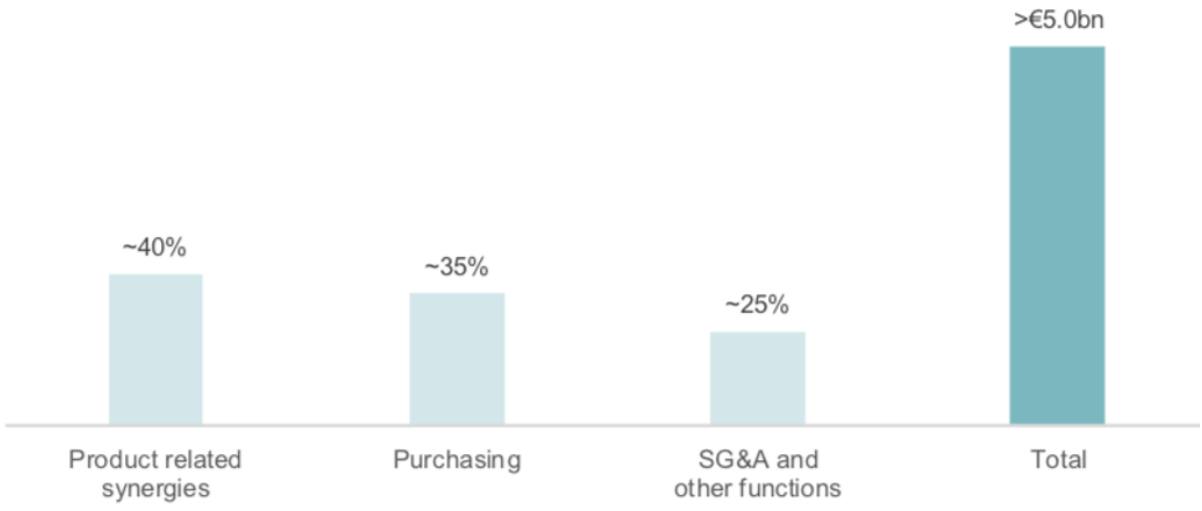
Since its near bankruptcy in 2012, PSA's CEO Carlos Tavares has had a solid track record in controlling expenses and producing free cash flow. As of 2019, the PCD (Peugeot, Citroen, and DS) division was as fruitful as (or even more profitable than) the German premium brands. In addition, the PSA group acquired Opel in 2017 from GM. The brand was facing a very difficult period, as the production facilities used were expensive and inefficient. So, PSA incorporated Opel's production into its platforms, regenerating the brand and improving sales, so that by the following year Opel was already generating profits after 19 years. Hence, OV volume share on PCD platforms will rise from 41% in 2019 to 93% in 2022e and 97% in 2025e, up from 41% in 2019 (IHS). This should support in "production and procurement" cost reductions by removing losses from outdated systems. HSBC estimates the savings from the platform shift from Opel to PSA at around €600m. PSA expected €1.7 billion in synergies over 10 years when it bought Opel, which it easily accomplished in the first two to three years. Throughout the customized, innovative programs, in addition to his managerial ability, CEO Carlos Tavares has a track record based on a focus on cost savings. PSA's Automotive margins improved from -3.9% in 2012 to 8.5% in 2019 (better than premium OEMs), implying that the new €5 billion synergy objective may be easily met. FCA's production, mainly in Europe, will follow the same path. The Italian-American brand's platforms, which have become inefficient, productive and outdated, will be replaced by PSA's platforms, which have a production capacity and cost efficiency in line with the major global groups. PSA has three main platforms: CMP, EMP2 and eVMP. The PSA CMP platform, commonly known as the Common Modular Platform, is a worldwide subcompact platform developed by Groupe PSA and Dongfeng, a state-owned Chinese manufacturer. The platform will be utilized for internal combustion engine. PSA EMP2 platform is used for bigger vehicles, while eVMP (Electric Vehicle Modular Platform) is used for battery-electric vehicles production. The sharing of investments would result in Stellantis having a high-performance electric platform, such that the eVMP platform by 2025e will have production volumes at par with VW's MEB platform, i.e., 1.3-1.4 million units (HSBC, 2021). FCA-Europe margins might increase from just breakeven in 2019 if the CMP platform is consolidated: PSA's new CMP platform, which may greatly aid FCA's attempts to grow into the B/C market in Europe, will enhance this potential in the short future. The benefits granted to FCA might be similar to those given to Opel. According to HSBC, in addition to platform sharing, Stellantis leads for savings from:

- joint purchasing, by utilizing the larger scale of the company with stronger negotiating power with suppliers and greater access to better suppliers, notably for electric and high-tech components;
- SGA optimization, the integration of selling, marketing, and administrative operations, particularly in countries where PSA and FCA have a large overlap (Europe and Latin America);
- other functions, mainly logistics, supply chain after sales support, and so on.

3.6.1) Potential for synergies

The CEO Carlos Tavares affirmed that the convergence of platforms and powertrains, as well as the optimization of R&D spending, will account for 40% of the projected > €5 billion in annual run-rate savings from the merger (with the full 80% to be realized during the following four years). Stellantis forecasts that 35% of these synergies will come from purchasing reductions, with the remaining 25% coming from SG&A savings and the optimization of other activities such as logistics, supply chain, quality, and after-market operations.

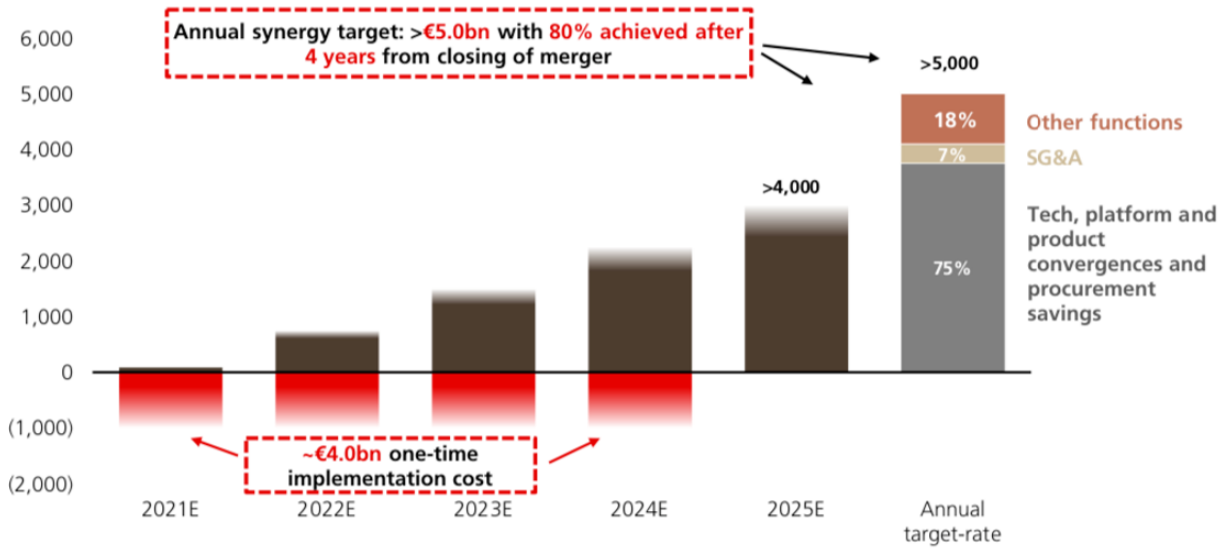
Figure 13. Synergies estimations per function



Source: Société Generale Cross Asset Research, 2021

The Group presented a very detailed program on potential synergies and how to exploit them. In fact, more than 80% of consistent synergies are projected by the end of 2024: these are expected to provide positive net cash flow beginning in 2021, while Stellantis will seek to reduce the total one-time implementation expenses to around €4.0 billion.

Figure 14. Annual run-rate synergies



Source: UBS, 2021

As mentioned above, the synergies created span several activities and processes within the new automotive group:

- synergies between products (planning, engineering, manufacturing, and module systems). Vehicle platforms, modules, and systems are overlapping. Investing in ICE powertrains, electrification, and other technologies is being consolidated. Efficiencies in the manufacturing process and equipment;
- purchasing (direct & indirect materials). Leverage bigger scale to reduce product costs, particularly for electric and high-tech components;
- SG&A and other functions. Savings from combining tasks such as sales and marketing, information technology, logistics, supply chain, quality, and after-market operations. Reduce expenses in areas where both firms have a strong presence.

Regarding the synergies created, at the press conference to inaugurate the birth of the new company, Tavares said: "*We'll bring the efficiency and the effectiveness of a larger company that is able to*

make highly effective sister cars, to make sure that the customers can enjoy completely differentiated products. But benefiting from the fact that, some of those components that they do not see are high volume components and therefore they will be very cost competitive and cost effective. So, at the end of the day, the brands will be given a strong opportunity to rebound or even to invest more based on the efficiency that is coming out of the implementation of the synergies, which is exactly the value creation factor. And we are quite excited about that because we see, in our synergies plan that, many things that were not possible on the stand-alone position are now becoming either possible or more profitable within the scale effect of Stellantis". The objective is therefore the creation of a differentiated product, aligned to the needs of consumers, who are thus able to obtain a better product (which is the result of new combined investments) at a lower price (which is the result of larger scale, increased volumes, and reduced costs). This is only possible thanks to the full cooperation and collaboration between the two companies, which have decided to merge for a common project, something that would have been impossible if the two companies had remained separate.

According to a study conducted by J.P. Morgan following the FCA-PSA merger, approximately 75% of synergies are projected to emerge from technology, platform, and product interdependencies, as well as procurement efficiencies The 7% from SG&A expenses and the rest synergies are supposed to come from all other functions.

1) Tech, platform, and product synergies

The first category of synergies covers the savings resulting from the sharing of plants, equipment, capex, and technologies for the production of the different product segments. Sharing and integration of PSA and FCA's respective platforms, products, and powertrains, as well as the optimization of R&D investments and manufacturing processes, are expected to create significant efficiencies, given that investments will be amortized over FCA and PSA's combined production. In a mature and highly innovative sector such as the automotive industry, a key factor is the investment capacity that a company is able to sustain in R&D. Huge investments, in particular for the creation of a competitive advantage over other companies for the creation of a new product, require risks that often a small or medium-sized company, in relation to its competitors, cannot bear. Hence, the need for an M&A operation, also because of the possibility of undertaking large and risky investments, which can however allow the company to compete with large automotive groups. Despite the economic pressures caused by the pandemic, the industry remains fully committed to its ongoing transition to carbon neutrality. The market share of electric cars grew significantly last year, with

provisional figures for 2020 showing an EU-wide market share of 10.5% (up from 3% in 2019), thanks to increased investment in the sector and support measures initiated at national level by governments to stimulate demand during the crisis period (ACEA, 2021). Furthermore, a very important factor in the production process in the automotive industry is the production capacity of each plant. Following LMC estimations, FCA ran its Italian factories at about 46% utilization in 2019, considerably below the 75% profitability criteria, while its US operations averaged 85% utilization. PSA employs less than 50,000 people in France and has considerably greater plant utilization (around 73% in the European plants). FCA is still largely reliant on the small platform, or SCCS platform, across Europe, Latin America, and Mexico, platforms that Fiat and GM collaborated on the development in 2002. It can be seen that the backwardness of the production process, resulting from FCA's platforms and plants, is relevant compared to the plants of its European competitors. In this sense, the enormous advantage FCA derives from the merger is clear: the use and know-how of PSA's innovative, efficient and high-performance platforms (which, as mentioned, have already helped Opel returning to profit after 19 years), namely EMP1 (CMP) and EMP2. FCA's upcoming compact vehicles will use PSA's CMP small-car architecture in Europe. FCA will be able to transfer up to 80% of its European manufacturing volumes by 2025 without closing any plants in Europe. FCA will gain from increased volumes on PSA's EV platform in Europe. PSA will shift from two multi-energy platforms to a single specialized high-energy BEV platform, the eVMP, for cars in the B and C segments. In 2023, the first vehicle to be released on the new platform will be a C category electric SUV. FCA will get direct access to PSA's EV platforms as a merged business.

The complementary nature of PSA and FCA's operations should provide benefits. In LATAM, PSA was weak, while FCA was strong; in EMEA, FCA was losing money, while PSA was close to double-digit margin levels. PSA had made significant progress on electrification, but FCA was far behind and had to rely on Tesla to achieve its CO2 requirements in the EU. As a result, we see platform sharing, notably the CMP (for compact cars) and eventually the eVMP for battery electric vehicles (BEVs), as a key driver of FCA's EMEA business realizing synergies and improving margins.

2) Purchasing synergies

The second category of synergies includes savings from the purchase of direct and/or indirect raw materials and has an effect not only on greater purchasing power regarding component vendors (as we mentioned earlier, Bosch, Denso, Continental, etc.), but also regarding high-tech companies for the production of electrical, digital, and technological components. Moreover, in addition to the

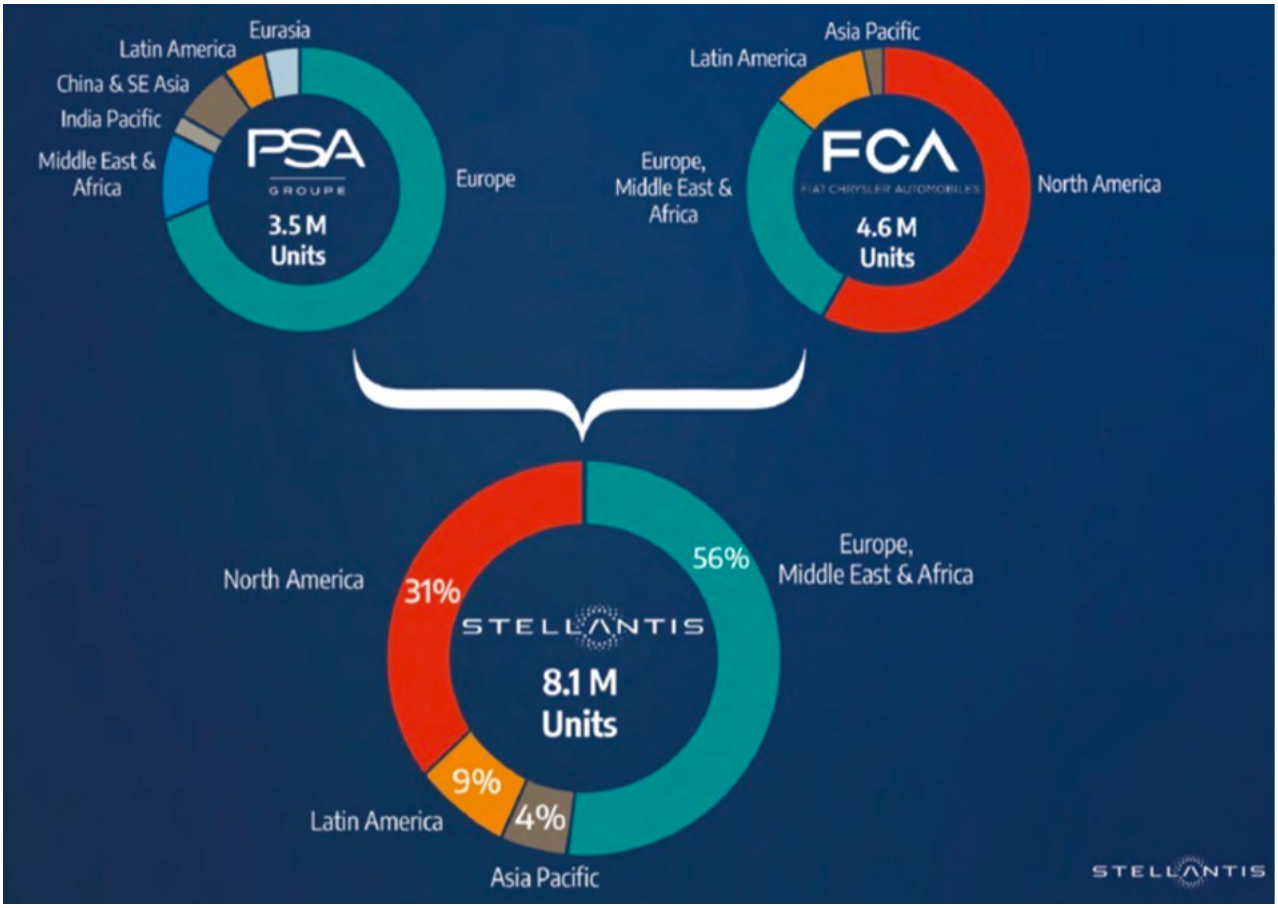
greater economies of scale thus created, a larger company also gains a greater reputation in relation to the big technology companies, including Google, Microsoft, Siemens, Huawei, etc. In this way, they can start advantageous collaborative relationships with such companies, also having a more competitive and innovative partner for the creation of an innovating product.
From the costs point of view, they include the standardization of product platforms and powertrains (using PSA platforms for Fiat/Jeep European vehicles), greater economies of scale in manufacturing, including production rebalancing (multi-brand factories), purchasing and overhead synergies. From the savings on CO2 conformity, instead, it covers the savings from the FCA-Tesla agreement. Using PSA powertrains and platforms for Fiat/Jeep cars in Europe, FCA will save €1 billion per year in EBIT. FCA is now required to pay Tesla for a pooling arrangement that expires in 2021 (estimate €400 million was paid in 2020), and FCA's current EV vehicle has lower contribution margins than PSA's (UBS, 2021).

3) Selling, general, and administrative expenses (SG&A) synergies
These involve all the interdependencies exploited in common selling functions. Stellantis forecasts savings through the merger of services such as sales and marketing, as well as cost optimization in markets where both firms have a well-established market share, plants or distributors, such as EMEA or LATAM. The management also foresees synergies for Stellantis from optimizing other activities, such as logistics (where savings are intended from optimizing new car logistics and the effect of the procurement volume increase on FCA and PSA's combined spending), supply chain, quality, and aftermarket.

3.6.2) Geographic complements

In addition to product diversity and platform sharing, the collaboration will provide size and significant increased geographic balance. Because of FCA's strength in North America and Latin America, and PSA's strong position in Europe, the Combined Group will have significantly greater geographic balance than either FCA or PSA, with approximately 56% of sales derived from Europe, Middle East & Africa, and Eurasia, and approximately 31% from North America, based on 2019.
The deal will also allow the Combined Group to restructure its approach in other geographical regions, particularly in Asia.

Figure 15. Stellantis sales per region – Estimations from PSA-FCA combined results in 2019



Source: Stellantis booklet, 2021

1) EMEA

FCA takes advantage of PSA's European dominance. FCA's loss-making European businesses will be simplified under PSA's architectures and plants, possibly allowing for a 2% margin uplift (following the J.P. Morgan estimations) throughout the Group's EU operations over the next 2-3 years, thanks to lower development and purchasing expenses.

2) North America

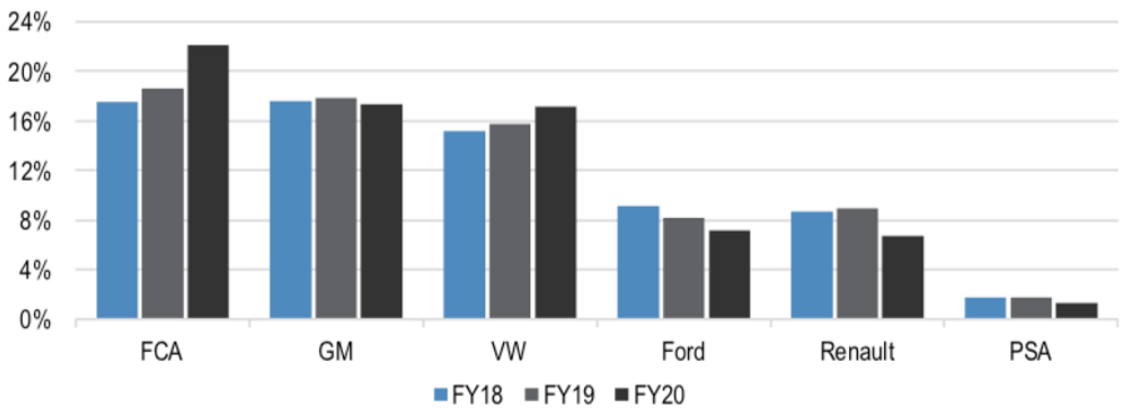
PSA exited the North American market in 1991, and Tavares previously set 2026 as the goal for the company to reopen the PSA market in the United States. Nonetheless, it was widely assumed that FCA's 2,500-plus dealer network would be an ideal launch pad for selling PSA cars. However, after the merger, the CEO stated that the re-enter in the US market from PSA is not a primary objective, given that FCA's NAFTA earnings are already adequate for the costs incurred in that region, so

increasing production and incurring additional costs to enter with new cars in a market that is already well covered is not the necessary investment at the moment.

3) LATAM

Brazil is one of the areas in which FCA made a big investment, not only to revitalize the Fiat brand, but also to launch the Jeep brand. PSA has a small market share in Brazil but a larger presence in Argentina, which complements FCA's coverage. The advantage for both brands is to share the standard CMP architecture (like the European approach). In addition, Ford, which has a 7% market share in Brazil, will shut down production in Brazil, thus closing its three plants in the country, giving Stellantis a further opportunity to gain market share.

Figure 16. OEM market share in Brazil



Source: J. P. Morgan, 2021

4) Asia Pacific

The new Group will make significant investments to open up and penetrate the Chinese market, which is currently underdeveloped and covered, if not at a loss, by both FCA and PSA. In particular, according to experts, Stellantis will penetrate the market first with the Jeep brand and in the LCV market, and then move into the passenger cars market once the brand is known.

3.6.3) Other investments: the Chinese and the alternatively powered vehicles markets

In addition to exploiting the interdependencies translated into synergies between the two companies, Stellantis will have to make investments especially in two macro areas: penetration of the Chinese market and the electricity market. Despite already having joint operations in China with Dongfeng and GAC, respectively, PSA and FCA have not enjoyed the same degree of success as their German competitors. In 2019, both JVs made huge losses. Stellantis is disproportionately exposed to Western markets due to the absence of earnings contribution from China, which is risky for the company. In fact, in striking contrast to developed markets, the Chinese market rebounded rapidly from the COVID-19 crisis, putting PSA/FCA at a disadvantage in comparison to German OEMs (with their much higher earnings shares from China). China has expanded to become the world's largest automotive market in current history, and Tavares has stated that Stellantis wishes to be present in the country. Due to intense rivalry from local rivals, PSA's automobile sales in China fell by 57% in 2019, and by 58% in 2020. For that reason, it is reasonable that Stellantis is likely to pursue an aggressive China market expansion plan in the next future.

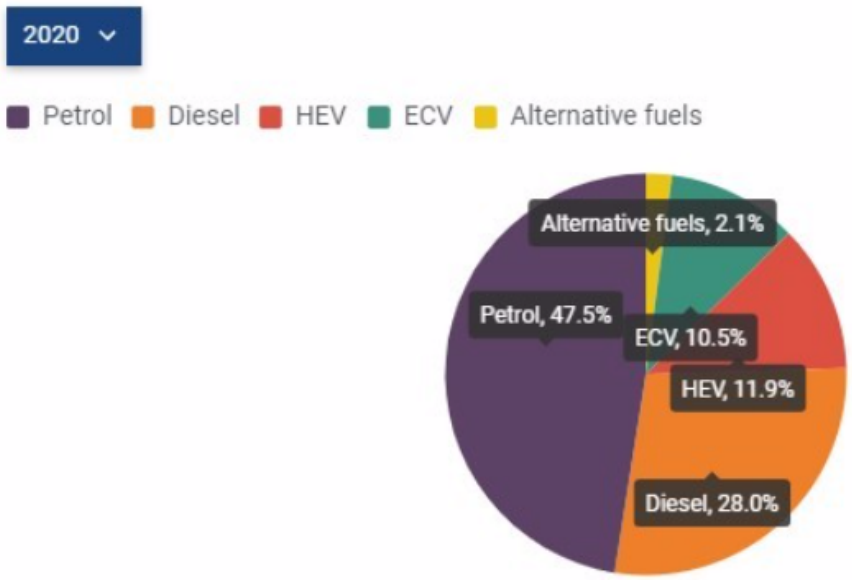
Electric cars will triple their market share in Europe. The spread of the COVID-19 pandemic has not affected sales of electric vehicles, which have increased dramatically. According to Transport & Environment (T&E), sales of electric cars could reach a market share of 10% in 2020 and 15% in 2021.

The Volkswagen Group largely dominates the ranking of the largest investors in Research & Development, with a budget that reached €13.6 billion in 2019, up 3.8% on the previous year. This is highlighted by the European Commission on the basis of an internal study by Joint Research and concerning the ranking of the 2,500 top global companies according to their investment in research and development. Among the automotive industry, Daimler came second (€9 billion), followed by Toyota (€8.2 billion). In fourth place was Ford (€7.2 billion) and in fifth place BMW (€6.9 billion). Research and development investment in the automotive sector, both car manufacturers and component companies, reached €123 billion in 2019, bringing the increase over the last 10 years to 91%. As for the PSA Group, in 2019 it recorded one of the largest increases in its automotive spending budget (+24.7%) thanks to the integration of Opel. However, the proportion for R&D to turnover remains below standard at 4.9%, far from the industry average of 6% (€3.6 billion). Slightly higher, at €3.7 billion, is FCA's investment.

Overall in 2020, hybrid electric vehicles accounted for 11.9% of total car sales across the EU, up from 5.7% in 2019. Electrically charged vehicles saw a similar surge in demand last year,

accounting for 10.5% of all new car registrations in the EU, up from a 3% market share the year before. Conventional fuel types, however, still dominated EU car sales in terms of market share (75.5%) in 2020, although the overall drop of 3 million units in car registrations as a result of the pandemic hit diesel- and petrol-powered vehicles hardest, with declines of 23.0% and 33.7% respectively (ACEA, 2021).

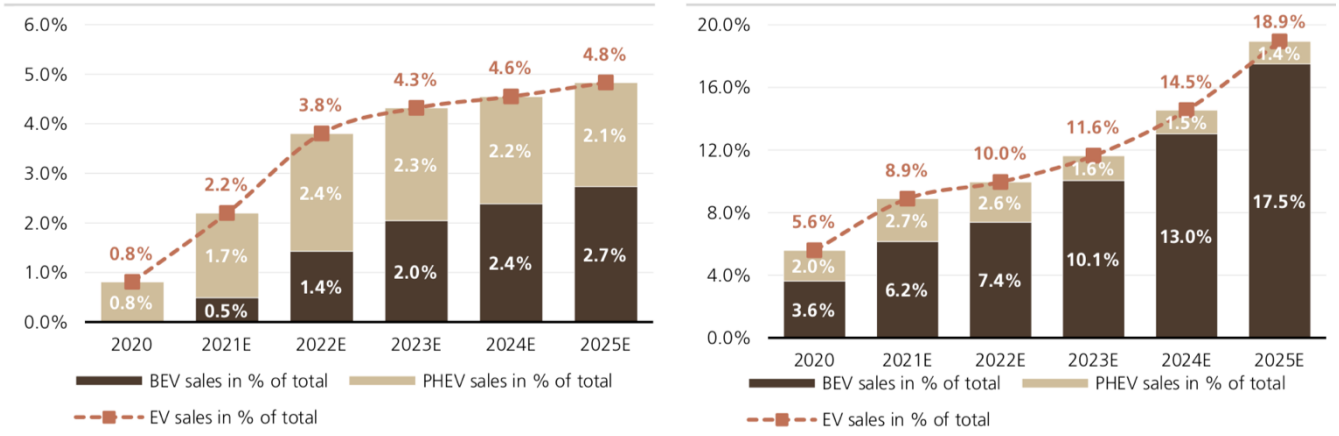
Figure 17. Automotive market share per vehicle power supply (2020)



Source: ACEA - European Automobile Manufacturers' Association, 2020

According to a study by UBS, FCA and PSA combined invest about half of what VW spends in the EV segment. Given the investments in electrification planned by the other worldwide major carmakers (VW will spend €35 billion over the next five years just on BEVs, while GM will spend $27 billion over the same period), following UBS's estimations, Stellantis should spend €20 billion over the next five years. So far, FCA and PSA have spent a combined €14 billion per year on capex and cash R&D (including expensed R&D), €2 billion per year on EVs. The resulting €10 billion total over five years is roughly half of what a company such as Stellantis should spend to remain competitive.

Figure 18. FCA-PSA BEV and PHEV share (2020-2025E)



Source: UBS estimates, 2021

3.7) Merger disadvantages

However, despite the various benefits that such a collaborative transaction may have for both automotive companies, there are some risks that could result in value disruption caused by the M&A, rather than the estimated synergies and potential value created (€25 billion).

1) Merger execution risks

While the PSA-Opel and Fiat-Chrysler mergers were successful, Stellantis is a merger of equals, which might result in integration difficulties, thus requiring a very detailed and planned pre- and post-merger program. The failure Daimler-Chrysler merger, the problems between Renault and Nissan, and the failed VW-Suzuki collaboration are just a few cases of problematic auto mergers. Realizing the synergies will necessitate reorganization, especially in Europe and Latin America. Furthermore, the possibility of plant closures, as well as different managerial skills, directives and policies, may imply discouragement among employees, thus delaying the realization of synergies.

2) Exposure to the mature market

Stellantis' strong exposure to the US/Europe and little exposure to China may be disadvantageous. There could be an increased aggressive competition both in US and Europe. FCA is strong in the North America, but competitors such as Ford, GM and Tesla can reduce the Stellantis' market share, given that it may focus in different markets. Same problem in Europe: here the competitors

are bigger, the market for passenger cars is very mature and product innovation, the blue ocean strategy, is the only operation that can allow an automotive company to maintain and gain market share. Furthermore, due to the extremely competitive environment in Europe, FCA's European operation carries a considerable execution risk. Failure to properly reposition FCA's brands and industrial base in the region from the management, may have a major negative impact on Stellantis' profit margin.

3) Platform sharing risks

While large platforms like the CMP and eVMP reduce expense, they can cause delays and disruption, thereby compromising synergy objectives. In addition, given the low level of capacity utilization at FCA's plants in Europe, some plant closures are possible, although Tavares has so far ruled this out. However, such a closure could also lead to savings for the company, thus an additional benefit from the synergy operation.

4) The return to the Chinese market

The distance from the Chinese market for several years and the failure of both FCA and PSA in the area, despite joint ventures with local groups, may be a sign of inability to understand, adapt and therefore enter the Asian market. Penetration into a market entails very high costs, investments aimed at collaboration with new partners, adaptation of the product to local habits and customs, creation of a production site, SG&A costs and related functions. If market penetration does not go as planned, it could be a very heavy loss for the new group, especially since the industry is growing more in that area.

3.8) The expert’s opinion

Throughout this chapter, information regarding the FCA-PSA merger has been provided to present a more detailed dynamic of this strategy implemented by the two automotive groups. This focus on the opportunity and benefits of the M&A is also the result of interviews I had the pleasure of conducting with a few experts to understand the dynamics of the merger. In particular, I wanted to interview four key people to understand all the different reasons behind the merger, the insights, the possible implications, the different possibilities and the benefits of this strategy. Therefore, I wanted to investigate the opinions of people who played a significantly important role in the

merger. I asked for the availability of experts to cover a wide range of topics and to collect opinions from different points of view. The anonymity regarding the interviews with PSA and FCA/Stellantis executives allows the two experts to comment on the merger personally. In fact, for contractual reasons, they cannot make statements under their own name, but with this interview they allowed me to analyze the merger through the points of view of both companies. For this reason, I first interviewed a former PSA executive who worked closely with Tavares until late 2019. He was very willing to relate some of the dynamics that were already present within PSA while he was an executive, his opinion on the merger, the benefits both companies can gain, and why this strategy is a positive move, beyond many scholars estimate. The former executive focused on PSA's position in the years preceding the merger, thus giving me the opportunity to understand the French manufacturer's viewpoint and objective for this transaction. In addition, he gave his personal estimates of potential synergies, provided very interesting data on costs and the importance of platforms, as well as other aspects of the production cycle that affect a group's sales. The former executive has been at Tavares' side during PSA's economic recovery in recent years, as well as having personally overseen the acquisition and transformation of Opel. Next, I had the opportunity to interview a senior executive of FCA for 10 years, with responsibilities also in corporate communications, currently a senior executive at Stellantis. With him we talked about the situation in FCA at the time of the merger and mainly about the objectives of the new Group, the opportunities and challenges that may occur in the first years of operation.

Subsequently I wanted to interview a third-party expert to the merger, who however could give me an overview and an objective point of view on the operation. For this reason, I spoke with Marigia Mangano, a “IlSole24Ore” journalist, editor of the Automotive sector. For years she has had the opportunity to follow the dynamics of FCA, to interview Marchionne and other officers of the Italian-American group. Most recently, she has been interested in the possibilities of mergers with other groups, and then followed the affair with PSA. She gave me her perceptions on the merger and under what conditions an M&A operation can be successful, why they did not opt for a softer collaboration, what were the preconditions put in place by both companies.

The last interview, conducted with Prof. Andrea Donzelli, Managing Director of Credit Swisse in Italy, brought further insights and reflections on the M&A operation in general, to make an accurate assessment of the possible implications and an in-depth study on the evaluation of potential synergies created by the merger. In this paragraph I wanted to summarize and describe in even more detail the opinions of the four experts on the merger, whom I would like to thank for their kind availability.

3.8.1) Interview 1: former PSA executive

"*The industry globally is governed by large companies. Among them, however, there is a clear division between the big competitors and the small ones*". In relation to the number of cars sold, the largest companies are Toyota and VW, which compete in all markets around the world. Followers include the Renault-Nissan-Mitsubishi alliance, Stellantis, GM, Ford, Hyundai, Daimler. "*FCA and PSA have several characteristics in common, starting already with their recent history: both Fiat and Peugeot were studying the exigencies of consolidation. Then both decided to merge with other companies. Fiat decided to acquire Chrysler, Peugeot, and Citroen with Opel. Both took this strategy because they were losing money and market share. They were still very small compared to the competitors. This posed a big problem in terms of short-term profitability, but also problems in the long term. The aim is to be profitable today and sustainable tomorrow. The automotive industry is going through a period of technological revolution (electric vehicles, connectivity, etc.) and the combination of this revolution with the need for large scale production has created several problems for the management of several companies, due to the increasing need for capex, as never before in the industry, outstanding capex just focusing on electrification, technology, and innovative investments. There is more technological complexity in a car than in an airplane*".

In addition to the synergies mentioned earlier and which I will also discuss during this paragraph with the experts' opinions, one objective achieved through this collaboration strategy is also to reduce competition. We can speak in these terms, even though an investigation was carried out by the European Commission and assurances were given by the new Group, only with regard to the LCV market in Europe. "*PSA has 25% market share, while FCA has about 9%. Together they would reach 34%. This means having more than a third of the market in the hands of a single company, which is therefore able to manipulate the market and increase prices. The two companies would then stop competing and fighting with prices, increasing the group's profits. However, in the passenger car market in Europe and in the automotive markets in the rest of the world, the competition between the two companies was almost zero, so the merger has a limited effect in reducing competition globally in the industry*".

Regarding the main trends in the automotive industry, the expert spoke mainly about the two advantages in charge of PSA and FCA: platforms and electrification for the former and connectivity for the latter. "*PSA is already ready to electrify all its models, it has a line-up of both electric and hybrid vehicles, both in terms of PCD and OV division. FCA does not have a developed and widespread technology. In terms of connectivity, it must be said that PSA is not as advanced as it is*

in electrification in comparison to its competitors. From this point of view, on the other hand, FCA is quite advanced, having an ecosystem of companies that could really help in creating what they need for the creation of connectivity technology, especially in the US". However, the technology is not only chip-based, but also vehicle manufacturing platform-based. These platforms, if technologically advanced, can make the process more efficient, faster and at reduced costs. "*PSA has developed very outstanding platforms that they are able now to use not only with PSA brands, but they are able now to use it with 14 brands. When you use just one single platform for all your brands, the cost of optimization is massive. In addition, the production of electric vehicles requires high-tech platforms*".

In terms of technology, the potential synergies between the two groups are very big, but also in terms of geography, since PSA is very strong in Europe and FCA in the Americas. "*Their unique weakness is China, since both are not performing well in line with competitors. Synergies are then limited to Europe and Americas; they are opening new gates for great synergies*". Whenever a company needs to manage a brand or create a new product, a new line-up, it must decide which technology to apply to that product. "*If the technology is already available within the company's core portfolio, without having to create a new platform, this would translate into a huge cost advantage for the company. Similarly, for the creation of an electric vehicle, a company needs a platform that can produce that vehicle and also a battery. Even today, to produce an electric vehicle, the battery comprises 40% of the cost of the car. The negotiating power for a single brand is very low. If a company is not alone in making that investment, the group can share buying power with the supplier and thus buy the battery at a lower price. In this way, by having 14 brands for which to potentially buy batteries to electrify models, the group gains a huge cost advantage*". This translates into another benefit of collaboration, reducing competition and gaining bargaining power: synergies in terms of procurement. "*Purchasing electrical and non-electrical components for 14 brands instead of one means talking about high volumes, footprint over the planet, feeding different factories of the supplier, and of course the group has a better chance to negotiate the price. Another example of procurement synergies is the purchase of electric engines, which represent 10% of the cost of an electric vehicle. The platform is 20% of the cost of an electric vehicle. We can imagine that Fiat, if it doesn't need to start a new platform, then it can skip 20% of the incremental cost, it can share the cost with all the different brands from PSA, cutting down the prices in a very massive way. The rest of the vehicles are quite similar to each other. Another important cost is the distribution of its products, which is about 25% of the total cost of the machine and here too you can see the advantage of synergies following a merger: if I sell one brand I have less power, while if I sell 14 brands I can share the distribution costs, the online sales platforms, the networks, the*

logistic partners, i.e., all those collaborators who allow the movement and sale of my brands all over the world. In this way it is possible to optimize all the costs of the value chain".

We can therefore divide the synergies created into different categories: those obtained in terms of bargaining power both towards suppliers (purchasing synergies) and towards distributors and logistics operators, so as to optimize the costs of movement, sale and distribution; those obtained in terms of increased power in engineering and factoring. The group can feed the factories with not only the model of one brand, but all the models out of 14 brands. "*In order to evaluate the efficiency of the manufacturer, there is one KPI that is very important between all the indicators about the productivity of a plant: the utilization rate, that is a ratio to estimate the capacity to load the factory as much as you can (actual production / production capacity). The primary objective of engineering directors in the automotive companies is to make sure that the load of the factory is big enough so that the working capacity of the factory is close to 100%. Many car manufacturers face troubles since the factories work at the 60-70% of their capacity. The break-even point in factories in the automotive industry is around 70-75%. If a company loads a factory at 60% of its capacity, that means that every time that it is open, it loses money. Stellantis engineers have then 2 main objectives: a cost reduction goal (or optimization goal), i.e., downsize the level of break-even, and feeding the factory with as many projects as possible, projects with best synergies between the lines (B-segment cars of a brand with other B-segment cars of another brand). The objective is thus to load the factory with cars that are very similar in terms of platform, engineering and low complexity to get the best synergies. Using the entire production capacity of a factory, reducing the segments of vehicles produced will give a cost advantage and efficient work. Since the vehicles belong to the same segment (B, C, depending on whether they are compact cars, passenger cars, LCVs, etc.), the platforms used within the factory will be the same and also the parts for the construction (engines, chassis, etc.) of the different vehicles belonging to different brands are similar, if not the same. In this way there will also be an advantage over suppliers and a logistical advantage, as well as greater simplicity of production*".

As for the situation the two companies were experiencing at the time of the merger, it must be said that both were performing in line with the industry, but far from the big players. In particular, PSA has changed course in recent years, being close to bankruptcy in 2012 until now being one of the automakers with a higher growth rate. "*PSA seven years ago was facing big trouble: the utilization rate was 60% on average between all the factories. PSA then came back to profits, efficiency, profitability, and they were close to 95%. That was an outstanding result because given that it is a key factor, people were wondering how PSA made it happen, they repaired their profitability and OV's profitability. FCA are performing well in US (productivity level around 90%), while in Europe*

is a nightmare, given that the utilization rate is a disaster, except for Fiat500 and LCV". There are several reasons for low plant productivity. As a primary cause of low plant productivity, according to the former PSA executive, there is a lack of sales. While the cause may be fairly intuitive, this nicely illustrates the consequences that a failed sales campaign in one market can cause throughout the value chain, right down to plant productivity. "*Therefore, the ability to sell their products determines the productivity of the factory, as the stock resulting from the lack of sales cannot grow indefinitely. Then they have to produce less, having to slow down the production phase. Related to sales efficiency, other factors that influence factory productivity are the adaptation of the line up to the market, the brand image in the targeted geographical culture. FCA in Europe is going through the same period of low sales efficiency that PSA was going through about 10 years ago*".

To measure the economies of scale created by the Stellantis merger, the expert recommends checking, for example, the number of sales generated divided by the number of platforms (or even factories) used. If only 3 platforms are used to produce vehicles of 14 brands, the development of economies of scale is intuitive, as the 20% incremental cost we mentioned earlier is saved immediately. In addition, there are also savings resulting from greater bargaining power along the production chain. According to his estimate, each platform involves an investment by the company of around €10 billion.

Currently Stellantis is working hard to create long term synergies, exploiting the interdependencies and similarities between the two companies, to spread and validate the product plan of each brand in all the industrial footprint. What they are doing now is not visible to the public, but they are working hard to build a strong structure, they are deciding in which factory allocate the production, while the results will be noticed only when the common production will take place on a large scale. The short-term synergies that can be exploited are on the procurement side, starting negotiations with high tech companies, components companies and distributors. Other short-term synergies are in re-engineering the way they sell cars, and that's what they are doing now in Europe, changing the commercial policy they have with their network. In this way, FCA will copy in a very similar way the commercial policy and approach of PSA, which has improved the profitability of sales in Europe in recent years.

Why was such an M&A transaction not carried out some time earlier, but rather the two companies preferred to compete, even though contacts had already been initiated previously? The former PSA executive, working closely with Tavares until 2019, followed firsthand the various strategic events at the corporate level involving PSA until two years ago. He says that for an M&A deal to be successful, there is a need for both parties to have achieved some "milestones". "*The shareholders of the French group were not ready for such an M&A, they were not profitable, they were losing*

money and burning cash, they hadn't the capacity to realize an M&A. In the last ten years they have created the ideal circumstances for such a strategy, they have preferred to consolidate their position, return to making profits, improve productivity and profitability, positioning themselves among the best groups in the global arena and especially in Europe. They then analyzed the different possible collaborative strategies, the ideal partners, from a more advantageous position than in the past, equal to other large automotive groups. Even 3 years ago it was too early for such a "big" deal, as they had just acquired Opel, which was already a big challenge for PSA. Following this acquisition, which took place very quickly and with a success that even the most optimistic forecasts could not foresee, the shareholders and the whole world understood the potential of the group, which had thus improved its global trust. PSA proved to be able to manage in the best way and to grow quickly through M&A strategies, so it then decided to undertake a real merger with a peer group to compete with the major companies. FCA thought about the merger as soon as the CEO changed. In fact, the shareholders and the Agnelli family, had understood the limits of FCA, the challenges they were facing in Europe, in the electrification of their vehicles and in the reduced productivity of their plants. As soon as both companies got to the point where they understood that such a merger was necessary for their business, then this operation started with possible positive implications. An M&A strategy between two competitors is only successful when there is a full willingness on the part of both companies to embark on a common path, when both companies are at the point in their history where there is a willingness to share a plan to achieve common benefits, greater than the simple sum of two separate plans". PSA's milestones were the return to profits, the willingness of shareholders, whose trust was placed in the work carried out by Tavares to improve profitability and to lead towards a successful M&A. On the FCA side, important milestones have been the premature death of CEO Marchionne, and the shareholders' awareness of not being able to rely exclusively on the American market, as well as new trends in electrification and vehicle connectivity.

According to the former executive, the merger between FCA and Renault did not go through because there was not the willingness from all parties, in this case from Nissan, which did not fully approve the project. "*The main difference between the Stellantis merger and Renault-Nissan-Mitsubishi Alliance is that the latter is not really a merger, as they have not put everything in common, the approach they have adopted is one of greater brand independence. This also results in a limited exploitation of synergies in the alliance, so ups and downs in relationship management are frequent. The synergies created are mainly on the procurement side, while on the design, engineering and markets side, synergies are not fully exploited, as the companies remain partly independent. Stellantis, instead, really decide to go to endless synergies, talking about factories,*

engineering, R&D, they decide to merge everything and not only procurement. They don't put any limitations on the potential synergies in Stellantis. The new Group has also decided to symbolically affirm the merger, creating a new, unique name for the brands, while the Alliance has kept the previous names, Renault-Nissan-Mitsubishi. The ambition of the new Group is, by far, much greater than that of the Alliance".

The former PSA executive then concluded with an opinion about the consolidation trend in the automotive sector. "*Surely other small and large companies will follow the example of Stellantis, working together to achieve synergies to reduce costs and be more competitive in the market. However, they will probably also take different paths to do so, as M&A involves huge risks and integration between companies is difficult. In particular, there are also today some collaborations that most experts are not taking into consideration, as they are executed with less important automotive companies, such as the one between Daimler and Geely (a Chinese OEM), which has become the first shareholder of the German group, with about 10% of the stake. These collaborations have the objective of making important investments and only the future will tell if these strategies lead to mergers, acquisitions or more consolidated alliances*".

3.8.2) Interview 2: FCA and Stellantis executive

The interview with the Stellantis executive, on the other hand, focused on the future of the new group. We analyzed the company's short- and medium-term objectives and the investments it intends to make, also in view of the savings resulting from synergies. "*For many years, FCA has argued that consolidation in the automobile sector is a good way to encourage and allow the capital expenditures needed for the transition to electric, connected, and autonomous driving. PSA and FCA investigated potential limited collaboration initiatives towards the end of 2018. These initiatives are prevalent in the automotive sector and are related to specific car models or powertrains. Carlos Tavares and Michael Manley reviewed the possible cooperation initiatives previously identified by the parties in March 2019 and discussed a potential business combination between the firms and how to analyze the potential synergies that would arise. Among the reasons that led FCA to merge with PSA we can find:*

- *the establishment of a new market leader. Stellantis is the fourth largest automotive group in the world with 400,000 employees of 150 nationalities, plants in 30 countries, presence in*

130 markets and 8.1 million global sales in 2019. It has a complete lineup of vehicles from passenger cars to SUVs, LCVs and trucks;

- *greater geographic balance. The merger will add scale and substantial geographic balance in Europe, North America and LATAM, in addition to product diversity;*
- *a stronger platform for innovation. With over 51 R&D facilities and over 33,000 dedicated workers, the company already has a significant worldwide R&D presence. The Combined Group will benefit from a strong platform to encourage innovation and accelerate the development of innovative capabilities in new energy vehicles, sustainable mobility, autonomous driving, and connectivity. It will be able to quicken the implementation of electrification technologies and increase its ability to find CO2 diminishing alternatives that consumers want;*
- *synergies;*
- *greater resilience. The deal will establish a more stable firm, considerably enhancing its capacity to handle economic downturns, which are often amplified in the automotive sector by high cyclicality and poor profitability.*

Stellantis' strategy in the short and medium term will focus on the development of the electric market, alternatively powered vehicles, and vehicle connectivity. The benefits of economies of scale and synergies will be exploited to invest in mobility solutions, connected vehicles and autonomous driving".

In July 2021, the company announced plans to invest more than €30 billion by 2025 in electrification and software, specifically with a 30% higher investment efficiency than the industry average in the ratio of total R&D and capex spending to revenues. "*The goal is for LEVs (Light Electric Vehicles) to account for more than 70% of sales in Europe and more than 40% of sales in the U.S. by 2030, markets where Stellantis intends to become the market leader.*

All 14 brands are working to offer fully electrified solutions. The electrification strategy leverages in-house expertise, as well as partnerships and joint ventures, to deliver advanced technologies at affordable prices. This strategy will enable the company to target sustainable double-digit adjusted operating profit margins in the medium term. Current collaboration agreements or JVs that Stellantis has signed to develop technologies aimed at electrification of its brands include Foxconn, ACC and Archer. The goal of the new group is to implement a strategy that includes a strong internal skill set, excellent relationships and symbiotic work with suppliers, along with strong strategic partnerships and JVs. In addition to supporting procurement strategies, Stellantis' synergies in terms of technical and manufacturing expertise will also lower battery costs. The goal

is to reduce battery pack costs by more than 40% between 2020 and 2024 and by a further 20% or more by 2030".

The company reconfirms its commitment to expand its leadership in commercial vehicles and passenger cars in Europe, strengthen its position in North America and become a global leader in electric commercial vehicles. "*Four BEV (Small-Medium-Large-Frame) platforms form the framework for Stellantis' electrified brand vehicles. The platforms are designed with a high level of component sharing, creating economies of scale whereby each platform will support up to two million units each year*".

Following the report developed by PWC in 2019, there are several opportunities and challenges by 2030 and beyond that large groups can exploit in the automotive sector:

- electric vehicle sales could represent more than 35% of new vehicle registrations;
- increasing shared mobility will impact number of vehicles in use;
- sales of 5G enabled vehicles are expected to reach 16 million in the EU, U.S. and China;
- regulations and innovations could raise vehicle costs by 20 - 40%.

"*The Company is ready to capitalize on these opportunities with 29 zero-emission models already available and an additional 10 vehicles expected to be introduced by the end of this year. By 2025, every new model will have an electrified version*".

3.8.3) Interview 3: Journalist of "IlSole24Ore"

With Mrs. Mangano we retraced the steps that preceded the merger in Stellantis. The journalist, an expert in the automotive sector, during her career has had the opportunity to interview the main representatives of FCA, thus developing a detailed and in-depth understanding of the merger. "*This merger was a must for FCA. After Marchionne's death, considering the energetic and the technological transition, FCA had to decide if making new investments on a standalone basis to grow on its own. Therefore, FCA had to understand whether to try to achieve an internal, organic growth or to collaborate with a competitor with whom there was a sort of complementarity, from a geographical and technological point of view. The ideal partner seemed to be Renault, but the difficult integration with Nissan made the merger fail. Then the Italian-American group moved to Peugeot, strong in Europe and electric, while FCA in America and connectivity*".

Mergers often fail because of leadership and governance issues, as although they may be at par, there is always one group that wants to lead. "*In the case of PSA there is a management leader, Tavares, who was already considered Marchionne's heir in personality and insight; in the case of FCA, instead, there is a group in transition with a new, more commercial CEO, Manley, who has moved back, while still remaining the head of the Stellantis business in America, and a chairman, Elkann, focused on financial returns. This complementarity from the company's structural and governance perspectives also provides a stability to the new organizational chart, which certainly helps with the quick and easy integration that is the key to a successful M&A. With Marchionne as CEO, the merger was not possible, as one between him and Tavares would have had to play second best, which is impossible with two leaders of their stature*".

PSA represented the ideal partner also because of the excellent relations that already existed between the Agnelli family and the Peugeot family, in addition to the already successful JV between the two companies. "*Elkann had aimed at a very precise target for the merger, so that both the partners with whom he had initiated contacts for a merger at par, i.e., Renault and PSA, are both French, with a strong and solid presence in the European market, well launched on the front of the electrification of vehicles, complementary from the geographical and technological point of view*".

The reason why the merger with PSA prevailed over Renault, according to the expert, is exactly the advantage Renault had over its French competitor, that is, a landing on the Asian market. "*The culture, the tradition and the way of managing a Japanese company, especially in the automotive sector (just take as a sample the diversity of management by Toyota and VW, two major companies that with a completely different management obtain similar results), are difficult to integrate in a merger with an Italian-American management. The merger with GM, much desired by Marchionne, was subsequently discarded by Elkann as it would have excessively consolidated the power of FCA in America, without diversifying the market risk, but rather basing the entire profit of the company on a single geographical market*".

The two companies, FCA and PSA, therefore decided to opt for a strategy of total collaboration, and not a softer collaboration, such as strategic alliance, partnership, or renewing a JV, as both assessed the risks and benefits of the merger. The goal, then, was to appropriate the other company's resources, whether they were network, technology, or market resources. "*The gaps that both companies had in relation to larger competitors were too great to be filled by a simple partnership. The €5 billion of synergies are only possible if business processes are rationalized, optimized, if it is possible to operate at a common level, to act on variables such as costs, employees, group structure, investments*".

From a financial point of view, a first advantage deriving from the merger is certainly the dividends that the shareholders of both groups have obtained. However, this wealth passed on to shareholders has been reduced due to COVID-19, so the two companies have preferred to reduce the dividend given to shareholders compared to the initial plan to give more liquidity to Stellantis. "*The financial results are difficult to estimate in the short term, however, the results achieved so far are clearly visible, i.e., a solid financial structure with good liquidity, the recovery of sales, the announcement of several investments especially in electric in the coming years, the possibility of opening an electric battery factory. The primary objective is therefore the transition of the entire Stellantis group to electrification*".

Regarding the possibility of entering the Asian market, the journalist is more cautious. "*The Chinese market is a problem for Stellantis. Tavares has announced the creation of a team to study what issues have characterized the past for both PSA and FCA in penetrating the Asian market. The objective, therefore, is to analyze the problems to find solutions to increase market share in a rapidly expanding market. The study should be ready by the end of the year, so we expect an industrial plan for 2022 aimed also at penetrating the Asian market, when short-term synergies and the integration of platforms in EMEA and LATAM have already been started*".

3.8.4) Interview 4: MD Credit Swisse – Italy and Prof. M&A and Investment banking

With Prof. Donzelli, in addition to analyzing the strategic variables that influenced this merger, we focused mostly on the financial variable behind this operation. Integration in itself does not guarantee the success of the merger.

"*The integration of realities, culture, production processes, cost optimization, extrapolation of synergies (of cost, but also of revenue) are an important condition for the success of a merger. However, several variables, often unique to each merger, must be considered. In addition to getting the integration well, it is necessary to have a strategic and operational plan for the combined entity, operating as a single player instead of two groups separated*".

"*The most relevant indicator to define a successful M&A is the value created by it. The price paid in an M&A is certainly a starting point for determining the success of an operation: if the price paid is higher than the value added by the merger, it is clear that the merger was a failure, as it is worth less than it was paid. The pre-merger planning concerns both the right price to pay for the M&A and a clear strategic objective underlying the operation, while the post-merger plan concerns the*

integration, so that the new company is "comfortable" in leading the company together and in implementing the pre-merger plan. In addition, the financial structure of the resulting new company must be considered, as a merger can lead to financial problems, either because leverage was involved, or because the target was already heavily indebted, or because the merger also includes a cash component, or because, as happened with Stellantis, extraordinary dividends were paid out to shareholders. In this case, however, the financial structure of the new group seems to have been strengthened by means of financial synergies, such as a reduced cost of debt and equity".

The value created by a merger derives from the increased value of two companies which, at the time of the merger, were worth x and y, while after years they have a combined value of x + y + z. "*This value created derives both from synergies (of cost, financial and revenues, even if more difficult to evaluate ex ante) and from the majority value of market cap. Furthermore, it should be remembered that FCA gave extraordinary dividends to shareholders to lower the market capitalization, so that the merger at par was possible: in this way, FCA shareholders had a lower share in the combined entity, having distributed worth*".

In addition to the more strategic reasons, also mentioned by other experts, such as pooling of platforms, acceleration of R&D investments, wider coverage of markets and obtaining cost synergies, Prof. Donzelli mentions two purposes behind a merger, especially in the case of Stellantis: "*A first purpose is defense, whether it is of a market, or even of a technology. This occurs in a market that is also declining, subject to strong competitive pressures. Therefore, a consolidation process may be appropriate to deal with oligopolistic positions, or even to avoid going to war with each other. The second purpose, more proactive and offensive, is to catch up with other competitors, to get closer to the size of the top players in the industry, to be able to compete on equal terms globally. This includes aims of rapid growth of the company, obtaining more favorable negotiating positions, financial synergies, greater investment opportunities*".

"*Financial synergies include a lower cost of debt, which depends on several factors. A larger company is considered more solid, so it is more reliable, has a stronger presence in more markets, has more solid cash generation, has lower overall risk, and may have a higher rating. On the other hand, regarding the lower cost of equity, the merger may lead to a decrease in beta, so the WACC is lower than before, and when discounting cash flows, there is a positive impact on value*".

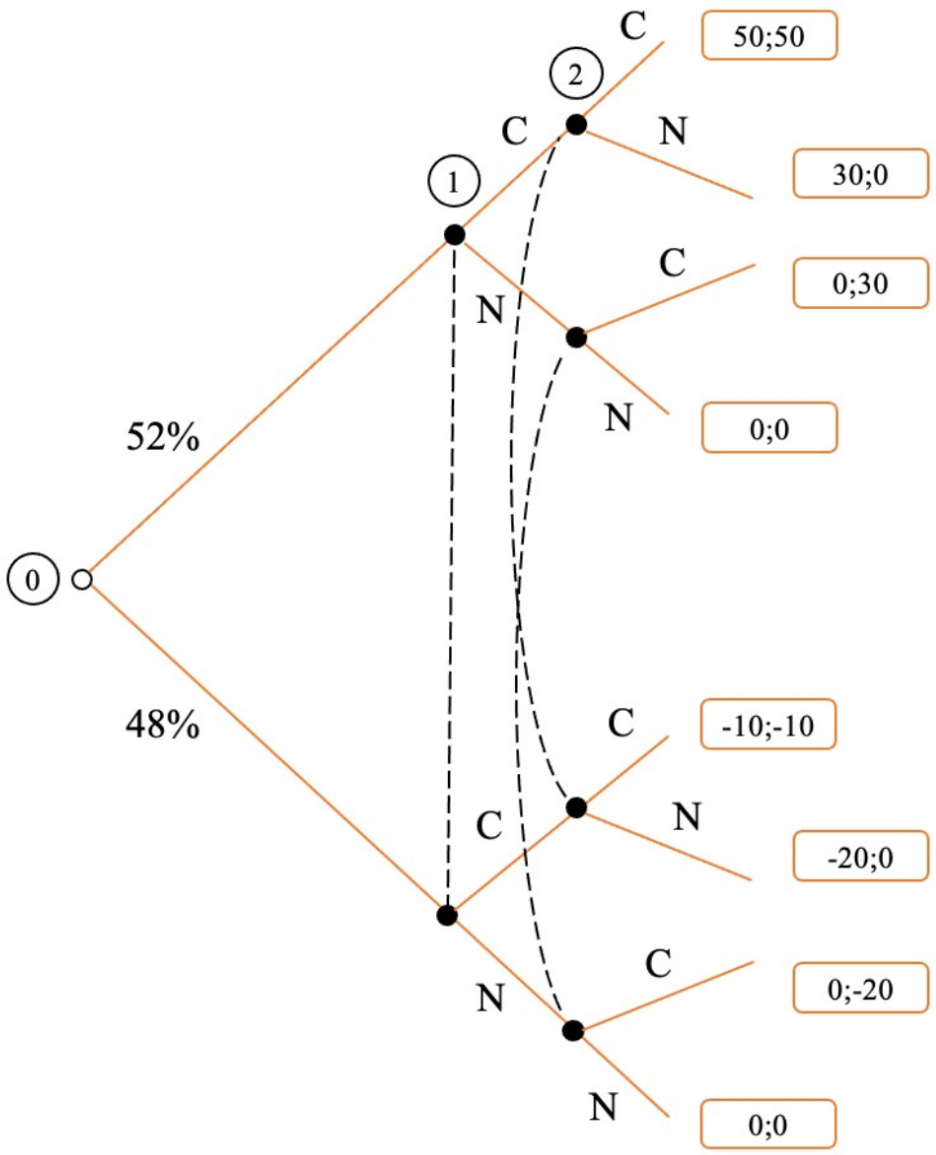
Risks that could lead to a failed M&A transaction can be a failed proper planning of strategy, policy and governance in the pre- and post-merger integration. "*A misalignment between corporate cultures can lead to a separate, divisional management of the business, whereby all the resources created by synergies would be wasted. There is also another risk that can challenge the effectiveness of an M&A operation: antitrust controls. Mergers often result in consolidation*

between several companies, so there is reduced competition, and therefore supranational companies in charge of controlling healthy and transparent competition often carry out controls to verify that consumers are not harmed by this operation. In fact, oligopolistic or monopolistic situations often arise in certain markets due to excessive concentration within the industry. Antitrust control companies therefore have the objective of verifying that the newly formed merger does not create a situation whereby the new company can raise prices to the expense of consumers, without the latter having a valid alternative". In the case of Stellantis, the European Commission carried out an investigation relating especially to the European market for Light Commercial Vehicles, since, as explained by the former PSA executive, Stellantis would have controlled approximately 34% of the market following the merger, which would have placed it in a position of power over the market itself. However, after a global control of all the businesses and markets of FCA and PSA, and after the relative assurances that the nascent Group had provided to the Commission (including an extension of the collaboration agreement between PSA and Toyota, according to which the former produces LCVs for the Japanese manufacturer under the Toyota brand in Europe), it *"approved the proposed inter-company merger between FCA and PSA".*

3.9) An extensive representation of the FCA-PSA game

Throughout this chapter, I wanted to provide a representation of the Stellantis merger, highlighting the positive effects that a collaborative relationship, even between two competitors, can bring with respect to aggressive competition. Applying game theory to the operation implemented by FCA-PSA, we can analyze the possible strategies that the two companies can undertake.

Figure 19. An extensive representation of FCA-PSA possible strategic moves



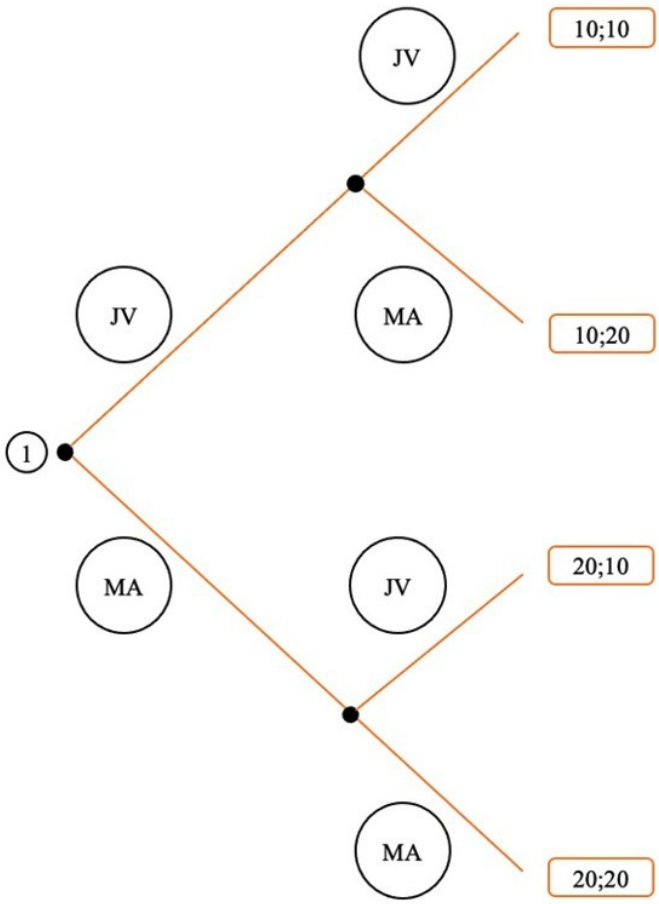
Source: personal elaboration

The graph represents the game describing the strategies of the two firms, FCA and PSA. The representation is a *Bayesian game*, in which player 0 is nature, i.e., a non-strategic player whose actions are determined by a set probability distribution rather than by payoffs. The nature in this game establishes the probability that an agreement of collaboration is successful or not. It is a random event, which, however, can be brought to one's favor through conscious and rational choices and plans by the two players (in the case of M&A are the pre- and post-merger plans). Nature, in the example, has a 52% probability that the partnership between FCA and PSA will be successful, while 48% that it will not be successful (I have taken these probabilities into

consideration based on the averages of success of M&A). The two players, who cannot know beforehand whether the nature is favorable or not, have two possible choices: Cooperate (C) or Non-cooperate (N). We consider FCA and PSA to be the two ideal partners, complementary and perfect for each other, so a collaboration between these two companies brings greater benefits than other collaborative relationships with other companies can provide. In the scenario where player 1, FCA, decides to cooperate, then player 2, PSA, would also benefit from cooperating, obtaining a payoff of 50 each. In the case where FCA decides to cooperate and PSA does not, the former would get a payoff of 30, having the possibility to cooperate with another partner, while the latter would get 0 because it has not carried out any strategy involving other players. If, instead, the nature is not positive, both players should not collaborate. In this case both would get a payoff of 0, instead of having a negative payoff if they decided to collaborate with each other (-10; -10), or even worse if one of the two players decided to collaborate with another partner, so the value destroyed by the collaboration relationship - that is the cost to manage and implement this strategy - would be higher. From the graph, it can be seen that in a situation where the two players are able to bring nature into their favor, i.e., by choosing the ideal partner and executing a pre-planning and high-level integration plan, strategy (C, C) is the best option for the two participants.

Considering, on the other hand, among the possible collaboration strategies between two companies, always assuming FCA and PSA as players 1 and 2, we can graphically represent the possibilities in the hands of the two participants:

Figure 20. An extensive representation of a game between JV and M&A strategies



Source: personal elaboration

The two players have two possible strategies: collaborate through a Joint Venture or through an M&A. If the strategies were equal, it is assumed that the collaboration is between the two companies; if they were opposite, i.e., one chose JV and the other MA, it is assumed that another partner was chosen. Thus, we can see that MA's strategy is dominant and constitutes a *Nash equilibrium*. In fact, regardless of the strategy of the other player, the M&A strategy is always preferable to the other. In the real case this representation is true, even if it is necessary to consider all those preconditions, integration and risks associated with this strategy that have been analyzed in detail in the previous paragraphs. I have considered the JV with a lower payoff than the M&A strategy because of the benefits that the latter can bring, the greater integration between the two companies and the greater potential synergies that can arise from such collaboration. Moreover, in

the practical case, it is worth considering that FCA and PSA have moved from a JV strategy, related to the LCV platform, to an M&A strategy, exactly because of the greater benefits that this can bring.

CONCLUSION

The automotive industry is one of the most fascinating sectors in the modern economy. I wanted to analyze the dynamics, trends, opportunities, and risks that this market includes to understand the strategies that major automotive groups implement to compete successfully. I focused mainly on consolidation between companies in the sector to understand the reasons that drive the firms to collaborate and compete at the same time. The automotive industry is a market where competition and collaboration manage to coexist. Therefore, coopetition is the main strategy implemented by all automotive groups. The market demands bigger and stronger facilities, factories, platforms, products, and innovations, which is why companies cannot cover all geographic markets. This is why they often collaborate with each other, open joint factories, or one company allows the other to produce a vehicle under its own brand in its factory, or use similar line-ups, develop joint technologies, or even allow the sale of their own products but under different brands in certain markets. At the same time, however, they also compete with each other, trying to sell the largest number of vehicles while cutting costs. Cost containment to invest more in R&D is, in fact, the main reason why two companies decide to collaborate. This collaboration is brought to its maximum representation by implementing an M&A strategy. It is indeed such a strategy, that two of the most iconic brands in the automotive world, FCA and PSA, have decided to implement.

The first two chapters provided a theoretical introduction, then applied to the practical case of Stellantis. The first chapter focused on game theory and how it provides a representation of the relationship between two players, even competitors. Game theory aims to represent the possible strategies of two participants. The paper started from the analysis of non-cooperative games between two players, and then moved on to the analysis of the *prisoner's dilemma*, a game in which the two criminals prefer to compete, although a cooperative relationship was more advantageous. Subsequently I provided a definition of cooperative and *biform games*, characterized by the simultaneous presence of competition and collaboration: coopetition. From game theory I moved, in the second chapter, to the analysis of the real strategies that two firms can implement when they decide to collaborate to obtain a competitive advantage. The analysis was progressive, starting from the strategy with the lowest degree of collaboration, i.e., strategic alliances, non-equity and equity, up to the theoretical description of joint ventures agreements and the transition to the M&A strategy. I then aimed to provide a strategic description of the M&A transaction, without going into financial detail, trying to explain what are the operational motivations that drive two companies to merge. In particular, a description of horizontal mergers with the objective of obtaining a cost

advantage has been provided. At the end of the chapter, synergies are analyzed, i.e., the exploitation of interdependencies that may arise as a result of a merger between two or more firms, with the achievement of a cost, revenue, financial or tax advantage.

In the third chapter, the theory was applied to the case of the Stellantis merger. Initially, I analyzed the automotive industry to understand the environment in which the new Group operates, and then carried out a competitive analysis using Porter's five forces. Next, I have analyzed the dynamics, trends, opportunities and risks that this market holds in order to understand the strategies that the major automotive groups are implementing to compete successfully. I focused mainly on consolidation between companies in the sector, to understand the reasons why companies collaborate and compete at the same time. Co-opetition is therefore the main strategy implemented by all automotive groups. I then outlined the history of the birth of Stellantis, analyzing the advantages of the M&A transaction, the synergies and, in particular, the benefits that such a merger can bring for both companies. I performed this analysis by reading press reviews, financial and operational reports, releases, pre-merger intentions and prospectuses, as well as reports performed by leading financial services companies. To provide a more complete, detailed, and original picture to the paper, I also conducted four interviews with industry experts to better understand the dynamics, intentions, insights, and motivations behind this merger. The first three interviews aimed to provide a more specific picture of the situation of PSA and FCA at the time of the merger and the main strategies of the new group.

I had the honor of interviewing two senior executives, whose names I cannot disclose for contractual and confidentiality reasons: one from PSA, who worked for years alongside Tavares in the restructuring of PSA and in preparing the merger until the end of 2019; the other from FCA for 10 years, currently an executive at Stellantis, who gave me a clear picture of the situation at FCA in recent years and especially Stellantis' strategic, operational and productive intentions in the short and medium term. The third interview, conducted with a journalist from IlSole24Ore, Dr. Marigia Mangano, was aimed at providing an expert opinion external to the two companies concerning the merger. For several years, the journalist has followed trends in the automotive sector and has been at the forefront of the events that have characterized FCA over the last 15 years. Finally, with the last expert, Prof. in M&A and Investment Banking Andrea Donzelli, we discussed the strategic but mainly financial aspect of the merger, helping me to understand and providing documents needed to evaluate the synergies that Stellantis CEO Tavares announced. These interviews gave me some data and information about the merger, in addition to experts' opinions that supported the greater efficiency brought by a collaborative strategy rather that competition. To conclude, I developed a game that well represented the convenience of the cooperative relationship between FCA and PSA.

The prisoner's dilemma showed how two players, who are rational, prefer not to cooperate to avoid the opportunistic behavior of the other. However, applying game theory to the Stellantis case, we noticed how, in a situation where the two automakers know the risks and work to ensure that the nature is positive, through detailed and careful planning, the collaboration strategy benefits both players.

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SUMMARY

Introduction

Collaboration between competitors is a strategy that is becoming increasingly popular in a dynamic, globalized, capital-intensive and risk-sharing environment. In the automotive industry, such relationships enable companies to compete and meet the ever-increasing demands and needs of consumers on the one hand and government institutions on the other. Agreements, alliances, joint ventures and mergers between car manufacturers are aimed at exploiting interdependencies in synergies, gaining competitive, cost or revenue advantages, increasing scale, gaining financial stability or making a large and risky innovative investment. Agreements built on a solid, rational basis between complementary partners, such as FCA and PSA, with the aim of pursuing a common goal with a shared strategy, can lead to market efficiencies and greater competitive power in the market, both towards competitors and suppliers, distributors, and consumers.

The aim of the paper is to provide evidence of the efficiency and benefits of collaborative arrangements and specifically, of mergers between competitors. This evidence is confirmed by the empirical case of Stellantis, the merger between FCA and PSA. For years, the two firms sought out and studied different competitors with whom to establish a strong collaborative relationship, to design short- and long-term objectives, planning strategies to be conducted in synergy in order to compete with the big companies in the sector and provide innovative products, conforming to and anticipating consumer needs.

The analysis is carried out progressively according to the nature of the relationships between companies. First an analysis of the competitive environment is conducted following Porter's work, and then an overview of the strategies between two firms is provided based on game theory. A definition of non-cooperative games between two players is then presented, explaining the equilibria and interactions between the two participants. The prisoner's dilemma is the best example that demonstrates the inefficiency of non-cooperation. From here the focus shifts to the analysis of cooperative games, in which two or more players can enter into binding agreements in order to base their strategies on cooperative arrangements. Such agreements may also occur between competing firms in certain sectors: this is reflected in the term *coopetition* (Brandenburger and Nalebuff, 1996). In this case, the strategies of the firms are aimed both at the achievement of their own and shared interests which, with common resources, can bring additional benefit to each firm. Coopetitive advantage is a type of interfirm strategy in which rival businesses agree to handle a partially convergent interest and goal structure and produce value through common resources and

plans. Game theory is thus applied to the market dynamics of firms. Moreover, In the second chapter I make an analysis of the possible collaborative strategies that two firms can put in place, according to the degree of dependence of the firms on the agreement. We then find strategic alliances, which are divided into equity and non-equity: they consist of a formal, or sometimes even informal, agreement between two or more independent firms that establishes a strategically relevant collaboration for the realization of different objectives, through the sharing of resources and risks and a certain mutual dependence. The firms thus collaborate, coordinate their activities, but remain autonomous. The second strategy consists in the creation of a joint venture, which increases the degree of dependence between the firms resulting from the shared ownership of the third independent firm. Finally, M&As are the closest collaboration strategies, as the dependency between firms is highest. The advantages of such strategies include the exploitation of interdependencies, called synergies, which are divided into operational (cost or revenue), financial and tax synergies. In the third chapter, the automotive sector is described and the case of Stellantis is used to support the thesis. The merger of FCA and PSA is then viewed from a collaborative perspective, synergies evaluation data are provided, and the different advantages and objectives of such a merger are outlined. The two companies have thus stopped competing by pooling all their resources, creating one of the largest automotive groups in the industry, able to compete worldwide and with innovative technologies. The elaboration of this assumption was also made possible thanks to the intervention of experts who provided their knowledge of the sector, their point of view and their opinions on the merger. In particular, I had the opportunity to interview two senior executives from the two former companies: a close associate of Tavares until 2019 at PSA, who led the corporate restructuring and the incorporation of Opel; a senior FCA executive for ten years, currently at Stellantis, with whom we discussed the different strategies of the new group in the coming years. Next, I interviewed a journalist, Dr. Marigia Mangano of IlSole24Ore, who is an expert in the automotive sector and has been working on FCA's strategies for years. Finally, with Prof. in M&A and Investment banking and MD Credit Swiss - Italy, Andrea Donzelli, I had the opportunity to evaluate both from a strategic and financial point of view of the various potential synergies announced by Stellantis. Afterwards, the analysis covered the different strategies that a company can implement in the competitive environment: non-competitive and collaborative, divided into strategic alliances, joint ventures and M&A depending on the autonomy between the companies. Then, with the intervention of high-level experts, the evidence of increased market efficiency, brought by a collaborative strategy such as the Stellantis merger, can be observed.

Chapter 1: The game theory

Game theory provides a theoretical and graphical representation of the interactions between two or more players, analyzes possible actions and the strategic interdependence between the participants. By competing in the market, each firm makes decisions while speculating on the behavior of the others. Non-cooperative game theory is concerned with how rational economic actors interact with one another to realize their own objectives. Each economic agent's payoffs are dependent not only on his or her own actions but also on the actions of other players. However, when binding agreements are made possible by the rules of the game, one may notice a propensity of the players towards collaboration to both achieve a positive payoff. Collaboration between firms can also occur in a competitive environment in order to increase profits, reduce costs, and lead to greater market efficiency than competition. This assumption is also confirmed by the prisoner's dilemma, that describes a situation in which two criminals, who do not cooperate, find an equilibrium - the so-called Nash equilibrium, i.e. that situation in which the strategies of the two players are best responses to the strategy of the other - by not cooperating, leading to a worse payoff than they would have obtained instead by entering into a cooperative relationship. This happens because the two players are prevented from cooperating, so, to avoid the opportunistic behavior of the other, they choose to think only of their own interest. Applying game theory to real situations, an analysis can be made of the relationships between two firms in case they decide to collaborate, assuming the previous statement: the greater efficiency of collaborative strategies over competition. These include, in order of firm autonomy, strategic alliances, joint ventures and M&As.

Chapter 2: Collaborative strategies between competing companies

The collaborative strategies might produce distortions in which self-interested conduct weakens the purpose of shared production. The distortion in the interaction between the two parties in the partnership game comes from each partner's failure to completely "internalize" the worth of his work. A partner understands that if he tries to increase the firm's profit by one, he will only get half of it. As a result, he is less willing to put up effort. For this reason, collaborations that involve only a limited firms' dependence, leaving them a certain degree of autonomy, may not generate the expected benefits, or at least the benefits deriving from such arrangements are certainly less than the potential benefits deriving from a total pooling and dependence of the firms' resources.

The objective of companies that decide to cooperate is incremental growth, which can be divided into dimensional or technological growth. The former aims to be more competitive in the market, to gain cost advantages and to expand into other geographical markets. The second, on the other hand,

has the objective of incorporating resources needed for innovation, to make investments, to obtain the know-how necessary to compete successfully in the long term, obtaining revenue advantages.

A strategic alliance occurs when two rivals or businesses in the same industry collaborate to strengthen a core business strategy, gain a competitive advantage, and prevent competitors from entering a market. It enables firms to do more as a group than they could on their own. It is a practical representation of the coopetition theory. Such strategic agreements do not preclude the autonomy of firms but provide a certain level of coordination between activities and synergies to be exploited. Strategic alliances may therefore be horizontal, if they involve two competing firms, or vertical, if they are implemented by firms along the production chain (e.g. suppliers or distributors). The objective for a company in the latter case is to entrust a part of its activity to another, specialized company, so that the former can free up technical, human and financial resources to be used in the core business, obtaining the efficiency of a capable partner for the collaborative activity. The strategic alliance can also be non-equity, when the nature is contractual or even informal; equity, when one or more firms hold minority shares in the other participants in the collaboration, with the purpose of increasing the degree of dependence.

The second collaborative strategy is the joint venture. In terms of the degree of autonomy between firms, this strategy lies between strategic alliances and M&A transactions. A joint venture is a cooperative arrangement in which two or more organizations work together to create a new company. A joint venture's participants share decision-making authority, operational control, and any profits earned by the enterprise. Companies prefer this strategy if they want to share the investment risk and their strengths and skills in creating a particular business. This business is separate from the main activities of the enterprises participating in the joint venture and therefore requires very strong governance, control and management systems. Joint ventures aim to reduce risk, while strategic alliances focus on maximizing reward. Both partners contribute equally to the profits and costs of the third company, the level of risk is limited to the investment in the third company as the core business is legally independent, the initial investment is often higher than in a partnership but lower than in an acquisition, both partners have performance incentives, higher control over the operations. Disadvantages include a possibility of losing proprietary knowledge, potential conflict between partners and shared control over operations.

Due to possible information asymmetries, the different bargaining power of the parties involved and the risks that may undermine the relationship (violations of industrial secrets, speculative behavior) and generate costs, the only effective coordination approach to govern the interdependence generated by the two companies is the M&A transaction. Divergent objectives and different motivations for cooperation, which may drive one partner to commit more than another to the

common project, compromise the degree of trust in the relationship and, therefore, the whole stability of the collaboration. Divergent objectives and different motivations for cooperation, which may drive one partner to commit more than another to the common project, compromise the degree of trust in the relationship and, therefore, the whole stability of the collaboration. For these reasons, in order to ensure an effective realization of the benefits deriving from cooperation, two companies have to share all their resources, becoming a single entity. In these cases, the companies create an organizational model that tends to be permanent, in which the internal links are not based on contractual agreements, but are realized through the subordination of the members to a single entity, which unitarily manages the group, with a consequent loss of independence of the member companies.

M&A transactions are divided into mergers and acquisitions. A merger occurs when two firms join forces to establish a new entity. Shareholders of the two businesses must consent to the merger, at which point they swap their shares for shares in the new company. The resulting firm is usually controlled by the management of both organizations. As a result of mergers, a new organization is formed from two or more organizations of a more or less similar scale, with all resources pooled. Acquisitions, on the other hand, relate to the process of one firm purchasing another. In this case, the buying firm incorporates the acquired firm into its own operations. Acquisitions can be made to eliminate rivalry by absorbing a competitor or to extend the corporate portfolio by keeping the acquired firm as a separate entity under the overall corporate administration. However, not every M&A succeeds in creating value and thereby achieving its objectives. To ensure the success of such a transaction, detailed planning, shared by both parties, is necessary to facilitate the integration process. This planning, divided into pre-merger and post-merger, aims to define the objectives and the strategies to achieve them. An accurate and realistic evaluation of the potential effects of the merger or acquisition must be made afterwards. The major failing was proceeding with the purchase without a detailed assessment of the post-merger management difficulties. The objective is to figure out if the proposed acquisition would achieve the desired result, and whether the acquired business's resources and procedures are compatible with those of the acquiring firm. There are several motivations for CEOs to implement an M&A strategy: managerial, strategic and economic or financial. The most common M&As in the competitive environment concern strategic and economic motivations. Such mergers can be horizontal, vertical or conglomerate. They aim to increase market share, achieve cost savings (i.e. scale, learning), and obtain know-how and technology. In the case of vertical mergers, the main objective is to achieve a more efficient coordination with the upstream or downstream chain, while in the case of conglomerate mergers the main objective is diversification, by obtaining economies of scope or complementary resources. Horizontal mergers,

on the other hand, take place between competing firms in search of cost advantages. These advantages allow the new company to have more resources to invest in technology and to be more competitive on the market, even lowering the price of its products. such cost reductions are possible thanks to the interaction of the resources, tangible and intangible, made available by the two companies, creating interdependencies that give these resources added value. Such interdependencies are called synergies. It is important to study what is the potential for interactions between the two businesses that can enhance the competitive advantage for both. A synergy occurs when the value of two businesses – considering their resources and activities - merged into one is greater than the sum of the values of the two businesses considered individually.

Before choosing on a collaboration option, managers must consider three sets of factors: the resources and synergies they target, the marketplace in which they compete, and their collaborative skills. Of course, if a company wants to grow, it must acquire the capacity to execute both acquisitions and alliances. Knowing when to utilize whatever approach may provide a bigger competitive advantage than knowing how to execute it (J. Dyer at al, 2004). The advantage of strategic alliances consists of a low level of investment required, access to the partner's know-how, both innovative and market-based, if the alliance has territorial expansion as its objective. Disadvantages, however, include a low level of trust, incentives and commitment, a relatively low profit potential, lack of control over the delegated operation and difficulties in transferring tacit knowledge. In order to exploit reciprocal synergies, companies have to work closely, basing on a process of knowledge-sharing, customizing resources and structures, trusting the partner at all. In this way, M&A is the best collaborating option. Such an operation requires a high level of commitment and investment; is an irreversible strategy, but the potential benefits are greater, as more resources and activities are pooled. The decision between alliances or M&A depends also on the nature of the resources: in fact, more the uniqueness of a resource, more the commitment is needed. If the collaborative strategy involves rare resources, know-how or innovative processes, as well as redundant resources, M&A are preferred.

Chapter 3: The automotive industry and the Stellantis merger

The automotive sector is one of the industries where collaboration and competition between companies coexist most. In recent years, the car has become a commodity, and consumers are demanding more and more of it, changing their requests. In fact, consumers' needs are mainly directed towards environmentally sustainable, safe, technological, and low-cost products. This has led manufacturers to look for strategies that will enable them to create an efficient model - hence the relocation of production to countries with low labor costs - and technology, towards the creation of

hybrid and electric cars. To achieve these cost advantages and up-to-date, cutting-edge innovation, companies have for some years been implementing collaborative strategies with competitors in order to meet customer needs. The industry's inclination to consolidation has already been acknowledged. The production of automotive is concentrated in the hands of a few extremely large companies in each of the major manufacturing countries, and small independent producers have almost vanished. The source of this tendency is mass production, which entails a significant investment in equipment and technology and is thus only possible for huge companies.

Over the last decade, sales of motor vehicles have risen from almost 75 million in 2010, an increase of 26% from the previous year - the negative peak of 2009 - to 96 million in 2017, a growth of 28% or 21 million new vehicles, then the market fell to 95.8 million in 2018 and 91.5 million in 2019, of which 67 million are passenger cars. In 2020, due to the Coronavirus pandemic, the automotive market contracted sharply globally, dropping 16%. In order to support a market that is essential for the economy of many developed countries, but also mature and one of the hardest hit by the epidemic, governments have decided to boost the automotive industry through government subsidies, especially for new hybrid and electric vehicles. Due to the support of demand from governments and new environmental and emission restrictions implemented by authorities, carmakers are preparing plans for short- and long-term innovation, increasing investments in alternative-powered vehicles, a market that is experiencing incredible development, reaching around 38% of vehicles sold in Q2 2021. As of 2019, the largest automotive group was Volkswagen, which, with its core brands of Audi, Volkswagen, Lamborghini, Porsche, Seat and Skoda, held around 12% of the market, while Toyota, in second place, held 11.6%. It was followed by the Renault group allied with Nissan and Mitsubishi, with a market share of 11%. In 2020, however, the Japanese group overtook VW, due to the German group's greater dependence on the European market, one of the hardest hit by the global downturn.

The main reasons for market concentration are economic and strategic, as it allows expansion into previously unreachable markets or the acquisition and enrichment of new knowledge and skills in certain segments. In addition, the opportunity to use the same components on different cars or the possibility of using the plants of one brand without setting up new ones, lead to advantageous economies of scale, and through standardization, costs are reduced. The future scenario will be characterized by a few large manufacturers because only a company of a certain size will be able to survive and compete with global rivalry. The destiny of the automotive sector is to be characterized by agreements between car manufacturers, but also by mergers that will increase the concentration of the sector. The main trend of the new millennium in the automotive industry, therefore, is consolidation. All car manufacturers enter into collaboration agreements, partnerships, equity and

non-equity strategic alliances and M&As in order to incorporate new resources and know-how, penetrate new markets, have different suppliers and distributors, obtain the latest technology and exploit other car manufacturers' facilities, to copy the production line, standardize the product and achieve cost savings. The M&A sector in the automotive industry, which includes both carmakers and component companies as well as high-tech companies, grew from $32 billion to $75 billion from 2015 to 2019. The number of transactions carried out by strategic investors (those with a volume of more than 100 million) grew by 40%, while the value grew by 50%, with an average of 1.4 billion per deal. While in 2016 two-thirds of M&A transactions were aimed specifically at achieving economies of scale, in 2019 it was only 39%. On the other hand, M&A transactions aimed at increasing economies of scope are on the rise, accounting for 61% in 2019 and even 75% in 2020 (Gianluca Di Loreto - Bain&Company, 2021).

As evidence of the trend towards consolidation between companies, there is the history between FCA and PSA. Until the 1980s, Fiat was one of the world's largest carmakers, behind only GM and Ford. In the new millennium, Fiat initiated a number of strategic alliances with other groups, mainly to compensate for the period of crisis by entering new markets. It began a partnership with GM in 2000, which ended five years later with a significant economic loss for both brands. In 2009, the Group bought 20% of Chrysler, and completed the acquisition in 2014. In 2015, the CEO, Marchionne, reveals that the consolidation process is necessary and inevitable: he tries to acquire Opel and to forge an alliance with GM, both without success. In 2019, the new CEO Mike Manley searches for new partners. Negotiations began with Renault, but friction with two important shareholders, the French government and Nissan, led to the end of the merger negotiations with the Italian-American group. FCA then agreed to a merger with PSA at the end of 2019. The French group owns the Peugeot, Citroen, DS, Opel and Vauxhall brands. Peugeot acquired Citroen in the 1970s, was close to bankruptcy in 2012, but thanks to the cost-saving, innovation and regrowth work done by CEO Tavares, it has managed to establish itself as one of the 10 largest car companies in the world. In 2017 it bought Opel and brought it back to profit after 19 years. In 2021, FCA and PSA formed Stellantis, the new fourth largest automotive group in the world. The pre-merger plan took more than a year, while the integration between the two companies will bring potential benefits of €5bn annually, with a cost of €4bn. According to the new CEO, Tavares, this M&A will create value of around €25bn. The company's financial structure is stronger, with increased liquidity, more tangible and intangible assets, increased investment in R&D and reduced debt. In addition, the synergies created at both revenue and cost levels allow the company to maintain a sustainable competitive advantage, as well as steady growth in both units produced and profits.

The two companies are the perfect partner. They complement each other geographically, technologically and in terms of leadership, as well as having significant exploitable cost and financial synergies. PSA's CEO, Tavares, who has personality and vision, will also manage the new group, while Mike Manley, who is more commercial, will run the division in America. This complementarity in terms of company structure and governance gives a stability to the new organizational chart, which will certainly help for a quick and easy integration, the basis of a successful M&A. With Marchionne as CEO, the merger was not possible, as one of him and Tavares would have had to play second fiddle, which is impossible with two leaders of their caliber. Geographically, FCA's sales are driven mostly by NAFTA, EMEA, and Latin America (56%, 28%, and 14% of total shipments, respectively), while PSA is concentrated mainly in EMEA. The Combined Group will have significantly greater geographic balance than either FCA or PSA, with approximately 56% of sales derived from Europe, Middle East & Africa, and Eurasia, and approximately 31% from North America, based on 2019. From a technological point of view, the two companies have different innovations in their portfolios, as PSA has an electrified product portfolio, advanced electric technology and also an EVMP electric platform dedicated exclusively to electric vehicles. FCA, on the other hand, has an advanced network and technology for connected vehicles. Thus, while PSA will leverage FCA's competitive advantage in North America, the former Italian-American group will be able to exploit and use the know-how of PSA's innovative, efficient and high-performance platforms. The synergies resulting from the merger will be cost, revenue and financial. However, only cost synergies are easily measurable, as the others depend on the degree of innovation that Stellantis and the automotive market will be able to achieve, and on the cost advantage of debt and equity that the new group obtains based on its new relationships with stakeholders. The operating synergies of €5bn per year for 5 years, with an implementation cost of €4bn, relate to products, purchasing, SG&A costs and other functions. In particular, the convergence of platforms and powertrains, as well as the optimization of R&D spending, will account for 40% of the projected savings. Stellantis forecasts that the other 35% of these synergies will come from purchasing reductions and economies of scale, with the remaining 25% coming from SG&A savings and the optimization of other activities such as logistics, supply chain, quality, and after-market operations. These savings will allow Stellantis to invest more on the electric powertrain front (which has reached a 10.5% market share in the EU by 2020), hybrid and Chinese market penetration. According to a study carried out by UBS, FCA and PSA combined invest about half as much in EVs as VW, the industry leader in R&D spending.

The risks arising from the merger between PSA and FCA can be divided into three categories:

1. Merger execution risks: While the PSA-Opel and Fiat-Chrysler mergers were successful, Stellantis is a merger of equals, which might result in integration difficulties, thus requiring a very detailed and planned pre- and post-merger program. The failure Daimler-Chrysler merger, the problems between Renault and Nissan, and the failed VW-Suzuki collaboration are just a few cases of problematic auto mergers. Realizing the synergies will necessitate reorganization, especially in Europe and Latin America. Moreover, the possibility of plant closures, as well as different managerial skills, directives and policies, may imply discouragement among employees, thus delaying the realization of synergies.
2. Exposure to the mature market: Stellantis' strong exposure to the US/Europe and little exposure to China may be disadvantageous. There could be an increased aggressive competition both in US and Europe. Moreover, due to the extremely competitive environment in Europe, straight FCA's European operation carries a considerable execution risk. Failure to properly reposition FCA's brands and industrial base in the region from the management, may have a major negative impact on Stellantis' profit margin.
3. Return to the Chinese market: The distance from the Chinese market for several years and the failure of both FCA and PSA in the area, despite joint ventures with local groups, may be a sign of inability to understand, adapt to and then enter the Asian market. Penetration into a market entails very high costs, investments aimed at collaboration with new partners, adaptation of the product to local customs and habits, the creation of a production site, and SG&A costs and related functions.

The paper was conducted with the help of reports, press releases, prospectuses, conferences, and financial documents, but above all with the collaboration of four experts, who provided their knowledge and opinions regarding the merger. This information, which highlighted the opportunity and benefits of the M&A, was in fact the result of interviews I had the pleasure of conducting with these professionals to understand the dynamics of the merger itself. The objective was to understand the different points of view, all the driving forces behind the merger, the insights, the opportunities and benefits of such a strategy. Three experts work directly in the automotive sector, while the fourth one, Dr. Andrea Donzelli, is MD Credit Swisse - Italy and Professor of M&A and Investment Banking at LUISS Guido Carli University. I first interviewed two senior executives from the former companies, PSA and FCA, but for contractual and confidential reasons I cannot share their names, which did however allow them to comment on the merger in person. The first expert, a former senior executive who worked closely with Tavares until 2019, was involved in the integration of Opel and worked in the pre-merger program with FCA. He was very willing to share some of the dynamics that were already present within PSA while he was an executive, his opinion on the

merger, the benefits both companies can gain and why this strategy is a positive move, beyond the forecasts many scholars use. The former executive thus focused on PSA's position in the years preceding the merger, thus giving me the opportunity to understand the French company's point of view and purpose for this operation. In addition, he gave his personal estimates of potential synergies, provided very interesting data on costs and on the importance of platforms, as well as other aspects of the production cycle that affect a group's sales. Afterwards, I had the opportunity to interview a senior executive at FCA for 10 years, who is currently a senior executive at Stellantis. With him we talked about the situation in FCA at the time of the merger and mainly about the objectives of the new Group, the opportunities and the challenges that may occur in the first years of operation. The expert revealed that Stellantis' strategy in the short and medium term will focus on the development of the electric market, alternatively powered vehicles and vehicle connectivity. The benefits of economies of scale and synergies will be exploited to invest in mobility solutions, connected vehicles and autonomous driving. The aim is for LEVs (Light Electric Vehicles) to account for more than 70% of sales in Europe and more than 40% of sales in the US by 2030, a target market where Stellantis intends to become the leader.

Having obtained the perspective of two executives within FCA and PSA who played key roles in the merger and in the two companies, I sought a point of view outside the companies involved, but experienced in the automotive sector. Therefore, I interviewed journalist Marigia Mangano from IlSole24Ore. For years she has been following the dynamics of FCA, interviewing Marchionne and other managers of the Italian-American group. Recently, she has been interested in the possibility of a merger with other groups, and then followed the affair with PSA. She gave me her perceptions of the merger and under what conditions an M&A operation can be successful, why they did not opt for a softer collaboration, what were the preconditions put in place by both companies.

With Prof. Donzelli, on the other hand, I investigated further insights and reflections on the M&A transaction in general, in order to carry out an accurate assessment of the possible implications and an in-depth study on the evaluation of the potential synergies created by the merger.

Finally, I created a game, represented in an extensive form, of the possible strategies that FCA and PSA could implement. If the two companies were able to influence "nature", which in the game is represented by player 0, i.e. influencing the variables in such a way that the M&A is successful, it can be seen that the collaboration strategy is the preferred action of both companies. Moreover, another game represents the major benefits that the M&A transaction can bring compared to other collaborative strategies, such as joint ventures.

Conclusions

Business strategy is planning, cost-benefit analysis and risk assessment. I wanted to provide a comparative representation of competitive and collaborative strategies, following the different degrees of autonomy of firms in cooperative agreements. I then looked for a sector in which competition and collaboration could coexist, in order to better understand the differences between the two strategies and future trends. The automotive industry is one of the markets where competition and collaboration can coexist. It is one of the most fascinating sectors in the modern economy. I have analyzed the dynamics, trends, opportunities and risks that this market holds in order to understand the strategies that the major automotive groups are implementing to compete successfully. I focused mainly on consolidation between companies in the sector, to understand the reasons why companies collaborate and compete at the same time. Co-opetition is therefore the main strategy implemented by all automotive groups. The market demands bigger and stronger structures, factories, platforms, products and innovations, which is why companies are unable to cover all geographical segments. Therefore, companies decide to cooperate in order to be more innovative, competitive and meet consumers' needs on a global level. At the same time, however, they also compete with each other, trying to sell the largest number of vehicles while containing costs. And cost containment to invest more in R&D is the main reason why two companies decide to collaborate. This collaboration is maximized by implementing an M&A strategy, which allows the greatest exploitation of interdependencies and savings. It is precisely this strategy that two of the most iconic brands in the automotive world - FCA and PSA - have decided to implement.