Effects of Inflation Accounting on Financial Ratios: An Empirical Analysis of Non-Financial Firms Listed on Istanbul Stock Exchange

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The study analyzes the effects of recently introduced practice of inflation accounting in Turkey. Despite a relatively long history of discussions on the subject, inflation accounting was adapted in the Turkish accounting practice only recently. Therefore, this created an opportunity to examine the results of implementation and to make meaningful comparisons between historical and inflation-adjusted financial statements of firms. An analysis of t-test on the means of financial ratios has been conducted on non-financial firms listed on Istanbul Stock Exchange (ISE). The results reveal that a statistically significant change for the whole sample occurs only on Total Assets Turnover (TAT). Regarding the industry-specific outcomes, significant changes are observed in non-metallic mineral products industry for total assets turnover and debt ratio. On the whole, the study provides useful insights from the industrial point of view and carries important implications for firms from different industries, as well as financial analysts.

Introduction

The users of financial information, such as current and potential investors, creditors, lenders, suppliers, customers, employees, government authorities and public, need relevant and reliable information about the financial position, performance and changes in the financial position of firms for making economic decisions. Inflation, on the other hand, distorts financial information by creating an impact on the firm's operational and financial results. In a hyperinflationary economy, reporting of operating results and financial position without restatement is misleading and thus is not useful (International Accounting Standards 29, code 2). Therefore, it is necessary that financial statements reflect the true picture and are free from the negative effects of inflation.

Starting in the first half of the 1970s, a continuous rise in oil prices has generated interest towards inflation accounting. The issue quickly caught the attention of a number of countries and many of its aspects have been examined by officials, academia and accounting professionals.

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All these parties strove hard for finding better ways to deal with inflation matters. Despite early works, until the World War I, major accomplishments on the subject have been possible only from the 1970s.

Even though inflation accounting has long been debated, a necessary attention is avoided to provide its effects on financial statements of businesses. Hence, this study is conducted to present empirical evidence on the results of inflation accounting practice recently applied in Turkey. The analysis performed in this study is expected to provide a broad range of financial information to users with meaningful results. Particularly, the study carries important implications for firms from different industries, as well as financial analysts. Among others, these messages are especially in the interest of firms conducting businesses in countries faced with hyperinflation. The study is organized as follows: after the introduction, inflation accounting practices worldwide are discussed. After a brief review of Turkey's inflation accounting practice in the past, the current Turkish practice is presented. This includes data, methodology and findings. Next, an empirical analysis on the effects of recent inflation accounting experience is presented. Finally, the study concludes.

Review of Literature

In order for accounting to function properly and to provide users in firms with necessary information of their particular interest, such inputs need to be true and reliable. In case the conventional accounting practice supplies misleading information, it is likely that this produces consequences, such as wrong decision-making of firm management, paying too much in taxes, facing unions demanding high wages due to nominal profit levels, unrealistic expectations of shareholders about the firm, etc. (Baxter, 1975, p. 13). Therefore, during the periods of high inflation, depending on conventional accounting wisdom, may result in firm's financial information losing its meaning and creation of unrealistic expectations among information users (Coopers and Lybrand, 1975, pp. 28-33).

The ongoing rise of costs and prices worldwide, since the 1970s, has catalyzed the need for inflation accounting. In many countries, while officials take measures to lessen the effects of inflation, academia and accounting professionals search for better ways for firms to deal with inflation and for methods in rearranging accounting systems to absorb the effects of inflation. In other words, now-a-days, efforts are put toward to minimize the problems created by inflation on businesses and also provide firms with an environment that allows them to conduct their business activities normally (Isbiter, 1977, p. 7).

Although there had been studies on how to protect businesses from the negative consequences of price movements since the World War I, intensive works to carry these steps into practice started only in the 1970s. For this, committees have been formed and results of these committees' works have been published in reports. In addition, several countries published reports of their experiences, as well as covered the issue in their accounting standards in the 1980s (Scapens, 1977, p. 8).

The issue of general price level accounting has been studied by research groups in British and American accounting institutions since 1960 (Research Foundation of the Institute of Chartered Accountants, 1968). These institutions have published the results of their studies between the period 1969-74. They have also directed their members to restate their financial reports in accordance with the general price level and report the adjusted figures, along with historical cost figures (Australian Accounting Standards Committee, 1974). Nevertheless, because of growing interest in current value accounting after 1975, this practice came to a halt and dropped off from several countries' accounting standards (The Institute of Chartered Accountants in England and Wales, 1978). During the 1990s, combined methods were favored. Hence, current value and general price level accountings were concurrently suggested.

In a number of countries, intensive studies have been carried out on inflation accounting. These countries have also formed committees to deal with the subject. Especially after inflation levels saw double digits in industrialized economies during the 1970s, work on the issue speeded up and the concept of 'inflation accounting' came into existence. When looking at the countries where the issue of inflation accounting is most intensively discussed, Britain is considered to be on the top of the list. The country began inflation accounting practice, first with the report known as ED 8, in 1973. Britain chose 'Current Cost Accounting' method for inflation accounting. The method was practised by firms on voluntary basis until 1988. In France, a committee headed by M Delmas Masalet presented a report in November 1976, requiring firms to publish their financial reports in accordance with general price level accounting, in addition to historical costs of the figures. Therefore, as opposed to other industrialized countries, France chose general price level accounting. Because the inflation level was low in Germany, interest in inflation accounting also remained low. Nonetheless, German accounting institute's report in November 1975 required that price changes be presented to the management as additional information. Works and practices regarding inflation accounting have also been taken up in the US. Accounting Principles Board's Manifesto No. 3 in 1969 announced that firms are advised to present financial reports restated by general price level changes, along with historical cost figures. A similar advice was also given by the Financial Accounting Standards Board (FASB) in December 1974. Another guideline about inflation accounting practice in the US was also presented by Securities and Exchange Commission (SEC) in March 1976. In Canada, the Canadian Institute of Chartered Accountants (CICA) suggested general price level accounting in its accounting guidelines in 1974. Then in June 1975, Accounting Research Committee (ARC) directed that financial reports could be prepared in accordance with either general price level accounting or current value accounting, or both.

In Brazil, working capital, fixed assets, and accumulated depreciations were subject to revaluation procedure in 1964. In Mexico, general price level accounting was recommended by a report published in September 1976 and adjustments were made with respect to consumer price index. In Israel, general price level accounting was implemented as a result of a report in May 1976. Finally, International Accounting Standards (IAS) 29 'Financial Reporting in Hyperinflationary Economies' was issued by International Accounting Standards Board (IASB) in July 1989, and reformatted in 1994.

A History of Inflation Accounting Practice in Turkey

In general, the regulatory environment of Turkish accounting was affected, first by, French and German, then by the US accounting perspectives until the 1990s. Finally, European Union's view has become the major guideline in Turkish accounting practice. Nevertheless, the most comprehensive accounting regulation of the country is the "General Circular for Implementing an Accounting System", adopted by the Finance Ministry (FM) in 1994. As a result, uniform accounting system was established in Turkey. Following this, Capital Markets Board (CMB) has become the first official public organization in accepting and implementing IAS/IFRS in Turkey.

Another important organization of the country dealing with the accounting standards is Turkish Accounting Standards Board (TASB). Prior to the establishment of TASB, several institutions—FM, CMB, and Banking Regulation and Supervision Agency (BRSA)—had acted in directing the accounting practices and issued regulations and guidelines. However, each institution's actions to create directions for subordinate institutions under their own jurisdiction resulted in a plethora of regulations, thus leading to disorder in practice. In order to end this confusion, TASB was founded in 2002. TASB, established through an article of the capital markets law, is a public entity with administrative and financial autonomy. The Board has designated IAS/IFRS as Turkish Accounting Standards (TAS). Within the copyright agreement framework with IASB, TASB publishes the Turkish translations of international accounting/ financial reporting standards as TAS on the official paper (Akdogan, 2006, p. 6).

With respect to inflation accounting practice, it should be noted that historically it was partially practised in Turkey under the concept of 'Revaluation'. Following World War II, a period of hyperinflation was experienced and prices started rising sharply, especially after 1953. The report of "Revaluation Tax and Reform Commission" in 1963 constituted an early example of inflation accounting practice of the country (Uman, 2002, p. 165).

Concurrently with the practice of revaluation of assets, other tax initiatives such as variety of provisions for exampting tax, deferring taxes, etc., were allowed by the regulatory bodies and tax laws. The reason behind these was to curb inflation and help the growth of the firms by retaining the profits earned by the firms. Among the measures, which showed only limited affects in minimizing the adverse effects of inflation, were:

- Revaluation reserves for fixed assets;
- Increased cost reserves (adjustment of cost by revaluation coefficient in selling off real estates, fixed assets and participations); and
- The Use of Last In First Out (LIFO) in stock valuation, etc.

However, all these implementations had limited success and could not totally eliminate the negative effects of inflation on financial reports. Moreover, these measures, neither allowed financial reports to produce reliable and comparable information, nor accounted for inflation-led gain or loss in terms of purchasing power. Therefore, inflation accounting measures became necessary in order to enable firms, which had been struggling to conduct business and suffered from high inflation for many years, to eliminate the negative effects of inflation in their financial reports.

Thus, since 2000, a number of institutions and boards have started issuing guidelines regarding the implementation of inflation accounting. For this purpose, the FM initiated a work to propose changes in Income Tax Law and Corporate Tax Law. The Ministry's draft passed the legislation procedure and become effective on December 17, 2003. The current amendment is known as the law No. 5024. Therefore, the legislation allowing restatement of financial reports during periods of hyperinflation is enacted into the Turkish legal system. In addition, TAS 29 "Financial Reporting Standard of Hyperinflationary Economies" was published by TASB in 2005. It should be noted that TAS 29 is the exact Turkish version of IAS 29.

Current Practice of Inflation Accounting in Turkey

With respect to inflation accounting practice, computation of conversion factor, periods when restatement is required and its implementation are exercized in line with the following methodological procedures (Akdogan, 2006, pp. 279-314).

Selected Method and Conversion Factor

The existing guidelines on inflation accounting require the use of general price indices and choose IAS 29 as the principle method for General Price Level Accounting. CMB and BRSA have decided the use of Producer Price Index (PPI) for adjustment. Therefore, the choice was made through the implementation of general price level accounting. On the other hand, it was decided that market price was to be used for marketable items. In case an asset's value calculated by conversion factor is higher than its current value, the current value is chosen. In that sense, the method may also be considered as close to the combined methodology.

Compulsory Periods of Inflation Accounting Practice

During hyperinflation periods, inflation accounting practice becomes mandatory. Laws and guidelines define the indicators of hyperinflation periods. Even though the indicators are mostly similar, there are several differences in detail. As summarized in Figure 1, the relevant code[1] (No. 5024) describes necessary conditions for inflation adjustment.

Figure 1: Conditions for Inflation Adjustment

Producer Price Index (PPI)

A cumulative increase of more than 100% during the last three accounting periods (including the current one)	and	An increase of more than 10% during the current period

Inflation adjustment starts from the time the above conditions occur, and remains in effect until both conditions disappear.

[1] Hereafter, the phrase 'the code' is used to refer to the code number 5024.

According to the CMB's guidelines, hyperinflation period starts when inflation rate is 10% or more in the current accounting period, and 100% or more in the last three accounting periods, including the current term. Even if none of the above conditions hold, the board still has the right to ask firms to comply with the mentioned guidelines, provided certain indicators of hyperinflation are observed in certain economic conditions, such as widespread holding of savings in foreign currency, pricing of goods and services in foreign currency, etc.

The period of hyperinflation ends when the price index on the day of annual balance sheet drops twice below the price index at the beginning of the third accounting period. However, if the price index rises 10% or more during the current period, the hyperinflation period continues.

Computation of Conversion Factor

According to the CMB's guidelines, conversion factor is obtained by diviing the price index on the balance sheet date by the price index when the transaction, subject to adjustment, occurs. The code designates PPI as the conversion factor. Conversion factors covered by the code are computed in accordance with the following instructions:

- Conversion factors are calculated by dividing the price index of the month, to which financial reports belong, by the price index of the month in which line item's quotation, collection, issue or payment, whichever is applicable, occurs.

$$\text{Conversion Factor} = \frac{\text{Price index of the month the financial reports belong to}}{\text{Price index of the month covering adjustment date}}$$

  At the beginning of the practice, dates of acquiring non-monetary components are determined by going as far back as 1970. The items dated prior to 1970 are adjusted by using the price index of 1970.

- Along with the conversion factor, the code also provides the definition of average conversion factor and carry forward coefficient. These are:

  Average Conversion Factor: This is computed by dividing the price index of the month, to which the financial reports belong, by the figure computed as averaging the very same index itself and the index of the previous accounting term.

  Carry Forward Coefficient: This is computed by dividing the price index of the month, to which financial reports belong, by the price index of the previous accounting term.

Basis Date for Adjustment

Another important aspect of adjusting non-monetary items is determining the date on which the computation of conversion factor depends. In other words, it is the date when a non-monetary event occurs. According to the guidelines of CMB, the adjustment of assets, of which balance sheet inclusion date is different from the date of acquiring or production, is performed by the

first date when their acquiring, production, and cost are recognized. However, special conditions apply for assets that are bought or sold on term-basis. For the inventory of finished goods and work-in-progress, transaction dates of items, included in the inventory's costing, are considered. In the adjustment of equity capital, the registration date of capital contribution is taken into account.

General Principles in Restating Financial Statements

Balance sheet items are restated according to the purchasing power of the currency at balance sheet preparation date. The following principles are applied to adjust the balance sheet items:

- Before starting the adjustment process, balance sheet items are classified as monetary and non-monetary.
- Since current assets are in terms of current purchasing power of the currency, they are not subject to adjustment.
- Non-monetary items are not subject to adjustment as long as they are stated in current values (e.g., with replacement cost or net cash value, net realizable value). All other non-monetary items, which are shown in their historical costs, are adjusted by general price level and are restated in the purchasing power of the currency.
- Items which are non-monetary in nature, yet stated in their current value without any adjustment, are treated similarly as monetary items and are not subject to adjustment.
- In adjusting depreciable assets, notional expenses, translation differences, and revaluation reserves, all of which were previously added to the cost of these assets, are subtracted from the costs, thus being not subject to adjustment.
- Accumulated depreciations are adjusted by considering the increase in underlined items after adjustment value. Depreciations are adjusted according to their useful life, as required by the guidelines of CMB.
- Inventory adjustments are performed with respect to the stock valuation method of firms. In adjusting, first booking date of items, which are added to the cost of supplements and substances, commercial goods, finished goods, and work-in-progress, are considered.
- In equity capital adjustments, booking or collection date of equity is taken into account. Such funds as revaluation reserve, which are added to the equity before the first adjustment date, are deducted from equity. Increases in equity, resulting from the addition of such funds, are not counted for an equity increase, thus not being subject to inflation adjustment.

The following criteria apply to income statement adjustments:

- Incomes and expenses are adjusted on accrual basis. However, incomes and expenses that spread through the whole period are adjusted by the conversion factor calculated by dividing the term-end index by the term-average index. Both the code and the guidelines of CMB allow adjustment by simple averaging method.

- Profits or losses, resulting from selling off non-monetary assets (e.g., profit/loss on sale of fixed assets), are recalculated. The difference between the adjusted value of sold financial item and the adjusted value of selling price constitutes the profit/loss on sale.
- Gain or loss on net monetary position, due to net monetary items (net monetary position profit or loss), is computed and shown in the income statement of the related period.

The CMB permits the calculation of net monetary position gain or loss by using balance sheet items. In addition, the balance of inflation adjustment account provides the net monetary position gain or loss.

Initial Balancing of Financial Statement and Recognition

During the first adjustment term, balance gathered by subtracting adjusted liabilities and adjusted equity from adjusted total assets figure is shown among the equity capital component under the account of accumulated profit or loss. This is also explained in the footnotes. According to the code, the balance of 'Inflation Adjustment Account' is carried to the account of either 'Accumulated Profits' or 'Accumulated Losses'.

In Turkey, adjustments carried along with TASB, CMB, and BRSA were previously not recorded in the official books and documents but rather recognized as 'Inflation Adjustments Book'. However, following the code's amendment, it is now required to make adjustments in the books of accounts officially and report. To serve the purpose, 'accounts of inflation differences' under the adjusted account and also 'account of inflation adjustment' were used. Accounts of inflation differences for non-monetary items were regarded suitable for opening as subordinate under the related account. On the other hand, differences resulting from adjusting paid-in-capital account were considered to be better recognized as another account like 'Equity Adjustment Difference' instead of 'Equity Account'. In case the adjusted amount of paid-in-capital was less than its booked amount, the negative difference was recognized as 'Equity Adjustment Difference (–)'.

Effects of Inflation Accounting Practice on Financial Ratios of Non-Financial Firms Listed on ISE

The subject of the effects of inflation accounting practice on firms' financial statements has long been a neglected area in the literature. Therefore, this study makes an attempt to cover this shortcoming. For the purpose, an empirical analysis is conducted on non-financial firms listed on Istanbul Stock Exchange (ISE). Even though TAS 29 was issued in 2005, firms quoted in the ISE had restated their financial statements from 2003 in accordance with the CBM's regulations, which were compatible with the IAS 29.

Data and Methodology

The sample covers all the 146 non-financial firms listed on ISE as of 2003. The inflation accounting was practiced for only two financial years of 2003 and 2004. Since firms are required to report their financial reports in both historical and inflation-adjusted formats for 2003 accounting period, the analysis is conducted on only one year's accounting data, i.e., for 2003.

Balance sheets and income statements included in the data set are acquired from ISE's database. Tables 1 and 2 provide information on the industries analyzed, the number of firms under each industry and the financial ratios used in the analysis. These specific ratios are chosen on the basis of their importance and rank.

Table 1: Industries and the Number of Firms Under Each Industry

Sl. No.	Industry (Sector)	Number of Firms
1.	Textile, Wearing Apparel and Leather Industries	30
2.	Manufacture of Non-Metallic Mineral Products	17
3.	Manufacture of Fabricated Metal Products, Machinery and Equipment	17
4.	Manufacture of Chemicals, Petroleum, Rubber and Plastic Products	15
5.	Manufacture of Food, Beverages and Tobacco	15
6.	Basic Metal Industries	8
7.	Manufacture of Paper and Paper Products, Printing and Publishing	12
8.	Consumer Trade	2
9.	Restaurants and Hotels	5
10.	Transportation	1
11.	Other Manufacturing Industries	2
12.	Manufacture of Wood Products, including Furniture	2
13.	Information Technology	4
14.	Mining	1
15.	Construction and Public Works	2
16.	Wholesale Trade	3
17.	Defense	1
18.	Electricity, Gas and Water	4
19.	Medical and Other Health Services	1
20.	Holding Companies	4
	Total	**146**

As can be observed from Table 1, many of the industries do not meet the necessary number of observations required for statistical significance. As such, the analysis is conducted only on those industries that have ten or more firms.

As the first step of the analysis, ratios mentioned in Table 2 are computed both on historical and adjusted number of financial statements to form two sets of ratios. Next, a *t*-test is performed to find out the difference, if any, between the means of two ratio sets. The *t*-test is performed on the following hypotheses:

$$H_0 : \mu_{2003\ (Historical)\ i} = \mu_{2003\ (Adjusted)\ i}$$

Table 2: Ratios Used in the Analysis		
Liquidity Ratios		
CuR	=	Current Ratio
ATR	=	Acid-Test Ratio
CR	=	Cash Ratio
Activity Ratios		
IT	=	Inventory Turnover
RT	=	Receivables Turnover
TAT	=	Total Assets Turnover
Financial Structure Ratios		
DR	=	Debt Ratio
FLR	=	Financial Leverage Ratio
STD/LR	=	Short-Term Debt to Liabilities Ratio
Profitability Ratios		
NPM	=	Net Profit Margin
ROA	=	Return on Assets
ROE	=	Return on Equity

$$H_1 : \mu_{2003\ (Historical)\ i} \neq \mu_{2003\ (Adjusted)\ i}$$

where $\mu_{2003\ (Historical)}$ refers to the mean of each ratio computed on financial reports prepared in historical numbers. $\mu_{2003\ (Adjusted)}$ refers to the mean of each ratio computed on financial reports prepared by using inflation-adjusted numbers. Each pair of the 12 ratios is analyzed to identify whether any statistically significant difference exists between the means of historical and inflation-adjusted ratio figures. The chosen statistical significance level is 10%.

Empirical Findings

Here, the study first discusses the effects of inflation accounting on financial statements. When looking at the effects of the practice on the sample firms' total assets, we observe that total assets reflect an average increase of 35% after the implementation of inflation accounting. Although the increase is common to all sectors, with the exception of basic metal industries, construction and public works industry displays the highest increase.

Construction and public works industry again comes first in current asset increase. Being the most affected items among current assets, inventories show the highest increase in construction and public works industry and holding companies. With respect to fixed assets component, which is the one with highest increase, there is an increase of 75% in a total of 146 companies. Construction, holding companies and non-metallic mineral products industries display the highest increases.

In the equity component, there is an increase of 90% for the whole sample of 146 companies. As for the previous components mentioned so far, the highest increase is observed in the construction industry. However, there appears to be a contraction in equity component for the industries of paper, paper-products and wholesale trade after the implementation of inflation accounting.

Another observation about the financial statements is that a number of firms still cover the revaluation fund item in the balance sheets which are already adjusted for inflation accounting. Moreover, treating inflation adjustment differences under the account of translation differences implies that inflation accounting practice is not fully understood by some of the firms.

With respect to income statements, it is observed that net sales revenues indicate an average increase of about 23% after adjusting for inflation. Cost of goods sold, on the other hand, rose

about 25%. Nevertheless, gross profit margin displays an increase of 12%. Among the industries, gross profit margin changed positively for 12 of them and negatively for the remaining 8 sectors. While the wood products industry showed the highest increase in terms of profit or loss, information technology industry registered the lowest.

Table 3 summarizes the results of descriptive statistics on ratios. First, the study briefly discusses the results of the descriptive statistics, before proceeding to the main findings regarding the results of *t*-test.

Liquidity Ratios

In this group, inflation-adjusted values of mean, median, maximum and standard deviations show a decrease. Nonetheless, the magnitude of decrease is fairly small except for 'maximum' figures. On examining the financial statements, it can be observed that the change in current ratio results from inventories, which is a non-monetary item, and those non-monetary items under short-term liabilities component. Non-monetary items of short-term liabilities are also responsible for the changes in both acid-test ratio and cash ratio. However, the magnitude of changes is limited due to the fact that these non-monetary items constitute only small amounts within the components.

Activity Ratios

When looking at this group, the change in inventory turnover catches our attention. The explanation for this is that we use the initial value of inventories in calculating the ratio, instead of an average, due to data limitations. Changes in total assets turnover display a decrease similar to the ones we observe in liquidity ratios. Figures of receivables turnover, on the other hand, reflect a positive change.

Financial Structure Ratios

Overall, a fairly big change can be observed in this group. This change shows itself in a negative way for debt ratio, but the other way around for the remaining ones of financial leverage and short-term liabilities to total assets ratio. The figures of standard deviation also get smaller for the whole group. The reasons for the change could be attributed to the fact that liabilities are treated as monetary items and non-monetary items constitute a small portion in the group, while the magnitude of equity goes up due to inflation adjustment. The adjustment lessens the weight of short-term liabilities within the balance sheet. In addition, debt ratio increases because of the rise in equity.

Profitability Ratios

On the whole, the profitability ratios record a decrease. The change in net profit margin is on account of increase in cost and expense items of income statement due to inflation adjustment. Moreover, changes occur in equities and total assets of the firms because of inflation accounting. Therefore, considerable changes are observed in ROA and ROE.

Industrial Outlook

With respect to liquidity ratios, mean, median and maximum values differ between historical and adjusted figures. The most definite change appears to be in metal products, machinery

Table 3: Descriptive Statistics

	Mean		Median		Maximum		Minimum		Standard Deviation	
	H	A	H	A	H	A	H	A	H	A
Liquidity Ratios										
CuR	2.459	2.222	1.516	1.521	44.008	32.732	0.000	0.000	4.484	3.048
ATR	1.670	1.353	0.922	0.884	43.302	17.537	0.000	0.000	3.959	1.902
CR	0.809	0.525	0.083	0.097	42.848	16.335	0.000	0.000	3.844	1.570
Assets Management Ratios										
IT	–14.760	–8.745	–5.013	–4.709	0.000	0.000	–818.145	–125.546	69.645	15.545
RT	14.192	15.181	4.385	4.790	509.300	522.700	0.000	0.036	59.154	60.947
TAT	1.050	0.907	0.936	0.795	3.144	3.018	0.000	0.018	0.645	0.587
Financial Structure Ratios										
DR	2.399	2.610	1.008	1.415	59.589	67.645	–0.999	–0.999	6.753	6.069
FLR	111.720	69.749	0.497	0.413	16,203.8	10,090.2	0.016	0.014	1,340.9	835.0
STD/LR	111.509	69.578	0.327	0.312	16,203.3	10,089.9	0.013	0.012	1,341.0	835.0
Profitability Ratios										
NPM	–153.618	–147.924	0.029	0.012	4.147	1.999	–22,204.9	–21,518.0	1,844.0	1,780.8
ROA	–110.180	–68.588	0.036	0.014	0.539	0.571	–16,075.6	–9,999.4	1,330.4	827.6
ROE	0.219	0.109	0.074	0.022	10.404	13.027	–1.891	–5.517	1.082	1.372

Note: Number of Observations 146.

and equipment. This change finds its roots under inventories and the items within short-term liabilities, all of which are non-monetary.

When we look at activity ratios, mean, median and maximum values differ between historical and adjusted figures. Among this group of ratios, total asset turnover is changed most in the industries of non-metallic mineral products, chemicals, petroleum, rubber and plastic products, and paper and paper products.

Among the financial ratios, the mean of debt equity ratio raises throughout all industries, other than fabricated metal products, machinery and equipment. Attention needs to be paid to the positive change in debt ratio mean of the non-metallic mineral products industry. This leads to the conclusion that equity of the firms in this sector may be relatively high. As the results of descriptive statistics become smaller across all industries, standard deviations also get smaller accordingly.

Profitability ratios reveal interesting points. A widespread change in net profit margin results from increases in both cost and expense items of income statements due to inflation adjustments. Because of inflation accounting, all industries reflect a serious change in their equity and assets components, thus causing considerable amount of changes in ROA and ROE. The biggest change is experienced in the food, beverages and tobacco industries.

Results of the *t*-Test

Table 4 presents the results of the *t*-test, which was carried out to ascertain whether the difference in means of ratios before and after inflation adjustment is statistically significant. As the *p*-value nears zero, the difference in means becomes statistically significant. Since only those industries that have a sample size of at least 10 firms are included in the analysis, the results presented pertains to these industries only.

As can be seen from Table 4, for the whole sample, the test is statistically significant for only TAT with a *p*-value of 0.0394. In other words, the difference between the mean values of historical and inflation-adjusted series is statistically significant only for TAT. As mentioned earlier, the explanation for this is that, after the inflation adjustment, the increase in total assets is more than that in sales revenues.

When the findings are analyzed from the industrial point of view, we have statistically significant results only for non-metallic mineral products. Like the results for the whole sample, statistical significance is observed in TAT with a *p*-value of 0.0363, thus suggesting the same observations made for the whole sample. Other statistically significant result, which is also seen in non-metallic mineral products, appears for the debt ratio, with a *p*-value of 0.0923. The reason for this is that the change in the equity of the firms in this industry is considerably high. Overall, these results carry important implications for firms from different industries, as well as financial analysts in implementing the inflation accounting.

Table 4: Results of the *t*-Test

	Total		S1		S2		S3		S4		S5		S7	
	Firms	*p*-value	Firms	*p*-value	Firms	*p*-value	Firms	*p*-value	Firms	*p*-value	Firms	*p*-value	Firms	*p*-value
Liquidity Ratios														
CuR	146	0.5973	30	0.8762	17	0.9908	17	0.5063	15	0.8769	15	0.9887	12	0.9250
ATR	146	0.3835	30	0.9528	17	0.9099	17	0.3771	15	0.9559	15	0.9794	12	0.7018
CR	146	0.4102	30	0.9299	17	0.9648	17	0.3787	15	0.9848	15	0.9830	12	0.8661
Activity Ratios														
IT	146	0.3076	30	0.8336	17	0.9247	17	0.3465	15	0.9157	15	0.6848	12	0.5098
RT	146	0.8882	30	0.8638	17	0.9772	17	0.9769	15	0.9775	15	0.9758	12	0.9738
TAT	146	0.0394	30	0.3460	17	0.0363	17	0.4006	15	0.2642	15	0.8812	12	0.3936
Financial Structure Ratios														
DR	146	0.7787	30	0.3151	17	0.0923	17	0.7261	15	0.2008	15	0.9007	12	0.8028
FLR	146	0.7484	30	0.2853	17	0.1761	17	0.5221	15	0.3873	15	0.8245	12	0.9701
STD/LR	146	0.7486	30	0.6578	17	0.2015	17	0.6480	15	0.4477	15	0.8129	12	0.9934
Profitability Ratios														
NPM	146	0.9787	30	0.3170	17	0.7777	17	0.7047	15	0.8752	15	0.9439	12	0.9767
ROA	146	0.7486	30	0.6745	17	0.1634	17	0.7974	15	0.7810	15	0.8919	12	0.9768
ROE	146	0.4455	30	0.3032	17	0.2436	17	0.5403	15	0.1692	15	0.3064	12	0.8891

Conclusion

This study conducted an analysis, on non-financial firms listed on Istanbul Stock Exchange, to examine the effects of inflation accounting practice on firms' financial ratios. The threat of a sudden increase in inflation remains, not only a problem unique to the developing nations, but also to some of the developed ones (e.g., several leading economies of Europe) that are dependant on raw materials. When the prices of raw material rise sharply as in recent years, these countries face the challenge of increases in inflation. This explains the reason for tough stand adopted by the European Central Bank regarding monetary policy issues.

The study approached the issue from two perspectives: one, effects of practice on items and components of financial statements, and the other, the reflections of the practice on financial ratios. The results reveal that adjustments of inflation accounting do not make a considerable difference to liquidity ratios. With respect to activity ratios, TAT reflects a change due to inflation accounting. Debt ratio shows an increase due to the change in equity capital. A change can be observed in profitability ratios resulting from a negative change in sales revenues, equity and total assets.

A t-test was conducted on the two series of ratios to identify whether any statistically significant change between historical and inflation-adjusted financial data exists. The results reveal that only TAT for the whole sample shows a statistically significant change. The reason behind this is that the asset components reflect a higher increase, compared to the increase in sales revenues. Finally, industry-wise examination suggests that only non-metallic mineral products industry shows a statistically significant result. The differences observed in this industry are in total assets turnover and the debt ratio. It should be noted that the magnitude of change in the industry's equity accounts for this result.

The findings of the study are useful for firms, especially for those conducting business internationally and are facing challenges in accounting practice from time to time due to hyperinflationary environment of the developing economies. As the study also provides insights from industrial point of view, it is expected to assist the Policy makers by fostering their ability, especially in enforcing regulations and the technical aspects of inflation accounting practices like rule making procedures. ■

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