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TRADE POLICIES, WAGE LEVEL AND PROFITABILITY IN THE MANUFACTURING SECTOR IN JORDAN (1976-98)

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Abstract

The impact of trade liberalization on the manufacturing sector in the developing countries has long been debated. The most important issues have been efficiency and enhancing competitiveness. Welfare implications received less attention, in particular income distribution and the impact on wage level and profitability. This study focuses on the relationship between trade liberalization, as part of the structural adjustment program, and profitability and wages and salaries in the manufacturing sector in Jordan over the period 1976-1998. The study makes no claim regarding the direction of causality, it has never the less shows that wages and salaries have declined in real terms during the period of "trade liberalization" while in the meantime manufacturers achieved almost the same level of profit margin suggesting that wage earners became worse off during the period under investigation.

1. Overview

It has long been believed that intensified international competition forces domestic firms to behave more competitively. Domestic industries, which may have reaped oligopoly profits in a protected domestic market, are forced to behave more competitively. This phenomenon is frequently claimed to be especially relevant in developing countries where the protected domestic market often supports only a few firms. (Levinsohn 1993 3). According to the classical views, prices in the competitive markets depend on supply and demand in the short run. In markets that are not governed by competition, prices depend on cost in the short run and on demand and supply in the long run (Sylos 1984). Nordhaus and Godely (1970 853) argued that industrial price behavior has tended to fall into three categories: a) some economists stress the role of competitive forces and argue that prices fall in relation to costs in periods of slack and rise relatively in periods of expansion; b) prices rise in relation to costs as demand falls, and visa versa; c) prices moves with normal cost, that is, they do not react to temporary changes in demand or costs, "normal price hypothesis". It is the third category that we will focus on in this study.

Another version of this hypothesis can be found in industrial economic literature, in models that base their analysis on "Structure-Conduct-Performance" (S-C-P). Under these models the structure of any industry, mainly its level of concentration- will affect the way in which the industry conducts its business and hence the performance of the firms that comprise that industry and their profitability rate.

It is commonly assumed that the performance and prices of business enterprises are strongly influenced by the structure of the markets in which they operate. The market structure-performance framework that is used to analyze these relationships is derived from the traditional theory of the firm, which distinguishes different types of market structure (monopoly, oligopoly, perfect competition) and deduces the ways in which firms will behave and perform within the constraints of these different structures (Devine et al. 1985). Four main structural features of such markets are usually identified: seller concentration, buyer concentration, entry barriers, and product differentiation. Consequently it has been argued that profit margin tends to be higher in those markets where *ceteris paribus* seller concentration or entry barriers are higher and if buyers' concentration is lower. In this context competitiveness and openness are expected to squeeze any excessive pricing policies.

Caves (1980, 114), in this context, argues that treating profits as directly observable and concentration ratios as valid measures of market power is not complete. The influence of import competition should be entered interactively with seller concentration and entry barriers to explain price-cost margin. He argues further that import competition has its greatest effect on the most highly concentrated industries.

Trade liberalization in Jordan is expected to contribute to creating a more competitive environment. This, however, might not be true for all sub-sectors in the manufacturing sector, which are not characterized by their oligopolistic or monopolistic behavior before liberalization.

The importance of finding how the profit rate will be altered by trade liberalization lies in its welfare implications. The welfare effects that might result from the combination of high levels of concentration and the high level of protection in the manufacturing sector are of multiple character and, in aggregate could be considerable in magnitude. The final consequences will depend, in turn, on some other factors concerning how a certain economy is behaving (Kirkpatrick et al. 1984 84).

However, the definition of "market structure" and how it may influence the behavior of firms is not clear. Kirkpatrick (Ibid. 62) in this context argues that there is no generally accepted theoretical framework that satisfactorily explains the behavior and performance of large firms in terms of the actual oligopolistic market structures that are the subject matter of most empirical studies in this field. The S-C-P model was applied and oversimplified by ignoring some important characteristics such as the big firms' influence outside their own groups of industries. More importantly the analysis assumed that the profit margin, which is observed at a given period of time, is assumed to reflect the market structure that exists at the same period of time irrespective of some other factors that might influence profitability. However, in more realistic dynamic market conditions, responses to change are continuous and non-instantaneous and in such conditions a simple form of comparative static analysis is not very appropriate.

In many oligopolistic markets in some cases there is a need to consider the past history of the market and the firms in it, and the internal organization and motivations of the oligopolistic suppliers. For example it is not easy to see without reference to the industry's history why price leadership has held up well in some industries compared with other industries. (McKie 1970 18) The entry-limiting price is a fact of the environment which each firm can recognize and on which each can base its own behavior. (McKie 1970 16).

This study will investigate the effects of trade liberalization in imperfectly competitive markets. Firms within a given 2- ISIC digit industries in Jordan are assumed to face similar conditions and would respond uniformly to any shocks that will effect their profit-cost margin, that is, all firms within each sub-group will have the same mark-up (Hall 1988). A possible drawback of this method is its neglect of the difference of mark-up reaped by different firms in the same

industry. In addition, the share and the behavior of the big firms might differ from the behavior of the small firms.

The organization of this study is as follows: I will first review the structure of the cost of production in the manufacturing sector by dividing it into its main components. The decomposition of cost will help in determining how the manufacturing sector's competitiveness could be enhanced and adjusted to a changing environment. I will then estimate indices of material inputs (variable cost) and output prices in the manufacturing sector by using relative prices. The findings of the relative prices will be compared with the actual "mark-up" in the sector. In the final section I will investigate the hypothesis that there would be profit squeeze during the period of trade liberalization compared with previous periods and I shall argue that this is not necessarily true in all cases especially in the short and medium term. I will then draw some conclusions, emphasizing the importance of the nature of the market structure and cost shifting in responding to the simultaneous reduction in trade barriers and devaluation.

2. Cost Structure

The manufacturing sector in Jordan is characterized by its low proportion of value added to gross output (VA/GO). On average this ratio was estimated at 38 percent during the period (1976-82). This percentage declined slightly during the subsequent periods reaching an average of 28 percent during the period 1990-97. The graph 1 depicts the pattern of the value added, in relation to total intermediate inputs, which is estimated as the difference between gross output and value added.

Differences in the ratio of VA/GO among the sub-groups may sometimes be ascribed to the imported contents. For example the proportion of value added to the gross output is estimated at 52 percent in the non-metallic industries, which exhibit the highest ratio of domestically acquired RM. On the other hand the ratio of VA/GO is estimated at 34 percent for the basic metal industries, despite the fact that the two sub-groups seem comparable in their degree of processing. This is to argue that low cost local material gives a higher value added than the same degree of processing of high cost imported material.

The low share of VA/GO, which is estimated on average for the whole sector at 33 percent for the period 1976-97 leaves the percentage of intermediate demand constituting about 67 percent of the gross output. The intermediate demand, in turn, is comprised of raw materials (RM) and other expenditures. Adding wages will give the total variable cost per unit of output as illustrated in graph 2.

RM have a high import content in Jordan due to the country's limited endowment of natural resources with few exceptions in the non-metallic industries and some food industries. Domestic industries concentrated on producing final goods instead of intermediate goods needed by the other industries. Graph 2 exhibits that RM is the major component of the variable production costs. Wages and other expenditure do not seem to comprise a major share of the total variable cost.

On average, during the period 1976-98, the share of wages in total intermediate cost amounted to 12 percent, and that of RM is 76 percent. The remaining 12 percent is referred to as other expenditures, which comprises *inter-alia* electricity, fuel, and transportation.

The share of imported RM to the total RM during the period 1979-1992 averaged 73 percent. Table 1 exhibits this fact for some selected years where data is available. There is no reason to believe that this ratio has changed in the last few years. The ratio of imported RM could even be higher if we consider the indirect import components in the domestically acquired RM, such as the equipment and fuel that were used to produce them. It is therefore to be expected that production costs in Jordan are far more sensitive to changes in import prices than to wages and other expenditures. At sub-sectoral level, food industries and non-metallic industries exhibited the lowest level of imported RM. Food industries have relied on agricultural products while non-metallic industries have relied on some natural resources especially the cement industry, which comprises the majority of this sub-group.

2.1 The Different Elements of Cost

I will turn now to analyze the different elements of the variable cost in the manufacturing sector in Jordan. The major component is raw material, which, as has been demonstrated in table 1, is mainly imported with its price determined exogenously in the international markets. This leaves Jordanian manufacturers with little room to maneuver in controlling the cost of this factor. Manufacturers could either change the source of their imports, seeking better contractual arrangements with their suppliers, and/or obtain a better quality of RM.

The second component of the intermediate demand is the other expenditures, which comprise electricity, fuel, transportation etc. Prices of the major components of the other expenditures, such as, electricity and oil, are determined by the government wherein individual firms are operating, in each sector. Firms in the manufacturing sector could cut costs either by improving the level of efficiency, and/or concluding better deals with the firms that supply these goods and services. Hence, manufacturers are left only with the wage element as a factor of adjustment in the cost, at least in the short term. It is for this reason that I will focus my analysis, in some detail, on the level of wages and its related policies. This is not to ignore the possibility of enhancing the TFP, which, implies a better use of all the factors of production. However, I will assume that each element in the cost can be treated alone.

It should be noted that one should consider capital costs that are associated with the production process. There are three points worth mentioning in this regard. First, the level of interest rate did not witness major changes during the period 1988-1996. The lending interest rate, that is, the rate that usually meets the short and medium term financing needs of the private sector, has ranged from a level of 10 percent in 1990 to a level of 11.25 percent in the year 1996. However, it should be noted that the interest rate has dropped during the last two years to a level of 6-8 percent. Secondly, Jordanian manufacturers are less dependent on commercial banks as a source of finance. They are dependent to greater extent, on their own savings and therefore the amount of borrowed working capital is very low. Third, the estimation of capital is very problematic, therefore, estimating the opportunity cost of capital could lead to the wrong conclusions. In addition, incorporating capital means that one has to control for capacity utilization wherein data is not available at any level concerning capacity utilization. For all these reasons and since estimates of the variable cost are believed to be more reliable, I will confine the analysis so as to include only the elements of wages and salaries, intermediate inputs and other expenditures. I will further assume, through out the analysis, that all industries are facing the same cost of capital in terms of the interest rate even though big firms could have better contractual terms with the lending institutions when compared with small firms.

3. Wage Level

Real wage per worker grew at a steady rate during the period 1976-84, at an annual rate of 12 percent. Wages rose from JD 820 annually to a level of JD 1865 in 1984 in real terms. After the year 1984, wages started to decline as out-migration from Jordan to the Gulf countries slowed down. During the period 1985-1990, wages declined at an annual rate of 8 percent with its level in 1990 amounting only to about 64 percent of its level in 1984. After 1991 wages almost maintained the same level, with some years witnessing a modest decline. The period of adjustment in Jordan,1988 and after, was a period of unprecedented high inflation. Government policies greatly deterred manufacturers from cutting wages.

On average, for the entire period under investigation, the highest average wage on an annual base was registered in the tobacco industries, to JD 3037 followed by the petroleum industries, where it amounted to JD 2901. Both of these industries were dominated by state owned enterprises. In the tobacco industries there was no rational for such high wages in terms of the skills required in the industry. In the Jordan Refinery, directors of the company were appointed by the government, which owned a controlling stock in this jointly owned private/public company. In this context, Sylos (1979 12) argues that the mark-up serves not only to provide profits but also, and primarily, to cover overhead costs made up of the salaries of managerial, administrative, and technical personnel, and of capital allowances. In some industries the growth in the number of administrative staff, and engineers increased by more than the growth in the number of manual workers and this phenomena could not always be attributed to the technological differences between the different industries. When this phenomenon coincides with a spurt in the salaries of the top management and other high-level managers who fix the salary for themselves, the profits of firms are in part "institutionalized" or transformed into salaries for top management. This phenomena will have an effect on both the salaries of others in the firms concerned and will erode the capacity of the firm to finance investment internally. The same argument could be said about the Indirect Tax collected by the government from some sub-groups.

The average wage for the manufacturing sector, as a whole, was estimated at JD 1384 during the period 1976-96 and a wide dispersion in wages among the different sub-sectors was observed. Wages in industries that could be described as labor intensive such as textiles, wood, footwear and wearing apparel, were the lowest on average. Wearing apparel exhibited the lowest wage rate JD 743 with textile and footwear and plastic industries exhibiting a slightly higher level but remaining below the average of the whole sector. The relatively low wages in these sub-groups may be ascribed to the fact that most of the firms are privately owned and their markets characterized by their limited size. The number of new entrants was higher than in other sub-groups, thus creating a more competitive market structure, which has resulted in a downward pressure on wages.[1] Employers were also able to cut wages in these industries because a large part of these sub-sectors employed workers on an informal basis and it was easy to lay off workers without substantial financial compensations. Another factor, which is not unique to these sub-sectors in Jordan, is the availability of foreign cheap labor. This is especially important in these industries because of the wide spread informal employment and the freedom to hire or fire without enforcing proper labor contracts.

It seems, however, that wages are lower where the sectors are informal, fragmented, and where a large number of small firms are operating, that is, where there is higher competition. It should be noted that it is difficult to obtain reliable information about the informal sector. Kruegr (1983, 23) noticed that in countries for which there is data available, it was evident that wages paid in the informal

[1] Although the argument could be the other way around, that is, more entrance would mean more demand on labor and hence higher wages for those who are working in these industries. However the labor market was oversupplied and as I will demonstrate below in this chapter, wage was the only factor that was adjusted during the period of liberalization. Another factor that might be peculiar to the textile and wearing apparel industries is the fact that female employees comprise an important share in the total labor force in these industries. With female unemployment exceeding 50 percent, wages generally are lower in such industries than in the male dominated industries.

sector are considerably below those paid in the formal sector. Furthermore, there are those who believe that the key distinction between the formal and the informal sectors lies in the enforceability of the minimum wage and other labor legislation over the formal sector and the enforceability in the informal sector. Informal sector activities have the following common characteristics: ease of entry; reliance on indigenous resources; family ownership; small-scale operation; labor-intensity and traditional technology; skills acquired outside the formal school system; unregulated and competitive markets (Kirkpatrick 1984 48).

3.1 Wage Determinations

It seems that in the case of the manufacturing sector in Jordan, whenever there exists a secured market for some industries wages tend to be higher. Beverage and tobacco and some branches of food industries are representative cases. This is the case since in theory and very likely in practice. Monopolistic or oligopolistic firms could always pass any increase in wages to the consumers while maintaining the same level of mark-up. This is to argue that differences in average earnings between different sub-groups reflected not only the differences in human capital but also labor market imperfections and the enforced regulations. Moreover, the skill composition of labor does not seem to explain all the inter-industry wage differentials. This may be the case, since wage differentials in the public sector, which is a highly influential factor in determining the wage in the whole economy, is not determined by the level of skill.

There are another two aspects of importance to wage policies in Jordan. First, there is a wage policy or "tradition" in Jordan that could be described as "certificate wage structure" under which the academic qualification or the years of formal education plays a very significant role in determining wage level. Second, the fact that government policies have their influences on wage level in the private sector. Whenever the government raises wages for its employees, the private sector has to follow. Therefore the government, which is by far the largest employer in the country, employing more than 40 percent of the labor force, has contributed in setting wages at a level higher than that dictated by labor market conditions (AlAqel, 1991).[2]

In order to shed some light on a number the factors determining wage level, I tried to correlate the wage level with the capital labor (K/L) ratio and labor productivity (LP). The rational for this is the fact that more intensive capital industries (higher K/L ratio) would require more skilled labor and therefore would exhibit a higher wage. And the second hypothesis is that, a higher (LP) is expected to be associated with higher wage.

[2] Quite recently the government announced its intention to enforce a policy of minimum wages for the whole economy.

A non- parametric test (Spearman rank correlation) over three distinct periods revealed that the relation between the level of real wage and LP is significant over the different periods under investigation. The coefficients were significant and they hold the expected positive sign. However the association between wage and the K/L ratio is less clear with only the last period exhibiting a significant correlation. One of the reasons behind this weak association may ascribed to the inaccuracy associated with estimating capital stock and the inability to control for capacity utilization which resulted in overstating the true capital employed in many sub sectors.

However, it should be noted that the association between wages and labor productivity might entail some bias since the element of wage is part of the value added as noticed by Baumol et al (1994 339).

The correlation matrix does not show the pattern of the association between the two variables over time. In order to trace the pattern of wages and LP two indices of the concerned variables were generated. As can be observed from graph 3 below, the two variables moved in the same direction over time, though the magnitude of the variation is different.

3.2 Wage Cost

In order to investigate further the relation between the LP and wages I attempted to estimate the real wage cost which measures the difference between the growth in real wage and in LP. For this purpose the period under investigation was divided into two periods. The first one (1977-86) covers the period before the adjustment process began and the second covers 1987-97, normally referred to as the period after the liberalization and adjustment. As can be observed from table 3 below, during the first period wage growth has exceeded growth in LP implying that wage cost has increased during this period.

Sylos (1984, 155) in this context argues that wages normally increase at a rate equal to/or higher than the rate of increase in productivity, owing to the bargaining power acquired by the labor unions, which, partly reflects the power of the oligopolistic firms in the markets for the products. The result is that the unit cost of wage labor either remains constant or increases, and falls only in exceptional cases . In the case of Jordan the government policies in addition to the labor market conditions, scarcity of labor during the decade of seventies and early eighties, are the main determinants of the wage level with the very limited role of the trade unions in the manufacturing sector.

During the second period (1987-96) manufactures managed to contain the growth in wages at a level that was in many cases lower than the growth in LP. Hence, while the wages rose at a rate similar to, or even higher, than that of LP during the post liberalization period, the reverse occurred during the period of adjustment. Wages declined or stagnated in many subgroups, indicating that

wage cost has been downwardly adjusted during the liberalization episode. This was true in most of the sub-groups as the table below exhibits with the exception of some industries such as wood and furniture and non-metallic industries.

According to the United Nations Industrial Development Organization (UNIDO), the value added per employees dropped between 1985 and 1997 from a level of US $ 13840 to US $ 12152. Over the same period wages and salaries dropped from US $ 4319 to US$ 3145, a decline of 27 percent compared with 12 percent for value added per employees. These findings are in line with our own estimates, which show that wages and salaries have declined at faster rate than LP.[3]

Furthermore, unit labor cost per employees has declined over the period 1985-1997. The proportion of wages and salaries to the value added per employees in the manufacturing sector has decreased from a level of 29 percent in 1985 to a level of 21 percent in 1997. With few exceptions, this was the case in most of the sub-sectors as table 4 exhibits. Sluggish growth in wages and salaries during the second period has resulted in the decline of the share of wage to total variable from a level of 13 percent in 1987 to a level of 8 and 9 percent in 1992 and 1996 respectively.

In addition to findings in table 4, the World Development Indicators 2001, shows that labor unit cost per worker in manufacturing has dropped by nearly 55 percent from a level of US $ 4643 as an average during the period (1980-84) to a level of US $2082 as an average for the period (1995-99). Over the same periods, value added per worker in the manufacturing sector declined from US$ 16337 to a level of US$ 11906, a drop by 27 percent. These indicators demonstrate that real cost of labor in the manufacturing sector has continued to decline during the era of the economic adjustment program.

4. Relative Prices

There are different methodologies that can be used to measure profitability. However, it should be noted that profitability is not an ideal measure of performance and there is no consensus on which indicators should be taken to represent firms' or industries' profit. Quite often, for example, public enterprises are not pricing their products similar to their counterpart in the private sector. While the first is concerned about maximizing the social welfare, the latter's main concern is profit maximization irrespective of other objectives.

Clearly the best measure of profitability is the direct net profit achieved by any individual firm. However, direct profit is not normally reported in Jordanian official statistics, except in the case of the public share holding companies.

[3] These figures were obtained from the UNIDO web site: http://www.unido.org/Geodoc.cfm?cc=Jordan.

Bear in mind that there are few limitations to measure profitability, at the aggregate level, of the second International Standard for Industrial Classification (ISIC) digits. This level of aggregation will include a large number of firms that are heterogeneous in: size, production techniques, production management, ownership and so forth. The aim at this stage is to trace trends in the profitability index both at the sub-sector level and for the whole sector pre and post liberalization.

In order to estimate a proxy of profitability in the manufacturing sector in Jordan, I generated input and output price indices, which could be employed to indicate the level of profitability and its trend over time.

4.1 Input Price Index

The input price index was estimated by dividing the elements of the variable cost into: a) raw material (local and imported), b) wages, c) other expenditures. An appropriate weight for each sub-groups was attached for each element of cost based on several industrial surveys whereby an average for a number of years believed to represent the whole period under investigation was considered.[4]

In order to estimate price index for the RM, the RM was divided into domestic and imported. I employed the relevant manufacturing import price index for each sub-group to estimate the price index for the imported RM.[5]

The relevant wholesale prices index (WSP) was used to estimate the price index for the domestic components of the RM. The WSP index is available for eight groups according to the ISIC classification. For some of the sub-groups, where the exact index is not available, either the general WSP was employed or alternatively a combination of two or more of the available indices were generated to deflate the concerned sub-groups.

In order to estimate a price index for the wage element, wage per worker was estimated before transforming the generated series into an index with the year 1985 being used as base year.

Finally, for other expenditures, I employed, the relevant wholesale price index for each sub-group. From all the above and based on the weight of each element in the variable cost for each sub-group, a composite index of input price for each sub-groups was obtained using the following formula:

$$IPI = \sum((PIRM * w1) + (PIW * w2) + (PIOE * w3))$$

[4] The selection of the years was necessitated by the availability of the industrial surveys. The years considered were 1979, 1984, 1987, 1992 and 1996.

[5] Price indices are available according to the SITC (Standard Industry Trade Classification) in the CBJ monthly statistical bulletins. A match between the ISIC-published by DOS- and SITC was carried out in order to select the relevant index for each sub-group.

Where w1+w2+w3 equals 1 and denotes weights attached according to each element's contribution in the total variable cost. And the variables IPI, PIRM, PIW, and PIOE denote the input price index, price index for raw materials, price index for wages and the price index for other expenditures respectively.

4.2 Output Price Index

In order to estimate the output price index, gross output was divided into two parts. The first part comprises that proportion of output consumed domestically and the second comprises the exported part.

For the domestic part, the relevant wholesale price index was employed. For the exported part of output, the relevant export price index for each sub-group was used. The two indices were then combined based on the proportion of export to total output for each sub-groups in order to estimate a composite output price. The following formula was used in order to estimate the index: OPI= $\sum$ ((WSPI*w1) + EXPI*w2)).

Where OPI denotes output price index and WSPI and EXPI denote the wholesale price index and the export price index respectively. The weights w1+w2 =1 are the proportion of output sold in the domestic and in the export market respectively.

The two obtained indices show that output price during most of the period under investigation grew at a higher rate than that for the input price. The gap between the two indices widened during the period 1987-97 contrary to the presumed outcome of import liberalization. Growth in output price index, as estimated in this study, was found to exceed the growth in the variable cost price index indicating that profitability has not been adversely affected by the changes in the trade regime vis a vis other related adjustment measures.

Graph 4 reveals the trends in relative price as estimated here over the period 1976-1997. In order to confirm these findings, I estimated the "mark-up"[6] in the manufacturing sector before and after the launching of the adjustment program. This is another crude measure of profitability with the advantage of being a direct measure since it netted the value added from wages. The mark-up, which was estimated over similar periods to the relative prices has re-enforced the earlier conclusion about rejecting the hypothesis of profit squeeze in the manufacturing sector in the short and medium term. On average the mark-up was similar over the two different selected periods, as table 5indicates. Selecting rather different periods further enforced the conclusion about the consistency of the mark-up ratio over the different periods investigated.

[6] Mark-Up is defined as value added minus wages and salaries.

5. Cost Shifting

But how can we explain these findings which are in apparent contrast with conventional wisdom? In theory, maintaining the same level of profitability after liberalization means that the competitiveness of the markets has not improved as a result of the reform measures. Hence, the market structure has not altered in such a way as to allow market forces to produce the expected results. The other possibilities are that there are some other institutional impediments that have kept prices of final goods higher than the equilibrium prices that could prevail in a competitive environment. Or alternatively, it was the case that improvements in the overall efficiency were achieved to compensate for the increase in some of the factors of costs' elements.

In the case of Jordan, it may be the case that even with the abolition of many trade barriers, the accompanied devaluation of the JD has compensated for the reduction in the tariff barriers on the final goods. The devaluation has resulted in simultaneous increase of the prices of imported final goods, and raw materials. The shift of the increase in prices can be either complete or incomplete based on the structure of markets in the concerned countries (Sylos 1984).

Table 6 exhibits variations in the exchange rate before and after the year 1989. It should be noted that while the impact of the devaluation is instantaneous and will affect the industries immediately, the trade adjustment program was introduced gradually, in two phases, over a period of 10-15 years. This gap between introducing trade liberalization measures and the devaluation may explain the peculiar results we obtained concerning profitability level. In the case of Jordan, the amount of the Trade Policy Adjustment Loan (TPAL), which constitutes the crux of the trade liberalization program was $80 million. In the terms of reference of this conditional loan, it was stated that "an important government commitment supported by this loan is to eliminate the remaining trade barriers over a period of 10-15 years by forging a closer trade relation with the European Union, by accession to the WTO, and by developing closer trade relations with the regional economies" (WB 1995 1). Hence, it is more convincing to expect that the mark-up will fall more in the subgroups that use to enjoy the highest level of protection and underwent high reductions in their protection level. However, this argument could not be tested straight forwardly because other government policies such as pricing were intact.

Another argument that may support our findings depends on Sylos' (1979 7) explanation wherein he argues that apart from custom duties, national producers are favored by various kinds of what Sylos called "hidden protection", due to factors such as lower transportation costs, better knowledge of the markets, some kind of control over the channels of retail trade and so on. Furthermore, Livinsohn (1993, 20) argues that it might also be the case that changes in protection as conventionally estimated by the reduction in tariff and non-tariff

barriers are not always accurate. There may be subtle ways of continuing to protect an industry that do not appear in tariff schedules and licensing regulations. In this context Sylos (1984, 141) argues that economists have not succeeded in incorporating the non-competitive market forms into models that deal with market structure and price formation. For example, viewing the market structure and the levels of concentration without considering the size of the government, will be misleading. In the case of Jordan, the size of the government is important since the government is by far the largest single buyer in the economy. Most of the government supplies, such as clothes and food for the civil servants and the army are confined whenever possible to local producers. This kind of arrangement secures a very important segment of the domestic demand to the local producers and therefore understates the potential impact of trade liberalization. Competition that could arise from trade liberalization was limited to a small segment of the market.

And finally one cannot argue in the case of Jordan that improvement in TFP was the main factor, which contributed to maintaining the same level of profitability. As we show earlier when measuring the labor productivity, there was no significant improvement in this indicator during the period of liberalization to justify this finding.

5.1 Measuring Cost Shifting

It seems from the above that demand has a weak impact on prices. In other words, demand elasticities are low, hence producers can pass any increase in cost to consumers with their level of mark-up unaffected. Sylos (1979: 9), in this context, argues that in a country characterized by its high dependence on the imported RM, which is the case in Jordan one would expect the rise in costs to be shifted into prices. This would be the case, since changes in the prices of RM will affect all firms in an industry and therefore modify the equilibrium price. However unit labor cost depend also on productivity, which seldom varies at the same rate in all firms. Earlier in this study we found a significant correlation between LP and wages implying that LP is important in determining the level of wages.

In order to track the behavior of output prices in manufacturing prices, with respect to the major components of the material cost, I estimated the following equation following Sylos (1979):

$$P = C + a\,(W/\Pi) + ß\,RMPI$$

where all the variables expressed in terms of the rate of change and P denotes the output price, (W/Π) denotes the ratio of money wages and LP in real terms. PIRM denotes the unit cost of raw materials, which is taken as the price index of imported RM.

Estimating the above equation for the manufacturing sector over the period 1976-1996 produces the following results:

$$Pi = 3.7 + 0.186\,((W/\Pi)) + 0.76\,RMPI \qquad R2=0.58 \quad DW=1.877$$

(2.96) (1.3) (5.11)

Changes in output price are found to be positively and significantly correlated with the changes in the variable cost elements. The sum of the two obtained coefficients is equal to nearly 0.95 implying that most of the changes in costs have been shifted into manufacturing output price. In the case of raw material, the coefficient is very high (0.76) and significant. This finding confirms the argument by Sylos concerning the variations in RM prices. Furthermore, the finding is consistent with the structure of the variable cost in Jordan, which is highly sensitive to the imported RM..

On the other hand, the elasticity of prices to the changes in the wage cost is less consistent. The coefficient holds the expected positive sign and the magnitude of the coefficient seems reasonable. However, the coefficient was not statistically significant. This may be the case since changes in wage were not always reflected in output prices. During the decade of nineties, for example the output prices increased while wages maintained almost the same level. Thus when statistically estimating this relation, it is not strange to obtain such results. As we observed earlier in this chapter, government policies and labor market conditions were more important in determining wages than the variations in output prices over the period under investigation. According to Sylos, LP and wages vary worldwide at different rates, therefore when domestic labor costs grow faster than in competing countries, they cannot be shifted fully into prices. If there exists strong labor unions, costs also will not be fully shifted into prices.

In a second regression, I added a dummy variable in the above equation in order to control for changes in the trade regime. The dummy variable takes the value of one for the period of liberalization and zero otherwise. The inclusion of the dummy variable has not significantly altered the original estimation. This finding indicates that the pricing pattern in the manufacturing sector has not changed before or after liberalization and continued to be dominated by the cost variations rather than demand and supply conditions. However, the dummy's coefficient was not significant, therefore it was dropped from the equation without affecting our conclusion.

Moreover, the above equation was estimated by employing individual sub-groups indices in order to find out whether cost-shifting behavior is applicable to the other subgroups. In most of the cases the conclusion concerning price elasticities was very similar to what was obtained for the whole sector. RM price changes were found to be shifted in output prices while no regularities have emerged concerning the relation between output prices and wages.

According to the conventional wisdom, profit squeeze is likely to be confined to the domestic oriented industries. While export oriented industries can benefit from an increase in export demand resulting from the devaluation of the exchange rate. Such relative profitability change is, in fact, the mechanism through which economic liberalization is meant to redirect resources to more profitable export oriented industries. In the case of Jordan, the observed inter-industry variation in profitability does not lend much support to this argument.

This argument is expected to be valid in economies, which are well integrated, in the international economy with a reasonable level of efficiency. However, in highly protected economies where the manufacturing sector has been mainly geared for the domestic market, as it is the case in Jordan, the re-orientation of production towards export markets is a much more complicated and drawn out process (Karshinas 1994). Production capacity that was built to domestic markets is difficult to use to satisfy different demand patterns externally. In the case of Jordan, even the export oriented industries are not similar to what is traditionally referred to in trade literature due to the presence of the bilateral and protocol trade which is normally arranged through the government and it is highly concentrated in regional markets.

6. Conclusion

Contrary to the conventional wisdom, there was no profit squeeze in the manufacturing sector in Jordan during the period of liberalization. Profitability, measured in terms of relative prices or the mark-up, has maintained the same level. This indicates that the market structure has not altered drastically to induce changes in pricing policies whereby oligopolistic features of the market still prevail after liberalization.

It seems that the only cost factor that has been adjusted during the period of trade liberalization is wages and salaries. The wage cost in many of the sub-groups declined during the decade of nineties. While the labor productivity has registered a decline during the period 1990-1998, the drop in wages in salaries has exceeded that of LP decline implying a fall in the unit labor cost. The other two factors of the variable, namely RM and other expenditures, remained pre-determined exogenously with changes in their prices being mainly shifted into output prices.

Jordanian manufacturers have managed to maintain the same level of profitability or mark-up. This was the case due to many reasons. First, the accompanying devaluation has resulted in improving the terms of trade of the country. Second, it seems that "hidden protection" as described by Sylos, is efficient, in the short and medium term, in providing a shelter from foreign competition. Third , the demand elasticities seem to be low due to the nature of the total demand, especially when it is divided into private and public.

For all these reasons it was possible to pass the increase in costs, during the adjustment period, onto the consumers. Output price elasticities, with respect to changes in RM prices, were found to be positive and significant while a more dubious relation emerged with wages. This finding implies that variations in prices in the short and medium term are dependent on cost, more than on the demand and supply conditions. Finally the inclusion of dummy variables, to control for the impacts of liberalization has not produced different results concerning price behavior.

The implications of all the above on TFP will be such that, the easier it is for firms to shift cost increases into prices, the weaker will be the incentives to enhance productivity.

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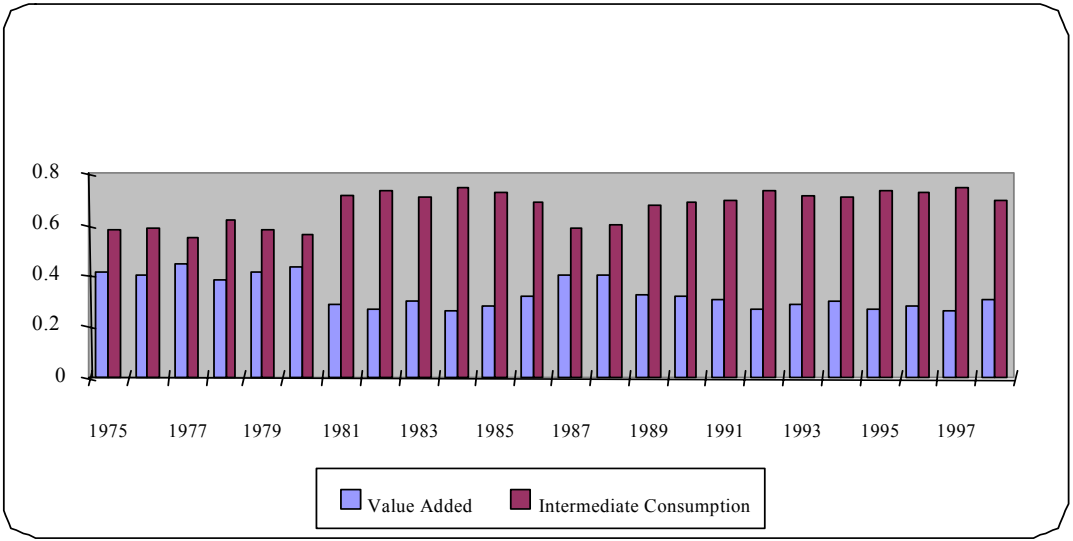
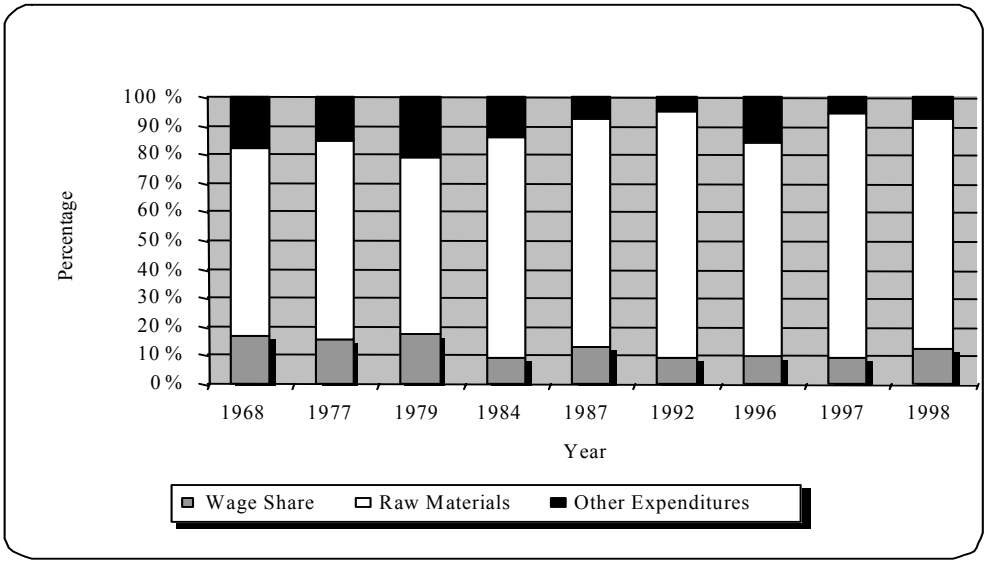
Graph (1): Value Added and Intermediate Demand



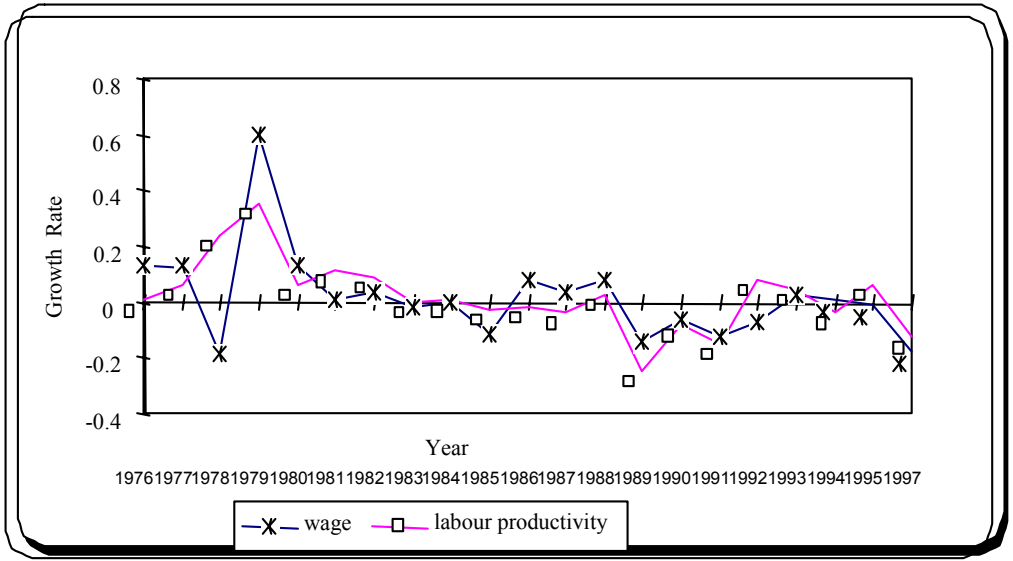
Source: Industrial Surveys, DOS.

Graph (2): Cost Structure in the Manufacturing Sector



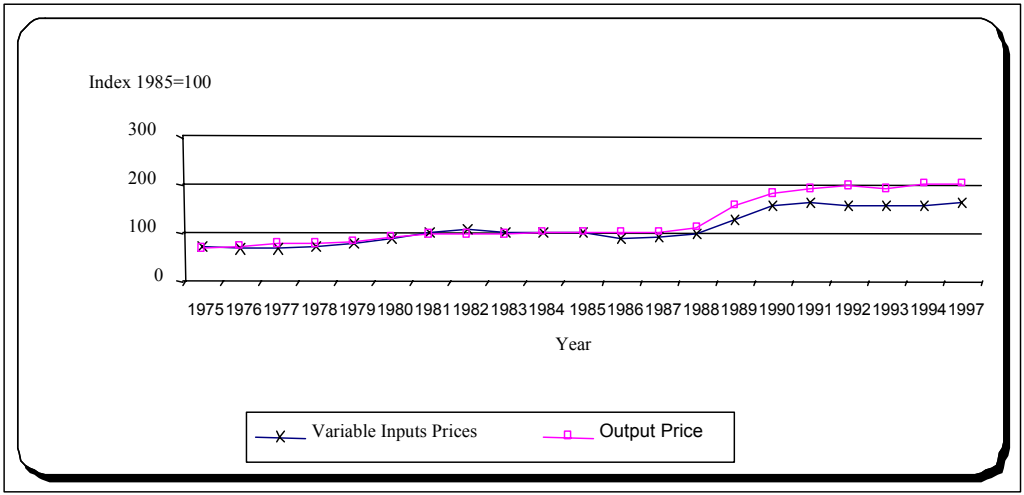
Source: Industrial surveys, different bulletins, DOS

Graph 3: Growth in Wages and Labor Productivity



Source: Industrial Surveys, Different bulletins

Graph 4: Output and Variable Input Prices



Source: own estimates based on CBJ , several bulletins, see text for methodology.

Table 1: Imported Raw Materials to Total Material Used

ISIC	Year	1979	1984	1987	1988	1992	Average
311	Food Products	0.365	0.556	0.625	0.559	0.459	0.513
313	Beverages	0.714	0.774	0.715	0.902	0.787	0.778
314	Tobacco	0.948	0.909	0.617	0.468	0.179	0.624
321	Textiles	0.880	0.685	0.956	0.939	0.924	0.877
322	Wearing apparel	0.251	0.738	0.864	0.840	0.652	0.669
323	Leather products	0.679	0.483	0.865	0.808	0.202	0.607
324	Footwear except Rubber	0.143	0.326	0.471	0.455	0.755	0.430
331+332	Wood and Furniture	0.392	0.757	0.944	0.869	0.771	0.747
341	Paper and Products	0.904	0.731	0.863	0.880	0.871	0.850
342	Printing and Publishing	0.765	0.544	0.925	0.907	0.892	0.807
351+352	Industrial Chemicals	0.940	1.000	0.728	0.713	0.383	0.753
353	Petroleum Refinery	1.000	1.000	0.939	0.933	0.932	0.961
355	Rubber products	0.651	0.000	0.956	0.948	0.857	0.682
356	Plastic Products	0.926	0.555	0.894	0.841	0.723	0.788
369	Non-metalic Mineral Prod.	0.212	0.833	0.161	0.137	0.139	0.296
371+372	Basic Metal	0.912	0.670	0.827	0.800	0.775	0.797
381+382	Fabricated indust.and Non-elec. machinery	0.423	0.557	0.631	0.702	0.725	0.607
383	Machinery electric	0.146	0.449	0.923	0.836	0.879	0.647
384	Transport Equipment	0.000	0.542	0.944	0.836	0.839	0.632
	Grand Total	**0.670**	**0.869**	**0.764**	**0.745**	**0.620**	**0.734**

Table 2: Matrix of Spearman Correlation Between Wage and LP and K/L Ratio

Variable	Average Wage (76-82)	Average Wage (82-90)	Average Wage (91-96)
Labor Productivity	0.84** (0.00)	0.74** (0.00)	0.79* (0.08)
K/L ratio	0.081 (0.734)	0.176(0.45)	0.56* (.011)

Notes: ** correlation is significant at the 0.01 level
* correlation is significant at the 0.05 level

Table 3: Estimated Growth in Wage Cost

		Growth in Wages		Labour Productivity Growth		Wage Cost	
ISIC	**Year**	**77-86**	**87-97**	**77-86**	**87-97**	**77-86**	**87-97**
311	Food Products	0.1075	-0.0392	0.0212	-0.0168	0.0863	-0.0224
313	Beverages	0.0107	0.0025	0.0319	0.0303	-0.0212	-0.0279
314	Tobacco	0.0426	-0.0445	0.3326	112	-0.2901	-0.0333
321	Textiles	0.1238	-0.1032	0.1157	-0.0460	0.0080	-0.0572
322	Wearing apparel	0.1649	-0.0400	0.0687	-0.0683	0.0961	0.0283
323	Leather products	0.0966	0.0627	0.0079	0.0430	0.0887	0.0197
324	Footwear except rubber	0.0842	-0.0467	0.1205	-0.0205	-0.0363	-0.0261
331+332	Wood & Furniture Products	0.0048	-0.0856	0.0700	-0.1027	-0.0652	0.0172
341	Paper and Products	0.1865	-0.0553	0.1670	-0.0293	0.0194	-0.0260
342	Printing and Publishing	0.1153	-0.0311	0.0623	-0.0022	0.0530	-0.0288
351+352	Industrial Chemicals	0.1311	-0.0017	0.0332	0.0696	0.0979	-0.0713
353	Petroleum Refinery	0.1083	0.0074	0.2244	0.0166	-0.1161	-0.0092
355	Rubber products	0.1907	-0.0122	0.4580	0.0742	-0.2673	-0.0864
356	Plastic Products	0.1618	-0.0515	-0.0089	-0.0590	0.1707	0.0075
361+62+369	Non-metallic Mineral Prod.	0.1047	0.2316	0.1300	-0.0595	-0.0253	0.2911
371+372	Basic Metal	0.0593	-0.0194	0.0240	0.0000	0.0353	-0.0194
381+382	Fabricated metal Products	0.0243	-0.0719	-0.0202	-0.0739	0.0445	0.0020
383	Machinery electric	0.1528	0.0129	0.0958	0.1094	0.0569	-0.0965
384	Transport Equipment	0.1154	-0.0613	0.1082	0.1272	0.0071	-0.1885
	Grand total	0.0856	-0.0482	0.0768	-0.0499	0.0088	0.0017

Notes: *Wage Cost: rate of growth in real wage per worker minus rate of change in labor productivity

- All figures are estimated at 1985 prices.

Table 4: Labor Unit Cost Per Employee

Branch (ISIC)	Value added per employee (JDs)		Wages and Salaries per employee (JDs)		Unit Labor Cost per employee	
Total manufacturing(300)	**1985**	**1997**	**1985**	**1997**	**1985**	**1997**
Food products (311)	5462	8616	1704	2230	0.312	0.259
Beverages (313)	3368	5012	1316	1686	0.391	0.336
Tobacco (314)	10843	18682	1971	2810	0.182	0.150
Textiles (321)	47833	91703	2849	2167	0.060	0.024
Wearing apparel,except footwear (322)	5674	5518	1576	1743	0.278	0.316
Leather products (323)	1747	3355	974	1289	0.558	0.384
Footwear,except rubber or plastic (324)	3910	5434	1538	2684	0.393	0.494
Wood products,except furniture (331)	5127	4632	1729	1473	0.337	0.318
Furniture,except metal (332)	2407	4221	1607	1611	0.668	0.382
Paper and products (341)	1937	3498	1249	1424	0.645	0.407
Printing and publishing (342)	3448	6127	2042	2554	0.592	0.417
Industrial chemicals (351)	2992	7173	2144	3084	0.717	0.430
Other chemicals (352)	5618	15932	3227	4191	0.574	0.263
Petroleum refineries (353)	3850	11324	2073	2955	0.538	0.261
Misc. petroleum and coal products (354)	12143	16991	3809	4652	0.314	0.274
Plastic products (356)	4667	9225	1333	2174	0.286	0.236
Pottery,china,earthenware (361)	3333	5885	1573	1822	0.472	0.310
Glass and products (362)	5860	1754	1855	1607	0.317	0.916
Other non-metallic mineral prod.(369)	2939	4667	1860	1694	0.633	0.363
Iron and steel (371)	9292	9991	1858	2352	0.200	0.235
Non-ferrous metals (372)	5053	17755	2123	3194	0.420	0.180
Fabricated metal products (381)	6433	8049	2126	3467	0.330	0.431
Machinery,except electrical (382)	2843	3783	1349	1606	0.474	0.425
Machinery electric (383)	2381	6395	1349	2230	0.567	0.349
Transport equipment (384)	2426	8716	1366	2122	0.563	0.243
Professional & scientific equipm.(385)	4462	7493	1731	2332	0.388	0.311
Other manufactured products(390)	na	4377	na	1859	na	0.425
Total manufacturing	**166048**	**296308**	**48331**	**63012**	**0.291**	**0.213**

Source: Adapted from the UNIDO data bank. 2002.

Table 5: Average Mark-Up in the Manufacturing Sector as a Percentage of the Value Added

ISIC	Year	1976-82	1983-89	1990-98	76-86	87-98
311	Food Products	0.7191	0.6411	0.6794	0.6750	0.6709
313	Beverages	0.7314	0.8345	0.8632	0.7748	0.8655
314	Tobacco	0.8503	0.9350	0.9319	0.8890	0.9335
321	Textiles	0.6360	0.6659	0.7163	0.6317	0.7068
322	Wearing apparel	0.7140	0.5511	0.6037	0.6220	0.6031
323	Leather products	0.7138	0.5613	0.6216	0.6151	0.6306
324	Footwear except rubber	0.6471	0.5847	0.5892	0.6331	0.5767
331+332	Wood and Furniture Products	0.6774	0.5566	0.6211	0.6080	0.6299
341	Paper and Products	0.6287	0.5420	0.6309	0.5652	0.6324
342	Printing and Publishing	0.5927	0.3966	0.5391	0.4927	0.5025
351+352	Industrial Chemicals	0.7561	0.5930	0.6875	0.6512	0.6880
353	Petroleum Refinery	0.5840	0.7208	0.5152	0.6468	0.5775
355	Rubber products	0.2635	0.5448	0.6365	0.3969	0.6019
356	Plastic Products	0.8319	0.6093	0.6472	0.7322	0.6361
369	Non-metallic Mineral Prod.	0.7558	0.7879	0.8024	0.7696	0.8018
371+372	Basic Metal	0.8705	0.8281	0.8745	0.8399	0.8761
381+382	Fabricated metal Products	0.6968	0.5691	0.6385	0.6369	0.6230
383	Machinery electric	0.6075	0.5482	0.7152	0.5387	0.7004
384	Transport Equipment	0.6378	0.4802	0.4982	0.5689	0.4908
	Grand total	0.7376	0.7318	0.7382	0.7272	0.7472

Source: Industrial Surveys, different bulletins, DOS

Table 6: Exchange Rate of the JD 1988-200, Units per JD

Year	Exchange RateJD/US $
1988	2.653
1989	1.733
1990	1.503
1991	1.470
1995	1.470
1997	1.412
1998	1.412
1999	1.412
2000	1.412
2001	1.412

Source: CBJ, monthly bulletin, several issues.