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FINANCIAL MANAGEMENT UNDER INFLATIONARY CONDITIONS IN TURKEY

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Özet: Aşağıda ki çalışmada, Türkiye'de ki enfalsyonist ortamda finansal yönetim açısından gözönünde bulundurulması gerekli iktisadi konular ele alınmıştır.

Paranın ölçme ve değerleme fonksiyonunu yitirmesi Türkiye'de finansal yönetim ve diğer işletme alanlarında ki önemli problemlerin kaynağını taşkil etmektedir. Bu problemlerin çözülmesi için ön koşul alışılagelmiş finansal yönetim yöntemlerinin değiştirilmesidir. Çünkü, alışılagelen yöntemlerim gelişitirilmesinde kullanılan varsayımlar istikrar ortamına ve sabit fiyatlara dayanmaktadır.

I. Introduction

In the beginning of the 80's, inflation in Turkey was between 20% and 50%, and there were justifiable hopes to leave the inflation problem behind within a short period of time. But at the end of 1987, inflation reached 55% and, climbing further on, exceeded 100% in spring of 1994[1].

Since the economic crisis in 1994, there were serious attempts to solve the economic problems of the country, especially the problem of high inflation. But despite different statements of some politicians, the inflation problem had not been solved until today and - in my opinion - will probably not been solved in the nearest future. Consequently, the management and particularly the financial management of multinational enterprises and joint ventures has to face and to solve the problems resulting from high inflation in Turkey.

The purpose of this paper is to examine the framework for financial management under inflationary conditions in Turkey in the context of the whole economy. Part 2 deals with problems of measuring and forecasting inflation. In part 3, the relationship between inflation on the one hand and money supply, economic growth, interest rates and exchange rates will be investigated in. Part 4 summarizes the results and gives an outlook on the consequences for accounting and financial management in Turkish companies.

II. Measuring and forecasting inflation

Usually, inflation is defined as the continuous rise of the price level of the national economy[2]. Consequently, the increase of single prices can not be described as inflation. Since the condition of a rise of all economic prices with the same rate in the same time probably never will be met in reality, this definition of inflation is not very helpful for the financial manager. In such a case, there are normally no real effects of inflation and therefore no real consequences for the planning process[3]. When there is only inflation in this narrow sense, the practical problems for the financial manager resulting from high inflation can be solved by issuing from time to time conversion tables for nominal amounts of money at different points of time.

In reality, high inflation rates are often combined with increasing temporary and persistent shiftings of relative prices[4]. In such a case, the relation of single prices - for example prices for buying raw materials on the one hand and prices for selling finished products on the other hand - is not constant but will change temporarily or permanent. In both cases, there are economic effects in real terms and therefore changes in the possibility of reaching determinated financial targets in real terms, e.g. a determined profit in real terms. Consequently, the increasing shifts of relative prices must lead to consequences in the planning process of a company. It is necessary to distinguish between "inflation" and "shifting of relative prices", but it is also necessary to understand that the possibility for shifts in relative prices will increase with the rise of inflation rates. A typical example are real estate prices which tend to increase more than the inflation rate in times of high inflation[5].

Another interesting observation in times of high inflation is the connection between the level and the volatility of inflation rates. There is some empirical evidence of a connection between this two variables: An increase in the level of inflation rates is connected with an increase in the volatility of inflation rates[6]. Therefore, the possible distribution of variables connected with the inflation rate in the future tends to be broader. From a financial management point of view, increasing inflation leads to increasing uncertainty in the planning process and to increasing economic risks.

Theoretically, inflation rate has to be measured by the change of the level of all prices of the national

economy within a specified period of time[7]. Normally, in this period of time not only the prices, but the type and quantity of the produced and consumed goods are changing too. Therefore, measuring inflation by the change of the level of all prices in an economy leads to results where pure price effects and effects resulting from a change of production and consumption patterns are mixed. So, in practice, inflation is measured by the increase of the prices of a fixed basket of goods which composition is re-arranged from time to time considering shifted production and consumption patterns[8].

Consequently, there are at least as many inflation rates as baskets of goods, multiplied with the number of institutes which are concerned with measuring inflation, and the inflation rate most discussed in public is not always the most interesting inflation rate for the financial manager. In Turkey, there are two interesting price indices, the Consumer Price Index and the Wholesale Price Index. Institutions which are concerned with the measurement of those indices are the State Institute of Statistics and the Istanbul Chamber of Commerce, respectively.

For both indices, there are much finer distinctions[9]. For example, there are wholesale price indices for agricultural products, mining or the manufacturing industry, and the wholesale price index for the manufacturing industry is subdivided into wholesale price indices for the production of food and beverages, textiles, wood products etc. Another distinction is the distinction of regional price level changes or of the price level changes of public or private manufacturers[10]. Since the price level changes of the different baskets of goods show strong differences, the use of the wrong price index for planning and controlling purposes can lead to serious planning errors. For the financial manager, it is always a good idea to choose a price index which reflects the development of the special prices he is interested in as close as possible, no difference if the investigation deals with the control of past plannings or with inflation forecasts for the future. For example, planned purchases in a special type of raw material should be forecasted with the special wholesale price index for such items instead of using the general consumer price index.

Another problem in connection with inflation forecasting is the choose of the right inflation rate with regard to the temporal aspect. Economic newspapers regularily publish "monthly" and "yearly" inflation rates, more accurate: monthly changes and changes over the same month of the previous year in the general consumer and in the general wholesale price index. Public discussion tends to look on the new published yearly inflation rates as if they are the most actual information regarding inflation rates which should be used for planning purposes too. Fig. 1 shows the problems which arrive from this point of view.

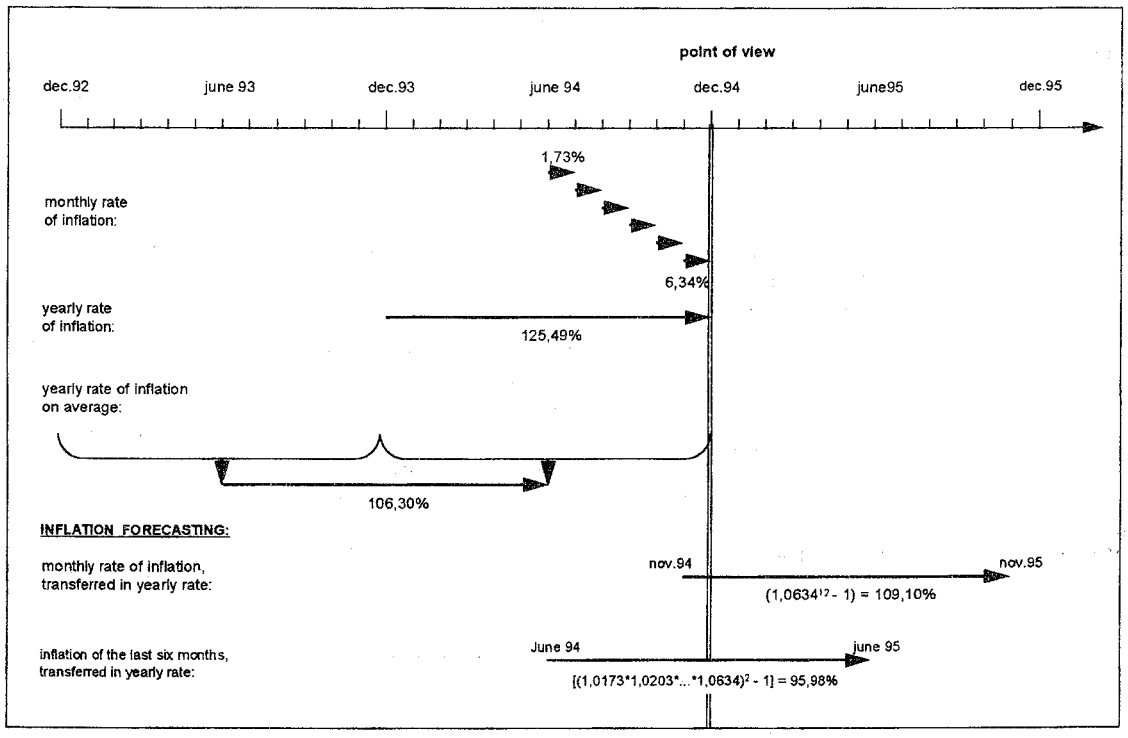

Fig. 1: Calculation of different inflation rates[11]

As could be seen in fig. 1, the montly inflation rate shows the change of the price level of the last month, whereas the change of the price level of the last twelve months is shown by the yearly rate of inflation. The inflation rates published for december 1994, for example, shows the change of the price level of december 1994 as monthly inflation rate and the change of the price level from january to december 1994 as yearly inflation rate, respectively. Consequently, the use of yearly inflation rates for inflation forecasts assumes that the price level changes of the last twelve months will happen again in the same height. Naturally, a forecast based on such "old" information can lead to unrealistic figures in such a dynamic surrounding like Turkey. Much stronger planning errors can take place if the average yearly inflation rate is used for forecast purposes since it contains dates up to two years old (fig. 1).

If the inflation forecast, measured in yearly rates, should be as actual as possible, the actual monthly inflation rate has to be transformed in a yearly rate as shown in fig. 1 for december 1994. The inflation figure calculated in fig. 1 means that the yearly change in the price level measured at the end of november 1995 will be 109,10% for the time from december 1994 to november 1995 if the change in the price level of december 1994 will continue in exact the same height for the next 11 months. The differences between the published yearly rate of inflation and the monthly rate of inflation, transformed in a yearly rate, were clearly recognizable in the time of the economic crisis between march and april 1994. In this period, the yearly rate of inflation climbed from 73,6% to 107,4% whereas the monthly rate of inflation, transformed in a yearly rate, changed from 83,7% to 1314%[12].

It is possible in principle to use actual monthly rates of inflation, transformed in yearly rates, for a forecast of inflation rates for the nearest future since the figures used for the forecast are as actual as possible. The main disadvantage of such a forecast is the strong volatility of the forecasted inflation rates due to the strong volatility of monthly inflation rates. A forecast based on yearly inflation rates, on the other hand, uses one year old, obsolete information and ignores the strong influence of actual developments. A possible compromise between those possibilities is the use of inflation forecasts based on the inflation rates of the last six months as shown in fig. 2.

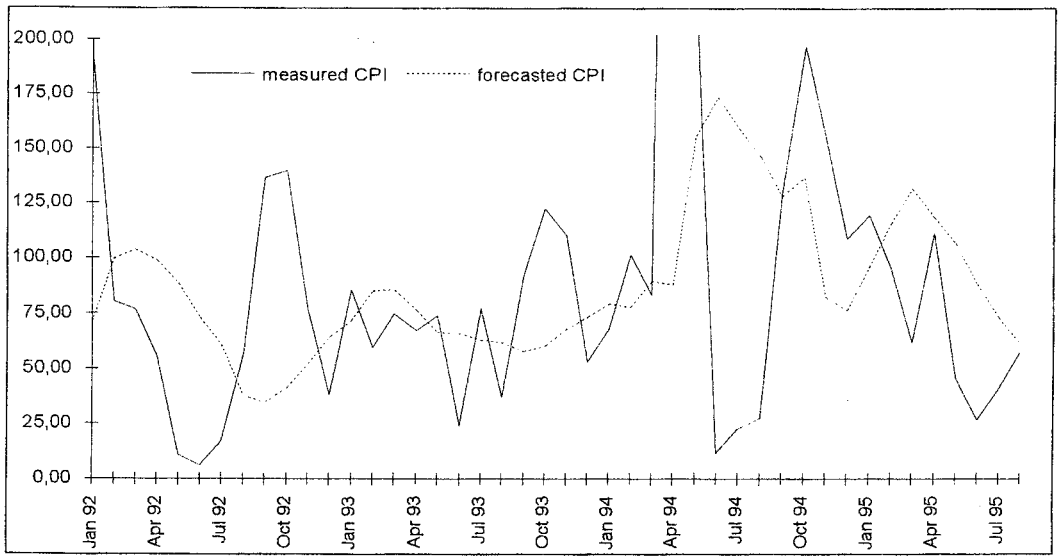

Fig. 2: Inflation forecast based on 6-month time series[13]

Based on simplified calculations, an inflation forecast based on 6-month time series seems to provide better results than forecasts based on monthly or yearly inflation rates[14]. But, as can be seen in fig. 2 too, the inflation forecast based on time series fails to meet the ex-post realized inflation rate in each month. Each inflation consists ex post of an expected part and an unexpected part. A better method of forecasting inflation shifts the dividing line between expected and unexpected inflation and can, therefore, lead to better financial planning - the financial management can only consider the expected and not the unexpected part of inflation.

Therefore, the question if it is worth to invest more time and money for using better statistical tools like - for example - regression analysis for inflation forecasts can only be answered for the individual case.

III. Inflation in a whole-economy context

III.1. Inflation, money supply and economic growth

A possible basis for an analysis of the connections between inflation and other economic figures could be the examination of inflation causes. If it is possible to find stable relationships between economic variables as causes and inflation rates as a result, and if it is possible to quantify these relations, stable quantitative relationships between inflation rates on the one hand and other economic figures on the other hand can be derivated.

Unfortunately, there is not only one, but a few inflation theories with different explanations for relationships between economic variables[15]. One common subdivision is the diffentiation between demand-pull and supply-push (or cost-push) inflation theories. Following the demand-pull theories, inflation is caused by an increase of the national demand for real goods without an equal rise in the national supply. This can be caused, for example, by an additive demand for real goods by state authorities, financed by an additive budget deficit[16]. Following supply-push theories, on the other hand, inflation is caused by the national supply. This can happen, for example, if the costs of imported goods like crude oil or the costs of government services increase and if these costs are shifted from the corporations to the consumers by calculating (and getting) higher prices for sold goods[17].

Following the OECD, the persistent high inflation in Turkey is primarily a result of the permant high budget deficits of the government[18]. The deficits cause inflation on the demand side - by higher demand of government organisations - and on the supply side - by higher prices of government services and of state-owned enterprises - at the same time. Therefore, it is not possible to foresee the direction of an inflationary push. Moreover, the timing of single inflation pushes is not forecastable - one inflationary push may last only a few days and another one a few months. This leads to overlaps of single inflation pushes. Last but not least, stabile cause-result-relationships can not be observed since market participators try to neutralize an expected inflation by taking into account the expected inflation of the future in their economic decisions of today[19]. This can lead, inter alia, to the appearance of the "resulting" inflation push chronologically before the (expected) "causes" for it take place.

Considering the failure of economic theories to explain stable relationships between the rate of inflation and other economic variables, an analysis of possible inflation causes is not helpful for the investigation of the framework of financial management in a high-inflation country. The only stable relationship seems to be the one between money supply and inflation rates, based on the quantity theory[20] (see fig. 3).

money supply: $M_S = M_q \cdot V$

(money supply = money quantity · circulation velocity)

money demand: $M_D = Y_R \cdot P$

(money demand = real gross national product · price level)

money market equilibrium: $M_S = M_D$

quantity theory: $M_q \cdot V = Y_R \cdot P$

If money circulation velocity V and real gross national product Y_R are assumed as constant, it follows that

$$M_q \sim P$$

Fig. 3: Quantity Theory

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The quantity theory assumes that the money market is in equilibrium in the long term what means that money supply and money demand are in equilibrium. The money supply is determined by the quantity of money M_q and the money circulation velocity V, the money demand by the real gross national product Y_R and the price level of the national economy P. If, for simplification, money circulation velocity V and real gross national product Y_R are assumed as constant, money quantity and price level must be proportional ($M_q \sim P$). This correlation can, as it is shown in fig. 4, be shown for Turkey too.

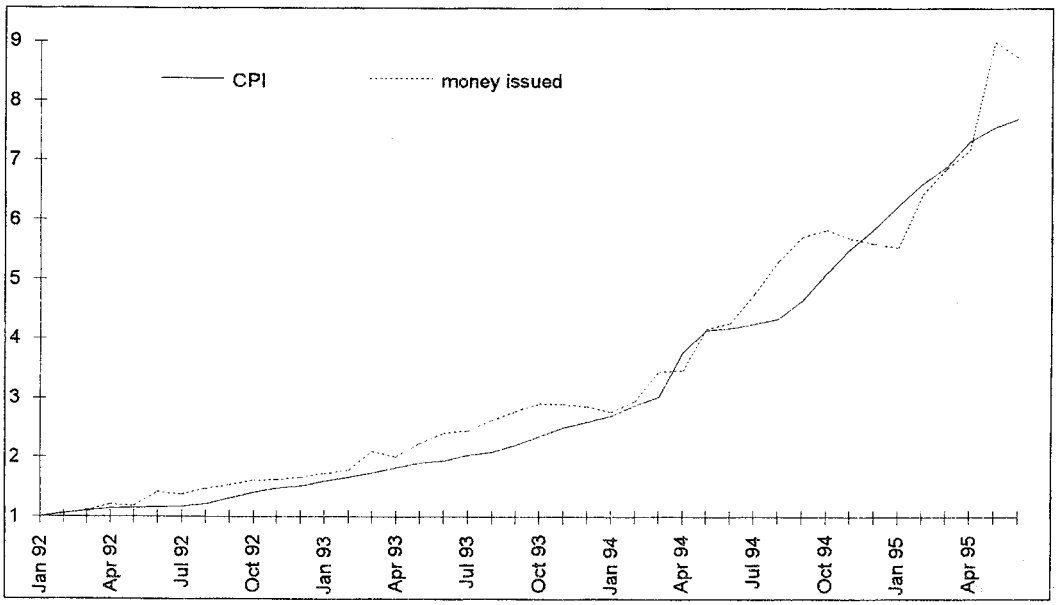

Fig. 4: Inflation and money supply[21]

In fig. 4, it can be seen that the price index and the quantity of newly issued money correlate in the long term. Therefore, the high inflation rates observed in Turkey can only take place because of the willingness of the Central Bank to rise the quantity of money. From the viewpoint of the financial manager, a meticulous observation of the Central Bank policy can therefore give interesting information about expected inflation in the nearest future.

The quantity theory (fig. 3) leads to another interesting result regarding the relationship between inflation rates and economic growth. Since we have seen that inflation pushes are not only caused by real economic phenomena but by expectations of economic subjects about future inflation rates too, it can happen that the future price level is fixed by determinations of prices and wages in today's contracts. When the central bank tries to slow down the inflation process by reducing the amount of newly issued money in the same time, the increase in the quantity of money will be smaller than the increase in the price level. If we assume furthermore a constant money circulation velocity V, the only way that leads to an equilibrium of supply and demand in the money market, following the quantity theory, is a decrease or at least smaller increase in the real gross national product Y_R. So, if the increase in the quantity of money fall short of the increase of the expected and anticipated inflation, the result can be less economic growth or - in some cases - a shrinkage of the real gross national product[22]. Conversely, an increase in the quantity of money that exceeds the expected and anticipated inflation rate can lead to additional economic growth. This relationship may explain the willingness of the Turkish Government and of the Turkish Central Bank in the past to accept higher inflation rates from year to year. On the other hand, this relationship shows the - maybe painful - way of the Turkish economy towards a future without inflation.

III.2. Inflation and interest rates

If a bank offers a credit in an inflationary environment, she will calculate her nominal rate of interest in a way that secures not only the earning of the planned real interest but a compensation for the loss of purchasing power of the credit amount, too. If all participants of the capital markets act in this economic rational way, the nominal rates of interest on the capital markets will follow the so-called "Fisher-relationship"

between nominal interest rates, real interest rates and expected inflation rates[23] (fig. 5).

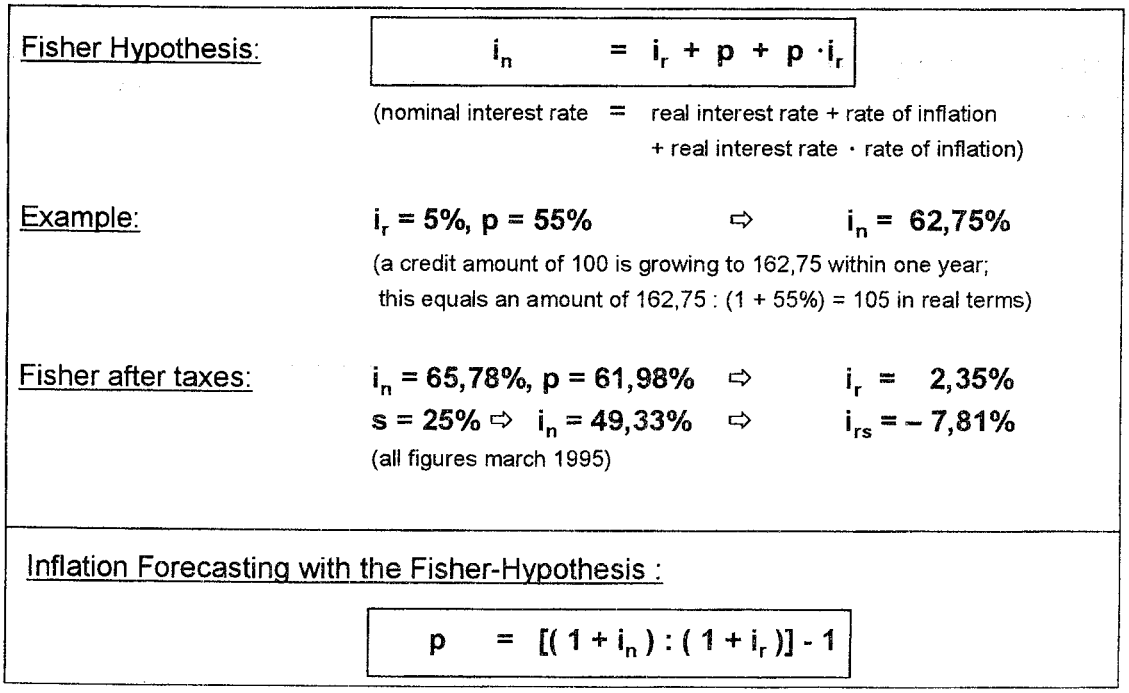

Fig. 5: Fisher relationship

Following the Fisher hypothesis, the nominal rate of interest can be calculated as real rate of interest plus expected inflation rate plus product of real rate of interest and expected inflation rate. If, for example, a bank wants to earn a real rate of interest of $i_r = 5\%$ and expects an inflation rate of $p = 55\%$ (fig. 5), she has to demand a nominal rate of interest of $i_n = 62{,}75\%$ to earn a real rate of interest (after inflation) of 5%[24].

It is difficult to test the Fisher hypothesis empirically. The main reason for this is the problem of observing expectations - in this case about future inflation - of economic subjects[25]. Normally, it is only possible to observe the realized rate of inflation instead the expected rate of inflation which means that it is possible to test the ex-post version of the Fisher hypothesis instead of the (original) ex-ante version. This test can be carried through by simply comparing the ex-ante determined nominal rate of interest for a special period of time with the ex-post observed rate of inflation for the same period. For example, it is possible to compare the nominal rate of interest for bank deposits for one year in january 1994 with the realized inflation rate from january to december 1994. In this paper, a detailed description of the results of such tests will not be given since, from a financial manager's point of view, they are very simple: An investment in sight deposits, time deposits or saving deposits with fixed rates of interests in Turkish Lira leads in nearly every case to a real loss of money in the long term, no difference which bank, which type of investment and which period is investigated in. The real rate of interest for one-year savings deposits in the period between 1990 and 1994, for example, was in the average minus 3,65%[26].

With the same methodology, it is possible to measure the real rate of interest for the overnight market in Turkey. This observation may be of particular interest because this market could be a relative perfect market since credits between banks are traded on it. The results of an ex-post measurement of real interest rates for the overnight market in the period between january 1990 and june 1995 are shown in fig. 6.

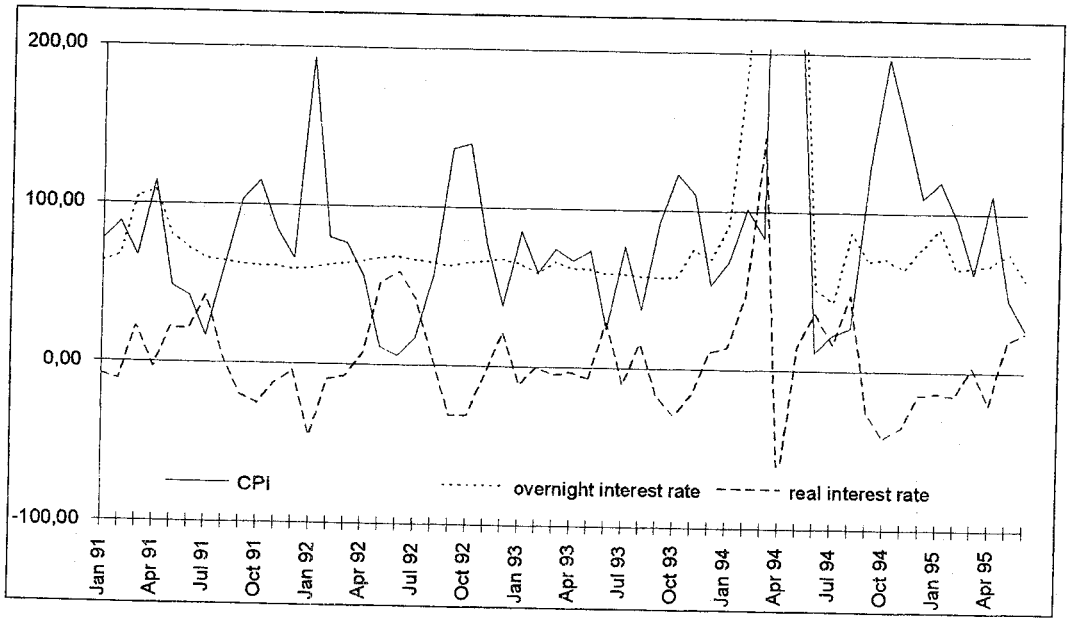

Fig. 6: Inflation and real rate of interest[27]

In fig. 6, it is shown that the real rate of interest is anything but constant. Sometimes it reaches a few percent above zero, in spring 1994 it exceeds 100%, but sometimes it falls below zero. These variations are caused by the divergation of realized inflation rates from expected inflation rates - differences between forecasted and realized rates of inflation leads to differences between planned and realized real interest rates, too. In the long run (at least from january 1991 to june 1995), the real rate of interest is on average approximately 4%, and this is - compared with the real interest rates of money markets of other countries - a reasonable rate[28]. But, for the short term, there is another confusing observation from fig. 6: The trends of the inflation rate on the one hand and of the real interest rate on the other hand seems to have reverse courses. In times of high inflation, realized real rate of interest tends to sink, whereas in low inflation times it tends to rise[29]. This relationship has been observed in other countries too[30], and it has been explained by different theories. Mundell, for example, argues as follows: In times of high inflation, the real value of cash assets of private households decreases, causing a fall in the demand for consumption goods of private households and, therefore, a rise in private savings. If the increased capital supply meets an unchanged capital demand, capital prices - and that means real rates of interests - fall[31]. If this so-called "Mundell-effect" take place, it leads to falling real interest rates and, therefore, cheaper capital for companies in times of high inflation.

Since the nominal interest paid from companies is deductable from their taxable income, the relationship between high inflation rates and low real interest rates becomes stronger if taxes are taken into account (see fig. 5)[32]. In some cases, real capital costs can be negative - getting a loan and investing the money only to avoid a loss in its purchasing power leads automatically to an increase in real wealth. If, as it is shown in fig. 5, the nominal rate of interest equals 65,78% and the tax rate 25%, nominal rate of interest after taxes becomes 49,33%. If, in the same time, inflation rate is 61,98%, the real rate of interest after taxes becomes minus 7,81% instead of plus 2,35% without considering taxes. On the other hand, companies in Turkey haveto pay for the cheap capital with a strong increase of the financial risk, precisely an increase in the risk of changes in the term structure of interest rates.

Before finishing the examinations about the relationship between inflation and interest rates, a few remarks about another possibility of forecasting inflation rates, in this case using the Fisher equitation, should be made. If every capital market participant calculates his nominal rate of interest following the Fisher equatation, the realized nominal interest rate of the capital market includes the expected inflation of the capital market participants on average. Therefore, a transformation of the Fisher equitation as it is shown in fig. 5 can be used for calculating the expected inflation rate of the capital market participants. It should be noticed that this way of forecasting inflation rates can only lead to better forecasts than forecasting based on time-series models if the

average capital market participant has better information about future inflation than it is reflected in time series and if the capital market is nearly perfect. In such a case, the prices shown on capital markets should reflect the "true" value of capital, and they should reflect all available information about future prices[33]. Considering a few simple tests (which will not be shown in this paper), the necessary preconditions for this forecasting models seems not to be fulfilled in Turkey; an inflation forecast using time-series models leads to better results than a forecast based on the nominal rates of interest.

III.3. Inflation and exchange rates

Before finishing part 3 of the paper, the relationship between inflation rates and exchange rates should be examined. It is assumed that at one point of time, the exchange rate between Turkish Lira and German Mark is fixed on a certain level, and all payments between Turkey and Germany are made in a neutral currency, for example the US-Dollar. If there is an increase in the price level of Turkey whereas the German price level is nearly constant, Turkish goods are becoming more expensive for German customers and vice versa. After a certain period of time[34], imports from Germany to Turkey increase whereas exports from Turkey to Germany fall. In Turkey, the additional imports leads to an increasing demand and the fall back of exports to an decreasing supply of US-Dollars, both effects causing an increase of the price of US-Dollar in Turkey. In Germany, opposite effects take place, causing a decrease of the price of the US-Dollar. Together, the Turkish Lira will be devaluated compared with the German Mark, measured in terms of US-Dollar.

Supposed there will be no change in the real interest rates in both countries and no other reasons for a change in the capital flows between Turkey and Germany. Supposed furthermore the central banks and the governments of both countries will not interfere in the price-building process on the currency markets. With these and a few more assumptions, the devaluation of the Turkish Lira will be exactly as high as it is necessary for an exact compensation of the additional imports from Germany to Turkey and of the lost exports from Turkey to Germany. In such a case, there will be no change in exports and imports of a country caused by different changes in their price levels; the "real value" of a currency will not be changed by different price-level changes. This effect is called the purchasing power parity[35]. An empirical investigation of this relationship for Turkey, compared with the German Mark and the US-Dollar, is shown in fig. 7.

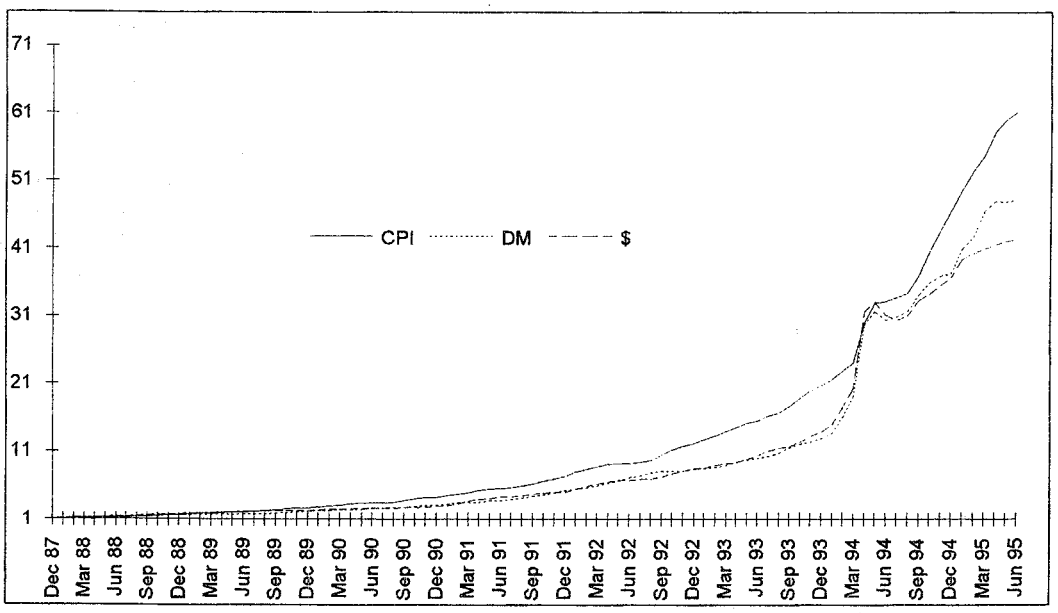

Fig. 7: Inflation and exchange rates

It can be observed from fig. 7 that the purchasing power parity seems to hold in the long term; inflation rates on the one hand and exchange rates to German Mark and Dollar, on the other hand, show the same trend. In the short term, on the contrary, purchasing

power parity theory does not work. From the beginning of 1988 to the beginning of 1994, the devaluation of the Turkish Lira against German Mark and Dollar was much smaller than the increase of the price level in the same time. In the economic crisis of spring 1994, the difference between the devaluation of the Turkish Lira and the increase in the price level was balanced within a few weeks[36]. After spring 1994, it seems that the devaluation remains behind the rise of the price level a second time. Therefore, a new economic crisis or at least a strong devaluation of the Turkish Lira in a relatively short period of time seems to be possible.

The reason for differences between long-term and short-term observations can be found if the assumptions made before are considered. A devaluation of the Turkish Lira which leads to an exact compensation of price level changes between Turkey and other countries as if described above could only happen if demand and supply on the currency markets are only determined by payments from imports and exports and by no other payments[37]. If, in contrast, an increasing demand for US-Dollar is satisfied by additional receipts from the tourism sector or by additional foreign credits, devaluation will be smaller than the increase in the price level as could be seen for the period from 1988 to 1993 in fig. 7.

Before the economic crisis in 1994 took place, not only the Central Bank of Turkey intervened in the currency markets, but moreover, the Turkish Government obtained more and more additional loans from the international capital markets for financing additional imports instead of letting the market regulate imports and exports by allowing free fluctuations of exchange rates[38]. Those loans including the interest due were payed with new, short-term credits as long as it was possible until, in spring 1994, the economic crisis and a sharp decline in the value of the Turkish Lira arose. In the long term, no central bank and no government is able to work against the forces of the international capital markets as long as the national economy is at least partly integrated in world markets. In the short term, on the contrary, central banks and governments can cause substantial distortions.

From the point of view of a financial manager, the unpleasant conclusion is that the risks resulting from inflation are not negligible by assuming that they are compensated by moves of the exchange rates. Inflation risk is not exactly abolished by exchange rate risks. Another consequence is that it is not possible to ignore inflation risks by carrying through all calculations in accounting and financial management in hard currency like German Mark or US-Dollar. As long as expenses in Turkish Lira are not exactly met by an income in Turkish Lira in the same amount and at the same point of time, an inflation risk, measured in Turkish Lira, remains. Neglecting this risk can lead to serious problems for the financial management and, sometimes, for the whole company.

IV. Summary and Outlook

Fig. 8 gives a short summary of the economic framework for financial management in high-inflation countries, especially in Turkey.

- inflation rate ↑ ⇨ possibility of shifts in relative prices ↑
- $\text{inflation}_{\text{observed}} = \text{inflation}_{\text{expected}} + \text{inflation}_{\text{unexpected}}$
  ⇨ financial management deals with $\text{inflation}_{\text{expected}}$
- inflation rate ↑ ⇨ volatility of inflation rates ↑
  ⇨ uncertainty in the planning process ↑
- $\text{inflation}_{\text{obs.}} < \text{inflation}_{\text{exp.}}$ ⇨ economic growth ↑ (possible)
- inflation rate ↑ ⇨ nominal interest rate ↑↑ ⇨ real int.rate → (long run)
  ⇨ nominal interest rate ↑ ⇨ real int.rate ↓ (short run)
- inflation rate ↑ ⇨ exchange rates ↑ ⇨ purch. power DM → (long run)
  ⇨ exchange rates ?? ⇨ purch. power DM ?? (short run)

Fig. 8: Economic framework of the financial management

An increasing inflation rate leads to an increase in the possibility of shifts in relative prices and to an increase in the volatility of inflation rates. The financial management can only consider the expected part of inflation in its planning process whereas it is impossible to deal with unexpected inflation. Since an increase in inflation rates is accompanied by an increase in the volatility of inflation rates, the unexpected part of inflation can increase, too. This leads to increasing uncertainty in the planning process and to increasing financial risks.

If the expected part of inflation grows less than the money supply, an additional economic growth can result. On the contrary, if the expected inflation exceeds the growth of money supply, less economic growth or, in some cases, economic decline can result. Nominal rates of interest and exchange rates, for the long term, compensate inflation which leads to constant real rates of interest and real exchange rates. For the short term, on the other hand, nominal interest rates and exchange rates can substantially depart from this course, leading to changes in real interest rates and in real exchange rates. In such cases, real interest rates tend to fall if inflation rate rises.

For the financial management, it can be concluded that nearly every relevant economic figure changes in times of high inflation. The most urgent problems resulting from this are the increasing uncertainty of the financial planning process and the loss of a stable standard for valuing payments, assets and liabilities of a company, no matter at what point of time the valuation take place. One Turkish Lira today has another value than one Turkisch Lira one month later, and one Turkish Lira in cash has after a short period of time another value than one Turkish Lira invested in stocks.

It is not the purpose of this paper to show solutions for the problems arising for the financial management in detail[39]. It shall only be remarked that nearly every area and every instrument in the accounting process and in the financial management has to be newly examined in detail. For the annual statements of a company including the annual statements for tax purposes, for example, it may be advisable to value assets and liabilities as close as possible - and as much as possible considering the legal framework - to market or current prices to avoid the reporting of high nominal (and taxable) but low real profits[40]. Another good idea may be the use of special inflation accounting instruments to show the difference between nominal and real profits to creditors, investors and employees. In the management accounting system and in the controlling process, current prices, if necessary forecasted with different inflation forecasting instruments as shown in this article, should be used in every part of the calculations[41]. Since the costs of capital explode in times of high inflation, cash management must be planned as precise as possible on a centralized basis. Financing and investing decisions, last but not least, have to consider the increased uncertainty of the planning process, as far as possible using instruments based on modern capital market theory. Moreover, the introduction of a central risk management for measuring and controlling price risks, interest rate risks and exchange rate risks is a must in a high-inflation country[42].

In the end, high inflation leads to the failure of nearly every conventional idea about accounting, controlling and financial management since nearly every instrument from these areas assumes a constant price level and certainty about future developments. In high-inflation countries like Turkey, business administration as an applied science has the task to investigate in the special problems caused by high inflation and to develop new instruments for a better accounting and financial management process.

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1) Türkiye Devlet Istatistik Enstitüsü (1995).

2) Issing (1987), p.186.

3) See Ströbele (1984), p.6 f., and Pohl (1981), p.134 f., for a detailed discussion of real effects of inflation.

4) Ströbele (1984), p.6 f.; Pohl (1981), p.134 f.

5) See Cassel (1984), p.299.

6) Issing (1987), p.208 f., with further references.

7) See Issing (1987), p.162 f.

8) See Pohl (1981), p.12 f., for a detailed discussion of the measuring problem.

9) Possible sources for getting information about inflation rates are: Türkiye Devlet Istatistik Enstitüsü, Türkiye Ekonomisi: Istatistik ve Yorumlar (montly); Türkiye Cumhuriyet Merkez Bankasi, Üc Aylik Bülten (quarterly).

10) See Türkiye Cumhuriyet Merkez Bankasi (1995) in detail.

11) Source: Türkiye Devlet Istatistik Enstitüsü (1995), own calculations.

12) Source: Türkiye Devlet Istatistik Enstitüsü (1995), own calculations.

13) Source: Türkiye Devlet Istatistik Enstitüsü (1995), own calculations.

14) It is not the purpose of this paper to investigate in the best possible way for inflation forecasts in Turkey. For this purpose, the simple calculations mentioned above have to be replaced by the necessary statistical tests to prove these statements.

15) See Issing (1987), p.162 f.; Riese (1986), p.41 f., for a survey.

16) Cassel (1984), p.274 f.

17) Cassel (1984), p.279 f.

18) OECD (1992), p.20 f.

19) For a discussion of the expectation problem of inflationary theories, see Issing (1987), p.207 f.; Pohl (1981), p.112 f. or - regarding interest rates - Thiemer (1987).

20) See Issing (1987), p.173 f., and Ströbele (1984), p.48 f., for a detailed discussion.

21) Source: Türkiye Devlet Istatistik Enstitüsü (1995), own calculations. Please notice that the term "money supply" in English is misleading since it described on the one hand the whole supply on the money market and, on the other hand. the quantity of money which determines the (whole) money supply together with the money circulation velocity.

22) See Issing (1987), p.173 f.; Ströbele (1984), p.50 f., for a more detailed discussion of the process.

23) See Fisher (1896), chap. II; Gebauer (1982), p.2 f.

24) In practice, there exists another formula which states that the nominal rate of interest equals the sum of real rate of interest and the expected inflation rate. In the example mentioned above, this calculation leads to a real rate of interest (after inflation) of 3,23%. Since the practician's formula ignores the loss of purchasing power of the interest payment itself, the use of this formula is only advisable for relative small numbers what means it is only advisable in a country with relatively low inflation rates.

25) A detailed investigation of this problem can be read in Thiemer (1987), p.6 f.; Gebauer (1982), p.90 f.

26) Source: Türkiye Devlet Istatistik Enstitüsü (1995), own calculations.

27) Source: Türkiye Devlet Istatistik Enstitüsü (1995), own calculations.

28) Own calculations, based on Türkiye Devlet Istatistik Enstitüsü (1995).

29) As mentioned in note 14), the simple calculations used here have to be replaced by the necessary statistical tests to prove these statements.

30) See Nelson/Schwert (1977); Fama/Gibbons (1982); Thiemer (1982), p.61 f.; Gibbons (1987).

31) Mundell (1963).

32) See Behrendt (1995) for a discussion in detail.

33) For a detailed discussion of this forecasting model, its preconditions and empirical evidence, see Fama (1975); Hess/Bicksler (1975); Titman/Warga (1989); Hafer/Hein (1990).

34) Within this period of time, fixed contracts and fixed prices can lead to opposite effects (J-curves). See, for example, Willms (1984), p.231 f.

35) Willms (1984), p.237 f.

36) There is no special reason for choosing the starting point december 1987. If another starting point will be choosen, relative devaluation and relative revaluation of the Turkish Lira would look different. Moreover, a more precise observation should concentrate on differences of price level changes between the countries and not on the price level change of Turkey alone as it has been done in this paper. I would expect the results of such a comparison to be similar since Turkish inflation rates reach such high values.

37) See Külp (1978), p.37 f.; Bechler (1981), p.281 f.

38) See OECD (1992), p.34 f.

39) For a more detailed discussion, see Behrendt (1995a).

40) For a detailed discussion of the planning process for the annual statements for tax purposes in Turkey, see Behrendt/Göksenli (1995).

41) See Behrendt (1995a).

For more information about the use of instruments based on modern capital market theory and about risk management, see Behrendt (1995a).

HAZİRAN Ayında yayınlanacak olan "öneri" Dergisinin 5. sayısı için makale teslim tarihi 30 NİSAN 1996 Salı günüdür. Bu tarihe kadar makalelerin, istenilen özelliklere göre Enstitümüze ulaşması gerekmektedir. İstenen özellikler aşağıda belirtilmiştir.

ÖZELLİKLER:

1-Makaller A4 boyutu kağıda uygun şekilde, 2 sütun halinde yazılacaktır.

2-Sayfa sayısı 4 sayfadan az, 10 sayfadan fazla olmayacaktır.

3-Makalenin sayfa düzenleri;
Kenar Boşlukları:
Üst : 3 cm
Alt : 3 cm
İç : 2 cm
Dış : 2 cm

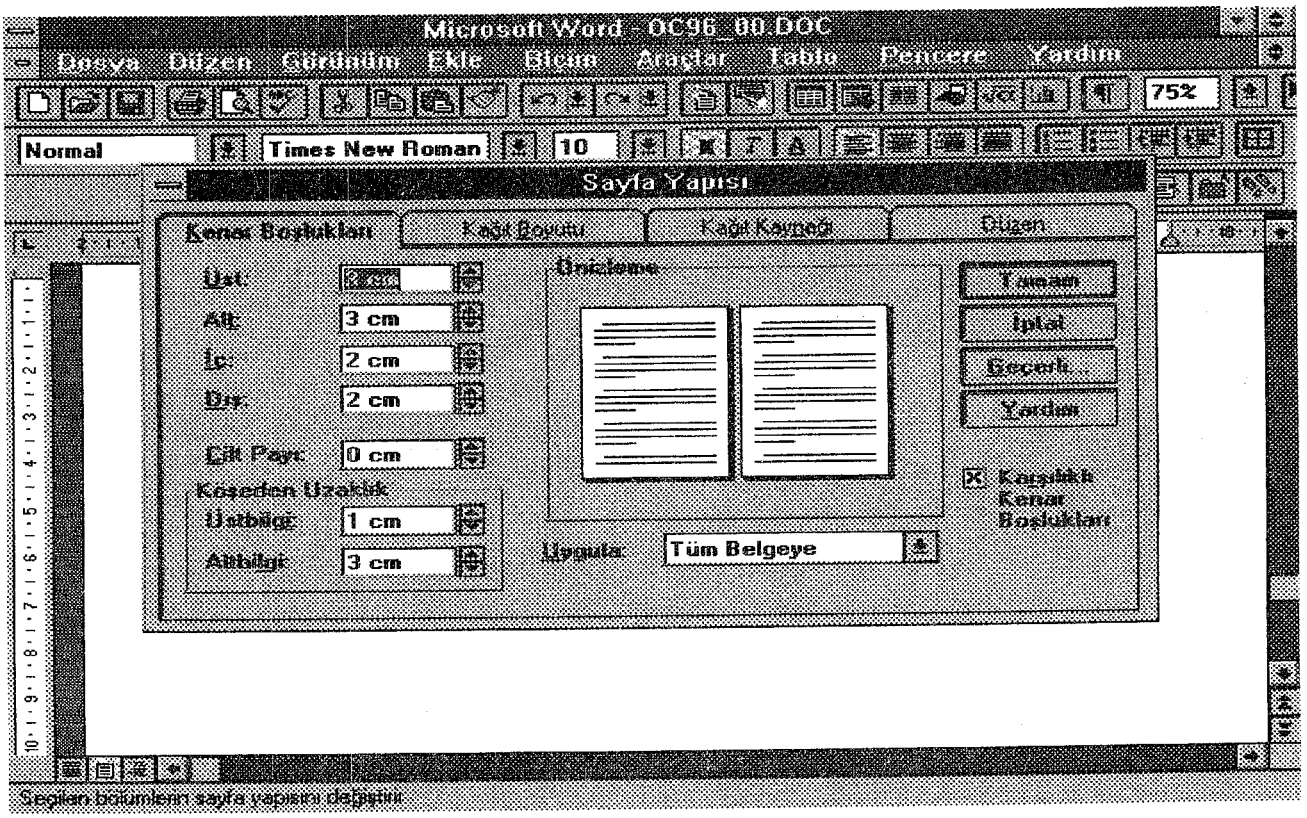
Üst bilgi : 1 cm
Alt Bilgi : 3 cm
Karşılıklı Kenar Boşlukları işaretli

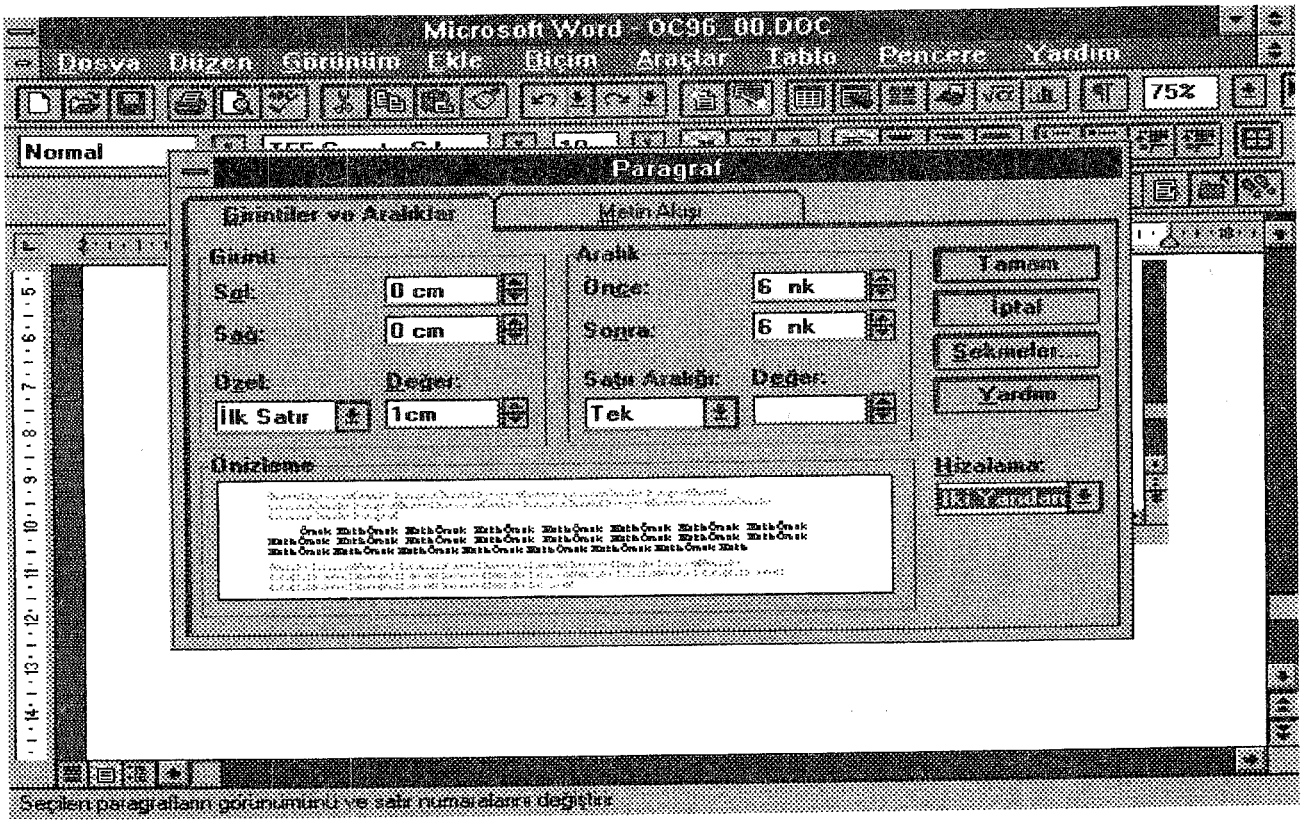
4-Sütunlar;

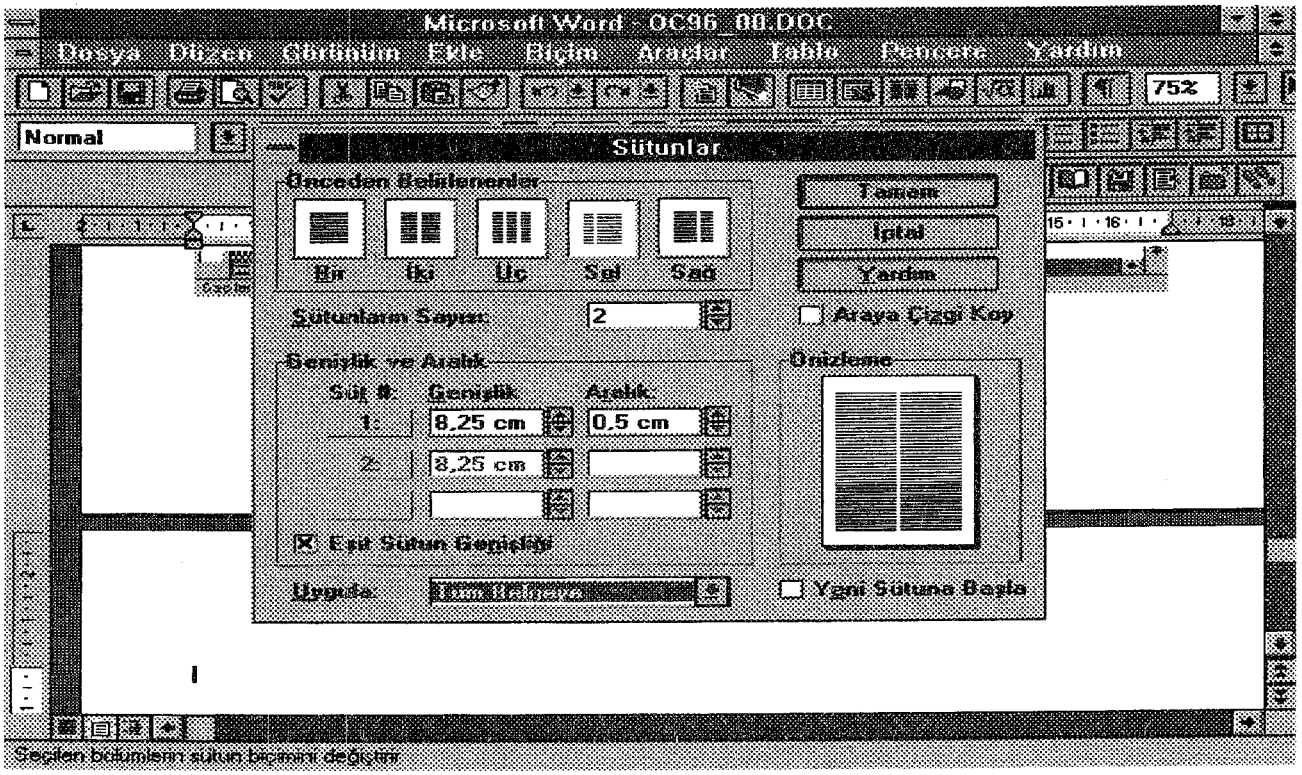
5-İlk sayfa; Başlık 5cm den başlamalıdır.

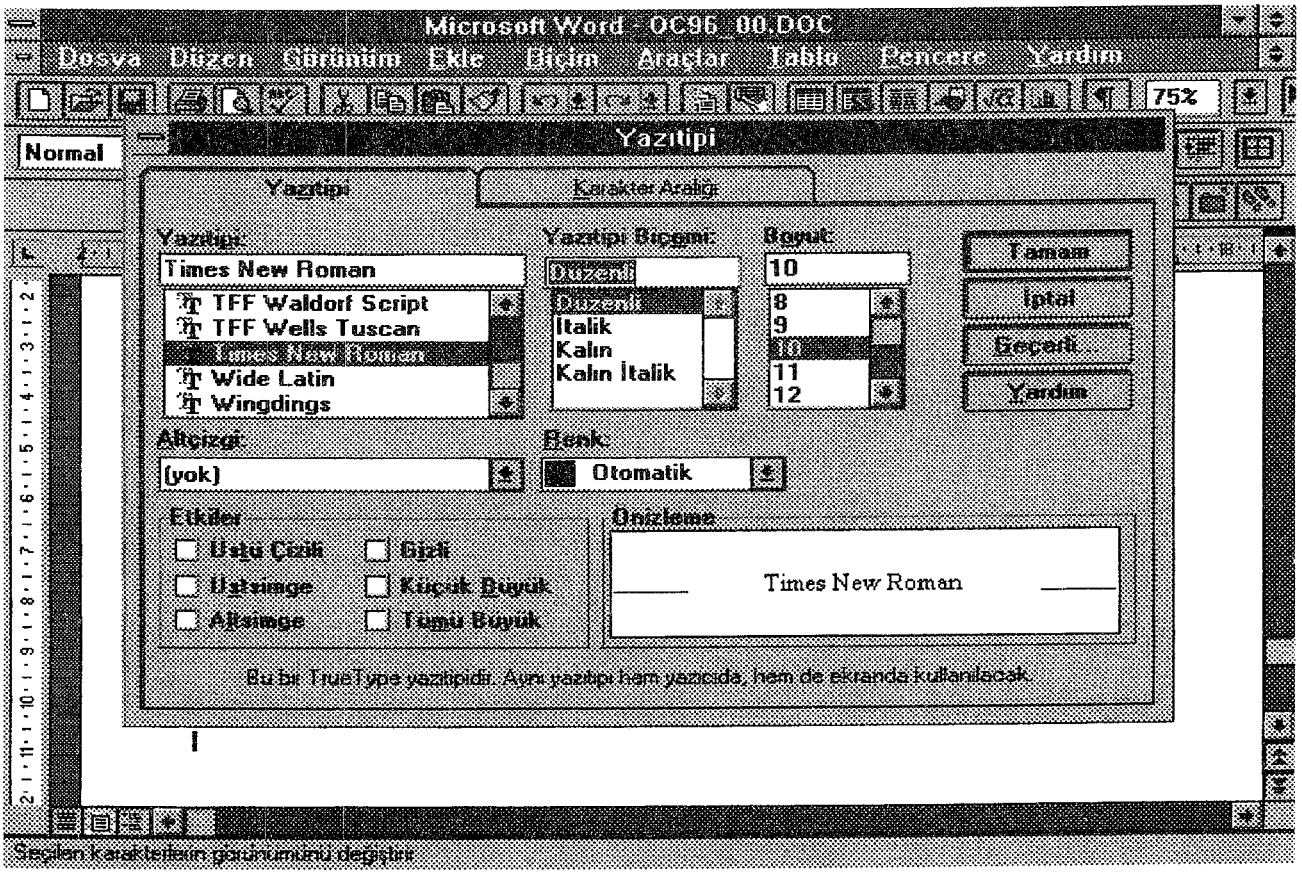
6-İlk sayfada, İngilizce yazılan makalelerde Türkçe; Türkçe yazılan makalelerde İngilizce olarak düzenlenmiş 50 kelimeyi aşmayacak şekilde özet bulunması gerekmektedir.

7-Makale yazılırken Winword 6.0 versiyonu kullanılmalı, yazı karakteri [Times New Roman], satır aralığı [tek satır], girinti [özel-1cm], Başlık [14 punto, Sayfa ortası, Koyu, Hepsi büyük harf], Yazar Adı [12 punto, Sayfa ortası], Yazarın bağlı olduğu [10 punto, İtalik, Sayfa ortası], Özet [9 punto, Koyu, Tek sütun, sağa-sola dayalı], Ana Makale [10 punto, İki sütun, sağa-sola dayalı], Dipnotlar [7 punto, makalenin bitiminde], Ara başlıklar [10 punto, Koyu, Büyük harf, Sayfa ortası], Kaynakçalar [9 punto, Makalenin sonuna] şeklinde **1 kopya A4 formunda bir kağıda çıktı ve beraberinde 3,5 inç'lik PC IBM formatında floopy** enstitümüze yukarıda belirtilen tarihe kadar teslim edilecektir.


Microsoft Word - OC96_00.DOC
Dosya Düzen Görünüm Ekle Biçim Araçlar Tablo Pencere Yardım
Normal
Times New Roman
10
Sayfa Yapısı
Kenar Boşlukları
Kağıt Boyutu
Kağıt Kaynağı
Düzen
Üst:
Alt:
İç:
Dış:
Cilt Payı:
Köşeden Uzaklık
Üstbilgi:
Altbilgi:
3 cm
2 cm
2 cm
0 cm
1 cm
3 cm
Önizleme
Tamam
İptal
Geçerli...
Yardım
Karşılıklı Kenar Boşlukları
Uygula:
Tüm Belgeye
Seçilen bölümlerin sayfa yapısını değiştirir


Microsoft Word - OC96_00.DOC
Dosya Düzen Görünüm Ekle Biçim Araçlar Tablo Pencere Yardım
Normal
Paragraf
Girintiler ve Aralıklar
Metin Akışı
Girinti
Sol:
Sağ:
Özel:
Değer:
0 cm
0 cm
İlk Satır
1cm
Aralık
Önce:
Sonra:
Satır Aralığı:
Değer:
6 nk
6 nk
Tek
Tamam
İptal
Sekmeler...
Yardım
Önizleme
Hizalama:
Seçilen paragrafların görünümünü ve satır numaralarını değiştirir


Microsoft Word - OC96_00.DOC
Dosya Düzen Görünüm Ekle Biçim Araçlar Tablo Pencere Yardım
Normal
Sütunlar
Önceden Belirlenenler
Bir
İki
Üç
Sol
Sağ
Tamam
İptal
Yardım
Sütunların Sayısı:
2
Araya Çizgi Koy
Genişlik ve Aralık
Süt #:
Genişlik:
Aralık:
1:
8,25 cm
0,5 cm
2:
8,25 cm
Eşit Sütun Genişliği
Önizleme
Uygula:
Yeni Sütuna Başla
Seçilen bölümlerin sütun biçimini değiştirir


Microsoft Word - OC96_00.DOC
Dosya Düzen Görünüm Ekle Biçim Araçlar Tablo Pencere Yardım
Normal
Yazıtipi
Yazıtipi
Karakter Aralığı
Yazıtipi:
Times New Roman
TFF Waldorf Script
TFF Wells Tuscan
Wide Latin
Wingdings
Yazıtipi Biçimi:
Düzenli
İtalik
Kalın
Kalın İtalik
Boyut:
10
8
9
11
12
Tamam
İptal
Geçerli...
Yardım
Altçizgi:
(yok)
Renk:
Otomatik
Etkiler
Üstü Çizili
Üstsimge
Altsimge
Gizli
Küçük Büyük
Tümü Büyük
Önizleme
Times New Roman
Bu bir TrueType yazıtipidir. Aynı yazıtipi hem yazıcıda, hem de ekranda kullanılacak.
Seçilen karakterlerin görünümünü değiştirir