

FUNDAMENTAL AND TECHNICAL ANALYSIS

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Fundamental and Technical Analysis

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Chapter 1

Overview

What Is Fundamental and Technical Analysis?
Two ways of analyzing securities to predict future prices.

What should you expect from this course?
<ul style="list-style-type: none">• a better understanding of the analysis provided by expert analysts;• how to interpret charts;• how to perform basic analysis.

Fundamental Analysis

- Fundamental analysis is the study of how external and internal factors affect the price of a company's securities.
 - External factors that will be examined in detail in this course include:
 - GDP and GNP as measures of the economy;
 - the business cycle;
 - reasons for economic growth;
 - interest rates;
 - inflation;
 - the labour market;
 - foreign trade;
 - government fiscal and monetary policies.
- Internal factors that we will review include an analysis of:
 - prospects for growth;
 - competition;
 - return on equity;

- factors affecting profitability;
- financial statements.
- Other external events, such as wars, natural disasters, and political upheaval will also affect the prices of securities, but will not be covered in this course.

Technical Analysis

- Unlike fundamental analysis, technical analysis focuses on capital markets. It uses stock prices, trading volumes, and other market data to try to discover patterns and predict future prices.
- Technical analysts believe investor psychology reveals market patterns because investors are bound to make the same mistakes again and again (i.e., continue to buy/sell based on greed rather than on expected earnings).
- One factor that makes technical analysis difficult:
 - the existence of program trading (i.e., automatically trading a security if it rises or falls a specific percentage), which can create large numbers of trades unrelated to a stock's expected earnings.

Chapter 2

Fundamental Analysis: External Impacts on Stock Prices

External Forces That Underlie Stock Prices and the Markets Are:
<ul style="list-style-type: none">• economic activity in Canada;• the business cycle;• inflation;• economic growth;• labour markets;• foreign trade;• fiscal policy;• monetary policy.

Economic Activity in Canada

- The two common measures of economic activity in Canada are the Gross Domestic Product (GDP) and Gross National Product (GNP).
- GDP and GNP are designed to measure economic well-being.
- For this reason, it is important for IAs to follow these indicators.

Gross Domestic Product

- The health of the economy is measured by Gross Domestic Product (GDP); this is the market value of all final goods and services produced in the country in a year.
- GDP is also called the economic output of a country. When real GDP—after inflation—is rising, then the economy is growing. A growing economy is highly desirable; unemployment will be low and the standard of living will be high.
- GDP is a measure of economic well-being; a high GDP exists in countries with higher life expectancies and higher literacy rates.
- GDP can be determined by the sum of either all spending in the economy (also known as *aggregate expenditure*) or all income earned in the economy (also known as its *aggregate income*). All spending and all income will be equal for a country as a whole.

- The formula for the aggregate expenditure is:

GDP = personal consumption (C) + investment (I) + government spending on goods and services (G) + net exports of goods and services [X minus imports (M)] ,or GDP = C + I + G + (X - M)
--

- **Personal Consumption:** All Canadian and foreign-produced goods and services used in households. This is the largest component of expenditure-based GDP.
 - **Investment:** The amount businesses spent on capital and consumers spent buying new homes.
 - **Government Spending on Goods and Services:** Government spending at all levels.
 - **Net Exports of Goods and Services:** Market value of Canadian sales to foreign purchasers, minus the value of Canadian purchases of foreign goods.
- The formula to determine aggregate income is:

GDP = income from production, minus wages, rent, interest on capital goods, and entrepreneurial profits.
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- **Wages:** Wages—including salaries and overtime—are the largest component of income-based GDP.

Growth and Productivity

- Three factors bring about a rise in GDP:
 - population growth; the growth of the workforce increases GDP;
 - an increase in worker productivity;
 - an increase in business productivity due to technological innovations.
- When productivity increases, the prosperity of the general population also increases. If productivity exceeds an increase in production costs, the market price of goods and services are typically reduced.

The Meaning of GDP Growth

It is important to look at long-term trends in GDP because countries with higher than expected growth rates represent opportunities for higher investment returns.
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Real GDP

- Also called constant-dollar GDP.
- Excludes the effect of inflation. The value of goods and services is at a constant price; this is called the base year.

Actual and Potential Growth

- Annual economic growth is either measured by the real GDP or the actual output produced by the economy that year.
- To determine whether the economy is operating above, below, or at capacity, economists estimate the maximum **potential output** of the economy and then analyze how the GDP measures up to that potential.

Nominal GDP

- Also called current-dollar GDP, and chained-dollar GDP.
- Includes the effect of inflation; nominal GDP is the value of goods and services at current prices.

Gross National Product (GNP)

- Gross National Product is another indicator of economic activity, but is used to a lesser extent than GDP. GNP is also calculated so that total income is equal to total spending on Canadians' goods and services.
- Total income is that earned by all residents of Canada within a year, including wages, salaries, profits and dividends realized by investors, rents received by landlords, and taxes that governments receive, including the GST, plus what Canadians earn abroad. The GDP refers to the output of a region, and GNP refers to the output of all nationals of the nationals of the region.
- Total spending by consumers encompasses the cost of food, clothing, rent, durable goods, personal services, and other items. GNP spending also includes government expenditures on goods and services, plus business outlays on capital equipment and new factories and commercial buildings, plus the spending of foreigners when they buy Canadian exports. Imported goods and services are deducted in the calculation, because they are not produced by Canadians.

The Business Cycle

- Even though the Canadian economy has had an average annual real growth of 3.8% over the last 40 years, fluctuations over this period have occurred.
- These fluctuations in output and employment tend to be cyclical in nature, hence they are known as the *business cycle*.
- The business cycle has five phases: expansion, peak, recession, trough, and recovery.

Expansion

- A steady expansion of the economy is evidenced by:
 - stable inflation;
 - business capacities and inventories that have been adjusted to meet higher demand;
 - corporate profits that are rising and start-ups that outnumber bankruptcies;
 - a strong stock market;

- unemployment that is either steady or falling.

Soft Landing

A soft landing occurs when GDP quickly slows but does not turn negative and inflation falls or remains low. Central banks attempt to try for soft landings at the end of a long period of strong growth.

Peak

- During the final stages of expansion, demand begins to outstrip the capacity to supply.
 - Wages and inflation are increasing due to labour and product shortages.
 - Interest rates are rising and bond prices are falling.
 - Business investment begins to slacken, as well as house sales and the sales of big-ticket consumer goods.
 - Company sales begin to decline, resulting in a stockpile of inventory and in reduced profits.
 - Stock prices fall and stock-market activity declines.

Business Cycle Indicators

The Composite Leading Indicator produced by StatsCan combines 10 indicators into a single index that is closely monitored for indications of growth or recession.

- Leading indicators anticipate the direction of the economy. These indicators will peak and trough before the GDP does. Examples are housing starts, house spending index, "spot" commodity prices, stock prices, manufacturers' new orders, employment levels, average hours worked per week, and money flows.
- Coincident indicators change at approximately the same time, and in the same direction, as the business cycle. Examples are industrial production, personal income, and retail sales.
- Lagging indicators follow ("lag" behind) the business cycle. Examples are plant and equipment purchases, business loans, interest rates, the unemployment rate, inventory levels, and inflation.

Recession or Contraction

- The economy is in recession when the economic activity declines.
 - Companies have unwanted inventories and declining profits; investment, as well as hiring, is postponed.
 - Business failures outnumber start-ups.
 - Employment is falling; therefore, household spending and savings are also falling.

- If there is a recession in Canada's trading partners (e.g., the United States), the size and duration of our recession is increased because of the reduction in our exports.
- The default rate and probability of default is reflected in the default premium paid by corporate borrowers.

Identifying Recessions

Recessions used to be defined by a decline in the real GDP during at least two consecutive quarters. The tracking bureaus no longer use this definition.

To judge a recession, Statistics Canada (StatsCan) considers the following indicators of a decline in business activity:

- **Size:** is the decline substantial enough to exclude the possibility of statistical error?
- **Duration:** has the decline lasted more than a couple of months?
- **Diffusion:** is the decline diffused throughout the economy or confined to a single sector?

Trough

- The recession continues, with falling demand and excess industrial capacity.
 - Firms cannot raise prices or salaries, so inflation falls.
 - Interest rates begin to decline, triggering a bond rally.
 - The trough is reached when consumers who postponed purchases are spurred by lower interest rates to begin buying.
 - Stock prices rally.

Recovery

- The recovery sees the return of the GDP to its previous peak.
 - Purchases of interest-rate-sensitive products, such as houses and cars, begin to pick up.
 - Companies begin to increase production to meet the new demand.
 - Unemployment remains high, so wage increases are constrained and inflation may even decline further.
- When the economy has passed its previous peak, another expansion is considered to have begun.

Inflation

- Inflation results when the demand for products (and the money to pay for them) increases beyond the supply (i.e., too much money chasing too few products).
- The most common standard of money supply is the **monetary base**, which includes all notes and coins in circulation, plus deposits at the Bank of Canada of clearing members of the Canadian Payments Association.

- Inflation erodes the real value of investments. If an investor receives 6% interest and inflation is 3%, the real rate of return for the investor is 3%. (This formula is a simplification, but is widely used.)
- The Consumer Price Index (CPI) measures the Canadian cost of living and is comprised of a shopping basket of goods and services that is tracked and measured against a base year. A CPI of 120 means that the basket costs 20% more than in the base year.
- Inflation is not created by an increase in the price of one product, unless that product has a ripple-through effect (e.g., oil).
- Inflation is in evidence during the peak of the business cycle. As we have seen, a peak is followed by a contraction of the economy; thus a high rate of inflation would indicate a recession will follow.

The Costs of Inflation

- Inflation:
 - erodes the standard of living of people with low or fixed incomes;
 - reduces the real value of investments, because the dollars buy less;
 - distorts the signs of price increases, because one cannot determine if price increases are real or inflationary;
 - causes interest rates to rise, followed eventually by a recession.

The Causes of Inflation

- A good leading indicator of inflation is the growth of the money supply. Interest rates will be depressed in the short run, leading to an increase in investment spending and lower unemployment.
- This opposing, or inverse, movement of inflation and unemployment is called the **Phillips curve**.
- The output gap is the most important indicator of inflation; it is the difference between the potential and actual level of output in the economy.
- Inflation will fall (or remain constant) when actual output in the economy is below potential; unemployed workers and unused plant and equipment can be called into service without raising hourly wage costs or prices.
- When actual output exceeds potential, the reverse occurs. Inflation then begins to rise (or remain constant).
- The actual level of output is measured by the current GDP.
- **Demand-pull inflation** occurs when, in response to demand, a company's actual output exceeds its potential output, wages increase due to the need for labour, and the company can increase prices for its products or services.
- **Cost-push inflation** occurs when suppliers of product increase prices unilaterally because the supply of product is limited (e.g., the price of oil, which is translated into an increase in the cost of gasoline at the pumps).

Theory of the Phillips Curve
<p>The theory behind the Phillips curve is that unemployment can be reduced in the short run by increasing market prices at a faster rate (hence, increasing inflation). Therefore it follows that inflation can be lowered at the possible cost of increased unemployment.</p> <p>The increase in unemployment that must occur in order to lower inflation is called the sacrifice ratio. For example; a ratio of 5 to 1 means that to lower inflation by 1%, there must be 5% lower output.</p>

The Costs of Disinflation

- Disinflation is a decrease in the rate of inflation.
- As we have seen, the Phillips curve illustrates that unemployment is increased by lowering prices. So, as inflation slows, the number of unemployed workers will increase.

Economic Growth

- The business cycle sees the economy ultimately continuing to grow despite occasional lapses. Economic growth in a country improves its standard of living and generates opportunities.
- Investment capital is attracted to a growing economy.

Growth in the Industrialized World

- The Organization for Economic Co-operation and Development (OECD) tracks the **productivity growth** of 30 countries by dividing the GDP by the population of each.
- Annual GDP growths of 2% to 3% can double a country's standard of living over 30 to 40 years.
- The growth of a country's capital stock comes from savings. Canada has a relatively low savings rate compared to Germany and France. A relatively low savings rate is one of the factors underlying a relatively low growth rate.

Labour Markets

- When the GDP is rising, the demand for labour is strong, unemployment falls and wages increase. A weak economy sees the reverse: the labour demand is reduced, unemployment increases, and wages fall.
- We've seen that the growth of the workforce increases GDP, therefore it is essential to be able to evaluate the condition of the workforce. Is it growing? Shrinking? Or static?
- The key indicators of the labour market are the:
 - **employment rate**: the percentage of working-age people who have jobs.
 - **participation rate**: the percentage of the working-age population (age 15 and older) that is either working or looking for work.
 - **unemployment rate**: the percentage of the workforce that is unemployed and actively looking for work.

Unemployment Rate

- The two types of unemployment are cyclical and structural.
- **Cyclical** unemployment will rise or fall depending on the economy.
- **Structural** unemployment will always be present. Because of structural unemployment, the unemployment rate will never be zero, regardless of the economic situation.
- Structural unemployment has been increasing since the 1950s for the following reasons:
 - There has been an increase in the number of people who are looking for work because they have quit, have been fired, etc. This type of unemployment is called **frictional unemployment**. This is normal in a healthy economy.
 - Labour regulations make hiring difficult (e.g., minimum wages are too high for some low-skilled jobs).
 - Unions maintain their wage levels during recessions, causing workers to be laid off and firms to become reluctant to hire in the future.
 - Costs of hiring (e.g., payroll taxes) have hindered job creation.
 - The benefits from welfare and unemployment insurance make some people unwilling to seek low-paying jobs.
 - Workers' skills may become obsolete due to technological changes, making them unemployable even in economic upturns.
- The minimum unemployment rate (i.e., structural unemployment) is called the natural unemployment rate, the full-employment unemployment rate, or the non-accelerating inflation rate of unemployment. (**NAIRU**).
- Union wage settlements are considered an important indicator of inflation, firm profitability, and competitiveness in the international marketplace.

Monetarist Theory
<i>Monetarist theory</i> states that an economy must be left on its own to achieve growth and prosperity. Under this theory, the unemployment rate moves naturally in line with the economy. If following this theory, it would be best for the central bank to match the money supply to the long-term growth rate of the economy and for the government to refrain from intervening in the unemployment rate.

Foreign Trade

- The economies of the countries Canada trades with and the world's financial markets have a strong impact on Canadian economic growth.

The Balance of Payments

- Canada's balance of payments reflects economic activity between Canada and its foreign trading partners.
- The balance of payments has two components:

- The current account reflects all **payments** between Canada and foreign countries for all goods, services, interest payments on debt, as well as dividends and transfers.
- The capital account reflects all **borrowings** necessary to finance any deficit in the current account.

The Current Account

- The amount of trade with foreign countries is the single largest factor in determining whether there is a surplus or deficit in the current account. A surplus is tied to exports; a deficit to imports.
- A falling Canadian dollar lowers the price that non-Canadians have to pay for our exports and raises the price that Canadians have to pay for imports.
- As imports increase, exports also tend to increase (e.g., auto parts are imported and assembled autos exported). The factors affecting imports/exports include:
 - the value of the Canadian dollar;
 - the economic climate in Canada versus the foreign country(s);
 - trade tariffs and other trade barriers.
- Another important component of the current account is **investment income**. Canada has a large net foreign debt (i.e., we have borrowed more from non-Canadians than they have borrowed from us, and we pay out more interest than we receive), causing the deficit of investment income to be the greatest contributor to the current account deficit.

The Capital Account

- A deficit in the current account means that Canadians are paying non-Canadians more for goods, services, interest and dividends than non-Canadians are paying Canadians (i.e., we are spending more, as a country, than we are earning). The deficit must be offset by either selling non-Canadians an asset or borrowing from them. If there is a current account surplus, the excess may be loaned to non-Canadians.
- Current account outflows to buy foreign goods or pay interest on debt held by non-Canadians creates a demand for foreign currency to make those payments. Canadian dollars are offered in exchange for this foreign currency unless there is a corresponding demand in foreign markets for Canadian dollars.
 - Borrowings to finance the current account are reflected in the capital account.
 - The purchase of an asset from, or sale of an asset to, a foreigner is also a capital account transaction.
 - In order to pay the interest on our borrowings, Canada may have to issue the non-Canadians with an IOU, such as a bond or T-bill. If Canadian dollars are received, the amount of the foreign currency that is needed to make the payment will have to be purchased (by selling the Canadian dollars).
- The major components of the capital account are:
 - **Direct investment:** A direct investment is made when a foreign investor owns 10% or more of a Canadian company or a Canadian invests abroad.

- **Portfolio investment:** A portfolio investment consists of a debt or equity investment that is less than 10% of a Canadian company.
- **International reserve transactions:** When the Bank of Canada buys or sells Canadian dollars for foreign currency.
- Services, including travel by Canadians abroad, consulting work provided by Canadian firms in foreign countries, and foreign aid, also contribute to the capital account.

Fiscal Policy

- Governments can influence the economy because of their powers to tax, spend and borrow. In order to stop the business cycle from oscillating widely between phases of growth and stagnation, they will spend more and tax less when the economy is weak and vice-versa when the economy strengthens.
- The federal government is responsible for unemployment insurance, defence, old age pensions, and veteran and native affairs. Provincial governments have responsibility for health, education and welfare although they receive some federal funding for these programs by way of transfer payments from the federal government.
- If these transfer payments are cut, it can increase provincial deficits because the provinces cannot replace these revenues.
- Other areas of government spending include the Canada and Quebec Pension Plans, workers' compensation boards, and Crown corporations such as Canada Post. The government bears responsibility for any deficits or unfounded liabilities.
- The fiscal policy and public debt of the federal government have a greater influence on the financial markets than the fiscal policy and public debt of the provincial governments.

Keynesian Theory
Keynesian theory refers to a counter-cyclical fiscal policy that can extend the business cycle (e.g., by cutting spending and raising taxes when the economy is strong, the government tries to keep demand from exceeding supply and thus causing inflation).

The Federal Budget

- The federal fiscal year runs from April 1 to the following March 31. The annual budget outlines the government's projections for taxation, spending, debt, and the annual deficit or surplus.
- The deficit signals to the market how much the government will be borrowing for its financial requirements.
- What the government projects to borrow and what it actually borrows are different due to:
 - maturing bonds being refinanced; this is not new borrowing;
 - the government's access to special accounts other than debt markets (e.g., civil service pension funds);

- the fact that the government cannot estimate its involvement in the foreign-exchange markets, so foreign exchange is not included in its financial projections. When the dollar is falling, the government sells foreign currency in return for Canadian dollars. When the dollar is rising, it borrows dollars to sell in the open market in exchange for foreign currency.

How Fiscal Policy Affects the Economy

- Fiscal policy affects the economy in the following ways:
 - **Spending:** government spending will increase economic growth and the GDP. Growth created by giving consumers money to save or spend (e.g., social security) does not increase the GDP.
 - **Taxes:** Higher tax rates mean less disposable income. The different types of taxes are direct taxes (income tax), sales taxes (e.g., GST), payroll taxes, capital taxes on assets, and property taxes on residential and commercial property. Income taxes can reduce the number of people wanting to work, and sales taxes reduce the desire to spend.
 - **Surplus/Deficit:** Generally, a rising deficit tends to stimulate the economy (due to greater spending and lower taxes) and vice versa.
 - **Automatic stabilizers:** some aspects of the government budget move counter to the business cycle. For example, when unemployment rises, employment insurance (EI) payments increase. The increase in income to recipients via EI helps to counter the drop in disposable income.

The Consequences of Failed Fiscal Policy

- The results of failing to address a large deficit are:
 - Staggeringly high interest payments to carry the debt. Interest costs are now the Canadian government's biggest item in its spending.
 - A cost to the economy if fiscal and monetary policies are not in step. In the late 1980s, the economy was growing but governments continued to have large deficits. This put upward pressure on inflation and resulted in higher interest rates. These higher rates increased the cost of servicing the debt, which in turn resulted in even higher deficits.
 - The inability of governments to implement counter-cyclical fiscal policies because of their large deficits. An increased deficit can increase economic activity because of spending, but any benefit will be reduced because of higher interest rates. When a recession occurs and the government cuts spending and raises taxes, the recession can be even deeper.

Monetary Policy

- The government manages the economy through interest rates, the exchange rate, and the growth of the money supply. These three factors comprise monetary policy.

Interest Rates

- The federal government's T-bills and bonds are the benchmark against which all other borrowers are judged (and therefore, against which rates are established). These debt instruments have the lowest default risk.
- Changes in interest rates affect the supply of, and demand for, debt securities, and therefore affect the market price of these securities.
- Rates are highest when the default risk is highest. An increased rate of interest due to default risk is called a default premium.

How Interest Rates Affect the Economy

- Higher interest rates affect the economy by:
 - Raising the cost of capital for business investments; this means that a higher return has to be earned on the investment in order to offset the higher interest costs on the money borrowed to make the investment.
 - Discouraging consumers from borrowing money to make large purchases (by increasing the cost of borrowing), or from using savings (which are earning high interest rates) to make a purchase.
 - Increasing the portion of household income needed to service debt.

Determinants of Interest Rates

- Factors that influence interest rates include:
 - Supply and demand of capital: when the supply of capital is short, interest rates increase thereby reducing demand.
 - Risk of default.
 - Central bank operations: the Bank of Canada exercises its influence on the economy by increasing or decreasing short-term interest rates.
 - Foreign conditions and the exchange rate: foreign investors expect higher rates (or an equivalent exchange-rate advantage) to offset an opportunity for higher rates and higher returns in a foreign country. If they do not get them, they will move their money..
 - Central bank credibility: the commitment shown by the central bank to keep inflation low.
 - Inflation: investors expect higher interest rates to offset lost purchasing power due to inflation.

Monetary Policy
Interest rates, the exchange rate, and growth of the money supply are evidence of management of the economy by the government.

The Exchange Rate

- The exchange rate is the value of the Canadian dollar expressed in a foreign currency (e.g., U.S. dollars)
- The **trade-weighted exchange rate** issued by the Bank of Canada is a reflection of how the Canadian dollar moves against other currencies.
- The exchange rate influences the economy through trade. Canadian exports become more expensive when the Canadian dollar is higher. Exports then decline, and Canada's trade balance is lowered. The opposite is true when the dollar is lower.
- The most common types of exchange rates are "fixed" and "floating."
- Under the fixed exchange rate, the domestic currency is maintained at a fixed level against other currencies. Controls are imposed on purchases of foreign exchange (usually implemented by poorer countries), or the currency trades freely. However, the central bank takes measures to keep the value of the currency within a certain range, either by buying or selling it in the open markets or by adjusting interest rates.
- The main advantage of a fixed exchange rate is that a country with high inflation can convey the credibility of one with low inflation to which the country with high inflation has pegged its rate.
- Most advanced countries have a floating exchange rate (e.g., Canada and the United States). This means that market forces determine the value of the currency; the central bank intervenes only if the exchange rate is excessive. It does so by buying or selling either Canadian or foreign currency or by increasing or decreasing interest rates.
- The Exchange Fund Account, administered by the Bank of Canada, consists of foreign currencies and securities that are used to buy Canadian dollars in the currency markets so as to influence the value of the Canadian dollar (i.e., the exchange rate).
- Downward pressure causes the Bank of Canada to sell foreign currency from the Exchange Fund Account and buy Canadian dollars, thereby increasing the demand for the dollar and in the process bidding up the value of the Canadian dollar. Upward pressure leads to the opposite effect. When reserves in the Exchange Fund Account run low, the federal government will issue debt denominated in foreign currency (usually T-Bills in U.S. dollars).
- Canada's trade balance decreases when the exchange rate is high, and increases when it is low.
- However, if the Canadian rate of inflation is lower than the U.S. rate, the impact of a higher exchange rate is offset by the lower cost to produce in Canada.
- The nominal exchange rate is the actual exchange rate and the real exchange rate is the nominal rate adjusted for inflation. For example, the Canadian dollar rises by a 5% nominal rate (e.g., from US\$0.65 to US\$0.6825) but inflation in the U.S. is 5% and in Canada it is 2%. This means that prices have risen 3% more in the U.S. and the real exchange rate has risen only 2%.

The Determinants of the Exchange Rate

- The key factors affecting the exchange rate are:

- **Inflation differentials:** over the long run, the currencies of countries with low inflation rise, reflecting their increased purchasing power relative to other countries with high inflation.
- **Interest rate differentials:** higher domestic interest rates attract foreign capital, and this helps to increase the exchange rate.
- **The current account:** a country that has a current account deficit needs to borrow foreign capital, which puts downward pressure on the exchange rate.
- **Economic performance:** a country with a strong economy attracts foreign capital, which relieves downward pressure on the exchange rate.
- **Public debts and deficits:** countries with large public debts are less attractive to foreign investors. This puts downward pressure on the exchange rate.
- **Terms of trade:** expressed as the ratio of export prices to import prices. A rising "terms of trade" reflects greater demand for exports (and therefore, revenues from exports) versus imports, which implies a stronger currency and, therefore, a stronger exchange rate.
- **Political stability:** An unstable government can cause a flight to countries with more politically stable governments.

Exchange-Rate Pressures	
Currency Moved Down by:	Currency Moved Up by:
high inflation rate	low inflation rate
low interest rates	high interest rates
current account deficit	current account surplus
weak economic performance	strong economic performance
large public debt	small or no public debt
weak demand for exports	strong demand for exports
political instability	political stability

The Monetary Conditions Index

- **Monetary conditions** are the combined effect of interest rates and the exchange rate on the economy. Monetary conditions are monitored and reported as an index ("The Monetary Conditions Index").
- A one-percentage-point rise in interest rates is equivalent to a 3% rise in the trade-weighted exchange rate (e.g., if interest rates went up 1% and the Canadian dollar fell by 3%, the impact on the economy would be neutral and the Monetary Conditions Index would remain unchanged).
- Some sectors of the economy are affected by interest rates and others by the exchange rate. A rise in interest rates will lower business and household spending, whereas a drop in the exchange rate will increase exports.

Growth of the Money Supply

- The Bank of Canada has three major functions in respect to the supply of money:
 - to act for the government in the issuance and removal of bank notes;
 - to act as the government's fiscal agent;
 - to conduct monetary policy.

Issuance and Removal of Bank Notes

- The Bank issues and distributes paper currency to the chartered banks and removes worn notes from circulation. Coins are issued by the Royal Canadian Mint, but are distributed by the Bank of Canada.

The Bank as Fiscal Agent

- The Bank manages the government's deposit accounts, the chartered banks, and the Exchange Fund Account.
- The Exchange Fund Account holds the foreign exchange reserves and is used to influence the foreign exchange value of the Canadian dollar.
- The Bank also manages the government's international currency reserves and operates in foreign exchange markets for the government.
- It can buy and sell gold, silver, and foreign exchange.
- It can maintain deposits with other central banks, as well as commercial banks around the world.
- It can act as agent and depository for other central banks.
- The Bank advises the government on:
 - timing, price, yield, and features of government security issues (how to make them marketable);
 - whether securities should be issued domestically or internationally;
 - economic and financial statistics, some of which are published and made available to the public.
- The regional offices across Canada communicate bank policy to the region and report back to the bank on the effect of its policies on the regions.
- The Bank manages government debt in the form of direct and guaranteed securities.
- Government debt is highly liquid, with issues ranging in maturity from a few days to over 30 years.
- Government debt has the highest possible credit rating and is held by a wide variety of investors.
- There are two principal categories of government debt securities:
 - **marketable**: Treasury Bills (T-Bills) and marketable bonds; and

- **non-marketable:** Canada Savings Bonds (CSBs) and Canada RRSP Bonds.
- T-Bills and marketable bonds are issued through auctions. Large dealers in government debt are called **primary dealers** and have aggregate bidding limits of 40% of the tender. Small dealers have access to at least 5% of the tender.
- Canadian T-Bills and marketable bonds are handled by the Canadian Depository for Securities (CDS).
- The Canada Investment and Savings Agency (CI&S) handles the Canada Savings Bond (CSB) campaign and the debt held by individuals (government retail debt).

The Bank and Monetary Policy

- The primary objective of monetary policy is sustained economic growth with price stability. This means that growth in levels of employment, consumption, and our standard of living must not be accompanied by increases in the level of inflation, otherwise the value of our currency and economic health, over time, will be eroded.
- Until 2006, the inflation-control target of the Bank was to hold year-over-year inflation, as measured by the CPI, between 1% and 3%. The inflation measured is called the core CPI. It excludes food, energy, and indirect taxes.
- The growth of the money supply and credit is regulated by the monetary policy so that they neither grow too quickly nor too slowly.
- Changes in the money supply and credit can lead to corresponding changes in the levels of consumption and investment, such that:
 - If the money supply grows too slowly, there may be insufficient funds for economic growth, and a recession may result.
 - If the money supply grows too quickly, the pace of economic activity may accelerate too quickly and inflation may result.
- The objective of the Bank is to obtain balanced economic growth, while restraining inflation.
- Regulation of the money supply can lead to changes in interest rates; if the monetary policy is eased, short term interest rates and the value of the Canadian dollar would normally move lower. Lower interest rates would tend to stimulate spending and a lower Canadian dollar would tend to make imported products more expensive, thereby inducing more consumers to buy Canadian-made products.
- There is a time lag of one to two years between total spending in the economy and a change in monetary policy. For this reason, monetary policy is always forward-looking.
- Canada is highly dependent on trade and foreign investment, so foreign economic developments will often affect our monetary policy.

Moral Suasion
It is possible for the Bank or government to "persuade" (through discussion) financial institutions to change credit policies or their prime rates. This method is rarely used.

Implementing Monetary Policy

The Money Market

- The Bank implements monetary policy through the money market.
- All securities with a maturity of less than one year are traded on the money market (e.g., T-bills, Bankers' Acceptances, and Commercial Paper).
- The major security that is used to manage interest rates is **overnight money**.
- The best known type of overnight money is **call loan money** (i.e., money loaned for one day at a time and callable any day).
- Suppliers of overnight money are large institutions (e.g., corporations, governments) with cash balances available for investment.
- Changes to the overnight rate affect the three-month T-bill rates; this is because T-bill dealers finance their purchases with overnight loans.
- The Bank watches trends at the long end of the bond market, and this will influence what it will do in the short-term market.

Supply-side Economics Theory
Supply-side economics theory states that government intervention in the market should be kept to a minimum. Supply-side economists believe that tax-rate changes have large effects on the supply and spending in an economy and that government and marginal tax rates should be reduced to stimulate economic investment and create higher output levels.

The Overnight Interest Rate Operating Band

- The Bank has a 50-basis-point operating band for the financing of overnight loans. One basis point is .001% or one-one hundredth of 1%.
- The Bank targets the mid-point of the band; the upper limit of the band is the bank rate.
- Changes in the operating band are important because they can:
 - indicate easier or tighter money conditions because of the bank's inflation expectations;
 - offset an exchange rate movement;
 - calm markets that may move rapidly because of unexpected events.

The Bank Rate

- The bank rate is the upper limit of the band for the overnight rate. It is the minimum interest rate at which the Bank will make loans to the chartered banks and money-market dealers as a **lender of last resort** (i.e., funds are not available from other sources).
- For money-market dealers, the Bank loans them funds through buy-back arrangements known as **Purchase and Resale Agreements (PRAs)**. The bank buys securities from the

dealer and resells them back to the dealer the next day. This insures the dealer has access to liquidity when needed.

Tools for Implementing Monetary Policy

- Monetary policy is primarily implemented through **open market operations** and **cash management**. Drawdowns and redeposits are used to avoid open market operations.

Open Market Operations

- Special Purchase and Resale Agreements (SPRAs) and Sale and Repurchase Agreements (SRAs) are the two open-market operations that influence the key overnight rates (i.e., call loan and interbank deposit rates) throughout the trading day.

Special Purchase and Resale Agreements (SPRAs or “Specials”)

- **SPRAs** are used to relieve undesired upward pressure on overnight financing rates (i.e., when the Bank wants overnight rates lower).
- The Bank buys short-term securities with an agreement to resell them the next business day.
- This reduces the supply of short-term securities and adds funds to the system.
- The rate on the loan is set by the Bank (the upper limit of the operating band) and the chartered banks use it to assess the Bank’s objectives for interest rates (i.e., does it want rates higher or lower).

Sale and Repurchase Agreements (SRAs)

- **SRAs** are used to when the Bank wants overnight rates higher.
- The Bank sells securities to the chartered banks, and agrees to repurchase them the next day.
- This reduces liquidity in the system, since the funds flow from the chartered banks to the Bank.
- The Bank tries to keep the overnight rate in a 50-basis-point range. The Bank establishes a range for the overnight rate by buying Specials at the ceiling of the range and selling SRAs at a rate up to 50 basis points lower. It repeats the procedure to keep overnight trading within the desired range.
- If the bank wants to change the range, it will buy specials or sell SRAs at a new ceiling or floor.

Cash Management

- The Large Value Transfer System (LVTS) is the primary vehicle for cash management.
- It has been implemented by the Canadian Payments Association (CPA) in concert with the Bank of Canada to allow financial institutions to track their LVTS receipts and payments throughout the day and to know the net position by end of day (same-day settlement).
- The Bank sets the level of settlement balances in the financial system at zero. The financial institutions with a deficit funds position can offset with participants with a surplus position (by borrowing or lending). The zero settlement level is achieved through transfers of Government of Canada deposits at the Bank, either to or from participants in the LVTS.

- LVTS participants have 1/2 hour at the end of day to reduce their LVTS positions; otherwise, open market operations have to be used for the settlement of the positions.
- Institutions have an incentive to reduce their overnight positions to zero, since positive balances do not earn any interest.

Drawdowns and Re-deposits

- **Drawdowns and Re-deposits** are how the Bank helps maintain the settlement balances at zero without entering into open market transactions. These methods rely heavily on market forces to achieve the desired money market conditions.
- They involve the transfer of Government of Canada deposits between the government's accounts at the Bank of Canada and its accounts with the direct clearers.
- A drawdown refers to the transfer of deposits to the Bank from the direct clearers. If the Bank wishes to tighten the system (i.e., increase interest rates and decrease credit), it does a drawdown by transferring government money from the direct clearers/chartered banks to accounts at the Bank, effectively draining the supply of available cash balances.
- When the temporary condition passes, the Bank can ease the system by re-depositing the cash balances with the direct clearers/chartered banks, thus increasing the money supply.

Summary of the Role of the Bank of Canada
The objectives and duties of the Bank are to Regulate, Control, Mitigate, and Promote (remember R-C-M-P): <ul style="list-style-type: none">• R: Regulate credit and currency;• C: Control and protect the external value of the dollar;• M: Mitigate fluctuations in the general level of production, trade, prices, and employment;• P: Promote the economic and financial welfare of Canada.

Chapter 3

Fundamental Analysis: Internal Impacts on Stock Prices

Internal Forces That Affect Stock Valuation Are:
<ul style="list-style-type: none">• industry analysis;• the laws of survivorship;• industry classification by stage of growth;• industry classification by competitive forces;• industry classification by ROE and stock characteristics;• company analysis;• quantitative analysis;• market theories.

Industry Analysis

- An industry structure is the result of its constituent companies' competitive strategies.

Role of the Investment Advisor
IAs can analyze industry structure by a company's stock valuation because the company's price strategies and cost structures affect industry long-term growth and sales and earnings volatility.

- Industries are identified by the product or service they provide (e.g., the S&P/TSX Composite Index lists 10 sectors based on company business activity).
- To better understand the competition within an industry, the industry can be classified by its prospects for growth and degree of risk.

Growth Prospects

- To analyze an industry's reported revenues and unit volume sales for the last several years (ideally more than one business cycle), compare:
 - the rate of growth in nominal Gross Domestic Product (GDP) to the industry's growth in sales;
 - the rate of change of real GDP to the industry's rate of change in unit volume;

- the overall rate of inflation to the industry's price index.
- Once there is a picture of industry growth, an IA can determine if a company is in a growing industry, a stable industry, or a declining industry.
- Revenue growth of a company is a result of pricing and sales volume. Corporate growth and price stability can indicate the risk of investing in the company and whether or not the timing is right.

Laws of Survivorship

- Each industry experiences a life cycle of emerging growth, rapid growth, maturity, and decline.
- The amount of time an industry and a company spends in each phase of this life cycle varies.
- As sales grow and decline during the phases of the life cycle, pricing strategy and unit cost structures are affected by the phase of the life cycle the firm is in.
- For example, the drug and health industry is in a growth phase and sees high profits and margins, while the older field of steel manufacturing is in a declining phase and sees prices decline due to competition.
- Due to economies of scale, as a market increases, unit costs decrease.
- To withstand competition in an industry and achieve higher profit margins, a company will normally:
 - become a low-cost producer to gain maximum profits;
 - set low prices to discourage potential competition from entering the industry;
 - produce products that are different (or perceived to be different) from existing products.
- Niche players are specialized companies that service smaller market segments that would otherwise be neglected.
- Investment capital is most likely to flow to industries with better returns. Therefore, the competitive playing field is ever-changing.
- Profit margins are lowered by new competition.
- Capital moves away from industries with low rates of return, especially if they are expected to remain low (e.g., if they will stay lower than T-bill rates, which represent the risk-free rate of return).
- These basic laws of survivorship ensure rates of return average out over time.

Industry Classification by Stage of Growth

Initial Growth or Emerging Industries

- An emerging industry is one with new products or services.
- It is usually technologically advanced, and rapidly innovative.
- Sometimes it is inaccessible to equity investors, because the company may be privately owned or the product may be only a part of a diversified company.

- An emerging company or industry may be unprofitable; however, the prospects for the future are typically promising, though it is impossible to predict success.

Growth Industries and Companies

- A growth industry has sales and earnings that are consistently expanding faster than most other industries and are expected to continue to do so.
- Companies in growth industries are called growth companies, and their common shares are called growth stocks.
- Growth companies exhibit the following characteristics:
 - leaders have high price-earnings ratios and low dividend yields;
 - over several years, stocks show a high rate of earnings on invested capital with the potential to maintain this rate in the future;
 - they have increasing unit and dollar sales over a period of time as well as having control of costs;
 - they retain and reinvest earnings (often no dividends are paid);
 - they have capable and aggressive management;
 - they spend on research and development. Successful growth companies grow profits by reducing prices, despite an increase in production costs and competition.
 - their cash flow may remain negative, or may not;
 - they show a high risk of rapid price decline if the market loses faith in the industry's ability to maintain growth.

Mature Industries

- Companies in mature industries have a growth rate that more closely matches the rate of growth in the economy and is much slower than the rate of growth for growth companies.
- Mature industries usually have positive earnings and cash flows, but it is difficult to differentiate between company products.
- Typically, companies in these industries face increased price competition, with pressure on profit margins.
- Overall, the growth rates for sales and earnings tend to be slower, but more stable.
- Companies in mature industries are not immune to recessions, but do tend to have financial resources that help them withstand poorer economic conditions.
- When the share price of a company in a mature industry falls, it tends to fall less than the S&P/TSX average.

Declining Industries

- These industries' growth rates either match the overall economic growth rate or show evidence of stopping growth and declining.

- A declining industry is one that is becoming obsolete due to technological advancements, is unable to compete with prices, or in which consumers have lost interest.
- These industries have large cash flows, because they do not have to reinvest in new plants and equipment.

Liquidity of Common Shares
<ul style="list-style-type: none">• Liquidity refers to the ease by which a stock exchange security can be bought and sold without a significant move in price. Trading should transact without too much distortion in a market.• High liquidity is important to institutional investors.• Exchanges have liquidity standards that their stocks must meet, but listed stock may still trade thinly.• Trading volume can be found in financial papers and publications.

Industry Classification by Competitive Forces

- There are five competitive forces that influence the attractiveness and future growth of an industry's companies:
 - ease of entry or exit for new competitors;
 - the degree of competition among existing firms;
 - the potential for pressure from substitute products;
 - the amount of pressure consumers can put on the company to reduce prices;
 - the amount of pressure suppliers can put on the company to pay for their materials or inputs.

Industry Classification by ROE and Stock Characteristics

- Industries can be categorized as cyclical or defensive. To compare industries in these two categories, the return on equity (ROE) must be understood.

Return on Equity (ROE)

- Return on equity is the ratio used to show investors how businesses are performing with the capital invested.
- ROE is used to show whether the companies in an industry are more or less profitable than others, at different stages (e.g., cycles).
- The ROE on total equity is net earnings before extraordinary items as a percentage of total equity.

Formula:

$$\frac{\text{Net earnings before extraordinary items}}{\text{Total equity}} \times 100 = \text{ROE on total equity}$$

Example:

$$\frac{1,897}{12,345} \times 100 = 15.37$$

- The return on total equity is 15.37 per share.
- The ROE on common equity only is net earnings minus preferred dividends:

Formula:

$$\frac{\text{Net earnings} - \text{preferred dividends}}{\text{Total equity}} \times 100 = \text{ROE on common equity alone}$$

- Cyclical and defensive industries alternate leadership during a business cycle:
 - Cyclical-industry ROE falls faster in a recession than a defensive industry ROE, and so cyclical stock prices fall faster than defensive ones.
 - During economic growth periods, cyclical industry prices and ROE tend to outperform defensive industries.
- Portfolio managers refer to this pattern as industry rotation.

Cyclical Industries

- S&P/TSX Composite Index cyclical industries mainly export commodities internationally (e.g., exporters of lumber, copper, oil, etc.)
- Generally, there are three groups of cyclical industries:
 - commodity (e.g., mining, chemicals, forest);
 - industrial (e.g., transportation, capital goods, basic industries such as building materials);
 - consumer (e.g., auto and merchandising companies).
- In addition, gold and energy industries are also cyclical, though they usually have different cycles.
- Cyclical industries are influenced by:
 - global economic conditions. Expansion and contraction in U.S. business is the main influence on Canadian cyclical company profits.
 - improving business conditions, because they significantly raise earnings;
 - price changes in international commodity markets;
 - changes in the value of the Canadian dollar; when the Canadian dollar declines, this makes exports cheaper to international buyers.

Defensive Industries

- Defensive industries can be characterized by:
 - stable earnings and dividend records;
 - relative immunity to poor economic conditions;

- relatively stable ROE and therefore include blue-chip stocks and income stocks.
- Defensive industry stocks include:
 - many blue-chip stocks. However, not all blue-chip stocks are defensive. They do not guarantee future performance and blue-chip companies can change. They usually are:
 - top investment-quality stocks that maintain earnings and dividends through good and bad times;
 - dominant in their markets, with strong internal financing and effective management.
 - Income stocks:
 - provide generous dividend yield that is relatively well assured;
 - may have a low degree of price volatility and limited potential for capital depreciation.
 - Consumer stocks
 - Occasionally, in the U.S. and Canada, consumer stocks generate stable long-term growth and are therefore considered defensive.
 - Major Canadian banks
 - May be considered blue chip by some investors, but are also income stocks, because typically they have high yields.
 - Banks are sensitive to interest rates. Rising interest rates cause banks to increase the rate they pay on deposits to attract funds. Banks also earn revenue from fixed-rate mortgages, and so they experience a squeeze on profits when rates rise.
 - Utility industry stocks
 - Utility industry stocks are also sensitive to interest rates, because they carry heavy debt.

Speculative Industries

- These are characterized as industries or shares for which there is little or no definitive information and so risk is exceptionally high compared to other industries.
- They include emerging industries which have products that attract rapid growth, but eventually involve a shakeout, with few companies consolidating the industry and emerging as leaders while others are forced out of the market.
- Better management, financial planning, products, and marketing can contribute to a speculative industry's success.
- Investment analysts must be experienced to select a successful speculative industry.
- The term speculative is also applied to Canadian penny stocks (i.e., junior oil, gas, and mining ventures), because they are volatile and priced on intangible factors.
- The term speculative is also used to describe any company that has shares that are treated as speculative (i.e., investors speculate on the success and failure of the stock).

Company Analysis

- This analysis studies an individual company's financial health and chance for profit by looking at its financial statements and balance sheet.

Earnings Statement Analysis

Sales

- Analysts try to isolate the main reasons for a company's sales and evaluate how those factors will affect future performance.
- Analysts look at:
 - increases in sales as a percent and in absolute terms each year; the increase should be a "real" increase, and not just a result of inflation;
 - increases in product price, unit sales, total sales, market share (at competitor's expense) and trends;
 - introduction of new products;
 - expansion into new markets (e.g., expansion into the United States);
 - consolidation when a company is taken over;
 - the effects of a new plant or diversification;
 - advertising, promotion, and strikes against the competition;
 - favourable government legislation;
 - business cycle upswings.

Operating Costs

- Analysts study operating costs to determine the overall effectiveness of operations.
- When analyzing operating costs, analysts:
 - include all costs necessary to generate sales;
 - exclude interest, amortization, and taxes;
 - calculate and look for trends as a percent of sales to determine the operating profit margin.
- The profit margin shows whether costs are rising (indicative of difficulty controlling costs), falling (indicative of cost efficiency), or stable.
- The analyst also studies reasons for changes in operating margin to determine what is affecting the company's cost structure.
- Changes in margin are likely to result from:
 - cost of goods sold. If a company must pay more for required raw materials, the operating margin is affected.
 - capacity utilization rate. Companies that operate close to their production capability are operating efficiently. Fixed costs that must be met can be spread out over time.

Fundamental and Technical Analysis

- expense on new plant or equipment;
- introduction of new products and services;
- employee costs (especially for labour-intensive companies);
- new plant start-up costs.

Ratios

- Analysts use ratios to compare profits to sales and to capital invested in the company.

Dividend Record

- Analysts study a company's earnings to determine how well management uses company resources.
- Between 20% and 50% payout of earnings in dividends is typical.
- Reasons a company is paying a higher dividend rate (e.g., over 65%) could be:
 - it regularly has earnings that permit high payouts;
 - it is about to cut the dividend;
 - it is earning from a depleting resource (e.g., a mine);
 - controlling shareholders demand higher earnings to pay for other ventures.
- Reasons a company is paying a lower dividend rate could be:
 - earnings are being used to finance continuing operations;
 - it is about to increase the dividend payout;
 - company policy is to maintain dividends;
 - there is a company share buy-back policy;
 - stock dividends are being planned.

Balance-Sheet Analysis

- Fundamental analysts study the balance sheet to gain insight into the company's overall financial position.

Leverage

- Leverage uses debt or preferred shares (versus common share equity) to fund capital requirements.

How Leverage Improves ROI		
	Company A No Leverage	Company B Leveraged
Net profit	\$100	\$100
Equity	\$1,000	\$500
Debt	n.a.	\$500
ROI	10%	20%

- A leveraged company's earnings increase faster in a business cycle upswing and decrease faster in poor economic times.
- Leverage affects the company's financial stability, its need for future financing, and the type of financing that would be most suitable.

Capital Structure

- Analysts study capital structure to determine a company's financial stability and to get an indication of future financing needs. They take account of:
 - maturing debt that may require refinancing;
 - retractable/extendable securities that may need to be refinanced;
 - convertible securities that indicate a potential decline in per share earnings because of dilution;
 - outstanding warrants/stock options that indicate the possible need for a new share issue;
 - a company priced at below book value/working capital per share which could represent undervaluation.

Qualitative Analysis

- Assesses the effectiveness of management and other intangible factors.
- The ability to perform qualitative analysis comes with experience (e.g., gaining industry contacts, intuition, etc.)

Market Theories

- There are also three market theories associated with fundamental analysis that are used to explain stock-market behaviour. Proponents of these market theories do not subscribe to technical analysis.

The Efficient Market Hypothesis

- This hypothesis assumes:
 - a large number of rational, profit-seeking investors exist;
 - investors react quickly to new information;
 - the intrinsic value of a stock will be reassessed when there is new information, and the market price will be adjusted accordingly.
- Based on these assumptions, the strong form of the efficient market hypothesis presumes that stock prices reflect all of the data available and are therefore the best estimate of the stock's value.

Random Walk Theory

- This theory assumes that:

- buyers and sellers constantly reassess stock value in response to new information, and market prices fluctuate accordingly. Since new information occurs at random, price changes are random.
- because price changes are random, past prices do not provide useful knowledge of future price.
- a stock's current price reflects current corporate developments.

Rational Expectations Hypothesis

- This theory is based on the assumption that investors make decisions rationally after considering all available information in order to predict change and avoid past mistakes.

Rebutting Market Theories
Markets do not necessarily behave as the above theories would suggest, because not everyone has access to new information at the same time. The fact that some investors do better than others and even outperform the indexes shows that investors react to information differently and for different reasons. For example, Tom may sell a stock because he needs cash and Meagan may buy it at the same price because she wants income and/or a capital gain.

Chapter 4

Technical Analysis: Market Factors Used in Stock Valuation

Market Factors That Are Used in Stock Valuation:
<ul style="list-style-type: none">• chart analysis;• quantitative analysis;• sentiment indicators;• cycle analysis;• market breadth.

- Technical analysis uses graphic illustrations of price movements in the markets. For this reason, technical analysts are also called “Chartists.”
- Two assumptions underlie technical analysis:
 - Market prices reflect all market influences (e.g., fundamental information, political events, natural disasters, and investor psychology). The impact of these factors will quickly show up in some form of price movement, either up or down.
 - The market does not move haphazardly. It moves in trends that are usually long lasting. Techniques of technical analysis identify significant trends to recognize as early as possible when trends are changing direction and to determine the probable extent of those trends.

Key Differences Between Technical and Fundamental Analysis
<p>The technician studies the effect of supply and demand (price and volume), while the fundamentalist studies the causes of price movements (such as rising interest rates.)</p> <p>Studying the fundamentals may give an investor a sense of long-term price prospects whereas technical analysis plays a role in deciding when and at what level to enter or leave a market.</p>

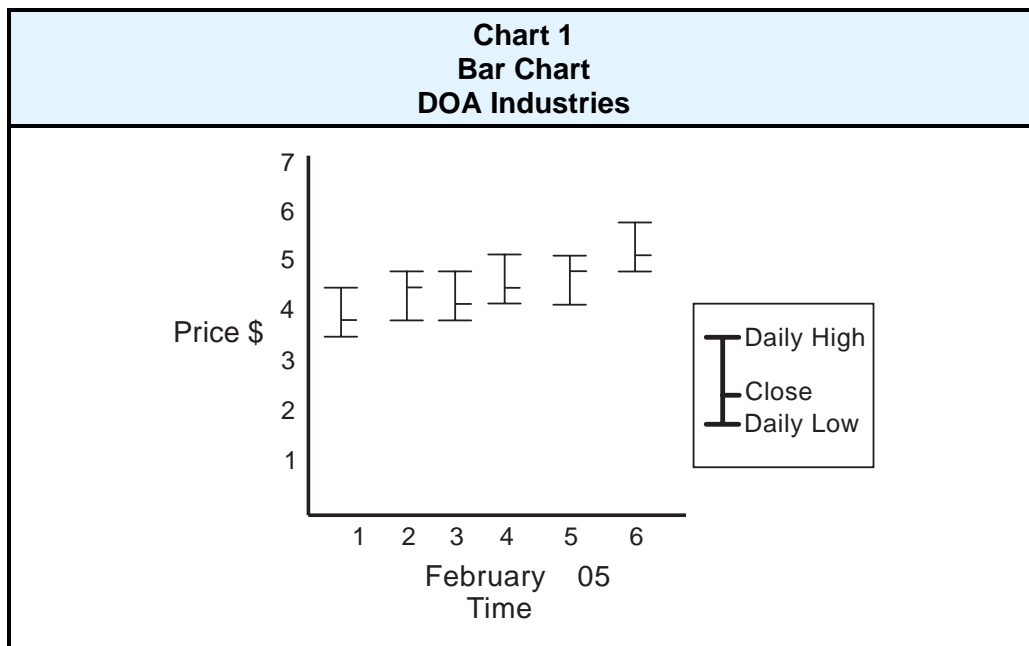
Common Tools in Technical Analysis

- There are four main tools in technical analysis:
 - chart analysis;

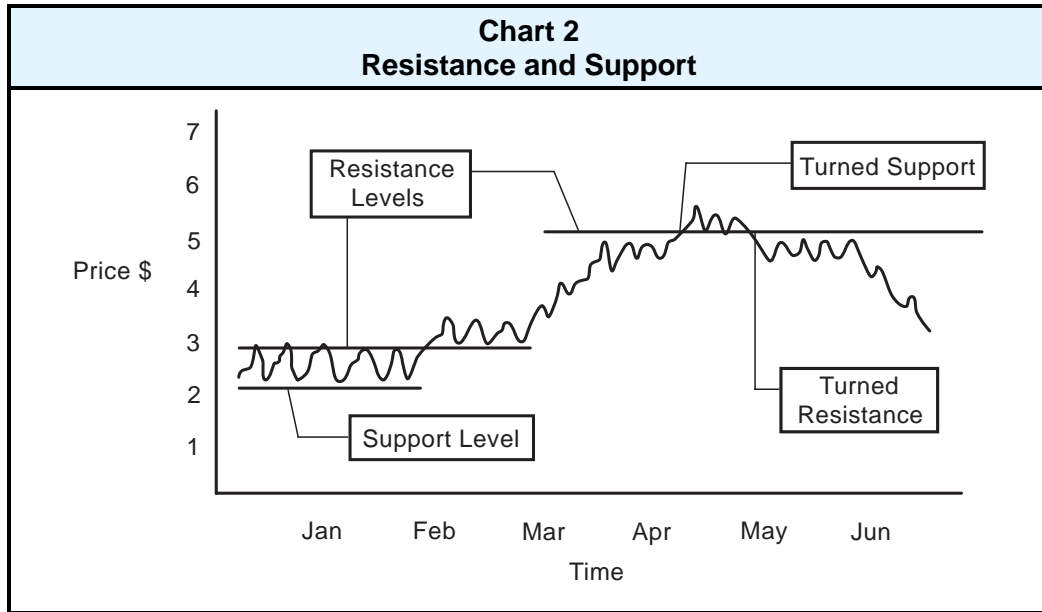
- quantitative analysis;
- sentiment indicators;
- cycle analysis.

Chart Analysis

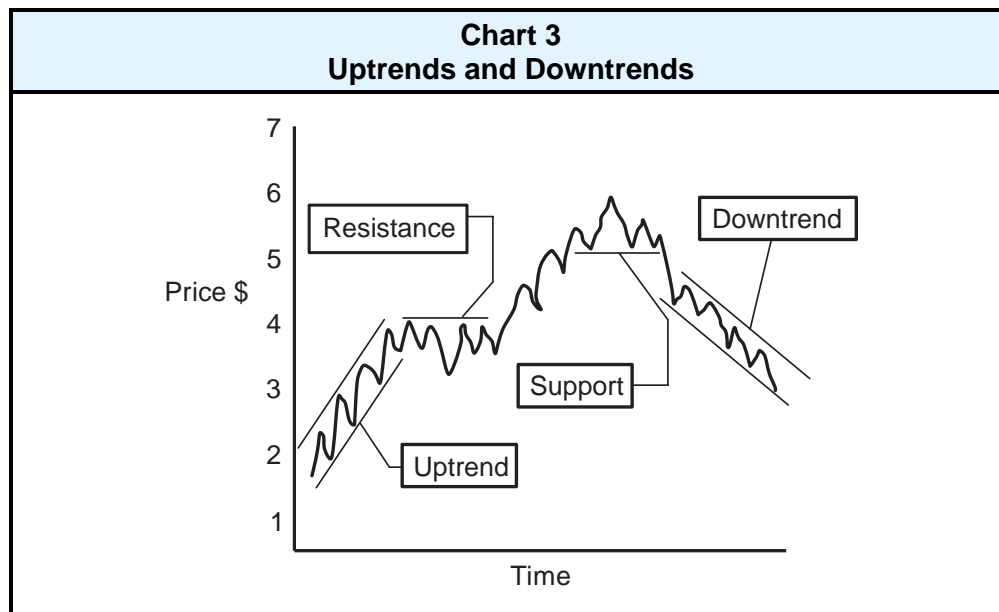
- A bar chart is the main type of chart used for analysis. Typically, it is used to provide a visual representation of the movement of the daily price of a security over a period of time (see Chart 1).
- In Chart 1, the price of DAO Industries on February 1, 2005, had a trading range for the day of between \$3 and \$4, and the closing price was \$3.25.



- **Support levels** and **resistance levels** are examples of price points (see Chart 2). Price points represent important changes in direction.
- A support level occurs where buying becomes strong enough to stop a falling trend (i.e., the price at which investors start showing they sense value), and a resistance level occurs where selling becomes strong enough to stop a rising trend (i.e., the price at which supply surpasses demand).
- Chart 2 shows that, during January and February, the support level for the stock was at \$2 and the resistance level was at \$3. At the end of February, the price broke through the resistance level and for the month of March the previous resistance level of \$3 became a new support level until the end of March. Then the stock price climbed to a new resistance level of \$5. At the end of April, the price broke through this resistance level and that level then became a support level until the beginning of May, when the \$5 level once again turned into a resistance level. This reversal of support and resistance levels is a common occurrence.

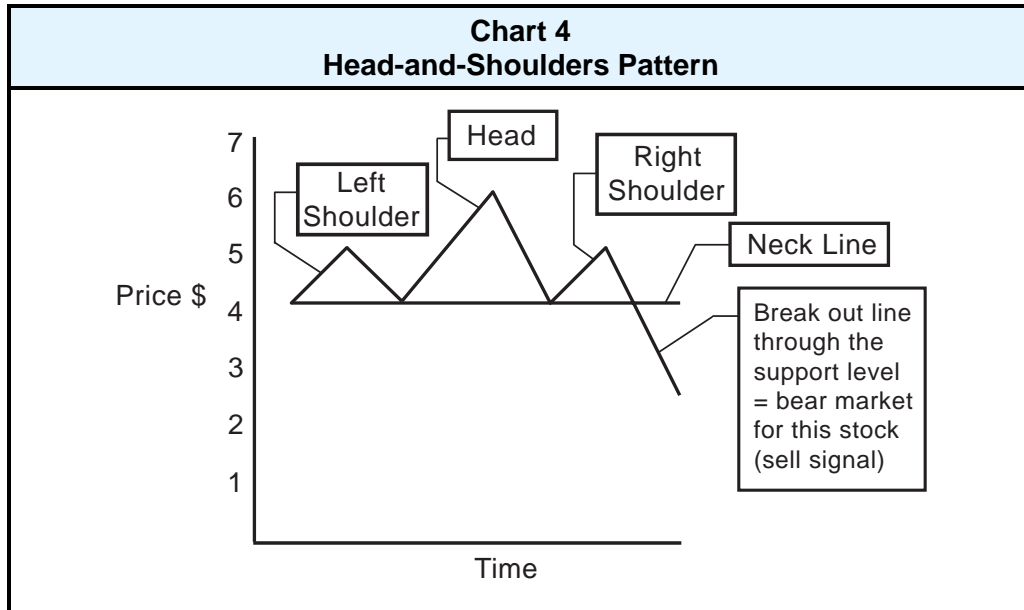


- An **uptrend** is a series of rising peaks and a **downtrend** is a descending series of peaks. Chart 3 shows price movements that represent an uptrend and a downtrend.
- Trends are classified into three categories: major, secondary, and minor. A major trend lasts more than six months, a secondary trend from one to three months, and a minor trend a few weeks or less.

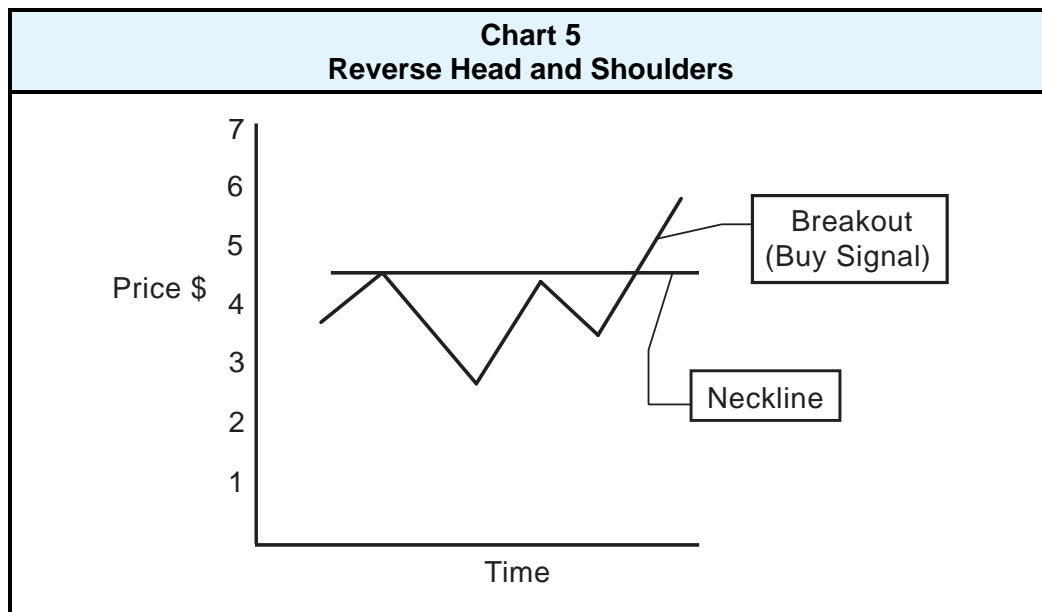


- **Reversal patterns** are major movements up or down that occur after a formation period. A **head-and-shoulders** pattern is a reversal pattern. Chart 4 shows a head-and-shoulders

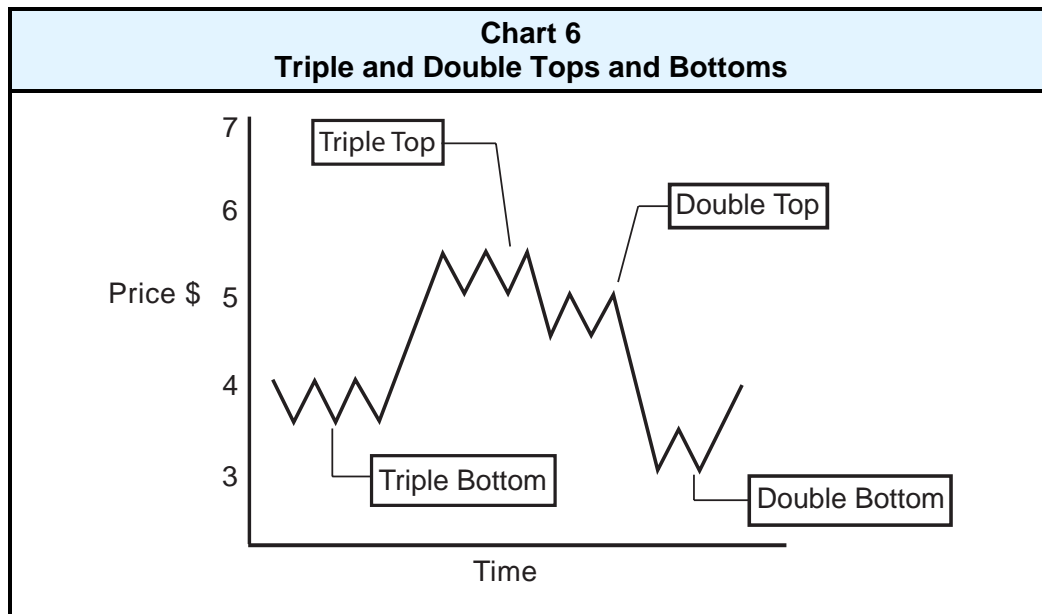
pattern. The **neck line** is a support level and the breakout through that level indicates a downtrend or bearish outlook for the stock (a sell signal).



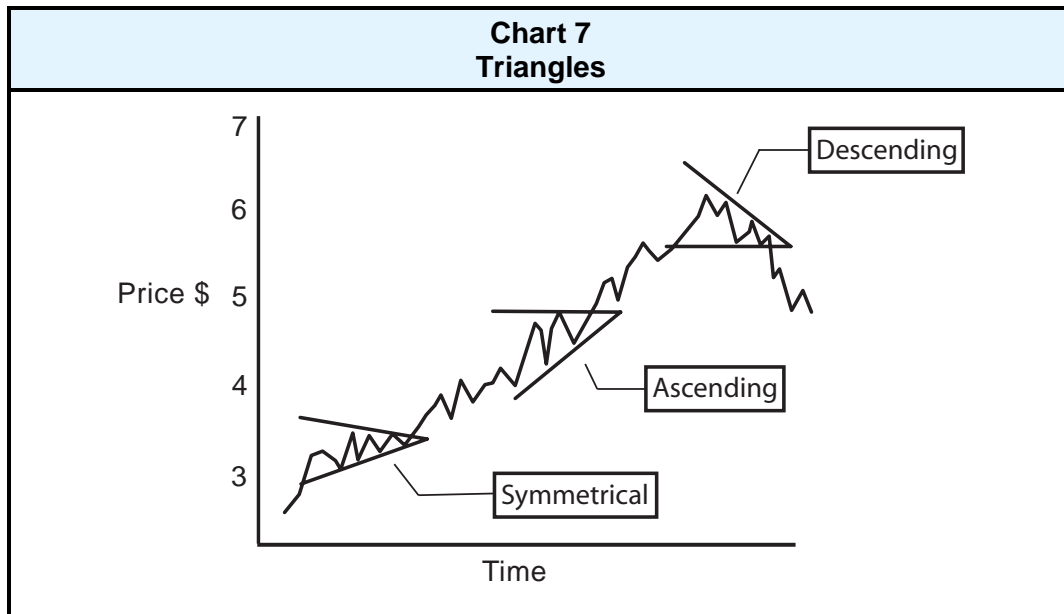
- Chart 5 shows a **reverse-head-and-shoulders** pattern. The neck line is a resistance level and the breakout through this level indicates an uptrend or bullish outlook for the stock (a buy signal).



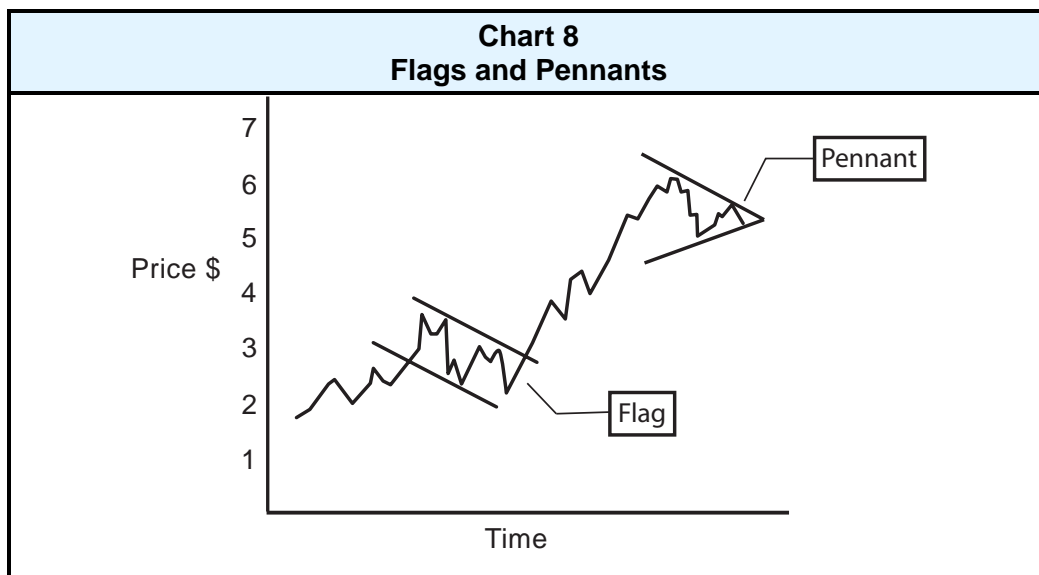
- **Triple and double tops and bottoms** are also reversal patterns. Triple tops and bottoms have three peaks and troughs and the breakout patterns are interpreted the same as a head and shoulders formation. Double tops and bottoms are also called Ms and Ws because of their shape. Chart 6 shows these formations.



- **Continuation patterns** or **consolidation points** are pauses in price on a chart, usually before a prevailing trend continues.
- **Triangles** are the most reliable of the continuation patterns. There are three types of triangles that have forecasting value: symmetrical, ascending, and descending triangles. All three are shown on Chart 7. They sometimes mark price reversals, but usually represent pauses in a prevailing trend.
- A **symmetrical triangle (also called a coil)** is distinguished by sideways activity with prices fluctuating between two converging trendlines. The upper line is declining and the lower line is rising. Buying and selling pressure are in balance. Before the apex of the triangle is reached, a breakout will occur (i.e., prices will move beyond one of the two converging trendlines).
- An **ascending triangle** has a flat upper line and a rising lower line. Since buyers are more aggressive than sellers, this is usually a bullish pattern.
- A **descending triangle** has a declining upper line and a flat lower line. Since sellers are more aggressive than buyers, this is usually a bearish pattern.
- The ascending and descending triangles have a built-in bias (bullish and bearish respectively). The symmetrical triangle is neutral but it implies that a prior trend will be resumed. In Chart 7, we see the prior trend was a rising market.

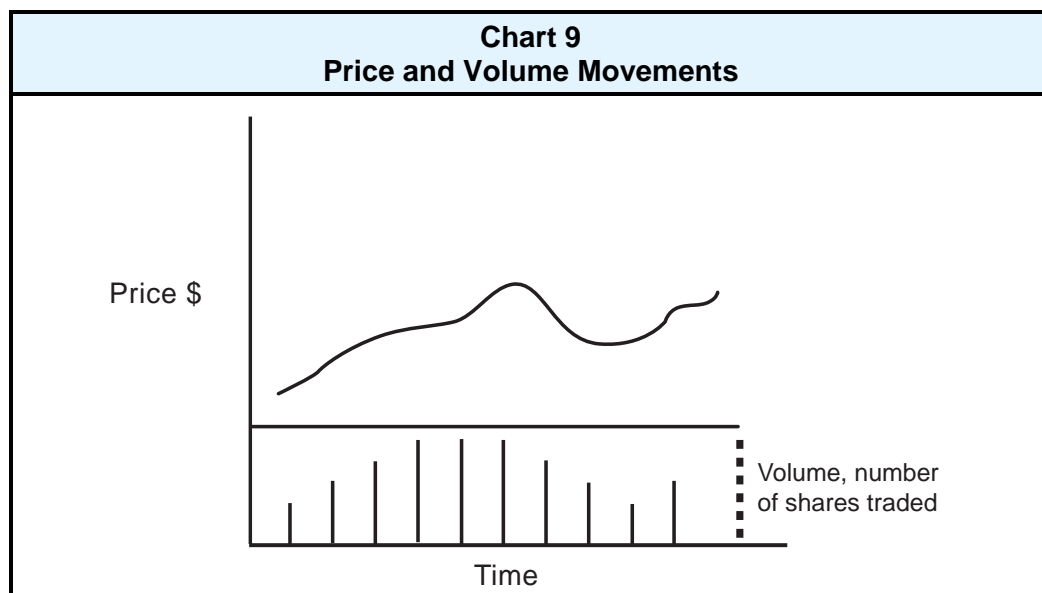


- **Flags and pennants** are examples of two short continuation patterns. They mark brief pauses, or resting periods, during dynamic market trends. Both are usually preceded by a steep price move, called a **pole**.
- In an uptrend, the steep advance pauses to catch its breath and moves sideways for two or three weeks. Then the uptrend continues. A flag resembles a parallelogram that tends to slope against the trend. During an uptrend, a bull flag will slope downward.
- During a downtrend a bear flag slopes upward. The pennant is like a small symmetrical triangle. Both patterns are said to “fly at half mast,” because they usually occur near the middle of a trend or near the halfway point of a market move. Chart 8 shows examples of flags and pennants.



Volume

- Chartists employ a two-dimensional approach to market analysis which includes a study of price and volume. Price is the most important of the two, but volume provides important secondary confirmation of the price action on the chart and often gives advance warnings of an impending shift in a trend.
- Volume is the number of shares traded during a time period, usually shown each day on the daily price chart. Volume measures the pressure behind a given price move. As a general rule, heavier volume (as seen on Chart 9 in the vertical bars at the bottom of the chart) should be present in the direction of the prevailing price trend.
- During an uptrend, heavier volume should be seen during rallies, with lighter volume (smaller volume bars) during downside corrections. In downtrends, the heavier volume should occur on price selloffs. Bear-market bounces (short uptrends) should take place on lighter volume.
- Heavier volume accompanying the breaking through of trendlines, support, and resistance levels lends greater weight to price activity.



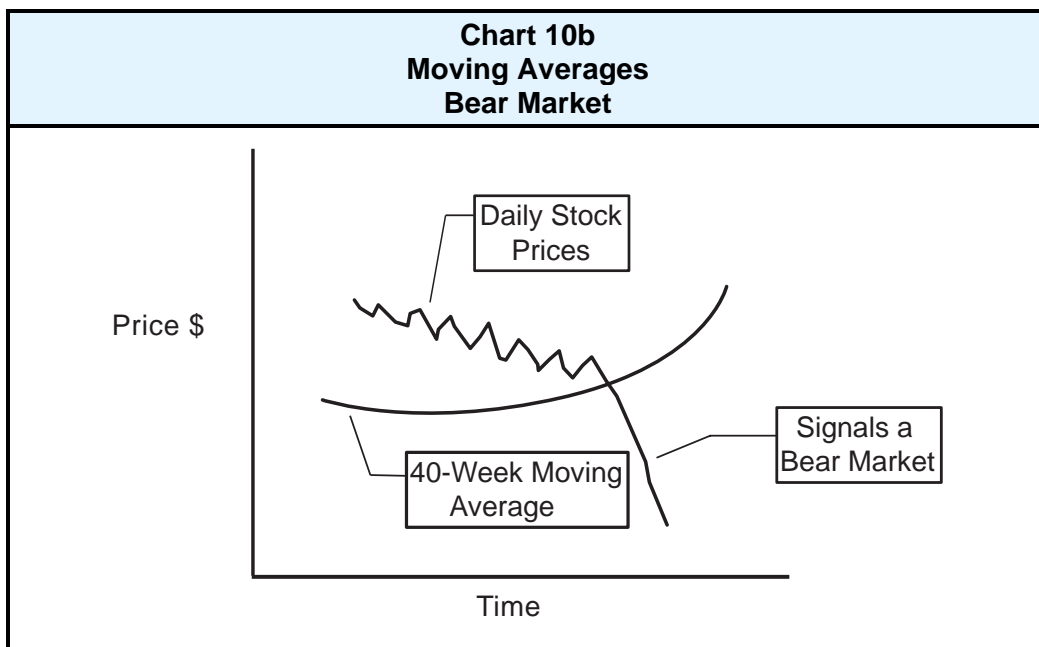
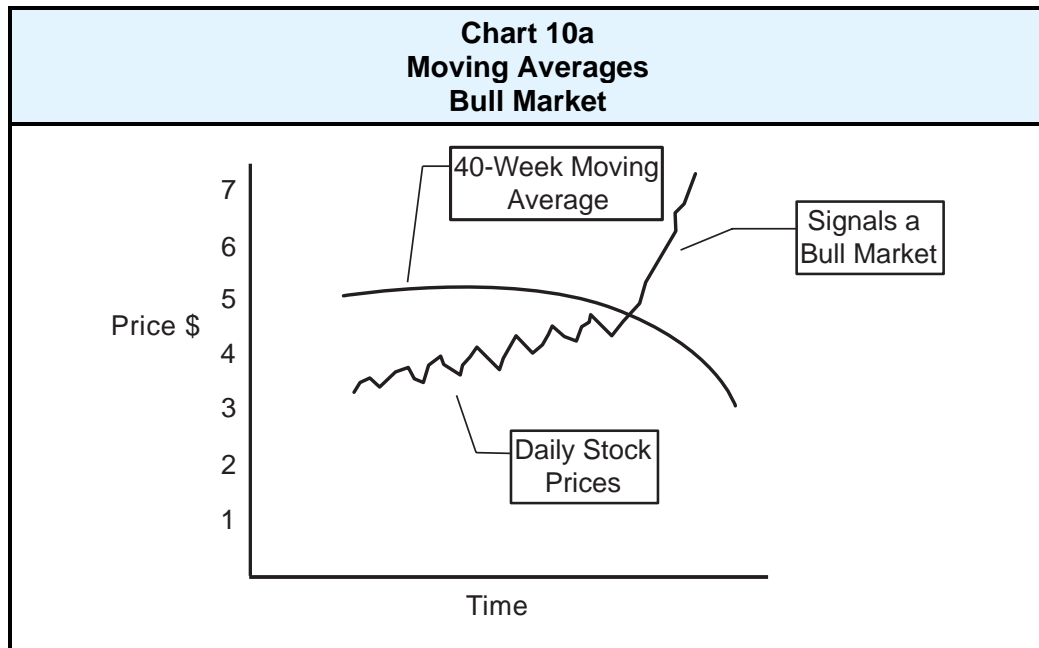
Quantitative Analysis

- Quantitative analysis is another tool for technical analysis using statistical data. This form of analysis produces **moving averages** and **oscillators**, which can confirm trends when used with other indicators.

Moving Averages

- Moving averages (e.g., the 40-week moving average) smooth the price action and make it easier to spot underlying trends. Each point on the 40-week moving is an average of all the weekly prices for the previous 40 weeks.

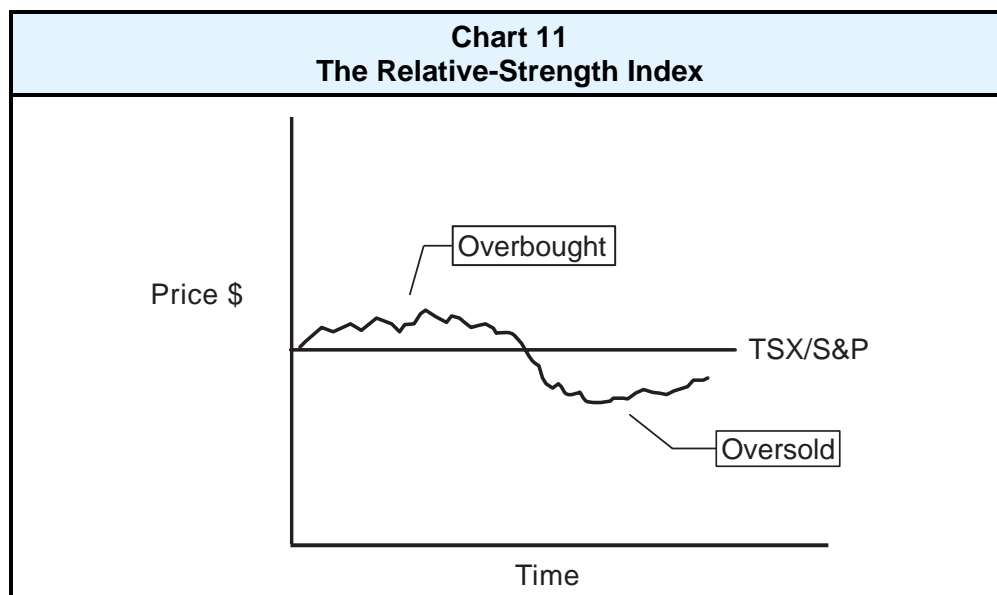
- Comparing the moving average against the daily market price shows whether a short-term price change is a signal of a major change in valuation.
- When a price breaks above the moving average, it can be interpreted as a sign to buy. When a price falls below the moving average, it can be interpreted as a sign to sell (see Charts 10a and 10b).



Oscillators

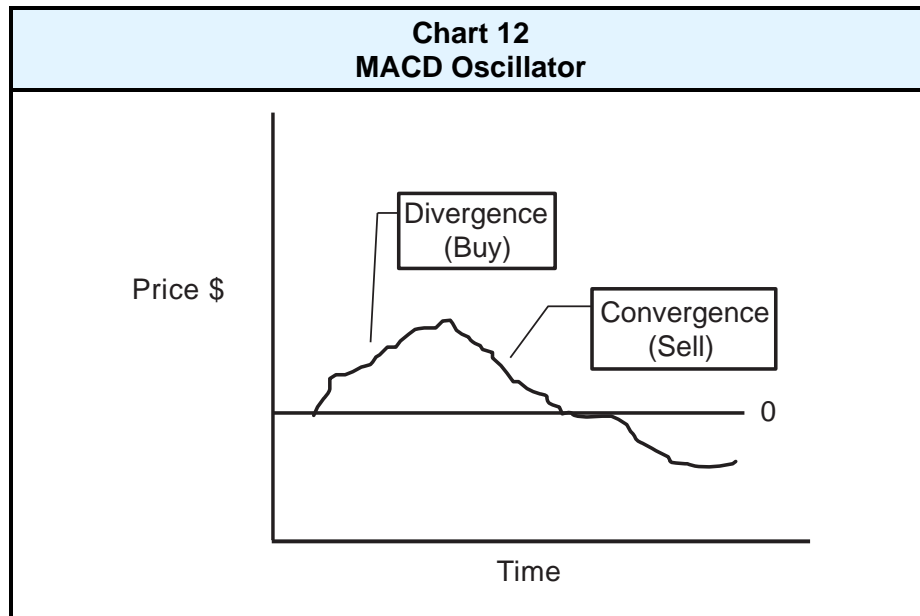
The Relative-Strength Index (RSI)

- The relative-strength index uses moving averages to measure the movements of a particular stock against the movements of a stock index such as the TSX/S&P. The TSX/S&P is represented by a straight line, usually marked as zero. When the stock has moved up more than the index, the RSI will be above the market line, and if the stock has not moved as much as the market, the RSI will be below the market line. Many chartists use this to determine if a stock is overbought (indicating a sell signal) or oversold (indicating a buy signal) (see Chart 11).



The Moving-Average Convergence-Divergence (MACD) Indicator

- The MACD is the most-used indicator for tracking momentum and indicating divergence of prices.
- This oscillator generates a smooth moving average on the difference between moving averages (e.g., the difference between the 10-day moving average and the 20-day moving average). The difference is the **divergence**. A trigger line is depicted as zero. When there is no difference between the two averages, the MACD will be on that line. This is the **convergence** point.
- When the MACD moves above the trigger line, it is a buy signal. When the MACD moves toward the trigger line or crosses it, it is a sell signal (see Chart 12).



Sentiment Indicators

- A sentiment indicator predicts investor expectations (e.g., to develop **contrarian** decisions based on doing the opposite to what the majority of investors are doing is a sentiment indicator).
- The CONSENSUS National Futures and Financial weekly compile data on all futures markets. When 75% of those surveyed are bullish, the market is considered to be overbought and it is time to sell. When only 25% are bullish, the market is oversold and it is time to buy.

Cycle Analysis

- Cycle analysis is used to predict the end of one cycle and the start of another (e.g., the end of a bear market and the start of a bull market).
- There are short- and long-term cycles. Common cycles are:
 - long-term (> 2 years);
 - seasonal (1 year);
 - primary/intermediate (9 to 26 weeks);
 - trading (4 weeks).
- The **Elliot Wave Theory** is an example of cycle analysis:
 - The rhythms found in nature form the basis of the thinking behind this theory.
 - The gist of the theory is that the market moves up in a series of five waves, and down in a series of three waves.

Market Breadth

- Technical analysts measure the condition of the stock market by the breadth of the market. Breadth is ascertained by:
 - the number of issues that trade and the number that advance or decline;
 - the extent or broadness of a market trend.
- Two ways to measure breadth are:
 - the advance-decline line:
 - a non-price measure of market trends using the difference between the number of stocks that advance and decline.
 - new highs and new lows:
 - like the advance-decline line, this measure includes the new high and new low prices for the whole market and thus is a measure of breadth. The market is considered to be strong when new highs are increasing and new lows are decreasing.