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# Real wages, profit margins and inflation in Turkish manufacturing under post-liberalization

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This article reports investigations into the behaviour of gross profit margins (mark-ups) in Turkish manufacturing industries for the post-1980 liberalization period in relation to price inflation, trade liberalization (openness) and real wage costs. Panel data econometrics over 29 subsectors of Turkish manufacturing are used over the period 1980–1996. Results suggest that profit margins are positively and significantly related both to price inflation and real wage costs. However, openness is found to have very little impact on profit margins.

## I. Introduction

We have investigated the behaviour of gross profit margins (mark-ups) in Turkish manufacturing industries for the post-1980 period in relation to trade liberalization (openness), real wage costs, and price inflation. The period under analysis is known to span the overall transformation of the Turkish economy from domestic demand-oriented import-substitutionist industrialization to one with export-orientation and integration with the global commodity and financial markets.

During this period manufacturing industry has evolved as the main sector in both leading the export-orientation of the economy, and also as a

focal sector wherein the distribution patterns between wage–labour and capital have been re-shaped. There exists considerable evidence on the extent of monopolization and high concentration in the Turkish manufacturing industries. The State Institute of Statistics (SIS) data suggest that the processes of export orientation and overall trade liberalization since 1980 have not altered the structural characteristics of manufacturing industry in a significant manner. Many of the monopolistically competitive sectors either kept their existing high rates of concentration, or even suffered increased monopolization as measured by their CR4 ratios or Herfindahl indexes.<sup>1</sup> Even among many competitive sectors of 1980, one observes increases in the CR4 ratios by 1996.<sup>2</sup>

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<sup>1</sup>Concentration ratios measure the share of value added (or sales) of the largest firms. Let  $s_i$  be the share of value added of firm  $i$ ; ranked from highest (1) to lowest ( $N$ )  $CR4 = s_1 + s_2 + s_3 + s_4$  is then the 4-firm concentration ratio. Higher measures of CR4 indicate a more concentrated market. On the other hand, Herfindahl indexes are generally preferred to concentration ratios since they are influenced by the size distribution of firms in a way that simple CRs are not. Let  $s_i$  equal firm  $i$ 's share of industry sales (multiplied by 100 so that 10% is 10, etc.). The Herfindahl index is then the sum of the squared shares:  $H = \sum s_i^2$ .

<sup>2</sup>See, for instance, Güneş (1991), Kaytaç, Altın and Güneş (1993) Katırcıoğlu (1990) and Şahinkaya (1993) for the evaluation of market concentration and patterns of oligopolistic mark-up pricing in the industrial commodity markets. Güneş, Köse and Yeldan (1996), in turn, document comprehensive panel data on the degree of concentration in Turkish manufacturing using the standard Input-Output classification for the period 1985–1993. Metin-Ozcan *et al.* (2002) argue that, contrary to expectations, the opening process was unable to introduce warranted increases in competition in the Turkish industrial commodity markets.

In a series of papers, Benabou (1988, 1992a, 1992b) links the welfare costs of inflation to its impact on market power, while Levinsohn (1993) and Harrison (1994) show the effects of trade liberalization on the monopoly power of domestic firms. When monopolistically competitive firms set prices with (S, s) rules, Benabou shows that inflation leads to an increase of the dispersion of prices within an industry. Therefore, buyers devote more resources to search for the lowest cost, and for a given level of market power, inflation lowers welfare. In Tommasi (1994) and Ball and Romer (1996), inflation lowers welfare by increasing relative price variability, reducing the information about future prices contained in current prices, and thus allowing firms to raise mark-ups on less informed and less price elastic consumers. On the other hand, Chirinko and Fazzari (2000) find that inflation usually has a positive effect on market power. They also report that this relation is found to be heterogeneous across the eleven US industries, and statistically significant positive relations are concentrated in industries with little market power. Similarly, Bloch and Olive (2001) show that aggregate inflation has a positive influence on prices and mark-ups by using 21 two-digit SIC industries in the USA for the period 1948 to 1979. Moreover, Neiss (2001) finds that higher mark-ups lead to a higher equilibrium rate of inflation. However, in recent years there has been mounting empirical evidence of a negative relationship between inflation and mark-ups. For example, the error correction term in the models of inflation estimated by Richards and Stevens (1987), Franz and Gordon (1993), Cockerell and Russell (1995) and de Brouwer and Ericsson (1998) may be interpreted to suggest that the mark-ups are negatively related with inflation. Further evidence can be found in the works of Benabou (1992b), Simon (1999) and Batini *et al.* (2000).<sup>3</sup> Finally, Banerjee and Russell (2002) identify a negative long-run relationship between inflation and the mark-up of price on unit costs on the one hand, and with the mark-up on marginal costs on the other.

Blanchard (1985) shows that there is a positive relation between increasing real wage and mark-ups. Metin-Ozcan *et al.* (2002) investigate the behaviour of profit margins (mark-ups) in relation to openness, concentration ratios and real wage costs using panel data from Turkish manufacturing industries over the period 1980–1996. In their analysis, profit margins are found to be positively

and significantly related to real wage cost increases in Turkish manufacturing industries. The current study is motivated from the inconclusive findings of the previous literature and particularly from the findings of Metin-Ozcan *et al.* (2002). As a further extension, we search for econometric evidence on the behaviour of mark-ups in relation to inflation, openness and real wage costs in Turkish manufacturing industry for the post-1980 period.

This study is important for two reasons: First, to the best of our knowledge, there is almost no empirical work that has investigated different types of market structures for each sector with regards to the behaviour of mark-ups in relation to price inflation. For example, Benabou (1991) examines the effects of inflation on mark-ups in only imperfectly competitive markets. Kaskerelis and Tsoulfidis (1999) examine the influence of demand, inflation and import competition on mark-ups. In contrast, the current study considers both the imperfectly competitive/oligopolistic and perfectly competitive market structures, and investigates the effects of inflation on mark-ups, given an openness indicator and real wage cost patterns. Second, there is no study for the Turkish manufacturing industry, which investigates the relation between inflation and mark-ups using formal econometric techniques. Furthermore, this investigation bears relevance to Turkish stabilization issues, as inflation has become almost a structural feature of the Turkish commodity markets for the last three decades.

It is also important to note that the concept of core inflation is a critical issue for the Central Bank in Turkey in conducting the monetary policy. The core inflation is regarded as a persistent and inertial source of inflationary behaviour. However, the inflation may not represent the long-term price movements, and short-term movements in inflation can blur the actual inflationary trend. Non-monetary events such as changing seasonal patterns, resource shocks, changes in indirect taxes and price adjustments, sector specific shocks and sampling problems may cause transitory noise problems in frequently used price indices (Bryan and Cecchetti, 1993; Cecchetti, 1996). Such a situation creates substantial difficulties for implementation of monetary policy. No matter what the target is, defining and measuring the core inflation determine the direction of the policy (Berkmen, 2002; Duman, 2002). Thus, we claim that a sector-wise detailed investigation of the effect of inflation in the manufacturing

<sup>3</sup> All these models assume that inflation and the mark-ups are stationary.

industries in Turkey is particularly important since inflation expectations are hidden in the core inflation. Thus, broadly speaking the purpose of this paper is to fill both of these two gaps in the literature. The plan of the paper is as follows: in the next section, we introduce main hypotheses of our econometric methodology and data sources. We investigate and discuss our econometric findings in Section III. Finally, Section IV summarizes and concludes.

## II. Econometric Investigation

We now turn to the econometric investigation of the dynamics of Turkish manufacturing industry over the post-1980 era. To this end, we focus on the 29 sub-sectors of manufacturing, based on 3-digit ISI-Classification (the ISIC codes and their sectoral identification are detailed in the Appendix, Table 1).

We utilize a specification that analyses the behaviour of gross profit margins in relation to trade liberalization, shifts in real wage costs, and inflation. We rely on the classification of Metin-Ozcan *et al.* (2002), which considers CR4 ratios of each sector. Accordingly, we classify those sectors that have a CR4 in excess of 0.30 as 'imperfectly competitive/oligopolistic'; and those with CR4 less than 0.30 as 'perfectly competitive'.<sup>4</sup> On a different spectrum, sectors are to be regarded as 'open' provided that their trade volume (measured as imports plus exports) as a ratio of sectoral value added exceed 0.50. Sectors with trade volume-to-value added ratios less than 0.50 are regarded as 'inward-looking'. We carry this classification based on the characteristics of the 29 sectors in 1980. Appendix, Table 2 shows the realized tabulation (see Appendix, Table 1 for identification of the ISIC codes).

### Data sources

Our data come from the *SIS Manufacturing Industry Annual Surveys* and *Indicators of Concentration*. The survey covers all public sector establishments and those private enterprises employing more than 10 workers.

Various concentration measures were available in addition to the CR4 ratio, such as CR10 and Herfindahl indexes in our data. We chose to adhere to the CR4 as the relevant measure of concentration due to its simplicity and also popularity.<sup>5</sup> *Wage costs* include all payments in the form of wages and salaries and per diems, gross income tax, social security, and pension fund premiums. It also includes social security, pension, contributions, and the like payable by the employer, and overtime payments, bonuses, indemnities and payments in kind. Annual wages and salaries paid are compiled for production workers and other staff. To arrive at 'wage rates', we have used data on 'total wages paid' divided by 'average number of workers engaged'. *Profit margins* (mark-up rates) are defined as the ratio of total profits to total costs of wages and intermediate inputs. In the absence of reliable capital stock estimates, this variable provides a good proxy on the profitability of capital. Finally, *inflation* is the first difference logarithmic values of wholesale price indices.<sup>6</sup>

### Method of econometric estimation

Our essential estimating equation is the following:

$$MR_{it} = f(\alpha_i, INF_{it}, O_{it}, RW_{it}) \quad (1)$$

The implicit function represents the influence of inflation, trade orientation and real wage cost on the mark-up rates of the manufacturing subsectors where  $MR_{it}$  denotes mark-up rates;  $INF_{it}$  denotes inflation;  $O_{it}$  stands for 'openness' of each sector (ratio of imports plus exports to sectoral value added), and  $RW_{it}$  denotes real wage costs. The index  $\{i = 1, 2, \dots, N\}$  refers to the individual

<sup>4</sup>This is the threshold further used by Boratav *et al.* (2000) and Yeldan and Köse (1999) in their historical account of the Turkish macrodevelopments over the post-liberalization era. There, on a further level of finesse, the sectors, which had CR4 ratios between 30% and 49% are classified as 'monopolistically competitive', and those sectors with CR4 ratios exceeding 50% are regarded to be 'oligopolistic'.

<sup>5</sup>Given that the idea of 'seller concentration' refers to the size distribution of firms that sell a particular product, the concept is usually regarded as a significant dimension of market structure since it is thought to play an important part in determining market power. Some researchers who have been studying market power have sought to measure it by using indexes based on microeconomic theory dating back to Lerner (1934) who suggested that the difference between price and marginal cost divided by price could serve as a direct measure of departures from the competitive ideal. Despite its intuitive appeal, the *Lerner index* is criticized on the grounds that it is essentially an *ex post* measure of allocative efficiency. Curry and George (1983) provide a thorough evaluation of these issues.

<sup>6</sup>For a more detailed information on these and related concepts see *SIS Manufacturing Annual Industry Surveys* and the SIS web site at <http://www.die.gov.tr>

**Table 1. Relationship between mark-up rates, inflation, openness and real wage costs**

Sectoral classification	Inflation	Openness	Real wage costs	Adjusted $R^2$	F-statistic	DW test
Overall sample	0.144*	(-0.014)*	0.219*	0.730	175.529*	1.025
Open&competitive	0.007	(-0.038)**	0.207**	0.780	34.227*	0.987
Open&imperfectly competitive	0.183*	(-0.006)	0.301**	0.653	44.463*	1.741
Inward looking&competitive	0.077**	(-0.047)**	0.189*	0.849	103.808	1.148
Inward looking&imperfectly competitive	0.241*	(-0.144)*	(-0.362)*	0.734	169.835*	0.899
Trade adjusting	0.234*	(-0.099)*	0.274*	0.663	74.983*	0.652

Note:\*The coefficient is statistically significant at 1%.

\*\*The coefficient is statistically significant at 5%.

sectors, and  $\{t=1, 2, \dots, T\}$  refers to time period. The coefficients  $\alpha_i$  (sector specific composite term) have two components:  $\alpha_{i1}$ , a sector specific intercept, and  $\alpha_{i2}t$ , a sector-specific deterministic growth trend.

The above equation is estimated using a panel data estimator, so that variation over both the cross-section and time series dimensions are jointly considered. The advantages of using panel data estimation are various. First, panel data enable major steps to overcome the problems associated with the lack of sufficient historical data for efficient estimation using single sector time series analysis. Second, it mostly compensates for the dissatisfaction with using simple cross-section estimation. Since temporal variation is ignored in cross-section estimation, changes occurred over time in the specific sectors of the manufacturing industries over the years cannot be observed. In contrast, panel data estimation uses all the information available in time series and the cross section-based procedures.

Panel data estimation further considers the sector-specific differences. Observed static differences between sectors of the manufacturing industries can be taken into consideration through variations in the intercept terms,  $\alpha_i$ s. The intercept is allowed to vary only across individual sectors, not over the time period under consideration. However, when we analyse our results, we will not take into account  $\alpha_i$ s since we will not investigate individual sectors in this study.

Formally, in our econometric investigation the general form of our specification is assumed to be linear:

$$MR_{it} = \alpha_i + \beta_1 INF_{it} + \beta_2 O_{it} + \beta_3 RW_{it} \quad (2)$$

### III. Analysis of Econometric Results

We employ panel data estimation on specification (2) in six sets of equations. First, we estimate Equation 2 for the whole sample; in other words for  $i = \{1, 2, \dots, 29\}$  and  $t = \{1980, 1981, \dots, 1996\}$ .

Then, we take each of the identified cells as one individual group exclusively and redo the estimation. Finally, we distinguish those sectors, which were 'inward-oriented' in 1980, but became 'open' by 1996. That is, sectors  $i \in \{2 \text{ and } 4\}$  in 1980 and  $i \in \{1 \text{ and } 3\}$  in 1996. This leaves us with the following sectors:  $\{311, 314, 321, 323, 324, 331, 332, 341, 352, 355, 356, 362, 371, 372\}$ . We classify this group with the identifier 'trade adjusters'.

#### Behaviour of gross profit margins

We start our econometric investigation with the analysis of the behaviour of gross profit margins (mark-ups). We regress mark-up rates on inflation, openness, and logarithm of real wage costs using the panel data. The results are shown in Table 1.

Our econometric results reveal the following relationship for the mark-up equation when all sectors are considered:

$$MR_{it} = \alpha_i + 0.144INF_{it} - 0.014O_{it} + 0.219 \log RW_{it} \\ (3.587) \quad (-3.961) \quad (3.056)$$

where  $\alpha_i$  is the sector-specific term, and  $t$ -ratios are given in parentheses. Thus, for the whole sample, inflation rates have a statistically significant and positive coefficient of 0.144 at the 1% level of significance. Thus, a 1% increase in the level of inflation is likely to affect the average profit margin of the aggregate manufacturing industry by +0.14%. This suggests the presence of a strong tendency towards acceleration of inflation in Turkey with increasing mark-ups. This result is in line with the arguments set forth in Chirinko and Fazzari (2000), Bloch and Olive (2001) and Neiss (2001). On the other hand, the overall coefficient of openness is estimated to be a mere -0.014. The magnitude, which is found to be statistically significant at the 1% level, is nevertheless very small, suggesting that the 16 years of adjustment to foreign integration has not brought a meaningful change in the market structure of the Turkish

manufacturing industry. As such, the speed of adjustment of gross profit margins is revealed to be very slow in spite of the import discipline and export penetration, and the technological and institutional barriers to entry seem to persist over the post-1980 reform era. What is more interesting, however, is that mark-ups do have a positive relationship with respect to real wage costs with 0.219. These observations suggest that the sector has been characterized by *Sraffian* dynamics in the aggregate, with persistence of mark-ups against wage increases. In other words, the real wages seem to act as an accelerationist variable, stimulating mark-ups in the post-1980 Turkish manufacturing industry. See also Boratav *et al.* (2000) and Yentürk and Onaran (1999) for a further assessment of the behaviour of mark-ups against the post 1989 wage cycle in Turkish private manufacturing.

Mark-ups have a positive relationship with inflation under all sub-groups, again resonating results in Chirinko and Fazzari (2000), Bloch and Olive (2001) and Neiss (2001). In addition, across the sub-groups, we observe that both the 'open' and 'inward-looking' sectors (as of 1980) have a negative relationship with 'openness'. Overall, 'trade adjusters' carry a negative coefficient of (-0.099) vis-à-vis openness as expected. Thus, for those sectors which were inward-looking by 1980, the process of opening could have been associated with a competitive discipline squeezing the cost-margins (mark-ups). On the other hand 'trade adjusters' as a group, displayed positively significant coefficients in relation with the inflation and the real wage costs. Except for the 'inward-looking & imperfectly competitive' group, mark-ups have positive relationship with real wage costs under all groups.

Thus, generally speaking, it seems that the manufacturing sectors could have responded to the shocks of inflation and rising real wage costs by increasing their profit margins over the post-1980 reform era. In contrast, trade policy seems to have very little impact on the profit margins of the manufacturing industry and this suggests that the opening process was unable to introduce warranted increases in competition in the industrial markets.

#### IV. Concluding Comments

In this paper, we have investigated the behaviour of gross profit margins (mark-ups) of the Turkish manufacturing industries for the post-1980 period in relation to inflation, trade liberalization and real wage costs. Utilizing existing evidence on the extent of monopolization and high rates of concentration

in the Turkish manufacturing industries, we attempted to formalize on these observations to deduce econometric hypotheses on the patterns of trade liberalization, mark-ups, and inflation. To this end, we investigated our empirical questions using various panel data procedures over 29 subsectors of Turkish manufacturing for the period 1980–1996.

We found that 'openness' had very little impact, if any, on the levels of profit margins (mark-ups). Our econometric results reflect a pattern of sluggishness of the existing levels of mark-ups in Turkish manufacturing against a 16-year-long period of trade liberalization adjustments. With a relatively small effect of 'openness' on gross profit margins (averaging -0.014 for the whole sample), the sector seems to display a resistance to increased competition despite the import discipline the post-1980 adjustments have brought.

Profit margins (mark-ups) are further found to be positively and significantly affected from real wage costs and price inflation. Thus, our results indicate that the manufacturing sectors have responded to shocks of acceleration of inflation and real wage costs by increasing their indigenous profit margins.

The positive responsiveness of profit margins against real wage costs indicate that over the period analysed, Turkish industrial capital could have escaped the classic trade-off over the wage-profit frontier. The fact that the real wage costs increases could have been met by further upward adjustments in gross profits can only be explained by referring to elements of political and social struggle. Thus, as a final assessment, gross profitability has been shaped and moulded by the capital's ability in acquiring and expanding the economic surplus through various economic and non-economic means, a process whose identification merits a further comprehensive treatment; and yet, remains clearly outside the scope of our methodology.

#### References

- Ball, L. and Romer, D. (1996) Inflation and the informativeness of prices, Working Paper, Johns Hopkins and University of California, Berkeley.
- Banerjee, A. and Russell, B. (2002) Inflation and measures of the markup, Economics Working Papers ECO20002/05, European University Institute.
- Batini, N., Jackson, B. and Nickell, S. (2000) Inflation dynamics and the labour share in the UK, Bank of England External MPC Unit Discussion Paper, No. 2, November.
- Benabou, R. (1988) Search, price setting and inflation, *The Review of Economic Studies*, 55, 353–76.
- Benabou, R. (1991) Inflation and markups: theories and evidence from the retail trade sector, Massachusetts

- Institute of Technology Department of Economics Working Paper: 587.
- Benabou, R. (1992a) Inflation and efficiency in search markets, *The Review of Economic Studies*, **59**, 299–330.
- Benabou, R. (1992b) Inflation and markups: theories and evidence from the retail sector, *European Economic Review*, **36**, 566–74.
- Berkmen, P. (2002) Measuring core inflation for Turkey-trimmed means approach, *Central Bank Review*, **2**, 1–18.
- Blanchard, O. J. (1985) The wage price spiral, National Bureau of Economic Research Working Paper: 1771.
- Bloch, H. and Olive, M. (2001) Pricing over the cycle, *Review of Industrial Organization*, **19**, 99–108.
- Boratav, K., Yeldan, E. and Köse, A. (2000) Globalization, distribution and social policy: Turkey: 1980–1998, CEPA and The New School for Social Research, Working Paper Series, No. 20, New York, February.
- Bryan, M. F. and Cecchetti, S. G. (1993) Measuring core inflation, NBER Working Paper, No. 4303.
- Cecchetti, S. G. (1996) Measuring short-run inflation for central bankers, NBER Working Paper, No. 5786.
- Chirinko, R. S. and Fazzari, S. M. (2000) Market power and inflation, *The Review of Economics and Statistics*, **82**, 509–18.
- Cockerell, L. and Russell, B. (1995) Australian wage and price inflation: 1971–1994, Reserve Bank of Australia Discussion Paper, No. 9509.
- Curry, B. and George, K. D. (1983) Industrial concentration: a survey, *The Journal of Industrial Economics*, **31**, 203–55.
- De Brouwer, G. and Ericsson, N. R. (1998) Modelling inflation in Australia, *Journal of Business & Economic Statistics*, **16**, 433–49.
- Duman, A. (2002) Inflation targeting as a monetary policy and its applicability to developing countries, Research Department Working Paper, No. 7, The Central Bank of the Republic of Turkey.
- Franz, W. and Gordon, R. J. (1993) German and American wage and price dynamics: differences and common themes, *European Economic Review*, **37**, 719–62.
- Güneş, M. (1991) Concentration criterias in Turkish manufacturing industry: 1985–1989 (in Turkish), Research Symposium 91, State Institute of Statistics, Ankara.
- Güneş, M., Köse, A. H. and Yeldan, E. (1996) Concentration trends in Turkish manufacturing industry in accordance with IO table's sectoral classification (in Turkish), *Ekonomik Yaklaşım*, **8**, 33–47.
- Harrison, A. E. (1994) Productivity, imperfect competition and trade reform: theory and evidence, *Journal of International Economics*, **36**, 53–73.
- Kaskerelis, I. and Tsoulfidis, L. (1999) Inflation, demand, import competition and markups in Greek manufacturing industries, *Economia Internazionale*, **52**, 151–71.
- Katırcıoğlu, E. (1990) Concentration in Turkish manufacturing and the factors determine concentration: 1975–1988 (in Turkish), Tüses Istanbul.
- Kaytaç, E., Altın, S. and Güneş M. (1993) Concentration in Turkish manufacturing Industry (in Turkish) TMMOB Proceedings of the Congress on Industry Vol. 1, Chamber of Engineers Ankara.
- Lerner A. P. (1934) The concept of monopoly and the measurement of monopoly power, *Review of Economic Studies*, **1**, 157–75.
- Levinsohn J. (1993) Testing the imports-as-market-discipline hypothesis, *Journal of International Economics*, **35**, 1–22.
- Metin-Özcan K. Voyvoda, E. and Yeldan E. (2002) The impact of the liberalization program on the price-cost margin and investment of Turkey's manufacturing sector after 1980, *Emerging Markets Finance and Trade*, **38**, 71–101.
- Neiss K. S. (2001) The markup and inflation: evidence in OECD countries, *Canadian Journal of Economics*, **34** 570–87.
- Richards, T. and Stevens, G. (1987) Estimating the inflationary effects of depreciation, Reserve Bank of Australia, Discussion Paper No. 8713.
- Şahinkaya, S. (1993) Sectoral labor productivity real wages and gross profit margins or mark-up rates in manufacturing industry (Turkey 1963–1988) (in Turkish), *Toplum ve Ekonomi*, No. 4.
- Simon J. (1999) Markups and inflation Department of Economics, *mimeo*, MIT.
- Tommassi M. (1994) The consequences of price instability on search markets: toward understanding the effects of inflation, *American Economic Review*, **84**, 1385–96.
- Yeldan, E. and Köse, A. (1999) An assessment of the Turkish labor market against its macroeconomics policies, in *The Burdens Related with Turkish Labor Markets and Policies* (Ed.) T. Bulutay, State Institute of Statistics, Ankara.
- Yentürk, N. and Onaran, Ö. (1999) Do wages stimulate investments? An analysis of the relationship between wages and investments in the Turkish manufacturing industry, Istanbul Technical University Discussion Papers in Management Engineering, No. 99/11 December.

**Appendix****Table A1. International standard industrial classification of all economic activities**

Manufacturing industry classification	
311	Food manufacturing
312	Manufacture of food products not elsewhere classified
313	Beverage industries
314	Tobacco manufactures
321	Manufacture of textiles
322	Manufacture of wearing apparel, except footwear
323	Manufacture of leather and products of leather leather substitutes and fur, except footwear and wearing apparel
324	Manufacture of footwear except vulcanize or moulded rubber of plastic footwear
331	Manufacture of wood and wood cork products, except furniture
332	Manufacture of furniture and fixtures, except primarily of metal
341	Manufacture of paper and paper products
342	Printing, publishing and allied industries
351	Manufacture of basic industrial chemicals
352	Manufacture of other chemical products
353	Petroleum refineries
354	Manufacture of miscellaneous products of petroleum and coal
355	Manufacture of rubber products
356	Manufacture of plastic products not elsewhere classified
361	Manufacture of pottery china and earthenware
362	Manufacture of manufacture of glass and glass products
369	Manufacture of other non-metallic mineral products
371	Iron and steel basic industries
372	Non-ferrous metal basic industries
381	Manufacture of fabricated metal products except machinery and equipment
382	Manufacture of machinery (except electrical)
383	Manufacture of electrical machinery apparatus repairing appliances and supplies
384	Manufacture of transport equipment
385	Manufacture of professional scientific measuring and photographic and optical goods
390	Other manufacturing industries

**Table A2. Classification based on the characteristics of the 29 sectors in 1980**

	Open sectors	Inward-looking sectors
Competitive sectors	312, 322, 381, 383	311, 321, 323, 331, 352, 356, 369
Imperfectly competitive sectors	351, 353, 382, 384, 385, 390	313, 314, 324, 332, 341, 342, 354, 355, 361, 362, 371, 372