



FINAL DEGREE
DISSERTATION

“CHARTIST ANALYSIS”

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Abstract:

One of the most complex factors when making an investment is determining the moment in which this action is going to be carried out and upon which values this investment is will becomes practical.

To solve this issue, analysts use methods of analysis focused on the comprehension of the market and the formulation of predictions, the most salient ones being Chartism and fundamental analysis.

This study is going to make an in depth analysis of Chartism, which is based on the interpretation of graphics and attends to different elements of support so that the analyst can reach decisions in a beneficial way.

The question that emerges is whether this method is a good option to rely on in spite of its characterizing subjectivity or if, because of this, it would be better to resort to the fundamental analysis. The aim of the project is to shed light upon these questions.

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1. Introduction

First of all, the aim of this project is to conduct a study of chartist analysis, with the scope of inquiring whether this method guarantees a good result for potential investors. However, if the resulting study proves that the method is not beneficial, it shouldn't be taken into account when making effective investment decisions.

For this reason, first we must put an emphasis on the theoretical fundamentals necessary to comprehend this analysis in a correct manner and consequently a practical case is going to be presented, in which the previously exposed theory is going to be reflected and thus, with the analysis of the obtained results, we will reach subjectively towards a conclusion regarding the validity of this analysis methodology.

Furthermore, it is important to justify why a theoretical-practical structure is being conducted in this project. Actually, the reason lies in the fact that this method is the big unknown factor to me, because in my experience as a student it was in this area where I was able to learn the main theoretical fundamentals of fundamental analysis, but nevertheless I didn't know anything regarding chartist analysis.

That is why, I thought that to my lack of knowledge, in order to judge upon this matter first I had to get to the substance and engage with the most important information in that regard. Thus, once I had this step accomplished and through the completion of a practical example I would be able to render a decision of whether Chartism is a good option for the analyst or not.

Moreover, when it comes to the justification of the choice of my subject, I must admit that to my knowing, the area of stock investment seems especially appealing and that is why I enjoyed reading both books and economic press related to that field, because it feels interesting to constantly keep track on financial markets, and thus achieving a better understanding of these.

Even more, I must admit that this interest has been enhanced after completing a six months period of internship in the private bank sector and also by having had the opportunity to assist numerous informative meetings on finance markets and conferences related to this field. What is more, I can state that the real trigger of this decision was the assistance to one of these conferences in concrete, due to the fact that in it chartist analysis was exposed.

Thus, starting from this fact and in view of my total lack of knowledge regarding this method, I decided to conduct my final degree dissertation in order to have a better knowledge of this strand and to be able to assess it.

What is more, from my point of view, this topic has a high degree of relevance, giving the fact that when a potential investor intends to carry out an investment it is known that he must deal with making two main decisions, which consist of determining when is the adequate time to make an investment and the values upon which this is going to be performed. For this reason, it is necessary for the analyst to decide on the practice of an analysis method, and consequently, he must have a good knowledge of his possibilities when carrying out his research, of either financial markets, indices, or the currencies, so that he is ascertained that the elected tool is the adequate one and that it leads towards making fruitful decisions.

In addition, in my opinion there are various reasons by which Chartism acquires a special relevance in relation to other analysis methods, which add another minor support to my choice. There are, on the one hand, the possibility to apply this method without the requirement of a vast amount of knowledge of the analyst in relation to this field, because he will make decisions based solely on the evolution of the prices of titles for which he shares a potential interest, and on the other hand, that fact that Chartism allows its use up-to-the-minute, which in other words means that decision-making in chartist analysis is not linked with any kind of annual or trimestral result reports, a fact that gives the analyst the possibility to perform a decision-making regardless the moment of the temporal horizon in which we may be.

It is for this reason that I consider it interesting to become aware of Chartism's watershed, because in some occasions its use may turn very beneficial.

However, I must admit that decisions made a priori brought me certain difficulties, due to the fact that in this project intended to showcase all the information or the exposed concepts by means of real examples in a clarifying form. Hence, I recollected certain concrete, graphical representations and I must admit that locating them implied not an easy task. However, I could finally settle this issue by means of using a program called Visual Chart. I was granted access to it thanks to the bankers from Santander Private Banking, since during my research stay as an intern my colleagues recommended this program to me and they accounted for its functioning.

2. Part One: Theoretical approach

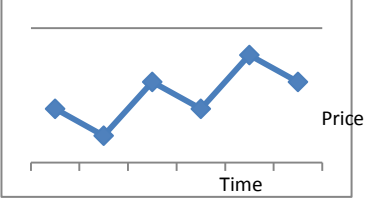
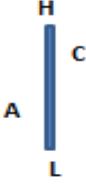
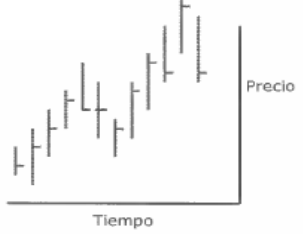
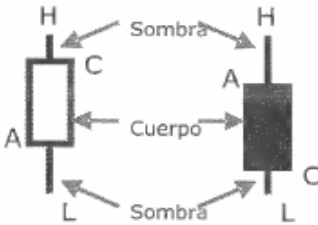
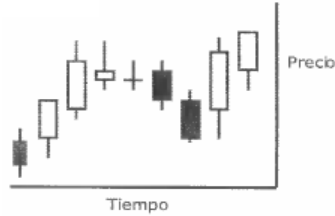
2.1 Chartist Analysis: Concept and Types of Charts

In relation to this analytical strand, it must be known that this mode encompasses the study of graphics, based solely on the price element, this way being able to recognize formations and figures in price graphics, with the objective of carrying out the development of truly helpful when making decisions in financial markets.

In fact, this tool is based on subjective proceedings and that is why, the margin of discretion can be considered an important quality of this analysis. This implies, on the one hand, that the quality of prediction of the graphics will depend upon the term taken into account, and on the other hand, each of the analysts can perform highly differentiated interpretations of the graphics. By this reason this project aims to value in the end the legitimacy of Chartism.

When it comes to charts, it is necessary to establish a differentiation between graphic modes which are most taken into consideration by the analysts.

A scheme is going to be presented below, which showcases the necessary information on the three most important modes.

Lines	Bars	Candles
<p>This one is the easiest. In it every period is represented by a dot.</p> <p>It can be drawn over any field:</p> <ul style="list-style-type: none"> • High or maximum • Low or minimum • Closure • Volume, etc.... <p>Example:</p> 	<p>Every period (minutes, hour, and day) is represented by a bar.</p> <p>Bar composition:</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>H = MAXIMUM L = MINIMUM C = CLOSURE A = APERTURE</p> </div> </div> <p>Example:</p> 	<p>This is the Japanese version of bar graphs.</p> <p>Bullish Period: Bearish Period:</p> <div style="text-align: center;">  </div> <p>Example:</p> 

Source: Personal elaboration

As a specification, it has to be taken into account that, of the three types of graphical representations previously described, the candle mode or Japanese bars is both the most utilized and taken into consideration by the analysts in Chartist analysis.

2.2 Chartist Interpretation: Tendencies

Once the differentiation between the various graphic modes is clear, the emphasis must be put on the interpretation of these representations that we, as analysts, may perform.

This interpretation must be focused towards the efficient comprehension of the market behavior, heading towards the recognition of tendencies that may follow titles, markets, etc. both in present and future moments. For that purpose, we shall rely on support tools, the use of which supposing great help for the practical implementation of this analysis.

The reason why trends acquire special importance lies in the fact that graphically, quotes of any title, index, currency...etc. will show a progression in the shape of tendencies and it remains clear that the recognition of these is considered a crucial step, since in order for us to have the capacity to make successful decisions, first we must be acquainted with the tendency that titles, markets or currencies follow in that precise moment, for which a potential interest is shown, because the leading tendency will have condition our decision.

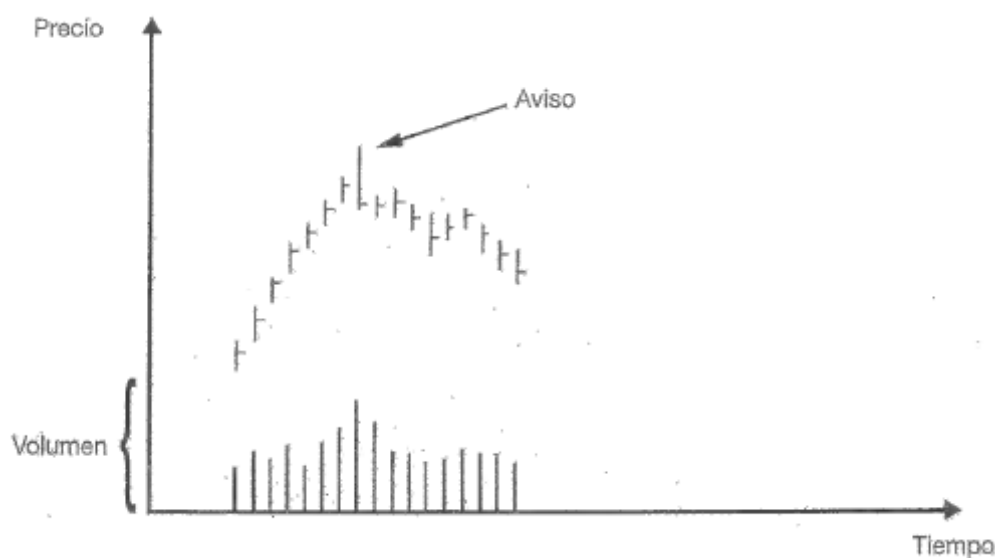
As analysts, however, we must go beyond that, meaning that we have to worry about approximated duration which the tendency may take so that we may be able to foresee what it is going to happen in the future.

That is why, it is important to consequently pay special attention to certain circumstances, inasmuch as these may foster variations of tendencies in any stock, market, etc., depending of the type of analysis we may conduct.

Nonetheless, we must bear in mind that that these tendencies trigger fluctuations, provided that they either take place in a session followed by a high negotiation or they are brought about in the known key dates.

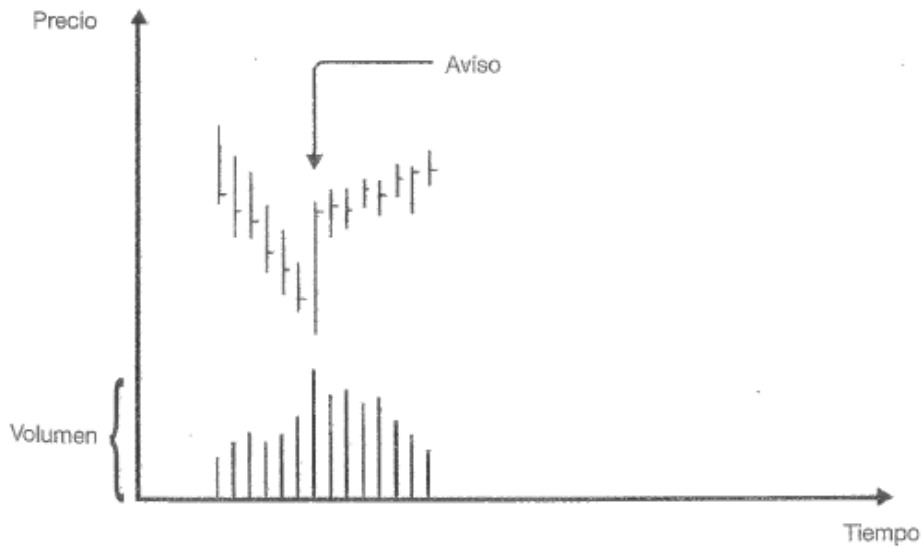
The aforementioned circumstances can be the following:

- On the one hand, when it is noticed that during a long, extended period of time the price quotations progress upwards, and then a session with a high negotiation is carried out, in which a fairly high closing price is determined. Then it would, therefore, foster the start of a low trend. The outburst of the change of trend aforementioned can be assessed in the following graphical description:



Source: Technical stock analysis. Amat, Oriol I Puig, Xavier. 1999

- On the other hand, given the opposite situation, in other words following a continued decline of quotations, a key date is established and a low valued price is set, being the consequence of the start of a bullish period. This change of direction of prices can be assessed in the graphic below:



Source: Technical stock analysis. Amat, Oriol I Puig, Xavier. 1999

In order to further comprehend the behavior of these tendencies, it would be interesting to be aware of the three existing types and to know what form and guideline every one of them follows graphically:

- Bullish Trend

This one follows a rising guideline. This implies that, graphically, the connecting line marked by the guideline is tasked to annex the minimal values and at the same time continuous step ups of rate quotations. Moreover, it is important to point out that once the analyst observes a sudden change of guideline reflected, he must ascertain this by giving a margin to the rates.

As an example, the following graphic about IBEX -35 is included, which gives us information in relation to the annual price evolution. In it the formation of different bullish trends can be differentiated, one of which taking a main role while the others appear by taking a minor relevance. The one labeled as the main trend is showcased as having an extended duration, to be precise it is located between mid-2012 and late 2015. Furthermore, the minor trend lines encompass a lesser duration, more concretely a period of time provided by the short-term. An example of these is the one located at the beginning of the year 2016.



- Bearish trend

This modality contains a progression marked by a guideline going downwards, which means that the line which makes up the guideline serves as a connection of the maximum quotations values, these last ones being decreasing over time.

Furthermore, following the previous modality, if the analyst prefers to avoid being too hasty and fall into error, it is necessary for him to verify whatever sign of a change of trend.

Finally, continuing with the IBEX-35 graphic, but in this case showing the rate evolution on a monthly basis, various trends going downwards can be differentiated. To start with, we can find a main bearish trend, which has its start in mid-July of 2015 and it ends mid-September of the following year, thus having a long-term duration. Secondly, secondary bearish trends can be charted, the duration of which containing a lesser time duration, for example the one that proceeds from February 2016 to July of the same year.



- Sideways trend, Featureless or “non-trending”

This trend modality does not follow any kind of particular continued guideline along the time axis. This happens because in the period of time contained in the aforementioned analysis there are no minimal or maximum continued values of rate quotations, which can be annexed across the line marked by the guideline. In addition, we must be aware that, if given the circumstance in which, as analysts, we have clues of the predominance of a trend, but nevertheless we are not certain of it, it is better not to have the suspecting trend into consideration and consider it as a case of “non-trending”.

In this case, we will exhibit the graphic from Caixabank as a representative example. In this graphic, a sideways movement of the quotation can be seen over a large period of time, more precisely between January 2014 and July 2015. The interpretation of the dominance of this trend over the indicated period of time can be interpreted as the non-existence of high investment opportunities during this term, due to the fact that the quotation swung around 3, 6 and 4, 2 Euros.

There are points, however, in which the resistance is exceeded and this circumstance can generate confusion among analysts, because we could suspect that these intersections may suppose a change of trend, as it might be related to this case's overtaking that is produced in September 2014, in which the start of an erroneous bullish trend can be deduced. In it mainly because of this that in order to confirm the

start of a new guideline we must analyze whether that change is made significantly and with enough volume.

That is also true concerning January 2015, where the quotation cuts off the downward trend's support, seemingly suggesting that the start of a bearish trend did not really happen.

On the other hand, in August 2015 the horizontal support line is again cut off downwards, which is afterwards attacked but without exceed the quotation, that level becoming a new resistance and start of a bearish trend.



2.3. Support tools:

As previously mentioned, if we interacted as analysts we would need these elements in order to carry out a good interpretation of this analysis, because thanks to them we could detect or prevent any kind of trend.

Down below that most utilized elements by the analysts are discussed:

2.3.1. Supports and resistances.

To begin with, a resistance takes place when a quotation level is produced; to which rates tend to stabilize within a period where a rising trend becomes prominent. Under this circumstance, it can be noticed that the volume corresponding to the demand would exceed the one belonging to the stock offer, because this is the one that would be in charge of ending the bullish impulse. This element can be graphically identified as previous peaks.

On the other hand, a support is produced when, within a period in which a bearish trend follows, the rate level starts to slow down with respect to its guideline. The purchasing power would advantage in relation to the title sale at this particular moment, which would be in charge of executing the stoppage of movement followed by the quotations, thus helping to rebound the rates. Usually, support comes referenced at a previous minimum.

Moreover, it is important to bear in mind two mentions related to both concepts. On the one hand, the importance of both supports and resistances relies on the past term. This circumstance is given, since the importance of both elements will have been increased if several proceedings regarding these have been previously given. Furthermore, when the fracture of a support is produced this would become known as resistance. This role exchange is reciprocal.

Once both concepts and their pertaining mentions are thereby clarified, as analysts we must make the following interpretation with respect to them:

- If we perceive that the quotation of a stock is getting close to the resistance line, we must interpret that all the investors in that moment will suppose that the stock at issue is overvalued and therefore this circumstance will incite us to conduct the sale.
- However, if we observe that the stock rate continues to rise, even coming to exceed the resistance line, we will become aware that the bearish trend is persisting during a very long period and therefore, sale pressure will decrease and it will be under this circumstance when there will be likelihood of a real rate increase.

As a result, broadly speaking every investor must be aware that it is advisable to conduct a purchase, given the circumstance in which the rate comes to exceed approximately 3% or 5% of the resistance line, because starting from this point the title will follow a rising trend. The other way around the same will happen, in other words with the support lines.

In order to clarify this concept, we shall once again expose as an example a graphical representation of the evolution of IBEX-35 in the long-term, more concretely over 9 years.

In it, we can see that there are rate levels that repeat throughout this period and that at the same time they becomes important supports, as is the case of the 7.530-point level, where the index relied on various occasions (red-colored). Likewise, we draw another support line into 9.230 points, which in turn it becomes resistance in the year 2016 (blue color).



2.3.2 Channels and Holes

First of all, channel formation takes place in the situation where the quotation of rates of a particular stock fulfills its evolution in a space graphically traced between a support line and another of resistance.

Down below, a graphic representation is shown as an example in which a rising channel takes place. This shows the trimestral evolution of Repsol's quotations during a long period of time, to be precise since July 2012 until April 2014. In it we can see how the quotation value was fluctuating, giving purchase signals in the support moment of the lower side of the channel and sale signals in the upper part of it (trading).



In a similar fashion bullish or bearish regression channels are portrayed, such as the two formed over a long period of time by the index S&P500, more concretely sixteen years. In this case, the annual evolution of the index is shown and historical peaks are still being set.



On the other hand, it is essential that as analysts we must consider the relevance of this moment, because thanks to it we have the opportunity to perceive future trend changes. This variation would appear at the moment in which price evolution goes through the channel, that is to say, both parallel lines previously mentioned. Depending of the line that was crossed, the analyst might perceive what trend modality would prevail in the future.

Given the case in which the traversed line represented the support, the analyst should assume that in the short-term, the start of a period dominated by a downward trend would set off. This would take place after the most seasoned investors had conducted the sale of the income in their possession.

However, if the traversed line was the one from the resistance a bullish period would start in an upcoming period, after the clustering incomes caused by the most capable investors.

In this case, as a clarifying example the Bankia graphic well be exposed. In it, we can observe that after a strong bullish impulse in which quotations evolved along an upward channel and achieved a high value of more than 1, 55 € per share, the support line of this channel is trespassed, thus modifying the rate guideline, since this fact gave birth to the start of a bearish channel in April 2014 approximately.

In this manner, quotation went plummeting through this channel and finally it was cut downwards in January 2016, a fact that is an indication of the continuation of the bearish trend:



On the other hand, when it comes to holes, we must know that these appear given the situation when the lowest rate of a particular share for a limited time period is greater than the price corresponding to the highest value for the previously mentioned time period. Graphically this concept is quite difficult to recognize, as we will show down below.

Yet, before this it is mandatory to know that there are different whole typologies, the most important of which being the following:

- **Shearing Hole:** when this modality is given, the analyst interprets that in the short-term a noticeable fluctuation can result in the discussed shares quotations and moreover, it is known that it will be coupled with a noticeable volume. These take place when graphically a trend change of guideline rupture takes place and it is important to specify that generally, these holes tend to be left uncovered.
- **Extension Hole or Intermediate:** this modality occurs while being half-way through a trajectory. Various circumstances may result, such as:

- Developing half-way through an upward trend, in which case it can be interpreted as a strength indication of the financial market expected to operate in.
 - Or on the contrary, developing half-way through a downward trend. This circumstance would occur as a sign of weakness of the market.
- Exhaustion hole: this type takes place when a trend that lasted up until now is going to end. If there is a case which previously has had shearing or extension modalities, the analyst has to know that there is a high chance for an exhaustion hole to occur in the short-term. In addition, the latter closes within a few days and once the closure is executed, the analyst has to be aware that it is highly probable that there is an upcoming change of trend.
 - Isle investment: following the exhaustion of hole of the aforementioned type, it is known that a rupture hole will consequently take place in the vast majority of the cases. This will generally be developed conversely to the preceding trend up to that moment. As a consequence of this circumstance, a set of rate levels that are off the graphical representation occurs, and this is how the isle formation comes into shape. Furthermore, in conclusion, the isle investments come from the implementation of a significant change of trend.

In order to shed light upon this concept, the following graphical representation charted by Apple is exposed, where several bullish and bearish holes took place in its quotation, which are marked by a circle.

These holes represent sudden quotation shifts, being either upwards or downwards, which on occasions owes to events that cause a high volatility in share rates, such as, for example, the result presentation.



2.3.3 Volume

This concept addresses to the whole number of shares which have been negotiated in a determined period of time, the latter being quite important, since as analysts, thanks to this element we are able to value and quantify which is the strength level that couples with rate variations. This means that, we might know what will happen to quotations trend simply by paying attention to volume factor, although it is clear that the best option would be to rely on each and every one of the support elements mentioned in this study.

For that reason, if a beneficial use of this instrument is meant to be carried out, it is advisable that at the same time as the analysis of it, the analysis of the quotation evolution of the share rates at issue also needs to be performed, in order to thus establish a relationship between both elements, that is to say, between the contract volume and share quotations.

Down below, the patterns to be followed as analysts are showcased versus the rise of various combinations of both factors, volume and rate tendency.

- If given the case in which a rate bullish trend couples with a an increase of the contract volume, as analysts we should interpreted this combination as having a greater demand than stock offer in that precise moment, and under this circumstance it would be interesting to conduct the stock purchase.

- When a rate increase trend is produced, followed by a loss of contract volume, we should be cautious. This caution would be caused by the circumstance which would reflect the cited factors combination, that is to say, by the finalizing warning in the short-term by the rising rate trend. In consequence, against this factor combination we should avoid buying stocks.
- Against a bearish rate trend coupled with a contract volume decrease, giving birth to a low volume, as analysts we should think that after a long-term bearish trend, investors maintain their stocks, since in the short-term a guideline change of rates fluctuation is expected. Therefore, this is not good moment to conduct that sale.
- Finally, when a bearish trend of quotations coupled with an increase of negotiation volume takes place, thus giving birth to a high volume, as analysts we would advise investors to carry out a stock distribution, since in the short-term a bearish trend will resume and therefore, at the moment their possessions are overvalued. Thus, it is a good moment to sell.

2.4. Types of Chartist Formations

Formations are drawings of a geometric type which appear in graphical representations and these may be considered by us as patterns of market behavior recurrent in time.

These are formed by means of quotation fluctuations of a particular stock, currency, market or index over a period of time. Among these, two big groups can be differentiated, each of them formed by diverse modalities. On the one hand, they are the figures which indicate a trend continuation, and on the other hand they take notice of a change of trend.

Before we pinpoint the modalities within each of these two groups, it is important to be aware of the general traits from patterns of both groups.

- To begin with, we must know that in order to form a graphical representation it is necessary that a previous trend exists, either bullish or bearish, but it can never be preceded by a lateral channel. Thus, if given the circumstance, it would not make any sense to apply the chartist analysis.
- Moreover, the movement that we shall perform as analysts will be in proportion with the formation. That is to say, if for example there is a case in which a pattern emerges three months after its formation, it is clear nonetheless that this will have a course or a repercussion which is greater than a formation configured in two weeks.
- If a comparative between superior figures is made, in other words the ones that appear on tops and the lower ones, which carry out their formation on grounds, it is important to specify that the first modality will stand out in relation to the other due to its volatility and for having a shorter length. This circumstance fulfills generically.
- In addition, the volume tends to be important for the two previously mentioned types of patterns, even though it has a greater significance in the lower patterns. This happens because superior modalities are not in need of a rising volume confirmation in rate shearing, while for the lower ones they do. In order for the price to grow it takes a lot of volume and yet, in order for it to decrease it is enough that individuals who were maintaining it cease practicing this exercise.

2.4.1 Changing trend figures:

2.4.1.1. Shoulder Head Shoulder (S-H-S)

This modality may appear to us in a normal and inverted form, both of them being matching typologies but with a main difference, which lies in that the normal figure comes preceded by a bullish trend and will mark bullish peaks in each of its three phases, however, the inverted one emerges against a bearish trend and will draw bearish peaks in its three stages.

The mentioned phases which shape the formation of these patterns are the following:

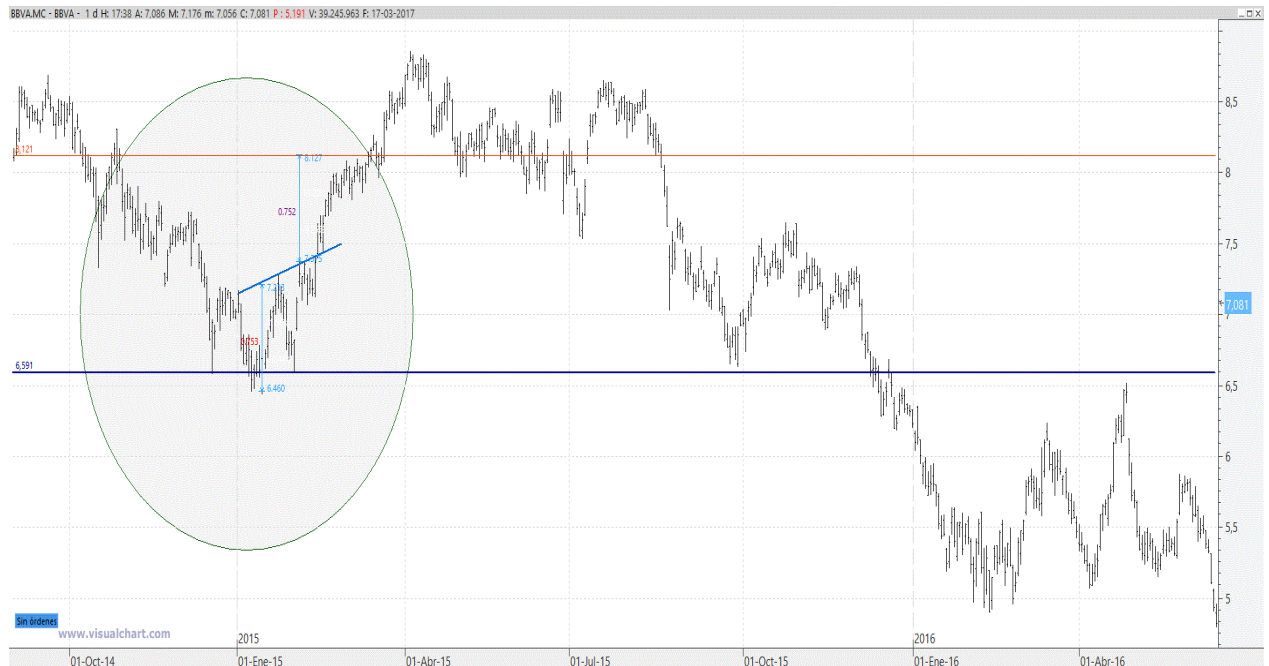
- The first corresponds to the left shoulder, which makes reference to the first peak in the case of the normal figure, or valley if is the case of an inverted S-H-S, the latter representing the third-to-last stock increase or decrease before the decline or the rise of quotations is produced.
- Subsequently, once the rate decline is produced (in the case of the normal S-H-S) or the rise of this (in the case of the inverted S-H-S), a head can be marked. As analysts we shall interpret this as the last cycle rise or drop.
- And finally, the right shoulder is marked, which indicates the decline (normal S-H-S) or the definitive stock rate ascension (inverted S-H-S) at issue.

On the other hand, as analysts we must make sure that as a matter of fact a pattern of this type is involved when having indications of it. To this effect, in case of a normal formation, we would check that the distance which can be seen graphically in the decline of the right shoulder is closely similar to the one found between the clavicle line and the top part of the head, knowing that the neck line is achieved starting from the union between the lowest point of the drop of the first shoulder and the lowest dropping point of the head.

As it is a little difficult to know the exactitude of this value, by default it is established that the drop of the second shoulder lies between one and five per cent more or less of the clavicle line. However, once this requirement is fulfilled it is convenient that the analyst performed a hallmark of the contract volumes.

And finally, we must specify that in this pattern the minimum rate objective is determined according to the distance found between the head and the clavicle line.

As an example we include the following graphic of BBVA, from which we can deduce the formation of an inverted S-H-S. In it, we first draw the clavicle line that unites the top part of both shoulders and secondarily the distance, in relation to height, which appears between the head and the mentioned clavicle line, which once transferred to the end of the right shoulder would give us a bullish projection of the value:



2.4.1.2. Double or triple top or ground figures

The first thing to bear in mind in relation to the two and three top figures is that we must know that they are primarily characterized by having two or three peaks at the top, which would play a resistance role, accompanied by two or three minimum rates, one for each of the mentioned peaks consequently succeeding. Therefore, these points appear in a continued form in the temporal horizon and either the minimum rates or the maximum rates are valued by the exact same amount.

In addition, we must know that on the one hand, in the graphic plan the peaks form the top of this formation and secondarily the ground is structured by means of the union of the two lowest value points, and on the other hand, this formation comes preceded by a bullish trend and by a rather high volume.

And finally, once the analyst renders this formation modality finished, he must know that subsequently a drop of rate quotations will be produced, which will be at least quantified with an equivalent value of the distance between the top and the ground.

From a secondary point of view, in relation to triple or double ground formations, we must point out that these come preceded by a bearish trend and for this reason this pattern is achieved, since after a period of time in which a bearish guideline becomes prominent, a tipping point takes place and here is when two or three minimums are produced accordingly in time, which are quantified in quite similar values. These points would graphically represent the ground of this formation.

Against the occurrence of each of the mentioned minimum values, immediate rates quotation goes through a certain recovery in its value, coupled with a volume lower than the one reached in previous moments. As a consequence of these the rate level improvements, the top of this figure is built.

Finally, we must specify that these four pattern modalities are characteristic by the certainty degree which accompanies them and secondarily by their ability to be recognized, since these patterns are quite common.

In a visual fashion we will expose the graphic of Arcelormittal, since in it a possible double ground formation is showcased, which lasts approximately four months, starting with the first valley, starting in April 2013, and ending with the valley of July of the same year, both of them being marked graphically through green arrows.

Moreover, the projection of its quotation is bullish accordingly to the existent height of the double ground formation. In this particular case, the height of the double ground was of 1,43€, meaning that the bullish projection of the double ground coincides with that number counted since 7,80€, in relation to the view of this figure we can predict that the quotation will reach the sum of 9,23€.



2.4.1.3. Rounded top and ground

In the first place, we must know that the rounded ground pattern comes preceded by a bearish trend and tends to develop against the tiredness of the demand and the decelerated stock offer increase. Conversely, the rounded top formation lies in the weakness of stock offer, accompanied by the paused rise of demand, provided that previously to this circumstance, rate quotations had followed a bullish trend.

Furthermore, of the two modalities we can highlight the following main differences:

- First of all, the existing relationship between the evolution of rate quotations and the transaction volume differs in both patterns, since in the rounded ground formation there is a similarity between them, both being loyal evolutions to the pattern at issue. Yet, in the rounded top figure we can observe that both of them do not evolve in a comparable fashion, since the volume shows an evolution contrary to the mentioned pattern and to the quotations, that is to say, the volume evolves in a U-shape.
- Secondly, we must know that the rounded ground is an accumulative pattern, that is to say, under its development investors will acquire more stocks, and conversely, the rounded top is a distribution figure, since it supposes the

distribution of stocks which relapse into the ownership of investors, and therefore, a mix of the most competent and inexperienced investors.

As analysts, we must know that in spite of the experience which we might have on the subject, to recognize a rounded top is something which is far from being obvious. This happens because this formation lacks geometrical points, by means of which the analyst may detect the ending of this figure.

A clear example of a rounded ground is the one formed by Gamesa, in which this pattern lasted for a long period of time, more concretely two years and in it we can observe that the quotation first went from 6,2€ to 1€, and afterwards, it drew the other half of the rounded ground, going back once again to 6,20 €.



2.4.2 Figures of continuing trend:

2.4.2.1 Triangles

First of all, it is important to specify that under this pattern we can find three differentiated modalities, such as ascendant triangles, descendent and symmetrical, all of them needing an approximated period of several weeks for their formation. Secondly, we must point out that against the formation of any triangle a decrease of the transaction volume will produce.

Moreover, among these three modalities we can take notice of a main difference, which lies in the offered information that the three different formations add over the future rate behavior.

On the one hand, the ascendant and descendent typologies are included, which function the same way. In them, once their formation is conducted, the analyst will know what generic guideline the quotations will adopt, just by looking at the trend which follows the steepest slope of the triangle, this one being easily identified since the remaining line goes according to a horizontal line, that is to say, the patterns of both modalities are right-angled triangles.

On the other hand, there is the remaining modality, namely the symmetrical. This one corresponds with an isosceles triangle and therefore the two lines that form the pattern follow a trend, each of them being different. For this reason, once this pattern has ended, the quotations might follow any of the two guidelines.

As an example, we expose the following graphic of Telefonica, in which the formation of a possible ascendant triangle can be observed. Under this pattern modality, we can observe how on the one hand quotations move within thereof and on the other hand, we notice that as the temporal axis approaches to the vertex of the figures, the rate breaks the triangle at the bottom indicating a bearish movement, conversely to what the slope line that shapes the ascendant triangle was indicating, that is to say, this is the example of an exception, since in this case our previous affirmation has been neglected.



2.4.2.2 Flags and Banners

In the first place, in relation to flags, we must know that graphically these are very similar to channels and they have a long-term duration. In addition, it is important to specify that, these figures tend to appear against sudden and aggressive quotation evolutions, since these are regarded as a tipping point in rate evolution, necessary to continue with the followed trend at the present time.

Moreover, in them we can observe that the quotation evolution will show a slope contrary to the followed guideline in that precise moment. That is to say, if at the present time the quotations of a company follow an upwards guideline, during this formation a bearish trend will follow.

And when it comes to volume, we know that it evolves in the same direction as the rates, meaning that the volume is loyal to the trend and the trajectory objective is revealed by the figure mast, since if we move it until the temporal axis point in which the rupture is produced, it will showcase the pursued rate level.

On the other hand, in reference to banners, we must clarify that these patterns are very similar to the ones previously exposed, since they also form in the short-term and they are considered as an interruption in the path followed by the trend.

However, as a main difference we can specify that under this pattern modality the evolution of quotations fluctuates along a triangle and in the case of banners this becomes a rectangle.

In the following graphic of Técnicas Reunidas we present what might be the chart of a flag, being quite similar to a channel but in truth the latter presents itself in a more narrow fashion. For this reason, the quotation moves rapidly between the two parallel lines that form the flag.

In addition, it is probable that in view of the formation of this figure, the quotation may be a subsequent bullish trend if it upwardly cuts the flag resistance significantly.



2.4.2.3. Wedges

Within this formation modality we may distinguish between bullish and bearish wedges, against which we must pay a lot of attention since they may be easily confused. These patterns appear when a change in trend has occurred, in which either a bullish guideline took place in the case of the bearish wedge or on the contrary, a bearish guideline occurred if we refer to a bullish wedge.

Another circumstance which helps us recognize both patterns would be when we see that the rate evolution within a value range takes place, which would gradually narrow along the temporal axis, thus diminishing the rate fluctuation capacity. The two lines that form the mentioned range would be graphically united by a vertex, thus forming the mentioned figures.

In relation to the lines, it is important to point out that these function as resistance and support, respectively, either in the bulling wedge or the bearish.

Finally, in relation to volume, it is important to specify that this will diminish when this formation appears, until the wedge gets crossed and the volume gets recovered from the previous drop.

Down below, we present as an example a graphic that showcases the evolution of the Eurodollar. In this graphic by means of a grey circle we mark the possible formation of

a bearish wedge, which gives birth to the fact that the evolution of quotations over time would delimit itself. Finally, this figure ends with a downward cut.



3. Part Two: Practical Application of Theoretical fundamentals

3.1. Practical Example

Let's imagine that a potential investor wishes to carry out an investment trying to obtain its maximum profit and therefore he seeks us analysts so that he is recommended in this field.

Our initial task to put into action would be to carry out an in depth analysis of different markets with the objective of detecting potential profitable opportunities for our investor. For this, it would be necessary to conduct an analysis of a high number of graphics.

To begin with, we would start with the analysis on a global level, such as currencies and stock indices, to thus find out what currencies would be ideal in order to carry out our investment and in what countries we would be interested in conducting this action. Secondly, we would take sides with an economic sector in terms of our analysis and finally, we would choose the company or companies that we consider ideal for the investment of our client.

Actually, we must specify that this policy-making will not obtain as an answer only one profitable alternative for our client, since, indeed, once our analysis is conducted we shall notice that the potential investor can a priori take sides with many investment options, since a unique successful alternative does not exist.

Moreover, it is important to know that once our market-related analysis and policy-making are finished, as well as currency, sector and enterprise/s in which we are going to invest, it would be necessary that we subsequently established several investment patterns which would allow us to successfully make decisions, through target setting both upwardly and downwardly. These would allow us , on the hand, to halt losses in case we would choose and incorrect investment option, and on the other hand, they would help us to keep in mind which is our objective, thus allowing us to recognize situations in which we should undo positions in spite of the fact that these would offer us profits.

Therefore, being aware of all this we can begin our chartist analysis.

To begin with, we shall perform an analysis of euro / dollar exchange rates to see whether investment opportunities exist, which would allow our client to obtain a greater benefit because of the risk of the adopted exchange rate.

This way, if we think that the dollar will continue on the assessment path regarding the euro we might present the change from euros to dollars for our client and search for an alternative investment in dollars, thus obtaining benefits of both the revaluation of the elected value and the expected assessment of the American currency.

This investment alternative is supported on the one hand by the rising scenario of interest types that is being occurred in the USA, which had its inception in December of the year 2016 and on the other hand by the new market rate increase which took place in part due to the Federal Reserve, more precisely in March of the same year. In addition, we must know that the aforementioned events reinforce market predictions, since the market indicates that two new increases are expected to happen for the current year.

For all that, as analysts we should take notice of the applied guideline with more and more impetus on the dollar and act according to the economic theory, which tells us that we should expect a quite noticeable assessment of the dollar/euro exchange rate. Let us observe the historical evolution of the euro/dollar exchange rate in the graphic below:



In this graphic we can observe that the euro/dollar exchange rate marked its peak around 0,63 \$/€ in early 1985, and on the contrary, marked its historic peak at 1,60 \$/€ in July, 2008. Actually, we might add that there have been large and successive, depreciation and assessment cycles of the currency over time and that is why we should analyze the expected transactions in the short-term.

In that sense, we observe that since July 2008 a marked, main euro/ dollar exchange bearish trend has been drawn, ending in a situation in which, since May 2014 the currency plummeted, thus leading its support level to a quantified value of approximately 1,040 in March 2015. From then on, the currency has shifted sideways between 1,04 and 1,14 and even another sideways channel seems to have formed between 1,08 and 1,04. Down below, we present a scaling-up of the previous graphic, in order to better appreciate the segment of the mentioned trends.



In fact, if we consider the evolution of the currency in the following graphic in a trimestral fashion, we can observe that a double top seems to be forming, which, as we already know it is a bearish figure, and therefore could launch the euro/dollar exchange rate to touch upon the long-term bullish guideline around approximately 0,95. In the graphic we mark the possible double top pattern formation by means of two arrows.



Therefore, it may seem that the direct dollar investment alone or by means of American actions may be a good investment, taking into account that the currency's own evolution (assessment versus the euro exchange rate).

Hereunder, we are going to analyze the historic evolution of some stock indices, such as S&P500 and our IBEX-35, with the aim of determining whether it would be a good option to carry out our client's investment by means of American actions, as we previously mentioned, in addition to the direct form of dollar investment, or on the contrary, it would be better to take sides with the national market.

In the first place, we proceed to carry out the analysis of the graphic that shows us the evolution of the index S&P500:



In this graphic we can find a clear bullish regression channel since 2009, where the index is continuously marking historical peaks. In spite of the adopted guideline on and on over time, it does not seem to be any hint of depletion of the bullish trend, as it seems to have happened in the period encompassed between years 2015 and 2016, which we mark by means of a circle.

However, it is important to point out in relation to the mentioned depletion, that it wasn't confirmed and therefore the index bounced on the lower part of the channel, thus continuing with its bullish trend.

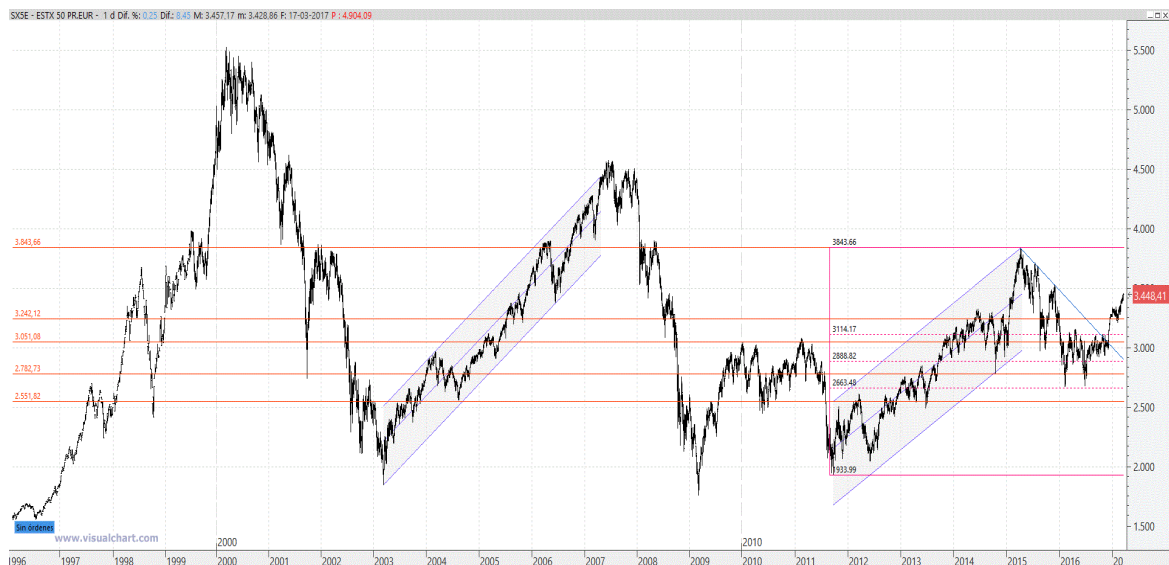
In case of a trend shift, that price zone around 2000 points of the S&P500 index, could act as a support and that, in case of which a bearish rupture could suppose a real trend shift. At the moment it seems that it is not the case and therefore, we might recommend our client to conduct the investment in the index at issue, through the derivatives market (options and futures) or through warrants.

Other possible alternative would be if we detected a company that lists within the index in order to see its revaluation potential. For this matter we use Apple as an example:



Apple's quotation marked its previous peak in April 2015 of 134\$, from which a bearish guideline was initiated, of which a quantified support of 89\$ (May 2016), greatly bouncing off that level and even exceeding the 134\$ of the previous peak and up to the current 139\$.

In addition, it is important to point out that as observed in the following graphic, the evolution of this company is similar to the S&P500 index itself in these last trading days, which at the moment seem to remain rising.



If we analyze sector-similar companies such as Google, Amazon, EBay etc... we would also find strong bullish trends which at the moment do not seem to present exhaustion symptoms and therefore they could be a good investment alternative, just like Apple.

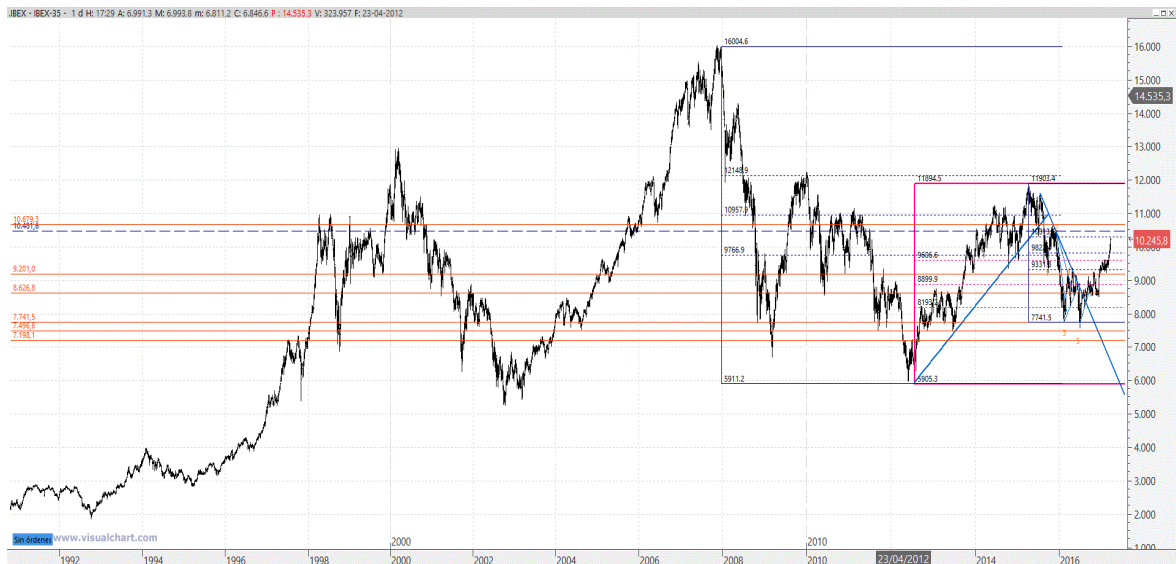
In fact, our client's investment will not be limited to a single value but to various, scarcely correlated ones, in order to agree with the principles of diversification and in some way with Markowitz's value selection theory.

For that manner, it would be interesting to focus on other sector within the American market, from which our client could benefit from the gradual increases of market rates, such as the banking sector, which will see its intermediation margins growing in minimal as of yet. Let us observe the example of the evolution of the Bank of America:



In this representation, we can observe that in only just twelve months quotation has shifted from 11\$ to the current 24,86\$, exceeding a possible resistance in 18 and 21\$, even though its historical peak was marked in the 55\$ of the year 2007, which is why a potential revaluation exists in the long term. This would be one of the sectors to monitor, in order to see if quotations are still revaluating or they are looking for possible cuts around 21% so that positions are going to be adopted perhaps.

Finally, our IBEX-35 presents the following historic series of prices:

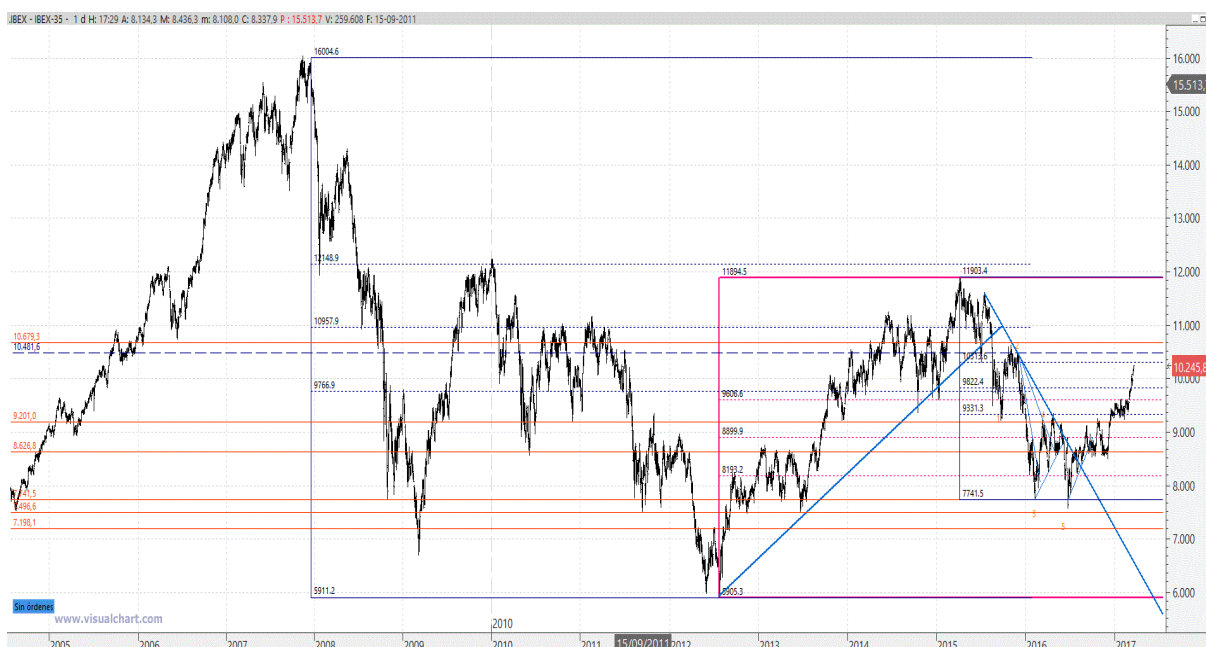


In this first representation, we can see how the index reached its highest value at 16.000 points in late 2007 and how it plummeted up to 5.900 points in 2012. However, over the year 2009 a strong upturn was produced, which lasted approximately twelve months and where the index fluctuated between the values of 6.700 and 12.000 points,

but this strong upturn met with the main bearish trend and the trend continued downwardly until the year 2012.

In that moment, when the start of a new bullish trend which lasted approximately three year takes place, thus causing the index to touch upon 12.000 points again as a strong resistance.

In the following graphic, this bullish trend can be observed in greater detail, since the representation is amplified. Thus, we can notice that the trend has its start in 2012, as previously marked and it ends in 2015, after encountering the resistance, this way starting a new bearish segment:



Finally, in the last bearish segment, this lasts from March 2015 until mid-2016, and we can observe that the guideline that this follows gets cut in August 2016, a moment in which we can see that the index begins to perform sideways movements, although relying on the 8.600-point support and finally exceeding the 9.200-point resistance.

In this moment it is important to specify that the index is believed to be moving around 10.330 points, which would make up a recovery of 61,8% from the previous bearish segment (Fibonacci progress). For that reason, it is quite likely that the index reaches that level and even tries to reach the second resistance of approximately 10.500 points.



As a result, in terms of value we observed strong increases since late 2016 and during this first term of 2017 and in this way, we could be interested in the most significant values of this index, such as the ones pertaining to BBVA, Santander, Telefónica, Repsol and Iberdrola.

Thus finally, as a consequence of our chart analysis we may claim that regardless of the proposed options, our client could obtain benefit, meaning that he could achieve putting into practice a successful investment.

At this stage, our task would be to decide under which circumstance we believe that the investor might obtain a greater profitability, that is to say, we should choose one of the different investment alternatives previously mentioned, which, as we already know, imply either investing directly in American currency or perform a diversified investment in different companies that list, or either in the S&P500 or our IBEX-35.

Because of this, it is quite difficult to know which of the previous options is the most beneficial for the potential investor, solely relying on the predictions performed based on the rate result record of the different stock indices, currencies or companies, which are reflected through the studied graphical representations throughout our analysis.

Over the course of this analysis, however, we have put an emphasis on our reflection in relation to the dollar/euro exchange assessment in the short-term and because of this, in concordance with our expectative and the predictions drawn upon the mentioned study, our client should be advised to choose either the option of investing in American currency or the option of forming a diversified investment portfolio among different companies that list in the American stock index, such as Apple or The Bank of America.

The choosing of this alternative would be secondarily supported by the profit that our client might obtain from the revaluation of the value and from the anticipated short-term assessment of the dollar with respect to the euro.

Admittedly, if we take into account all the submitted information in this project this decision relies on subjectivity, and therefore it is based on our experience as analysts and our view. Consequently, should this analysis be carried out by another analyst, it may well be the case that another opinion could be depicted, totally different from ours.

4. Result analysis: analysis legitimacy

In relation to the assessment of the results of the aforementioned analysis, it is important to specify that of the major inconveniences with regard to Chartism, which might help us in the assessment of the legitimacy of this methodology. This issue lies in the fact that it is impossible for us as analysts to consider an investment alternative of a company that lists in a financial market for the first time, since as we already know in Chartism, the decisions of the potential investor are predetermined by an historic set of prices of the company in question. As a consequence of having put into practice this aspect of the analysis in the previous practical case, we may have stopped obtaining a significant profitability after ignoring the investment alternative in this type of companies.

In addition, for the same circumstance, namely the necessity to rely on results which occurred in the past, the analyst may fall into error when elaborating predictions on future rates behavior or when determining the intensity of these. This happens because actually, this analysis modality claims that the best way to predict the future consists of revolving around the past temporal horizon, since through the observation of different rate patterns, the analyst may try to anticipate the future evolution of these. This circumstance is given because in this study strand history is considered to always repeat itself, just as several authors such as Oriol Amat claim.

The analyst therefore sets aside certain important information thinking that it is covered by the evolution shows by rates and yet, on some occasions the contemplation of this may have a significant or an important influence in the decision making of the potential investor.

In fact, we may claim that according to technical analysts this type of information, or more secondarily certain significant developments, such as corporate results of the company for which a potential interest is depicted or the result of several choices, are solely interpreted as a volatility increase.

For this reason, if as an example we observe the following historical graphic, which showcases the evolution of index S&P500, which has already been mentioned in the previous section, we may see that graphically it would be quite complicated to mark the concrete dates where certain noticeable developments occurred, such as the different presidential changes made in the USA or a highly prominent date, such as 11-S.



However, if exceptionally as analysts we paid attention to these timely moments in the time frame, just as fundamentalists would do, we might be able to see how a significant increase would take place in the speed of the movement that was already predefined by the trend under this strand.

For this reason the focus of the analyst regarding these occasional developments may reinforce his predictions on the evolution or future rates behavior, a circumstance which may be considered as another inconvenient of this analysis modality.

Finally, in my view the subjective character the chartist analysis is crucial to the assessment of it, since the interpretation and the conclusions drawn from the graphical

representations of the analysis at issue may vary to a great extent, depending on the analyst who conducts them. This happens because actually each analyst puts into practice his own discipline or analysis procedure, relying on his own opinion and professional experience.

For this reason, if another analyst would have conducted the practical case posed in the previous section he may not have reached the same conclusion as we did and maybe, he would have thought that the investment alternative in companies that list in our IBEX-35 or the direct investment in the American currency imply a more optimal solution than the one that we selected, that is to say, the diversified investment in companies which list in the American stock index.

5. Final conclusions

Once have already been detailed theoretical foundations necessary to understand this analysis and has raised the previous case study along with the results obtained from this, you can come to a conclusion about the validity of the chartista analysis, this being the objective of this project.

In my opinion, the chartist analysis do not think that is a good option to choose as an analyst in the implementation of a study for investment, due to the subjectivity that contemplates, always and when we refer to this aspect of study without contemplation of another type of additional information.

In concordance with the studied practical case and to all the information exposed in this project, I must admit that, in my view, I, as analyst, do not believe chartist analysis to be a good option to rely upon when conducting a practical study of investment due to its gaze on subjectivity, provided that we refer to this study strand without the contemplation of another type of additional information.

On claiming this we mean that maybe the key to success in this field lies in the pursuit of a certain balance between the two most depicted strands, that is to say, technical chartist analysis and fundamental analysis. This combination may be achievable by means of the implementation of the chartist analysis, and at the same time taking into account variables which belong to the fundamental analysis, since this way the decision making conducted by the analyst or potential investor would be much more pondered and thus, probably we would draw near to a successful decision making.

The reason for which I would justify our greater success probability would consist in overcoming through the combining of the strands previously exposed the aforementioned inconveniences which, in conformity with our point of view, are raised by the chartist analysis. These difficulties, which have already been described in the previous paragraph, does not consist in the possibility of investment under this method in listed companies for the first time, the subjectivity that contemplates and finally the non-consideration of relevant information, such as financial information of the company in which to invest.

This would happen because through the further examination of certain factors which belong to the fundamental analysis, such as macroeconomic factors, microeconomics or countable, we would have the opportunity to comprehend in a broader sense what happens within financial markets and in addition we might know for example the economic-financial state which corporates for which we show a potential investment interest go through. In consequence, it remains clear that if we base our predictions on a wider range of information, a great part of the information being objective, we succeed in getting a little closer to what will certainly happen in the future.

Moreover, taking these fundamentalist factors into account, we might raise the alternative of investing in a company that lists for the first time, or in recent years, in financial markets.

For this reason, I would finally conclude that, from our point of view, the strand analyzed in this project and the fundamental analysis, a study modality already known to us, should be considered as complementary study alternatives, more than substitutes.

6. Biography

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