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Özlem Onaran

March 2007

WORKINGPAPER SERIES

Number 132

POLITICAL ECONOMY RESEARCH INSTITUTE

Gordon Hall
418 North Pleasant Street
Amherst, MA 01002

Phone: 413.545.6355
Fax: 413.577.0261
peri@econs.umass.edu
www.peri.umass.edu

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Ozlem Onaran

Vienna University of Economics and Business Administration
and
Research Scholar of the Political Economy Research Institute

Vienna University of Economics and Business Administration

Dept. of Economics VWL 9

Nordbergstrasse 15

UZA4 3. Stock Kern D

A-1090 Vienna

Austria
Tel.: +43 1 31336 5821

Fax: + 43 1 31336 5835

Email: ozlem.onaran@wu-wien.ac.at

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Abstract

The aim of this paper is to analyze the changes in the wage share in manufacturing industry in Mexico, Turkey, and Korea in the era of globalization. The focus is on the one hand over the effects of globalization on the wage share, which are measured by the effects of international trade and FDI intensity of the economy. On the other hand, the process of opening up has been accompanied by major currency crises in most developing countries in the last decade, which has affected the wage share through exchange rate depreciation and economic recession. The paper develops a Post-Keynesian conflicting claims model for an open economy under the pressure of globalization, and an equation for the wage share is estimated for each country using Seemingly Unrelated Regression method. The results show that both recessions and nominal depreciations have a clear and lasting negative effect on the manufacturing wage share in all countries, whereas the effect of openness, in particular international trade depends on industrial policy structure. Increased export intensity leads to a decline the manufacturing wage share in Turkey and Mexico, but no significant effect in Korea. The positive expectations from FDI are also not materialized in any of the three countries.

Keywords
Labor's share, developing countries, trade, FDI, crisis

JEL
E240, E250, O150, O190

1. Introduction

The aim of this paper is to empirically analyze the effects of globalization on the wage share in three major developing countries, Mexico, Turkey, and Korea, which have gone through a substantial process of liberalization at the national as well as international level, although the starting point differs, ranging from early 1980s in the case of Turkey and Mexico, to the late 1980s in the case of Korea. These countries have an important share in world trade, and are representing a variety of development paths in the emerging markets, and are usually referred by the IMF as the successful examples of integration to the world economy. In spite of the differences in their former development policies as well as liberalization process, they also shared the common adversity of financial crises in the 1990s and 2000s, which followed the liberalization of capital accounts. In addition to discussing the effects of globalization on the wage share through the channels of international trade and foreign direct investment (FDI) flows, the paper will also address the effects of crisis on the process of income distribution, since increased financial fragility and risk of currency crisis have accompanied financial liberalization and globalization.

The issue of income distribution vs. globalization has attracted a wide variety of research as well as the attention of institutions like the IMF, World Bank, ILO, and UN. ILO has established the World Commission on the Social Dimension of Globalization and published the report on "A fair globalization: Creating opportunities for all" (2004). World Bank, after having promoted trade liberalization for two decades, in its 2005 World Development Report discusses that the aggregate effects of trade reform on income distribution are not always clear, and there are winners and

losers (World Bank, 2005); however the policy framework is defined as previously, focusing particularly on the areas of the labor market flexibility, infrastructure, and competition. The concerns regarding the links between globalization and income distribution have motivated three broad lines of research. The first focuses on individual income distribution, and consists of two contrasting positions: on the one hand are the researchers, who argue that the process of further economic liberalization at national as well as international level will reverse the trends (e.g. Dollar and Kraay, 2004). On the other hand are the researchers, who, quite on the contrary, see Washington Consensus-inspired policies as a reason for the increased inequality in the last two decades (eg. Cornia, 2004). The second line of research focuses on wage inequality and emphasizes the adverse effects of capital mobility as well as technological change on unskilled labor in both developed and developing countries, in a way contrary to the expectations of the traditional trade theory (eg. Feenstra and Hanson, 1997; Harrison and Hanson, 1999). The third line of research argues that not only individual or wage inequality are increasing, but also labor as a whole is losing ground to capital in both capital abundant developed and labor abundant developing countries (Lee and Jayadev, 2005; Harrison, 2002; Diwan, 2001; Rodrik, 1998; Haque, 2004; Griffin, 2003; Pollin, 2002; UNCTAD, 1997). It is this third group, where this paper takes place.

The studies by Rodrik (1998), Diwan (2001), Harrison (2002), Lee and Jayadev (2005), which are based on empirical tests of the effects of globalization on labor's share for a panel data of developed and developing countries, are of particular concern to our study, and point at some regularities about the falling trend in labor's share across countries. The secular fall of the labor's share is especially marked for

countries, which have experienced financial crises and large swings in the exchange rate (Diwan, 2001; Harrison, 2002; Lee and Jayadev, 2005). The absence of capital account restrictions is associated with a lower labor's share (Rodrik, 1998; Diwan, 2001; Harrison, 2002; Lee and Jayadev, 2005). Foreign direct investment and favorable conditions for capital inflow coincide with low wages (Harrison, 2002). The positive effects of increased capital accumulation are wiped out by the negative impact of reduced capital controls, depreciating exchange rates, and a dampening of the bargaining power of labor. Regarding trade, Rodrik (1998) and Harrison (2002) find a negative connection between the share of trade in GDP and labor's share; Diwan (2001) additionally argues that the negative impact is dominated by normal years, whereas during a crisis there is a positive effect.

The political economy approach emphasizes the asymmetry between the fall back options of capital vs. labor due to the increase in the mobility of capital, the consequent increase in the elasticity of labor demand, and the threat of capital to relocate or outsource as the major factors, which pressurizes the bargaining power of labor, and generates a distributional bias in the outcomes of globalization as well as the crises (Rodrik, 1998; Burke and Epstein, 2001; Crotty, et al. 1997; Harrison, 2002). While labor has to compete harder to attract capital, the increased international competitive pressures are making capital less willing to accommodate wage demands, both leading to a race to the bottom.

In order to test the effects of the various channels through which globalization and crisis may affect labor's share, this paper uses a Post-Keynesian conflicting claims model for an open economy, where distribution is determined via wage bargaining by

workers, price setting by firms, and improvements in productivity. A reduced form for the wage share is obtained from the model and is estimated using the Seemingly Unrelated Regression (SUR) technique. There are two sets of variables that affect income distribution: i) growth (or recession during a crisis) and currency shocks, which lead to inflation that is unexpected or non-reflected to wages, ii) the degree of interaction with the global economy through international trade and FDI, which may effect the bargaining power of labor, and lead to a downward shift of the distributional curve.

One feature that distinguishes this study from previous empirical work on the effect of globalization on distribution is that the time span of the previous work does not include the Asian crises of 1997, and the 2001 crisis in Turkey. Understanding the distributional impacts of the crisis is particularly important at this point in history, when short-term financial flows have once again led to shocks to local currencies in the emerging markets in the first half of 2006, and the stability of the economies are being threatened with a global turbulence and contagion effects in the financial markets.

A second feature of this paper is that it is based on country specific estimations, and takes into account the heterogeneity in the effects of globalization and crisis across countries. In addition to the focus on country specific factors, another reason for working with Korea, Mexico, and Turkey as representative cases of the major developing countries is data limitations regarding labor's share. An uninterrupted time series data for wages is unfortunately not available for many developing countries[1]. Due to further data limitations, which are discussed in Section 2, our analysis is based

on manufacturing industry. Working with the manufacturing industry in Korea, Mexico, and Turkey brings together the advantage of working with continuous and long time series data instead of unbalanced and short panel data, which does not allow for estimating country specific equations.

The rest of the paper is organized as follows: Section 2 discusses data related issues and Section 3 presents the stylized facts of the countries. Section 4 introduces a model of distribution, and Section 5 presents the estimation methodology and the results. Section 6 summarizes the conclusions.

2. Data Sources

The wage share data used in this study is the data on the manufacturing industry wages/value added supplied due to the problems associated with the quality of the nationwide wage data. The OECD National Accounts Database delivers estimations for the nationwide labor compensation data for Turkey and Mexico for the period of 1970-1988, when no aggregate wage statistic was reported in those countries. So rather than estimating a model based on estimated wage share, we conclude that the wage share data for the manufacturing industry is more reliable, offering longer time series based on firm level statistical surveys.

Also the changes in the aggregate wage share might be distorted by the structural change in these countries related with a shift from agriculture to industry and services, which might have reduced the number of self-employed, and increased the number of wage earners. We cannot correct this possible distortion for the whole time period of

1970-2003 due to the inexistence of data on self-employment as well as total employment vs. number of employees for earlier periods not even at aggregate level, let alone sectoral details.

Working with the manufacturing data on the other hand has the advantage of focusing on the locomotive sector of growth in developing countries, which has also been the engine of export booms. Compared to 1970 as of 2003 the share of manufacturing exports in merchandise exports increased from 32.5% to 81.5% in Mexico, and from a very low level of 8.9% to 84.5% in Turkey. The increase has been lower in Korea, who already started with a 76.7% share of manufacturing exports in merchandise exports in 1970, which nevertheless achieved an even high level of 92.7% in 2003. Manufacturing industry has also attracted a good deal of FDI inflows – ranging between 35.4% (in 1991) and 80.0% (in 1994) in Korea, 22.3% (2001) and 84.3% (1982) in Mexico, 24.0% (2003) and 94.8% (2000) in Turkey. As of 2003 the share of manufacturing value added in GDP is 26.4% in Korea, 18.0% in Mexico, and 20.0% in Turkey. In all countries the increasing trend in manufacturing share in value added was reversed in late 1980s. Currently manufacturing employment comprises 24.7% of total employment in Korea, and 11.1% in Mexico and 19.4% in Turkey.

Nevertheless the wage data in manufacturing industry is also not free of data quality problems, particularly regarding the international comparability of the data. There are two major reasons for that. First problem is about the definitions and data sources. The data source for Korea and Mexico is the OECD Industrial Structural Analysis Database (STAN) for the period of 1970-2003 for wages as well as employment and value added, however there is no data in STAN for Turkey, although it is a member of

the OECD, due to the lack of labor compensation data in Turkey based on a comparable methodology. STAN reports labor compensation data for Korea and Mexico[2], which consists of wages and salaries of employees as well as supplements such as contributions to social security, private pensions, health insurance, and similar schemes by the employers. This is the point where the comparability problem arises with Turkey, where the only source of wage data in Turkey that goes back to a date earlier than 1987 is on the manufacturing industry wage and salaries, which do not include the social security, pension contributions and the like payable by the employer[3]. This is one of the reasons why the wage share in value added for Turkey will be lower than that for Mexico and Korea[4].

Another important point that could account for the differences in the share of labor in value added is the share of self-employed in total employment. In both national account statistics and survey data all earnings of the self-employed are incorporated in the operating surplus of the firm, in spite of the fact that part of these earnings is labor income rather than profit income, and there are several methods for estimating the share of self-employment earnings that could be associated with labor income[5] (Gollin, 2002). In a country with a high share of waged or salaried employees in total employment, the measurement problem that could result from classifying self-employment earnings due to labor income as operating surplus will be low, and the labor share in value added will tend to be higher compared to countries with a lower share of employees in total employment. This partly explains the higher labor share in Korea, as will be seen in the figures in Section 3, where the share of employees in manufacturing industry is the highest among the three countries[6].

Following on these two problems about the international comparability of the labor share data, the discussion in Section 3 below will be based on the trends (%changes) through time within a country rather than cross country comparisons. In the following we will refer to labor's share in manufacturing industry for all countries simply as wage share.

Consistent with the choice of the manufacturing wage share as the indicator of distribution, we will use the value added in manufacturing, as well as the share of exports and imports in manufacturing value added. The data is supplied by the World Bank World Development Indicators (WDI).

In the case of FDI, the consistent approach is also to use the manufacturing FDI data; however the data for manufacturing FDI supplied by the OECD starts in 1981 for Mexico, 1985 for Korea, and 1992 for Turkey. For Turkey and Korea, the manufacturing FDI/value added and aggregate FDI/GDP (supplied by the WDI) are highly correlated, but for Mexico this is not the case. Therefore for Mexico we will use the manufacturing FDI, even if the time series is short. For Turkey and Korea the time series for manufacturing FDI is however too short; therefore we will check for robustness based on two specifications using both aggregate and manufacturing FDI, but both of these results have to be evaluated with caution.

3. Stylized Facts

First we will briefly discuss and compare the process of integration to the world economy in Mexico, Turkey, and Korea. Both Turkey and Mexico, reflecting the

general Latin American case, experienced a major structural change in the 1980s by shifting from an import substituting industrialization strategy to an export-oriented growth model via implementing an orthodox structural adjustment program, as typically prescribed by the IMF and the World Bank (see eg. for Mexico Blecker, 2006; Pacheco-Lopez and Thirlwall, 2004; Salas and Zepeda, 2003; for Turkey Boratav and Yeldan 2002; Metin-Özcan et al, 2001; Onaran and Yentürk, 2002). Pro-capital redistribution of income was a major tool of the export oriented strategy in both countries, where a drastic initial decline in the wage share moderated the competitive pressures over capital. However, contrary to the promises, after two decades of extensive liberalization the persistence of high unemployment goes hand in hand with lower labor costs in Turkey (Aydiner and Onaran, 2004), and in Mexico unemployment can be kept at a relatively lower level only due to the informal economy and the massive emigration to the United States since the 1990s (Blecker, 2006).

Both Mexico and Turkey have also been integrated to advanced countries through free trade agreements -the North American Free Trade Agreement with Canada and the United States for Mexico in 1994, and the Customs Union with the European Union in 1995 for Turkey. Mexico also had an intensive FDI-led integration with the regional economy, however this process has relied heavily on cheap labor, imports of inputs, and weak backward linkages to domestic supplier, and has done little to promote sustainable industrial development through spillover effects, industrial restructuring, job growth, and environmental improvements in Mexico overall (Gallagher and Zarsky, 2004; Blecker, 2006). This is also a call for lessons for Turkey, whose ability

to attract FDI has been recently remarkably increasing, due to the positive expectations regarding the EU accession process.

Finally both Mexico and Turkey experienced the first financial crises in the 1990s following the fragilities created by massive short-term capital inflows after the liberalization of capital accounts, Turkey in 1994 and Mexico in 1994-1995. As speculative and short-term capital inflows generated a fragile growth pattern, the capital inflows and additionally the pegged exchange rate regime in Mexico led to the appreciation of the local currency and high current account deficits in both countries, which then triggered a speculative capital outflow. Turkey repeated the former mistake of many other developing countries by adapting a currency peg in 2000, and had an even more severe crisis in 2001. Mexico faced another recession in 2001, followed by slow growth in the economy and further recession in manufacturing during 2002-03.

As opposed to Turkey and Mexico, in Korea the process of structural change and export-orientation was based neither on mere wage repression nor an unlimited deregulation of product and financial markets (Amsden, 1989). The state aimed at not only disciplining labor but also controlling capital, financial system, foreign trade regime, exchange rates and capital flows as part of its export-oriented growth strategy until late 1980s. As the country moved up the industrial ladder towards the production of capital and skill-intensive goods with investment, export, and growth rates significantly higher than the Latin American countries and Turkey, a sustained and predictable increase in wages in a conflict-controlled environment, rather than low wages has been important in maintaining high demand, high growth and high accumulation (Onaran and Stockhammer, 2005). However when the external

neoliberal forces, as well as the large domestic corporations pushed for deregulation, Korea had stages of liberalization from the late 1980s through the mid-1990s (Crotty and Lee, 2002). Exactly through this process of liberalization, Korea became increasingly more fragile, and finally after the crisis in Thailand in July 1997, financial outflows also hit the economy of Korea, which was praised by all international institutions even shortly before the Asian crisis, in a very similar way to Mexico and Turkey.

In the following, we discuss the developments in growth and distribution in Korea, Mexico, and Turkey. Table 1 reports the annual growth rate in GDP and manufacturing value added for sub-periods. A very striking fact is that the annual average growth rate of GDP is significantly lower and its variation (standard deviation/mean) is higher in the post-1980s than the 1970s, irrespective of the differences in the economic policies in all countries. The change is particularly pronounced in the case of manufacturing industry in Korea, which is also partly due to the very rapid rate of industrialization in the 1970s. Nevertheless, the rates of growth in Korea are remarkably higher than in Mexico and Turkey in all sub-periods, even after the slow down in the 1990s, although the trend deterioration in the growth performance is similar across countries. In Mexico, the big shock is in the first phase of liberalization in the 1980s –the so-called lost decade following the debt crisis. In spite of a slight recovery in the 1990s, the growth rates in both total economy and manufacturing are remarkably lower than the era of import substituting industrialization. In Turkey, aggregate growth in the first phase of liberalization is only slightly lower, and manufacturing growth is almost the same; indeed stagnation in growth had already started at the last two years of import substitution. But the era

of capital account liberalization marks a clear deterioration in the growth performance of manufacturing as well as the aggregate economy with much higher rates of variation.

<Table 1 approximately here>

The differences in economic policy are particularly reflected to the distributional outcomes of the countries, as can be seen in Figure 1. Mexico and Turkey experienced a significant decline in the manufacturing wage share, whereas Korea experienced an increase in the wage share. Table 2 shows the period averages for the wage share. Nevertheless, the crises following capital account liberalization have had very similar effects on the wage share in all three countries leading to a clear and long lasting decline.

<Figure 1 approximately here>

<Table 2 approximately here>

In addition to the decline in growth and bargaining power of workers during a crisis, inflationary shocks during these currency crises have set the stage for the decline in labor's share. Due to the import dependency of these countries, depreciation has a pass-through effect on prices, generating dramatic increases in inflation, albeit at lower rates than the nominal depreciation. These shocks are not only unexpected but also hard for the workers to reflect to their wages due to the magnitude of the shock. The depreciation rates had reached up to 90.2% in Mexico in 1994, and 169.5% and 96.0% in Turkey in 1994 and 2001 respectively. In Korea as well, the currency crisis

has resulted in a nominal depreciation rate of 47.3% in 1998. The outcome is a radical deterioration in the real wage, and consequently wage share during currency crises. Indeed similar episodes were also experienced during the early phases of opening up in Mexico and Turkey, which were accompanied by huge devaluations of the domestic currency with the aim of achieving higher international competitiveness.

Table 3 below summarizes the developments in the exchange rate and growth during these crisis episodes, and decomposes the sources of the decline in the wage share to its sources: i.e. changes in real wages and labor productivity, the latter also decomposed as changes in value added and employment. In Table 3 only the developments in the years when a recession is accompanied by a real depreciation of the currency are shown together with the two years following the crisis.

Table 3

The initial crisis year is always associated with a decline in the wage share, but the percentage decrease in the wage share by far exceeds the rate of decline in production during the crises. After a crisis, employers push labor unions to accept dramatic wage cuts or compulsory unpaid leaves to avoid job losses. Eventually profits are restored and when the crisis is long past, it is labor, which has carried the burden of adjustment. The crisis also creates a hysteresis effect that destroys the bargaining power of labor for a long period afterwards. Diwan (2001) defines crises as episodes of distributional fights, which leave "distributional scars". In all countries, a strong economic recovery took place right after the crisis, with production returning to its pre-crisis level within a year, however the fall in the wage share usually continued for two or even three years. In Mexico, which experienced the early crisis of 1994-1995, the wage share has declined 29.5% as of 1996 compared to 1993, and indeed has still

not returned to its pre-crisis level ten years after the crisis. The post 2001 recession in the manufacturing industry of Mexico has triggered a new declining trend in the wage share. In Turkey the cumulative decline in the wage share has been 24.8% and 32.2% following the 1994 and 2001 crises with the decline continuing for two and three years respectively. The slow recovery in the wage share in Turkey after the 1994 crisis is again reversed in 2001, and the wage share as of 2003 is even lower than its level in 1994. In Korea, the wage share has continued to decline for three years following the 1997 crisis, and was 21.6% lower in 1999 compared to 1996. In Korea as well the wage share has not returned back to its pre-crisis level in seven years after the crisis. In that respect, crisis has brought Korea closer to the cases of Mexico and Turkey, reversing the increasing trend[7].

The major source of the decline in the wage share during the crisis year is the decline in the real wage, which owes itself partly to the inflation shock due to depreciation and partly to a loss in the bargaining power due to lower employment. Employment declines also in all crisis years, except for 1980 in Turkey, when the crisis was associated with a military coup, which also banned lay-offs. In both Mexico and Turkey during all crisis years the decline in the real wage is much higher than the change in employment, the difference reaching rather dramatic levels during the 1995 Mexican and the 1994 and 2001 Turkey crises. This difference indicates that the wages adjust rather flexibly to changes in the labor market conditions. On the contrary during the Korean crisis, the adjustment in employment exceeds that in real wages quite significantly. In Korea the decline in employment also exceeded that in value added, leading to productivity increases. Thus the decline in the wage share during the 1998 recession in Korea is associated with both real wage declines and productivity

increases. In Mexico both 1982 and 1995 are episodes of stagnant productivity (comparable declines in employment and value added), thus the decline in the wage share is solely resulting from real wage declines. In the cases of crises of Turkey, both productivity and real wages decline, with the decline in the latter being significantly higher. Following the crisis years, both productivity (other than 1983 in Mexico) and employment recover (except for the post-2001 jobless recovery in Turkey). However real wages continue to decline for two more years after the crisis in both Mexico and Turkey (except for the 1981 recovery in wages after the military coup of 1980). The following rate of decline in real wages is also quite high particularly following the 1995 Mexican and 1994 and 2001 Turkish crises.

Apart from the crisis episodes, the recovery in the wage share is also very weak and one of the challenging aspects of these developments for the traditional expectations from trade liberalization is that particularly Mexico and Turkey have extensively opened up their economies in the 1980s, and have experienced a literal boom in manufacturing exports first in the 1980s, and then further in the 1990s following the free trade agreements. Table 4 shows the exports and imports as a ratio to manufacturing value added. The increase in exports has also been followed by a significant increase in imports as a result of a reduction in tariffs. The trade deficit in manufacturing in Turkey, which was already very high during the import substitution era, decreased during the first phase of liberalization, but then increased remarkably in the 1990s due to the appreciated exchange rate as well as the Customs Union in 1995 with the EU. Mexico's trade deficit increased after the liberalization of trade, but there has been some recovery after NAFTA due to increased outsourcing. Korea on the other hand started with much higher rates of exports as well as imports in the 1970s

due to its mixed trade regime dating back to 1960s, and has managed to improve its export performance in the 1980s, which slightly slowed down in the 1990s. In the 1980s import dependency of Korea decreased also to some extent. Korea has had a trade surplus in manufacturing early on, which increased remarkably in the 1980s, but somewhat deteriorated in the 1990s.

FDI inflow also increased remarkably in the 1990s in all three countries in both aggregate economy and manufacturing, with the intensity of FDI to value added ratio being higher in the manufacturing industry, as can be seen in Table 5. Mexico has had a much higher intensity of FDI due to both NAFTA and its border to the US. In particular in Korea after 1997 crisis, but also in Turkey after 2001 crisis, there has been significant inflows of FDI, which was facilitated both by a political push for privatization or deregulation, and with high rates of depreciation of the local currency, which had led to a dramatic decline in asset prices.

4. A model of distribution

The model of distribution presented here has the nature of a Post-Keynesian conflicting claims model (eg. Rowthorn, 1977; Arestis, 1986), that explains the change in labor costs and the inflationary process as an outcome of bargaining in the labor market, which gives rise to a conflict of interest between labor and capital, quite different from the neoclassical model, where technology and preferences determine the relative returns to the factors of production. We incorporate to this model the effects of globalization, which may increase the distributional conflicts, for a given

level of economic activity, i.e. result in a downward shift of the wage bargaining and distribution curve.

The aspirations and the bargaining power of the workers determine the wage setting process in the labor market. The workers bargain for a nominal wage per worker, w, given the expected price level, p^e, and the expected productivity, $prod^e$. The bargaining power of workers depends on the labor market conditions, reflected by the rate of employment (employment/labor force), E/N, as well as the macroeconomic environment. For convenience of presentation, we define a vector of international variables, global, and discuss them, once the basic reduced form of the wage share has been derived. Then w (wage in logarithms) can be written as follows:

$$w_t = b_0 + b_1 e_t - b_1 n_t + b_2\, global + p_t^e + prod_t^e \qquad (1)$$

where all variables are in logarithms and all coefficients are positive numbers.

Employment, e, is determined via labor demand, which is a positive function of output, y, and a negative function of the real unit labor cost, which is the share of labor in output, ws, and there is a certain hysteresis effect from lagged employment, i.e. lag of y and ws. This is a general form; whether the labor costs have a significant effect on employment is an empirical question.

$$e_t = e_0 + e_1 y_t + e_2 y_{t-1} - e_3 ws_t - e_4 ws_{t-1} \qquad (2)$$

The expectations for price and productivity reflect imperfect foresight:

$$p_t^e = a \cdot p_{t-1} + b \cdot p_t \qquad (3)$$

and

$$prod_t^e = s \cdot prod_{t-1} + w \cdot prod_t \qquad (4)$$

The coefficients, a, ß, s, ? , not only depend on the formation of the expectations, but also the bargaining power of the workers. In particular, if a+ß<1, and s+?<1, then wages are imperfectly indexed to inflation and productivity.

Prices are set as a mark-up over variable costs by the firms in a Kaleckian spirit. Variable costs include the cost of labor, and domestic and imported inputs, as developed by Sylos-Labini (1979). Linearizing, and simplifying, price, p, (in logarithms) is equal to 1+mark-up rate, m, determined by the oligopolistic power of the firms, plus the unit labor cost, represented by the wage share, ws, and a pass through effect from the current and past value of the exchange rate, x, which in turn depends on the degree of import dependence as well as the mark-up power of the firms (which are jointly reflected in the coefficients i_1 and i_2 below):

$$p_t = m + \Phi ws_t + i_1 x_t + i_2 x_{t-1} \qquad (5)\ ^{8}$$

Productivity (in logarithms) on the other hand is by definition output, y, minus total employment, i.e. the sum of the number of production and non-production employees. The presence of fixed employees makes productivity an increasing function of output:

$$prod_t = (1+d)\, y_t - e_t \qquad (6)$$

The actual wage share (in logarithms) is by definition bargained wage minus actual price minus actual productivity:

$$ws_t = w_t - p_t - prod_t \qquad (7)$$

Substituting equations (1), (2), (3), (4), (5) into (7), we get the reduced form for the wage share:

$$ws_t = l_0 + l_1 y_t + l_2 y_{t-1} + l_3 ws_{t-1} - \frac{(1-b)i_1}{j} x_t - \frac{((1-b)i_2 - a i_1)}{j} x_{t-1} - \frac{b_1}{j} n_t + \frac{b_2}{j} global$$

(7a)

where the signs of l_0, l_1, l_2, l_3 are ambiguous, and j is a positive coefficient[9]. The constant term reflects exogenous effects of the mark-up level, bargaining and employment factors. At the estimation stage, changes in these variables will show up in the error term.

The effect of current output on the wage share will depend on the relative magnitudes of the positive bargaining effect via labor demand and the negative effect via an unexpected or not reflected increase in productivity. Thus the wage share can have a counter or pro-cyclical pattern, depending on these effects. If the labor/output coefficient is high, if wages are sensitive to labor market conditions, and if productivity gains are reflected relatively quickly to wages, then the wage share would be pro-cyclical. We can call the latter two conditions as mutual wage flexibility. Thus the higher the labor/output ratio is, and the more mutually flexible wages are, the more pro-cyclical will be the wage share. The effect of lagged growth on the wage share, on the other hand, depends on the positive bargaining effect via lagged labor demand, and the lagged productivity effect.

The effect of the lag of the wage share reflects whether a distributional shock is persistent. It will depend on the relative magnitude of the bargaining effect via increased labor demand effect of the previous decrease in labor costs, the effect via

the productivity increase in the current period, and the effect from past inflation and past productivity. If past labor costs are not effective on employment, a shock to distribution will persist.

Finally, the current value of the exchange rate is expected to have a negative effect on the wage share through its effect on current inflation. The magnitude of the effect depends on the import dependency of the economy, the ability of the firms to reflect import price changes to consumers, and the inability of the workers to index wages to inflation. This coefficient will capture the effect of currency crisis on distribution. The coefficient of the lag of the exchange rate will be ambiguous depending on the relative magnitude of the negative effect through its effect on current price, and the positive effect through the indexation of wages to past inflation. If the absolute values of the coefficients are close to each other, this can also be interpreted as reflecting unexpected inflation generated by unexpected depreciation, i.e. the change in depreciation rate.

The effects of all the explanatory variables will be higher in absolute value the lower the value of j is, i.e. the lower the effect of labor costs on employment, and the higher the degree of indexation to current price level is.

Next we specify the role of integration to the global economy, i.e. international trade and FDI, on the wage bargaining process. Obviously the changes in these variables affect effective demand, and consequently employment. However, they may also have further effects on the bargaining power of workers for a given level of economic activity due to the change in the intensity of competition.

In contrast to previous studies, which only discuss the effect of the volume of trade (exports+imports/GDP), this study will analyze the effect of international trade components separately, and test also the possible differences in the effect of export demand and import penetration. The traditional trade theory, based on Heckscher-Ohlin and Stolper-Samuelson theorems, expects a positive effect of an increase in the trade intensity of production (export/output and import/output) on the wage share (through both wage and employment effects) due to the increased labor intensity of production in developing countries with a comparative advantage in labor intensive industries in the long run (Krugman and Obstfeld, 1994; Krueger, 1983). Although it is suggested that in the short run the immobility of sector-specific capital may prevent the optimal reallocation of production across sectors, and thereby may result in a decline in the wage share, this is perceived as a temporary phenomena (Edwards, 1988; Milner and Wright, 1998). In versions of the traditional trade theory that distinguish between skilled vs. unskilled labor, the expectation is that the wage of the unskilled workers will increase as a result of openness, and that of the skilled workers will decrease in the long run, and since developing countries have relatively abundant unskilled labor, the implication of that for the aggregate wage share is an increase. However, according to the political economy approach export oriented policies have usually been accompanied by a shift in the balance of power relations in favor of capital via the deregulation of the labor market,[10] and an increase in the threat effects associated with international capital mobility and outsourcing, which has led to labor disciplining effects, and has transferred the pressure of international competition from capital to labor (Burke and Epstein, 2001; Rodrik, 1998). If that is the case, then openness would lead to a downward shift of the distribution curve. However in the

case of imports there may be an additional mechanism at work: since these countries are highly import dependent, imported goods are not necessarily the substitutes of domestically produced goods, and if imported goods are complementary to labor, in the negative effect will not be observed.

Regarding the within wage distributional impacts, there is also a critique directed to the traditional trade theory, which quite on the contrary expects an increase in the wage bill of the skilled labor with respect to the unskilled labor. The explanation is based on empirical evidence, particularly in the case of Mexico, where increased international competition, the pressure for technological change, and FDI inflow from the US has adversely affected the relative demand for unskilled labor, and increased the skill bias of production (Feenstra and Hanson, 1997; Harrison and Hanson, 1999). Again if unskilled labor dominates the labor force, this would then correspond to a decline in the aggregate wage share, with increased inequality among wage earners as well as between labor and capital. While this literature mostly focuses on the skill bias, it may additionally be the case that internationalization of production increases the capital intensity of production, because of the available technologies as well as international competition. The effort of firms to increase productivity through labor saving may also contribute to an increased capital intensity of production. Ghosh (2006) argues that as an outcome of globalization of production labor saving technological change becomes a common feature in the North and the South alike, despite low wages in the latter, and the output elasticity of employment is decreasing in the majority of the successful exporters among the developing countries. If the resulting productivity gains of technological change can not be reflected to wages,

wages and the wage share will be adversely affected, not only for the unskilled, but also skilled workers.

In the case of FDI, the positive expectation is again that an increase in FDI will not only increase the demand for labor, but that an increase in the ratio of FDI to GDP will create positive effects on the wage share through the transfer of more productive technology and better working relations in the firms with foreign capital. However, obviously, the nature of FDI, whether it is in the form of greenfield FDI, which creates new production capacity, or brownfield FDI, which involves mergers and acquisitions, matters in the realization of the expected positive spill over effects. If FDI is mostly through mergers and acquisitions, rather than a genuine interest in long term investment, then the increase in the pressure on the firm through shareholder valuation can lead to further conflicts in the bargaining process. Also the employment effects of FDI may be negative through the downsizing of the plant in this case. Second, even when the positive firm level effects of FDI are realized, the spill-over effects can be quite limited, which may lead to a dual economy, without any major positive effects on economy wide competitiveness, employment, and wages (Mencinger, 2003; Gallagher and Zarsky, 2004). Furthermore FDI can also have destructive effects on small capital, which on the one hand decreases the bargaining power of labor in these firms further, and on the other hand destroys jobs in the small domestic firms, which cannot compete anymore. Gosh (2006) argues that the process of relocation of production to the South has been part of a broader process of national and international concentration and centralization of production, which increases the competitive pressures on domestic small firms as well as large firms. In this case FDI can favor a particular group of skilled labor, while the unskilled labor's wage bill as

well as the aggregate wage share decline. Third, if FDI is efficiency seeking rather than market seeking, and low labor costs are one of the major factors that attract FDI, the threat of capital flight in the event of a reversal of this relative labor cost advantage may generate a significant downward pressure on wages as the share of FDI exposure of the economy increases, generating a race to the bottom. To sum up, if FDI is mostly in the form of greenfield investment, market seeking, and have strong backward linkages to the domestic economy, the effect on the wage share may be positive; otherwise a negative effect is expected according to the political economy arguments.

5. Estimation Results

The reduced form of the wage share derived in section 4 forms the basis of the empirical estimation. This reduced form is particularly useful for technical problems related to the endogeneity of price and employment in a wage equation. Due to the problem of endogeneity in the case of exports, imports and FDI, the first lags of these variables are used. Using a lag is also convenient, while it can be argued that these variables would effect distribution only through time.

We estimate the model in difference form, due to the existence of unit root not only in the value added and exchange rate, but also in the wage share and the export and import ratios. FDI inflow/value added ratio is stationary for all countries; therefore it will be used in level form[11].

In terms of the lag structures, according to the traditional trade theory, the relationship between the wage share and the export and import ratios are rather a long term relation, and it is accepted that in the short run capital immobility can lead to deterioration in the wage share. Econometrically, this translates into testing the cointegrating relationship between three I(1) variables, and the Johansen tests also support the existence of a cointegrating vector among the levels of the wage share, and the export and import ratios [12]. Therefore, we will estimate the change in the wage share via an error correction model (ECM) with the lagged differences as well as the levels of the import and export ratios and the lagged level of the wage share as the explanatory variables. While the differences of the export and import ratios reflect short-run effects, the levels will show the long-run effects. For robustness check, we will also estimate short-run relations with only the differences of the variables. Regarding the other I(1) variables, value added and the exchange rate, the Johansen test results do not indicate a cointegrating relationship with the wage share; this also makes intuitively sense, since the wage share is a ratio, whereas real value added as well as the nominal exchange rate are unbounded variables. Finally, in order to check the robustness of the form of the equation to be estimated, autoregressive distributed lag models are estimated, which also suggest the use of the difference of value added and the exchange rate, level of FDI inflow ratio, and an ECM for the export and import ratios.

The labor force growth rate has been dropped from the model in order to gain degrees of freedom, since it was insignificant and did not affect the other coefficients. Besides, long time series data does not exist for the labor force in urban areas, which could represent the manufacturing labor force.

Unlike previous empirical work (Rodrik, 1998; Diwan, 2001; Harrison, 2002; Lee and Jayadev, 2005), which relies on pooled panel data estimations for all countries or sub-groups of countries based on income groups or regional entities, this study is based on separate estimations for each country. The advantage is to have heterogeneous coefficients of the explanatory variables and constant terms across countries, as opposed to pooled panel data estimations, which has the disadvantage of imposing cross-country homogeneity in the coefficients of explanatory variables, and all the cross-country differences are captured only by a country specific fixed effect. As we will see below, if the differences in economic policy among the countries matter, imposing coefficient homogeneity may deliver an average value of significant and insignificant coefficients with opposite signs. Also if the variables are not strictly comparable across countries due to statistical measurement problems or methodological differences, than the advantage of panel data estimation in terms incorporating cross-country differences may even turn into a further disadvantage.

The estimation technique used in this study is the Seemingly Unrelated Regression (SUR) model. This methodology also allows for common international shocks not captured by the country-specific explanatory variables, eg. an international crisis like the Asian crisis, to have effects on the dependent variable via the correlation of the country-specific residuals.

The advantage of accounting for cross-country differences comes, however, with the disadvantage of low degrees of freedom, which limits the number of explanatory variables that can be simultaneously included in the regression. A joint factor could be

constructed based on the globalization variables; however in order to have a transparent account of the significance of the variables, they will be kept as separate variables. This is also convenient, since the time period when the trade and FDI data are availability do not match.

First we discuss the results of the basic model without the globalization variables, where the logarithmic change in the wage share in manufacturing is estimated as a function of the current and lagged values of growth in manufacturing value added and the nominal depreciation rate. Table 6a shows the results of this regression[13]. The wage share does not have any cyclical behavior (at conventional levels of significance) with respect to the current value of growth in any of the countries, and the lag of growth is positively significant only in Mexico. On the other hand, nominal depreciation has the expected negative significant effect on the wage share in all countries, and the lag of nominal depreciation is insignificant. The economic significance of the negative effect of depreciation is also relevant, ranging between -0.14 in Mexico to -0.27 in Turkey. The lagged value of the wage share is significant and positive in all countries. The results are robust to the exclusion of the insignificant lags.

<Table 6a and b approximately here>

The insignificance of the growth effects suggests an important question concerning the robustness of these results, i.e. whether there is a change in the cyclical pattern of distribution over time. There seems to be no statistically significant break in this relation in the post-1980s[14]. However, there could also be a shift in the cyclical

behavior of the wage share during the crisis periods. To address this question, a slope and intercept dummy has been included for growth during recession years. The results are in Table 6b. The Wald tests for the joint significance of the summation of the coefficients of the growth and the recession slope dummy are reported at the end of the Table. We find that the wage share is pro-cyclical during a crisis in all countries. During a normal year the wage share has no cyclical pattern in Korea and Mexico, whereas in Turkey the wage share is counter-cyclical during normal years; thus, the wage share decreases in good years, as well as in years when the economy is contracting. The recession intercept dummy on the other hand is significant only in Korea, where it is positive, but the slope and intercept effects of a recession together still indicate that a 1% decrease in production leads to a 1.2% decrease in the wage share. The effects are much stronger in Turkey and Mexico. Korea has experienced very few recession years; nevertheless the results are also robust when high vs. low growth years are differentiated instead of recession vs. growth years. Overall the robustness of the findings continues when other variables are also added to the model, as will be discussed below. The counter-cyclicality of the wage share in Turkey, or the insignificant response of wages to growth in Korea and Mexico may be due to a low employment effect of growth, a low responsiveness of wages to favorable labor market conditions and productivity gains. On the contrary, the pro-cyclical behavior of wages during a recession may be due to a highly negative employment effect of recession and high flexibility of wages with respect to adverse employment and productivity shocks.

These findings are different from those of Diwan (2001), who performs separate estimations for crisis and non-crisis years for a panel of countries, and argues that

labor's share is pro-cyclical during non-crisis years and counter-cyclical during crisis years. This difference might be due to pooling a heterogeneous group of countries (even in the sub-sample of poor vs. rich countries), or defining the crisis based on a nominal depreciation rate greater than 25% rather than on recession years[15], and dividing the time series, rather than comparing the coefficient shifts within the data. Finally an econometric problem exists in Diwan's estimations, where both the wage share and GDP (per capita) are used in levels. Both wage share and GDP has a unit root, however it is not straightforward that these two variables are cointegrated in all countries. These technical issues are not discussed in Diwan's paper. Moreover cointegration is a long run relation, and it is not very useful to talk about the long-run relation between these two variables during normal vs. crisis years; the crisis is a short-run shock and its effect can be observed via the short-run relation (the effect of the change in GDP on the change in the wage share) during a crisis year. To check for the robustness of our estimations, we also estimated an ECM for the basic model, and we do not find a statistically significant and robust long-run relation between growth and the wage share, whereas the short term pro-cyclical coefficient of growth remains to be robust in the ECM estimations for all countries[16].

If we interpret these results for a crisis year, the cause of the decline in the wage share during a crisis is explained by the dramatic rates of depreciation as well as the decline in production. The persistence of the initial decline in the wage share is related to the lagged effect from the wage share itself. Thus the fall in labor costs during the recession year does not have strong employment effects afterwards. In Mexico, the lagged growth is also significant. Again in Mexico, the lag of the nominal depreciation is positively significant, indicating that the change in the nominal

depreciation rate is the source of the shock on wages through the generation of unexpected inflation.

In the remainder of the empirical analysis, the results of the globalization variables are reported based on the specifications with the recession intercept and slope dummies, and the robustness of the results are also reported for the cases without the dummies.

To test the effects of openness on the wage share, we estimate both an ECM model and a short-run relation based on differences. The ECM is estimated in the following form:

$$\Delta ws_t = b_0 + b_{1i}\Sigma_{i=0,1}\Delta y_{t-i} + b_{2i}\Sigma_{i=0,1}\Delta x_{t-i} + b_3\Delta ws_{t-1} + b_4\Delta exp_t + b_5\Delta imp_t + b_6 ws_{t-1} + b_7 exp_{t-1} + b_8 imp_{t-1} \quad \text{Eq (8)}$$

where exp and imp are export and imports as a ratio to value added, and all variables are in logarithms. The long run effect of export/output on the wage share is $a_1 = b_7/-b_6$ and of import/output is $a_2 = b_8/-b_6$, and $ws_{t-1} = a_1 * exp_{t-1} + a_2 * imp_{t-1}$ represents the long-run relationship. Stability requires that the speed of adjustment coefficient, b6, is negative.

Table 7a reports the results of the ECM estimations. In all three countries there is no significant short-run export or import effect (with b_4 and b_5 being statistically zero). But in the long run, in Mexico and Turkey the cointegrating relation between export ratio and the wage share is significant, however with an opposite sign according to the traditional trade theory. An increase in the export intensity of the economy has a

negative effect on the wage share in the long run, and the effect is economically significant: -0.20 in Mexico and -0.27 in Turkey. In Korea, the long run effects of exports are also insignificant. Finally in all countries imports are insignificant in the long run as well, indicating that imports are not a substitute for domestic production, and thus exert no negative competitive pressures over labor. The results are robust, even when we do not control for the nominal depreciation or even growth, lagged variables, or the recession dummies. The results for exports and imports are also robust to the exclusion of the other trade component. The coefficients of nominal depreciation and the recession effects are robust with respect to the basic specification as well.

<Table 7a and 7b approximately here>

To test for robustness, Table 7b reports the results for the short run estimations with only the differences of the variables as the explanatory variable. In this case, the short run coefficients for Mexico and Turkey are significant, but the economic significance of the coefficient for Mexico is rather small.

Finally alternative estimation methods are also used to check the robustness of the results. As an alternative to ECM, a vector error correction model (VECM) is estimated. Instead of the single equation based ECM, VECM estimates a system of ECM equations for all the variables, which are argued to be endogenously related (in our case wage share, export and import shares) in the form of a vector autoregression model (VAR). However VECM comes with the cost of leaving out the SUR method that was utilized in the single equation ECM estimations, where error terms were correlated across countries. The results of the VECM are nevertheless very similar to

the ECM results[17]. Indeed the issue of endogeneity is not discussed in most of the ECM estimations, rather the interpretation of the cointegrating relation is made according to theory or the direction of causality between the variables based on Granger causality tests. In this case, the Granger causality tests suggest that exports cause the wage share in Turkey and Mexico rather than vice-versa, and there is no causal relationship between wage share and imports[18]. These are consistent with the interpretation made above based on the ECM results in Table 7a. In Korea there is no causal relation between exports and the wage share, but there is two way causality between imports and the wage share according to the Granger causality results; however the ECM results do not verify a significant causal relationship between these two variables. Finally as a third test to check the robustness of the results, the short run estimation is repeated using instrumental variables approach[19]. However due to the limited degrees of freedom, all variables including the exogenous variables turn into insignificant variables. Furthermore, given the significance of the cointegration relationship, it is preferable to base the discussion on long run relationship rather than the short run.

As a result, we can conclude that the export boom in manufacturing has had a negative effect on the wage share in Mexico and Turkey. Thus, the negative bargaining effects of increased export intensity dominate its supposedly positive demand effects. These results are also consistent with the explanations based on technology bias in production due to openness. Moreover the former comparative advantages of the middle income countries like Mexico and Turkey in the low skilled labor intensive products are being significantly challenged by the entry of the lower wage countries like China and India into the world trade markets. However even in Korea exports fail

to deliver the expected positive effects, but the existence of industrial policy and reliance on new investments and productivity increases as well as specialization in more skilled and higher value added industries at least prevents the negative competitive pressures over wages.

In the case of FDI, we report two specifications: In Table 8a manufacturing FDI/value added is used for Mexico, and aggregate FDI/GDP for Korea and Turkey. According to these results FDI has a statistically significant negative effect on the wage share in Mexico, but the economic significance of the effect is small (a 1% increase in FDI inflow/value added leading to a 0.05% decrease in the manufacturing wage share). For Korea and Turkey it is not possible to verify either the wage dumping effect or the promised positive effect. However, the effect turns to negative for Turkey, when manufacturing FDI/value added is used (which unfortunately can be estimated only for the very short period of 1993-2003), and the effect is economically also significant, but must be evaluated with caution due to limited degrees of freedom. The results for this specification, where for all countries manufacturing FDI/value added is used, are in Table 8b. Due to the limited degrees of freedom, the lags of growth, exchange rate, and the recession dummies are excluded. The results in both Table 8a and 8b are robust with respect to the use of two lags of FDI as well as the exclusion of growth and nominal depreciation, or insignificant lags.

<Table 8a and 8b approximately here>

Finally to test the robustness of the results, the estimation in Table 8a is repeated using a three stage least squares method with instrumental variables[20]. The insignificance of

FDI stayed robust for Turkey and Korea, but it also turned to be insignificant in the case of Mexico. Given that the economic significance of the negative (and statistically significant) effect of FDI is also low (according to the results in Table 8a), it makes sense to express the common result of the two different methods for Mexico as evidence of the lack of a positive effect of FDI on the wage share.

The results about FDI for Mexico are nevertheless interesting, because they indicate that the low wage strategy of attracting FDI in Mexico did not create any positive effects on the wage share in manufacturing. Although 72% of FDI in Mexico is greenfield investment (Gallagher and Zarsky, 2004), the positive possible effects of this is overshadowed with the efficiency seeking character of FDI, the low integration to the local market, and the threat effects of capital flight. The results for Turkey and Korea also do not indicate any positive spill over effects from FDI to the manufacturing wage share. However the FDI inflow to these countries is also much lower, and usually coincides with the crisis and post-crisis episodes of the late 1990s and 2000s, when there was a major change in the terms of bargaining at the expense of labor.

Although these results are country specific, and are not directly comparable with the panel data results of the previous empirical work, a comparison is indicative to see how they match up to the general trends. The results on the effect of nominal depreciation and foreign trade (for the case of Mexico and Turkey) are consistent with Lee and Jayadev (2005), Harrison (2002), and Rodrik (1998). Compared to Diwan (2001), the results regarding the effect of nominal depreciation is also consistent, but results on the effect of foreign trade differ from Diwan's findings (2001), who reports

that the negative impact of trade on labor is dominated by normal years, whereas there is a positive effect during a crisis. However, his estimation method does not take into account the problem of endogeneity between exports and labor costs, as well as time series properties. Most of all our results for trade effects indicate the importance of country specific factors regarding industrial policy. Also exports and imports have different effects, rather than trade volume playing a uniform role. In the case of FDI, the results indicating a low negative or insignificant effect for Mexico, mixed evidence for Turkey, and no effect in Korea, do not completely correspond to the significant negative effect in Harrison (2002), which might be related to the use of panel data, as well as problems with endogeneity, i.e. an inverse causation. Although our results must be interpreted with caution, the importance of country differences must be considered.

6. Conclusion

This paper has discussed the effect of globalization and crisis on the wage share in Korea, Mexico, and Turkey based on a Post-Keynesian model of distribution that has been estimated for the manufacturing industry. The crises of the post-1990s have had a clear and lasting negative effect on the manufacturing wage share in all countries, whereas the effect of openness, in particular international trade depends on industrial policy structure.

Regarding the effects of the crisis, in all three countries, production recovered strongly a year after the crisis, but the decline in the wage share has been much more persistent. Interestingly enough, although the wage share does not reflect a clear

cyclical pattern in Mexico and Korea during the normal years, it is pro-cyclical during a crisis in all three countries. Thus, although the wage share does not respond to growth in good years, it decreases as the economy contracts. Moreover in Turkey, the wage share is counter-cyclical during the normal years, but pro-cyclical during the crisis, where capital gets the benefits of growth and labor the burden of the crisis.

The depreciation of the local currency, either through the official devaluations of the early stages of liberalization or after the financial crises, has also a significant negative effect on the wage share in all three countries. Dramatic depreciations generate inflation shocks, which are both unexpected and not reflected to wages under the intense conditions of the distributional struggle during episodes of crisis.

The positive expectations of the traditional trade theory regarding the effects of openness on the wage share, which shaped the structural adjustment programs, have also not been observed. Quite on the contrary, in both Mexico and Turkey exports, increased exposure to the global markets has intensified the conflicts in the bargaining process and resulted in negative pressures on the wage share in the manufacturing industry. In Korea, the active industrial policy of the state, which has facilitated a continuous improvement in international competitiveness based on new investment and productivity increases, has alleviated the negative pressures on wages due to the increased international competition.

In the case of FDI, there is no evidence of a positive effect on the manufacturing wage share. In Mexico the high inflow of capital, particularly after NAFTA might even have a negative, albeit low effect on the wage share. The lack of positive FDI effects

is related to the dominance of the efficiency seeking FDI with low domestic backward linkages, even if it is mostly greenfield investment. There is also some evidence of a negative effect of manufacturing FDI on the wage share in Turkey, but the results need to be interpreted cautiously due to the limited time series data. In Korea, the wage share is not affected by FDI. But it is fair to conclude that attracting FDI at all costs does not seem to be a positive strategy, particularly in terms of labor's share.

Since the empirical results are limited to manufacturing industry only, some final remarks on the implications of these results for the aggregate economy is in place here. First, it is true that manufacturing industry is expected to be affected more intensely by the increase in openness to trade compared to the non-tradable sectors; however both in tradable and non-tradable sectors the effects of globalization through capital mobility and FDI flows might be more similar. Second, manufacturing industry is representing the relatively more organized segments of the labor market, and plays the role of a wage setting leader for the other sectors. So we could expect the trends in other sectors to be similar, if not experiencing further deterioration. Particularly regarding the effects of the general slow down in aggregate growth as well crisis episodes, the affects on less organized non-manufacturing sectors can be more severe, given that wage inequality is increasing even within manufacturing industry (Galbraith et al, 2000).

The findings about the manufacturing industry in three major developing countries show that the process of globalization has not been able to deliver its promises to labor. In the absence of a trade policy designed based on industrial development priorities and incomes policy, the increased global competitive pressures are being

shifted onto labor. Moreover the increased frequency of crisis in the global economy leads to a persistent deterioration in the share of wages in income. Dependence on global export markets and the destructive effects of speculative capital flows make it also harder for countries to preserve a stable development path. In order to be able to realize the possible benefits of international demand, and generate a not only sustainable but also egalitarian industrial restructuring, a combination of industrial and trade policy as well as incomes policy is required. These outcomes call for an alternative macroeconomic policy framework and new global institutions to provide the proper conditions for such policies.

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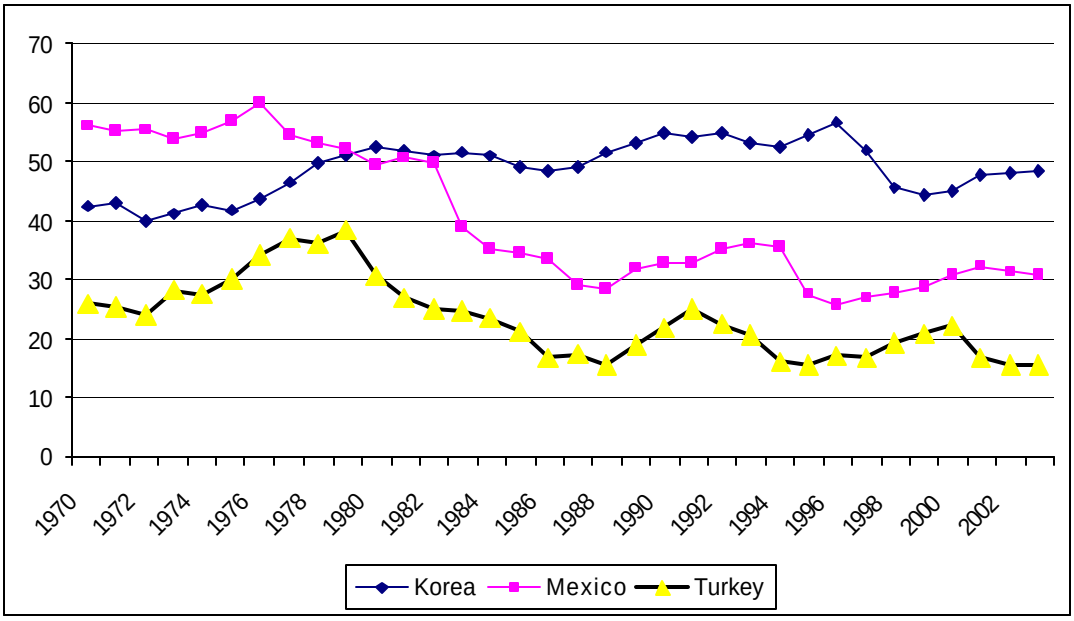
Table 1: Growth % (annual average)

		in GDP			in manufacturing value added		
		Korea	Mexico	Turkey	Korea	Mexico	Turkey
1970-79	Mean	8.29	6.43	4.70	18.66	6.44	6.11
	Variation	0.28	0.34	0.68	0.35	0.45	0.93
1980-89	Mean	7.68	2.29	4.08	11.02	2.17	6.29
	Variation	0.49	1.97	0.85	0.65	2.52	0.88
1990-03	Mean	6.06	3.01	3.75	7.66	3.26	4.65
	Variation	0.71	1.12	1.51	0.91	1.52	1.44
1980-03	Mean	6.74	2.71	3.88	9.06	2.80	5.34
	Variation	0.60	1.41	1.23	0.78	1.82	1.15

Source: World Bank World Development Indicators

Note: Variation=standard deviation/mean

Figure 1: Wage /Value added in Manufacturing Industry, % (1970 -2003)



Source: As in Table 1.

Table 2: Wage share in manufacturing value added

	Korea	Mexico	Turkey
1970-79	44.18	55.21	30.71
1980-89	50.91	38.20	22.08
1990-03	50.90	31.01	19.00
1980-03	50.90	34.01	20.29

Source: As in Figure 1.

Table 3: The sources of the change in the wage share during a crisis

	Annual % change in						
	Exchange rate (local currency/$)	Real exchange rate (local currency/$)	Real value added	Wage share (Wage bill / value added)	Real wage per worker (deflated by CPI)	Employment	Productivity (Real value added / employment)
Korea							
1998	47.32	37.02	-7.90	-12.58	-2.10	-13.74	6.78
1999	-15.17	-15.86	21.77	-2.48	4.92	2.24	19.11
2000	-4.87	-6.97	16.98	1.45	5.65	6.80	9.53
Mexico							
1982	130.07	44.77	-2.74	-1.60	-3.16	-2.04	-0.72
1983	112.93	5.53	-7.84	-21.74	-22.46	-7.13	-0.76
1984	39.75	-15.58	5.01	-9.63	-6.15	2.07	2.89
1995	90.20	40.89	-4.94	-22.25	-13.07	-5.31	0.39
1996	18.38	-11.90	10.83	-7.07	-8.62	6.88	3.70
1997	4.20	-13.62	9.94	4.89	-0.52	8.79	1.06
Turkey							
1980	144.67	16.41	-6.21	-19.76	-38.50	1.17	-7.29
1981	46.27	7.10	10.33	-11.88	11.05	1.42	8.78
1982	46.16	11.71	6.36	-7.19	-2.17	3.76	2.50
1994	169.55	30.68	-5.60	-22.22	-14.14	-4.27	-1.39
1995	54.84	-17.69	11.80	-3.31	-0.15	4.08	7.42
1996	77.57	-1.54	7.50	9.98	-5.14	6.82	0.65
2001	96.03	26.96	-8.05	-24.27	-27.60	-2.94	-5.26
2002	22.98	-15.17	8.20	-5.51	-11.39	0.61	7.54
2003	0.42	-19.85	8.44	-5.23	-10.08	1.82	6.50

Note: The real wage is deflated by CPI, whereas productivity is calculated based on real value added deflated by PPI.
Thus the difference in the % change in the wage share and the % change in the real wage-% change in productivity is the differences in inflation rates in CPI and PPI.
Source: Own calculations based on OECD STAN for Mexico and Korea,
and Annual Survey of Employment, Payments, Production and Tendencies in Manufacturing Industry for Turkey.
Source for the exchange rate and CPI is World Bank World Development Indicators. Real exchange rate is deflated by CPI.

Table 4: Foreign trade

	Export/value added in manufacturing industry %			Import/value added in manufacturing industry %		
	Korea	Mexico	Turkey	Korea	Mexico	Turkey
1970-79	86.89	6.44	5.44	79.79	25.74	44.68
1980-89	112.70	20.96	30.92	69.10	42.17	46.97
1990-03	104.35	95.60	73.51	70.76	112.32	104.04
1980-03	107.83	64.50	55.77	70.07	83.09	80.26

Source: World Bank World Development Indicators

Table 5: FDI inflow (by non-residents)

	Total FDI/GDP, %			Manufacturing FDI/value added %		
	Korea	Mexico	Turkey	Korea*	Mexico*	Turkey*
1970-79	0.19	0.80	0.17	-	-	-
1980-89	0.26	1.16	0.20	0.90	7.11	-
1990-03	0.70	2.39	0.61	1.73	11.99	1.97
1980-03	0.51	1.88	0.44	1.51	10.08	1.97

Source: FDI manufacturing: OECD, total World Bank World Development Indicators
FDI manufacturing for Korea: 1985-2003, Mexico: 1981-2003; Turkey:1992-2003

Table 6: The basic model for Dlog(wage share) (1972-2003)

Included observations: 32

	Table 6a: Basic						**Table 6b: With recession intercept and slope dummies**					
	Korea		**Mexico**		**Turkey**		**Korea**		**Mexico**		**Turkey**	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
constant	0.002	0.903	-0.028	0.179	0.024	0.693	-0.007	0.627	-0.042	0.251	0.148	0.061**
Δlog(value added) t	0.095	0.382	0.401	0.166	-0.044	0.917	0.137	0.243	0.227	0.670	-1.409	0.044**
Δlog(exchange rate) t	-0.202	0.003***	-0.144	0.010***	-0.272	0.019**	-0.212	0.004***	-0.119	0.022**	-0.297	0.006*
Δlog(wage share) t-1	0.228	0.118*	0.296	0.093*	0.295	0.099*	0.229	0.100*	0.275	0.091*	0.247	0.102*
Δlog(value added) t-1	0.039	0.699	0.471	0.096*	0.355	0.374	0.055	0.574	0.697	0.014***	0.237	0.525
Δlog(exchange rate) t-1	-0.107	0.159	0.061	0.340	0.126	0.324	-0.098	0.177	0.105	0.096*	0.126	0.279
recession dummy*Δlog(value added) t	-	-	-	-	-	-	1.014	0.130	2.371	0.017**	7.763	0.077*
recession dummy	-	-	-	-	-	-	0.081	0.023**	0.072	0.142	0.281	0.346
Adjusted R-squared	0.449		0.422		0.136		0.496		0.485		0.229	
Durbin-Watson stat	2.037		1.959		2.124		2.179		2.157		2.271	
Prob(Q-stat)												
Null: no 1st order serial correlation	0.192		0.490		0.914		0.278		0.636		0.324	
Null: no 2nd order serial correlation	0.422		0.477		0.926		0.525		0.521		0.532	
Prob(growth+growth*recession dummy=0)							0.069		0.004		0.089	

*,**,*** stand for 1%, 5%, and 10% significance levels respectively.

Table 7: The effect of foreign trade on Dlog(wage share) (1972-2003)

Included observations: 32

	Table 7a: ECM Model						**Table 7b: Short-run Model**					
	Korea		**Mexico**		**Turkey**		**Korea**		**Mexico**		**Turkey**	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
constant	0.721	0.412	2.057	0.000***	1.202	0.017**	-0.005	0.708	-0.026	0.468	0.159	0.040**
Δlog(value added) t	0.050	0.707	0.051	0.899	-1.585	0.008***	0.099	0.413	0.153	0.765	-1.482	0.020**
Δlog(exchange rate) t	-0.144	0.091*	-0.162	0.000***	-0.321	0.004***	-0.181	0.019**	-0.131	0.008***	-0.394	0.000***
Δlog(wage share) t-1	0.263	0.127	0.181	0.166	0.280	0.046**	0.197	0.232	0.172	0.295	0.202	0.173
Δlog(value added) t-1	0.023	0.844	0.013	0.962	0.116	0.756	0.084	0.461	0.514	0.086*	0.372	0.323
Δlog(exchange rate) t-1	-0.111	0.292	-0.046	0.465	0.241	0.052**	-0.118	0.209	0.128	0.040**	0.262	0.027**
recession dummy* Δlog(value added) t	1.145	0.071*	1.631	0.044**	6.609	0.073*	1.049	0.103*	2.454	0.011***	8.539	0.030**
recession dummy	0.068	0.057*	0.057	0.147	0.187	0.451	0.067	0.063*	0.075	0.123	0.324	0.224
Δlog(export/value added) t-1	-0.006	0.925	-0.038	0.338	-0.155	0.047**	0.010	0.866	-0.098	0.030**	-0.203	0.012***
Δlog(import/value added) t-1	-0.047	0.613	-0.047	0.413	-0.101	0.399	-0.088	0.260	-0.032	0.644	-0.063	0.567
log(wage share) t-1	-0.163	0.154	-0.464	0.000***	-0.291	0.011***	-	-	-	-	-	-
log(export/value added) t-1	0.037	0.223	-0.095	0.003***	-0.079	0.031**	-	-	-	-	-	-
log(import/value added) t-1	-0.059	0.612	-0.007	0.854	0.029	0.639	-	-	-	-	-	-
Adjusted R -squared	0.461		0.661		0.395		0.473		0.521		0.355	
Durbin-Watson stat	2.327		1.878		2.293		2.209		2.152		2.048	
Prob(Q-stat)												
Null: no 1st order serial correlation	0.166		0.757		0.235		0.254		0.614		0.763	
Null: no 2nd order serial correlation	0.384		0.867		0.235		0.504		0.748		0.649	

*,**,*** stand for 1%, 5%, and 10% significance levels respectively.

Table 8: The effect of FDI on Dlog(wage share)

	Table 8a: Manufacturing FDI/value added for Mexico, aggregate FDI/GDP for Korea and Turkey						Table 8b: Manufacturing FDI/value added for all countries					
	Korea (1977-2003)		**Mexico (1982-2003)**		**Turkey (1972-2003)**		**Korea (1986-2003)**		**Mexico (1982-2003)**		**Turkey (1993-2003)**	
	27 observations		22 observations		32 observations		18 observations		22 observations		11 observations	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
constant	-0.002	0.883	0.026	0.525	0.194	0.029**	0.010	0.592	0.088	0.029**	0.277	0.007***
Δlog(value added) t	0.107	0.388	0.706	0.163	-1.445	0.041**	-0.048	0.798	0.752	0.010***	-0.142	0.771
Δlog(exchange rate) t	-0.162	0.055**	-0.083	0.045**	-0.304	0.005***	-0.266	0.010***	-0.079	0.080*	-0.339	0.006***
Δlog(wage share) t-1	0.350	0.031**	0.080	0.565	0.216	0.193	0.394	0.029**	0.312	0.031**	0.127	0.562
Δlog(value added) t-1	0.045	0.658	0.977	0.000***	0.096	0.799	-	-	-	-	-	-
Δlog(exchange rate) t-1	-0.077	0.295	0.069	0.207	0.079	0.513	-	-	-	-	-	-
recession dummy* Δlog(value added) t	1.037	0.096*	1.629	0.048**	6.562	0.101*	-	-	-	-	-	-
recession dummy	0.069	0.033**	0.089	0.037**	0.214	0.473	-	-	-	-	-	-
log(FDI inflow/value added) t-1	0.002	0.713	-0.050	0.001***	0.012	0.474	0.005	0.604	-0.051	0.008***	-0.222	0.004***
Adjusted R-squared	0.539		0.747		0.208		0.467		0.607		0.453	
Durbin-Watson stat	2.476		2.150		2.198		0.034		0.058		0.099	
Prob(Q-stat)							2.593		2.309		2.002	
Null: no 1st order serial correlation	0.171		0.878		0.482		0.164		0.357		0.525	
Null: no 2nd order serial correlation	0.392		0.986		0.605		0.364		0.488		0.813	

*,**,*** stand for 1%, 5%, and 10% significance levels respectively.

Due to unbalanced data, the covariance terms are down-weighted by dividing with the maximum of the number of observations.

Notes

Acknowledgements
The paper received financial support from the "Dr. Heinz Kienzl Prize" granted by the Austrian National Bank and the Vienna University of Economics and BA. The author is grateful to two anonymous referees, Jim Crotty, Joachim Becker, Engelbert Stockhammer, Herbert Walther, Gerard Angeles-Castro, Salih Çevikarslan, Eckhard Hein, Julia Woerz and the participants of the Annual Conference of the European Association of Evolutionary Political Economy for helpful comments on an earlier version of the paper, and to Taner Ersoz, Hulya Turkoglu, and Merih Gunes from the Turkey Statistical Institute for valuable information about the data sources.

[1] The lack of data on functional income distribution and wages is worth noting. Labor share data existed in the World Bank WDI database for the manufacturing sector until 1993, but then the release of this data was terminated in the following versions of this database. The wage and productivity data in the Economist Intelligence Unit starts only from the 1980s onwards for some countries and from the 1990s for most others. In the UN database, labor's income, both in manufacturing and nationwide, is only provided for some countries, and usually only from the 1990s onward.

[2] STAN is primarily based on member countries' Annual National Accounts by activity tables and uses data from other sources, such as national business surveys/censuses, to estimate any missing detail. STAN reports both labor compensation data and wages and salaries wherever available, but for Korea and Mexico only labor compensation data is reported.

[3] This data is reported in the Annual Survey of Employment, Payments, Production and Tendencies in Manufacturing Industry based on firm level surveys supplied by the Turkey Statistical Institute for all public sector firms and private firms with 10 or more persons engaged for the period of 1950-2001. For 1997-2001 period data for private firms with less than 10 persons engaged are also announced, but the wage share figures in aggregate do not show much deviation between all firms vs. firms with 10 or more persons engaged. Due to a change in the survey methodology the data after 2001 is still not announced. Regarding the National Accounts data, GDP based on incomes approach is reported only for the period of

1987-2005. The payment to employees data in the National Accounts include the social security and pension contributions of the employers; also estimations are made to incorporate the payments to employees in the firms employing less than 10 persons. The wage and salary data in the Survey include wages and salaries, per diems, overtime payments, bonuses, indemnities, payments in kind, before gross income tax, social security and pension fund premium deductions from the employees, and excludes the contributions to social security etc. by the employers. Nevertheless, the two data series, i.e. the labor share based on survey data and National Accounts, for the common period of 1987-2001 show similar trends with a correlation coefficient of 0.87. The wage share based on the manufacturing industry surveys is extended using the percentage change in the wage share in manufacturing industry based on the National Accounts for the years 2002-2003.

[4] For e.g. in 2000, the last normal year before the crisis, the wage share according to the manufacturing survey in Turkey is 22.3%, where as the share of labor compensation in manufacturing value added in Mexico is 30.7% and 45.1% in Korea. The share of labor compensation in manufacturing value added in Turkey as reported in the National Accounts is 30.3% –a rate comparable to Mexico.

[5] However, ILO reports the data on self-employed at a sectoral level jointly with the data on employers. Alternatively it is possible to calculate the share of employees in total employment for certain years, but the lack of long time series data on self-employment in Mexico and Turkey makes a correction (based on the estimated labor income of the self-employed) impossible for the whole period of 1970-2003; even for the later periods there are years when data is not available due to changes in the definition of the classifications. The latter is also a problem for Korea.

[6] According to ILO data in 1993, the share of employees in manufaturing total employment is 84.7 in Korea, 75.6 in Mexico and 75.5 in Turkey based on ISIC-Rev.2 industrial and ICSE-

58 status classification. In mid to late 1990s the definitions of the classifications changed, which make comparisions through time within a country harder but based on ISIC-Rev.3 industrial and ICSE-93 status classification for the latest year available the the share of employees in manufaturing total employment is as follows: 82.2% in Korea in 2000, 77.0% in Mexico in 2000 and 81.5% in Turkey in 2002.

[7] Crotty and Lee (2002) and Crotty and Dymski (2001) emphasize the importance of crisis episodes in facilitating a radical restructuring, which could not be achieved via a democratic process under normal economic circumstances.

[8] Indeed, unit labor cost in nominal terms is P*WS. Thus $P = M_o(P \cdot WS + d \cdot P + f_1 X_t + f_2 X_{t-1})$. The logarithmic function for P in equation (5) is a linear approximation of this equation, where Φ is a positive coefficient less than unity.

[9]

$$l_o = [b_0 + e_0(1 + b_1 - w - s) - m(1 - b + a)]/j$$
$$l_1 = [e_1 b_1 - (1-w)(1 + d - e_1)]/j$$
$$l_2 = [e_2(b_1 + (1-w)) + s(1 + d - e_1)]/j$$
$$l_3 = [-e_4 b_1 + a\Phi - e_4(1-w) + e_3 s]/j$$
$$j = [1 + e_3(1 + b_1 - w) + (1-b)\Phi]$$

The second lags of y, ws and x have been dropped for convenience, related to the shortness of the time series data, which will be important at the estimation stage.

[10] Since trade and capital account liberalization and labor market deregulation have been implemented as part of a structural adjustment package, their trend is expected to be the inversely related to variables like unionization, collective bargaining coverage and organizational strength, which are institutional variables that we cannot incorporate to our analysis due to the absence of good time series indicators. See van der Hoeven and Saget, 2004 for a review of the links between globalization, changes in labor market institutions, and labor market outcomes in the developing countries.

[11] Unit root test results are available upon request.

[12] Cointegration test results are available upon request. Since FDI inflow is I(0), it can not have a cointegrating relation with the wage share. One could try this by the stock of the FDI; however data for this is not available, and summing up the FDI inflow -outflow data through years to get a stock variable does not take into account the depreciation rate. Moreover, manufacturing specific FDI data is very short, and does not allow for ECM estimations.

[13] The Q-statistics indicate that there is no first or second order serial correlation in the country specific residuals, as indicated by the probability of the Q-statistics, which are reported at the end of the estimation results.

[14] The slope dummy for 1980s for growth is insignificant for all countries. We also did not find a significant negative trend in the wage share estimations, which is consistent with the results of Lee and Jayadev (2005) for upper middle income developing countries, but different from Diwan (2001).

[15] The recession years correspond to years of nominal depreciation higher than 25% in all cases except for three incidences in Mexico (1993, 2001, 2003). However there are many years when a higher than 25% nominal depreciation does not necessarily mean a crisis in Turkey and Mexico due to high inflation rates.

[16] The results are available upon request. Robustness checks are made for the inclusion of the level of the exchange rate.

[17] The results are available upon request. In the VECM estimations lags of growth and depreciation are used as exogenous variables.

[18] The results are available upon request.

[19] A three stage least squares method is estimated, which is a two stage least squares estimation with error terms correlated across countries. As instruments the lags of the

endogenous and exogenous variables and the GDP of OECD are used. The results are available upon request.

[20], The lags of the endogenous and exogenous variables are used as instruments.