

**Behind stock price movement: structural and cyclical explanatory factors
in Financial market.**

**Derrière le mouvement des cours boursiers : les facteurs explicatifs
structurels et conjoncturels sur le marché financier.**

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Abstract :

volatility is central for asset pricing, risk management and asset allocation as well. the volatility of financial assets must be measured to build efficient portfolios. It is recognized among financial economists that volatility varies over time with ups and downs that affect investments. Volatility is identified as measure of risk and it is important to understand it insofar that allows to manage the inherent risk associated with investing. Trying to get a perception of the market close to reality, we have to deal with a broad range of factors that impact the price of securities from companies (stocks) and other issuers in financial market.

This paper seeks to better understand how this volatility can be determined following the effect of structural explanatory factors and cyclical explanatory factors.

Keywords: stock prices movement, volatility, factors impact, risk management, stock market trend.

Résumé:

La volatilité est essentielle pour les actifs financiers, la gestion des risques et la répartition de l'actif. La volatilité des actifs financiers doit être mesurée pour construire des portefeuilles efficaces. Les économistes financiers reconnaissent que la volatilité varie au fil du temps avec les hauts et les bas qui affectent les investissements. La volatilité est identifiée comme mesure du risque et il est important de la comprendre dans la mesure où cela permet de gérer le risque inhérent associé à l'investissement. En essayant d'avoir une perception du marché proche de la réalité, nous devons faire face à un large éventail de facteurs qui influent sur le prix des titres de sociétés (actions) et d'autres émetteurs sur les marchés financiers.

Cet article cherche à mieux comprendre comment cette volatilité peut être déterminée en suivant l'effet des facteurs explicatifs structurels et des facteurs explicatifs cycliques.

Mots clés: évolution du cours des actions, volatilité, impact des facteurs, gestion des risques, tendance du cours boursier.

Introduction :

The study of the functioning of the financial markets is still the ambitious that theorists have given themselves to develop their reflections. However, the biggest challenge for finance specialists is to theorize the evolution of price market, which remains incomprehensible for the insiders. Trying to get a perception of the market close to reality, however, is useful. Indeed, all the work generated by financial market has a decisive impact on many areas. Share prices have fluctuated sharply in recent years. Spectacular movements that have revived interest in the volatility of financial markets by professionals in the field and academic circles. When you know the main factors that influence it, it becomes easier to predict the future course trend.

volatility is part of the financial landscape. the volatility of financial assets must be measured to build efficient portfolios. Volatility's concern is explained by the fact that investment decisions depend not only on the level of returns, but also on the level of risks associated with the various assets that make up the portfolios. this phenomenon measures the amplification of the price variation. It is considered the basis of risk measurement. Thus, the higher the volatility of an asset, the greater the risk of investing in that asset, and therefore the greater expected gain (or risk of loss). According to Kevin Daly (2008) *“Volatility can be defined as the changeableness of the variable under consideration; the more the variable fluctuates over a period of time, the more volatile the variable is said to be”*.

This concept is probably one of the most research topics in the area of mathematical finance. The fair price of a financial asset is determined by a number of factors including the volatility of the underlying asset. All of these factors are directly observed on the market apart from volatility. Similarly, when a company wants to study its degree of exposure to a financial risk, it must be able to assess the volatility of each property it owns. As a result, any investor seeking to hedge against the various risks relating to the change in asset values will have to estimate the future prices of the latter. The problem that arises at this level lies in the estimation of this volatility which is a function of several factors. So what drive stock prices go ups and downs?

Within this framework, our paper looks at analyzing the different determinants of volatility in a literature review that is certainly not exhaustive, but that shows the existence of several factors determining the volatility of stock prices. to answer this question, the plan of this study

is composed of two sections: the first is interested in structural explanatory factors. As for the second one is devoted to the conjunctive explanatory factors.

1. Structural explanatory factors

1.1. Returns:

Portfolio management is basically formed by risk-return performance. The higher portfolio's return, the higher the risk. Risk is originally measured by volatility, which is related to the concept of return. How to explain the price volatility through company's return?

1.1.1. Dividends Announcement:

The financial image of the company is essentially represented by the dividend. It constitutes- especially in the long term - a reliable indicator to enhance the company, and a main source of global return for an investor. The dividends distribution indeed constitutes, for companies, a way of arbitrage between a positive signal on the market and the way which allows attracting capital in the future.

The right to dividends is an inescapable right for holders of shares. The terms of payment of dividends pass through three forms:

- The company distributes shares at a privileged price to shareholders. This method of payment per share is intended to limit the exit of liquidity of the company;
- It pays in cash through dividends;
- Or it acquires its outstanding shares either to reduce the number available on the market, or to prevent a shareholder from holding a very important participation on the company.

Dividends are the profits distributed to shareholders. They reflect the profitability and the financial situation of the company, the changes in the dividends are often an impact on the stocks prices. The early stocks prices, reflect generally the future events including the payment of dividends. As the dividend is declared, it is already included in the stocks prices. However, the stocks prices can move either up or down during dividends announcement, if the amount of this latter is more or less that the expected amount.

However, Modigliani and M. Miller (1961) call into question the interdependence between the stocks prices and dividends. Their thesis of dividend neutrality which was supported by F. Black and Scholes (1974) shows that the dividend has no influence on the security valuation that it rewards. Therefore, company's value is simply determined by the investment policy

and the profitability of its assets in a perfect market environment and where there is no uncertainty. Since then, the "puzzle" of dividends has encouraged a number of researchers to study the impact of dividend distribution on company's value. It has generated a large volume of literature that relates to the issue of dividends announcement and its impact on stock prices. Petit (1971) was the first researcher to show that dividend changes (positive or negative) have an impact (positive or negative) on abnormal returns. Subsequently, much work has been done to check the reactions of the dividends announcement changes and their effects on stock prices. Indeed, famous articles like DyL and Weigend (1998), Woolridge (1982), and Lintner (1956) which were inspired by the recent literature and especially they remained compatible with signaling hypothesis, they brought arguments that have generally supported financial markets inefficiency. The analysis from a signaling point of view, brought to the market, remains the most discussed field on the influence of dividends policy on the stock prices. Many empirical studies have shown that there is a positive relationship between dividends announcement and stock price fluctuations. Some authors classify announcements according to information quality of: good, mediocre or neutral. In the German stock market, Amihud and Murgia (1997) studied the change in dividends on stocks prices for a sample of 200 companies over a period from 1988 to 1992. They found an abnormal return of 0.96% during the increase, and -1.73% decreases for the day announcement and the one who proceeds. In the Austrian market, Gurcul et al. (2003) found on 22 companies listed in the ATX index between January 1992 and April 2002 that dividends announcement introduces significant reactions on stock prices. Subsequently, Aharony and Swary (1980) studied this relationship on 384 events in the US market. They noticed that the change in dividends announcements yields excess returns varying between 0.36% when the announcement is positive, and -1.13% during a dividend decrease. Similarly, in the British stock market, Lomé et al. (1996) have shown that when dividends rise, abnormal returns are 2.03% and -2.15% if dividends decline over a two-day period between each announcement. The French studies have found some usual articles devoted to this subject relating to empirical studies on the French financial market.

Sigalla (1977) reaches results maintained on 155 stocks listed on the Paris Stock Exchanges from 1971 to 1976, "*we would have been able to predict the relative variation of the prices, as far as we would have been able to predict the evolution of dividends*" (quoted in M.

Albouy 1990, p. 147). Thus, following Sigalla's works, H. Chenut (1979) proceeds in the same way but on a more reduced sample of 48 stocks over a period of 4 years (1974-1978) then over period of 2 years (1977-1979). He showed that there is a concordance between price and dividend variations; the more the dividend rate increase, the more price developments are stronger and vice versa.

Roughly speaking, although the markets are different, the empirical results above suggest that the direction of the announced dividend change (up, down, constant) is perceived as news by the market. And which lead to stock price variations.

1.1.2. Earnings:

Earning or more precisely the net accounting profit, is an indicator that gives information on the overall performance of the company. It measures the wealth or realized loss of the business during a quarterly or annual period. In the financial market, the decision to invest in the stock market requires in-depth knowledge of the actual factors of the share price. It is crucial to be able to predict future stock price changes, as some parts of the return on equity investments are derived from the stock market variation. According to Al-Malkawi (2007), investors use information published by the company such as earnings, as a sign of the financial health and future prospects of the company. Basu (1977), according to the profit multiplier model (P/E), states that profits are the most important factors that determine the financial health of the real company's value. Beaver in his 1968 article "*The information content of annual earnings announcements*" examined the extent to which earnings announcements influence the common stocks held by investors. He noted that at the time of results announcement, transactions volume and returns volatility increase. Gordon (1959) and Collins (1957) were the pioneers of laboratory research, identified profits as one of the factors influencing stock prices. The study presented by Sharma (2011) examined the relationship between the share price and the explanatory variable like EPS (earning per share), he concluded that in the Indian market, earnings per share being the strongest determinant of market price in a positive direction, and investors are advised to take into account earnings per share before investing in a company. Beaver (1988) specified that the current period's earnings provide information that can be used to predict earnings in future periods. This in turn creates information to determine stock value. New earnings information that triggers a change in investor expectations of future dividends should reflect a change in the market

value of the company's stock. Lonie and al. (1996) have shown that earnings announcements are one of the main tools of signaling used by managers to provide the public with information on the state of company's health and its future prospects. Nichols and Wahlen (2004) began to study the nature and significance of the relationship between accounting results and stock market returns. They used in their studies the three theoretical links developed by Beaver (1988) between earnings and stock prices. The theory linking accounting results to changes in stock market prices depends on the following three assumptions: 1) the accounting results provide shareholders with information on the current and expected future company's return; (2) the current and future expected return provides shareholders with information about the company's current and future dividends; 3) The stock price is equal to the present value of the expected future dividends for the shareholder. For Nichols and Wahlen (2004) stock price is supposed to represent the company's market value. And thus, changes in accounting information correspond to changes in the market value company's market, this implies that the information on the results provides relevant and reliable information.

1.2. Demand stock prices¹:

The law of supply and demand is a common theory of economics that explains the price of goods and services. This law establishes the principle that a price of a good can balance the market. If the price of a good is too high, large number of suppliers will be very high and will lead to overproduction. Therefore, the price of the good will fall. Conversely, if the price of a good is too low, buyers will be very numerous, and a shortage will soon be felt. In this case, the price of a good will increase. In the stock market, the concept of supply and demand works in the same way; a buyer and a seller meet – mostly takes place electronically - and negotiate the price of a particular security. It is reflected in particular by the orders of buyers and sellers on the stock market. On the stock markets and under no regular basis, stock prices (and other securities) are constantly changing. Many investors are curious about why stock prices fluctuate from day to day, sometimes from one moment to the next. As a result, there is no specific reason to specify and determine the large overlap of elements in the market movement. Generally, price change depends on supply and demand including many other

¹ Demand factor can be in conjunctive explanatory factors as well.

factors (e.g., information). The increase in supply leads stock prices share down on the market and vice versa.

The meaning ascribed to the market is that it is a place where the sellers and buyers meet to exchange goods for a given price. In neoclassical literature, the key driving force of asset prices is the arrival of new information. Therefore, some effects on price variation cannot be explained in the neoclassical framework, hence the appearance of the literature on the microstructure of the market. This recent literature provides a wealth of models such as the effect of buying/selling pressure on price movement, which measures the disparity between transactions initiated by buyers and sellers. It should be noted that in the standard microstructure models of the market, by no means denies that information remains an important factor behind price fluctuations, but there is a growing number of empirical studies that have approved that new constitutes only one several price determinants.

The recent empirical discovery interprets the price changes also to the impact of the imbalance of supply and demand measured by "order flows" or "order imbalance" proposed by Hasbrouk (1988), which would be digested by the market. Orders contain a variability of information constituting the hidden bottom of supply and demand. This is what makes prices move, and therefore, modulate the way in which information is incorporated into prices. Orders can be defined as:

«The difference between buyer-initiated and seller-initiated trades in a given time frame» (F. Carlini et al. (2010), P. 2);

«Order flow imbalance refers to the difference between market buy and sell orders during a given period» (M. Hante, H. Weigerding (2015), P. 214).

In the same vein, Garman (1976) takes back the classic definition of supply and demand including individual choice theory. *«Individual demand is more usually characterized as the quantity of a good that a consumer desires to purchase per interval time at a given price»* (Garman (1976), P. 259).

This process of individual demand is represented in an exchange context thus describing a time series of unilateral purchase contracts and sales of a given quantity of good at a specified price designated as "orders". This order can be described as follows:

$\Phi_i = (P_i ; Q_i)$, where P_i refers to price and Q_i quantity of good to characterize the trading structure of a market. But we first need to define the set $A(t)$ and $B(t)$, which represent respectively the purchase orders and the sales orders.

works that succeeded Hasbrouk (1988) on the different markets; (Lyons (2001) and Evans-Lyons (2002) Fx price markets, Subrahmanyam et al (2002), NYSE, ...) have shown that order flows are highly correlated with the time series of the aforementioned market indices. In NYSE, they found a positive and significant impact on stock market returns. Hopman (2006) in his article entitled "*Do you supply and demand drive stock prices?*" » Found that the imbalance between the orders of purchases and sales explain the majority of the price changes in Paris stock market. His results have established causality going from orders to prices.

In addition, studies on the demand curve examine the effect of addition and deletion announcement equities in the S & P500 index, which results in a persistent impact on equities price. This has led to further empirical studies showing that shocks in demand and supply shocks affect stock prices. In the same vein, Shleifer (1986) who studied the announcement inclusion of new stocks interpreted that the stock demand curve is tilted down. This typical effect of additions and deletions on prices has shown an elasticity of demand (Petajisto 2004).

2. Cyclical explanatory factors

2.1. Interest rate:

The impact of macroeconomic variables on the stock market has been the subject of increasing theoretical and empirical studies. The central question in this literature is the size and nature of this impact. Economic theory suggests that stock prices should reflect expectations for the company's future performance. Thus, in order to formulate the country's macroeconomic policies, causal relations and dynamic interactions between macroeconomic factors and the stock market are very important. In addition, investors believe that the country's interest rate and exchange rate policies and macroeconomic events have a major influence on price volatility, which implies that macroeconomic variables can act on investment decisions.

The question of whether stock prices and interest rates are linked or not is an important issue, particularly with increasing international trade and the integration of global financial markets. Furthermore, developing countries can use this link to attract foreign portfolio investors to

their own countries. However, the change in the interest rate can have a different effect on all the aggregates of a country. It can impact the cost of business and therefore this effect can ultimately be reflected in stock prices.

For Fisher (1930, P. 108) *«interest plays a central role in the theory of value and prices and in the theory of distribution. The rate of interest is fundamental and indispensable in the determination of the value (or prices) of wealth, property, and services»*. In micro-finance, the interest rate represents the discount rate of future dividend flows that determine the fundamental value of stocks Malkiel (2003). Alam & Gazi ((2009), P.43) interpret the interest rate as *«one of the important macroeconomic variables, which is directly related to economic growth. Generally, interest rate is considered as the cost of capital, means the price paid for the use of money for a period of time. From the point of view of a borrower, interest rate is the cost of borrowing money (borrowing rate). From a lender's point of view, interest rate is the fee charged for lending money (lending rate) »*. In other words, investors are always looking to invest in markets that generate "extraordinary" profits. In such a case, if the interest rate offered by banks to depositors increases, investors will transfer their capital from the stock market to the bank. This will reduce the demand and stock value. And vice versa.

From another point of view, the decrease in interest attracts savings to the stock market against the bank. Theoretically, the relationship between the interest rate and the stock price is a reverse relationship. Empirical studies that have examined the dynamic relationship between interest rates and stock prices have yielded mixed results. Some research such as Alam and Uddin (2009), based on data from fifteen developed and developing countries, over a period from 1988 to 2003, that the interest rate has a negative relationship with stock prices. In the Pakistani market, Ali (2014) has evolved the impact of the interest rate. He found that it has a negative impact on the stock market. On the other hand, the study developed by Mthukumaran and Somasondaram (2014) found a weak or no relation. They finally concluded that the interest rate did not affect stock market returns in India.

The positive correlation between price level and interest rate has been listed several times in the past since British data is available. This has been of great importance in the development of monetary theory. The positive correlation was interpreted for the first time by A. H Gibson (1923); and then by Keynes (1930). While Gibson was the first to note this paradox, J.M. Keynes was the first to give a name to the observation; "Gibson Paradox". He found a strong

positive correlation between “*the price level as measured by the log of the index price, and the long-term interest rate, as measured by the yield to maturity of the long-term bonds.*” (Shiller 1992, p. 237). The study, based on British data between 1729 and 1974, showed an impressive similarity of the two series during the major changes in the economic, political and social structure that took place during this period. This correlation has been characterized by “*one of the most fully established empirical facts in the entire field of quantitative economics*” (Keynes 1930, 2:198 – quoted in Shiller 1992. pp. 237). On the other hand, these same data have revealed that there is a positive correlation between price and interest rate over the shorter period of time, and that is much stronger than that between the long term, referred to «the Kitchin phenomenon "or" Kitchin cycle "relating to Joseph Kitchin (1923). A number of theories have been suggested to explain the positive correlation between interest rates and prices, notably by MacKinlay (1938), Fisher (1930), Sargent (1973) and Keynes (1930). In fine, the relationship between the interest rate and the stock market returns may vary depending on the economic activities of the countries.

2.2. Inflation:

« *Inflation is always and everywhere a monetary phenomenon* », Milton Friedman quoted in Frederic Mshkin 2013, P. 959, and Scott Ulman 1981).

In a market economy, the term inflation refers to the change in prices of goods and services. Some prices increase, others decrease. We talk about inflation if there is a continuous and widespread increase in prices. And not just certain products. It is apprehended as a variable that is closely related to the interest rate. Due to the fact that this study deals with the inflation rate, it is essential to understand the meaning of the inflation rate beforehand. According to Burda et al. (2003), the inflation rate refers to the rates of change in the average price level. It is closely linked to the Consumer Price Index (CPI). The latter is a price index of a set of goods representing a set of national consumption.

Investment is a major factor that has a great influence on the national income. Its variations in spending depend in particular on many factors, one of the most important of which is the interest rate. The higher the interest rate, the more difficult it is to borrow to invest. Moreover, the nominal interest rate is constituted - as any nominal rate - of two components namely: the real rate and expected inflation. Which is quite logical to think that there is a causal

relationship between economic activity, real interest rate, real stock market returns, and the components of inflation. However, the relationship between stock returns and inflation can be interpreted in several ways: a negative or positive relationship.

Rising inflation usually leads to a drop in real household wealth, which will help lower their investment, perceived as a risk for companies. This will lead to lower stock prices. In this case, the relationship between inflation and stock market returns is negative. On the other hand, during inflationary periods, the bonds are more attractive than the shares due, in fact, to the repercussions on the increase of the interest rate. In such a situation, it will be logical for investors to think about replacing equities with bonds in their portfolios. This will lower the value of the shares. In the other case, inflation may prompt investors to choose stocks whose prices may rise, instead of investing in bonds with fixed maturity values. In these conditions, we obtain a positive relationship between equity returns and inflation. However, the preceding reasoning lead us to contradictory conclusions. Hence, to explain the existing relationship between economic aggregates, it is not much to rely on intuition, but on empirical studies. This enigmatic relationship has been developed in several theoretical frameworks. This point leads us into a debate between classical and Keynesian on the role of money in real economic activity.

The correlation between inflation and ex-ante stock market returns has been the subject of an abundant literature that has examined the causality study between these two variables. Fisher (1930) *“states that the nominal rate of profitability of a financial asset, such as equities, is equal to the sum of expected inflation and the actual rate of return of the action”*. That is, equities are a hedge against inflation. And the monetary authorities can use the nominal rate as the leading indicator of inflation in the constitution of their monetary policy decisions. However, this identity of Fisher goes against the observation of empirical work. There is no relationship between these two variables. The proxy hypothesis introduced by Fama (1981) draws an idea of the negative relationship between stock returns and inflation, both expected and unexpected inflation. According to him, stock returns are influenced by inflation through real activities that are essential determinants of stock market values. Actual activities include, for example, capital expenditures, as well as the average real rate of return on capital and output. In other words, the negative correlation between returns and inflation is reflected in the negative correlation between actual activity, which is assumed to be the main determinant

of stock market returns and inflation. This is said, that inflation is not useful for explaining real returns only to the extent that it includes relevant information about future economic activity. The difference between Fisher and Fama depends on the selection of samples.

Coate and Vanderhoff (1986), Geske and Roll (1983) used Fama's results. They argue that the relationship between expected inflation and stock market returns is due to a series of macroeconomic events. Mudell (1963) and Tobin (1965) in their model, verify that the variation in expected real returns is due to changes in expected inflation. In a causality study by Ram and Spencer (1983) to explain the negative relationship between inflation and stock market returns, they found that inflation breeds equity returns, not the other way around. Feldstein (1981a) argues that higher inflation reduces prices because of the interaction of inflation with the tax system. Again, depreciation and the taxation of nominal capital gains reduce net equity returns as inflation increases Feldstein (1981a, b) and Summers (1981a, b). As Friend and Hasbrouk (1982) have shown, this Feldstein argument depends on tax rates and other parameter values, it also depends on how the interest rate evolves with the evolution of the interest rate. expected inflation rate.

2.3. Stock market anomalies:

Stock market anomalies in the financial markets show that stock market returns may be abnormal. These come from imperfect markets; the markets are not fully efficient, contrary to the assumption of the efficiency of the financial markets. The stock market anomaly is defined as a temporary, persistent or recurrent price imbalance, without any approvable financial logic. During certain periods of the year, stock returns vary in an exceptional way. This is how the effect of Monday, Effect Size, Holiday Effect, and Effect January has been demonstrated.

2.3.1. January effect:

A number of researchers have found that January has been a very exceptional month for stock market returns. It has the best performance compared to other months of the year, especially for small cap stocks. The latter, experienced during the month of December and for various reasons, sales including tax. And in January they go back naturally. "This privileged moment" of the beginning of the year, the shares of small listed companies benefit from a better

rebound than those of the big companions. Hangen and Lakonishok (1988) documented January's high scores in a book called *The Incredible January Effect*.

Many previous studies suggest that investors sell underperforming stocks at the end of the year, which has a negative impact on stock prices. The existence of the January effect has been frequently debated in the financial literature for many decades. The January effect occurs when an investor gets abnormally high returns on small caps at the beginning of the calendar year. To do this, the investor buys shares in a small or underperforming company at the end of the current year and then sells the shares when his price rises in January of the new year. Finance professionals believe that they can explain the January effect around tax transactions. On the basis of this explanation, it follows that investors would engage in the sale of tax losses at the end of the year to mitigate the negative tax consequences Reinganum (1983). Then, when they receive their end-of-year bonuses, they re-enter the market in January, pushing up prices. This January effect is closely linked with another "anomaly" also assimilated in different markets; "Size Effect" Keim (1983).

2.3.2. Size effect:

Market capitalization refers to the total value that the market allocates to a business. It is calculated by multiplying the price of a share by its total number of shares. The concept of market capitalization is therefore simple and quite simple to grasp. The reason we want to know is that businesses of different sizes work differently. Many studies have shown that small businesses (capitalization or assets) tend to outperform large ones. The size effect refers to the fact that the returns of small firms are larger than those of large firms (the performance of a relatively small firm -based on market value- exceeds that of a large firm). It is well known that size effects exist on the stock market as an anomaly, Banz (1981) was the first to document this phenomenon for US equities (see also Reinganum (1981)).

2.3.3. Monday effect or Weekend effect:

Effect day of the week, effect weekend or effect Monday, is a phenomenon on the financial markets where Monday's stock returns are often significantly lower than those of the previous Friday. A little as if the financial markets were awakening little by little after a weekend!

Recent work confirms the persistence of the day effect; Keim and Stambaugh (1984), Cross (1973), Gibbons and Hess (1981), French (1980) have shown that the average yield on Friday is abnormally high, while the average yield on Monday is abnormally low, mainly on shares in the United States. The explanation is that after the closing of the market, the companies would have the habit of spreading their bad information on Friday so as to avoid that their financial assets are undervalued. In contrast, the good information will be revealed during the week.

Conclusion

to hold a stock implies to watch regularly its variation. Stock prices change daily under the pressure of market forces, that is, depending on several factors that may influence the desire to buy or sell stocks. And can be costly in terms of investors' well-being. We then we brought two types of explanations of how stock prices can be explained by variables in two ways. An explanation of a structural nature that is the elements directly related to the company; earnings and dividends are the important elements to evolve a company. In general, when these figures exceed the expectations of analysts, the stock price progresses. Conversely, if they prove to be inferior, the stock recedes. It is therefore the financial health of a company that influences stock price and initiates a movement. And the other of a cyclical character are the elements that are not directly related to the company but to its macroeconomic environment that are leading indicators of economic health status.

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